SWIFT®

FUTURA™ HYDRO

Controller Manual

COMPUTERIZED ELEVATOR CONTROL CORP.

Moving People. Moving Business.

TABLE OF CONTENTS

FUTURA SAFETY PROCEDURES

WARNING

The following procedures are intended for the use of qualified and authorized personnel ONLY. In the interest of your personal safety and the safety of others, do NOT attempt ANY procedure that you are NOT qualified and authorized to perform.

These procedures should be performed in accordance with any governing local codes: and where practical, any rules of the latest edition of the National Electrical Code, Article 620; the latest edition of ASME A17.1, Safety Code for Elevators.

Every attempt has been made to ensure that this manual is as accurate and up-to-date as possible. However, Computerized Elevator Controls assumes no liability for consequences resulting from any error or omission. The material contained herein is subject to revision, and Computerized Elevator Controls makes every effort to inform its product users of these revisions as they occur. Please report any problems with this manual to the Technical Support Department.

SAFETY SUMMARY

This information should be read BEFORE any work is performed on the Futura.

Terms in this Manual

CAUTION statements identify conditions that could result in damage to the equipment or other property if improper procedures are followed.

WARNING statements identify conditions that could result in personal injury if improper procedures are followed.

Use the Proper Fuse

To avoid fire hazard, use only a fuse of the correct type, voltage rating and current rating as specified in the parts list for your product.

Other Electrical Safety Information

Electric shocks can cause personal injury or loss of life. Circuit breakers, switches and fuses may **NOT** disconnect all power to the equipment. Always refer to the wiring diagrams. Whether the AC supply is grounded or not, high voltage to ground will be present at many points.

Do **NOT** remove connections or printed circuit cards from the equipment while power is applied. This can damage equipment.

Always lock out the Mainline Disconnect when power has been removed from equipment.

Installation Wiring

All installation wiring must comply with all applicable national, state, or local codes, and should be in accordance with the U.S. National Electric Code (NEC) where practical.

When Servicing With Power On

Dangerous voltages exist at several points in this product. To avoid personal injury, do **NOT** touch exposed connections or components while power is **ON.**

STATIC PROTECTION GUIDELINES

IMPORTANT!

Read this page before working with electronic circuit boards.

Modern elevator systems use a number of electronic circuit boards to control various functions of the elevator. These boards house components that are extremely sensitive to electrostatic voltage, which can cause board damage or failure.

Proper handling and shipping of boards is important to ensure their reliability and long-term operation. Use the following guidelines when handling circuit boards.

SHIPPING

- All boards, whether they are "good" or "to be repaired," MUST be packaged in a closed and sealed anti-static bag whenever they are being transported.
- Boards MUST also be packaged in sturdy protective cartons for shipping.
- Use only anti-static packing materials (ordinary Styrofoam is not acceptable).

HANDLING

- Store all boards in separate, sealed anti-static bags until time for installation.
- When handling all boards, always wear an anti-static wrist strap with ground wire. Acceptable straps should be available through any local electronics parts supplier.
- Handle boards only by their edges using proper anti-static techniques. Avoid touching components, traces and connectors.
- Always lay boards on a grounded electrostatic protection barrier (i.e., a dissipative mat or an anti-static bag).
- Extra care should be used when handling individual components such as integrated chips, metal oxide semi-conductors, and field-effect transistors, some of which can be destroyed with as little as 30 volts of electrostatic discharge.

Failure to adhere to these guidelines will VOID board warranty!

RECOMMENDED TOOLS AND TEST EQUIPMENT

The following tools and calibrated equipment are required for installing and adjusting:

- RS-232C compatible PC or terminal capable of operating at 19,200 baud.
- Digital VOM, Fluke 8024B or equivalent.
- Oscilloscope, Tektronix Model T-912 or equivalent (optional)
- TOOLS: Normal tools required for elevator installation.

SAFETY NOTICES

WARNING

This equipment contains voltages, which may be as high as 600 Volts and connects to rotating parts on motors and driven machines. High voltage and moving parts can cause serious or fatal injury. Only qualified personnel, familiar with elevator operation, should attempt to start-up or troubleshoot this equipment. Observe these precautions:

- Use extreme caution. Do not touch any circuit board, power device or electrical connection without ensuring that high voltage is not present.
- Electric shocks can cause personal injury or loss of life. Circuit breakers, switches and fuses may not disconnect all power to the equipment (more than one live circuit). Always refer to the wiring diagrams. Whether the AC supply is grounded or not, high voltage to ground will be present at many points.
- All equipment must be properly grounded. Do not apply AC power before following grounding instructions.
- Improper control operation may cause violent motion of motor shaft and driven equipment. Be certain that unexpected motor shaft movement will not cause injury to personnel or damage to equipment. Peak torques of several times rated motor torque can occur during a control failure.
- Motor circuits may have high voltage present whenever AC power is applied, even when the motor is not rotating.

CAUTION

- Do not remove connections or printed circuit boards from the equipment while power is applied. This can damage the equipment.
- Meggering or "buzzer" type continuity testers can damage electronic components. Damage resulting from their use will void all existing warranties.
- When instruments such as an oscilloscope (line voltage operation) are used to work on live equipment, great caution must be used. The oscilloscope's chassis should be grounded and a differential amplifier input probe should be used. Always refer to the manufacturer's instruction book for proper operation and adjustments of the test equipment.
- Connection of devices such as voltmeters on certain low-level analog circuits or tachometer may degrade performance of the regulator drive system. Always use a voltmeter having a minimum of 20K OHM/VOLT. A digital voltmeter is recommended.
- Always read the complete instructions prior to applying the power or troubleshooting the equipment. Follow the procedures step by step.
- The controller must be grounded at one point only. Refer to the "Site and Installation Planning Guide" section for further information.

For Additional Information or Assistance
If you require assistance or additional information, please contact Technical Support at:
Computerized Elevator Control, Corp.
24 Empire Blvd. (201) 508-2300
Moonachie, N.J. 07074

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SECTION 1 - SITE PLANNING & INSTALLATION

Machine Room Layout

Controller. The ***Futura Hydraulic Controller*** is a front access designed controller. This controller is a RETMA enclosure 45" Wide, 18" Deep and 34" Tall. The doors are hinged to swing open and they are also removable. [See Figure 1-1.]

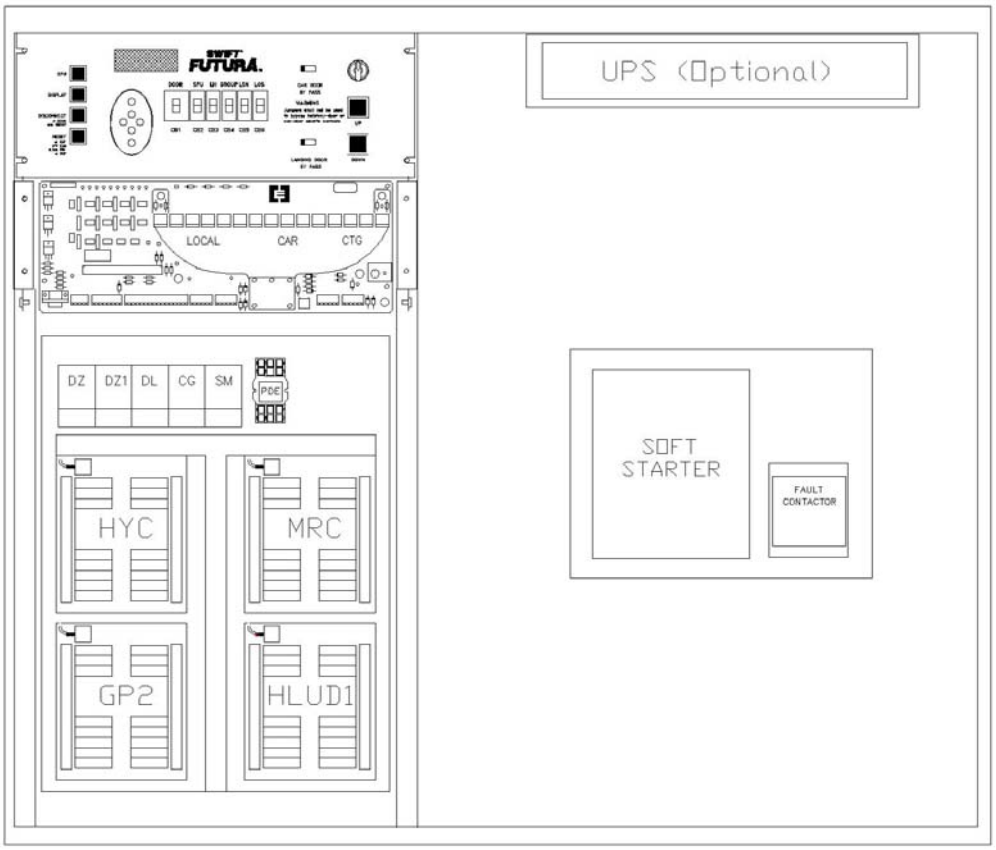
Warning!

While cutting/punching holes or drilling in the top or side of the controller, take care to prevent metal shavings from entering the controller.

Mounting: The ***Futura*** is designed to be either a wall mount (structural wall only) or a floor stand mount controller (with Optional Leg Assemblies). Place the controller in a location that will provide for proper ventilation and meet local codes for proper work clearances. Note: 2" are required between the controllers for proper ventilation.

Futura Hydraulic Controller

Figure 1-1



Machine Room Duct, Conduit and Wiring

Duct and Conduit

Warning All electrical conduit and ductwork must be properly bonded and grounded according to the latest Applicable Electrical Code.

Caution Use caution when cutting or punching holes into the controller cabinet to prevent metal filings from entering cabinet.

Power wiring from disconnect and from the pump motor must be run into the controller separately from the hoistway and traveling cable wiring. Use flex conduit when connecting to pump unit to minimize mechanical and electrical vibrations.

Machine Room Wiring

Power wiring to the controller: The power wiring can be a 2, 3 or 4 circuit configuration, depending on the drive system that is supplied.

- An independent, emergency backed single-phase supply for the cab lighting circuit is required for all elevator controllers.[See Figure 1-2.]

Cab Lighting Circuit

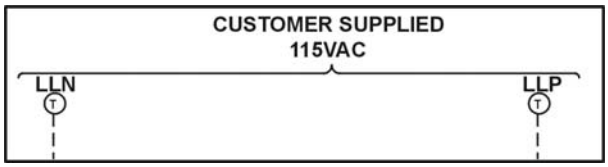


Figure 1-2

Warning The Futura controller transformer cannot and is not designed to support cab lighting and cab ventilation. Using the Futura 120 VAC control circuits in this manner is a code violation and may cause damage to the transformer and possibly void the warranty.

- An independent, emergency backed, single-phase 120 VAC circuit is common to all group installations (for the first controller of each group only). [See Figure 1-4.]

Hall Call Power Circuit

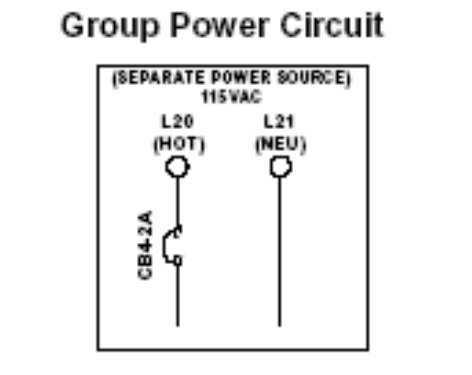


Figure 1-3

- The 3-phase mainline power circuit is common to all starter types. The power may connect directly into solid state starter on the controller. Otherwise, the power may connect to the overload side of a wye-delta starter on the controller [See Figure 1-4 & 1-5].

Three-Phase Power Circuit On Solid State Soft Starter

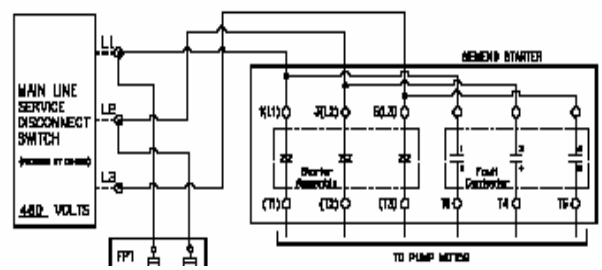


Figure 1-4

Three-Phase Power Circuit On Y-D Starter

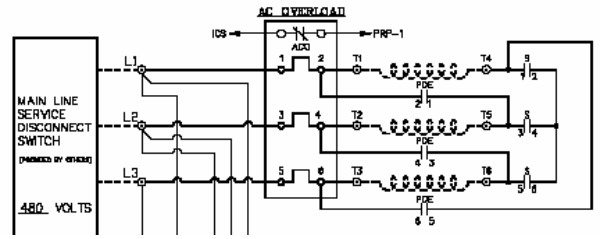


Figure 1-5

- A separate fused circuit from the primary side of the power transformer terminals H1 and H2 to the FP1 fuse block on the drive side of the controller. [See Figure 1-6.]

Controller Power Circuit

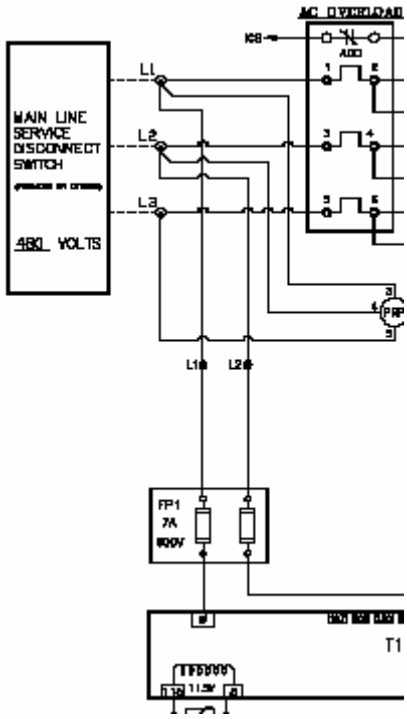


Figure 1-6

Warning! All wire sizes are to be in accordance with the applicable Electrical Code.

Warning! The main line power must supply a ground wire in accordance to National Electrical Code that is continuous to the source or to an earth ground connection.

Hoistway Switches, Tape Style Positioning System Installation, Conduit and Wiring

Hoistway Limit Switches

The Futura controller uses Up Final, Direction and Terminal Slowdown switches.

Up Final Limit: Up Final Limits is used at the top of the hoistway. It is usually set to open 3" past top floor level but must be set to open prior to the piston striking the stop ring. This switch is wired into Safety Circuit in series. See Wiring Diagrams.

Directional Limits (normal limits): Directional limits are also used at both the bottom and top of the hoistway. They are usually set to activate 1" below top floor and 1" above bottom floor. [See Figure 1-7.] Each of these switches wires directly to the controller. See Wiring Diagrams.

Normal Limits

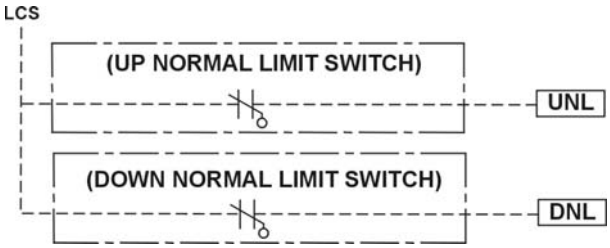


Figure 1-7

Terminal Slowdown Switches: These slowdown switches are also used at the bottom and top of the hoistway. The distance these switches operate away from the terminal landings depends on the elevator's contract speed. [See Table A.] These switches wire directly to the controller. [See Figure 1-8 and Wiring Diagrams for further details.]

Note: *These switches may need to be moved after final valve adjustment. Make sure enough slack in the wiring is available to move any switch up or down 12".*

Slowdown Limits

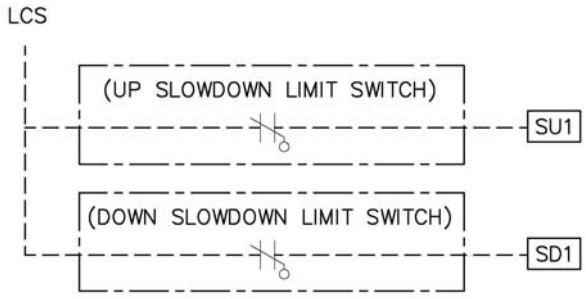


Figure 1-8

Slowdown Distance

FPM	(m/s)	SLD1	Distance	TSV1 Value
50	(0.25)	10"	(25 cm)	50
75	(0.37)	15"	(38 cm)	75
100	(0.50)	20"	(51cm)	100
125	(0.63)	25"	(64 cm)	125
150	(0.75)	30"	(76 cm)	150
175	(0.88)	35"	(89 cm)	175

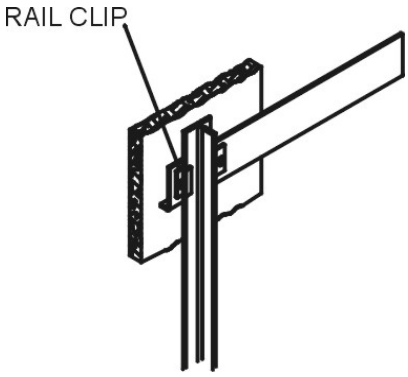
Tabel "A"

Installation for Tape Style Positioning System:

Mounting the Tape:

- Locate the quadrant of the hoistway were the tape would not interfere with Limit Switches, Oil Piping, etc.
- Mount top tape support bracket on the main guide rail high enough so that the CPT Box will not strike the bracket when the car is sitting on the Stop Ring. [See Figure 1-9.]

Top Tape Bracket



Figiure 1-9

- Make sure the support bracket is square to the main guide rail and securely fastened.
- For most installations place the spool of tape on reel stands and pull the end of the tape up to the top support bracket and secure (snug but still allow to swing right to left).
- Once the tape is connected to the top support bracket and extends the length of the hoistway, allow the tape to hang freely for some period of time (overnight) to allow any twists to disperse.
- After the tape has been allowed to hang freely for a period of time, loosely mount the bottom support bracket. Position the bracket so it is low enough to not interfere with any travel of the car and is in line with the top support bracket and the centerline of the tape.
- With the tape hanging motionless secure it to the top bracket. [See Figure 1-10.]

Top Tape Bracket with Support

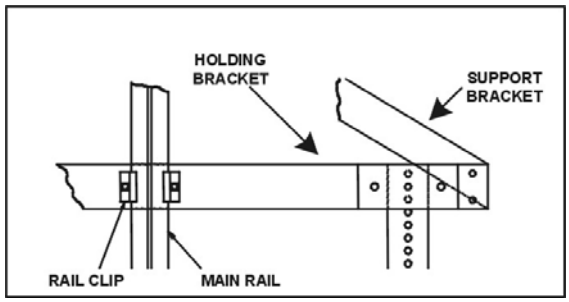


Figure 1-10

- Double over a short portion of the end of the tape and secure the bottom portion of the tape between plate #1 and plate #2. Cut off and discard remaining tape. [See Figure 1-11.]

Spring Tension Plates

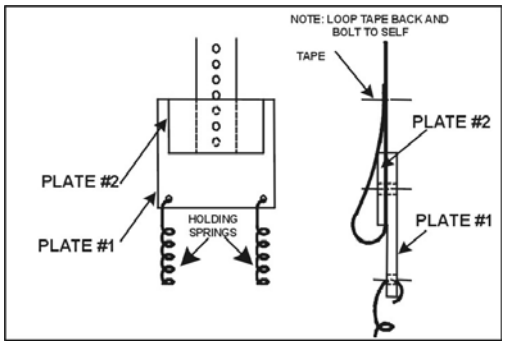


Figure 1-11

- Connect tension springs to plate #1 and to support bracket plate #1. [See Figure 1-12.]

Tape Tensioning Assembly

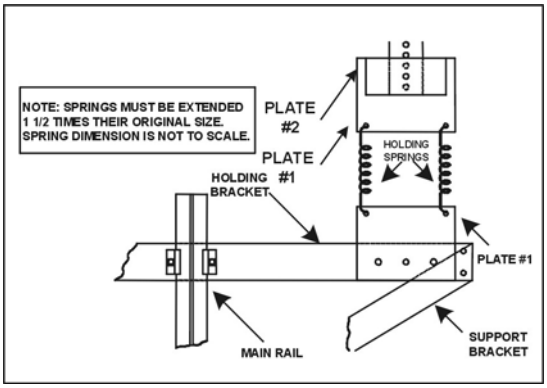


Figure 1-12

- Position the bottom support bracket to a position below the support bracket plate #1 that would allow the springs to become stretched to 1.5 times their original lengths. Verify the support bracket is inline with the top bracket and the centerline of the tape. Securely mount the bottom support bracket to the rail. [See Figure 1-13.]

Bottom Tape Bracket

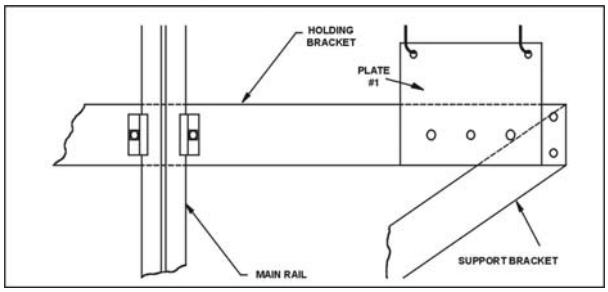


Figure 1-13

- Pull the bottom support bracket plate #1 down and secure it to the bottom support bracket. Verify the springs are approx. 1.5 times their original lengths, move the bottom support bracket if required [See Figure 1-14.]

Tape Tensioning

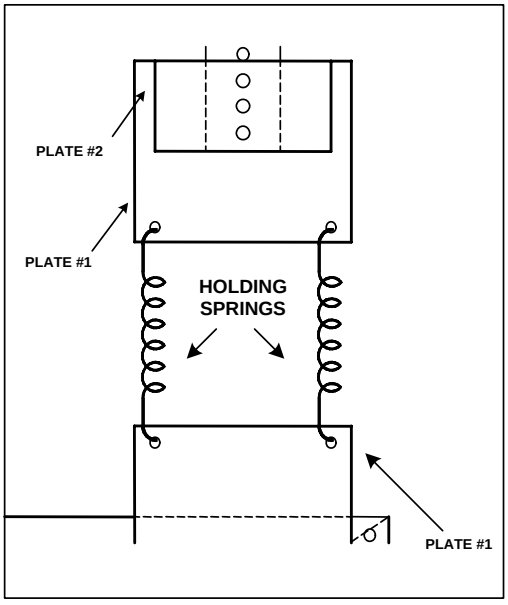


Figure 1-14

Note: *For proper operation and longevity of the selector tape guides the tape must run true from top to bottom without any twists.*

Hall Position Indicator, Push Button and Hall Lantern Wiring

Hall Lantern

The Futura can support 2 different configurations of wiring for Hall Lanterns: Discrete Circuits and Serial. Check the wiring diagrams for the configuration used for this job.

Discrete Circuits

- From the controller, a common wire is run the length of the hoistway of an individual elevator.
- 2 wires (usually from a multi-cable from the controller) for that particular floor is also connected to the hall lantern.
- From the hall lantern, wires are connected to the applicable wires in the hoistway.
- This process is repeated for every floor where a hall lantern exists. See wiring diagrams for detail.

Serial

- From controller terminals (VL+, VLC) and SPU-Link terminals (HLRT+, HLRT-), 2 twisted pairs all of 12 gauge wire are run the entire length of the hoistway.
- Connect to the end of these wires a HPU Termination board. [See Figure 1-15.]

HPU Termination Board

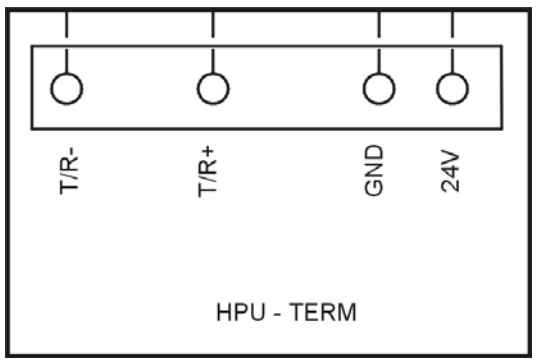
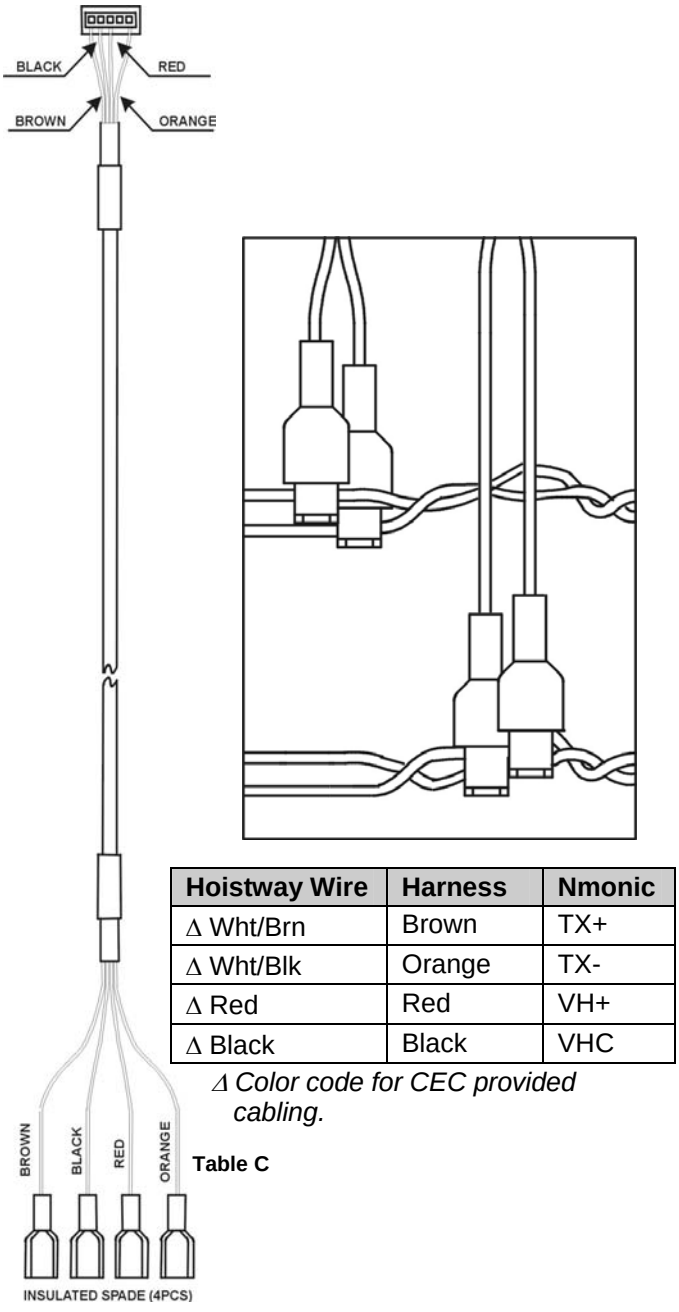


Figure 1-15

- Run the cable provided by CEC from the hall lantern box to the hoistway duct.
- Connect cable to the wires using the fasteners provided. [See Figure 1-16 and Table C.]

HPU Wiring Harness



Hoistway Wire	Harness	Nmonic
Δ Wht/Brn	Brown	TX+
Δ Wht/Blk	Orange	TX-
Δ Red	Red	VH+
Δ Black	Black	VHC

Δ Color code for CEC provided cabling.

Table C

Figure 1-16

- Connect the other end of the cable to the Hall Lantern HPU board P1 (5 pin) connector (HPU is to remain in the Hall Lantern box). Verify that the connections correspond to their appropriate connections in the hoistway.

Warning! Failure to keep the connection correct will cause damage to the HPU board and possible void board warranty.

- Connect the Hall Lantern devices to the CEC supplied cable as shown in the wiring diagrams.
- Connect the Hall Lantern cable to the P5 (5 pin) connector on the HPU board. [See Figure 1-17.]
- Verify the HPU address jumpers are correct for that floor. [See Figure 1-18 and HPU Address Jumper Configuration Charts.]

Hall Lantern Wiring

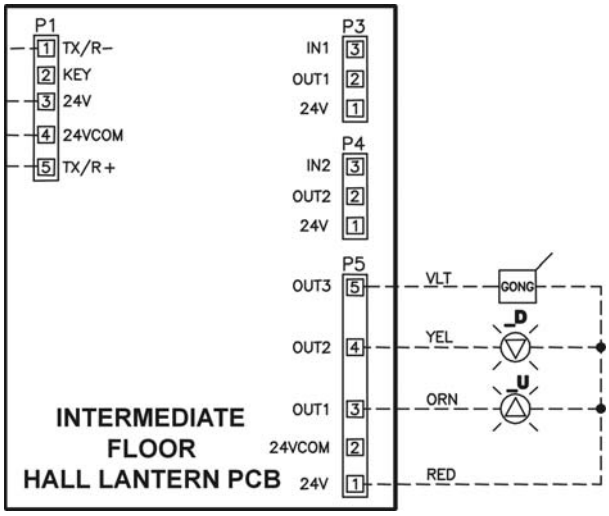


Figure 1-17

- Verify all connections are correct and that the plastic insulating sleeve is installed over the HPU.

Warning! When routing the HPU wiring through the controller it is important to keep 6" or more clearance from any high voltage wiring.

Hall Push Buttons

The Futura can support 2 different configurations of wiring for Hall Push Buttons: Discrete Circuits and Serial. Check the wiring diagrams for the configuration used for this job.

Discrete Circuits (I^2C)

- From the group controller, Power and Common wires are run the length of the hoistway of an individual elevator.
- From the Hall Push Button, wires are connected to the applicable wires in the hoistway.
- The 3rd and 4th wires (usually from a multi-cable from the group controller) for that particular floor are also connected to the Hall Push Buttons.
- This process is repeated for every floor where a hall push button exists. See wiring diagrams for detail.

Serial

- From group controller terminals (VH+, VHC) (HCRT+, HCRT-), 2 twisted pairs all of 12 gauge wire are run the entire length of the hoistway.
- Connect to the end of these wires a HPU Termination board. [See Figure 1-15.]
- Run the cable provided by CEC from the hall push button box to the hoistway duct.
- Connect the cable to the wires using the provided fasteners. [See Figure 1-16.]
- Connect the other end of the cable to the Hall Push Button HPU board P1 (5 pin) connector (HPU is to remain in the Hall Call Box). Verify that the connections correspond to their appropriate connections in the hoistway. [See Figure 1-18.]

Warning!

Failure to keep the connection correct will cause damage to the HPU board and possible void of board warranty.

- Connect the hall push buttons to the CEC-supplied cable as shown in wiring diagrams.
- Verify the HPU address jumpers are correct for that floor (each board has floor designation on back). [See Figure 1-18.]

HL & HC HPU Cards

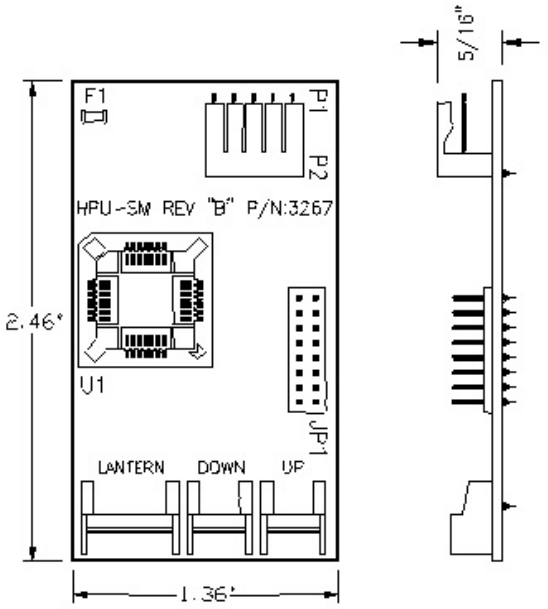


Figure 1-18

Note: *Jumpers must be installed on JP1 to properly address HPU's for proper hall lantern location/operation. Refer to job documentation for proper addressing for project.*

- Connect the Hall Push Button cable(s) to the P3 and/or P4 (3 pin) connector(s) on the HPU board. [See Figure 1-19.]

Hall Call Wiring

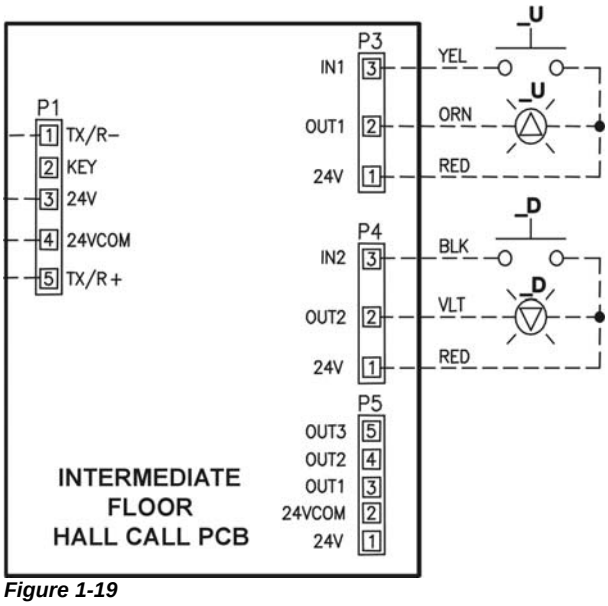


Figure 1-19

- Verify all connections are correct and that the plastic insulating sleeve is installed over the HPU.

Warning!

When routing the HPU wiring through the controller, it is important to keep 6" or more clearance from any high voltage wiring.

Hall Position Indicators

The Futura can support 3 different configurations of wiring for Hall Position Indicators: Binary, Discrete Circuits and Serial. Check the wiring diagrams for the configuration used for this job.

Binary & Discrete Circuits

- From the car controller, Power and Common wires are run the length of the hoistway of an individual elevator.
- From the P.I., wires are connected to the applicable wires in the hoistway.
- A wire (usually from a multi-cable from the controller) for each particular floor is also connected to the P.I. or wires from the controller to the same designated wires at the P.I.
- This process is repeated for every floor where a hall position indicator exists. See Wiring Diagrams for detail.

Serial – CEC Provided PI Displays

- From controller terminals (VL+, VLC) and CCU (HLRT+, HLRT-), 2 twisted pairs all of 12 gauge wire are run the entire length of the hoistway.

  Note: *If Serial Hall Lanterns are used, connection should be made to these wires.*

- Run the P.I. cable from the box to the hoistway duct.
- Connect the cable to the wires using the provided fasteners.

Hall P.I. Wiring – CEC Provided PI Displays

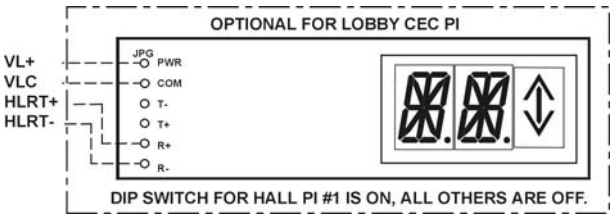


Figure 1-20

- Repeat this process wherever a hall position indicator is present.

Warning!

Failure to keep the connection correct will cause damage to the P.I. board and possible void of board warranty.

Car Top Box Installation

Car Top Box: The standard *Futura* Car Top Box is 22.5" W X 15.5" L and 6" D. It contains the terminals for the termination of the traveling cable wires as well as the CPT, COP, CC1, Door Board, Car top inspection station, Work light and Car position indicators. [See Wiring Diagrams for details.] This box must be placed in a convenient location for piping and wiring as well as conforming to any and all codes governing car top clearances. (usually mounted on the front side of car top next to cross head). [See Figure 1-21.]

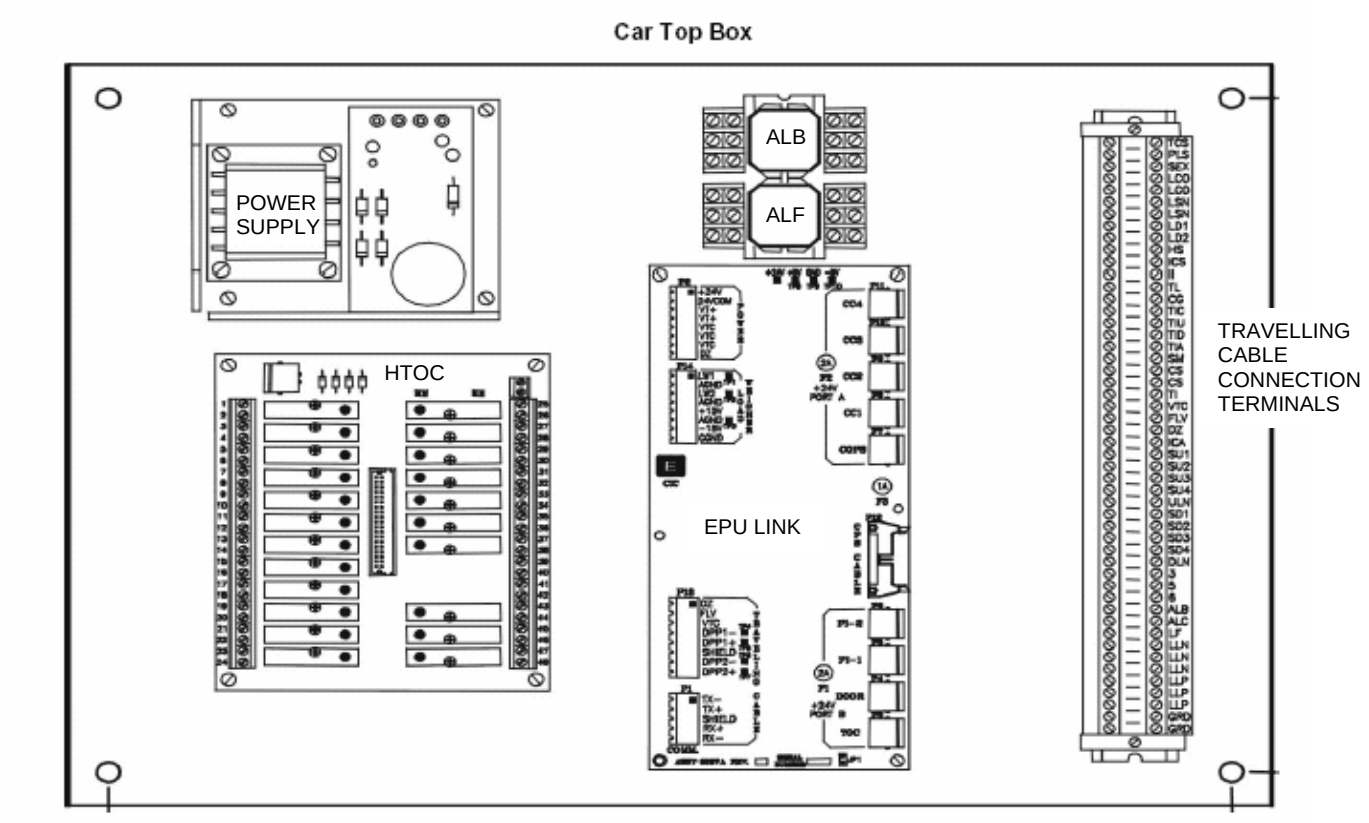


Figure 1-21

CPT Installation

The bracket for the CPT is mounted plumb to the tape on the car top in the same quadrant where the selector is to be located.(See Figure 1-22)

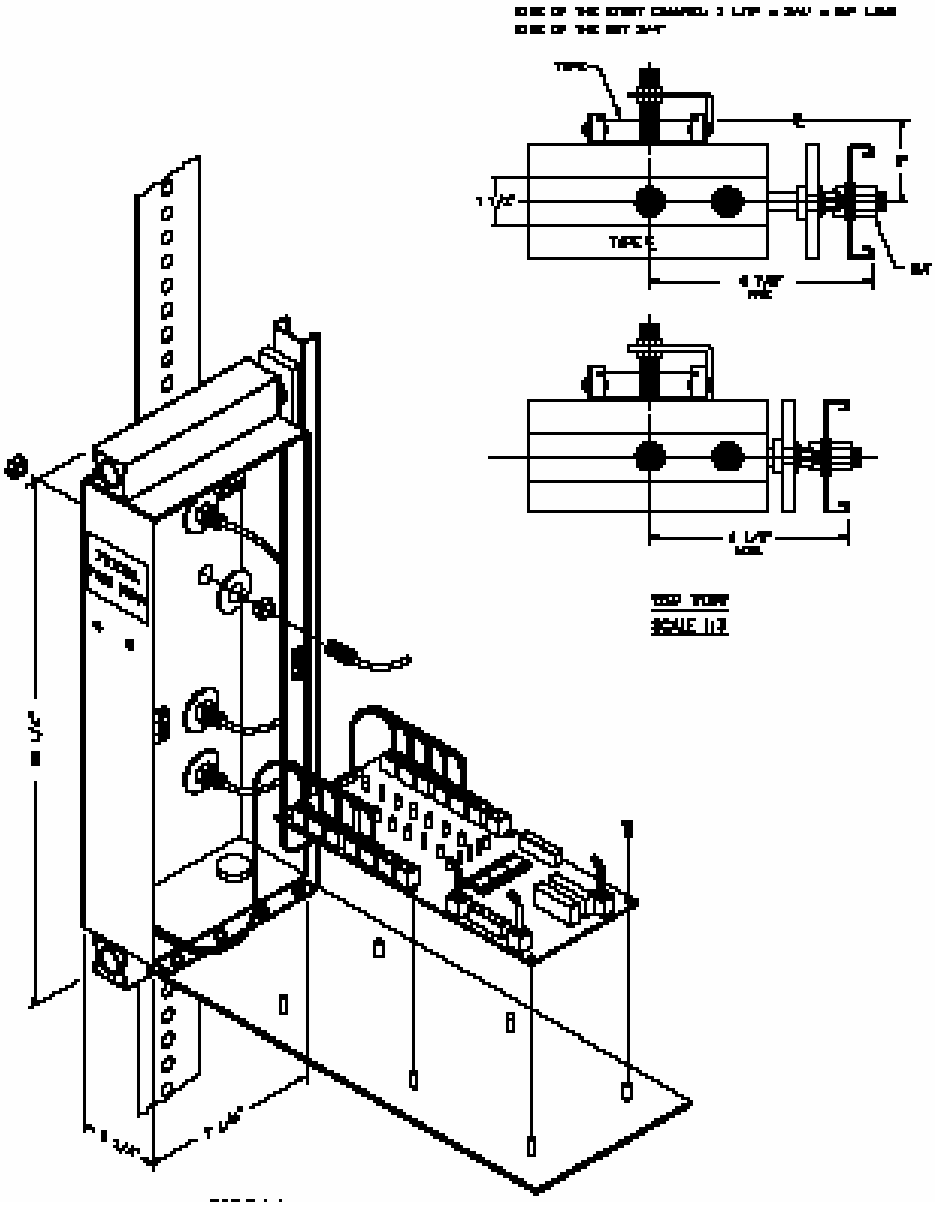


Figure 1-22

Magnet Placement

The Futura Tape system incorporates a series of magnets for leveling and floor identification. The magnets consist of a 12" Leveling magnet and 3" parity magnets.

1. Place the car at the exact floor level.
2. Scribe a mark across the tape that is even with the top of the CPT Box Assembly.
3. Place the template provided against the left edge of the tape with R1, R2 facing outward.
4. Align the top of the template even with the scribe marks in step two.
5. Place the 3" magnets in their proper location as shown in the table below.
6. Turn the template outward and place it against the right side of the tape.
7. Again aligning the top of the template to the scribed marks. Place the 12" magnet at the position shown on the template.
8. Repeat until all floors have magnets installed.

Magnet Placement Table- Hydro

Floor	R8	R4	R2	R1	OP
1	-	-	-	M	-
2	-	-	M	-	-
3	-	-	M	M	M
4	--	M	-	-	-
5	-	M	-	M	M
6	-	M	M	-	M
7	-	M	M	M	-
8	M	-	-	-	-

COP and CC1 Board Installation

These boards are to be located in the Car Operating Panel when serial communication is requested to the COP. [See Figure 1-22.]

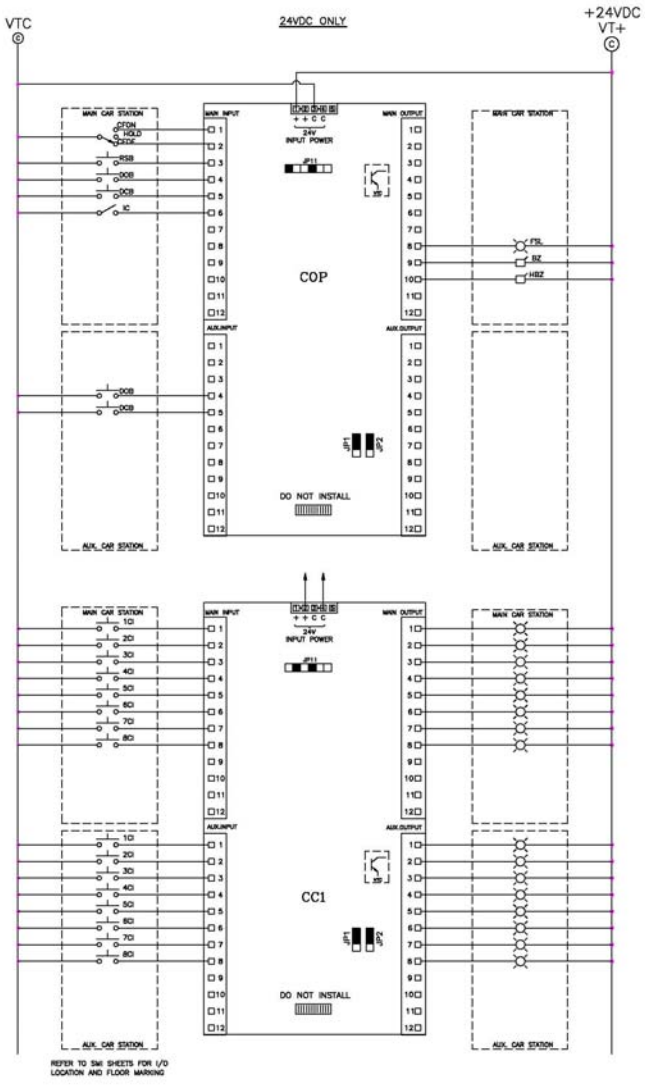


Figure 1-22

These boards are connected to the EPU Link using provided 8 conductor telcom cable. Each device will have a port designated for installation of the communication cable.

Note: *See wiring diagrams for job specific wiring of the COP and CC1 boards***.**

C.E.C. Door Operator Interface

The Futura Controller interfaces with all standard door operators on the market. It provides this interface by the way of output modules to control the operation of the door operator and input modules to monitor its position. These input and output modules are provide on the TOC board for passenger doors and on the Controller for Freight doors.

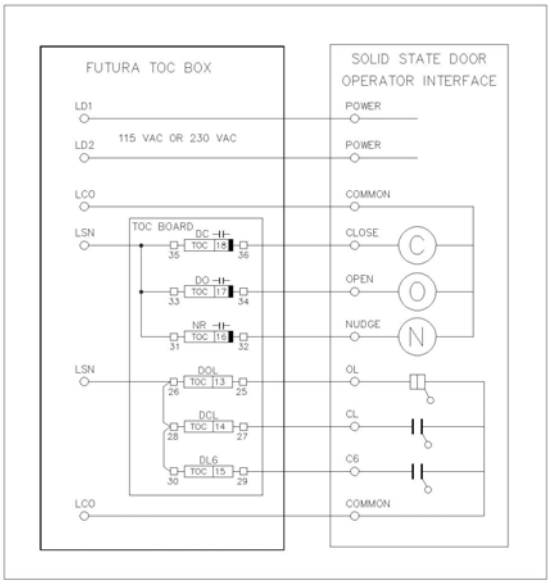


Figure 1-24

The Door Control Outputs are:

DC – Door Close Signal

This output (Dry Contact Type) comes on to signal the door operator to close the doors.

DO – Door Open Signal

This output (Dry Contact Type) comes on to signal the door operator to open the doors.

NR – Reduced Torque Signal *(Nudging)*

This output (Dry Contact Type) comes on when nudging operation is activated to signal the door operator to close the doors at a reduced speed/torque when closing.

The Door Monitoring Inputs are:

DOL – Door Open Limit

This Input monitors the door fully open position. When energized the doors are at a position other than the fully open position.

DCL – Door Close Limit

This Input monitors the door fully closed position. When energized the doors are at a position other than the fully closed position.

DL6 – Door Close 6 inch Limit

This Input monitors the door position within 6 inches of fully closed. When energized the doors are at a position other than within 6 inches of the fully closed position.

Car Safety Circuit Wiring

Safety devices located on the car are wired to the Car Top Box. See wiring diagrams for specific details.

Car Gate Switch and Hoistway Door Locks

See the wiring diagrams for your particular job for specific wiring details.

NOTES

SECTION 2 - FUTURA STARTUP PROCEDURES for HYDRO

Machine Room Preparations

FIELD WIRING CHECK

1. Verify Mainline disconnect is in the **OFF** position and properly locked out.

2. Verify all the circuit breakers on the front panel (located at the top of the controller) are in the off position. [See Figure 2-1.]

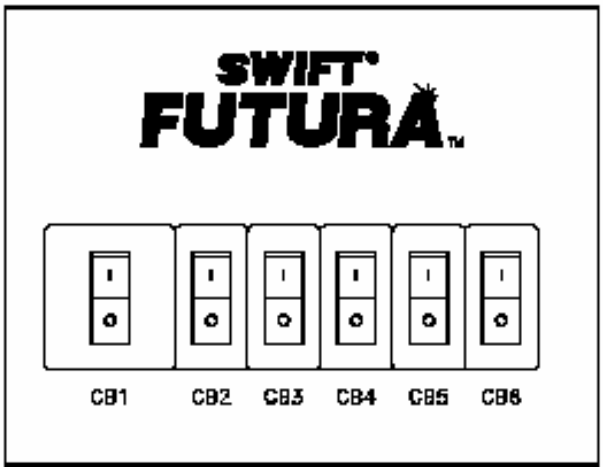


Figure 2-1

3. Turn the AUTO/TEST switch to the **TEST** position.

4. Verify that the following field wires are connected as described in the Installation portion of this manual.

   Power wiring to the controller: The power wiring can be a 2, 3 or 4 circuit configuration, depending on the building power that is supplied.

   A. The first circuit common to all drive types is an independent single phase supply for the cab lighting circuit. Usually 120 VAC for North America and 230 VAC for the remainder of the world. This circuit should be a 15 amp fused circuit.

      [See Figure 2-2.]

Cab Circuit Lighting

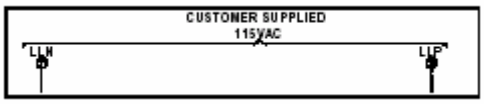


Figure 2-2

Note: *The Futura controller transformer is not designed to support cab lighting and cab ventilation. Using the Futura 120 VAC control circuits in this manner may cause permanent damage to the main controller transformer.*

   B. The second circuit requires common to all drive types (for the 1st controller of each group only) is a separate independent emergency backed single phase 120 VAC circuit for North America and 230 VAC circuit for the remainder of the world to supply power for the hall call circuitry. This circuit should also be a 15 amp fused circuit. [See Figure 2-3.]

Group Power Circuit

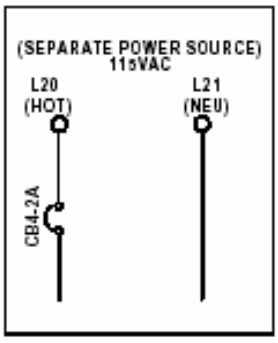


Figure 2-3

C. The third circuit required common to all drive types is Main Line power. This power will either connect directly into a fuse block in the drive side of the controller or to the line side of a solid state starter. If a power transformer is used the secondary side will be wired to the fuse block in the drive side of the controller. [See Figure 2-4.]

Three-Phase Power Circuit

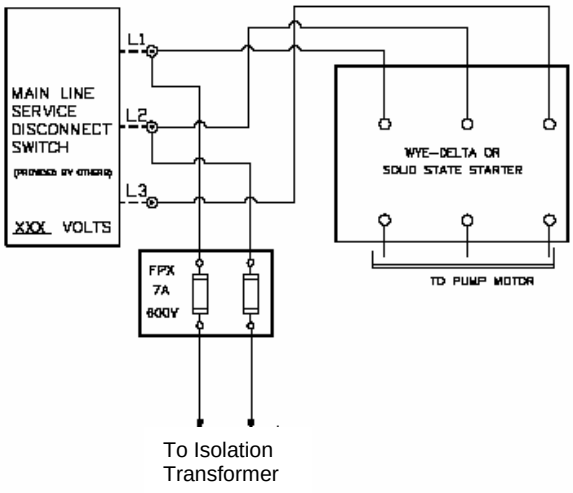


Figure 2-4

Warning!

All wire sizes are to be in accordance to the applicable National Electrical Code.

Warning!

The main line power must supply a ground wire in accordance to National Electrical Code that is continuous to the source or to an earth ground connection.

Transformer Configuration

1. Verify all transformer taps are connected for proper voltage according to the Power Distribution page of the wiring diagrams.

2. Verify the mainline voltage:

   A. Measure and record the input voltage at the mainline disconnect.

   B. Ensure the voltage agrees with the job voltage +/- 10%. See the Power Distribution page of the wiring diagrams.

      1) Turn on CB1 and verify there is 115 VAC (or 230 VAC depending on Door Operator Power requirements) between terminals LD1 and LD2.

      2) Turn off CB1 and turn on CB3 and verify there is 115 VAC present between LH and LCO terminals.

      3) Turn off CB3 and turn on CB5 and verify there is 115 VAC present between LSN and LCO.

      4) Turn off CB5. CB4 will be tested during group startup.

   C. Temporary Wiring Installation

      1) Verify the mainline disconnect is in the **OFF** position.

      2) Install the following temporary jumpers. [See Table 1.]

Warning!

These jumpers are to be of a high visibility color, a minimum of 36" (1M) in length and only installed for temporary operation. Never operate a car at high speed with temporary jumpers. They must be removed as the door and safety circuit wiring is installed.

TEMPORARY JUMPERS		
Circuit	**From**	**To**
Hoistway Safeties	LCS	HS
Car Safeties	HS	CS
Car Stop Switch	CS	ICS
Up Normal Limit	LCS	UNL
Down Normal Limit	LCS	DNL
Normal Power	VG+	NP
Group Common	VGC	VC
Group Power	V+	VG+
Car Gate Switch	ICS	CG
Door Locks	ICS	GL
Car Insp. Switches	CS	II
Down Slowdown Limit	LCS	SD1
Up Slowdown Limits	LCS	SU1
Power Switch	V+	DRVS

Table 1

AC Voltage and Switch Test

1) Turn on the mainline disconnect.

2) Turn on CB2 and CB6 and verify the following:

- The SPU front panel LED should flash red and then stay lit constant green.
- 115 VAC voltage is present between LCS and LCO.
- Verify that there is 24 VDC across V+ and VC on the SPU link board.

SPU Power-Up, Initialization and Wizard Operation

SPU Power-UP and Wizard Connection

1. Verify the mainline disconnect switch and verify CB2 and CB6 are in the **ON** position.
2. Connect the Diagnostic Terminals Serial Port to the Human Interface Port on the SPU Link using a 9 pin RS-232 cable.
3. Start the Wizard program
4. At opening screen click on the Terminal button.
5. Cycle off CB2 then back on the check terminal for Confidence Test. [See Figure 2-8.]

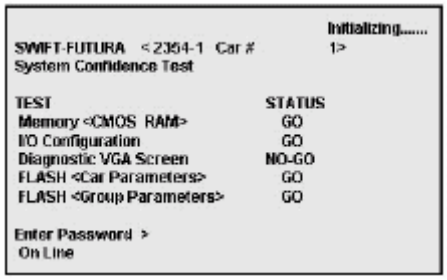


Figure 2-8

6. Verify the Job Number shown on the confidence test matches the Job Number shown on the controllers and all tests are a "GO". Should there be a "NO-GO" in the Flash tests, go to System Initialization on page 11-4.

Note: *Presently an on board video card on the SPU is no longer utilized and a "NO-GO" will appear at the Diagnostic VGA Screen test. Disregard this message.*

7. Type in the password "INSTALL" and press enter.
8. Verify the prompt returned on the screen matches the car number. [i.e. C# 1=> is car 1 of this group.]
9. Type in "IVE=15" and press enter.
10. Type in "WRT" and press enter.
11. Type in "GET" and press enter.
12. Click the close button and return to the Wizard start menu.
13. Click on the Run Wizard button to connect to the Wizard Main Menu.
14. Click on the car to monitor. This should be the car you are connected to. This will take you to the Car Main Menu.
15. Click the Diagnostics Button to display the diagnostics window.

System Initialization (For NO-GO Tests)

Note: Contact CEC Tech Support before using this procedure.

Note: ***These procedures are to be used only if the confidence test shows a NO-GO in the FLASH TEST ONLY. [See Figure 2-9.]***

1. At the password prompt type in HUDSON.BAY and press enter.
2. Type in the following command **"EPI2374"** and press enter.
3. When **"OK"** is returned at the prompt, power down the SPU by turning off Circuit Breaker 2 (CB2).
4. Wait 10 seconds and Power up SPU by turning on Circuit Breaker 2 (CB2).
5. At the password prompt type in **"INSTALL"** and press enter
6. Type in **"GET"** and press enter. This will move all of the stored default parameters into active parameter files.
7. If a parameter is out of the acceptable range, it will appear at the prompt. A proper value must be entered for this parameter in order for the test to be successful. See parameter listing for the proper default value. (i.e. if DPF is returned then type in "DPF=320" and press ENTER).
8. Type in **"WRT"** and press enter after every change.
9. Repeat step 6,7,& 8 until an OK is received after the GET command.
10. Once the OK is returned type in **"WRT"** and press enter.
11. Type in **"GRP"** and press enter to enter into the Group parameter files.
12. Repeat steps 2,6,7,& 8 for clearing a NO-GO Group Flash test while in the Group mode.
13. Once the OK is returned at the Group prompt, type in **"WRT"** and press enter.
14. Type in **"CAR"** and press enter to return to the car prompt.
15. Return to step 5 of the SPU Power-Up and Wizard connection.

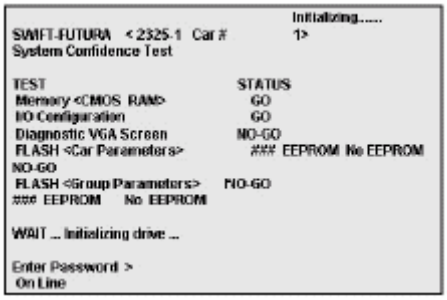


Figure 2-9

Running the Car on Inspection

1. Using either the "On Board" Diagnostic Display (if equipped), the Diagnostics Screen in the Wizard or the RVU screen, verify that the elevator is on inspection.

2. Place the controller in setup mode by performing the following steps.

Note: *Setup mode disables DPP feed back from the car top unit. If the car top unit is installed and operational this will not be required.*

   A. Press and hold the SPU button until the Display, Door Disconnect and Reset button light up. (Controller must be on Inspection for setup mode to activate)

   B. Release the SPU button and press the Display button once.

   C. The Display button will now flash red and green. This will indicate you are in the setup mode.

Note: *This function can be activated in terminal mode by typing STM and pressing ENTER .*

Note: ***This procedure will have to be done every time the power is turned off.***

3. Verify the following inputs are activated.

SD1	SU1	PT
DRVS	CS	ICS
UNL	DNL	NP
GL	DL	

4. Verify the following relays are activated.

CG	DL

Note: *If you have a rear (or side) door opening then you also need RCG & RDL relays active.*

5. Momentarily press the up button and verify the SM relay energizes.

Running on Temporary Buttons

1. Remove jumper II to CS.

2. Remove jumper TIC to TIA.

3. Wire temporary run box as per Figure 2-10.

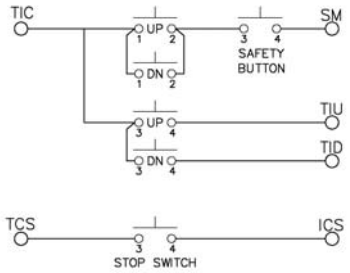


Figure 2-10

Note: *Make these connections only if two-pole buttons are used.*

4. Verify the elevator runs in the proper direction from the temporary run box.

5. Verify that a stop switch is wired in the safety circuit and opens the safety circuit when activated.

6. Set Leveling Speeds on valve to a value for a safe working speed for the elevator. (Usually 15 to 30 fpm)

7. Verify the car is on STM mode by observing Display button. Verify car runs without stopping without speed and position feedback from CPT Assembly (tape unit). If the controller is not in the STM mode, the car will stop every few feet even if the Temp Buttons remain pushed.

8. Temporarily reset Car BIT 2,3 (Type BITR2,3 and press Enter) to disable the panic motion fault feature during installation. Car BIT 2,3 must be set prior to final adjustments.

NOTES

SECTION 3 - ADJUSTMENT PROCEDURES

SPU Communication Verification

1. Verify all components are connected to the SPU Link.
2. Verify the elevator is on Panel Test (Inspection).
3. Place the Wizard into Terminal Mode.
4. Turn off the mainline disconnect for 10 seconds then back on.
5. Verify the Wizard Terminal Screen confidence test does not list any errors. Verify the CPU LED is flashing along with the green LEDs on the SMIC boards.
6. At the Wizard Terminal, type in the password "INSTALL" and press enter.
7. At the Wizard Terminal window, type in "CMC" and press enter. (See Car Commands for details.)
8. Verify that all the devices are communicating with the SPU.

Note: *Depending on job configuration, there may be more CAR address location than shown. Check job folder for details.*

9. Access the Wizard Diagnostic screen.
10. Run the car on inspection in the Up direction by using the controller UP test button and verify VEL is equal to SR (Speed Reference). Also verify both SR and VEL have green arrows. Run the car in the Down Direction by using the controller DOWN test button and verify speed. Then verify the SR and VEL green arrows change to red.

Magnet and Switch Placement

1. Verify the car in on Inspection.
2. Verify All Temporary Jumpers have been removed and all circuits are operational.
3. Verify that the floor magnets have been placed at the proper height at each landing so that when the car is floor level only the UFLZ, DFLZ and MLZ inputs are active.
4. Verify the proper floor preset magnet locations by running the car to each floor and comparing the seen locations with the locations as specified in Section 1.
5. Verify that the Terminal Slowdown Switches are at the required distance from the terminal floors for the required contract speed and the TSV values are also correct for that speed. TSV values can be viewed and modified under the Wizard program sub-menu "Limits." [See Table 1.]

Slowdown Limit Mounting Distances

FPM (m/s)	SLD1/TSV1
50 (0.25)	10" (25cm) / 50
75 (0.37)	15" (38cm) / 75
100 (0.50)	20" (51cm) / 100
125 (0.63)	25" (64cm) / 125
150 (0.75)	30" (76cm) / 150
175 (0.88)	35" (89cm) / 175

Table 1

6. Verify that the Up and Down normal limits stop the car in the appropriate direction.

Preliminary Slowdown Settings

1. Set the up slowdown distance by setting parameter DTA as follows:

FPM (m/s)	DTA (inches)
50 (0.25)	32 (12”)
75 (0.38)	48 (18”)
100 (0.51)	64 (24”)
125 (0.63)	80 (30”)
150 (0.76)	96 (36”)
175 (0.89)	112 (40”)

Table 2

2. Set the down slow down distance by setting parameter DT2 to the same setting as DTA was set to in the previous step.

DPP Setup

AC Voltmeter Method

1. Using a voltmeter on the **AC scale** to verify the DPP signals, connect it between DPP1+ (positive lead) and DPP1- (negative lead) on the DPP1+ and DPP1- on SPU-Link board.

2. Run the car Up and Down on Inspection at 12 fpm.

3. Adjust the meter settings to monitor the Pulsed voltage. The reading should be 2.7 VAC ±0.5 VAC.

4. If not within tolerance, adjust the distance between the sensor and the magnet.

Note: *Adjust the sensors and /or magnets IN or OUT in 360° increments. Failure to do so can result in improper selector operation.*

5. Repeat steps 2-4 until the reading is within tolerance for both DPP1 & DPP2.

Oscilloscope Method

An alternate and more accurate method of verifying the DPP signals is using the Oscilloscope method. It is the preferred method but can be bypassed if an Oscilloscope is not available.

1. With an isolated dual channel oscilloscope, connect the one channel to DPP1+, DPP1- and the other channel to DDP2+,DPP2- on the SPU-Link board.

2. Run the car Up and Down on Inspection at 12 FPM.

3. Verify the proper waveforms and amplitude of the square waves are correct.

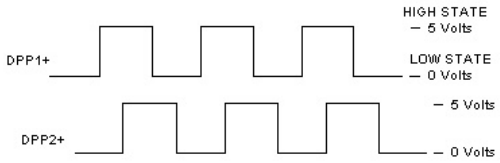


Figure 3-1

4. Verify the two signals are 90° out of phase with each other.

Verify the following conditions **do not** exist in the DPP signals on the display.

- Excessive Noise Spikes
- Ringing or Oscillations
- Distortion

(See Figure 6-3 for examples of incorrect waveforms.)

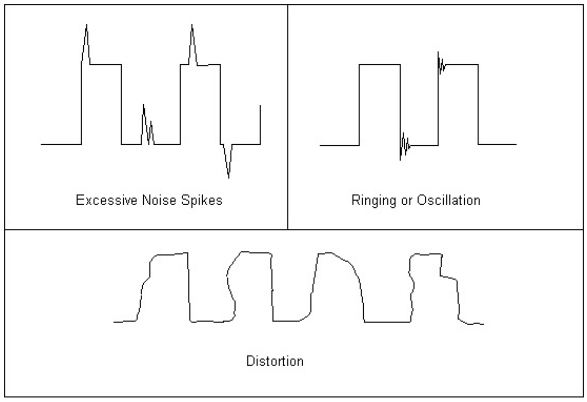


Figure 3-2

If any of these conditions exist, verify the following:

- The DPP signal is wired (continuous run) through the ***twisted shielded cable***.
- The shielded cable is grounded on the controller ground terminal.
- The DPP wiring is not run in the same traveling cable with the high voltage signals (over 120 VAC).
- The minimum wire gauge for the DPP signal is 18 AWG.

Correct as necessary.

Auto-Setup

1. Verify BIT 6,11 is reset so car runs at leveling speed only while on inspection.

2. Temporarily adjust the Valve Up Leveling speed to 20 FPM.

3. Place temporary jumpers from UNL to DNL. This will disable these direction limit switches.

4. Place the elevator below the bottom floor with just the ULZ and UFLZ inputs activated.

5. Activate the Wizard Terminal window (black screen).

6. Type in **"ASU"** and press Enter.

7. The DPC count will change to 100 to ensure the auto setup mode is in effect.

8. Press and hold the up button on the controller.

Note: *Should car stop before the top floor, setup will be invalid.*

9. While elevator is running up observe the LCD Display or the Wizard Car Diagnostics window.

Note: *DPC value will change from 100 to 1000 upon passing the lowest landing floor magnet and will confirm proper starting of the Auto Setup Operation.*

10. Verify the DPP count is increasing in value and the DPP LEDs are flashing on the front of the SPU-Link.

11. Once car has stopped on its own, above the top floor, return to the Wizard Terminal window. The prompt should display "Normal".

12. Type **FCP** command and press Enter.

Note: *Once a successful scan is completed, the FCPs will change from their default values, i.e. 1000, 1400, 18000, to the actual floor counts, i.e. 1000, 1420, 1881, etc.*

13. Once the FCPs are verified that the scan was successful, type **WRT** and press Enter.

14. Select Door Disconnect from the panel buttons. Pressing the Door Disconnect Button once will place the controller in Door Disconnect Operation. This will cause the Door Disconnect Button to flash on and off once per second.

15. Place the Panel Test switch to Auto and verify the car re-levels down to the top floor.

Running High Speed

1. Once the elevator has re-leveled to the top floor, enter **STD** and verify the car runs on automatic to the next floor below.

2. Continue to enter **STD** and verify the car stops at every floor. Once the car reaches the bottom floor, type **STU** and press Enter. This will run the car to next floor in the up direction.

3. Continue to enter **STU** and verify the car stops at every floor.

4. Once the elevator reaches the top floor, type **STD** and monitor the SR and confirm it displays the elevators contract speed. Also monitor VEL and adjust the valve down high speed adjustment to obtain full contract speed.

5. Once at the bottom landing, type **STU** and monitor the VEL in the Up direction. Confirm the elevators speed in the up direction is the required contract speed.

Note: *UP Direction speed is controlled by the amount of oil the pump can transfer. On a submersible (direct coupled motor and pump) this is non adjustable. On a dry (belt drive) pump unit the pump speed and output can be adjusted by reconfiguring the pump and motor pulley ratio. Any variance in the actual car speed and the contract speed in the up direction should be reported to your supervisor as soon as possible.*

"Speed Curve" and Floor Accuracy Adjustments

1. Display the Car Diagnostics Window.

2. Run the elevator on multi-floor runs up and down into the same mid hatch floor.

3. Adjust the valve to provide smooth acceleration away from and to obtain full speed within 36". Adjust the deceleration to provide 2 to 4 inches of stabilized leveling speed prior to floor level stop.

4. Follow the valve manufactures adjustment procedures to obtain proper ride quality, performance and leveling accuracy.

Hydro Speed Profile

The following parameters are non adjustable and only present to allow monitoring of the "S" curve based on an internal speed profile. These will not affect the actual running profile of a Hydraulic Elevator. All performance adjustments are to be made via the Hydraulic Valve adjustments.

Parameter	Range	Default	Units	Description of Car Adjustment Parameters
TLV	Non Adjustable	5	DPP	**T**ransfer to **L**eveling **V**ane (DPP): Minimum distance from floor level at which the constant leveling velocity should takes effect.
SST	Non Adjustable	16	1-64 SEC	Soft Start Time: The time it takes from the start of up valve sequence until the car starts to move.
TFD	Non Adjustable	1	Number	**T**op speed **F**lat top travel **D**istance:
DER	Non Adjustable	100	Feet/ min/ sec	**DE**celeration **R**ate This is the rate of deceleration in the speed profile.
ACR	Non Adjustable	100	Feet/ min/ sec	**AC**celeration **R**ate This is the rate of acceleration in the speed profile.

Table 3

Miscellaneous Safety Parameter Adjustments

1. Using the Terminal Window set the following parameters. See Table 4.

VEE	Highest difference between Speed Reference and Velocity during Acceleration plus 30.
MLV	160
MRV	60

Table 4

Terminal and Emergency Slowdown Limit Adjustments

1. Perform multiple types of floor runs (1, 2, 3 and high speed) into the top terminal landing.

2. Type in **"ULB"** and press Enter after each run into the Up terminal landing. Record the **Up Slowdown Limit** position lowest **DPP** count and speed.

3. Type in **"ELB"** and press Enter after each run into the Up terminal landing. Record the **Emergency Up Limit** position lowest **DPP** count and speed

4. Repeat for the bottom terminal landing using "DLB" command and record the **Down Slowdown Limit** position highest **DPP** count.

5. Compare the **ULB** and the **DLB** limit positions recorded in step 2 and 3. They should be within 3 DPP counts of each other. If not adjust either **ULR** or **DLR** values for each switch, i.e. ULR1 for SU1, DLR1 for SD1, etc.

6. Set the corresponding **TSV** speed (**TSV1** is for **SU1** and **SD1**, etc.) value 15 fpm higher than what was recorded from using the ULB and DLB commands in the previous steps.

7. Set parameter LPE to a value between 20 to 30.

8. Make multiple runs into the terminal landings and verify that fault 11 does not occur. If an 11 error occurs, the **LPE** value may have to be higher.

9. Set the **ESV** parameters to 25 fpm higher than the corresponding ELB values, ESV1 higher than TSV1, etc.

10. Run the car at high speed into the top and bottom landings and verify no errors are recorded.

Miscellaneous Adjustments

Setting the Hoistway Access

1. Place the car at the top floor on Inspection/Access operation (ICA).

2. Set parameters ACT to a value to stop the car at a level to allow safe access to the car top.

Note: *ACT and ACB values are not used until the car travels off of SD1 or SU1.*

3. Access the car down from the top floor verifying the car stops where desired. Readjust ACT as needed to obtain proper stopping point.

4. Repeat at bottom floor setting ACB to stop the car in the up direction at a point to allow safe access to the Pit Area.

NOTE: If top access is located other than top floor, set ACF to the Top Access Floor.

Setting Pump Motor Running Timers

1. Set Car Parameter PMP to allow pump to continue to run after up leveling valve de-energizes to ensure soft final stop in up direction. This is normally set for 5 seconds.

2. Set Car Parameter LOT to allow car to fully travel from bottom landing to top landing running at Inspection/leveling speed. Record run time and add 10 seconds to recorded time and enter into LOT parameter.

Various Door, Fire Parameters and Control Status Word Settings

Door Operational Bits

CSn	Bit	DEFAULT	DESCRIPTION
0	**13**	R	When set and on independent service, the doors will close automatically when a car call is registered.
1	**4**	S	When set, pre-opening is disabled for the front doors.
1	**5**	R	When set, front door pre-opening will occur at the 2" leveling zone.
2	**1**	R	If set, pressing the door close button shortens the door open time. If reset, DCB has no affect on door open time.
2	**8**	R	If set, does not allow reopening of doors with the safety edge or the electric eye during nudging.
3	**13**	S	If set, door-nudging operation is disabled.
4	**5**	R	If set, front door pre-opening will occur when car reaches 6" from floor level.
5	**3**	R	If set, car will shutdown if car goes out of the level zone and doors are open.
6	**3**	S	Set to disable electronic detector edge time out.
6	**4**	S	Set to enable electronic detector edge operation Vs. mechanical safety edge.
6	**5**	R	Set to enable electronic proximity edge operation Vs. mechanical safety edge.
6	**14**	R	Set to enable drive fault GLR error. (both GLR input and DOL input active while at the floor)
7	**10**	R	Set to invert detector edge input.
9	**5**	R	Set to require DCL on (with GLI and GL) to start car.

Door Operation Parameters

PAR	RANGE	UNIT	DESCRIPTION
CDT	16-200	1/16 Second	Door Open Time: Time for doors after answering a car call.
DCC	2-20	Units	Door Cycle protection Counter: Normally adjusted for 6 cycles before removing power form doors.
DCP	5-20	Seconds	Door Close Protection time: The amount of time the doors are given to close before taken out of service on door protect.
DDT	0-80	Seconds	Door open Delay Time after activation of DOB input.
DHT	0-64	1/16 Second	Door Hold Time: Delay time before high-speed door opening. Only used on Dover OHS door operator circuits.
DOH	0-360	Seconds	Extra Door Open button Hold time: Only used with door hold buttons.
DOP	5-20	Seconds	Door Open Protective time: Amount of time allowed to open the doors before taken out of service on door protects
DOT	0-60	Seconds	Door Open button Time-out: Maximum amount of time doors are allowed to remain open form the door open input.
LDT	32-200	1/16 Second	Long Door open Time: Time used when car answers a hall call.
NDT	5-120	Seconds	Nudging Door Time: Time doors are allowed to be held open before nudging goes into effect.
SDT	4-48	1/16 Second	Short Door Time: Door time after electric eye or safety edge has been activated.

Fire Service Operation Parameters

PAR	RANGE	UNIT	DESCRIPTION
FAL	1-# FLs	Unit	Fire recall Alternate Floor: The alternate floor to which car recalls when main fire floor smoke sensor (FAL) is activated.
FBT	1-65535	1/64 Second	Fire Bypass Timer for GSA fire standard.
FIR	1-# FLs	Unit	Fire Recall Floor: The main fire floor for phase 1 recall mode.
IFT	0-300	Sec.	Independent Fire Time: Time system takes to override independent service during fire phase 1 operation.

Fire Service Operational Bits

CSn	Bit	DEFAULT	DESCRIPTION
1	8	R	When set, the fire buzzer is pulsed.
1	9	R	When set, the fire emergency light is pulsed.
1	10	R	When set, the stop switch is not bypassed. When reset, it is bypassed according to bit 11.
1	11	R	When set, stop switch is bypassed all the time. When rest, the stopswitch is bypassed according to ANSI code standard.
1	13	S	When set, the in-car fire service light also operates during phase II.
1	14	R	When set, the doors will close when a car call is registered. If reset, the door must be closed with the door close button.
3	3	S	If set, allows car to shut automatically after phase II key switch is set to “OFF” and phase I condition exists.
3	5	R	When set, the door open button is disabled during phase I fire service.
3	14	S	If set, door-nudging operation is activated during phase I fire service operation while the door is closing. **This bit will override bit 13 (disable nudging).**
4	0	R	If reset, car will open front door automatically when it reaches the fire floor during phase I.

Car Call Operational Bits

CSn	Bit	DEFAULT	DESCRIPTION
0	4	R	If set, dumps all calls after consecutive car calls answered per CCD parameter number order with no electric eye break.
4	10	R	If set, car calls will not be cancelled when the car has a reversal slowdown.
4	11	R	If set, cancel car calls for positions above the car when the car is moving down and cancel car calls below the car when the car is moving up.
7	15	R	Set to pulse car call output for low intensity lights.

NOTES

SECTION 4 - FUTURA GROUP SETUP

Setting Group Parameters

1. Set the following parameters for the group under the Group Parameters Menu.

   Note: *These parameters that set floors must also be set to the same floor in each car parameter.*

LBY	Lobby Floor Designation – Set this to the floor designated as the main building lobby floor. Count up from the lowest landing served by this group.
FIR	Main Fire Recall Landing – Set this to the floor where the Phase 1 Recall switch is located. Count up from the lowest landing served by this group.
FAL	Fire Alternate Floor Landing – Set this to the floor where the elevators are to travel to when the smoke detector at the main floor activates (input FAL) Count up from the lowest landing served by this group.
EPF	Emergency Power Floor – Set this to the floor where the elevators are to travel to when returning on Em Power Return Operation. Count up from the lowest landing served by this group. – *This is normally the same as FIR*
MEP	Maximum Cars on Emergency Power – Set this to the number of elevator allowed to run when power is being supplied by other than the normal source
LER	Elevator Lobby Request – This is the number of elevators required to be in at the lobby floor at all times.

Adjusting Group Dispatching

Note: *This procedure can be set up when 2 or more of the cars have been put into service. It is ideal to set the group up when all cars are in service.*

Note: *Prior to setting up the group, it is a good idea to monitor and note existing traffic patterns. For example, if the main lobby has continuous traffic all day, then an elevator might want to be returned to the lobby when free.*

The Futura is defaulted so that one elevator will return to the Lobby if there is no demand. If this is what is required, there is no further adjustment necessary.

Parking One or More Cars at the Lobby

1. Note which floor in the building is referred to as the main lobby.

2. Set Group parameter **LER** to the number of elevators wanted to be placed at the lobby. In most cases this will be 0 (no elevators required) or 1.

3. Place all the elevators on Automatic and observe, verifying that the number of cars returning to the lobby matches what was set for parameter **LER.**

   Note: *If the lobby has floors below, an elevators going up from those lower floors will always stop at the lobby if there is not enough elevators at the lobby to satisfy the LER setting.*

4. Once the proper number of elevators have been assigned to stop at the lobby an extended door time can be programmed in for that floor. If this is desired set CSW 0 bit 1 and entering the time required to stay open at group parameter NDH.

   Note: *NDH is set in increments of 1/16 of a second, so if NDH is set to 160 this is a time period of 10 seconds.*

Should the remainder of the elevators be required to space themselves out in the building once they are free for a period of time, then Zoning can be utilized.

Zoning Setup

1. Note the traffic in the building and determine the following:

   A. Is one or more cars required in the lobby?

   B. Are there certain floors where you would want to park an elevator?

   C. What floor spacing would be required to accommodate one elevator per zone? (Having an elevator parked at the lobby will be a separate zone function).

2. Count the number of elevators that are in the group minus **LER** value and set Group Parameter **NZN** to that number.

   Example: *If there is 4 cars total in the group and LER is set to 0 then NZN should be set to 4. If LER is set to 1 then NZN should be set to 3.*

3. Set **CSW 0 Bit 4** and **CSW 0 Bit 5** to have the elevators park at specific floors.

   Command: *BITS0,4 & BITS0,5*

4. Set **ZN1** (first zone) to the floor where an elevator should park.

   Note: *Count up from the lowest landing the group serves and enter that number to designate the landing to park at.*

5. Set **ZN2** (second zone) to the floor where an elevator should park.

6. Continue setting **ZN#** until there are no more elevators for zones. The **ZN#** should equal the **NZN** parameter.

7. Set the time the elevators have to set idle before zoning using **PFT** parameter.

   Note: *PFT is in increments of 2 seconds, so if PFT is set to 5 then the time period is 10 seconds.*

8. Once these are set, use the **WRT** Car command to save to flash memory and then the **GET** Car command to ensure the updated parameters are loaded.

Up Peak and Down Peak

1. In order to trigger up peak automatically from the number of calls or load, set the following Group Parameter:

   UCC – Number of trips from the lobby with more than 2 calls entered.

   ULC – Number of trips from the lobby with load switch tripped.

2. In order for Down peak to be triggered by calls, ETA times and wait times, set the following parameters:

   DCC – Number hall calls initiated at one time.

   Example: *If set to 10 then when a total of 10 down hall calls are registered Down Peak will Activate.*

   DTT – Down peak Trigger Time. The time period which will triggers down peak if the average Down Call ETA time exceeds this value.

   Example: *If DTT is set to 40 then when the average wait time for all the down calls registered exceeds 40 seconds the Down Peak Operation will be triggered.*

   DWT – Long down call waiting time. If a down call is not answered in this amount of time the system will swing to Down Peak.

   Example: *If DWT is set for 20 then if a down hall calls wait time exceeds 20 seconds the Down Peak Operation will be triggered.*

Setting Elevator ETA Parameters in the Group

In order for the group to properly dispatch the elevators to the call, it must know specific details of each elevator.

1. Using a stop watch, observe and note the following:

   A. **ACC:** Average acceleration time it takes the elevator to reach top speed.

   B. **ATT:** Average transfer time the doors are fully open when loading and unloading passengers.

   C. **BBT:** Blind travel time it takes the car to travel through a blind hoistway. *(Not Applicable on Hydro installation and should remain at the default value of 0)*

   D. **DCT:** Door closing time it takes the doors to close.

   E. **DEC:** Average deceleration time it take the elevator to slow from top speed to stopping at a floor.

   F. **DOT:** Door open time it takes to open the doors fully.

   G. **SPE:** Speed of elevator in timed units by using the formula:

   Average floor height (h)/(Speed in FPM/60) X 16 =SPE value

   or for metric

   Average floor height in meters X 3.28/(Speed in meters per second/.3048) X 16 = SPE value.

   H. **GPT:** If this is a generator application the time it takes for the generator to start completely. *(Not Applicable on Hydro installation and should be set at the value of 0)* (GPT).

2. Using the ***Group Command REE***, enter the car number you are working on, then enter the previous values For example, REE = 1.

3. With the exception of **SPE** all values recorded in the previous steps will be multiplied by 16 and entered into these related group parameters. **ACC, ATT, BTT, DCT, DEC, DOT, GPT, SPE.**

HPU Hall Call Activation

(If using discrete wired hall button disregard)

1. Verify that all HPUs for the hall push buttons have been installed and properly addressed.

2. Type in “RMA” and press enter to make the car you are adjusting the master (Dispatcher).

3. Verify the following Group CSW bits are reset (disabled):

- CS4 bit 5 - Set to use SMI Boards for Hall Calls else HPUs (BITS4,5)
- CS4 bit 13 - Set to enable front auxillary riser. (If applicable BITS4,13)
- CS4 bit 14 - Set to enable rear auxillary riser. (If applicable BITS4,14)

4. Set Group CS4 bit 3 to disable Emergency dispatching. *This will be reset after HPU are communicating*. (BITS4,3)

5. Verify hoistway wiring for HPUs are connected to terminals, VH+, VHC, HCRT+ & HCRT- and is clear from all high voltage wires.

6. Verify this wiring is at least 6” away from any high voltage wiring. (mainline and motor).

Note*: If the HPU’s LED is not on, check the VH+ & VHC power connections to the card. If it is on solid, check the HCRT+ and HCRT- communication connections.*

7. Scroll to Car Commands and select CMG and press enter (this can only be done when connected to the car which is performing as the Master). This will display the address of each hall HPU and the status of its communication. The primary HPU addresses are 11 through 42.

Note: *If there are any with 100% failures, check the connection address of that HPU. If problem still exists, replace HPU.*

Note: *If aux. risers are used, set Group CS4 bit 13 and repeat step 6.*

Note: *If RPU’s are utilized due to a large amount of HPU’s then the commands RPU1, RPU2,etc would be used to verify HPU communications*

8. With all the HPUs showing good communications, place the car on Automatic and, using the hall push button stations, call the car to each landing, using both the up and down push buttons.

NOTES

SECTION 5 –CONTROLLER COMMUNICATION INTRODUCTION

This section describes how to communicate, or "interface" with the ***Futura***™ controller via either a PC or a terminal (Human Interface). This section is critical in setting up the controller and performing diagnostics. We recommend that you read it over carefully. If you have any questions about any part of this section, please call CEC Technical Support.

This manual uses several operative terms, which describe various ways information is transferred between the user and the system. They are called: error code, command, input, output, parameter, bit, and device. In some cases, the terms are interchangeable, but most often each refers to a specific type of informational exchange between the system and the user, or within the system for serving different purposes.

ERROR CODE: A failure (also called a fault or error) status indicator, which is returned by the system in order to locate the source/resolution of a problem occurrence. These codes are programmed into the system by the manufacturer (i.e.: Error code 96 signifies that the SPU board tach was not in UP position while car was running UP).

COMMAND: A request entered (or "input") by the user (via the computer keyboard) which orders the controller to perform a specific function (i.e.: <**RFL**> asks the system to Reset all the Faults). Commands must be recognizable to the system in order to trigger a response, and therefore are written exclusively in the language of the system by the manufacturer. Various tables of commands and their descriptions are presented in this section, and most commands in this manual are presented in a specific way for easy identification and input.

INPUT: Data entered by the user or from external mechanical devices (i.e.: switches, etc.) which is necessary for the system to process information and execute commands.

OUTPUT: Data (signals) sent from the CPU to the mechanical devices to (de)activate.

PARAMETER: A variable entered (or "input") by the user and assigned a value, which refers to a specific function of the system. Parameters are used for setting limits, timers, etc. (i.e.: <CDT = 5> is what is entered to set the Car Call Door Timer at 5 seconds)

BIT: A variable setting, which determines enabling, or disabling of specific features in the system.

DEVICE: Generic term usually referring to a physical/mechanical component (i.e.: board, switch, or other mechanical equipment) monitored by and used to execute/trigger input and output signals.

Note: *We recommend that a list of the parameter and bit settings be recorded and maintained for each individual controller as each initial controller setup is completed. This list will be helpful in the event the settings are accidentally changed or lost. We also recommend that any person placing a technical support call to CEC have this list available.*

Terminal Mode Operation

Terminal Mode operation allows the user to interface directly with all the parameters and commands of the controller. One does not need the ***Futura***™ ***WIZARD*** interactive tool to operate exclusively on terminal mode. A PC with a serial port and any regular terminal program can be used to interface with the controller.

Your computer or terminal must be connected to P11 (USER) RS-232 port located on the bottom left side of the SPU Link Board. The following communication parameter settings must be available:

Baud Rate	19200
Word Length	8
Parity	No Parity
Stop Bit	1

Wizard Mode Operation

The ***Futura™ WIZARD*** is a PC-based visual interface, which operates under the Microsoft Windows operating system. The information is grouped logically, permitting easy navigation through the menus.

The ***WIZARD*** permits interfacing with all controller functions, diagnostics, and uploading of software (whereas the Terminal mode only permits manipulation of certain parameters, which are accessible through Terminal mode). Door timing setup, diagnostics, or downloading new software is accomplished by selecting, with the mouse, the appropriate *icon*. However, full Terminal operation is also available from within the ***WIZARD***

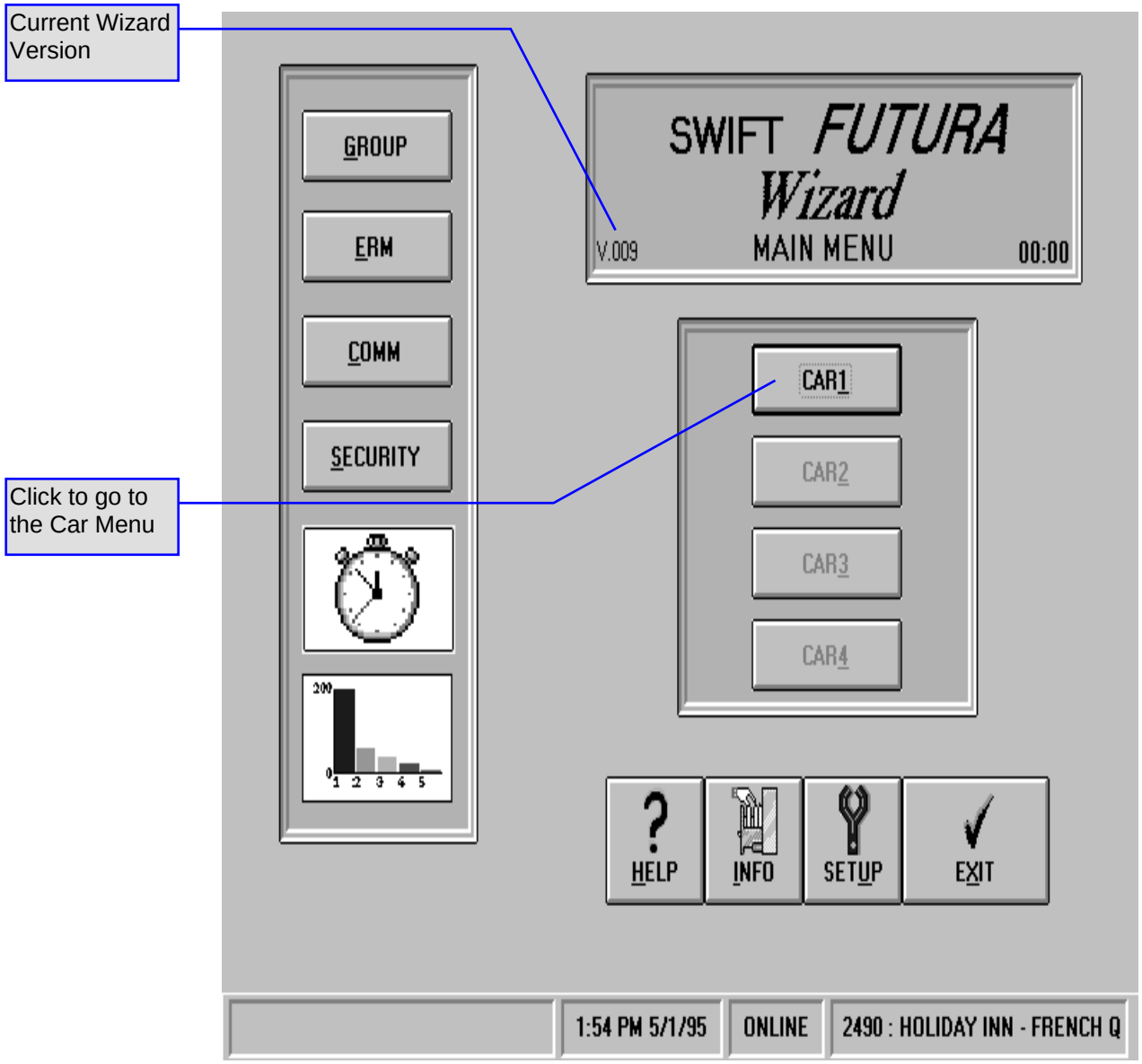


Figure 5-1

For comprehensive instruction on the ***WIZARD,*** please see the ***Futura™ WIZARD*** Startup Guide.

The ***WIZARD*** software is provided for ***Futura***™ installations. This ***Futura***™ interactive tool is based on a regular PC or a notebook PC with integral mouse control (preferred) and requires a standard RS-232 serial communication port (usually COMM 1) to operate. The reason why an integral mouse control is preferred is because notebooks without the integral port use the RS-232 serial communication port for the mouse. The ***WIZARD*** is an optional item, available in color or monochrome. The online HELP system for this visual interface is provided with the ***WIZARD*** software.

Controller Commands & Parameters

Line Editing And Control Characters

The examples shown in this chapter are based on the assumption that no typing errors occur. The *Futura*™ Operating System provides line-editing controls to permit you to correct typing mistakes.

You can use specific characters to control and edit terminal input. Some of these characters correspond to single keys on your terminal (such as <enter ↵>/Carriage RETURN or <backspace ← > /DELETE). Any time it is necessary to delete a character, use the backspace key; the delete key <del> is not used on the *Futura*™. For others, called control characters, you must hold down the <ctrl> key while also pressing an alphabetical key. The *Futura*™ Operating System recognizes control/edit characters as follows:

<enter ↵>

Terminates the current line and executes the command.

<backspace ← >

Deletes the previous character in the input line. Each execution of the Backspace key (←) removes a character from the screen and moves the cursor back to that position. Used in place of delete <del> key.

<ctrl>+<R>

If the current line is not empty, this command reprints the line with editing performed. If it is empty, it reprints the previous line and executes it.

<ctrl>+<X>

Discards the current line: echoes a pound sign (#) followed by a carriage return/line feed.

<ctrl>+<S>

Places the terminal in stopped mode (stops output). This feature can be used to pause or freeze the display when viewing scrolling data. You can resume output without loss of data by entering **<ctrl> +<Q>.**

<ctrl>+<Q>

Resumes output mode. (See <**ctrl>+<S>**)

<ctrl>+<Z>

Aborts output to the terminal. This feature can be used to stop scrolling data on the display and return to the terminal prompt.

Power-Up or Reset Message Sequence

When power is applied to the SPU chassis, the CPU board boots up invoking a System Confidence Test (**SCT**). This confidence test will display its results on the terminal through the P15 USER port. The normal power-up or reset message sequence is shown in the example below. A GO or NO GO status indicates whether or not the test was successful. If any (except the load weigher or diagnostic VGA) of these tests fail, the processor will not enter into the control mode.

The RAM Memory and FLASH Memory (EEPROM) tests are associated with devices on the CPU board. If the FLASH test fails, it probably indicates a **checksum** error or invalid job parameter(s).

FUTURA	**5434-1**	**Car # 1)**
Software Version 0.1		
System Confidence Test		
TEST		**STATUS**
Memory (CMOS RAM)		**GO**
Battery Test		**GO**
LCD Display		**GO**
Job Configuration		**GO**
I/O Configuration		**GO**
Analog Load Weigher		**GO**
EEPROM (Car Parameters)		**GO**
EEPROM (Group Parameters)		**GO**
WAIT…Initializing Drive		
Enter Password >		
On Line		

Figure 5-2 System Confidence Test Screen (No Failure)

When new software is installed in the car controller, it may be necessary to initialize the FLASH (EEPROM). To determine if the FLASH requires initialization, check the "Status" in the System Confidence Test (SCT) for "No EEPROM". (See System Confidence Screen below.) Check both the "FLASH (Car Parameters)" and "FLASH (Group Parameters)" lines. If status is “No EEPROM”, then the FLASH must be initialized.

FUTURA	**5434-1**	**Car # 1)**
Software Version 0.1		
System Confidence Test		
TEST		**STATUS**
Memory (CMOS RAM)		**GO**
Battery Test		**GO**
LCD Display		**GO**
Job Configuration		**GO**
I/O Configuration		**GO**
Analog Load Weigher		**GO**
EEPROM (Car Parameters)		**NO-GO**
### EEPROM NO EEPROM		**NO-GO**
WAIT…Initializing Drive		
Enter Password >		
On Line		

Figure 5-3 System Confidence Test Screen (Flash Memory Failure)

Initialize FLASH (Car parameters)

Perform the following steps (Terminal Mode only):

1. Get Car Prompt: Logon as <**HUDSON.BAY**> <**enter** ↵>

2. Enter <**EPI2374**> to initialize the RAM memory.

3. Additional parameter adjustments may be needed. Enter <**GET**> to update the RAM. If any parameters require adjustment, a message will be displayed naming the parameter. A value is entered for this parameter and steps 2 and 3 are repeated. If after entering <**GET**> your response is "OK", then you have successfully completed the initialization of FLASH (Car Parameters).

4. Power down and Power up SPU. Re-log the System password. If the car has been previously adjusted, parameters saved and the EEPROM data has failed on boot-up, the screen will display C# 0>. To attempt to recover parameters, follow steps 5 through 7.

5. Logon as <HUDSON.BAY> <enter>

6. Type in EPI1701 and press enter.

7. Type in GET and press Enter to read the data into the RAM. Any parameters with errors will be displayed.

8. Correct the individual parameter then enter <WRT> <enter>. Repeat until you receive a response of "OK" indicating that all parameters are fine. If there were more than 5 parameters with errors, it would be better to re-initialize the EEPROM with the EPI2374 command and start over at step1.

Initialize Flash (Group Parameters)
Perform the following steps in terminal mode only.

1. Get Car Prompt: Logon as <**HUDSON.BAY**> <**enter** ↵>

2. Go to Group prompt: Enter <**GRP**>

3. Enter <**EPI2374**> to initialize the **EEPROM** memory.

4. Additional parameter adjustments may be needed. Enter <**GET**> to update the RAM. If any parameters require adjustment, a message will appear naming the parameter. Enter a value for this parameter and repeat steps 2 and 3. If after entering <**GET**> your response is "OK," you have successfully initialized FLASH (Group Parameters).

5. To return to the Car prompt enter <**CAR**>.

6. Power down and Power up SPU. Re-log password.

Log-On

When prompted for the password, type in the system password, then <**enter** ↵> (see Note). Each character you type will be displayed as an asterisk on the terminal screen for security. It is important that you enter the password carefully. enter the password incorrectly, the system will prompt you to re-enter the password continually until the correct password is recognized. Then the system will acknowledge by displaying "OK."

Note: INSTALL (or LCD can also be used on newer jobs) is the factory default system password. Each time you disconnect and reconnect, you must re-enter the password.

EXAMPLE (How to Type in the Password)

Enter Password
On Line
******* <**enter** ↵>
(* represents each password key entry)
OK>
C # 1 =>
(ready to perform diagnostics or adjustments)

Changing Passwords

The Change Password <**CHP**> command has been provided to allow the user to change the default passwords used to enter the human interface. The first two levels of password protection can be changed using this command (see below).

Note: ***Once the passwords are changed, CEC will not be able to help you if you forget the new passwords. To provide extra security, the passwords cannot be read back from the terminal. It is critical that you write down any new passwords and store them in a safe place***.

	FACTORY SET <PASSWORD>	PROMPT	FIXED?	AVAILABLE FUNCTIONS
Level #1	SNOW-FLAKE	C# 1=:	(Changeable)	Adjust, View, and Change Password
Level #2	INSTALL	C# 1=>	(Changeable)	Adjust and View
Level #3	INSTALL	C# 1=>	(Changeable)	Adjust and View
Level #4	HUDSON.BAY	C# 1=.	(Fixed)	View Only

Table1

To change any of the passwords you must first log-on using the level #1 password, then type the **<CHP>** command. You will be prompted for the password ID level and the new password. You will be prompted to enter the password twice in order to ensure that the password is entered correctly. It is then necessary to execute the **<WRT>** command in order to save any changes made with the **<CHP>** command.

Note: *The prompt " =: " indicates that you have logged-on using the 1st level password. <SNOW-FLAKE> is the default 1st level password (dash must be included).*

To Change the Password:

Figure 5-4 Change Password Screen

1. Log on as <**SNOW-FLAKE**> <**enter**>
2. Enter the command **<CHP> <enter>**
3. Enter password level. **(1,2,or 3)**
4. Enter new password.
5. Repeat password entry.
6. Type **<WRT>** <**enter** ↵> (Write to FLASH memory. Saves change.)

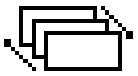
Disconnect the connector from the P11 Human Interface port and then reconnect it. You should now be able to log-on using the new password.

RVU (Remote Video Unit) Introduction

This section will provide the user with a complete understanding on the operation of the SWIFT Futura Remote Video Unit (RVU). By using the four push buttons on the front panel of the RVU, a variety of functions can be performed. These functions include setting hall calls and car calls, error tracking, and error analysis. This makes the RVU an invaluable tool for troubleshooting and diagnostics.

The RVU communicates to the group controller (SPU) on the Car To Group bus (CTG). The RVU can be wired to any controller in the bank. Once connected, it is possible to view information from all of the cars in that particular bank. If another controller in the group becomes the "Master" (Dispatcher) the RVU will need to re-establish communications with the new "Master" controller which will take approximately 20 seconds to do so.

There are two main screens displayed by the RVU; the group screen, which shows all of the elevators in the bank as well as their position and movement, and the car diagnostic screen, which provides detailed information on the status of the car being viewed. Depending on which screen is being viewed, the push buttons can be used to perform different tasks. Throughout the remainder of this document, the push buttons will be referred to as:



Rotate Screen

Enter

Scroll Left

Scroll Right

It is recommended that the user become familiar with these buttons and their names. A full description on the use of the push buttons and the functions they perform will be provided in the following pages.

Initialization and Communication Set-Up **1.**

Before powering up the RVU, consult the wiring diagram. Remember, when wiring to the RVU to the CTG Buss, the transmit and receive lines are swapped with the SPU

T_x- on the RVU is wired to R_x- on the SPU

Once proper wiring is confirmed, connect the VGA monitor to the RVU and power on the monitor and RVU.

After a few seconds, the following screen will appear:

FUTURA - Remote Video Unit(v.009)

Initializing...

If the EMIS feature was purchased, the screen will display "Remote Video Unit & EMIS".

When this screen appears, the user has approximately three seconds to access the communication setup menu. To enter communication setup, press the rotate screen button as soon as the initialization screen appears. The following screen will appear:

Communication Setup

PORT	BAUD RATE	SIGNAL TYPE	COMM ADDRESS
REMON / WIZARD	19200	RS-232	1
CTG / HC	38400	RS-485	212

[] DONE ← CHANGE **<< >>** UP/DOWN << LEFT >> RIGHT

The default settings are shown above. The only time it will be necessary to change any settings is if a Remote Monitoring System is being used. If any changes need to be made and the message "Unable To Setup Comm" appears on the screen, disconnect the connector from the CTG/HC port on the back of the RVU.

If line drivers are used to communicate with a Remote Monitor PC, the comm. setting for the Remon/Wizard port will need to be changed.

1. Press the scroll right button until the signal type for the Remon/Wizard port is highlighted.
2. Next, press the Enter button to change the value from RS232 to RS485.
3. Once this value has been changed, press the rotate screen button (done). The RVU will reset and the change will take place.
4. Reconnect the CTG/HC port after the RVU resets.

The menu can also be used to set up extended RVUs. In this configuration, more than one RVU can be connected to the same group on the same bus. One RVU, the master, will communicate to the SPU at address 212. Any other RVUs, or extended RVUs, connected to this group must use comm address 213. To switch to the CTG/HC parameters, press both the scroll left and right buttons simultaneously. Highlight the comm address parameter. Press the enter button to switch the address to 213. Press the rotate screen button and the RVU will reset. Extended RVUs can only access the group screen, not diagnostic screens.

The Group Screen

After the RVU initializes successfully, the group screen, or motor room screen, will be displayed. A sample group screen is shown below:

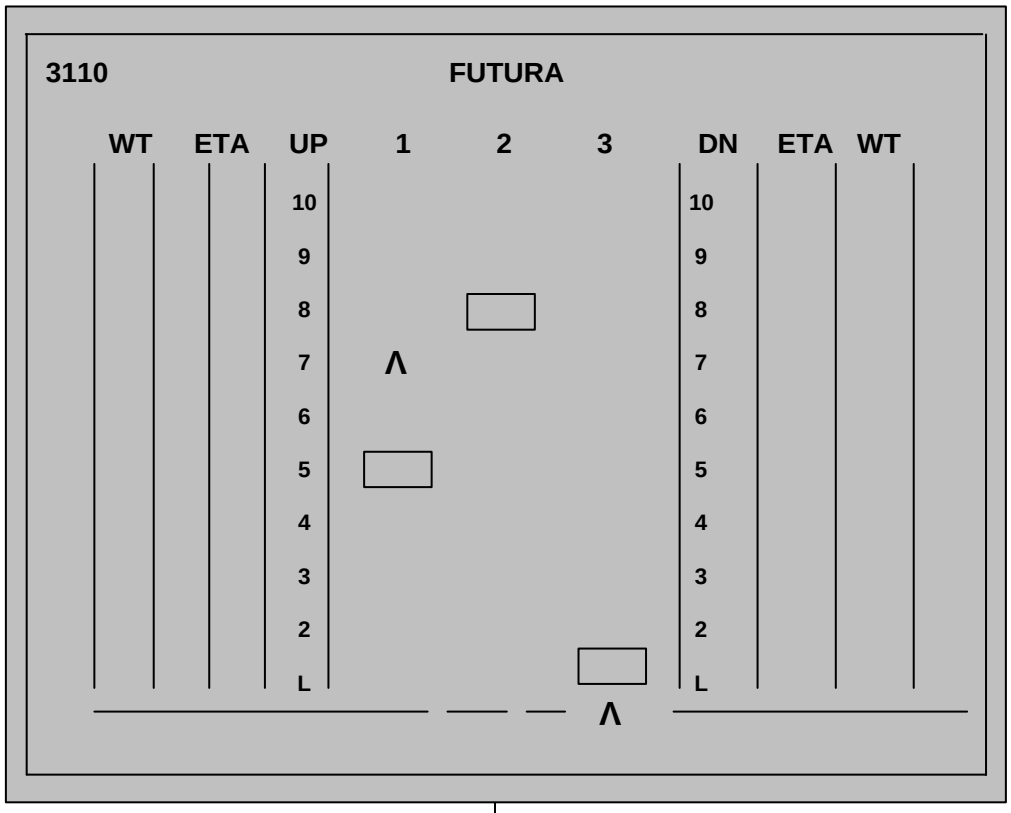


Figure 5-5

Note that the CEC job # is shown in the upper left corner of the screen. The left side of the display represents the wait time and estimated time of arrival for UP calls. DOWN call information is displayed on the right side of the screen.

From this screen, the push buttons can be used to perform various functions. The first button is used

to rotate the screen from the group display to the car diagnostic screen. Pressing this button once from the group screen will display the diagnostic screen for car one. To see the next car, simply press the rotate screen button again. It is possible to scroll directly to a desired car's diagnostic screen without scrolling through all of them. By pressing the scroll left button or the scroll right button, a specific car number can be highlighted at the top of the screen. Once the desired car is highlighted, press the rotate screen button to scroll directly to that car's diagnostic screen.

The functions available from the group screen include setting hall and car calls, changing the appearance of the group screen, and hiding the ETA and wait times. To access the list of functions available from the group screen, press the enter button. The command 'Hall Call' will appear at the bottom of the screen. To scroll through the available commands, press the scroll left or scroll right buttons.

Setting a Hall Call from the Group Screen

Once the command 'Hall Call' appears at the bottom of the screen, press the enter key. The option 'Set Up Call' will appear to the right. To select 'Set Down Call' press the scroll right button. Pressing the scroll right button again will bring up the 'Exit' option. Once the desired function is selected (up call, down call, or exit) press the enter key. If an up or down call was selected, the command 'Select Floor' will appear. Use the scroll left and scroll right buttons to set the desired floor and press the enter key. The call will be set at that floor and the commands will clear from the bottom of the screen. The user also has the option to exit from the 'Select Floor' option. If 'Exit' is selected, all the commands will clear from the bottom of the screen and no calls will be set.

Setting a Car Call from the Group Screen

In order to set a car call, the user must first select a car. To do this, press the scroll right or scroll left button until the desired car is highlighted. Then press the enter key once, select the option 'Car Call', and press enter. The option 'Set Car Call' will appear to the right. The user can also select the option 'Exit' from here. To set a call, select 'Set Car Call' and press enter. The command 'Select Floor' will appear to the right. Use the scroll left and right buttons to select the desired floor and press enter. The call will be set at that floor and the commands will clear from the bottom of the screen.

Canceling Car Calls from the Group Screen

This option can only be selected if a car call has been set for the highlighted car. Press the enter key, select 'Car Call', and press enter. The option 'Set Car Call' will appear. Press the scroll right button once and the command 'Cancel Car Call' will appear. Press enter to activate this command. This cancels **ALL** of the car calls for that car. This option will only be displayed for SPU versions 17 and above.

Changing the Appearance of the Group Screen

This option allows the user to select different preset colors for the group screen, to toggle between the extended and standard motor room screens, and to hide/show the ETA and wait times. Press the enter key once, select the option 'Group Screen', and press enter. The command 'Extended Group Screen' will appear. Pressing enter will switch the display to the extended group screen. The purpose of the extended group screen is to display the car's position and hall and car call assignments for jobs in which the total number of floors can't be displayed on one screen. The cars are displayed at the top of the screen, showing their position, door status, direction, and service status. The floor numbers are listed in columns with hall call assignments next to the floor number. A number representing the car assigned to that call is displayed to the upper right of the hall call. Separate columns are used for each car to represent car calls. The car call will appear under the appropriate car number at the floor for which the call is set. Hall and car calls can also be set from this screen using the same procedures as the standard motor room screen. To return to the standard motor screen, press the enter key, select 'Group Screen', and select the option 'Single Group Screen'.

Selecting the option 'Hide ETA & Wait Time' from the standard motor room screen will cause the ETA and wait time columns to disappear from the display. Also, the service type and job number will not be displayed. The next time this option appears, it will read 'Show ETA & Wait Time'. Press enter to return to the original display. If you do not wish to select this option, use the scroll right button to select 'Select Preset Colors' or 'Exit'. If 'Select Preset Colors' is chosen, the command 'Preset Color 1' appears. There are 10 preset color options. Use the scroll left and right buttons to choose a preset color and press enter. The screen will change colors and the commands will clear from the bottom of the screen.

The Car Diagnostic Screen

To access a car diagnostic screen, press the rotate screen button from the group screen. To scroll to the next car, press the rotate screen button again. Pressing the rotate screen button from the last car in the group will return the user to the group screen. To return to the group screen without scrolling through all of the cars, press and hold in the rotate screen button for two seconds and then release it. This will return the user to the group screen, regardless of which car diagnostic screen was being displayed.

There are eight SMI blocks displayed on a car diagnostic screen. To rotate the SMI blocks, press either the scroll left or scroll right button. This will rearrange the blocks and allow the user to see any remaining SMI blocks. Only eight blocks can be displayed at one time.

As with the group screen, pressing the enter key will bring up an options menu. This menu will appear in the middle of the screen. The available commands are 'Set Car Call', 'Arm/Trigger', 'Error Codes, 'Reset Errors', and 'Exit'. In addition, if any car calls have been set for this car, the option 'Cancel Car Call' will appear. The option 'Error Codes' will only appear for SPU version 17 and above and only when the car being viewed has any faults listed. Use the scroll left and right buttons to select the desired option and press enter to activate it.

Setting a Car Call from the Diagnostic Screen

After selecting the 'Car Call' option, the command 'Set Car Call' will appear to the right. Press enter. The command 'Set Floor' will appear. Again, use the scroll left and right buttons to select a desired floor and press enter to set the call.

Canceling Car Calls from the Diagnostic Screen

This option can only be selected if a car call has been set for the car being viewed. Press the enter key, select 'Cancel Car Call', and press enter. Press enter to activate this command. This cancels **ALL** of the car calls for that car. This option will only be displayed for SPU versions 17 and above.

Triggering for Errors

After selecting the option 'Arm/Trigger', the user has the option to 'Trigger Now' or 'Arm For Error'. Selecting 'Trigger Now' will result in the screen turning red and the enter button flashing. The total number of frames and the current frame will be displayed. To scroll through these frames, press and hold in the rotate screen button and press the scroll left and right buttons. For more trigger options press the enter key and select 'Arm/Trigger'. The options 'Set Frame Increment', 'Jump Frame', 'Jump To Current Frame', 'Play Backward', 'Play Forward', 'Reset', and 'Exit'. Selecting 'Exit' will exit from this menu and leave the RVU in trigger mode. To exit trigger mode, select 'Reset'.

The RVU can also be set to trigger only for certain errors. Select 'Arm/Trigger', press enter, then scroll to the option 'Arm For Error' and press enter. The error and its error code will appear to the right. Use the scroll buttons to select the error desired for the RVU to trigger on and press enter. When the error occurs, the screen will appear with a red frame and the enter key will flash. Press the scroll left button once (while holding in the rotate screen button) to find where the error occurred. Scroll left will then show the frames before the error, and scroll right will show the frames after the error.

Viewing Error Information

Select the option 'Error Codes' from the diagnostic screen menu and press enter. The screen will turn blue and the message "DOWNLOADING CONTROLLER FAULTS Please Wait..." will appear. After a few seconds, the Fault List screen will appear. Along the left hand side of the screen, there is a menu and directions on how to use the push buttons. The lower left hand corner displays the number of pages to view or the number of bytes.

The first screen to be displayed is the fault list. This list displays the faults (by corresponding error code) in the order they occurred. Also listed with each fault is the number of times

the fault occurred, the floor the car was on, and so on. Use the scroll left and right buttons to view the other pages of information.

To switch to the Description list, press both of the scroll buttons simultaneously. This will bring up a list of all of the error codes and their description. The descriptions are in the same order as the Fault List.

Pressing both scroll buttons again will bring up the Details screen. This is a visual representation of the car's status when the error occurred. Information such as the door status, motor field status, and brake status can be viewed. Each fault has three pages of information. The pages can be scrolled through using the scroll left and right buttons.

To see the List Description screen, press both scroll buttons. This will bring up a list of all of the acronyms used in the fault list (i.e. DMD, demand velocity). Each acronym is shown with a brief description. The control status words are also explained in detail. It is recommended that the user scroll through this list and become familiar with the information it contains.

To exit the error diagnostics, press the enter key. The car diagnostic screen will be displayed.

Resetting Errors

Select 'Reset Errors' and press enter from the diagnostic screen menu. This will clear all of the faults on the diagnostic screen.

NOTES

SECTION 6 - CAR COMMANDS

From the Human Interface terminal, type <**CAR**> to establish communication with the car functions. The prompt in Car Human Interface mode is:

C# 1=>

CAR DIAGNOSTIC COMMANDS

<COMMAND>	DESCRIPTION OF CAR COMMAND
ASU	**A**utomatic **S**et **U**p: (Hoistway Scan) Limit switch position and Floor Count Position (FCP) Reference Set-up. **Note:** *The following sequence must be performed to adjust the car (refer to Position Reader Tape Installation):* 1. Adjust the Leveling Vane for accurate floor level. 2. Adjust the terminal slow-down limit switches. 3. Put the car in Panel Test and position below the bottom terminal. 4. Jump out the top normal limit. 5. Enter the command “ASU” 6. Run the car up on inspection until it stops. 7. Enter Write Command (WRT) to save. 8. Type in the GET command and press enter.
BAS	**BAS**e of output: Output base setting can be either 10 or 16. If set to 10, all values returned by the controller will be in decimal notation (easiest to read). If set to 16, all values returned by the controller will be in hexadecimal notation. It is advisable to leave it at 10.
BBT	**B**rake to **B**rake last travel **T**ime: This command can be used on a Hydro to return the actual last amount of time the car ran. It can be used to obtain floor to floor times.
CCS	**C**ar **C**all pilot **S**tatus: Displays the pilot status of the car. An UP pilot is a call above current car position. A DOWN pilot is a call below current car position. The hexadecimal numbers below indicate the pilot status: 0H - no pilot 1H - up pilot 2H - down pilot 3H - up and down pilot 4H - at call floor 5H - at call floor and up pilot 6H - at call floor and down pilot 7H - at call floor and up and down pilot

<table>
<tr><th><COMMAND></th><th>DESCRIPTION OF CAR COMMAND</th></tr>
<tr><td>CCT</td><td>Car Call Test. The car call test automatically activates car calls at selected floors to allow the car to run continuously in a test mode unattended with the doors either opening and closing or in door disconnect mode. The command CCT toggles the car call test operation on and off. To select the desired floor, type “CCTF” for front or “CCTR” for rear car calls and follow the prompt to select the individual floor. More than one car call must be selected to activate the test. Loss of power, activation of fire service, or activation of Inspection will cancel the car call test operation.

Note: Once the Car Call Test (CCT) has been activated, it must be turned off by entering CCT on a laptop or placing the car on inspection. Disconnecting the laptop from the controller will not deactivate this mode of operation, it must be turned off.</td></tr>
<tr><td>CLS</td><td>CLear terminal Screen. Clears the terminal screen on the wizard or human interface terminal device.</td></tr>
<tr><td>CMC</td><td>This command displays Car smart controllers CoMmunication status (Communication Status of the following Devices):

<u>COMMUNICATION STATUS (CAR)</u>
LOC ST RCV FAIL CAR ST RCV FAIL DRV ST RCV FAIL
3 OK 13544 0 8 OK 13544 0
12 OK 13544 0 18 OK 13544 0
13 OK 13544 0 19 OK 13544 0
14 OK 13544 0 20 OK 6774 0
16 OK 13544 0

Note: ST (status) line indicates “OK” when the device is communicating; RCV = the # of packets received; FAIL = the # of failed packets; LOC = local port; CAR = car port and DRV = drive port.

The following indicates the corresponding address to each board:

<table>
<tr><th><u>DEVICE NAME</u></th><th><u>COMMUNICATION ADDRESS</u></th><th><u>DESCRIPTION</u></th></tr>
<tr><td>HYC</td><td>3</td><td>HYdro Control Board</td></tr>
<tr><td>CPT</td><td>8</td><td>Car Position Transducer</td></tr>
<tr><td>MRC</td><td>12</td><td>Motor Room Controller SMI</td></tr>
<tr><td>GLB</td><td>13</td><td>Gate Lock Bypass SMI</td></tr>
<tr><td>GP1</td><td>13</td><td>General Purpose SMI 1</td></tr>
<tr><td>GP2</td><td>14</td><td>General Purpose SMI 2</td></tr>
<tr><td>GP3</td><td>15</td><td>General Purpose SMI 3</td></tr>
<tr><td>GP4</td><td>16</td><td>General Purpose SMI 4</td></tr>
<tr><td>HTOC</td><td>18</td><td>Top Of Car Device</td></tr>
<tr><td>COP</td><td>19</td><td>Car Operating Panel</td></tr>
<tr><td>CC1</td><td>20</td><td>Car Call Board Number 1</td></tr>
<tr><td>RCC1</td><td>25</td><td>Rear Car Call Board Number 1</td></tr>
<tr><td>GP5</td><td>29</td><td>General Purpose SMI 5</td></tr>
<tr><td>GP6</td><td>30</td><td>General Purpose SMI 6</td></tr>
<tr><td>GP7</td><td>31</td><td>General Purpose SMI 7</td></tr>
<tr><td>GP8</td><td>32</td><td>General Purpose SMI 8</td></tr>
<tr><td>GP9</td><td>33</td><td>General Purpose SMI 9</td></tr>
<tr><td>GP10</td><td>34</td><td>General Purpose SMI 10</td></tr>
</table></td></tr>
</table>

<table>
<tr><th><COMMAND></th><th>DESCRIPTION OF CAR COMMAND</th></tr>
<tr><td>CMG</td><td>
Displays Group CoMmunication status status (Communication Status of the following Devices):

<u>COMMUNICATION STATUS (GROUP)</u>
<table>
<tr><th>HI</th><th>ST</th><th>RCV</th><th>FAIL</th><th>CTG</th><th>ST</th><th>RCV</th><th>FAIL</th><th>HC</th><th>ST</th><th>RCV</th><th>FAIL</th></tr>
<tr><td>3</td><td>OK</td><td>2965</td><td>0</td><td>201</td><td>OK</td><td>40816</td><td>0</td><td>44</td><td>OK</td><td>43708</td><td>0</td></tr>
<tr><td></td><td></td><td></td><td></td><td>202</td><td>OK</td><td>40816</td><td>0</td><td>211</td><td>OK</td><td>43708</td><td>0</td></tr>
<tr><td></td><td></td><td></td><td></td><td>203</td><td>OK</td><td>40816</td><td>0</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td>204</td><td>OK</td><td>40817</td><td>0</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td>212</td><td>OK</td><td>40817</td><td>0</td><td></td><td></td><td></td><td></td></tr>
</table>

The following description indicates the corresponding address to each board:

<table>
<tr><th><u>DEVICE NAME</u></th><th><u>COMMUNICATION ADDRESS</u></th><th><u>DESCRIPTION</u></th></tr>
<tr><td>HI</td><td>3</td><td>Human Interface</td></tr>
<tr><td>HPU</td><td>11-18</td><td>HPU Hall Calls for floors 1 through 8</td></tr>
<tr><td>HC1</td><td>44</td><td>Hall Call SMI Board</td></tr>
<tr><td>GRP</td><td>200</td><td>GRouP Communication Address</td></tr>
<tr><td>CAR 1</td><td>201</td><td>Car #1 Communication Address</td></tr>
<tr><td>CAR 2</td><td>202</td><td>Car #2 Communication Address</td></tr>
<tr><td>CAR 3</td><td>203</td><td>Car #3 Communication Address</td></tr>
<tr><td>CAR 4</td><td>204</td><td>Car #4 Communication Address</td></tr>
<tr><td>CAR 5</td><td>205</td><td>Car #5 Communication Address</td></tr>
<tr><td>CAR 6</td><td>206</td><td>Car #6 Communication Address</td></tr>
<tr><td>CAR 7</td><td>207</td><td>Car #7 Communication Address</td></tr>
<tr><td>CAR 8</td><td>208</td><td>Car #8 Communication Address</td></tr>
<tr><td>CAR 9</td><td>209</td><td>Car #9 Communication Address</td></tr>
<tr><td>CAR 10</td><td>210</td><td>Car #10 Communication Address</td></tr>
<tr><td>RVU</td><td>211</td><td>RVU on Hall Call Bus</td></tr>
<tr><td>RVU</td><td>212</td><td>RVU on Car To Group Bus</td></tr>
<tr><td>RPU1</td><td>213</td><td>Remote Processing Unit 1</td></tr>
<tr><td>RPU2</td><td>214</td><td>Remote Processing Unit 2</td></tr>
</table>

Note: HI = Human Interface; CTG = Car to Group; and HC = Hall Call; ST indicates “OK” when the devise is communicating; RCV = # packets received; and FAIL = # of failed packets.
</td></tr>
<tr><td>CPY</td><td>
CoPY flash parameters to ram or ram parameters to flash.

CPYR – Copies ram parameters to flash.
CPYF – Copies flash parameters to ram.

</td></tr>
<tr><td>DATE</td><td>
Set the real time calendar clock DATE. The date is entered as month/day/year. To exit this command without changing the date, hit <enter ↵> before typing in new date values.

Current date: 1/01/2007
Enter new date: 3/12/2007
</td></tr>
<tr><td>DCS</td><td>
Down Call pilot Status:
a) Up Pilot -- down hall call above current car position
b) Down Pilot -- down hall call below current car position
</td></tr>
</table>

<COMMAND>	DESCRIPTION OF CAR COMMAND
DLB	**D**own **L**imit **B**reak: Car velocity and position when the Down Slowdown Limit switch first opens during a run. This command is entered after the elevator has stopped and opened the down slowdown limit switch on a run to the bottom landing.
DPC	**D**igital **P**osition **C**ount: This command returns the DPP count of the current elevator position. This value is also displayed on the car diagnostic screen under "Pos Cn".
DPY	**D**iagnostic **D**ispla**Y** Control: The <DPY> commands allow the user to capture up to 128 frames of the car diagnostic display for playback at a later time. The capturing of the diagnostic display can be triggered on the activation of any error code. **DPYD** or **DPYTD** Enter diagnostic display mode. This mode will display the captured frames of the diagnostic display Enter: <**B**> to play **B**ackward one frame <**F**> to play **F**orward one frame <**C**> to get **C**urrent frame <**CTRL>** + <**C**> to quit diagnostic display mode **DPYT** Displays all the DPY commands **DPYTS** Setup diagnostic triggering **DPYTR** Reset triggering display (returns display to normal mode)
ELB	• **E**TS (Emergency Terminal Slowdown) **L**imit **B**reak: *This command is available on a Hydro controller however it has no function as Emergency Limits are not required on Hydraulic elevator.*
EXE	**EX**clude **E**rror Code. The command creates a list of error codes that are not stored in the error buffer. **EXES** – Set bit to exclude error code from buffer. Eg. Type EXES54<enter> to exclude error code 54 from displaying. **EXER** – Reset bit that excluded error codes from buffer. Eg. Type EXER54<enter> to allow error code 54 to be displayed. **EXEC** – Clear error code exclusions list. Allow all error codes to be displayed. **EXEL** – List error codes excluded from being displayed.

<COMMAND>	DESCRIPTION OF CAR COMMAND

FLTn

(See p.8-29 for Error Code Definitions)

Fau**LT**s (Errors): The ***FUTURA***™ Operating System keeps a record of the previous 24 faults that have occurred along with the number of occurrences, time of day, the floor number, the velocity, digital position count and various status bytes. The faults are labeled 0-23. This command displays four of the 24 faults starting at fault n (n = 0-23). The n is optional. If not used, the <**FLT>** command displays all 24 faults. Zero indicates no fault occurrence. Note that CS and DS are in hexadecimal form, which must be converted into binary form.

00H 0

The fault is displayed on screen as follows:

C# 1>FLT0

	FLT	*COUNT*	*FLR*	*TIME*	*DATE*	*DPP*	*DMD*	*VEL*	*DM*	*DZ*	*SV*	*CS*	*DS*	*GR*
FLT0=	*80*	*1*	*11*	*4:39:22p*	*6/02/94*	*5279*	*350*	*350*	*3*	*00H*	*26*	*AFH*	*0FH*	*20*
FLT1=	*0*	*0*	*0*	*0:00:00a*	*0/00/94*	*0*	*0*	*0*	*0*	*00H*	*0*	*00H*	*00H*	*0*
FLT2=	*0*	*0*	*0*	*0:00:00a*	*0/00/94*	*0*	*0*	*0*	*0*	*00H*	*0*	*00H*	*00H*	*0*
FLT3=	*0*	*0*	*0*	*0:00:00a*	*0/00/94*	*0*	*0*	*0*	*0*	*00H*	*0*	*00H*	*00H*	*0*

The headings in the above table are detailed below:

FLT = Fault number
COUNT = Number of occurrences
FLR = Floor where the error occurred
TIME = The time the fault occurred (from the system real time calendar clock)
DATE = Date of occurrence
DPP = Digital Position Pulse count
DMD = Demand velocity
VEL = Car's Velocity calculated from the Digital Position Pulse
DZ = Door Zone status

To interpolate the information below, convert the hexadecimal number under the DZ heading into a binary number. The 8-bit binary number will correspond to the bits shown below. Bit 0 will be the least significant, or the "right-most" bit. Wherever there is one (1) on the specified bit, this signifies that the item described next to the bit was active when the fault occurred.

BITS

0	up level zone	**4**	dz
1	up final level zone	**5**	Not Used
2	down final level zone	**6**	Not Used
3	down level zone	**7**	Not Used

SV = Car service type

Numbers shown correspond directly to status (no conversion needed)

0=INVALID	**1**=SAFETIES	**2**=DRIVE OFF	**3**=PWR LOSS
4=INSPECT	**5**=### INIT	**6**=DRIVE FLT	**7**=CWT DRL
8=CTLSHUTDN	**9**=EARTH Q.	**10**=FIRE PH 2	**11**=FIRE PH 1
12=CODE BLUE	**13**=EM RECALL	**14**=HOMING	**15**=INDEPEND
16=ATT	**17**=DOOR DISP	**18=**REAR DISC	**19**=VIP
20=LBY IND	**21**=DISP LOSS	**22**=STOP SW	**23**=SERV PROT
24=LOAD BP	**25**=SECURITY	**26**=AUTOMATIC SERV	

CS = Car Status

Convert hexadecimal numbers to binary as in DZ above.

BITS

0	start sequence	**4**	SRU (Speed Reference Up)
1	run sequence	**5**	SRD (Speed Reference Dn)
2	EMST (Emergency Stop Output)	**6**	up motion
3	EMSD (Emergency Stop Input)	**7**	down motion

DS = Door Status

Convert hexadecimal numbers to binary as in DZ and CS above.

BITS

0	door open limit (DOL)	**4**	door open pilot
1	door close limit (DCL)	**5**	door close pilot
2	rear door close limit (RDCL)	**6**	rear door open pilot
3	rear door open limit (RDOL)	**7**	rear door close pilot

<COMMAND>	DESCRIPTION OF CAR COMMAND
FLTXn (See p.8-29 for Error Code	**F**au**LT**s (errors - see FLTn): This command shows the e**X**tended fault buffer corresponding to the faults shown with the above **<FLT>** command. The "n" value is set to the fault index number label from 0 to 23. From the **<FLT>** command example shown below, the "n" number is selected to retrieve additional fault information for fault code 80 stored at index number 0. Convert the hexadecimal numbers to binary for bit settings. *C# 1>FLT0* *FLT CNT FLR TIME DATE DPP DMD VEL DM DZ SV CS DS GR* *FLT0= 80 1 11 4:39:22p 6/02/94 5279 350 350 3 00H 26 AFH OFH 201* *FLT1= 0 0 0 0:00:00a 0/00/94 0 0 0 0 00H 0 00H 00H 0* *FLT2= 0 0 0 0:00:00a 0/00/94 0 0 0 0 00H 0 00H 00H 0* *FLT3= 0 0 0 0:00:00a 0/00/94 0 0 0 0 00H 0 00H 00H 0* *C# 1>FLTX0* *CS1, CS2,CS3,CS4,VS1,VS2,VFCV,MFS,BKS,DS1,DS2,DS3,DRVCM, EX1,..,EX5* *FT 0= 04H, 28H,80H, 00H,00H, 00H, 0, 00H, 00H, 00H, 00H, 00H, 0003H, 00H,...,00H* The following details the headings in the above table, ***which are <u>NOT</u> to be confused with Control Status Word Bits (see page 8-18).*** In the event of a support call to CEC, you may be asked to provide the appropriate bit description as listed below. Convert hexadecimal numbers to binary for bit settings: CS1 = Car Status 1 BITS **0** Rope Gripper Trip **4** Controller Fault **1** Rope Gripper Fault **5** Motion Fault **2** Fault Trip **6** Gate & Lock (GLR) Fault **3** Relay Fault **7** Run Time-Out Fault CS2 = Car Status 2 BITS **0** MG Fault **4** Communication Initialization Ok **1** Motion Master **5** Tach Direction (DPP 1=up,2=dn) **2** Gate or Lock On Fault **6** Tach Direction Error (DPP) **3** Drive Fault **7** SPU Tach Direction Error CS3 = Car Status 3 BITS **0** Up Call Pilot **4** Moving **1** Down Call Pilot **5** Leveling **2** At Floor Call Pilot **6** Lev DZ **3** Drop Level Velocity Output (LVE) **7** SPU Thermal Sensor CS4 = Car Status 4 BITS **0** SYSTEM MASTER (SRD/SRU ok) **4** SM Input from Contactor **1** Proximity **5** MC Input from Contactor **2** g11 **6** BKR (Brake Relay) **3** Gate & Lock (GL) **7** Door Operation
FPR	**F**loor **P**osition **R**eference at present floor: Displays the DPP count the system has stored in memory for the location of the floor where the elevator is presently at.
FWL	**F**lash **W**rite access **L**og. When data or program is written to flash memory or EEprom the SPU bios software will log the event in battery backed ram. This command prints the data log to the terminal screen. **FWLC** clears the write access log.

<COMMAND>	DESCRIPTION OF CAR COMMAND
GET	**GET/**load the parameters from EEPROM: This command restores modified parameters. (Also verifies the checksum and displays any errors.) ***Note: FCP, ULR, DLR & TSV parameters must all be valid for <GET> to return an 'OK'.***
GRP	Enter the **GR**ou**P** Human Interface (Prompt: Group =>) This command switches from the car parameter access to the group parameters access. The car must be the master (performing the group functions) to be able to access the group parameters. *(See RMA command to switch have controller become the master)*
LWR	**L**oad **W**eigher **R**eading. Displays the load weigher voltage and percent load. This will only display the value if the system is using an analog type of load weighing system and it has been properly setup. *(Normally Hydraulic elevators are not equipped with load weighers, however the system is equipped to handle this type of option if needed.)*
LWUn	**L**oad **W**eigher **U**ser interface setup. This command guides the user though the load weigher setup starting with the car on independent and the sensor verified with an empty car at the bottom floor, car fully loaded at the top floor and finally empty at the top floor. If the LWU command is entered without a number immediately following, a list of four options are given for the user to select from those shown below: 1. Proximity sensor setup. 2. Strain gauge sensor setup. 3. Observe sensor setup parameters. 4. Activate offset calibration procedure. If proximity or pressure (strain gauge) sensor setup is selected, the user is prompted for additional information to start the setup procedure. Once setup is activated, the following "LWU" commands are entered to validate the load condition of the car. **LWU1** – Command is entered when the sensor voltage is setup between 1.0 and 1.4 volts and the car is empty at the bottom landing. **LWU2** – Command is entered when the car has full load at the bottom floor. **LWU3** – Command is entered when the car has full load at the top floor. **LWU4** – Command is entered when the car is empty at the top floor.
MEN	SPU BIOS **MEN**u: Use to upload the software into FLASH memory ***Contact CEC Tech Support before using this command if you have not used it before.***

<COMMAND>	DESCRIPTION OF CAR COMMAND
PAR	**PAR**ameters: This command offers a speedy way to Enter or Review all of the above adjustment parameters. Typing <**PAR> <enter ↵>** displays all parameters with a slight delay.
PARA	The '**A**' (Alter) suffix permits changing or reviewing all **PAR**ameters. Each command is displayed with the current value followed by a question mark. You can now change its value or hit **<enter ↵>** to skip to the next one.
POS	True Car **POS**ition, e.g. 1 through 15 (including 13) This displays the floor position of the elevator. This number reflects the stop number not the building floor number. These numbers start with the lowest landing being 1.
RCC	**R**eset all **C**ar **C**alls Use this command to reset all registered car calls.
RCM	**R**eset **C**o**M**munication status log. Resets failure counts for all COMM devices (See <**CMC**> command)
RFL	**R**eset the **F**au**L**t Hold memory Use this command to reset the fault memory. ***Warning: Once reset all registered fault will be erased from memory.***
RMA	**R**equest **Ma**ster. When entered at the terminal of a car that is not the group, this car will request to become the master car, i.e. the group. The existing master car will relinquish group control to this car.
RPU	RPU Hall call unit status commands. These commands would only be used if the installation is equipped with RPU's (Remote Processing Unit). RPU's are utilized when HPU type of hall call interface are used and the number of HPU's for hall calls exceeds 16 in total. **RPUC** – Reset comm errors for HPU devices on RPU comm buss. **RPUR** – Software reset of RPU hall call board. **RPUD** – SPU to send hall call setup information to RPU board. **RPUn** – Show HPU device "n" comm status from RPU. *(Example: Using command "RPU1" displays the status of the HPU's connected to and configured for board RPU1)*

<COMMAND>	DESCRIPTION OF CAR COMMAND
RSL	**R**equest **Sl**ave. When entered at the terminal of a car that is currently the group controller, this car will relinquish group control to the next available car with the lowest number. If no car is available, this car will time out and become the group again.
SCCn	**S**et **C**ar **C**all at floor (**n**). This command allows you to set a car call at a selected floor. The floor number is the landing number, not the building floor number. *(Example: SCC3 – Sets the car call for the 3rd stop from the bottom)*
STD	**ST**art **D**own: The <**STD>** command can be used while in automatic operation to provide a one (1) floor run down from the existing location.
STM	**S**e**T** Up **M**ode: This command allows car to run on inspection mode without the Digital Position Pulse while setting up the car. This operating mode bypasses the normal safety check (communication with car devices and feedback from the DDP sensors) and prevents car from shutting down. If car loses power or if inspection switch is moved to automatic mode, elevator will automatically be removed from **Setup** mode. **Note:** *This operating mode can also be initiated from front panel push buttons in the circuit breaker panel. While elevator is on inspection mode, press and hold SPU push button on front panel of the controller for approximately 3 seconds: DISPLAY button will then light green. Release SPU push button and then press DISPLAY push button momentarily. DISPLAY button lights red and green alternately, indicating car is in **Setup** mode.*
STU	**ST**art **U**p: The <**STU>** command can be used while in automatic operation to provide a one (1) floor run up from the existing location.
TIM	Computer up **TIM**e since the last power-up (day-hour:min:sec) This displays the amount of time the processor has been running since it was last powered up.
TIME	Set real **TIME** calendar clock. Time is entered as hour:min:sec followed by 'a' for am or 'p' for pm. To exit this command without changing the time, hit <**enter ↵>** before typing new time value. Current time: 11:12:32p Enter new time: 10:22:30a

<COMMAND>	DESCRIPTION OF CAR COMMAND
UCS	**U**p **C**all pilot **S**tatus (See CCS for explanations.) a) Up Pilot -- down hall call above current car position b) Down Pilot -- down hall call below current car position
ULB	**U**p **L**imit **B**reak: Car velocity and position when the Up Slowdown Limit switch first opens during a run. This command is entered after the elevator has stopped and opened the up slowdown limit switch on a run to the top landing.
VEL	Actual Car **VEL**ocity in FPM – This displays the car speed in FPM the moment the VEL command is entered.
VER	Displays software **VER**sions for all communications boards. See <**CMC**> command for description of devices: **DEVICE VERSION** (SYS= system; LOC= local; DRV= drive; HC= hall call) **SYS** Ver **LOC** Ver **CAR** Ver **DRV** Ver **HC** Ver 201 010 9 008 8 006 2 44 006 202 010 11 008 18 005 211 006 212 003 12 007 19 006
VFC	**V**elocity **F**ault **C**ontroller Status: *This command is available on a Hydro controller however it has no function as a velocity control boards are not utilized on a Hydraulic elevator controller.*
VLT	**V**elocity **L**imit **T**est: *This command is available on a Hydro controller however it has no function as a velocity control boards are not utilized on a Hydraulic elevator controller.*
WRT	**WrT**e parameters to EEPROM: This command stores changes in non-volatile memory. **Note:** *It is not necessary to write <WRT> altered parameters immediately to EEPROM. You can test operation, continue to operate elevator, and store to EEPROM when satisfied. In case of removal of power to CPU, or if terminal is disconnected, parameters are restored to the previous values..*
ZON	**ZON**e floor: Displays floor to which car is zoning.
ZPS	**Z**one **P**ilot **S**tatus (Refer to <CCS> command for explanation)

NOTES

SECTION 7 - CAR ADJUSTMENT PARAMETERS

The ***FUTURA***™ operating system provides a series of adjustment parameters, which allow the user to fine tune elevator operation, and control the operation of some devices associated with the elevator. For example, the parameter ACR controls the elevator acceleration rate, while the parameter DOD controls door timing.

PARAMETER	RANGE	DEFAULT	UNITS	DESCRIPTION/UNITS OF CAR ADJUSTMENT PARAMETER
ABT	0-65535	0	Second	Attendant Buzzer Time. Duration of time for the attendant buzzer to sound while a hall call is not being serviced.
ACB	0-65535	300	DPP	**B**ottom **AC**cess offset from SLD1: On access mode, this is the number of DPP counts at which the car will stop when traveling up after the SLD1 limit switch makes back up.
ACF	1-6	1	FL.#	**AC**cess **F**loor when mid-shaft. This parameter sets the access floor if it is located other than at the terminal floors.
ACT	0-65535	300	DPP	**T**op **AC**cess offset from SLU1: On access mode, this is the number of DPP counts at which the car will stop when traveling down after the SLU1 limit switch makes back up.
AND	0-10	0	# Car calls	**AN**ti-nuisance **D**umping: Number of Car Calls which must be registered to enable dumping all the car calls when the Anti-Nuisance Load switch is not triggered. **Note:** *Only functional if the elevator is equipped with a load weighing system.*
AST	5-180	30	Second	**A**utomatic **S**ervice **T**ime-out: After this time, car is taken out of group service or hall service.
CCD	1-128	3	# CALLS	**C**ar **C**all **D**umping: Number of Car Calls that a car will answer without the Electric Eye (EE input) activated (before canceling the remaining Car Calls).
CDT	16-200	48	1/16 Second	**C**ar **C**all Door **T**ime: This is the amount of time the doors will remain open when answering a car call.

PARAMETER	RANGE	DEFAULT	UNITS	DESCRIPTION/UNITS OF CAR ADJUSTMENT PARAMETER
CCN	1-15	JOB	NUMERIC	**C**ar **C**ommunications **N**umber. This parameter identifies the car for Car To Group communications. *This is set to the car number of the controller in this group, not the building elevator number.*
CIT	0-65535	48	SYS TIME	**C**PU **I**nterrupt **T**est. Individual bits are set to display system timing. BITS **0** - Real time clock interrupt **1** - Sequence clock interrupt **2** - Group to Car communications timer
CKT	0-128	80	1/16 Second	**C**oded Call **K**eypad entry **T**ime (Use with optional keypad security) Entry time-limit to press the four push-button codes required during security mode. If this time elapses without completing the code, process is aborted & you must restart.
CS1	0-65535			**C**ontrol **S**tatus **W**ord (Car) **1** *(See CSW Bit Commands p.8-4, not FLTXn param.)*
CS2	0-65535			**C**ontrol **S**tatus **W**ord (Car) **2** *(See CSW Bit Commands p.8-5, not FLTXn param.)*
CS3	0-65535			**C**ontrol **S**tatus **W**ord (Car) **3** *(See CSW Bit Commands p.8-6, not FLTXn param.)*
CS4	0-65535			**C**ontrol **S**tatus **W**ord (Car) **4** *(See CSW Bit Commands p.8-7, not FLTXn param.)*
CS5	0-65535			**C**ontrol **S**tatus **W**ord (Car) **5** *(See CSW Bit Commands p.8-8, not FLTXn param.)*
CS6	0-65535			**C**ontrol **S**tatus **W**ord (Car) **6** *(See CSW Bit Commands p.8-9, not FLTXn param.)*
CS7	0-65535			**C**ontrol **S**tatus **W**ord (Car) **7** *(See CSW Bit Commands p.8-10, not FLTXn param.)*
CS8	0-65535			**C**ontrol **S**tatus **W**ord (Car) **8** *(See CSW Bit Commands p.8-11, not FLTXn param.)*

PARAMETER	RANGE	DEFAULT	UNITS	DESCRIPTION/UNITS OF CAR ADJUSTMENT PARAMETER
CS9	0-65535			**C**ontrol **S**tatus **W**ord (Car) **9** *(See CSW Bit Commands p.8-12, not FLTXn param.)*
CS10	0-65535			**C**ontrol **S**tatus **W**ord (Car) **10** *(See CSW Bit Commands p.8-13, not FLTXn param.)*
CS11	0-65535			**C**ontrol **S**tatus **W**ord (Car) **11** *(See CSW Bit Commands p.8-14, not FLTXn param.)*
CS12	0-65535			**C**ontrol **S**tatus **W**ord (Car) **12** *(See CSW Bit Commands p.8-15, not FLTXn param.*)
CS13	0-65535			**C**ontrol **S**tatus **W**ord (Car) **13** *(See CSW Bit Commands p.8-16, not FLTXn param.)*
CSW	0-65535			**C**ontrol **S**tatus **W**ord (Car) **0** *(See CSW Bit Commands p.8-3, not FLTXn param.)*
DCC	0-20	6	DOOR CYCLES	**D**oor **C**ycle Protection **C**ounter: Number of time the Doors will attempt to close without getting the Door close limit or the Door locks. After this number the elevator will be taken out of service on Door Protect.
DCP	5-20	12	Second	**D**oor **C**lose **P**rotective time: The amount of time the doors are given to close before recycling. *Each time the door recycles it increases the door close attempt register which is linked to DCC.*
DDT	0-80	8	1/16 Second	**D**oor Open **D**elay **T**ime after activation of DOB (Door Open Button) input.
DER	Not Adjustable	100	Feet/ min/ sec	**DE**celeration **R**ate: This is provided as part of the "S" curve to monitor the performance of the valve adjustments.
DHT	0-64	15	1/16 Second	**D**over "**H"** Operator **T**ime: Delay time before high speed door opening. Only used on Dover OHS door operator circuits.
DIT	0-16	1	1/16 Second	**D**oor **I**nterlock **T**ime: Time delay between switching from door close to door open to prevent interlock jamming.

PARAMETER	RANGE	DEFAULT	UNITS	DESCRIPTION/UNITS OF CAR ADJUSTMENT PARAMETER
DLR	0-65535	JOB	DPP	**D**own **L**imit position count **R**eference: This command allows viewing of the recorded DPP positions associated with the down slowdown limits. Although 5 are shown using this command only one (DLR1) is utilized on a hydro. *To manually re-enter the DPP position of the Down Slowdown switch -- Use the command DLR1 = nnnn* *"n" represents the 4 digit DPP count you want to enter for DLR1*
DMD	Calculated			**D**igital **M**ultiplier **D**own direction. **Not Applicable for a Hydro.**
DMU	Calculated			**D**igital **M**ultiplier **U**p direction. **Not Applicable for a Hydro**
DOD	0-32	12	1/16 Second	**D**oor **O**pen **D**elay time: Only used on OTIS 6970 operators.
DOH	0-360	15	Second	Extra **D**oor **O**pen button **H**old time: Only used with Door Hold buttons.
DOP	5-20	18	Second	**D**oor **O**pen **P**rotective time: Amount of time allowed to open the doors before taken out of service on Door Protect.
DOT	0-60	15	Second	**D**oor **O**pen Button **T**ime-out: Maximum amount of time doors are allowed to remain open from the Door open button input.
DPD	0-20	0	DPP	**D**igital **P**osition A**D**justment: DPP (Digital Position Pulse) adjustment at the 12 inch (30 cm) and at the 6 inch (15 cm) leveling zone. If there is an error from the DPP at the 12" or at the 6" target, DPD parameter is the correction adjustment. If no correction is desired, such as during set-up, set DPD to zero.
DPF	160-960	320	DPP	**D**PP **P**er **F**oot (dpp x 10) . The number of DPP counts per foot that the controller is expecting to count. *Set to 320 for 32.0 dpp per foot on standard jobs utilizing a tape positioning system.*
DPL	0-40	32	DPP	**D**igital **P**osition at 12 inch **L**eveling: Digital Position is calculated from floor position reference that should be at the 12 inch (30 cm) target. It is normally set to 31 or 32. (12" / 0.375") = 32 (or 30 cm/ 0.95 cm)

PARAMETER	RANGE	DEFAULT	UNITS	DESCRIPTION/UNITS OF CAR ADJUSTMENT PARAMETER
DPZ	0-20	16	DPP	**D**igital **P**osition at 6 inch **Z**one: Digital position, calculated from floor position reference, that should be at the 6 inch (15 cm) target. It is normally set to 15 or 16. (6"/ 0.375") = 16 (or 15 cm/ 0.95 cm)
DRT	Non Adjustable	1	1/16 Second	**D**eceleration **R**oll **T**ime: This is provided as part of the "S" curve to monitor the performance of the valve adjustments.
DRV	0-80	0	Second	**D**oor **R**e**V**ersal (Optional) used with a Door Reversal Limit switch and operates at 1/2 the Door Reversal time. Prevents the door from fully opening during Electric Eye (EE input) reopening when the DRV parameter time expires. The doors will continue to operate until Door Open Limit (DOL) input deactivated.
DTA (up)	8-1500	100	DPP	**D**eceleration **TA**rget (DPP Count): This is the distance from the floor level that slowdown is initiated in the up direction.
DT2 (down)	10-900	100	DPP	**D**eceleration **T**arget **2** (DPP Count): This is the distance from the floor level that slowdown is initiated in the down direction.
DZO	CALCULATED			**D**igital **Z**ero **O**ffset. **Not Applicable for a Hydro**
EDR	0-65535	JOB	DPPs	**E**mergency **D**own Limit **R**eference: This is the DPP reference point at which the Down Emergency Terminal Switch opens. *This parameter is available on a Hydro controller however it has no function as Emergency Limits are not required on Hydraulic elevator.*
EDS	NO RANGE			**E**mergency **D**ispatch floor **S**etting: If car communication is lost with dispatcher, car will stop at the floors set with this command. ***Setup in the Black Terminal mode of Wizard only. Note that the direction in which stops are made can also be set. When prompted, answer `Y' or `N' if a stop is desired for that floor, and `U', `D' or `B' for Up, Down or Both Up and Down respectively, for the direction of stop.***

PARAMETER	RANGE	DEFAULT	UNITS	DESCRIPTION/UNITS OF CAR ADJUSTMENT PARAMETER
EPF	1- # FLs	1	Floor Number	**E**mergency **P**ower recall **F**loor: This is to be set to the landing at which emergency power recall sequence is to bring the car to. ***Note: This is to be set to the landing number for this elevator and is counted from the lowest landing this elevator serves. This is normally set the same as the Main Phase 1 recall floor.***
ESV	0-65535	JOB	FPM	**E**mergency **S**lowdown **V**elocity: Maximum speed reference output when the Slowdown Limit Switch is activated (Open). If the car speed exceeds this setting the car will immediately begin an emergency slowdown.
ETV	0-65535	JOB	FPM	**E**mergency **T**erminal slowdown **V**elocity: Maximum velocity allowed when an Emergency Limit Switch is open. *This parameter is available on a Hydro controller however it has no function as Emergency Limits are not required on Hydraulic elevator.*
EUR	0-65535	JOB	DPPs	**E**mergency **U**p Limit **R**eference: This is the DPP reference for the point at which the Up Emergency Terminal Switch opens. *This parameter is available on a Hydro controller however it has no function as Emergency Limits are not required on Hydraulic elevator.*
FAL	1- # FLs	2	Floor Number	**F**ire Recall **A**lternate **F**loor: The alternate floor to which cars recall to when main default fire floor sensor (FAL) is activated. (See FIR param). ***Note: This is to be set to the landing number which this elevator is to recall to when on Fire Phase 1 Alternate Recall Operation and is counted from the lowest landing this elevator serves.***
FBT	1-65535	1	1/64 Second	**F**ire **B**ypass **T**imer for fire GSA standard. This is only applicable to GSA specific projects and is used to time out the Smoke Detector Bypass function.
FEV	0-2000	0	FPM	**F**eed forward **E**nd **V**elocity. **Not Applicable for a Hydro**

PARAMETER	RANGE	DEFAULT	UNITS	DESCRIPTION/UNITS OF CAR ADJUSTMENT PARAMETER
FIR	1- # FLs	1	Floor Number	**FIR**e Recall Floor: The floor to which the car is to recall to during Phase 1 recall operation. ***Note: This is to be set to the landing number for which this elevator is to recall to when on Fire Phase 1 Recall Operation and is counted from the lowest landing this elevator serves.***
FLV	0-480	290	VOLTS	**F**ield **L**ine **V**oltage: **Not Applicable for a Hydro**
FRC	1-8	3	RESETS	**F**ault **R**etry **C**ount. The number of times the controller will try to recover from a motion fault and return to automatic service before shutting down.
FSD	0-24	0	1/64 Second	**F**inal **S**top **D**amping. **Not Applicable for a Hydro**
GCT	0-32	20	1/16 Second	**G**ong **C**ycle **T**ime: Total On time for the 1st Down Lantern signal (1/16 sec).
GDB	4-64	4	1/64 Second	**G**ate and lock **D**e**B**ounce time: Time to debounce (delay) the gate and lock signals to prevent a false start caused by the gate or lock bouncing.
GLV	0-200	160	FPM	**G**ate and **L**ock **V**elocity limit. Maximum car velocity allowed by HYC board when GL1 input is deactivated.
GOT	0-32	9	1/16 Second	**G**ong **O**ff **T**ime: Total off time between Down Lantern Signals
GP1	0-65535 (Software Specific)			**G**eneral **P**urpose parameter **1** (Job Specific)
GP2	0-65535 (Software Specific)			**G**eneral **P**urpose parameter **2** (Job Specific)
GP4	0-65535 (Software Specific)			**G**eneral **P**urpose parameter **4** (Job Specific)
GP5	0-65535 (Software Specific)			**G**eneral **P**urpose parameter **5** (Job Specific)
GRT	20-360	180	Second	**G**enerator **R**un **T**ime: **Not Applicable for a Hydro**

PARAMETER	RANGE	DEFAULT	UNITS	DESCRIPTION/UNITS OF CAR ADJUSTMENT PARAMETER
HBT	0-32	8	1/16 Second	**H**andicap **B**uzzer **Ti**me (HBZ output) Floor Passing Tone. This is the amount of time each pulse will be on to activate the signaling device. (pulse function of Handicap Buzzer)
HDT	0-60	15	Second	Car **H**oming **D**oor open **T**ime
HLD	0-60	0	Second	**H**all **L**antern **D**elay: Delay time from activation of the slowdown to send hall lantern output signal.
HM1	1- # FLs	1	Floor Number	Car **H**o**M**ing floor **designation 1**: A maximum of four (4) floors can be designated for Homing. The HM1 through HM4 parameters match the HM1 through HM4 input names. The floor designation does not have to be sequential. ***Note: This is to be set to the landing number for this elevator and is counted from the lowest landing this elevator serves***
HM2	1- # FLs	1	Floor Number	Car **H**o**M**ing floor designation **2**
HM3	1- # FLs	1	Floor Number	Car **H**o**M**ing floor designation **3**
HM4	1- # FLs	1	Floor Number	Car **H**o**M**ing floor designation **4**
HTT	0-65535	35	Floor Number	**H**igh Speed **T**ravel **T**imer: Maximum time the car is allowed to run at high speed.
IFT	0-301	15	Second	**I**ndependent to **F**ire **T**ime: This is the time delay before overriding independent service during Fire Phase I operation.
IRV	0-150	150	FPM	**I**nspection **R**un **V**elocity limit. HYC board velocity limit when car is running on inspection mode.
IVE	0-100	12	FPM	**I**nspection **VE**locity: The Inspection velocity is set at 12 FPM (0.06 m/s) when the controller is shipped.
LBY	1- # FLs	1	Floor Number	**L**ob**BY** Floor: Default recall floor during regular zoning services. ***Note: This is to be set to the landing number for this elevator and is counted from the lowest landing this elevator serves***

PARAMETER	RANGE	DEFAULT	UNITS	DESCRIPTION/UNITS OF CAR ADJUSTMENT PARAMETER
LDT	32-200	48	1/16 Second	**L**ong **D**oor Open (Standing) **T**ime (2 to 12.5 seconds) This is the time period the doors should stay open when answering a hall call. *Example: LDT = 48 (48/16 = 3 seconds)*
LFT	0-600	60	Second	**L**ight and **F**an **T**ime: This is the time period (in Seconds) before relay LFT is energized in the TOC box to turn off lights and fan inside the elevator when it is parked.
LIC	16-25	20	msec	**L**ow **I**ntensity **C**ycle time (msec). Used to pulse the car call lights so they glow slightly while the call is not selected. Once the call is energized, the car call light turns on bright. This parameter controls the total on-off time (how fast the car call light is pulsed) . A cycle time set to 16 would be 62.5 Hz.
LIO	2-9	4	msec	**L**ow **I**ntensity **O**n time (msec). The amount of time that car call light is on during each cycle time. If LIC is set to 16 milliseconds and LIO is set to 4 milliseconds, then the light will be pulsed with a 25% duty cycle.
LND	0-65535	0	1/16 Second	**L**ocal **N**ext-Up **D**oor time: Only used for simplex car when Lobby Recall feature enabled
LOT	0-65535	0	Second	**L**ow **O**il run **T**ime, when the pump running time exceed this time setting the unit will activate low oil function and register a 64 fault.
LPE	1-65535	50	DPP	Terminal **L**imit switch **P**osition **E**rror: Position error that will result in an emergency slow-down. When car approaches a terminal landing, the instantaneous position when the limit switch opens is compared with the Limit Position Reference (see ULR and DLR parameters). If this differential value is larger than LPE parameter values, the car will go into emergency slowdown.
LTR	0-1000	300	Fpm/s	**L**inear **T**ime **R**ate (feet/min/sec). **Not Applicable for a Hydro**
LVE	Non Adjustable	12	fpm	**L**eveling **VE**locity (feet per minute) This is the Leveling reference velocity in the “S” curve.

PARAMETER	RANGE	DEFAULT	UNITS	DESCRIPTION/UNITS OF CAR ADJUSTMENT PARAMETER
MAR	75-300	150	Fpm/s	**A**cceleration **R**ate when using **MMS** parameter for setting top speed. **Not Applicable for a Hydro**
MBT	0-65535	1	Second	**M**otor **B**lower **T**imer. **Not Applicable for a Hydro**
MDR	80-3	150	Fpm/s	**D**eceleration **R**ate when using **MMS** parameter for setting top speed **Not Applicable for a Hydro**
MDT	8-40	18	DPP	**D**eceleration **T**arget when using **MMS** parameter for setting top speed **Not Applicable for a Hydro**
MLV	Not Adjustable	40	Fpm	**M**aximum **L**evel **V**elocity: When leveling, maximum velocity at which the car can run with doors open.
MMS	0 - top speed	Top speed	Fpm	**M**aximu**M** Car **S**peed. Sets top speed of car. Only functional when bit 5 on Control Status Word 7 (CS7) is set. **Not Applicable for a Hydro**
MSS	1-480	250	Fpm/s^2	**S**tart **R**oll **R**ate into acceleration using **M**MS operation. **Not Applicable for a Hydro**
MRT	0-65535	45	Second	**M**aximum **R**un **T**imer: Maximum time the car is allowed to run per trip. Run car from bottom floor to top floor on Inspection and record time. Add 10 seconds to value recorded and enter in MRT.
MRV	Not Adjustable	50	Fpm	**M**aximum **R**e-level **V**elocity: Maximum velocity the car can run with the doors open when re-leveling.
MTL	10-50	18	DPP	**T**ransfer to **L**eveling mode when using **M**MS parameter **Not Applicable for a Hydro**
MVD	0-24	5	1/64 Second	**M**inimum **V**elocity **D**amping Time period **Not Applicable for a Hydro**

PARAMETER	RANGE	DEFAULT	UNITS	DESCRIPTION/UNITS OF CAR ADJUSTMENT PARAMETER
NCF	0-12	0	Num	**N**umber of **C**oded calls per **F**loor (Use with optional keypad security) Number of codes available per floor for keypad security. This number (*n) multiplied by the number of floors +1 must be less than the maximum of 300 code storage allocation. ***Note:*** *If this value is changed, all new codes must be re-entered.*
NDT	5-120	15	Second	**N**udging **D**oor **T**ime Once the time the door has been open reaches the value in NDT door nudging operation is activated.
OST	0-65535	0	1/16 Second	Overlay Slowdown Timer. **Not Applicable for a Hydro**
PDT	0-128	0	1/64 Second	Preconditioning Delay Time. **Not Applicable for a Hydro**
PEK	0-31	Calculated	Number	**PE**rformance **Constant**: **Not Applicable for a Hydro**
PMP	0-65335	5	Second	Pump time to run after Up relay falls out. This is the amount of time the pump is to keep running after the Up valves de-energize.
PPS	0-128	0	1/64 Second	**P**reconditioning **P**hase-out **S**tart time. **Not Applicable for a Hydro**
PPT	0-196	0	1/64 Second	**P**reconditioning **P**hase-out **T**ime **Not Applicable for a Hydro**
RVE	Non Adjustable	12	FPM	**R**e-leveling **VE**locity (feet per minute)
SCT	2-18	18	1/16 Second	**S**ystem Master **C**ontrol **T**imer. Delay timer for SMC output that controls the SM contactor. This timer uses increments of 1/16 second to delay SMC input.
SDT	4-80	8	1/16 Second	**S**hort **D**oor **T**ime (0.5 to 5 seconds) after Electric Eye (EE input) or Safety Edge (SE input) activation
SPC	0-20	6	Cycles	**S**tart Sequence **P**rotection **C**ounter: Normally adjusted for 6 cycles to try starting motion. Refer to Error code 18.

PARAMETER	RANGE	DEFAULT	UNITS	DESCRIPTION/UNITS OF CAR ADJUSTMENT PARAMETER
SSD	2-64	2	1/16 Second	**S**top **S**equence **D**elay (1/16 second) . Minimum time required for the car to stop and test for BK, SM and MC contacts to drop out before attempting another run.
SST	Non Adjustable	24	1/64 Second	**S**oft **S**tart **T**ime: This is provided as part of the "S" curve to monitor the performance of the valve adjustments
SSV	0-36	0	FPM	Soft Start Velocity (fpm). **Not Applicable for a Hydro**
TDF	0-16	8	1/16 Second	**T**ime **D**amping before **F**ault: Fault damping time causes the car to shut-down when an out of sequence Tach signal or an out of sequence direction occurs. The greater the number, the more fault detection time necessary to cause the car to shutdown. (See Control Status Word Bit settings CS2 and CS3 - p.8-20,21)
TDT	0-7	3		**T**ach **D**amping **T**ime (from Top of Car Transducer) : Digital tach (DPP Sensor) damping time period. (Filtering)
TFD	Non Adjustable	1	Number	**T**op speed **F**lat top travel **D**istance: This is provided as part of the "S" curve to monitor the performance of the valve adjustmen.
TLM (up)	10-900	100	DPP	Transfer to Leveling Mode: Distance in DPP from floor level in the Up Direction at which the computation changes from Deceleration to Leveling mode. The ratio between the TLM and DTA parameters determines the slope at which the car will level. ***Note:*** *The leveling mode does not refer tot the leveling operation. In this mode the velocity is directly proportional to the distance remaining from floor. TLM must be a larger value than DTA.*
TL2 (down)	10-900	100	DPP	Transfer to Leveling Mode: Distance in DPP from floor level in the Down Direction at which the computation changes from Deceleration to Leveling mode. The ratio between the TLM and DTA parameters determines the slope at which the car will level. ***Note:*** *The leveling mode does not refer tot the leveling operation. In this mode the velocity is directly proportional to the distance remaining from floor. TL2 must be a larger value than DT2.*

PARAMETER	RANGE	DEFAULT	UNITS	DESCRIPTION/UNITS OF CAR ADJUSTMENT PARAMETER
TLV	Non Adjustable	5	DPP	**T**ransfer to **L**eveling **V**ane: Distance in DPP from floor level at which the constant leveling velocity should take effect. This is provided as part of the "S" curve to monitor the performance of the valve adjustments.
TSV	1-65535	JOB	FPM	**T**erminal **S**lowdown limit **V**elocity: Maximum velocity the terminal slowdown limit switch can open at. If the car velocity exceeds the Limit velocity, the computer will initiate an emergency slow-down.
ULR	1-65535	JOB	DPP	**U**p **L**imit position count **R**eference: This command allows viewing of the recorded DPP positions associated with the up slowdown limits. Although 5 are shown using this command only one is utilized on a hydro. *To manually re-enter the DPP position of the Up Slowdown switch -- Use the command ULR1 = nnnn* *"n" represents the 4 digit DPP count you want to enter for DLR1*.
VDD	0-24	12	1/64 sec	**V**elocity **D**amping **D**ecrement. **Not Applicable for a Hydro**
VDF	0-20	16	1/16 sec	**V**elocity error for **D**rive **F**ault: Value of fault filtering or damping time causing the car to shut-down via panic motion fault when the velocity error is excessive. The greater the number, the more time is necessary to detect the fault causing the car shutdown. (See CS2, bits 2 & 3 - p. 8-5)
VDT	4-31	6	1/64 sec	**V**elocity **D**amping **T**ime Period: The filtering or damping time period needed to remove any step values introduced during speed reference calculations..
VEE	50-350	150	FPM	**V**elocity **E**rror for **E**mergency slow-down: Velocity error that will result in an emergency slow-down. If the velocity difference between the digital demand and the digital velocity computed by DPP exceeds this value, the car will go into emergency slowdown. When the demand reaches top speed, this value is replaced by a percentage of top speed.
XDT	0-200	16	1/64	E**X**tra **D**oor open (Standing) **T**ime (0-3 seconds): During a car/hall call stop, XDT parameter adds "door open" time to the Short Door Time (SDT parameter) once the Electronic Eye (EE device) is activated. Permits extra transfer time.

NOTES

SECTION 8 - CONTROL STATUS WORD BIT COMMANDS (CAR)

The ***FUTURA***™ operating system provides Control Status Words for customizing the operation of the elevator. An example would be the ability to enable or disable pre-opening of the doors. Each Control Status Word is made up of 16 bits labeled 0-15. Each bit controls a specific operation of the elevator or one of its devices. Each bit can be set (1) or reset (0) and the operation which each bit controls is affected by the state (set or reset) of the bit.

The following command <BIT> is used to set or reset the individual control flags (bits) of the control status word parameters. Each bit of a control status word is used to activate or deactivate a particular service or function. These control status words are found both in the individual car controllers and in the group controller.

- ✓ Set designates that a bit is a logic 1 (True).
- ✓ Reset designates that a bit is a logic 0 (False).
- ✓ There are 16 bits per control status word, referenced 0-15
- ✓ Control status words (CAR) available: CSW (CS0), CS1, CS2, CS3, CS4, CS5, CS6, CS7, CS8.

Note: *The number of Control Status Words used on a particular job depends on the job itself. Your particular job may not contain all the Control Status Words.*

<COMMAND>	FUNCTION
BITRx,n <ENTER ↵>	Resets bit n of Csx (where x = 0-8, n = 0-15).
BITSx,n, <ENTER ↵>	Sets bit n of Csx (where x = 0-8, n = 0-15).
BITD <ENTER ↵>	Displays the current bit status of all control status words in tabular form.

Table A

CSW Car (Control Status Word 0)

BIT	AFFECT	DEFAULT	DESCRIPTION
0	EDS	R	When set, prevents Emergency Dispatching (EDS parameter) from enabling when a Dispatch Loss occurs, even if EDS is activated.
1	DPP	S	When set, permits presetting the Digital Position Pulse (DPP) at start sequence. **Note: must always be set in normal operation**.
2	DRIVE	S	When set, permits Fault Reset of an internal Drive Fault after car stops.
3			**Not valid on *FUTURA™ HYDRO*.**
4	CALL	S	Dumps all calls after consecutive car calls answered per Car Call Dump (CCD parameter) number order with no Electronic Eye (EE device) break.
5			**Not valid on *FUTURA™ HYDRO*.**
6	DOOR	R	Set to allow doors to reverse before reaching Door Open Limit (DOL input): Presently used only with an extra Door Reversal Limit (DLR input) switch.
7	LOBBY	R	When set, car will return to lobby floor after the last call (Lobby Recall).
8	EMP	R	During Manual Emergency power selection, setting this bit causes the car NOT to recall to the main floor if car loses communication with the dispatcher.
9	IND	R	When set and on Independent Service mode, calls are accepted only when the doors are closed.
10	IND	R	When set and on Independent Service mode, car calls are canceled when a slowdown is initiated.
11	DRIVE	R	When set, if drive switch input is deactivated, car will be returned to the main lobby floor and no calls will be accepted.
12	DRIVE	R	When set, doors remain open when drive switch is deactivated. (No effect on *FUTURA™ HYDRO*)
13	DOOR	R	When set and on Independent Service, the doors will close automatically when a car call is registered.
14	GONG	R	When set, no double gong occurs with the down hall lantern.
15			**Not valid on *FUTURA™ HYDRO*.**

Table B

CS1 Car (Control Status Word 1)

BIT	AFFECT	DEFAULT	DESCRIPTION
0			**Not valid on *FUTURA™ HYDRO*.**
1			**Not valid on *FUTURA™ HYDRO*.**
2	DOOR	S	When set, pre-opening is disabled for the rear door operation.
3	DOOR	R	When set, rear door pre-opening will occur at the 2" (5cm) leveling zone.
4	DOOR	S	When set, pre-opening is disabled for the front door operation.
5	DOOR	R	When set, front door pre-opening will occur at the 2" (5 cm) leveling zone.
6	HOMING	R	When set, all calls are answered. When reset, calls are canceled immediately if a homing recall occurs.
7	DOOR	R	When set, rear door operation disabled. (Similar to door disconnect switch.)
8	FIRE	R	When set, the fire buzzer is pulsed.
9	FIRE	R	When set, the fire emergency light is pulsed.
10	FIRE	R	When set, the stop switch is not bypassed. When reset, it is bypassed according to bit 11.
11	FIRE	R	When set, is bypassed all the time. When reset, the stop switch is bypassed according to ANSI code standard.
12	FIRE	R	When set and on Fire Phase II, the doors will open automatically when the car returns to the designated floor. If reset, the fireman must open doors.
13	FIRE	R	When set, the in-car Fire Service light also operates during Phase II.
14	FIRE	R	When set, the doors will close when a car call is registered. If reset the door must be closed with the Door Close Button (DCB input).
15	FIRE	R	If set, car is not a designated car. If reset, car is a designated car: **Under Fire Phase II (New York City only)**

Table C

CS2 Car (Control Status Word 2)

BIT	AFFECT	DEFAULT	DESCRIPTION
0	DOOR	R	If set, wait for the generator to be running before opening the doors.
1	DOOR	R	If set, pressing the Door Close Button (DCB input) shortens the door open time (transfer time). If reset DCB has no effect on door open time.
2	FAULT	R	If set, allows a reset of a panic motion fault. **Note that if the fault keeps recurring, the processor will not continue to reset the fault.**
3	FAULT	S	Must be set to activate the panic motion fault feature. (See VDF & TDF parameters and bit 2 of this status word.) When a panic fault is detected, an error 9 is registered and the processor immediately begins to shutdown the car by removing the SYSTEM MASTER (SM output) and the direction signals. The brake will apply immediately.
4	IND	S	If set, Independent Service mode will be disabled after IFT parameter time when a Fire Recall is initiated.
5			**Not valid on *FUTURA™ HYDRO*.**
6	DOOR	R	Allows short rear door reversal. Allows doors to reverse before reaching Rear Door Open Limit.
7	BUZZER	R	If set and car door is closing on Nudging Mode, nudging buzzer activates only when a Door Open Device is activated. If reset, nudging buzzer sounds while doors are nudging closed.
8	DOOR	R	Does not allow reopening of doors with the Safety-edge (SE input) or the Electric-Eye (EE input) during nudging.
9	DOOR	R	If set, simultaneous front and rear door operation instead of selective.
10			**Not valid on *FUTURA™ HYDRO*.**
11		R	Reserved.
12	VIP	R	If set, enables buzzer to sound during VIP mode to alert passenger that car is in VIP operation mode.
13	VIP	R	If set, enables the buzzer to sound at VIP floor.
14	SEC	R	If set, a special buzzer sounds during security with push-button keypad operation. A brief sound indicates acceptance of security code and registration of call while extended sound indicates rejection of security code. (Per contract basis.)
15	LANT	R	Must be set for software version that utilizes a Lantern Master I/O module for controlling the lantern's power supply.

Table D

CS3 Car (Control Status Word 3)

BIT	AFFECT	DEFAULT	DESCRIPTION
0			**Not used on *FUTURA* ™.**
1	DOOR	R	If set, allows call pilots to be accepted when on door protection mode.
2	DOOR	R	If set, allows Door Open Delay (DOD output) to operate every time door opens.
3	FIRE	R	If set, allows car to shut door automatically after Phase II key switch is set to "OFF" and Phase I condition exists.
4	INDEP	R	Independent Service: If reset, Independent Service mode overridden by Fire Service after Independent/Fire Service override time (IFT parameter) expires.
5	FIRE	R	When set, the door open button is disabled during Phase I Fire Service.
6		R	Reserved.
7	MOTION	R	**Not valid on *FUTURA*™ *HYDRO*.**
8	CALL	R	If set, no slowdown for hall calls and the floor is secured by the <**SFL>** command from the Human Interface.
9	ZONE	R	If set, no ZONE slowdown at floors secured by <**SFL>** command from Human Interface.
10	LOBBY	R	If set, car can be removed from Lobby Independent Service at any floor when the key switch is turned off. If reset, the car must be at lobby floor.
11	LOBBY	R	If set, Short Door Timer (SDT parameter) disabled when car at lobby floor.
12		R	Reserved.
13	DOOR	R	If set, door nudging operation is disabled.
14	FIRE	R	If set, door nudging operation is activated during Phase I Fire Service operation while door is closing. This bit will override Bit 13 (Disable nudging).
15	DOOR	R	If set, the Electric Eye (EE) time-out feature (nudging) is disabled.

Table E

CS4 Car (Control Status Word 4)

BIT	AFFECT	DEFAULT	DESCRIPTION
0	FIRE	R	If reset, car will open front door automatically when it reaches the fire floor during Phase I.
1	FIRE	R	If reset, car will open rear door automatically when it reaches fire floor during Phase I.
2	CALL	R	If set, Car Calls are latched internally.
3	CALL	R	If set, Hall Calls are latched internally for a simplex car.
4	LANT	R	If set, cab lantern is triggered when door reaches Door Open Limit switch (DOL input).
5	DOOR	R	If set, front door pre-opening will occur when car levels into mid level zone.
6	DOOR	R	If set, rear door pre-opening will occur when car levels into mid level zone.
7	INDEP	R	If set, a car on Independent Service mode will answer car calls secured from the secure floor <**SFL>** command with the human interface.
8	POSIT	R	If set, the position output is disabled when the car is out of service.
9	POSIT	R	If set, the position output will flash when the car is out of service.
10	CALL	R	If set, Car Calls will not be canceled when the car has a reversal slowdown.
11	CALL	R	If set, cancel car calls for positions above the car when the car is moving down and cancel car calls below the car when the car is moving up.
12	LOBBY	R	When set, car will stop at lobby if it is above lobby and calls are placed below lobby or if car is below lobby and calls are placed above lobby.
13	VIDEO	R	If set, do not blink the car symbol in the video display.
14	ELD		If set, do not “refresh” the ELD display in the car.
15			Reserved.

Table F

CS5 Car (Control Status Word 5)

BIT	AFFECT	DEFAULT	DESCRIPTION
0	DOOR	R	If set, the Electric Eye (EE device) is disabled when the door is closing.
1	DOOR	R	If set, then full door reversal after the Safety Edge (SE device) is activated when the door is on nudging operation.
2			**Not valid on *FUTURA™ HYDRO*.**
3	DOOR	R	If set, car will shutdown if car goes out of level zone and doors are open.
4	LOBBY	R	Set to use Lobby Independent Service as Lobby Recall Service.
5	LOBBY	R	Set to open the rear door when car is on Lobby Recall Service.
6	LOBBY	R	Set to take car out of group svc. when car is returning on lobby recall svc.
7			**Not valid on *FUTURA™ HYDRO*.**
8			**Not valid on *FUTURA™ HYDRO*.**
9	ERROR	R	Set to disable interrupt error display.
10			**Not valid on *FUTURA™ HYDRO*.**
11			**Not valid on *FUTURA™ HYDRO*.**
12			**Not valid on *FUTURA™ HYDRO*.**
13	ELD	R	If set, no lines are displayed on the ELD screen.
14	ELD	R	If set, ELD screen remains on all the time.
15	DOOR	R	If set, drops Door Close (DC) module output after car in motion for 0.5 seconds.

Table G

CS6 Car (Control Status Word 6)

BIT	AFFECT	DEFAULT	DESCRIPTION
0			**Not valid on *FUTURA™ HYDRO*.**
1			**Not valid on *FUTURA™ HYDRO*.**
2			**Not valid on *FUTURA™ HYDRO*.**
3	DOOR	S	Set to disable electronic Detector Edge time out.
4	DOOR	S	Set to enable electronic Detector Edge operation vs. mechanical Safety Edge (SE).
5	DOOR	R	Set to enable electronic Proximity Edge operation vs. mechanical Safety Edge (SE).
6	BUZZER	S	Set to enable handicap buzzer all the time. If reset, the Audible Service Button (ASB input) must be pressed on each run to enable the handicap buzzer.
7	DRIVE	R	**Not valid on *FUTURA™ HYDRO*.**
8	DRIVE	R	**Not valid on *FUTURA™ HYDRO*.**
9	DRIVE	R	**Not valid on *FUTURA™ HYDRO*.**
10	DRIVE	R	**Not valid on *FUTURA™ HYDRO*.**
11	INSP	R	Set to allow hydro controller to run high speed on inspection mode.
12	DOOR	R	Set to disable Door Open Buzzer (DOB input) when front door is secured with lockout switches.
13	DOOR	R	Set to disable Rear Door Open Buzzer (RDOB input) when rear door is secured with lockout switches.
14	DOOR	R	Set to enable drive fault GLR (Gate & Lock input) error. (Both GLR input and DOL input active while level at the floor).
15			

Table H

CS7 Car (Control Status Word 7)

BIT	AFFECT	DEFAULT	DESCRIPTION
0	FAULT	R	Set to cause motion fault when tach direction error occurs with DRIVE unit, CCU board, or VIC controller.
1	FAULT	R	Set to disable deceleration check in emergency mode.
2	FAULT	R	Set to disable ESV and ETS velocity limit at slowdown limit switches.
3	MOTION	R	Set to disable linear time (max change in speed ref) parameter.
4	DPP	R	Set to disable updating position count when error is detected (more than 5 counts off).
5	MOTION	R	Set to adjust cars maximum velocity from MMS parameter.
6			**Not valid on *FUTURA™ HYDRO*.**
7			**Not valid on *FUTURA™ HYDRO*.**
8			**Not valid on *FUTURA™ HYDRO*.**
9			**Not valid on *FUTURA™ HYDRO*.**
10	DOOR	R	Set to invert detector edge input.
11	DOOR	R	Set to enable door close button to latch during Attendant Service.
12	BUZZER	R	Set to enable Attendant Buzzer at every floor (adj ABT for buzz duration).
13	ATT	R	Set to enable AUB/ADB inputs (attendant Up/Down buzzer) to latch.
14	FAULT	R	Set to cause motion fault when SPU board emits velocity error.
15	CALL	R	Set to pulse car call output for low intensity light.

Table I

CS8 Car (Control Status Word 8)

BIT	AFFECT	DEFAULT	DESCRIPTION
0		R	Unused.
1	FAULT	R	Set to disable DPP velocity window check. Velocity window is a difference (tolerance) of ± 100 fpm from previous velocity calculation per CPU. If difference > ± 100 fpm, error 119 occurs. Refer to Error Code List p.8-32.
2	DPP	R	**Not valid on *FUTURA™ HYDRO*.**
3			**Not valid on *FUTURA™ HYDRO*.**
4			**Not valid on *FUTURA™ HYDRO*.**
5	CWD	R	**Not valid on *FUTURA™ HYDRO*.**
6	MOTION	R	Set for PEK parameter compensation instead of RVT parameter compensation.
7			Unused.
8			**Not valid on *FUTURA™ HYDRO*.**
9			**Not valid on *FUTURA™ HYDRO*.**
10			**Not valid on *FUTURA™ HYDRO*.**
11			**Not valid on *FUTURA™ HYDRO*.**
12			**Not valid on *FUTURA™ HYDRO*.**
13			**Not valid on *FUTURA™ HYDRO*.**
14			**Not valid on *FUTURA™ HYDRO*.**
15	MOTION	R	Set to enable timed leveling mode. Should only be used for test.

Table J

CS9 Car (Control Status Word 9)

BIT	AFFECT	DEFAULT	DESCRIPTION
0	GROUP	R	Set for slave car to execute group commands. Note that parameters will be overwritten by whichever car is the master (i.e. the group).
1	DOOR	R	Set to disable SRU or SRD inspection door close option.
2			**Not valid on *FUTURA™ HYDRO*.**
3	DOOR	R	Set to disable door field economy voltage on door close.
4			**Not valid on *FUTURA™ HYDRO*.**
5	DOOR	S	Set to require DCL on (with GL1 and GL) to start the car.
6			**Not valid on *FUTURA™ HYDRO*.**
7	MOTION	R	Set to disable pre-start. Pre-start allows the controller to prepare to run when the DCL6 limit is made.
8	BUZZER	R	Set to disable nudging buzzer with EESW in OFF position.
9	DOOR	R	Set to disable DCR if door is open in SAFETIES.
10	DOOR	R	Set to enable hall call door re-open.
11			**Not valid on *FUTURA™ HYDRO*.**
12			**Not valid on *FUTURA™ HYDRO*.**
13	PI & BUZZER	R	Set for PI and HBZ to ring at dpp position.
14			**Not valid on *FUTURA™ HYDRO*.**
15			**Not valid on *FUTURA™ HYDRO*.**

Table K

CS10 Car (Control Status Word 10)

BIT	AFFECT	DEFAULT	DESCRIPTION
0			**Not valid on *FUTURA™ HYDRO*.**
1			**Not valid on *FUTURA™ HYDRO*.**
2	MOTION	R	If set then Start Sequence at DCL point.
3	MOTION	R	If set then Start Sequence at DCL6 point.
4			**Not valid on *FUTURA™ HYDRO*.**
5	MOTION	R	If set then enable one floor run sequence.
6	MOTION	R	If set to initiate Start Master (ASM) at door close.
7			**Not valid on *FUTURA™ HYDRO*.**
8	LANTERN	R	If set then activate pawl to ring lantern when car parked.
9			Unused.
10			Unused.
11			Unused.
12			Unused.
13			Unused.
14			Unused.
15	LCD DISPLAY	R	If set then LCD cursor location blinks when changing parameters.

Table L

CS11 Car (Control Status Word 11)

BIT	AFFECT	DEFAULT	DESCRIPTION
0	DOOR	R	If set then enable front DHB time out.
1	DOOR	R	If set then enable front DOB time out.
2	DOOR	R	If set then enable rear DHB time out.
3	DOOR	R	If set then enable rear DOB time out.
4	FIRE	R	If set to assign the car as fire fighting car. For UK job only.
5	SECURITY	R	If set to invert security inputs to use card reader rather than lockouts.
6	LIGHT	R	If set to blink GLBL output (2000 Compliant)
7	FIRE	R	If set then allow secondary fire bypass (Input HFBPA) to work.
8	LIGHT	R	If set to invert the logic of in service light (Output ISL).
9	CONTROL	S	Set to Enable CEN Test
10	CONTROL	R	Set disable LCD Auto Logoff
11			**Not valid on *FUTURA™ HYDRO*.**
12			**Not valid on *FUTURA™ HYDRO*.**
13			**Not valid on *FUTURA™ HYDRO*.**
14			**Not valid on *FUTURA™ HYDRO*.**
15			**Not valid on *FUTURA™ HYDRO*.**

Table M

CS12 Car (Control Status Word 12)

BIT	AFFECT	DEFAULT	DESCRIPTION
0			Unused.
1			Unused.
2			Unused.
3			Unused.
4			Unused.
5			Unused.
6			Unused.
7			Unused.
8			Unused.
9			Unused.
10			Unused.
11			Unused.
12			Unused.
13			Unused.
14			Unused.
15			Unused.

Table N

CS13 Car (Control Status Word 13)

BIT	AFFECT	DEFAULT	DESCRIPTION
0			Unused.
1			Unused.
2			Unused.
3			Unused.
4			Unused.
5			Unused.
6			Unused.
7			Unused.
8			Unused.
9			Unused.
10			Unused.
11			Unused.
12			Unused.
13			Unused.
14			Unused.
15			Unused.

Table M

NOTES

SECTION 9 - CONTROLLER ERROR CODE DEFINITIONS

The following sequential list of error codes indicates various fault conditions on the controller and elevator.

ERROR	DEFINITION OF CONTROLLER ERROR CODE
1	Division by zero.
2	Program Sequencing error
3	Real Time Clock program processing error: Indicates that insufficient time was available to process the control information.
4	Invalid internal car position (such as zero): The position of car was internally set to zero in program.
5	**Not used on *FUTURA*™ *HYDRO*.**
6	Invalid Motion Control sequence or control parameter: This is related to the Digital drive system .
7	Calculated slowdown target to floor was negative during Deceleration or Leveling modes.
8	Velocity of the car is 25% in excess of contract speed. Verify Car top encoder alignment and associated wiring. Digital encoder feedback from digitizer was under 9 fpm (0.046 m/s) while demand velocity exceeded VEE parameter setting.
9	Panic motion fault error: This error occurs when: a) There is an opposite direction between demand and velocity. b) There is a demand direction but no velocity. c) There is a velocity direction but no demand.
10	Digital Tach error: Indicates excessive differential between the "Demand" velocity (digital speed pattern) and the Digital speed reference (from encoder DPP). Possible problems: a) Improper setting of the Regulator on the drive. Check response and inertia settings. b) Verify the connections to DPP from encoder and the encoder alignment on the rail. c) The drive system motor field response (Make sure that motor field is producing proper torque).
11	Limit position reference error: When a terminal slowdown limit switch first opens, the switch's actual position count is compared against its reference position count (ULR or DLR parameter settings), check ULB and DLB. If the difference between the actual position and the reference position is greater than the LPE parameter setting, an emergency slowdown will occur. Remedy this problem by adjusting ULR and DLR accordingly.

ERROR	DEFINITION OF CONTROLLER ERROR CODE
12	Preset Parity error.
13	Invalid Direction error: Mismatch between Up or Down direction signal & encoder. Check Motor encoder coupling for tightness.
14	Terminal limit position error: The position of the car was invalid at the bottom most or top most limit switch (SD1 or SU1). Check to see if there were preset errors prior to this. (See error 15.)
15	Position preset error: Error 12 is a parity error from input signals. Position of car is not altered. When a preset position error occurs, the car position **is** altered and the DPP will be reset to floor position reference when car leaves the floor. Run the car floor to floor to ascertain that floor preset signals are valid. This error is more likely to occur after an emergency stop, or from Inspection to Auto operation. It is also possible for DPP to go "off" but that is not usually the source of problem.
16	Dispatch communication time-out: Verify serial communication link connections to each controller. This error usually occurs if the dispatch controller or car #1 for duplex installation is operational.
17	Motion time-out: This error occurs when too much time elapses during a run sequence.
18	Control response time-out: Occurs when a start sequence is initiated from computer and the BK relay fails to energize. Verify connections to the Up and Down output modules, the SM and MC circuitry, and connections to the BK input module. Check hoistway doors for any bounce when final close occurs. Check door interlock time parameter DIT and increase if necessary.
19	Up Pilot and Down Pilot signal wire on at the same time. Check wiring.
20	Digital Encoder loss time-out: No DPP input signal. This will initiate an emergency slowdown. Check operation and alignment of car top encoder.
21	FLASH EPROM Read/Write error: This error will prevent the car from operating. Verify the settings of PAR, FCP, ULR, DLR, TSV and ESV parameters with the terminal.
22	Terminal limit switch emergency slowdown: Velocity of car > TSV adjustment at terminal landing. Verify car velocity when terminal limit switches open with <**ULB**> and <**DLB**> commands.
23	Digitizer board fault.

ERROR	DEFINITION OF CONTROLLER ERROR CODE
24	Drive fault: Indicates an encoder fault from the drive. This error occurs when there is excessive variance between the analog demand velocity and the analog tach reference velocity on non serial drives and M.G.'s.
25	Start Sequence Error: A start sequence was initiated, in auto or inspection, during a drive fault. Reset and/or correct fault trip condition on drive. Also, verify associated wiring. Check CCU display.
26	Motion Fault Error: If doors were closed, there was an Up or Down signal without Delta (M.G.), ICS, or GLR input modules. Check CCU display. If doors were already open, either of the following occurred: a) an up or down signal without Delta, ICS, GV, HS, CS, Normal Power or Auto input modules; or b) an up or down signal without LVE output.
27	**Not used on *FUTURA*™ *HYDRO*.**
28	**Not used on *FUTURA*™ *HYDRO*.**
29	Slowdown Terminal Limit Switch Error: Occurs when start sequence is in up direction with an up slowdown limit open and position count indicates that car is not at that limit switch. The reverse is true for a start sequence in down direction with a bottom limit switch incorrectly open.
30	Car is moving without a demand velocity from SPU, meaning that Up or Down relays were on.
31	Car was on Next-Up (dispatch mode) and went into service protect mode. Check AST parameter.
32	Reserved.
33	Reserved.
34	Reserved.
35	Look-ahead distance calculated too short. Decel Roll Time is set too long (DRT); or Distance Look Ahead Multiplier (DLM), Performance Constant (PEK) or Top Speed Travel Distance (TFD) are set too small.
36	Variable has wrong value
37	**Not used on *FUTURA*™ *HYDRO*.**

ERROR	DEFINITION OF CONTROLLER ERROR CODE
38	**Not used on *FUTURA™ HYDRO*.**
39	**Not used on *FUTURA™ HYDRO*.**
40	Level velocity too high when car reached final leveling. Velocity of car was greater than 70 fpm (0.36 m/s) at 2 inch (5 cm) point. Check valve.
41	Trying to re-level in level mode. Indicates software error. Should not occur - Call CEC.
42	Doing a final stop in wrong digitizer mode. Indicates software error. Should not occur - **Call CEC.**
43	Gate and Lock switch opened when car velocity was greater than maximum level (MLV parameter) setting when doors are open. Check valve.
44	The Gate and Lock (GL) input was not activated when the doors were fully closed. Check interlock clearance.
45	The Door Closed Limit (DCL) input was not activated when the doors closed. Check limit switch for proper operation.
46	The Door Open Limit (DOL) input was not activated when the doors open. Check limit switch for proper operation.
47	Reserved.
48	Reserved.
49	Reserved.
50	***Not used on FUTURA™ HYDRO.***
51	***Not used on FUTURA™ HYDRO.***
52	Car out of mid level zone with gate and lock input modules not activated (GL); Car not moving. Car SPU must be powered off and then on to allow the car to run. Check valve.

ERROR	DEFINITION OF CONTROLLER ERROR CODE
53	Car out of mid level zone with gate and lock input modules not activated; Car still moving without demand from the SPU.
54	Up or Down encoder motion detected 1.5 seconds after the valve de-energized.
55	***Not used on FUTURA™ HYDRO.***
56	Max run timer timed-out during a run: Run sequence of elevator exceeded the Maximum Run Timer (MRT parameter) adjustment.
57	***Not used on FUTURA™ HYDRO.***
58	An auto fault reset occurred. A fault condition caused by drive system has been reset by SPU. If fault occurs more than 3 times within 1 hour, SPU will not reset automatically. After the 3rd time, the fault must be reset manually.
59	Up or Down motion but no Up or Down signal.
60	Up or Down signal but no Up or Down motion.
61	Car did not decelerate during a drive fault.
62	***Not used on FUTURA™ HYDRO.***
63	***Not used on FUTURA™ HYDRO.***
64	Low Oil Timer (LOT) tripped and returned car to bottom floor.
65	***Not used on FUTURA™ HYDRO.***
66	Both ACU & ACD input modules on simultaneously, or, AUTO input module was on with either ACU or ACD input module on. Check module and wiring.
67	Both PTU & PTD input modules on simultaneously, or, AUTO input module was on with either PTU or PTD input module on. Check module and wiring.

ERROR	DEFINITION OF CONTROLLER ERROR CODE
68	Both TIU & TID input modules on simultaneously, or, AUTO input module was on with either TIU or TID input module on. Check Module and wiring.
69	Top slowdown limit switch open while in Bottom Access Mode. Check switch and wiring.
70	Bottom slowdown limit switch open while in Top Access Mode. Check switch and wiring.
71	***Not used on FUTURA™ HYDRO.***
72	***Not used on FUTURA™ HYDRO.***
73	***Not used on FUTURA™ HYDRO.***
74	Communication packets were lost on local COMM port (HYC, GP2, MRC) while the car was moving.
75	Communication packets were lost on car COMM port (TOC or COP devices) while car was moving.
76	Communication packets to the CPT board were lost while the car was moving.
77	***Not used on FUTURA™ HYDRO.***
78	***Not used on FUTURA™ HYDRO.***
79	Lost the HS (Hatch Safety) input while the car was moving.
80	Lost the CS (Car Safety) input while the car was moving.
81	Lost the ICS (In-Car Stop Switch) input while the car was moving.
82	***Not used on FUTURA™ HYDRO.***
83	Lost the RDY (Ready) module input while the car was moving.
84	Lost the SM (System Master) module input while the car was moving.

ERROR	DEFINITION OF CONTROLLER ERROR CODE
85	***Not used on FUTURA™ HYDRO.***
86	***Not used on FUTURA™ HYDRO.***
87	Car cannot be a Master (Dispatcher). GRPO was asserted but the GRPI input was not activated.
88	Real time clock control interrupt failed. Detected by secondary watch dog timer.
89	Dispatch sequencer clock interrupt failed. Detected by secondary watch dog timer.
90	Second interrupt timer failed.
91	In Car Inspection input module on while car was on auto or while both top and bottom car calls on. Check wiring.
92	GL, DLS, or CGS input modules on when door reached full open (DOL switch input) at the floor.
93	Intelligent device powered up reset after previous initialization.
94	EMSD was lost unexpectedly: lost FLT, EMST
95	DPP not in UP direction when car running up.
96	**Not used on *FUTURA™ HYDRO.***
97	**Not used on *FUTURA™ HYDRO.***
98	DPP signal not in DOWN direction when car running down.
99	**Not used on *FUTURA™ HYDRO.***
100	**Not used on *FUTURA™ HYDRO.***
101	Car did not decelerate as expected in an emergency stop.

ERROR	DEFINITION OF CONTROLLER ERROR CODE
102	***Not used on FUTURA™ HYDRO.***
103	***Not used on FUTURA™ HYDRO.***
104	DZ in the motor room not on when expected (on from the TOC). Check wiring.
105	DZ on TOC board not on when expected (on from the CPT). Check wiring.
106	DPP count off by more than 5 counts when car is level at floor. Check DDP sensor alignment.
107	Both UP and DOWN motion true during DPP interrupt. DPP count not updated.
108	No UP or DOWN motion during DPP interrupt. DPP count not updated.
109	DZ signal from MRC board & TOC board is on despite an absence of command from CPT board.
110	Car tried to re-level 25 consecutive times. Check valve operation.
111	SPU velocity feedback zero when demand > 40 fpm. (0.2 m/s)
112	***Not used on FUTURA™ HYDRO.***
113	***Not used on FUTURA™ HYDRO.***
114	GL lost during a start sequence. Check DZ aux. contacts in GL circuit.
115	CG or DL lost during a start sequence.
116	LVE not dropped during a start sequence. Check module and wiring.
117	Multiple cars Master at the same time. Check CTG cross connect wiring.
118	Too many Hall Call (HC) devices selected.

ERROR	DEFINITION OF CONTROLLER ERROR CODE
119	***Not used on FUTURA™ HYDRO.***
120	***Not used on FUTURA™ HYDRO.***
121	***Not used on FUTURA™ HYDRO.***
122	Deceleration roll error: roll target velocity higher than demand velocity.
123	Car was placed on gate and lock bypass while the car is on inspection.
124	***Not used on FUTURA™ HYDRO.***
125	***Not used on FUTURA™ HYDRO.***
126	***Not used on FUTURA™ HYDRO.***
127	***Not used on FUTURA™ HYDRO.***
128	Group EEPROM checksum error.
129	Group battery RAM checksum error.
130	Group EEPROM and battery RAM checksum error.
131	Invalid access code EEPROM byte write.
132	Invalid access code EEPROM word write.
133	***Not used on FUTURA™ HYDRO.***
134	***Not used on FUTURA™ HYDRO.***
135	***Not used on FUTURA™ HYDRO.***

ERROR	DEFINITION OF CONTROLLER ERROR CODE
136	SPU thermal switch fault. The SPU temperature is too high.
137	***Not used on FUTURA™ HYDRO.***
138	***Not used on FUTURA™ HYDRO.***
139	***Not used on FUTURA™ HYDRO.***
140	***Not used on FUTURA™ HYDRO.***
141	***Not used on FUTURA™ HYDRO.***
142	***Not used on FUTURA™ HYDRO.***
143	***Not used on FUTURA™ HYDRO.***
144	***Not used on FUTURA™ HYDRO.***
145	LTR parameter rate set too low during emergency deceleration at terminal limit.
146	DZ relay failed to drop when expected (for 2000 Code Compliant)
147	CEC String did not drop when expected (for 2000 Code Compliant)
148	CGDL (Gate Door Lock Contact) did not drop during CEC test (for 2000 Code Compliant)
149	**Not used on *FUTURA™ HYDRO*.**
150	Contact proven input failure (CPI or RPI Module) *Part of CEC Test*
151	**Not used on *FUTURA™ HYDRO*.**
152	FBPR not on when FBP or FBPA module is on *Part of CEN Test*
153	Door Bypass Fault – Both CDP & CDP1 are on at the same time or off at the same time or Both LDP & LDP1 are on at the same time or off at the same time
154	**Not used on *FUTURA™ HYDRO***
155	**Not used on *FUTURA™ HYDRO***

NOTES

SECTION 10 – GROUP COMMANDS

Type <**GRP>** to establish communication with group functions. The Group Human Interface mode's prompt is: **Group =>**

GROUP DIAGNOSTIC COMMANDS

<COMMAND>	DESCRIPTION OF GROUP DIAGNOSTIC COMMAND
CAR	Enter the **CAR** Human Interface (Prompt: C# 1=>)
FLTn	Displays last four **F**au**LT**s starting at position (**n**). `n' equal to 0 is the most recent fault. Note: *REE parameter must be set accordingly*.
GET	**GET**/Load all the parameters from EEPROM. This command restores the parameters from EEPROM - All Parameters (PAR) and the Scan Table (SCA).
NCU	Display the car number of the Next-Up Car
PAR	Review all the **PAR**ameters
PARA	Alter/Load all the Parameters with prompting. Each parameter is listed with its value. Pressing <ENTER ↵> will leave it unchanged. Entering a value and then pressing <ENTER ↵> will alter this parameter with the new value displayed.
PARI	Initialize the Parameters as per factory default (as shipped)
RCB	**R**eset all **C**ode **B**lue calls This command reset all registered Code Blue Hall Calls
RDC	**R**eset all **D**own **C**alls This command resets all registered Down Hall Calls
REE	Set the **RE**ference **E**levator. Many commands require that REE is set to either the System (REE = 0) or to a car (REE = 1 through 8) for cars 1 through 8.
RFL	**R**eset the System (REE = 0) or car related **F**au**L**ts REE = 1 through 8 ***Warning: Once reset all registered fault will be erased from memory***
RTC	**R**eal **T**ime **C**lock time (day-hour:minute:second) since last power-up or reset This displays the amount of time the processor has been running since it was last powered up

<COMMAND>	DESCRIPTION OF GROUP DIAGNOSTIC COMMAND
RUC	**R**eset all **U**p **C**alls This command resets all registered Up Hall Calls
SCA	Review the floor **SCA**n assignment table for Car <REE> command. The REE parameter needs to be set to the car of the group you want to review.
SCAA	Alter/Load the floor SCAn assignment Table for Car REE
SCAI	Initialize the floor SCAn Assignment for Car REE as per factory default (as shipped). The following values with their designations can be entered with the <SCA> command: Value Definition 0 Do not accept Up or Down Hall Calls for that floor 1 Accept only Up Hall Calls for that floor 2 Accept only Down Hall Calls for that floor 3 Accept both Up and Down Hall Calls for that floor
SCBf	**S**et a **C**ode **B**lue call at floor (**f**) Use this command to enter a Code Blue Hall Call at the desired floor. *The floor number is the number of stop from the lowest landing the group services not the building floor designation.*
SCT	Screen for Motor Room CRT display monitor. Rotates CRT display from Dispatch to Diagnostics. Type <E> to determine the type of display. e = 0 is for the Dispatch Screen e = 1 through 8 is for the car diagnostic screen
SDCf	**S**et **D**own **C**all at floor (**f**) Use this command to enter a Down Hall call at the desired floor. *The floor number is the number of stop from the lowest landing the group services not the building floor designation*
SUCf	**S**et **U**p **C**all at floor (**f**) Use this command to enter a Up Hall call at the desired floor. *The floor number is the number of stop from the lowest landing the group services not the building floor designation*
TES	**T**ype of **E**levator **S**ervice in HEX Value Definition 1 Out of service from Car Controller (Control) 2 Loss of Communication 4 Timed-Out service protection (AST) from Group 8 Code Blue Service 10H(16) Emergency Power Recall Service 20H(32) Loss of Hall Call Power Service

<COMMAND>	DESCRIPTION OF GROUP DIAGNOSTIC COMMAND
WRT	**WRiT**e/Store the parameters to EEPROM - All Parameters (PAR) and the Scan Table (SCA)

NOTES

SECTION 11 - GROUP ADJUSTMENT PARAMETERS

The ***FUTURA***™ operating system provides a series of adjustment parameters which allow the user to fine tune the operation of the elevator as well as control the operation of some of the devices associated with the elevator. For example, the parameter ACR controls the acceleration rate of the car while the parameter DOD controls door timing.

PARAMETER	RANGE	DEFAULT	UNITS	DESCRIPTION OF GROUP ADJUSTMENT PARAMETER
ALR	0-# cars	1	Number of Cars	**A**lternate **L**obby minimum car **R**equest This is the minimum amount of cars which must be at the Alternate Lobby at any time. ***Note: This is only effective if system was configured with an (Optional) alternate lobby.***
ALY	1 - # Fl.	2	Floor Number	**A**lternate **L**obb**Y** floor. This is the floor location of the Alternate Lobby. ***Note: This is only effective if system was configured with an (Optional) alternate lobby.***
AST	0-1600	640	Second	**A**utomatic **S**ervice protection **T**ime: This "Group" parameter is similar to the car controller AST parameter. ***Note: Group AST must always be set higher than the Car AST by a minimum of 15 seconds (n=240).***
BDP	0-720	0	1/16 Second	**Not used on *FUTURA*™ *HYDRO*.**
BEx	0-65535			**B**uilding **E**levator number One through Eight: Sets the building designation number for car number x. Similar to BED for the Car controller. This will change the number the elevator displays on Group Screens such as on the RVU unit. Example: BE1= 21 (if 1st car in group is Building designated number is 21)
BGC	0-7			**B**ack**G**round **C**olor for video display
BLK	1-2			1= **BL**in**K**s the text on the group screen. 2= Blinks the background of text on the group screen.

PARAMETER	RANGE	DEFAULT	UNITS	DESCRIPTION OF GROUP ADJUSTMENT PARAMETER
CBH	0-120	15	Second	**C**ode **B**lue door **H**old time: The amount of time the doors will remain open at Code Blue designated floor. If after this time the Hospital service switch has not been activated, doors will close and car will return to normal operation.
CBR	0-5	0	Number	**C**ommunication **B**aud **R**ate: 0=1200, 1=300, 2=600, 3=2400, 4=4800, 5=9600
CBx	0-# cars	CB1 = 1 CB2 = 2 CB3 = 3 CB4 = 4 CB5 = 5 CB6 = 6 CB7 = 7 CB8 = 8		**C**ode **B**lue car pre-selection order: It is possible to establish which cars are better able to respond to a Code-Blue Call and prioritize these cars per CB1 through CB8 order. When there is a Code-Blue Call, car designated by CB1 will be evaluated first, then CB2 car if first one was not available. ***Note: Car number must use FUTURA™ group car numbering (i.e. #1-8)***
COx	0-# cars	CO1 = 1 CO2 = 2 CO3 = 3 CO4 = 4 CO5 = 5 CO6 = 6 CO7 = 7 CO8 = 8		**C**ar **O**rder: The order in which car number x is displayed on Video Screen. These parameters can change the left-to-right relationship of cars 1 through 8 respectively. This is for the Dispatch screen. ***Note: Car number must use FUTURA™ group car numbering (i.e. #1-8)***
CS1	0-65535			**C**ontrol **S**tatus **W**ord (Group) **1** (See CSW Bits p.12-4)
CS2	0-65535			**C**ontrol **S**tatus **W**ord (Group) **2** (See CSW Bits p.12-5)
CS3	0-65535			**C**ontrol **S**tatus **W**ord (Group) **3** (See CSW Bits p.12-6)
CS4	0-65535			**C**ontrol **S**tatus **W**ord (Group) **4** (See CSW Bits p.12-7)
CSW	0-65535			**C**ontrol **S**tatus **W**ord (Group) **0** (See CSW Bits p.12-3, not FLTXn param.): Used to manipulate all 16 bits of CSW simultaneously. Number to be entered **must** be hexadecimal equivalent of the 16 bits.
DCC	1 - 8	4	Number of Calls	**D**own **C**all **C**ount trigger
DDT	10-255	20	Second	**D**own-**P**eak **D**uration **T**ime: Minimum duration of time the system will remain on Down Peak Operation after being triggered.

PARAMETER	RANGE	DEFAULT	UNITS	DESCRIPTION OF GROUP ADJUSTMENT PARAMETER
DLB	1 – # Fl.	2	Floor Number	**D**ual **L**o**B**by floor
DLR	0-# cars	1	Number Of Cars	**D**ual **L**obby number of car **R**equests
DTT	10-960	70	Second	**D**own-Peak **T**rigger **T**ime: If the average forecasted Down Call ETA exceeds this value, Down Peak operation will be activated.
DWT	0-65535	20	Second	**D**own Call long **W**ait **T**ime trigger: If a Down Hall Call forecasted waiting time exceeds the value Down Peak Operation will be activated.
EPF	1 - # Fl.	1	Floor Number	**E**mergency **P**ower **F**loor: Floor to which cars will return if emergency condition occurs. ***Note: This is to be set to the landing number of the group and is counted from the lowest landing the group serves. It normally is set the same as the Main Fire Recall floor (FIR).***
EPx	0-# cars	EP1 = 1 EP2 = 2 EP3 = 3 EP4 = 4 EP5 = 5 EP6 = 6 EP7 = 7 EP8 = 8		**E**mergency **P**ower car selection order: During an Emergency power automatic recall operation, all the cars must be returned to the designated floor. The car at EP1 will be the first car to be returned, followed by EP2 through EP8. ***Note: Car number must use FUTURA™ group car numbering (i.e. #1-8)***
FAL	1 – # Fl.	2	Floor Number	**F**ire **A**lternate **F**loor: Floor to which the cars will return to when on Fire Service Phase 1 Alternate. (FAL Activated). ***Note: This is to be set to the landing number of the group and is counted from the lowest landing the group serves.***
FBT	1-65535	1	Second	**F**ire **B**ypass **T**imer for fire GSA standard. ***Note: This is only applicable to GSA specific projects and is used to time out the Smoke Detector Bypass function***

PARAMETER	RANGE	DEFAULT	UNITS	DESCRIPTION OF GROUP ADJUSTMENT PARAMETER
FIR	1 - # Fl.	1	Floor Number	**F**ire **R**ecall **F**loor: Floor to which the cars will return to when on Fire Service Phase 1. ***Note: This is to be set to the landing number of the group and is counted from the lowest landing the group serves.***
GP0	0-65535		Number	**G**eneral **P**urpose Reserved variable used on a per job basis. ***Note: Documentation on the use of this parameter (if implemented) provided with the job.***
GP1	0-65535		Number	**G**eneral **P**urpose Reserved variable used on a per job basis. ***Note: Documentation on the use of this parameter (if implemented) provided with the job.***
GP2	0-65535		Number	**G**eneral **P**urpose Reserved variable used on a per job basis. ***Note: Documentation on the use of this parameter (if implemented) provided with the job.***
GP3	0-65535		Number	**G**eneral **P**urpose Reserved variable used on a per job basis. ***Note: Documentation on the use of this parameter (if implemented) provided with the job.***
IRC	0-# cars	0	Car Number	Must be set to select which car will be the **I**nconspicuous **R**iser **C**ar when the IR switch is activated. If set to 0, no IR Car will be selected. ***Note: Car number must use FUTURA™ group car numbering (i.e. #1-8)*** ***Note: This is only effective if system was configured with an (Optional) Independent Riser***
LBY	1 - # Fl.	1	Floor Number	**LoBbY** Floor: Main lobby designation ***Note: This is to be set to the landing number of the group and is counted from the lowest landing the group serves.***

PARAMETER	RANGE	DEFAULT	UNITS	DESCRIPTION OF GROUP ADJUSTMENT PARAMETER
LER	0-#cars	0	Number of Cars	**L**obby **E**levator **R**equest: Number of cars that must be at lobby floor is equal to 'n'. ***Note: This will cause an elevator to stop at the lobby if traveling up from a floor below the lobby and there are not enough elevators at the lobby to fulfill this requirement.***
LRP	0-960	8	1/16 Second	**L**obby **R**equest **P**enalty time
MEP	1-# Cars	1	Number of Cars	**M**aximum cars for **E**mergency **P**ower: Maximum number of cars which can operate simultaneously under emergency power.
MID	2-40	18	1/16 Second	**MI**nimum ETA **D**ifferential: Min differential ETA during call SCAN to prevent reassignment. For example, if MID is set at 3/4 sec (12), no calls will be reassigned when the Minimum ETA is less than MID.
MIE	0-65535			**MI**nimum **E**ta compare. Used with job specific software to set a minimum limit on the ETA to execute a specific function.
MTT	0-960	300	1/16 Second	**M**ax allowed **T**ravel **T**ime: Maximum (ETA) to lobby in order to consider a car in a good position to become next-up or to be dispatched to the lobby floor.
MXD	2-36	12	Second	**MaX**imum ETA **D**ifferential: Max differential ETA during call SCAN to force a reassignment. For example, if MXD is set for 2 seconds (32), another car must be in a better position by more than MXD to force a reassignment to that car.
MXE	0-65535			**MaX**imum **E**TA compare. Used with job specific software to set a maximum limit on the ETA to execute a specific function.
NCF	1-12	0	Number	**N**umber of **C**odes available per **F**loor for keypad security. This number multiplied by number of floors must be 299 or less. ***NOTE: If this value is changed, all new codes must be entered.*** ***Note: This is only effective if system was configured with an (Optional) Coded Car Call Security.***

PARAMETER	RANGE	DEFAULT	UNITS	DESCRIPTION OF GROUP ADJUSTMENT PARAMETER
NDH	5-480	220	1/16 Second	**N**ext-Up **D**oor **H**old time: Door Open time when at the lobby floor and assigned as the next up. ***Note: When calls are registered, this value becomes smaller in order to release the car faster***
NDP	10-1440	350	Second .	**N**ext-Up **D**ispatch **P**enalty time: When a car is Next-Up, a call's ETA must be greater than NDP parameter. For better traffic handling, this value should be smaller in a Duplex operation to enable lobby car to be more responsive.
NZN	0-6	0	Number of Zones	**N**umber of **Z**o**N**e floor pointers (ZN1 through ZN6). This is to be set to the maximum number of Zones you would like. Setting this requires to use the LER parameter also. ***Example: If there are 4 cars total in the group and LER is set to 0 then NZN should be set to 4. If LER is set to 1 then NZN should be set to 3.***
PFT	0-60	8	2 Second	**T**ime the car must be **F**ree to **P**ark: This sets the time the elevators have to set idle before zoning using **PFT** parameter. ***Note: PFT is in increments of 2 seconds, so if PFT is set to 5 then the time period is 10 seconds.***
RLB	1-# floors	2	Rear Floor Number	**R**ear **L**o**B**by floor: This designates which rear floor as a lobby. ***Note: This is to be set to the landing number of the group and is counted from the lowest landing the group serve***
RLR	0-# cars	1	Number of Cars	**R**ear **L**obby number of car **R**equests: Number of cars that must be at the rear lobby floor is equal to 'n'. ***Note: This will cause an elevator to stop at the lobby if traveling up from a floor below the lobby and there are not enough elevators at the lobby to fulfill this requirement.***
RRT	0-65535	20	Second	**R**emote Car **R**ecall Travel **T**ime. Time allowed for remote car to travel to emergency power floor during Recall operation.

PARAMETER	RANGE	DEFAULT	UNITS	DESCRIPTION OF GROUP ADJUSTMENT PARAMETER
RST	0-65535	5	Second	**R**emote car **S**equence **T**ime. Time delay to select next remote car during emergency power recall operation.
RTO	0-65535	25	Second	**R**emote car **T**ime-**O**ut during emergency power recall operation. Time delay for remote car to give drive running signal after group has given a drive enable signal.
S5C	0-FFFF			**Not used on *FUTURA™ HYDRO*.**
TXC	0-7			**T**e**X**t **C**olor
UCC	1-20	6	Number of Trips	**U**p-Peak Car-**C**all **C**ount trigger: Number of trips from Lobby registering more than 2 Car Calls will trigger Up Peak operation mode.
UDP	10-960	60	1/16 Second	**U**p-Peak **D**ispatch **P**enalty time.
UDT	10-255	15	Second.	**U**p-Peak **D**uration **T**ime: Minimum duration of time the system will remain on Up Peak Operation after being triggered
ULC	1-20	5	Number of Trips	**U**p-Peak **L**oad Switch **C**ount trigger: Number of trips (in a time interval) from the lobby floor with the load weigher activated which will trigger Up Peak operation. ***(Normally Hydraulic elevators are not equipped with load weighers, however the system is equipped to handle this type of option if needed.)***
VP1	1-# floors	0	Floor Number	Selects the floor at which the **VIP1** input is used. i.e. if set to 4 then floor 4 would be the VIP floor when VIP1 input is activated. ***Note: This is to be set to the landing number of the group and is counted from the lowest landing the group serves***

PARAMETER	RANGE	DEFAULT	UNITS	DESCRIPTION OF GROUP ADJUSTMENT PARAMETER
VP2	1-# floors	0	Floor Number	Selects the floor at which the **VIP2** input is used. i.e. if set to 4 then floor 4 would be the VIP floor when VIP2 input is activated ***Note: This is to be set to the landing number of the group and is counted from the lowest landing the group serves***
ZN1	1-# floors	1	Floor Number	**ZoNe One (1)** floor pointer Set this to the floor stop number where you want a car to zone to for Zone 1 ***Note: This is to be set to the landing number of the group and is counted from the lowest landing the group serves***
ZN2	1-# floors	1	Floor Number	**ZoNe Two (2)** floor pointer Set this to the floor stop number where you want a car to zone to for Zone 2
ZN3	1-# floors	1	Floor Number	**ZoNe Three (3)** floor pointer Set this to the floor stop number where you want a car to zone to for Zone 3
ZN4	1-# floors	1	Floor Number	**ZoNe Four (4)** floor pointer Set this to the floor stop number where you want a car to zone to for Zone 4
ZN5	1-# floors	1	Floor Number	**ZoNe Five (5)** floor pointer Set this to the floor stop number where you want a car to zone to for Zone 5
ZN6	1-# floors	1	Floor Number	**ZoNe Six (6)** floor pointer Set this to the floor stop number where you want a car to zone to for Zone 6

GROUP RELATED CAR ETA PARAMETERS

Note: <REE> *command must be equal to the car number to access these parameters.*

PARAMETER	RANGE	DEFAULT	UNITS	DESCRIPTION OF GROUP ADJUSTMENT PARAMETER
ACC	16-255	30	1/16 Second	Average **ACC**eleration Time: Average time car needs to Accelerate to top speed.
ATT	8-160	60	1/16 Second	**A**verage (passengers) **T**ransfer **T**ime: The average time the doors are fully opened. A value of 64 (4 seconds) is about normal.
BTT	0-720	0	1/16 Second	**B**lind **T**ravel **T**ime: **Not used on *FUTURA™ HYDRO*.** .
DCT	16-160	40	1/16 Second	**D**oor **C**losing **T**ime. Average time car needs to close its doors.
DEC	16-255	30	1/16 Second	**DEC**eleration Time: Average time it takes car to decelerate from top speed.
DOT	16-160	30	1/16 Second	**D**oor **O**pening **T**ime. Average time car needs to open its doors.
GPT	0-720	0	1/16 Second	**G**enerator Start **P**enalty **T**ime: **Not used on *FUTURA™ HYDRO*.**
SPE	4-48	12	Calc.	**SP**eed of **E**levator in Time Units: One typical floor travel time. If the average floor height (H) is 12 feet, and the speed (S) of the car is 500 FPM then one floor travel time in “tu”, or “time units” (16 “tu” in one second) is: (h / (s / 60)) * 16 (12/ (500/60)) * 16 = 23 tu or {H in meters*3.28} / {(S in m/s)/0.3048}*16=tu

NOTES

SECTION 12 - CONTROL STATUS WORD BIT COMMANDS (GROUP)

The ***FUTURA***™ operating system provides Control Status Words for customizing the operation of the elevator. An example would be the ability to enable or disable pre-opening of the doors. Each Control Status Word is made up of 16 bits labeled 0-15. Each bit controls a specific operation of the elevator or one of its devices. Each bit can be set (1) or reset (0) and the operation which each bit controls is affected by the state (set or reset) of the bit.

The command <BIT> is used to set or reset the individual control flags (bits) of the control status word parameters. Each bit of a control status word is used to activate or deactivate a particular service or function. These control status words are found both in the individual car controllers and in the group controller.

- ✓ Set designates that a bit is a logic 1 (True)
- ✓ Reset designates that a bit is a logic 0 (False)
- ✓ There are 16 bits per control status word, referenced 0-15
- ✓ Control Status Words (GROUP) available: CSW (CS0), CS1, CS2, CS3, CS4

Note: *The number of Control Status Words used on a particular job depends on the job itself. Your particular job may not contain all the Control Status Words.*

<COMMAND>	FUNCTION
BITRx,n **<enter ↵>**	Resets bit n of Csx (where x = 0-4, n = 0-15)
BITSx,n, **<enter ↵>**	Sets bit n of Csx (where x = 0-4, n = 0-15)
BITD **<enter ↵>**	Displays the current bit status of all control status words in tabular form.

Table A

CSW Group (Control Status Word 0)

BIT	AFFECT	DEF	DESCRIPTION
0	CALL	R	Hall Call Latching (Reset) or Canceling (Set) mode of operation: When set, allows cross-cancellation of hall calls with existing dispatch controller. (Useful during installation)
1	NEXTUP	R	When set, doors close on Next-Up car after initial Next-up courtesy time expires as set by NDH. When reset, doors remain open till Motor Generator (MG) set shuts-down.
2			***Not valid on FUTURA™ HYDRO.***
3	NEXTUP	R	When set, rear doors close on Next-Up car after initial Next-Up courtesy time expires per NDH. When Reset, rear doors remain open till Motor Generator (MG) set shuts-down.
4	ZONING	R	If set, free (available) cars are parked at zone floors (ZN1 through ZN5).
5	ZONING	R	If set, free (available) cars are parked at specific floors by priority.
6	ZONING	R	If set, cars not required at lobby floor park at zone floors (ZN1 through ZN5).
7			***Not used on FUTURA ™HYDRO.***
8	BLUE	R	Controls assignment of a Code Blue call. When reset, a Code Blue call is assigned to the closest car that can respond. When Set, a Code Blue call is assigned in a pre-established order as defined by commands CB1 through CB8.
9	LOBBY	R	If set, use alternate lobby Next-Up floor (ALY) parameter instead of normal lobby floor (LBY).
10	LOBBY	R	When set, initiates DUAL lobby next-up mode.
11	LOBBY	R	When set any cars with rear lobby doors go into rear lobby Next-Up mode.
12		R	**Reserved**
13		R	**Reserved**
14		R	**Reserved**
15	CALL	R	Rear Hall Call Latching (Reset) or Canceling (Set) mode of operation. When set, allows cross-cancellation of REAR hall calls with existing dispatch controller. (Useful during installation.)

Table B

CS1 Group (Control Status Word 1)

BIT	AFFECT	DEF	DESCRIPTION
0			**Not valid on *FUTURA™ HYDRO*.**
1			**Not valid on *FUTURA™ HYDRO*.**
2		R	**Reserved.**
3		R	**Reserved.**
4		R	**Reserved.**
5		R	**Reserved.**
6		R	**Reserved.**
7	FIRE	R	Fire Operation: When set, the Fire Light for hallway will flash On and Off.
8	CALL	S	If set, no hall call latching if the call cannot be assigned. (On certain jobs only.)
9	BLUE	R	If set, no Code Blue call latching if call cannot be assigned to an automatic operation car.
10	RCALL	S	If set, no Rear hall call latching if call cannot be assigned (On certain jobs only.)
11	VIP	R	If set, the VIP call is self latching. (Configured on certain jobs only. The job must be purchased with VIP call option.)
12	VIP	R	If set, the VIP call is self latching.
13		R	**Reserved.**
14		R	**Reserved.**
15	UPPEAK	S	If set, all cars requested to lobby during Up Peak.

Table C

CS2 Group (Control Status Word 2)

BIT	AFFECT	DEF	DESCRIPTION
0	VIP	R	This bit must be set to allow car # 1 to answer a VIP call.
1	VIP	R	This bit must be set to allow car # 2 to answer a VIP call.
2	VIP	R	This bit must be set to allow car # 3 to answer a VIP call.
3	VIP	R	This bit must be set to allow car # 4 to answer a VIP call.
4	VIP	R	This bit must be set to allow car # 5 to answer a VIP call.
5	VIP	R	This bit must be set to allow car # 6 to answer a VIP call.
6	VIP	R	This bit must be set to allow car # 7 to answer a VIP call.
7	VIP	R	This bit must be set to allow car # 8 to answer a VIP call.
8		R	Reserved.
9		R	Reserved.
10		R	Reserved.
11		R	Reserved.
12			**Not valid on *FUTURA™ HYDRO*.**
13			**Not valid on *FUTURA™ HYDRO*.**
14	VIDEO	R	Set to display car status on group screen.
15	VIDEO	R	If set, do not blink car on lobby screen.

Table D

CS3 Group (Control Status Word 3)

BIT	AFFECT	DEF	DESCRIPTION
0			**Not valid on *FUTURA™ HYDRO*.**
1	CALL	R	If set, then front Hall Call inputs will internally latch.
2	CALL	R	If set, then rear Hall Call inputs will internally latch.
3	CALL	R	If set, then Hall Call will only latch if a car is available.
4	DNPEAK	R	If set, down peak zoning is active even if there is no blind shaft.
5	ZONE	R	If set, zone to floor with most calls, else zone to floor with the longest wait.
6	ZONE	R	If set, zone car with a pilot.
7	ZONE	R	If set, remove zone as soon as call is assigned.
8	ZONE	R	If set, disables up peak zoning with a pilot on up peak.
9	ZONE	R	If set, will not zone a car to lobby on up peak if ETA to lobby is too great.
10	NEXTUP	R	Reset to allow multiple Next Up cars.
11	BLUE	R	If set, then Code Blue call inputs will internally latch.
12		R	**Reserved.**
13		R	**Reserved.**
14		R	**Reserved.**
15		R	**Reserved.**

Table E

CS4 Group (Control Status Word 4)

BIT	AFFECT	DEF	DESCRIPTION
0			**Not valid on *FUTURA™ HYDRO*.**
1			**Not valid on *FUTURA™ HYDRO*.**
2			**Not valid on *FUTURA™ HYDRO*.**
3		R	Set to disable EDS with loss of HPU comm.
4	CALL	R	Enable cross cancellation operation.
5	CALL	R	Set to use I^2C for Hall Calls else HPUs
6			**Not valid on *FUTURA™ HYDRO*.**
7		R	**Reserved.**
8			**Not valid on *FUTURA™ HYDRO*.**
9	ERROR	R	Set to disable interrupt error display .
10	EMP	R	Set to activate inter-group emergency power.
11		R	**Reserved.**
12		R	**Reserved.**
13	CALL	R	Set to enable front auxiliary riser.
14	CALL	R	Set to enable rear auxiliary riser.
15	RPU	R	Set to use RPU for HPU Hall Calls

Table F

NOTES

SECTION 13 - TECHNICAL INFORMATION

Introduction

The ***FUTURA™*** controller is based on distributed processing technology. The main system processor (**S**ystem **P**rocessing **U**nit [SPU]) communicates with "smart" microcontrollers (reviewed in this section) over a high speed communication network (SWIFT LINK) providing an all digital, powerful, multiprocessor system.The EPU COP processor handles all **C**ar **O**perating **P**anel functions, including car call latching, lamp illumination intensity, and access codes, when in the security operation. Without additional burden to the SPU, the ***FUTURA™*** PI fixtures provide all required COP buzzer tones and illumination levels to match the car lighting. Most of these "smart" controllers connect as easily as a telephone extension, providing quick installation and servicing.

Controller Devices

System Processing Unit (SPU)

Description

The system processor 'U1' is based on a highly integrated Intel 20MHZ 16-bit embedded micro-controller using 256K bytes of CMOS nonvolatile memory, 512K bytes of FLASH memory for the program and 128K bytes of EEPROM memory for the SWIFT BIOS. The CMOS memory and a Real Time Clock controller chip is powered by two batteries during power loss. The Lithium batteries have a shelf life of 10 years. Note that the program memory and the system parameters are located in the Flash memory and are not affected by loss of battery power. An SBX expansion port is provided and used for an MG drive system. An optional VGA interface (J3A and J3B) is also provided.

The SPU has a temperature control chip, which will trigger at 140°F (60C). This will cause the cars to stop normally at the nearest floor and open their doors. The service type will be displayed as Overload (Thermal Overload).

The SPU requires only 5VDC to operate (adjust to 5.1VDC on SPU-LINK test points). For MG jobs, an additional +/- 15VDC supply is located in the chassis and provides power for the SBX interface.

SPU Board

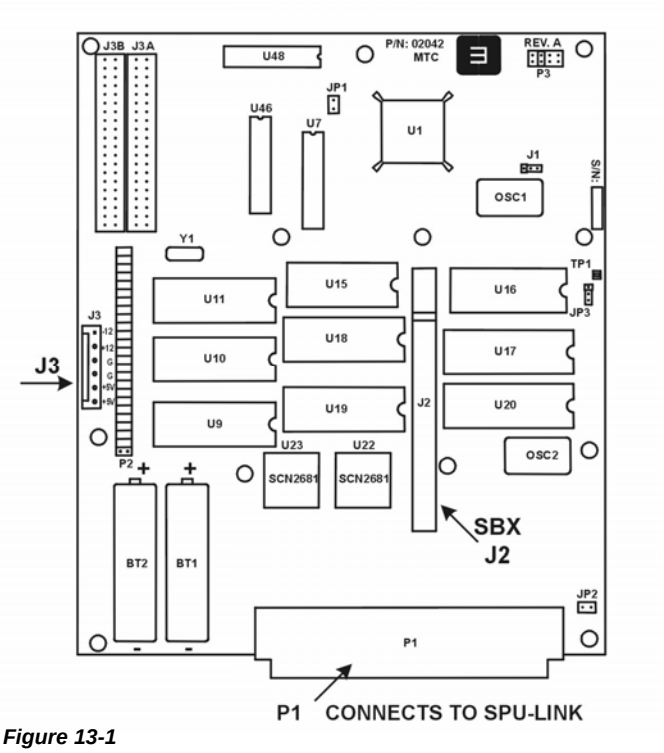


Figure 13-1

Jumper Configuration

J#	PIN	REQ	FUNCTION
JP1	1-2	OUT	186 Watchdog to the SPU watchdog timer
JP2	1 2	OUT OUT	SBX option 1 SBX OPTION 2
JP3	1-2 2-3	OUT IN	+12VDC power for Flash memory. **DO NOT CONNECT** Enables Flash memory paging.
J1 J1	1-2 2-3	IN OUT	Software operation strobe to the SPU watchdog timer Diagnostic strobe to the SPU watchdog timer. **Note:** *If this jumper is inserted, the SPU will not reboot under certain conditions.*
P2	1-2 * thru 47-48	IN	SPU interrupt control matrix. **Note:** ** (15-16, 29-30) are OUT (see below)*
P2	15-30	IN	Wire-wrap: One second clock update
P2	16-29	IN	Wire-wrap: Real Time Clock
P2	49-50	OUT	SPU interrupt control matrix
P3	5-6	IN	Bus Clock. All other jumper on P3 must be removed

Table-1

Component Identification Table

FUNCTION	LOCATION	DEFINITION
CMOS RAM	U18, U17	Battery-backed CMOS Non Volatile Static Memory
FLASH	U19, U20	Non Volatile FLASH program and parameter memory
EEPROM	U15, U16	Non Volatile Read Only Memory (System BIOS)
PALS	U7, U46, U48	Programmable Array Logic
Power Connector	J3	Power connector: -12V, +12V, COM, COM, +5V, +5V **Note:** *+/- 15VDC for MG SBX-414*
VGA Conn.	J3A, J3B	VGA interface board connector

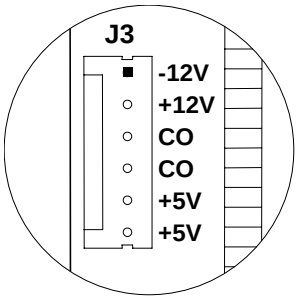


Table 2

System Processing Unit Link Board (SPU-LINK)

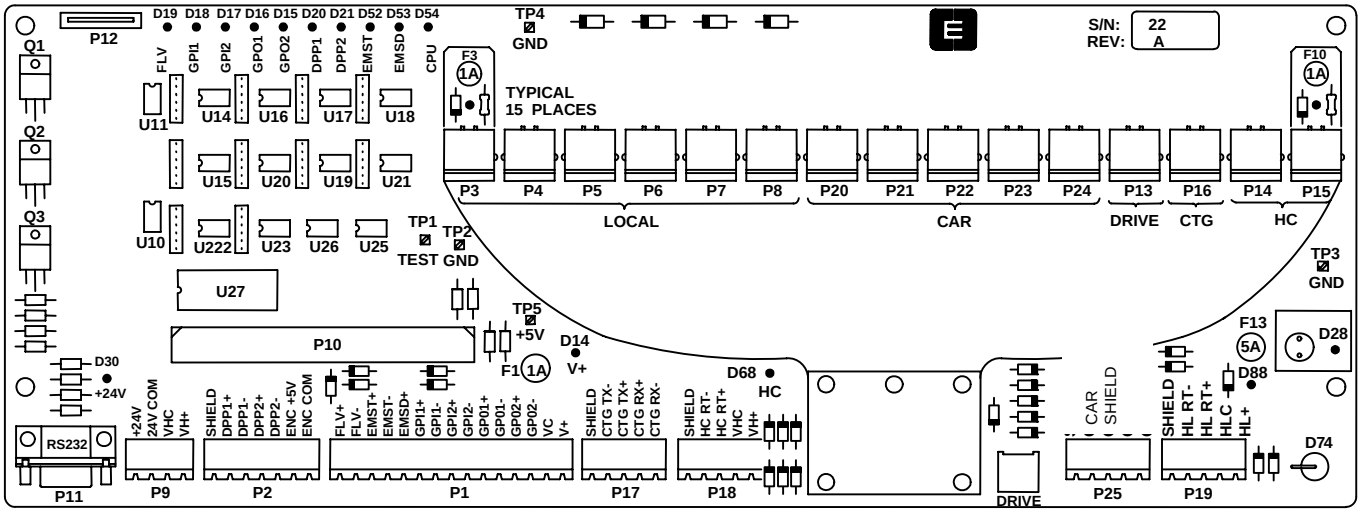


Figure 13-2

The SPU-LINK is mounted on the front of the SPU chassis and provides the communication interface to the "Smart" peripherals. The primary function of the SPU-LINK is to protect and provide the drivers for the communication lines, the DPP interface, and three input and output control ports. It has an RS-232 (P11, DB-9 connector) port to permit communication with a terminal or a PC. Note that the Radio Shack, or other similar terminal PC's used with the SWIFT-5000, can also operate with the ***FUTURA*** controller (Port Setting: 19,200 Baud, 8-bits and no parity).

Note: The +5VDC SPU supply should be between 5.00 and 5.20 VDC. Test points TP5 (+5V), and TP1 (GND) should be used to check SPU power Supply voltage.

SPU-Link LED Indicators

Numerous indicators are provided for quick diagnostics. The following table describes the LED status:

LED STATUS	
NAME	**DESCRIPTION**
FLV	at Floor Level
GPI1	General Purpose Input # 1
GPI2	Group Comm. handshake
GPO1	General Purpose Output # 1
GPO2	Group Comm. handshake. If ON, then this car is in the Group
+24VPWR	+24V Input (P9 +24V, 24VCOM)
HC PWR	+24Volt Hall Call interface power (connector P9 VHC , VH+)

LED STATUS	
NAME	**DESCRIPTION**
DPP1	Digital Position Pulse #1 (Input)
DPP2	Digital Position Pulse #2 (Input)
EMST	Emergency Stop Output (controls CEN)
EMSD	Emergency Stop Input (CEN feedback)
CPU	FLASHING indicates if that the SPU is running.
V+ PWR	+24V Output (Check F1 if LED is Off)
HL PWR	+24V for Hall Lanterns (Check F13 if LED is Off)
TELCO JACK	All LEDs associated with the 8-pin jacks (except HC ports). Check fuses if LED is Off. The input power is from +24VPWR (D30).
TELCO HC ports	D71 and D72 HC power. Hall Call SMI power. NOTE: Diode D74 prevents reverse voltage to be applied to the HC ports.

Table 3

SPU-Link Input / Output Interface

The following table describes the I/O interface:

FUNCTION	TB Marking	I/O	VOLT	DEVICE	DESCRIPTION
FLV	FLV+, FLV-	Input	24VDC	U5	At Floor Level. Signal from the CPT.
EM Stop	EMST+, EMST-	Output	24VDC	U6, Q1	Emergency stop control from the SPU. Located in the control line of the CEN contactor.
EM Slowdown	EMSD+	Input	24VDC	U4	Emergency stop in the CEN control line. Indicates that a device has shut the car down.
GPI1	GPI1+, GPI1-	Input	24VDC	U3	General Purpose Input
GPI2	GPI2+, GPI2-	Input	24VDC	U2	General Purpose Input
GPO1	GPO1+,GPO1-	Output	24VDC	U7, Q2	General Purpose Output
GPO2	GPO2+,GPO2-	Output	24VDC	U8, Q3	General Purpose Output

Table 4

SPU-Link Communication Ports

The SPU LINK has six discrete communication channels routed to twenty physical ports. These ports are available from an 8-pin TELCO connector or from a removable screw type terminal block to be used with twisted pair communication cables. The following table describes the communication channels and their associated ports:

COMM NAME	COM	PORT	DEVICES	TERMINATION	PROTECTION	CONTROLLER FUNCTION
RS 232	1	P11	U27 (235CPG)	none	D44-D51	Human Interface
CTG	2	P17	Rx: U22 (75176) Tx: U21 (75176)	J14 (+) J15 (T) J13 (-)	D59+, D60 D58+, D57	Car To Group Communication. Links all the cars for dispatching functions. **Note:** *P16 (TELCO) port is used for diagnostic purpose.*
LOCAL	5	P3, P4, P5, P6, P7, P8	Rx: U18 (75176) Tx: U17 (75176)	J5 (+) J6 (T) J4 (-)	D26+, D27 D25+, D24	HYC, MRC, GP2
DRIVE	3	P13	Rx: U26 (7601) Tx: U16 (75176)	J17 (+) J16 (T) J18 (-)	D65+,D66 D64+,D63	Isolated Digital Drive Comm. ***Not Used on Hydro Controllers***
CAR LOCAL	6	P20, P21, P22, P23, P24	Rx: U20 (75176) Tx: U15 (75176)	J23 (+) J24 (T) J22 (-)	D79+, D80 D78+, D77	TOC, COP, CC1, POS, HL (smi)
CAR Remote	6	P25	Rx: U25 (7601) Tx: U19 (75176)	J29 (+) J28 (T) J30 (-)	D91+, D92 D90+, D89	Isolated Car communication to the CPT or the CDP boards. TOC, EPU-COP, EPU-(CC1-CC4), FUTURA PI
HC	4	P14, P15 P18	Rx/Tx: U14 (75176)	J8 (+) J7 (T) J9 (-)	D62+, D61	Half Duplex Hall Call communication. Interconnects all the cars with the Hall Call interface. The VGA communication adapter also plugs on this bus.
HL	6	P19	Rx/Tx: U23 (75176)	J26 (+) J27 (T) J25 (-)	D82+,D81	Half Duplex Hall Lantern communication

Table 5

+24VDC Power "P9"

Car functions: The SPU-LINK distributes the 24VDC power to all the SMI interface ports, to the I/O interface (V+ & VC) and to the Hall Lantern interface (HLC & HL+). The 24VDC local car power is connected to connector P9-1&2 (+24V & 24V COM) at the factory.

Group functions: According to the job configuration, the group 24VDC power is connected to P9-3&4 (VHC & VH+) and is distributed to the Hall Call (HC) ports.

Encoder Interface "P2"

Car Position Transducer (CPT): The DPP signals, DPP1 and DPP2, are sent from the car top position reader and must be shielded at P2-1 (SHIELD). These signals are in quadrature and are used to locate the car and to calculate the velocity (DPP1), and to determine the car direction (DPP2). Indicator LEDs are provided. Note that the voltage level at this connector is 5VDC.

SPU-Link Control Panel

The Control Panel interface port (P12) interconnects to the push-button/LED PC board via a flat cable type connector. To insert the cable, the top portion of the connector must be pulled to permit the ribbon cable (with the blue plastic facing down) to be inserted. The top portion is then pushed-back to squeeze the ribbon cable and provide the connection. The following table describes the control panel operation:

Control Panel Operation			
PB NAME	**PB FUNCTION**	**LED**	**LED FUNCTION**
SPU	STM: Setup Mode commands on Inspection. Press SPU until the Display LED turns Green (3 sec), then release and press the Display button momentarily. The Display button will alternately flash Red/Green.	OFF RED GREEN	Invalid Condition Power Up or Reset (SPU not running) Normal Operation
DISPLAY	Rotate the motor room diagnostic screen from car to car (x) to group.	OFF RED/ GREEN	Normal Condition Flashing Red/Green: Special operation during inspection. See SPU PB function
DISCONNECT	Changes the car service from Normal to Door Disconnect to Group Disconnect back to Normal	OFF RED RED	Doors are normal operation One flash: Door Disconnect Operation Doors will not open and car will only respond to car calls Two rapid flashes: Group disconnect Car will only respond to car calls and door will open and close normally
RESET	Reset the Counterweight Derailment Reset Earthquake latch Reset Gate/Lock Fault Reset Rope Gripper	OFF RED RED RED RED	Normal One flash: Counterweight derailment Two flashes: Earthquake Three flashes: Gate/Lock Fault On Steady: Rope Gripper Fault

Table 6

Serial Module Interface (SMI & SMIC)

The SMI and SMIC boards are always used in pairs, permitting an interface with 24 I/O circuits. The SMI connects to the communication link via an 8-pin TELCO connector (P4). This connector provides the serial communication transmit and receive signals as well as the 24VDC power.

The SMI can accept all of the I/O functions. It can be used with dedicated functions or with general purpose optional features.

Serial Module Interface I/O Base Board (SMI)

The I/O modules plug in directly in the sockets provided at each module M1 through M24. Each I/O module has both input connections brought to the terminal block. Refer to the SMI data sheets for TB/Module pin relationship. No addressing is required on the SMI. The addressing is performed on its controller, the SMIC.

The 5VDC power required for the I/O modules and the SMIC controller is provided by a high performance isolated DC-DC converter located at "U1" (HDF-2405). The isolated converter plugs-in at U1.

Card guides are provided to hold and secure the SMIC.

SMI Board

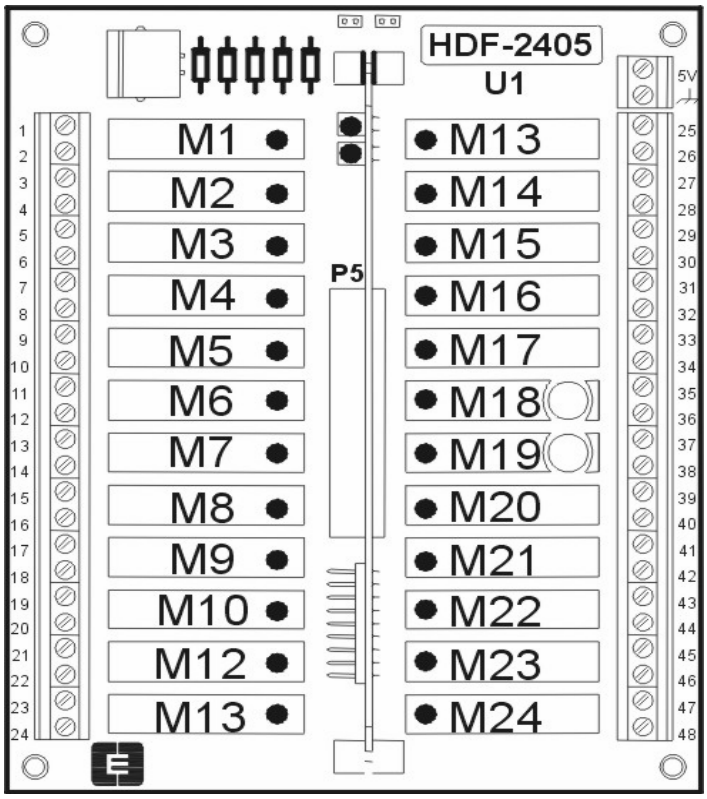


Figure 13-3

Serial Module Interface Controller Board (SMIC)

The SMIC is based on a highly integrated 8052 type microcontroller. It interconnects to the SMI via "P1". Two LEDs are provided to indicate: D1 (red LED) a reset condition which occurs at power-up or a watchdog timer reset, and D2 (green LED) which pulses when the micro-controller is communicating.

SMIC Board

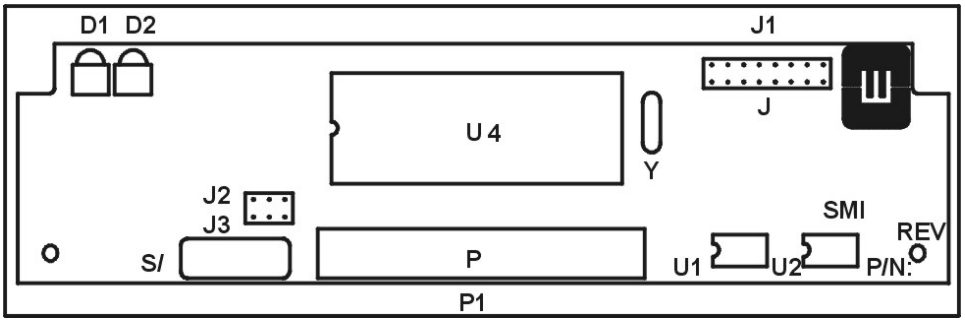


Figure 13-4

The following table lists the jumper configuration for the SMIC board.

J#	PIN	REQ	FUNCTION
J1	1-2 3-4 5-6	OUT OUT OUT	Termination Common Termination +5V Termination
J1	7-8 9-10 11-12 13-14 15-16 17-18	Refer to SMI Data Sheets	Address 32 Address 16 Address 8 Address 4 Address 2 Address 1
J2	1-2 2-3	Refer to SMI Data Sheets	Module 17 Normal mode Module 17 gated by module 6
J3	1-2 2-3	Refer to SMI Data Sheets	Module 19 Normal mode Module 19 gated by module 8

Table 7

CAR DEVICES

Car Position Transducer (CPT)

The primary position transducer, located on the car top, has its own microcontroller, which interfaces with the digitizer, leveling, and preset transducers. The car position in the hoistway is digitized through a stationary steel perforated tape. The position digitizer uses two sensors (DPP1 & DPP2) to determine the direction (quadrature), velocity (within one percent) and the car position. It permits a 0.1875 inch (4.8 mm) resolution accuracy for the entire length of the hoistway. Other sensors are used to interface with the leveling (ULZ, UFLZ, MLZ, DFLZ, & DLZ) and absolute preset vanes (OP, PR1-PR32) located on the tape. During setup, the SPU learns the floor position as well as the Slowdown Limit Position and stores this data in Flash memory.

Leveling

The automatic two way leveling device provided is designed to govern the leveling of the car to within 1/4" (6.4 mm) above or below the landing sill. Any over travel, under travel, or rope stretch returns the car level to the landing sill.

The DZ connector sends the At Floor Level (FLV) and the Door Zone (DZ) signals to the main controller.

Load weighing – *Hydro's Special per Job Basis*

Another function of the Car Position Transducer "CPT" is to interface with compatible load cells to measure the car load. After initial calibration, the controller will compensate for load cell variation and for the car position in the hoistway. This data is used by the dispatching system for car load information required in measuring traffic intensity and also for the main terminal dispatching. The car uses this data for anti-nuisance, by-passing, and for an overload condition.

SPU-LINK direct connections (w/o EPU-LINK):

The CPT can be configured to operate directly from the SPU-LINK twisted-pairs communication cables. The two communication cables connect at J1 while the DPP, DPP1, FLV & DZ signals connect at P20. The JP5 communication configuration jumper must be inserted.

SPU-LINK connections with CDP:

If a Communication Distribution Panel CDP is used, the 8-pin telephone cable connects at P1, and the two 4-conductor TELCO cables connect at DZ and DPP. The JP5 communication configuration jumper must be removed.

The CPT requires 24VDC to operate. The power connects at J1 (+24V, 24VCOM). When the micro-controller is powered and operates normally, the D1 (RUN) LED should illuminate. Note that the DC/DC converter U9 (HDF-2405) must be present for the CPT to operate. If the Load Weighing function is desired, U8 (HDF-2415) must be inserted.

Car Position Transducer

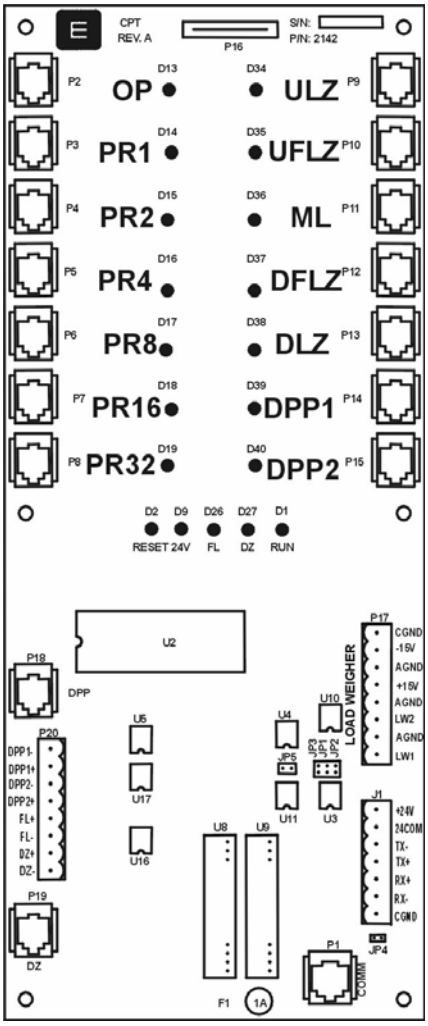


Figure 13-5

Car Distribution Panel (EPU-Link Board)

The Car Distribution communication Panel (EPU-Link) is always located on the car (normally in the Top of Car [TOC] chassis).

The TOC operates from the 24VDC supply (connector JP11 +24V & 24VCOM) and requires a 5VDC DC/DC converter located at U6.

The primary function of the EPU-Link is to interface the traveling cable to the car "smart controllers". Connectors JP8, JP9 & JP10 provide the traveling cable terminal connections while the 4-pin TELCO connectors DZ and DPP and the 8-pin TELCO connectors CPT, FDOOR, RDOOR, PI-1, PI-2, COPS, CC1, CC2, CC3, CC4 & DIAG provide the quick connection to the "smart controllers". Status indicating LEDs and fuses are provided for the "smart" links.

EPU-Link Board

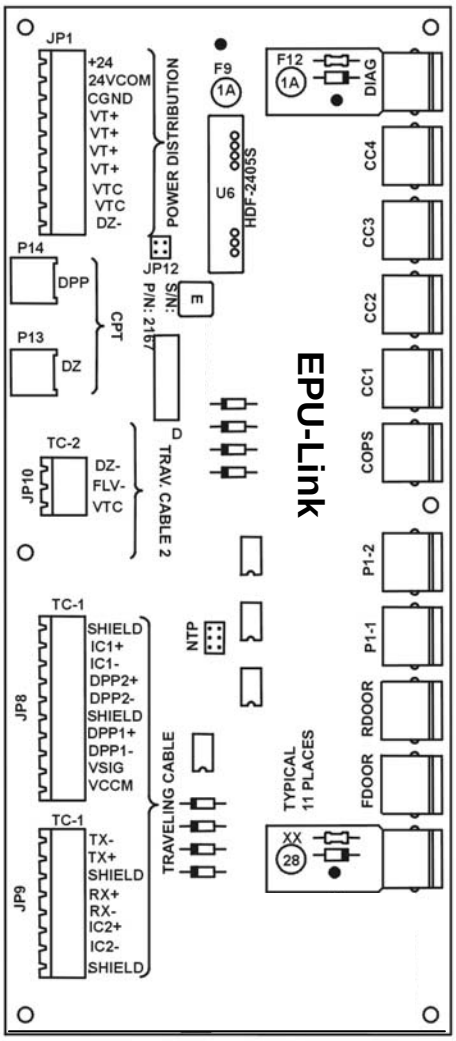


Figure 13-6

Elevator Processing Unit (EPU)

The Elevator Processing Unit (EPU) is located normally in the car station if space permits, or in the Top Of Car (TOC) box.

The EPUs are used for the Car Operating Panel (COP) signals and for all the Car Calls. The EPUs telephone communication cable plugs at P1. 24VDC power is required and is wired to the Input Power connector (+24V & 24VCOM).

Note: ***The EPUs operate on 24VDC*** *(signals and lamping). Input connectors J1 & J2, and Output connectors J3 & J4 are interconnected (meaning that J1 pin 1 is connected to J2 pin 1, J3 pin 1 is connected to J4 pin 1).*

Refer to the SMI Data sheets for job related EPU jumper configuration.

Note: The main car station call push-button contacts connect at J1, and the main car station Button Lamps connect at J3. The auxiliary car station call push-button contacts connect at J2, and the auxiliary car station Button Lamps connect at J4.

Elevator Processing Unit (EPU)

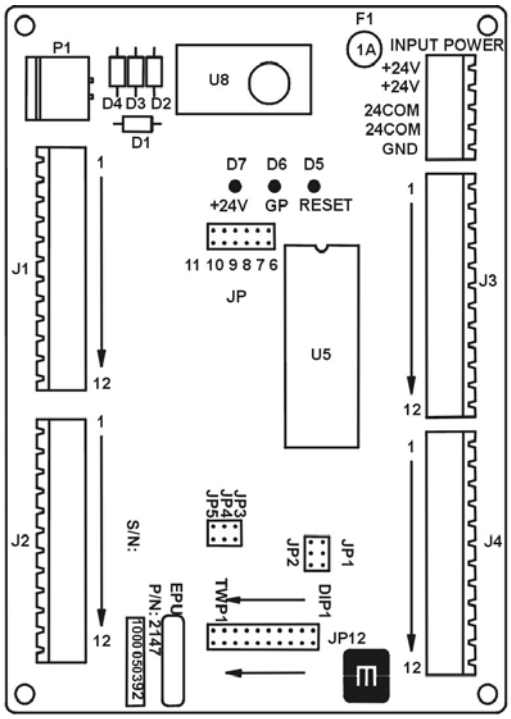


Figure 13-7

NOTES

SECTION 14 - GLOSSARY

Terms and Descriptions

Below is list of commonly used terms that you will find throughout this manual. This section is developed to assist in understanding the meanings of these terms.

TERM	Description of Term
Address	A communication location given to a device usually using header jumpers.
Binary	A mathematical way to count using only 1 and 0 used in Digital communications.
Bit	A variable setting, which determines enabling, or disabling of specific features in the system .
Bite	A digital word that consists of 1 and 0.
CC1	The first Car Call board on the elevator car. Mostly mounted in the Car Operating Panel.
Circuit Breakers	A resettable device designed to open a circuit when excessive current flows in that circuit.
Commands	A request entered by the user, which orders the controller to perform a specific function.
Confidence Test	A self test displayed in the terminal mode of a laptop during startup of the SPU.
Control Status Words	A series of Digital words that consists of bits that are field changeable.
COP	A car operating board where the ar key switches and buzzers wire to
CPT	Car position transducer board (tape Selector assembly)
Device	A physical/mechanical component monitored by and used to execute/trigger input and output signals.
Discrete device	An external device that only accepts an output from the Microprocessor.
Download	A process of taking information from the controller and storing it on the laptop.

TERM	Description of Term
DPP	Digital Position Pulse
Encoder	A device used to change motion into a digital signal.
EPROM	Erasable programmable read-only memory.
EPU-Link	Extended Processor Unit Link for communication CPT, EPU and TOC board
Error Codes	A failure status indicator, which is returned by the system in order to locate the source/resolution of a problem occurrence.
Fault Code	See Error Codes.
Feedback	The transmission of current or voltage from the output of a circuit or device back to the input, where it interacts with the input signal to modify the operation of the circuit or device.
Final Limits	Mechanical switches wired into the safety circuit located a specified distance beyond normal travel at the top and bottom of the hoistway.
Flash	Flash memory is non-volatile computer memory that can be electrically erased and reprogrammed.
Full Load	Rated capacity of the elevator
Fuses	A non re-settable device that opens when its current rating is exceeded.
GP1	General purpose I/O board
Group	A system that controls 2 or more elevators by governing assignments in response to hall calls.
Hall Lantern	A corridor mounted signal light indicating that an elevator car is approaching that landing and the direction in which the car is to travel.
Header Jumper	A small jumper assembly made to slip over pins in order to complete a circuit.
HPU	Hall processing unit used to convert or invert the push button or hall lantern signal to serial communication.
HPU Term	A termination board located at the bottom of the serial riser to load the voltage and communication signal.

TERM	Description of Term
Input	Data entered by the user or from external mechanical devices, which is necessary for the system to process information and execute commands.
Leveling Vanes (Magnets)	Vanes located at each floor at a specific height from the floor that is used to tell the system where exact floor level is located.
Load Weigher	A device used to determine the weight on the car by means of using electro/mechanical switches, a proximity sensor or pressure transducer.
Log On	A process where the user enters a command that will allow access to the microprocessors information.
Mainline	The mechanically operated switch in the machine room that applies or removes power to the elevator system.
MRC	Motor room controller SMI board
Normal Limits	Mechanical switches at each end of the hoistway that is wired to the direction circuits.
Optical Leveling Unit	A car device consisting of emitters and detectors that provide signal to the controller as they pass hoistway vanes.
Output	Data (signals) sent from the Controller to the mechanical devices to (de) activate.
Parameters	Field adjustable settings that allow the user to program the system.
RVU	Remote Video Unit found in the machine room that accesses the controller information.
S Curve	An adjustable speed pattern profile used to accelerate/decelerate and stop the car at the desired floor.
SEM	Serial Expansion Module
SMI	Serial Module Interface PC Board
SMIC	Serial Module Interface Controller PC Board
Serial communication	Information transmission in which the characters of a word are transferred in sequence over a single line.

TERM	Description of Term
Single Phase	An AC voltage source consisting of 2 wires where only one wire is energized.
Slowdown Limits	Mechanical switches at the top and bottom of the hoistway that are used as backups to slow the car down should the car fail to slowdown normally.
SMI	Serial Module Interface PC Board
SMIC	Serial Module Interface Controller PC Board
SPU	System Processing Unit (Main Processing PC Board)
SPU-Link	SPU Communication and I/O Board
Temporary Jumpers	Short pieces of wire filed connected to temporarily bypass critical circuit.
Terminal Mode	A process of connecting to the microprocessor where information is exchanged back and forth by the use of characters.
Three Phase	An AC voltage source consisting of 3 wires each energized with 3 different power sources that are displaced 120 degrees apart in their AC sine wave.
TOC	Top of Car controller
Transformer	A static electrical device that uses electro/magnetic induction to transfer electrical energy between 2 circuits.
Upload	A process of taking information stored in the laptop and transferring it to the controller.
VFC	Velocity fault controller.
Volt Ohm Meter	A hand held device that allows the user to measure voltage or resistance in a circuit.
Wizard	The windows based program provided by CEC to communicate with the controller.
Zones	Field programmable areas of a hoistway consisting of a certain group of floors that when instructed will have an unassigned elevator park at

Diagram Terminology

Below is a list of acronyms and their meanings used throughout this manual.

Acronym	Meaning
_C	Car Call Input
ACB	Access Bottom Switch
ACD	Access Down Button
ACT	Access Top Switch
ACU	Access Up Button
AFR	Auto Fault Reset
ALF	Auto Light Fan
ASB	Audible Signal Button
AU	Automatic Operation
CDL	Cab Down Lantern
CEN	Controller Enable Relay
CFCF	Car Fire Switch Off
CFON	Car Fire Switch On
CGL	Car and Gate Lock monitor
CS	Car Safety Circuit

Acronym	Meaning
CTL	Car To Lobby
CUL	Cab Up Lantern
DC	Door Close Relay and Door Close Output
DCB	Door Close Button
DCL	Door Close Limit Switch
DET	Detector Edge
DFLZ	Down Floor Level Zone
DI	Door lock input (freight/swing doors)
DI1	Door lock aux. input (freight/swing doors)
DL	Main Door Lock monitor
DL6	Door Close Limit Switch @ 6"
DLZ	Down Level Zone
DNL	Down Normal Limit Switch
DO	Door Open Relay and Door Open Output
DOB	Door Open Button
DOL	Door Open Limit Switch
DPP1	Digital Pulse Line 1 from Tape Selector or Encoder

Acronym	Meaning
DPP2	Digital Pulse Line 2 from Tape Selector or Encoder
DRV	Drive Ready Verification
DRVS	Drive Shutdown Switch
DZ	Door Zone
EMSD	Emergency Stop Indicator
EMST	Emergency Stop Output from SPU
EPA	Emergency Power Automatic Lower
EPL	Emergency Power Light
EPX	Emergency Power car select
ESP	Emergency Power Sequence Transfer
ETSD	Emergency Terminal Stop UP
ETSU	Emergency Terminal Stop Down
FAL	Fire Recall Alternate
FBP1	Fire Bypass (Stop Switch)
FBP2	Hall Fire Bypass Aux (Stop Switch)
FLT	Fault Output
FLV	Floor Level Indicator

Acronym	Meaning
FR	Fire Recall Phase I
FSL	Fire Service Light
FSLH	Fire Service Light Hall
GL	Gate Lock Relay/Input
GL1	Aux. Gate Lock Input
GRP	Group
HFBP	Lobby Fire Bypass Switch
HFON	Lobby Fire Switch On
HS	Hoistway Safety Circuit
IC	Independent Service Car
ICA	In Car Access
ICI	In Car Inspection
ICS	In car Stop Switch
IL	Independent Service Lobby
INB	Inspection Bypass Monitor
LBE	Lock Bypass Enable
LBP	Lock Bypass Monitor

Acronym	Meaning
LVE	Leveling Enable
LVE1	Leveling Enable 1
MA	Main Armature Contactor
MACC	Master Access Enable
MCC	Master Contractor Control
NP	Normal Power
NR	Nudging Relay and Nudging Output
OLF	Overload Fault
PI	Position Indicator
PT	Panel Test
PTB	Panel Test Button
PTD	Panel Test Down
PTU	Panel Test Up
RC	Retiring Cam Output
RDY	Ready To Run
RSB	Car Call Reset Button for Fire and Independent
RX+/-	Receive Lines of Communication

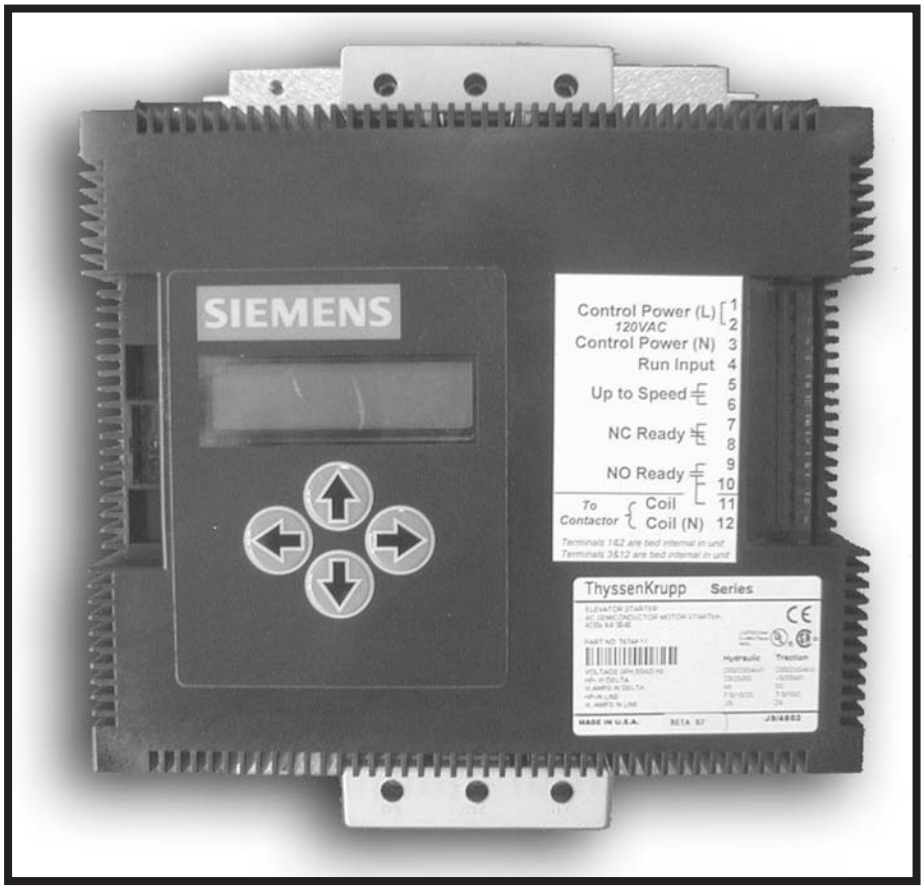
Acronym	Meaning
SD1	Down Slowdown Switch 1
SM	Start Master
SMC	Start Master Control
SU1	Up Slowdown Switch 1
TAKR	Access Relay
TCI	Top Car Inspection
TID	Top Car Inspection Down
TIU	Top Car Inspection Up
TX+/-	Transmit Lines of Communication
UFLZ	Up Floor Level Zone
ULZ	Up Level Zone
UNL	Up Normal Limit Switch

NOTES

SIEMENS

SFIS-72DV000-0203
February, 2003

ThyssenKrupp Elevator
Class 72DV Starter Quick Set-up Guide
for Hydraulic Elevator Pump Motors



⚠ DANGER

Hazardous voltage.
Will cause death or serious injury.

Always de-energize and ground the equipment before maintenance. Read and understand this manual before installing, operating or maintaining the equipment. Maintenance should be performed only by qualified personnel. The use of unauthorized parts in the repair of the equipment or tampering by unqualified personnel may result in dangerous conditions which may cause death or serious injury, or equipment or property damage. Follow all safety instructions contained herein.

THIS EQUIPMENT CONTAINS HAZARDOUS VOLTAGES. DEATH, SERIOUS PERSONAL INJURY, OR PROPERTY DAMAGE CAN RESULT IF SAFETY INSTRUCTIONS ARE NOT FOLLOWED. ONLY QUALIFIED PERSONNEL SHOULD WORK ON OR AROUND THIS EQUIPMENT AFTER BECOMING THOROUGHLY FAMILIAR WITH ALL WARNINGS, SAFETY NOTICES, AND MAINTENANCE PROCEDURES CONTAINED HEREIN.

THE SUCCESSFUL AND SAFE OPERATION OF THIS EQUIPMENT IS DEPENDENT UPON PROPER HANDLING, INSTALLATION, OPERATION AND MAINTENANCE.

SIGNAL WORDS

The signal words "**DANGER**," "**WARNING**" and "**CAUTION**" used in this manual indicate the degree of hazard that may be encountered by the user. These words are defined as:

DANGER - For the purpose of this manual and product labels, **DANGER** indicates an imminently hazardous situation which, if not avoided will result in death or serious injury.

WARNING - For the purpose of this manual and product labels, **WARNING** indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION - For the purpose of this manual and product labels, **CAUTION** indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

QUALIFIED PERSON

For the purposes of this manual and product labels, a qualified person is one who is familiar with the installation, construction, operation or maintenance of the equipment and the hazards involved. In addition this person has the following qualifications:

(a) is trained and authorized to energize, de-energize, clear, ground and tag circuits and equipment in accordance with established safety practices.

(b) is trained in the proper care and use of protective equipment such as rubber gloves, hard hat, safety glasses or face shields, flash clothing, etc., in accordance with established safety practices.

(c) is trained in rendering first aid.

Class 72DV Starter Quick Set-up Guide **SFIS-72DV000-0203**

February, 2003

Congratulations, you have just purchased the most advanced, full-featured Elevator Starter available. While this product contains several features to aid in set up, it is important to read and understand this manual before attempting to install. As the set up and wiring of this version is quite different from previous versions of ThyssenKrupp Elevator Starters, it is equally important to read even if you have a good working knowledge of the 72DV787AE starter. If questions arise, additional help is available by calling Siemens Technical Support at 800-323-5450. Visit us on the web at www.siemens.com/controlsusa

Special Features:

16 Character by 2 Line Liquid Crystal Display
-------Displays RMS Currents for motor and line amps
-------Displays RMS Voltages for the incoming line power.
Dynamic Stall Prevention
-------Automatically increases current to motor under stall conditions.
Digital Current Limit
-------Allows precise control and monitoring of currents during starting and run modes.

IMPORTANT

These instructions do not purport to cover all details or variations in equipment, nor to provide for every possible contingency to be met in connection with installation, operation, or maintenance. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, the matter should be referred to the local Siemens sales office. The contents of this manual shall not become part of or modify any prior or existing agreement, commitment, or relationship. The sales contract contains the entire obligation of Siemens. The warranty contained in the contract between the parties is the sole warranty of Siemens. Any statements contained herein do not create new warranties or modify the existing warranty.

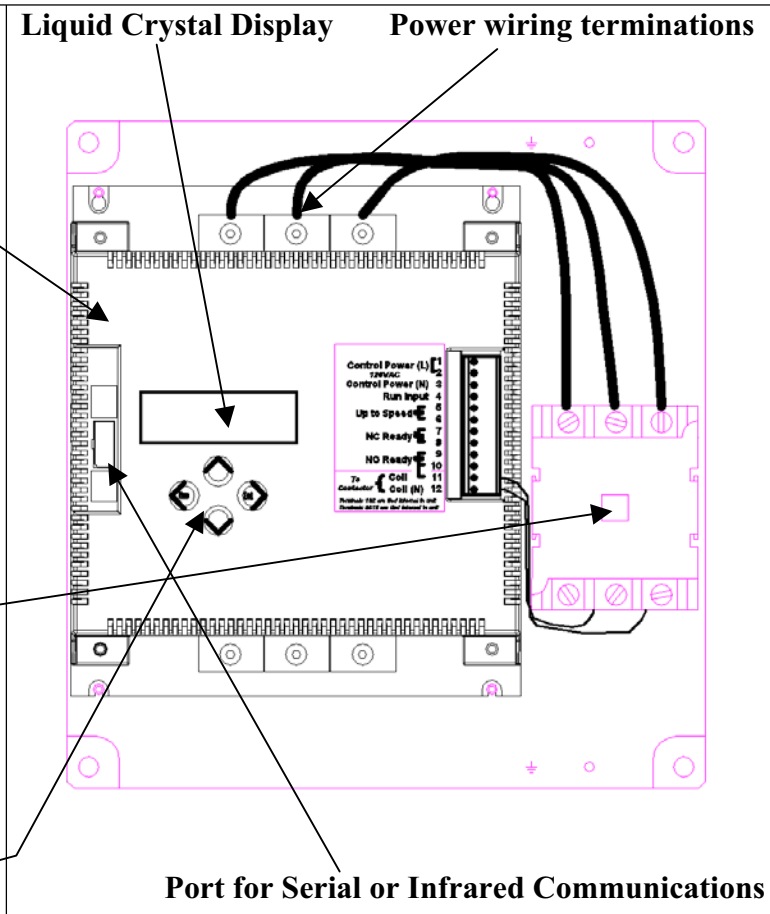
Overview:

The 72DV series of elevator starters consists of two main components.

The Solid State Starter controls the current during the start and provides overload, current imbalance, reverse phase, single phase and shorted SCR protection. In addition to those faults, on power up the starter will check the motor configuration.

The Fault Contactor provides a means for interrupting current during shorted SCR conditions. It DOES NOT provide electrical isolation when opened if wired in delta.

Keypad for easy setup and operation.



Control Power Connections:

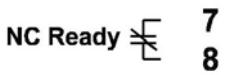
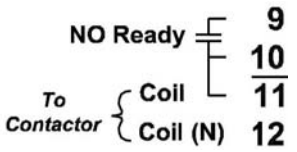
CAUTION

Wrong voltage or power rating, may cause property damage.

To avoid possible starter and/or motor damage, be sure the line and control voltage sources are as specified on starter label, and motor rating corresponds to the type of wiring used (Inside Delta or In Line).

The customer control connections on the 72DV Solid State Elevator Starter feature a removable terminal block. Depending on the style of controller ordered, one or two terminal strips would be used to make the connections. The layout is shown to the left. If two terminal blocks are used, terminals 1 through 10 will be on the first block, while terminals 11 and 12 will be on the second.

Terminal	Connection
Control Power (L) 120VAC 1, 2 Control Power (N) 3	A constant 120 VAC 500VA supply should be connected between the (L) 1, Line and (N) 3, Neutral terminals. This supply also powers the fault contactor. Terminal 1 and 2 are internally connected. An external jumper wire is required to connect terminal 1 to terminal 9.
Control Power (N) 3 Run Input 4	The 120 VAC motor run input is connected to terminal 4. The neutral for the motor run input must be referenced to the neutral of the Control Power input.

	This output is used to either directly supply power to the Up valves or supply a signal to a control board to indicate the motor is up to speed. This output utilizes a triac rated for 120 VAC.
	This contact may be used to signal a control board that the unit is in a fault condition.
	Terminal 9 should be connected via a jumper wire to either terminal 1 or 2 (L). This provides a hot feed to the fault contactor coil when the **NO Ready** contact is closed. Terminals 10 and 11 are the switched side of the **NO Ready** contact. This configuration allows terminal 10 to be used to signal that the starter is ready to run while terminals 11 and 12, the neutral for the fault contactor coil, control the fault contactor.

Note: The load on terminals 5 and 6 must not be greater than 1 amp at 120V. The load on terminals 7 – 11 must not be greater than 3 amps at 240V. All terminals are rated for AC voltage only.

Inside Delta Motor Wiring

The motor wiring on the next pages should be connected exactly as shown. If it is not, the starter will detect a motor wiring error. If you have elected to cycle the fault contactor on each start, you must contact technical support for directions on configuring the starter and wiring in a required off delay timer.

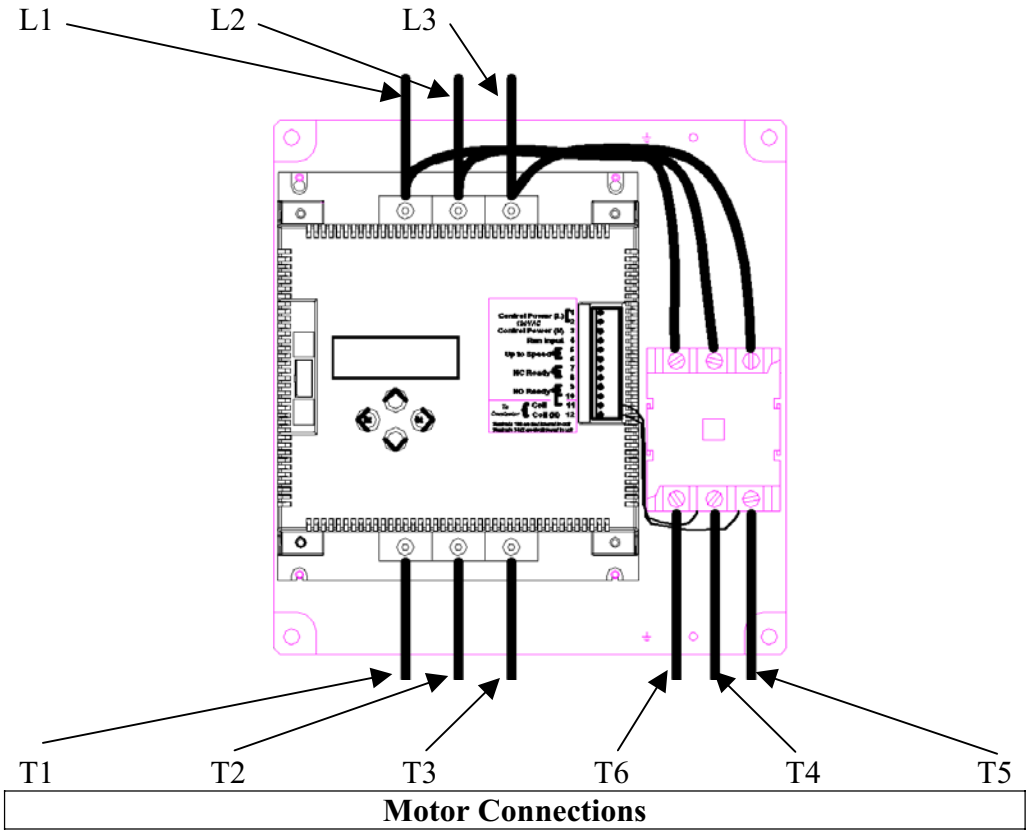
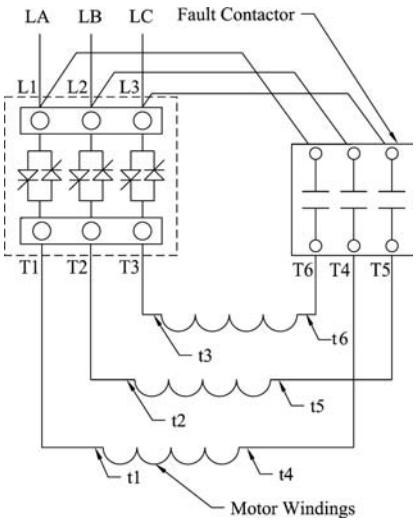
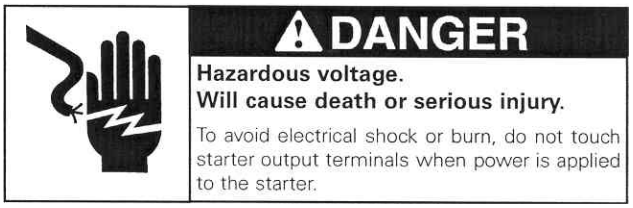
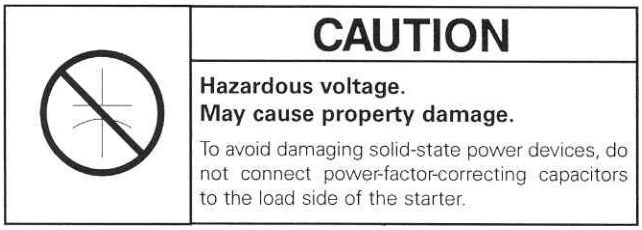


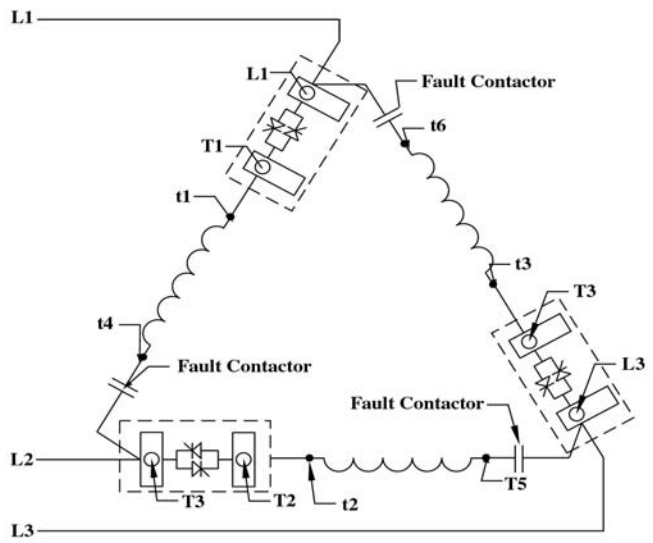
Figure 1 – Power Wiring for In-Delta Configuration

Wiring Diagram









Low Voltage Connections					
T1 1,7	T2 2,8	T3 3,9	T4 4,10	T5 5,11	T6 6,12

High Voltage Connections					
T1 1	T2 2	T3 3	T4 10	T5 11	T6 12

Join 4&7, 5&8, 6&9

Figure 2 – Motor Wiring for In Delta Applications

Current ->	22	42	55	68	80	105	130	156	252
L1, 2,3 Terminals	36-53	36-53	36-53	36-53	36-53	89-110	89-110	89-110	89-110
T1,2,3 Terminals	36-53	36-53	36-53	36-53	36-53	89-110	89-110	89-110	89-110

Table 1 - Solid State Starter Torque Requirements in Lb.-In. for Power Connections.

Contactor Catalog Number	Top Connection	Bottom Connection	Coil Connection
42EF35AFN (60A)	40	40	9
42FE35AF757R (75A)	50	50	9
42GE35AF757R (90A)	50	50	9
42HF35AAA (120A)	120	120	9
42IF35AAA (150A)	120	120	9

Table 2 - Fault Contactor Torque Requirements in Lb.-In. for Power Connections.

Note: The Siemens Solid State starter is intended for in Delta operation on 6 and 12 lead Delta motors only! If you have a 9 lead delta motor, you must run it in the "In Line" application. If you have a submersible application where only 3 motor leads are brought to the starter, you may elect to run the starter "in line" also. When running "in line", the correct size starter must be used. The following pages show how to connect the starter in the "In Line" configuration. If needed, consult Siemens Technical Support at 800-323-5450 for additional information or see website for additional information.

Inline Motor Connections

Line Connections	Motor Connections

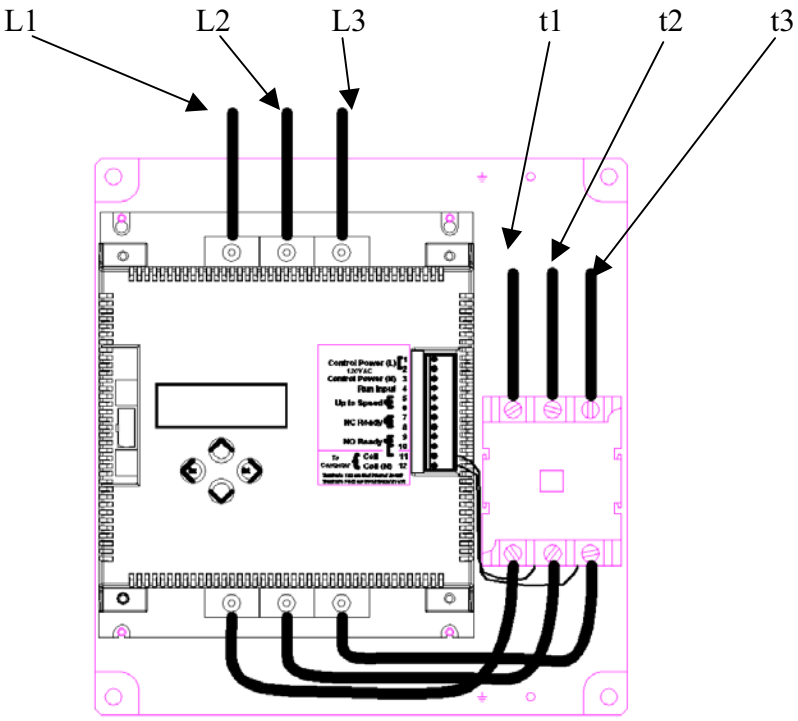


Figure 3 - Conversion for In Line Applications

It is up to the end user to reconfigure the leads from the starter to the fault contactor for In-Line operation

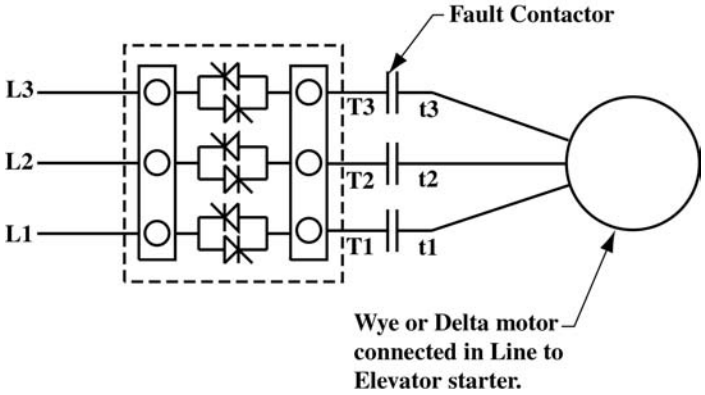
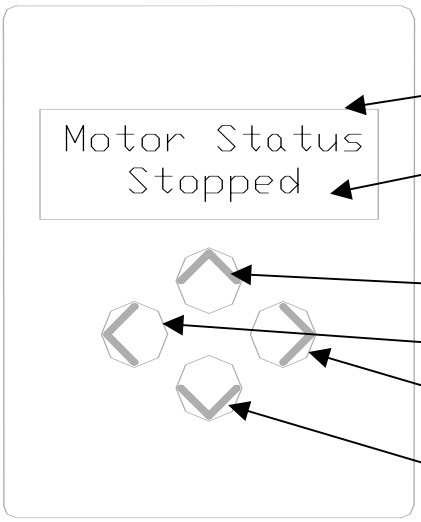


Figure 4 - Motor wiring for in line Applications.

Any motor may be run In Line. When sizing the starter use the In Line rating as opposed to the Inside Delta rating. The conversion is done by removing the wires between the L1, L2, and L3 inputs on the top of the starter and top of the fault contactor from the top of the starter and moving them to the bottom, as shown in the diagram.

LCD Menu

Upon power up the LCD will display the status of the starter. If a fault is present, it will be displayed.

<table>
<tr><td> 
</td><td>Top Line of LCD
Bottom Line of LCD
Up Button
Exit Menu Button
Enter Menu Button
Down Button</td></tr>
<tr><td>Up Button</td><td>This key is used to move up in all of the menu structures. It also is used to increase or select different parameters in the parameter adjust mode.</td></tr>
<tr><td>Exit Button</td><td>This key is used to exit menus and to exit the parameter adjustment menus after selections have been made.</td></tr>
<tr><td>Enter Button</td><td>This key is used to enter menus and to enter the parameter adjustment menus.</td></tr>
<tr><td>Down Button</td><td>This key is used to move down in all of the menu structures. It also is used to decrease or select different parameters in the parameter adjust mode.</td></tr>
</table>

LCD Menu (Cont.)

Main Menu →	Sub Menus
Status Menu	The submenus for the Status menu show line voltages, minimum line voltages, actual and peak motor and line currents, control power status, Motor configuration, operating frequency and line rotation.
Configuration Menu	The sub-menus for the Configuration menu display the unit's catalog number, rated current, rated volts, software revision, serial number, and final test date.
Parameter Menu	The submenus for the Parameter menu control the following adjustments of the elevator starter: Starting Current Overload Current Line Rotation Off Delay in milliseconds On Delay in milliseconds To edit any of the above parameters, select the parameter and press the right arrow key. If the parameter is a numerical field, the flashing digit is the only digit currently being changed. Use either the Up or Down keys to adjust each digit to the desired setting. Using the right key will move you to the next digit. If you are at the last digit, the right key will move you to the first. Once the adjustment is finished, the left arrow key will take you back and display the present setting. If a value outside of the range for a particular unit was entered, either the lowest or highest setting will be displayed.
Diagnostics Menu	The submenus for the Diagnostic menu display the following: Power on time Running time Starting time Number of Starts Power Ups Total Faults This information cannot be changed.
Faults Menu	The submenus for the Faults Menu show the following information for the last four faults: Type of fault Run Status when the fault occurred Time that the fault occurred Amount of time in the run that the fault occurred The motor currents when the fault occurred This information cannot be changed.
System Menu	This menu allows users to reset the starter, reset the settings to the default values. A password is required for further setup adjustment.

Basic Configuration of Your Siemens Elevator Starter using the Parameter Menu.

Configuring the starter to operate is very simple. Simply enter the desired settings in the Parameter Menu. The factory default settings are shown in the default setting.

Menu Choice		Default Setting
Starting Current	This is the level that the elevator starter will hold the current limit to during the start. Keep in mind that while lower settings reduce the inrush currents, they increase the starting time. This setting should not be less than twice the motor's FLA.	
Overload Current	This setting should be set at or below the FLA of the hydraulic pump motor.	
Line Rotation	The choices for this are either ABC or CBA. To change the setting from the factory default of ABC rotation, select the right key, which causes the ABC to flash and select the up key. To exit select the left key.	ABC Rotation
Off Delay	This is the time the starter continues to run after the run signal has been removed. This value is adjustable from 0 to 1250 milliseconds. To change from the factory default of 500 milliseconds, press the right key then select the desired setting the same using the up, down and right keys. Once the desired value is reached, press the left key to exit.	500 milliseconds
On Delay	This is the time the starter waits before running after receiving a run signal. The factory default is 0 milliseconds. This value is adjustable from 0 to 5000 milliseconds. It is adjusted the same way the Off delay is adjusted.	0 milliseconds

Resetting

Menu Choice	
Reset Fault	This is one way to reset the starter after it has tripped on a fault. To reset the starter, press the right key followed by the up key and the left key. The starter may also be reset by pressing both the Up and Down keys at the same time or by cycling the control power.
Password	The menu allows the user to enter a password, which allows advanced setup. Depending on the style ordered the password may or not be available. If you were given a password, enter it here: _____ to ensure it is not lost or forgotten.

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