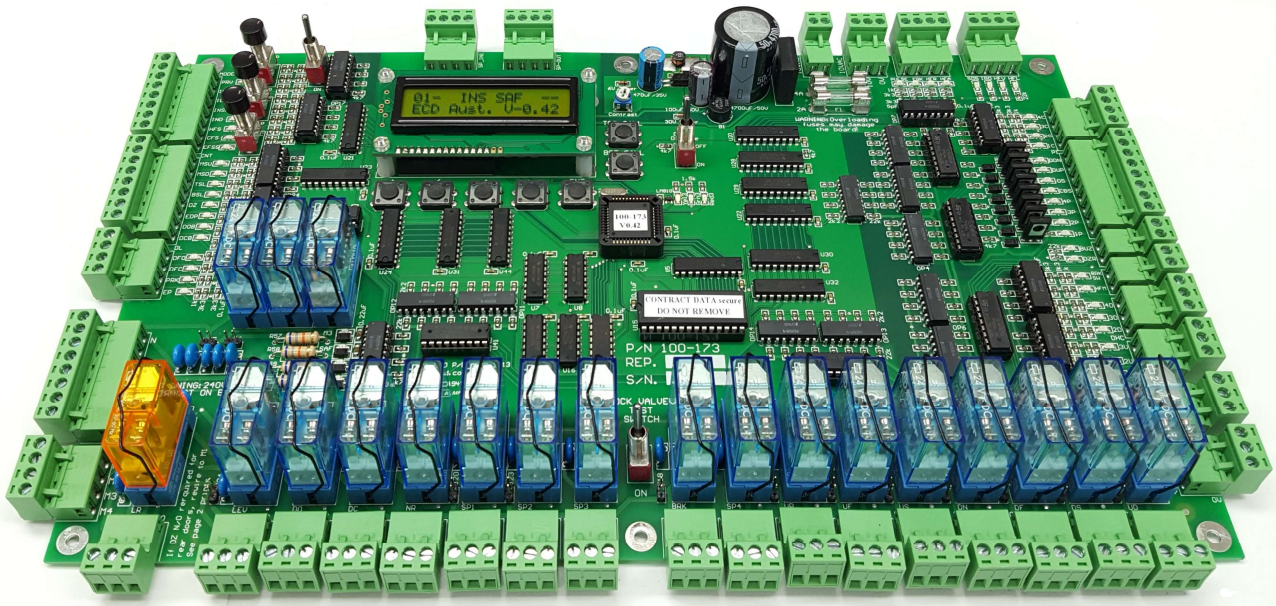




100-173 Controller Manual



Revision Date: Sep 04, 2019

ECD System Manual

ELECTRONIC CIRCUIT DESIGNS PTY. LTD.

Operation Guide

This manual covers all versions of 100-173 hardware and software. Some features and operative descriptions mentioned in this manual may differ or not be available on earlier 100-173 versions

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Table of Contents



.....	0	FD1 – Front Doors setup, Levels 1-8	17
<i>Table of Contents</i>	<i>i</i>	FS – Fire Service type.....	17
<i>Section 1: Safety Regulations & Introduction</i>	<i>4</i>	HFA - Hall Fire Alternate Floor setup	17
1.2.1 Following operating instructions.	4	HFS - Hall Fire Service Return floor setup.....	17
1.2.2 Obligations of operator.....	4	IND – Independent Service type	18
1.2.3 Obligations of personnel.....	4	LCK – Parameter lockout function	18
1.2.4 Hazards associated with the equipment	5	MOD – MODE Inputs setup	18
1.2.5 Warranty and liability.....	5	MSL – Magnet Slowing Type.....	18
1.2.6 Organizational measures.....	5	NR - Door Nudging setup	18
1.2.7 Protective equipment.....	6	PI - Position Indication setup	18
1.2.8 Informal safety measures.	6	PRK – Park/Zone with doors open	18
1.2.9 Training of personnel.	6	PRV – Proving required setup	18
1.2.10 Machine controls.....	6	RD1 – Rear Doors setup, Levels 1-4	19
1.2.11 Safety measures during normal operation.	6	RLV – Re-leveling setup.....	19
1.2.12 Hazards caused by electric power.....	6	RPT - Run Protection Timer setup	19
1.2.13 Hazards caused by hydraulic power.....	7	RTM – Run Time short floor run setup	19
1.2.14 Special danger areas (examples).....	7	SD1 – Selective rear doors setup, Levels 1-4	20
1.2.15 Introduction	7	SDX - Star Delta Exchange Time setup.....	20
1.2.16 Controller Installation Environmental Requirements	8	SDX – VF Drive setting 06,07,08 brake drop time.....	20
<i>Section 2: EEPROM Settings</i>	<i>9</i>	SFR - Short Floor Run setup.....	20
<i>EEPROM Version 0.42 (Simplex) Summary</i>	<i>10</i>	Spares.....	21
<i>EEPROM Definitions (Full description)</i>	<i>13</i>	StF – Start Fast	21
ADO - Advanced Door Opening setup	13	StM – Start Medium	21
ALP – Auxiliary Leveling Pump operation setup	13	SIF – Slow Fast	21
ANS – Anti Nuisance setup	13	SIM – Slow Medium.....	21
BST – Brake Switch Time	13	ST2 - Star Delta Changeover Time setup.....	21
CCM - Car Call Mask setup.....	14	ST2 – VF Drive setting 06,07,08 end run time	22
CNT – CNT Input setup.....	14	TCC - Top Car Call setup	22
COD – Parameter lockout function.....	14	TOP - Top floor setup.....	22
DCM - Down Call Mask setup.....	14	UCM - Up Call Mask setup.....	22
DLI - Door Limit invert setup	14	UDT – UD delay time setup.....	22
DLM - Door Limit setup	15	XTM – Extend run time short floor run.....	22
DPT - Door Protection Time.....	15	ZON - Zoning/Parking floor setup.....	23
DRV - Drive type setup	15	ZTM - Zoning time setup	23
DT - Door Time Close setup.....	16	<i>Section 3. Group. N/A</i>	<i>24</i>
DTC - Door Time Car Call Close setup	16	<i>Section 4. Inputs – Outputs</i>	<i>25</i>
DTH - Door Time Hall Call Close setup	16	BKSW - Brake Switch Input.....	25
DTZ - Door Time Zone Close setup	16	BRK - Brake Relay Output	25
EP – Emergency Power type.....	17	BSL – Bottom Slowing input.....	25
EQK.....	17	BUZ - Nudging Buzzer Output	25
		CBS - Hall Button Stop Output	25
		CC - Car Call Inputs/Darlington Outputs	26
		CFS - Car Fire Service Input	26
		CFSS - Car Fire Service Start Input.....	26
		DC - Door Close Relay Output.....	26
		DCB - Door Close Button Input.....	26

DDO - Door Open Disable Switch (no actual input).....	26	PI - Position Output.....	36
DDN - Direction Down Output.....	26	PRK - Parking Function Input.....	36
DF - Down Fast Relay Output.....	26	PRV - Proving Circuit Input.....	36
DFC - Door Fully Closed Input.....	26	PULSE – Pulse Counting Input.....	36
DFO - Door Fully Open Input.....	28	SAF - Safety Circuit Input.....	37
DHC - Down Hall Call Inputs/Darlington Outputs.....	30	SO4/IRO – Inspection Relay Output.....	37
DN - Down Relay Output.....	30	SO5 – Spare Output 5.....	37
DO - Door Open Relay Output.....	30	SO6 – Spare Output 6.....	37
DOB - Door Open Button Input.....	31	SO7 – Spare Output 7.....	37
DS - Down Slow Relay Output.....	31	SO8 – Spare Output 8.....	37
DUP - Direction Up Output.....	31	SO9 – Spare Output 9.....	37
DZ - Door Zone Input.....	31	SP/EP - Emergency Power Input.....	37
DZ – Door Zone Relay Output.....	31	SP1 - Multi Purpose Output 1.....	37
DZR – Rear Door Zone Output.....	31	SP2 - Multi Purpose Output 2.....	37
EDP - Electronic Door Protection Input.....	31	SP3 - Multi Purpose Output 3.....	37
EQK – Earthquake Detection input. (Siesmic or Counterweight displacement switch).....	32	SP4 - Multi Purpose Output 4.....	37
EP - Emergency Power Input.....	32	TSL – Top SLOWing input.....	38
HFA - Hall Fire Alternate Input.....	32	UD - Up/Dn Relay Output.....	38
HFL - Hall Fire Light Output.....	32	UF - Up Fast Relay Output.....	38
HFM Hall Fire Machine Room/Hoist way Input.....	32	UHC - Up Hall Call Inputs / Outputs.....	38
HFR - Hall Fire Reset Input.....	32	UP - Up Relay Output.....	38
HFS - Hall Fire Service Input.....	33	US - Up Slow Relay Output.....	38
HFV - Hall Fire Visual signal Output.....	33	<i>Section 5. Liquid Crystal Display.....</i>	<i>39</i>
HV2 - High Voltage Input.....	33	<i>LCD Status Line.....</i>	<i>39</i>
IDN - Inspection Down Input.....	33	LCD Position & Direction.....	39
IN3 – Spare Input 3.....	33	LCD Lift Modes.....	39
IN4 – Spare Input 4.....	33	LCD Lift Status.....	40
IN5 – Spare Input 5.....	33	LCD Door Modes.....	40
IN6 – Spare Input 6.....	33	LCD Control Buttons.....	40
IND - Independent Service Input.....	33	LCD Display Options.....	41
INSP - Inspection Control Input.....	34	<i>Section 6. Motion.....</i>	<i>42</i>
IRO – Inspection Relay Output.....	34	Motion Control Outputs.....	42
IUP - Inspection Up input.....	34	Drive settings and their output status.....	42
IN1/HFM – Multi Purpose Input.....	34	Counting Method “00” - Magnet Counting.....	51
IN2/BKSW – Multi Purpose Input.....	34	Counting Method “01” - Pulse Counting.....	53
IN3 – IN6 – Multi Purpose Input 3 to 6.....	34	<i>Section 7: Faults – Fault finding.....</i>	<i>61</i>
LEV - Leveling Relay Output.....	34	Upgrade Controller software.....	61
LR – Lock Relay Input.....	34	Leveling inhibit. LEV.....	61
LR – Lock Relay Output.....	34	Run protection timer. RPT.....	61
LRX – Aux LR Input.....	34	Lift won’t re-level with doors open.....	61
M3 - Door Locks Input.....	35	On board fuse blows.....	62
MSD - Down Count Input.....	35	Testing 24VDC.....	62
MSU - Up Count Input.....	35	Doors do not open.....	62
NR - Nudging Relay Output.....	35	Doors close on park.....	62
OUT1/BUZ - Nudging Buzzer Output.....	36	Doors don’t open at terminal floors.....	62
OUT2/DZR – Rear Door Zone Output.....	36	Lift gets out of step.....	62
OS - Out of Service Output.....	36	Lift does not answer car calls.....	62

Lift does not answer hall calls.....	62
Lift misses hall calls.....	63
Re-leveling won't operate.....	63
Red3 LED is not blinking.....	63
Processor errors/Lockup:	63
<i>Section 8. Upgrades, Changes & Technical Information.....</i>	<i>64</i>
<i>Controller ID.</i>	<i>65</i>
<i>Terminal Screw Torque Settings.....</i>	<i>66</i>



Section 1: Safety Regulations & Introduction

Section 1.1 Safety Regulations

Elevator controllers and other electrical components can cause serious harm or death if installation guides are not met. It is the responsibility of the installer of our equipment to ensure that once installed, the equipment does not pose any threat, danger or hazard.

Installation of this equipment shall be done in accordance with AS1735 for Australia and with all applicable local codes.

As per AS 60038-2012, Table 1, nominal supply voltage shall be 230(4 wire)/400(3 wire). Highest supply voltage shall be 253/440. Lowest supply voltage shall be 216/376.

Section 1.2 Obligations and Liability

1.2.1 Following operating instructions.

- In order to ensure safe handling and problem free operation of this equipment, it is absolutely essential for the relevant personal to be fully acquainted with the relevant safety regulations.
- These operating instructions contain the most important information for operating the machine correctly and safely.
- These operating instructions, in particular the safety regulations, must be observed by all those persons who work on the equipment.
- Furthermore, all locally applicable rules and regulations relating to accident prevention and installation must be observed.

1.2.2 Obligations of operator.

The operator undertakes to allow only those persons to work on the equipment who

- Are fully acquainted with the basic regulations relating to safety in the workplace and accident prevention and to have been trained in handling the equipment.
- Have read the safety regulations and the warning notices contained in these the operating instructions.
- Regular checks are conducted to ensure that personnel perform their duties with safety considerations foremost in their minds.

1.2.3 Obligations of personnel.

All personnel charged with working on the machine undertake prior to starting work to

- Observe the basic regulations relating to safety in the workplace and accident prevention.
- Read the operating instructions, in particular the safety regulations, and confirm by way of their signature that they have understood them.

SAFETY REGULATIONS & INTRODUCTION

1.2.4 Hazards associated with the equipment.

The equipment is built with state-of-the-art technology and recognized safety regulations. Nevertheless, use of the equipment can result in dangers to life and limb for the installer, user or a third party and in impairments to the equipment or to other material property. The equipment must only be used

- For its intended purpose.
- In perfect condition in terms of safety requirements.

Operate the equipment in technically perfect condition and for its intended use only while bearing in mind all safety and hazard considerations and following the operating instructions. In particular, faults which restrict safety must be rectified immediately after they have been identified and at the latest before the equipment is started up.

Compliance Testing for AS/NZS CISPR 22:2002 Class A

WARNING !

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Compliance Testing for FCC Title 47 Part 15, Subpart B Class A

FCC PART 15

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

1.2.5 Warranty and liability.

Our “Sales terms and conditions” apply. These terms and conditions will have been available to the purchaser at time of sale. Warranty and liability shall be limited to repairs and replacement to the equipment purchased from us. Warranty and liability claims shall not be entertained if they can be traced back to one or more of the following causes.

- Equipment not used for its intended purpose.
- Improper installation, startup, operation and maintenance of the equipment.
- Operation of the equipment with faulty safety devices or improperly installed or non-operational safety and protective equipment.
- Failure to observe the information, instructions and notices contained in the operating instructions relating to transportation, storage, installation, startup, operation, maintenance and setting up of the equipment.
- Inadequate monitoring of the equipment parts which are subject to wear.
- Improperly conducted repairs.
- Catastrophes caused by the influence of foreign bodies and force majeure.

1.2.6 Organizational measures.

- The installer and or maintainer shall provide the necessary protective equipment for the personnel
- All existing safety equipment must be checked at regular intervals.

SAFETY REGULATIONS & INTRODUCTION

1.2.7 Protective equipment.

- At all times, prior to putting the machine into operation, all protective equipment must be correctly installed and in proper working condition.
- Protective equipment may only be removed
 - after the machine has come to a complete stop and the machine has been disabled to ensure it cannot be started up again.
 - if subcomponents are delivered, the operator must install the protective equipment in accordance with regulations

1.2.8 Informal safety measures.

- Keep the operating instructions and circuit diagrams permanently at the site where the equipment is installed.
- In addition to the operating instructions, the generally valid and local regulations relating to accident prevention and environmental protection must be provided and observed.
- Maintain all safety and danger notices on/next to the machine in legible condition and comply with them.
- If the equipment is sold or transferred, the operating instructions must be included with the equipment.

1.2.9 Training of personnel.

- Only personnel who have been trained and instructed are allowed to work on the machine.
- The responsibilities of the personnel must be clearly defined for the machine/controller installation, startup, operation, setting-up, maintenance and repairs.
- Personnel still in the process of being trained are only permitted to work at the machine under the supervision of an experienced person.

1.2.10 Machine controls.

- Under no circumstances carry out any program modifications to the software!
- Only properly instructed personnel are permitted to operate the controls.
- The machine must not be operated if potential electromagnetic interference sources are acting on the machine. Interference sources are e.g. welding equipment, portable phones.

1.2.11 Safety measures during normal operation.

- Only operate the machine when all protective equipment is fully operational.
- Prior to switching on the machine, ensure that the startup can cause no harm to personnel.
- Regularly maintain and check machine for externally identifiable damage and check that all the safety devices are operational.

1.2.12 Hazards caused by electric power.

- **Ensure 0v and 24v are free from other voltages. High voltages may be superimposed on 0v and 24VDC lines as no reference to ground exists. See Warning 1.2.14**
- Work on the electric power supply may only be carried out by a qualified electrician.
- Check the electrical equipment of the machine at regular intervals.
Repair loose connections and scorched cables immediately.
- Keep the control cabinet locked at all times. Access is only permitted to authorized personnel with a key or tool.

SAFETY REGULATIONS & INTRODUCTION

- If work has to be carried out on live parts, do this only in the presence of a second person who can switch off the master switch in an emergency.
- The machine causes electromagnetic interference sources. For this reason, do not use any sensitive equipment in its vicinity.
- For EMC reasons, the controller must not be modified.

1.2.13 Hazards caused by hydraulic power.

- Only personnel with special knowledge and experience in the field of hydraulics may work on hydraulic equipment.
- Before beginning repairs, depressurize system sections and pressure lines which are to be opened.

1.2.14 Special danger areas (examples).

- When on inspection, always ensure either of the common or direction control buttons stops the lift.
- The common button shall break the safety line and the 0V up/down direction input.
- Never place yourself or any party in a position of danger where relying on any single safety measure.
- Automatic machines start without warning. Care must be taken at all times.

WARNING !

Always treat terminals and conductors as dangerous. High voltages may be superimposed on 0v and 24VDC lines as no reference to ground exists. Always meter these points to ensure correct voltage exists.

1.2.15 Introduction

The 100-173 lift controller operates as a 4 stop **simplex**, fully collective controller. **The 100-173 controller cannot be duplexed or grouped.**

Processor

Under normal operation;

- The red Red3 LED blinks to confirm that the microprocessor is running.
- The yellow Yel3 LED comes on to confirm outputs are enabled.
- The green Grn3 LED comes on during power up and turns off during normal operation. It will also flash once when a new value has been written in to EEPROM.

When re-powering; ensure the lift is off for 10 seconds before turning back on.

On power up, a delay of approximately 2 seconds is given on start up to ensure voltages are stable prior to reading and writing outputs.

1.2.16 Controller Installation Environmental Requirements

Controller cabinet must be installed in a location free from;

- Dust and dirt.
- Excessive heat and humidity. Ambient temperature should not exceed 40°C /104°F.
- Excessive vibrations.
- Mist or water

When mounting controller cabinet, ensure it is suitably supported.

Section 2: EEPROM Settings

EEPROM How to read and modify settings

This EEPROM holds settings for the particular contract data including number of floors, door type and drive types.

The EEPROM holds values for various contract settings which may be altered on site. Each setting has a definition followed by its value in hex followed by its value in bit format.

Settings from the power up state,

```
02-  NOR IDL  ][  
ECD Aust. V-0.42
```

To inspect the settings from the power up state, press the forward “>” button located to the left below the LCD until the EEPROM setting appears.

```
02-  NOR IDL  ][  
--1 ff :11111111
```

Now you can use the up “^” and down “v” buttons to scroll through the settings. If you want to change a setting press the enter “ENT” button and a * shall appear on the screen to indicate you are in edit mode.

```
02-  NOR IDL  ][  
TOP: *02:00000010
```

Now use the up “^” and down “v” buttons to change the setting. When you are at the required value press the enter “ENT” button again and the * shall disappear.

```
02-  NOR IDL  ][  
TOP: 03:00000010
```

EEPROM Security

A special write sequence has been added to ensure unauthorized writes to the EEPROM are not made. Only operates with EEPROMs with this capability. These EEPROMs are recommended and identified by a “contract data secure” label.

EEPROM SETTINGS

EEProm Version 0.42 (Simplex) Summary

The EEPROM holds values for various contract settings which may be altered on site. Each setting has a definition followed by its value in hex and then its value in bit format.

Note: Refer to EEPROM Definitions (Full description) for more information.

--1	Spare		
TOP	Top floor number (VALUE)		
	Setting example:-	TOP 04: 00000100	(Level 4 is top floor)
--2	Spare		
TCC	Top car call for "TOP" button (MASK)		
	Setting example:-	TCC 10: 00010000	(Set to Level 4)
CCM	Car call mask. Floors allowed. (MASK)		
	Setting example:-	CCM F0: 11110000	(Levels 1-4)
UCM	Up call mask. Floors allowed. (MASK)		
	Setting example:-	UCM E0: 11100000	(3 Levels 1U-3U)
DCM	Down call mask. Floors allowed. (MASK)		
	Setting example:-	DCM 70: 01110000	(4 Levels 2D-4D)
--3	Spare		
ZON	Zone floor. (MASK)		
	Setting example:-	ZON 40: 01000000	(Zone to Level 2)
ZTM	Zoning time. (VALUE)		
	Setting example:-	ZTM 06: 00000110	(= 60seconds)
HFS	Hall fire service floor. (MASK)		
	Setting example:-	HFS 80: 10000000	(Level 1)
HFA	Hall fire alternate floor. N/A in Australia (MASK)		
	Setting example:-	HFA 40: 01000000	(Level 2 alt. fire floor)
SFR	Short Floor Run (MASK)		
	Setting example:-	SFR 9F: 10011111	(Short floor between 2&3)
MOD	MODE inputs (MASK)		
	Setting example:-	MOD 02: 00000010	(CFS input inverted)
CNT	CNT inputs (MASK)		
	Setting example:-	CNT 02: 00000010	(DOB input inverted)
BST	Brake Switch Time		
	Setting example:-	BST 03: 00000011	(3s)
PRV	If set to "01" requires PRV, prove input on all DRV settings		
RPT	Run protection timer		
	Setting example:-	RPT 01: 00000001	(25s)
DRV	Drive control type.		
	Setting example:-	DRV 02: 00000010	(3010/2CH/S block)
ST2	Star Delta time. (VALUE)		
	Setting example:-	ST2 08: 00001000	(= 800ms)
SDX	Star Delta Exchange time. (VALUE)		
	Setting example:-	SDX 01: 00000001	(= 100ms)
MSL	Magnet slowing type.		
	Setting example:-	MSL 00: 00000000	(MSU/MSD slowing)
		MSL 01: 00000001	(pulse slowing)

EEPROM SETTINGS

- RTM** Extend run time. – If slowing is obtained less than this time, then add the value of in XTM on before dropping high speed.
Setting example:-RTM 00: 00000000 (No extended run time.)
- XTM** Extend run time. – If a short floor determined by RTM then add this amount of Time on before dropping high speed.
Setting example:-XTM 00: 00000000 (No extended run time.)
- StF** Start Fast. - Number of pulses it takes to reach fast speed.
- StM** Start Medium.- Number of pulses it takes to reach medium speed.
- SIF** Slow Fast. - Number of pulses it takes to slow from fast speed.
- SIM** Slow Medium.-Number of pulses it takes to slow from medium speed.
- 4** Spare
- 5** Spare
- 6** Spare
- RLV** Re-leveling. Turn re-leveling on/off.
Setting example:-RLV 00: 00000000 (No Re-level.)
RLV 01: 00000001 (Re-leveling on.)
- DLM** Door limit mask.
Setting example:-DLM 00: 00000000 (Single doors.)
DLM 01: 00000001 (Multi doors.)
DLM 02: 00000010 (Door cam.)
- DLI** Door limit invert. (MASK)
Setting example:-DLI 00: 00000000 (Limits not inverted.)
- NR** Nudging Relay for door nudging /Passing tone (MASK)
Setting example:-NR 00: 00000000 (Nudging off.)
- ADO** Advanced Door Opening.
Setting example:-ADO 00: 00000000 (Off)
- DTC** Door time car call. (VALUE)
Setting example:-DTC 32: 00110010 (= 5000ms, “5 seconds”)
- DTH** Door time hall call. (VALUE)
Setting example:-DTH 32: 00110010 (= 5000ms, “5 seconds”)
- 7** Spare
- ANS** Anti Nuisance EDP. (VALUE)
Set to the number of times a car call is answered without EDP activation before calls are cancelled.
- DTZ** Door time zone. (VALUE)
Setting example:-DTZ 32: 00110010 (= 5000ms, “5 seconds”)
- FD1** Front doors 1-4 mask.
Setting example:-FD1 F0: 11110000 (Front doors 1-4.)
- RD1** Rear doors 1-4 mask.
Setting example:-RD1 20: 00100000 (Rear doors 3.)
- SD1** Selective rear doors 1-4 mask.
First floor of selective front/rear doors.
Setting example:-SD1 10: 00100000 (Levels 3 & 4 selective.)
- 8** Spare
- UDT** Delay time for UD to drop out after SIN5 goes low (DRV=0B)
- ALP** Auxiliary Leveling Pump. Turns on Auxiliary Leveling Pump, for Up Re Level operation.
Setting example:- ALP FF:11111111 (No Auxiliary pump Re-level.)
ALP 01: 00000001 (Re-leveling with Auxiliary pump)
- PRK** Park/Zone with doors closed/open. Set to 00 – doors closed.
- IND** Independent service operation. Set to 00.
- FS** Fire service type

EEPROM SETTINGS

Setting example:-FS 00: 00000000 (Australian fire service.)

FS 01: 00000001 (Code 17.1 U.S.A..)

EP Emergency power operation. Set to 00.

PI Position Indication

Setting example:-PI 00: 00000000 (Decimal outputs.)

DT Door Time Close Setup (Enable "DTC/DTH Canceling Function")

Setting example:-DT 01: 00000001 (DTC/DTH Canceling Activated)

LCK EEPROM Lock (Unlock default 67)

COD Lock code (Unlock default 89)

EQK N/A. Do not adjust

-11 Spare

EEPROM SETTINGS

EEProm Definitions (Full description)

ADO - Advanced Door Opening setup

Sets the doors to open whilst traveling into the floor. The doors shall commence opening when the lift is within the door zone and the MSU or MSD vane pending direction.

ADO EEPROM Advanced Door Opening.

00: 00000000 "Off – Default"

01: 00000001 "On"

ALP – Auxiliary Leveling Pump operation setup

For hydraulic lifts, ALP can be set to control SP3 relay to allow Up Re Leveling using the Auxiliary Pump motor. For "SP3" relay to energise when performing an Up Re level set ALP to "01" and DRV to "00", "02" or "05".

The contacts of SP3 may also be used to stop a secondary pump starting when Up Re Leveling

If ALP is set to "01", SP3 shall NOT turn on for inspection.

ALP EEPROM Auxiliary Leveling Pump.

FF: 11111111 "Off"

01: 00000001 "On – operates SP3 for Up Re-Level or inspection"

ANS – Anti Nuisance setup

Set to the number of times a car call is answered without EDP activation before calls are cancelled. Counter is reset to zero if EDP is activated. If a hall call is present as well as a car call, the counter will not increment.

ANS EEPROM Anti Nuisance.

00: 00000000 "Off"

03: 00000011 "On – operates after 3 car calls of no EDP in a row."

1e: 00011110 "On – operates after 30 car calls of no EDP in a row - Default"

BST – Brake Switch Time

To prove the brake has lifted, brake monitoring switches in conjunction with BST setting, may be used.

BST sets the time for BKSU input to be initiated, once the brake command (BRK relay pulled in) has been given.

Setting example 01-05: 01: 00000001 = 1s

(Immediate stop) 02: 00000010 = 2s

03: 00000011 = 3s

04: 00000100 = 4s

05: 00000101 = 5s

FF: 11111111 = OFF. BKSU not monitored.

If the input is not detected within the specified time (setting 01-05) the lift shall stop immediately and display BST in LCD Lift Status.

Setting example 11-15: 11: 00010001 = 1s

(stop next floor) 12: 00010010 = 2s

13: 00010011 = 3s

14: 00010100 = 4s

15: 00010101 = 5s

FF: 11111111 = OFF. BKSU not monitored.

If the input is not detected within the specified time (setting 11-15) the lift shall stop at the next available floor and display BST in LCD Lift Status. Door open button will still operate.

EEPROM SETTINGS

BST is a fatal error. Reset is only via a processor POR.

Any other setting than above will turn the brake switch monitoring OFF.

See also Input - Output, BKSWS.

CCM - Car Call Mask setup

CCM EEPROM Car call mask. Floors allowed. (MASK). For this lift only.

This setting lets you define the floors which the lift can serve via car calls.

This signal will disable car calls to floors not allowed.

Set bits to a "1" car call allowed or a "0" for not allowed.

C0: 11000000 (1c,2c)

E0: 11100000 (1c,2c,3c)

F0: 11110000 (1c,2c,3c,4c)

Note: This feature shall not to be used for security purposes, as it shall disable the car calls in Fire Service and other modes of operation.

CNT – CNT Input setup

Enables the following CNT inputs to be inverted; DCB, DOB and EDP

CNT EEPROM (MASK)

00: 00000000 No inputs inverted.

01: 00000001 DCB. Door close input inverted

02: 00000010 DOB. Door open input inverted

04: 00000100 EDP. EDP input inverted

eg. 06: 00000110 = both DOB and EDP inputs inverted.

COD – Parameter lockout function

To stop unauthorised adjustments to the EEPROM parameters the COD and LCK parameters are used.

COD and LCK must both be set to default values to allow other parameters to be adjusted.

See also Eeprom setting LCK

COD default. 89: 10001001

LCK default. 67: 01100111

DCM - Down Call Mask setup

DCM EEPROM (MASK) Dn hall calls allowed for this lift only.

This setting lets you define the DOWN floors which the lift can serve via DOWN HALL CALLS

With this setting you may disable DOWN hall calls to floors not allowed.

Set bits to a "1" hall call allowed or a "0" for not allowed.

40: 01000000 (2d)

60: 01100000 (2d,3d)

70: 01110000 (2d,3d,4d)

DLI - Door Limit invert setup

DLI is only valid when DLM is set to 00, 03, 04 or 06. See also EEPROM setting DLM.

DLI setting is used to invert the DFO and DFC inputs when normally open (n/o) door limit contacts are used.

DLI EEPROM Door limit invert. (MASK)

DLI: 00 "Limits not inverted."

DLI: 01 "Limits inverted." Any setting other than 00 shall default to inverted limits.

EEPROM SETTINGS

DLI set to 00 - Limits not inverted. Using n/c limits.

Doors fully open – DFC LED will be on. DFO LED will off
Doors fully closed – DFC LED will be off. DFO LED will on
Doors midway – DFC LED will be on. DFO LED will on

DLI set to 01 - Limits inverted. Using n/o limits.

Doors fully open – DFC LED will be off. DFO LED will on
Doors fully closed – DFC LED will be on. DFO LED will off
Doors midway – DFC LED will be off. DFO LED will off

DLM - Door Limit setup

DLM setting is used to configure the DFO and DFC inputs and the DO and DC relay operation.

Generally; if you have a single door operator, set DLM to 00.

For two door operators, set DLM to 01. (DLI setting shall be ignored).

See also EEPROM setting DLI, DFC, DFO.

DLM EEPROM Door limit mask.

Setting example: DLM 00: 00000000 The door open and door close limits are wired directly to DFO and DFC inputs. These inputs may be inverted using the DLI setting.

DLM 01: 00000001 (Used for front and rear doors) The door open and door close limits are used to operate open and close relays. Normally open contacts from these relays are wired to DFO and DFC inputs (DLI setting shall be ignored)

DLM 02: 00000010 (Door cam control) DC relay output used to control Cam operation.
Nb: 2 sec delay from DO picking up after DC has dropped. (to allow time for cam to drop and locks to break, to avoid lock “snagging”).

See also Input - Output, DFC.

DLM 03: 00000011 As per DLM setting “00”, except DO and DC are held up

DLM 04: 00000100 (Used to hold door closed when running) As per DLM setting “00”, except DC relay picks up whilst running

DLM 05: 00000101 Used for Goods lifts with Peele door operators that automatically Open but close when a call is registered.

DLM 06: 00000110 (Used to hold door closed when running) As per DLM setting “00”, except DO has a 400 millisecond drop delay after DFO changes state and DC relay picks up whilst running and door locks may be opened whilst no demand i.e the door spear has relaxed.

DPT - Door Protection Time

Sets the amount of time for doors to reach fully open or fully closed, before DOP or DCP failure.

ff: 11111111 = 25 seconds. Default

02: 00000010 = 50 seconds.

All other remaining settings will default to the value of 25s.

DRV - Drive type setup

This sets the drive output type. Relay output configurations are changed to suit equipment installed.

Refer to operation section for motion outputs.

DRV...EEPROM...Drive control type.

00: 00000000 “Standard hyd. block valve. 3010EN”

01: 00000001 ”DA DynaHyd valve.”

02: 00000010 “Soft valve. 3010/2CH/S”

03: 00000011 “VF type 1; Keb VF drive, Zetadyn VF drive”

04: 00000100 “1,2 speed AC”

EEPROM SETTINGS

05: 00000101 “GMV 3010/S, Blain EV100”, Maxton, Bucher LRV, EECO
06: 00000110 “VF type 2”
07: 00000111 “VF type 3; ABB VF drive”
08: 00001000 “Butcher VF Hydraulic drive”
0A: 00001010 “Same as DRV=03, except with 1.0 sec delay on UD drop (for DB contactor motor short)
Keb, B&F, Gefran, Zetadyn, C.T. See also Inputs-Outputs IRO
0B:00001011 Do Not Use (Wittur VF Hydro)
0C:00001100 “Butcher I-Valve”
0D:00001101 “Blain EV4.Same as DRV=05 except for 2 second delay on LEV and UP for drive ramp down.
”

DT - Door Time Close setup

This setting allows the door fully open time NOT to be canceled when a car-call or door closed button (DCB) is pressed.

Setting example:

DT 00: 00000000 (De-activated, NOT allowed to cancel DTC/DTH time by pressing either DCB or any car call).

DT 01: 00000001 (Activated. ALLOW pressing a car-call or DCB to cancel DTC/DTH time).

DT 02: 00000000 (Partially de-activated, NOT allowed to cancel DTC/DTH time by pressing any car call).

DTC - Door Time Car Call Close setup

Sets the amount of time before the doors close for a car call whilst on normal operation.

DTC EEPROM Door time close. (VALUE)

Set value for door close time.

The time is set in 100ms increments.

1e: 00011110 = 3000ms, “3 seconds”

32: 00110010 = 5000ms, “5 seconds”

37: 00110111 = 5500ms, “5.5 seconds”

90: 10010000 = 14400ms, “14.4 seconds”

(01 to FF valid values.)

DTH - Door Time Hall Call Close setup

Sets the amount of time before the doors close for a hall call whilst on normal operation.

Lobby time (DTL) overrides this setting when lift is at the lobby floor.

Recommend DTH is set equal to or greater than DTC.

DTH EEPROM Door time close. (VALUE)

Set value for door close time.

The time is set in 100ms increments.

32: 00110010 = 5000ms, “5 seconds”

37: 00110111 = 5500ms, “5.5 seconds”

90: 10010000 = 14400ms, “14.4 seconds”

(01 to FF valid values.)

DTZ - Door Time Zone Close setup

Sets the amount of time before the doors close after a zoning call is answered when on normal operation.

DTZ value overrides DTH value when answering a hall call at the zone floor.

Recommend DTZ is set equal to or greater than DTH and DTC.

DTZ EEPROM Door time close. (VALUE)

Set value for door close time.

The time is set in 100ms increments.

EEPROM SETTINGS

32: 00110010 = 5000ms, “5 seconds”
37: 00110111 = 5500ms, “5.5 seconds”
90: 10010000 = 14400ms, “14.4 seconds”
(01 to FF valid values.)

EP – Emergency Power type

Hydraulic operation only – Set to 00: 00000000

EQK

N/A. Do not adjust.

FD1 – Front Doors setup, Levels 1-8

This sets the levels for the front doors to operate.
May be used in conjunction with RD1 and SD1 for selective rear door operation

FD1 setting example: A0: 10100000 (Level G and 2). See table below.
FD1 A0: 10100000 (Level G and level 2 have front doors)
RD1 50: 01010000 (Level 1 and level 3 have rear doors)

FLOOR DESIG.	FRONT DOORS	REAR DOORS
3		3 (rear) 4C, 4D
2	2 (front) 3C, 3U, 3D	
1		1 (rear) 2C, 2U, 2D
G	G (front) 1C, 1U	

FS – Fire Service type

Australia: Set to 00: 00000000

USA Only. Fire Service Code 17.1. FS EEPROM setting must be set to 01: 00000001

HFA - Hall Fire Alternate Floor setup

USA Only. Fire Service Code 17.1. FS EEPROM setting must be set to 01
When the designated floor smoke alarm is activated, the lift shall return to the HFA floor
See also Inputs-Outputs HFA

HFA...EEPROM Hall fire alternate floor. (MASK)

80: 10000000 (Level 1)
40: 01000000 (Level 2)
20: 00100000 (Level 3)
10: 00010000 (Level 4)

HFS - Hall Fire Service Return floor setup

This sets the hall fire service return floor activated when HFS input is active whilst in normal mode.
HFS...EEPROM Hall fire service floor. (MASK)

80: 10000000 (Level 1)
40: 01000000 (Level 2)
20: 00100000 (Level 3)
10: 00010000 (Level 4)

EEPROM SETTINGS

IND – Independent Service type

Australian. – Set to 00: 00000000

LCK – Parameter lockout function

To stop unauthorised adjustments to the EEPROM parameters the LCK and COD parameters are used. LCK and COD must both be set to default values to allow other parameters to be adjusted.

See also EEPROM setting COD

LCK default. 67: 01100111

COD default. 89: 10001001

MOD – MODE Inputs setup

Enables the 8 MODE inputs to be inverted. (DCB to MSU)

MOD EEPROM (MASK)

02: 00000010 CFS. Car fire service input inverted

04: 00000100 HFS. Hall fire service input inverted

08: 00001000 IND. Independent Operation input inverted

MSL – Magnet Slowing Type

Sets the slowing/counting type.

00: 00000000 MSU/MSD magnet slowing.

01: 00000001 Pulse slowing.

See also Section 6: Motion – EEPROM MSL setting “00” and “01”

NR - Door Nudging setup

Sets the door nudging feature on or off. (Nudging time is preset) See also Input - Output, NR.

Sets “OUT1/BUZ” output on or off to control the floor passing tone. See also Input - Output, OUT1/BUZ.

00: 00000000 No door nudging or passing tone. Sets EDP/OS time to 30 secs. See also Input - Output, EDP

01: 00000001 Door nudging only

02: 00000010 Door nudging and passing tone

03: 00000011 Passing tone only. Sets EDP/OS time to 30 secs. See also Input - Output, EDP

04: 00000100 Sets EDP/OS time to 180 secs. See also Input - Output, EDP

PI - Position Indication setup

PI EEPROM Position Indication output type

This setting changes the PI transistor output sequence to the following values.

00: 00000000 “Decimal outputs.”

01: 00000001 ”Binary outputs.”

02: 00000010 “Grey code outputs.”

PRK – Park/Zone with doors open

This setting sets the lift to Zone with the doors open.

PRK EEPROM value.

00: 00000000 “Normal.”

01: 00000001 ”PRK doors open.”

PRV – Proving required setup

If set to "01" PRV input is required to be on prior to starting a run, irrelevant of DRV type selected.

EEPROM SETTINGS

See also Input - Output, PRV.

RD1 – Rear Doors setup, Levels 1-4

This sets the levels for the rear doors to operate.

DZR relay used for rear door control, is switched by the controller DZR/OUT2 output

RD1 eliminates the need for a rear door/DZR sensor in shaft

May be used in conjunction with FD1 and SD1 for selective rear door operation

RD1 setting example: 50: 01010000 (Level 1 and 3). See table below.

Controller switches DZR/OUT2 output to 0V when lift at level 1 or 3

FD1 A0: 10100000 (Level G and level 2 have front doors)

RD1 50: 01010000 (Level 1 and level 3 have rear doors)

FLOOR DESIG.	FRONT DOORS	REAR DOORS
3		3 (rear) 4C, 4D
2	2 (front) 3C, 3U, 3D	
1		1 (rear) 2C, 2U, 2D
G	G (front) 1C, 1U	

RLV – Re-leveling setup

This sets the floor re-leveling function on/off

Setting example 00: 00000000 off. Lift will NOT re-level.

01: 00000000 on. Lift will re-level.

RPT - Run Protection Timer setup

If the lift is given run signals from controller and lift does not move, (no MSU or MSD input received) the controller turns off all run signals after a certain time, (e.g. 25s) depending on value of the RPT setting. If this process is cycled 3 times, then the controller shall display RPT error message on the LCD screen.

RPT is a fatal error. Reset is only via a processor POR or Inspection on/off sequence.

Setting example 01: 00000001 = 25s

02: 00000010 = 50s

03: 00000011 = 75s

All other remaining settings including 00, will default to the value of 25s.

RPT does not operate on inspection or on DRV setting “01” (DA valve).

RTM – Run Time short floor run setup

Nb: DRV must be set to a traction lift setting.

If a short floor exists where the lift starts slowing prior to reaching full speed, a long creep into floor may occur.

RTM setting, in conjunction with XTM setting, reduces this long creep time by holding in the fast speed relay for a defined time (XTM) after the initial slowing point.

Setting RTM. – Look at Ram address R:72. (Motion Timer).

02-	NOR	IDL][
R:70	00	OA	00 14

To access R:72 on the LCD see also Section 5: LCD Display Options

R: 72 shown in red at left.

EEPROM SETTINGS

When performing the shortest floor run take note of the highest value R:72 reaches (in hex). Add approx. 5 (in hex) to this value and set RTM to this value.

If slowing is obtained before the value in RTM is reached, the fast speed relay (UF or DF) will be held up for extra time as defined by XTM.

Set XTM to 20. If the lift fails to slow down to leveling speed before reaching the floor, (fast speed relay is being held up too long) reduce XTM value. If there is still too much creep (fast speed relay is being held up not long enough) increase XTM time. Continue until desired result is obtained.

SD1 – Selective rear doors setup, Levels 1-4

This sets the first floor of the selective front and rear doors.

Used in conjunction with FD1 and RD1

Selective Rear Door floors are treated as two separate floors requiring separate car and landing buttons. See 1(front) and 1(rear) in table below

Setting Example: Refer to table below

SD1 40: 01000000 (Level 1 has selective front and rear doors)

FD1 D0: 11010000 (Level G, level 1(front) and level 2 have front doors)

RD1 20: 00100000 (Level 1 has rear doors)

This sets the levels for the rear doors to operate by turning on DZR (OUT2) output to 0V when lift answers call to 3C,3U,3D. See RD1.

FLOOR DESIG.	FRONT DOORS	REAR DOORS
2	2 (front) 4C, 4U, 4D	
1	1 (front) 2C, 2U, 2D	1 (rear) 3C, 3U, 3D
G	G (front) 1C, 1U	

SDX - Star Delta Exchange Time setup

This sets the amount of time from Star dropping out and Delta picking up.

SDX EEPROM Star Delta Exchange time. (VALUE)

Set value for delay between star dropping and delta pulling in.

The time is set in 100ms increments.

08: 00001000 = 800ms

Set between 01 & 08

SDX – VF Drive setting 06,07,08 brake drop time

Valid only when Eeprom setting “DRV” is set to “06, 07, 08”.

This sets the amount of time after a run for the brake drop in 10ms increments.

SDX value must be less than ST2 value

Set between 01 & ff

SFR - Short Floor Run setup

Note: this setting only works on MSL 00

This signal sets a short floor between floors, i.e the controller will not set the fast speed relays (UF & DF).

SFR...EEPROM Must be FF: 11111111 unless stated.

A setting for a short floor between levels 2 & 3 would be as follows.

12345678

10011111

EEPROM SETTINGS

Spares

--1 EEPROM Spare
--2 EEPROM Spare
--3 EEPROM Spare
--4 EEPROM Spare
--5 EEPROM Spare
--6 EEPROM Spare
--7 EEPROM Spare
--8 EEPROM Spare
--9 EEPROM Spare
-10 EEPROM Spare
-11 EEPROM Spare
-12 EEPROM Spare

StF – Start Fast

Number of pulses (in hex) it takes to reach fast speed

StF EEPROM Start Fast pulses. (VALUE)

Eg. 30: 00110000 (30 pulses in hex or 48 in decimal)

See also Section 6: Motion – EEprom MSL setting “01”

StM – Start Medium

Number of pulses (in hex) it takes to reach medium speed.

StM EEPROM Start Medium pulses. (VALUE)

Eg. 20: 00100000 (20 pulses in hex or 32 in decimal)

See also Section 6: Motion – EEprom MSL setting “01”

SIF – Slow Fast

Number of pulses (in hex) it takes to slow from fast speed.

SIF EEPROM Slow Fast pulses. (VALUE)

Eg. 30: 00110000 (30 pulses in hex or 48 in decimal)

See also Section 6: Motion – EEprom MSL setting “01”

SIM – Slow Medium

Number of pulses (in hex) it takes to slow from medium speed.

SIM EEPROM Slow Medium pulses. (VALUE)

Eg. 20: 00100000 (20 pulses in hex or 32 in decimal)

See also Section 6: Motion – EEprom MSL setting “01”

ST2 - Star Delta Changeover Time setup

Star connected motor running time.

The amount of time the motor runs in Star, before changing to Delta.

ST2 EEPROM Star Delta time. (VALUE)

The time is set in 100ms increments.

08: 00001000 = 800ms

0a: 00001010 = 1000ms, “1 second”

12: 00010010 = 1800ms, “1.8 seconds”

EEPROM SETTINGS

ST2 – VF Drive setting 06,07,08 end run time

Valid only when Eeprom setting “DRV” is set to “06, 07, 08”.

This sets the amount of time after a run for the Up/Dn relays to drop in 10ms increments.

Set between 01 & ff.

ST2 value must be greater than SDX value

TCC - Top Car Call setup

TCC EEPROM Top car call for the “TOP” button (MASK)

Top floor served for this lift only.

The controller shall enter a car call to this setting when the “TOP” button on the circuit board is pressed

40: 01000000 (Level 2)

20: 00100000 (Level 3)

10: 00010000 (Level 4)

TOP - Top floor setup

TOP EEPROM Top floor number (VALUE)

Set value to number floors served. (02 to 04 valid values)

Lift resets to “TOP” value when TSL limit is activated.

02: 00000010 (Level 2)

03: 00000011 (Level 3)

04: 00000100 (Level 4)

UCM - Up Call Mask setup

This setting lets you define the UP call floors which the lift can serve.

With this setting you may disable UP hall calls to floors not allowed.

UCM EEPROM Up call mask. Floors allowed. (MASK) Up calls allowed for this lift only.

80: 10000000 (Level 1u)

C0: 11000000 (Level 1u,2u)

E0: 11100000 (Level 1u,2u,3u)

UDT – UD delay time setup

N/A

XTM – Extend run time short floor run

Nb: DRV must be set to a traction lift setting.

If a short floor exists where the lift starts slowing prior to reaching full speed, a long creep into floor may occur.

RTM setting, in conjunction with XTM setting, reduces this long creep time by holding in the fast speed relay for a defined time (XTM) after the initial slowing point.

Setting RTM. – Look at Ram address R:72. (Motion Timer).

02- NOR IDL] [
R:70 00 OA 00 14

To access R:72 on the LCD see also Section 5: LCD Display Options
R: 72 shown in red at left.

When performing the shortest floor run take note of the highest value R:72 reaches (in hex). Add approx. 5 (in hex) to this value and set RTM to this value.

EEPROM SETTINGS

If slowing is obtained before the value in RTM is reached, the fast speed relay (UF or DF) will be held up for extra time as defined by XTM.

Set XTM to 20. If the lift fails to slow down to leveling speed before reaching the floor, (fast speed relay is being held up too long) reduce XTM value. If there is still too much creep (fast speed relay is being held up not long enough) increase XTM time. Continue until desired result is obtained.

ZON - Zoning/Parking floor setup

This signal sets the master zoning floor.

After the zone time period as defined by ZTM, a lift shall zone to floor defined by ZON.

ZON EEPROM Zone floor. (MASK) Zoning floors for lift.

00: 00000000 (No zoning). **To disable zoning** set “ZON” to “00”.

80: 10000000 (Level 1)

40: 01000000 (Level 2)

20: 00100000 (Level 3)

10: 00010000 (Level 4)

ZTM - Zoning time setup

This sets the amount of time prior to zoning to the “ZON” setting.

To disable zoning set “ZON” to “00”.

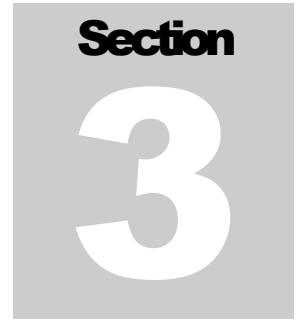
ZTM EEPROM Zoning time. (VALUE)

The time is set in 10s increments.

06: 00001000 = 60s

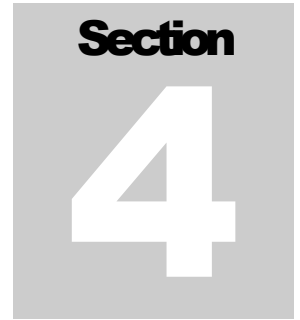
0a: 00001010 = 100s, “1 minute 40 seconds”

12: 00010010 = 180s, “3 minutes”



Section 3. Group. N/A .

Group operation is not applicable to this controller.



Section 4. Inputs – Outputs

All inputs except LR, SAF, HV1 and HV2 switch low to 0 Volts in respect to 24VDC. The input shall draw approx 12mA. The input LED is in series with the input. All inputs are OPTO isolated to avoid noise-related problems.

Darlington Outputs switch low to “0V” 0 volts in respect to 24VDC. **The output can switch a maximum of 500mA.** The output LED indicates the output status and shall be illuminated when the output has switched low. All outputs are OPTO isolated to avoid noise-related problems.

Transistor Outputs switch high to “24V” in respect to 0VDC. **The output can switch a maximum of 1.5A.** The output red LED indicates transistor output on, e.g. 1P, 2P, 3P, 4P.

BKSW - Brake Switch Input

For brake switch monitoring.

Brake lift is monitored via brake switches on the hoist machine, which input 0V to BKSW input when fully lifted. LED on when brake is fully lifted.

Malfunctioning brake shall cause either of 2 errors – BSD or BST

BSD - If brake does not drop 1 second from when lift stops with the doors closed.

Note: BSD error shall only set when the doors are closed to enable lift to re-level with the doors open

BST - If brake does not lift once run is initiated.

See also EEPROM settings, BST

See also LCD lift status BSD, BST.

BRK - Brake Relay Output

BRK RELAY OUTPUT Brake relay output

See Section 6: Motion, for more on the relay operation

BSL – Bottom Slowing input

Bottom floor position correction limit and forced slowdown limit for terminal floor.

BSL LED shall be off when BSL limit is activated.

BSL LED must remain off when lift is on the buffer

BUZ - Nudging Buzzer Output

BUZ – DARLINGTON OUTPUT

BUZ is used to activate an audible signal when lift on HFS recall

BUZ can also be used to operate an audible floor passing tone device

BUZ can also be used to operate a door nudging buzzer

The nudging buzzer shall operate when the nudging relay NR, is activated. See Inputs – Outputs, NR

See also EEPROM settings, NR

CBS - Hall Button Stop Output

CBS TRANSISTOR OUTPUT

INPUTS - OUTPUTS

Hall button stop output. CBS activates when the lift answers a hall call.

CC - Car Call Inputs/Darlington Outputs

inputs / outputs

1C - I/O - 1st floor car call/tell tale light

2C - I/O - 2nd floor car call/tell tale light

3C - I/O - 3rd floor car call/tell tale light

4C - I/O - 4th floor car call/tell tale light

CFS - Car Fire Service Input

Australia: CFS - Car Fire Service signal input.

LED on when keyed to CFS unless inverted with MOD setting.

CFS over rides HFS.

CFS shall allow only one car call to be entered and shall toggle to the latest pressed call.

When CFSS is pressed, CFS input must stay on.

USA: Fire Service Code 17.1. FS EEPROM setting must be set to 01

CFS – **Phase 2.** In Car Fire Operation input.

CFSS - Car Fire Service Start Input

Australia: CFSS – Car Fire Service Start signal input.

The CFSS LED is on when keyed to CFSS unless inverted with MOD setting.

The input is switched low to 0 Volts.

When on CFS this signal shall close the doors. The DOB and EDP shall be ignored. When the doors are closed the lift shall run to the floor selected.

USA: CFSS – **Phase 2.** In Car Call Cancel input.

DC - Door Close Relay Output

DC RELAY OUTPUT Door Close relay output. See also DFC Input.

DCB - Door Close Button Input

LED on when door close button is pressed unless inverted with CNT setting.

The door close button closes the doors on Independent Service.

DCB cancels door timing on normal operation if DT is set to 01h.

Both the door detector EDP and door open button DOB shall override the DCB.

DDO - Door Open Disable Switch (no actual input).

Toggle switch provided on board. When switch is on (down) DDO is activated.

Allows the lift to be sent to floors via car calls without the doors opening. Useful for testing/adjusting etc.

OS output shall be activated. Lift shall be taken out of the group.

DO button, Independent Service and Fire Service override DDO

DDN - Direction Down Output

DDN TRANSISTOR OUTPUT Down Direction indication output.

Output switches to 24VDC for indication of lift advanced down direction.

DF - Down Fast Relay Output

DF RELAY OUTPUT Down Fast output

See Section 6: Motion, for more on the relay operation

DFC - Door Fully Closed Input

DFC input must change state when the doors reach the fully closed limit/position.

INPUTS - OUTPUTS

Single Doors:

Input state can be inverted with DLI setting. See DLI in EEprom settings.

To close the lift doors, DC relay shall pull up and stay up until the DFC input is switched and the locks are made.

If DFC input does NOT switch, DCPfail shall appear on the LCD after a period of 25 seconds and drop DC relay. After a further period of 15 seconds, the doors will re-open and display **DCP (Door Close Protection)** on the LCD. This process is repeated until the fault has been cleared and the DFC input switches.

While in DCPfail/DCP mode, the controller switches on the **OS output**. See Inputs - Outputs, OS.

Nb: When DLM = 02, DCPfail does not apply.

Alternatively, **If DFC input is switched and the door locks do not make, LCK-bad** shall appear on the LCD. DC shall stay active for a period of 5 seconds to try to push the doors closed. If the door locks still fail to make then the doors shall then re-open. This process will be repeated until the fault has been cleared and the locks make.

Nb: When DLM = 02, LCK-bad does not apply, due to locks not making until a call is registered and cam lifting.

Dual Doors:

DLM EEprom setting must be set to 01 for dual doors.

DLI EEprom setting shall be ignored. . See DLI in EEprom settings.

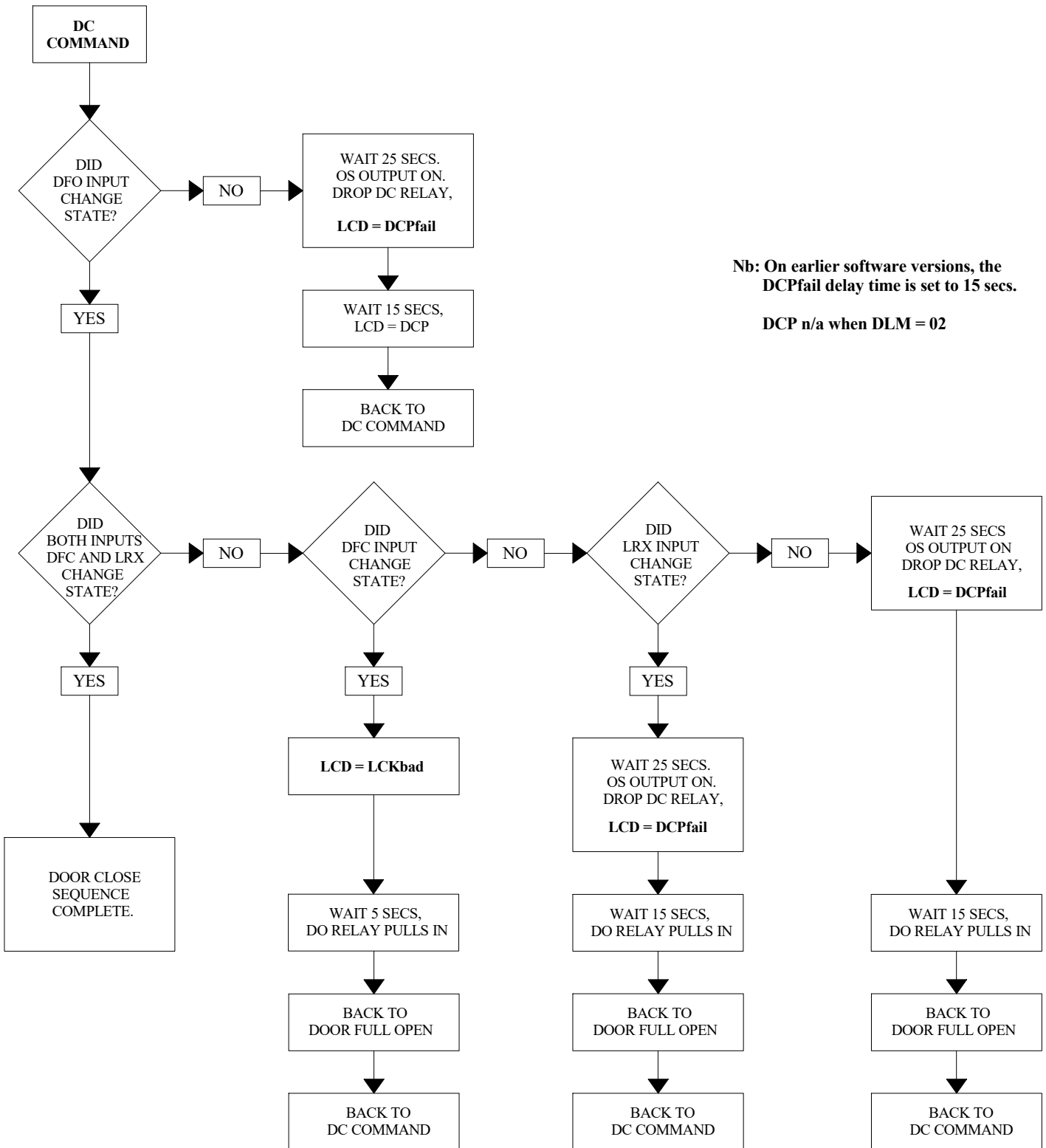
DFC input is switched via the external front or rear door close relay n/o contacts.

The door close relays drop out via the door fully closed limit switches.

When the external front or rear door close relay is in DFC LED will be on.

See the following DC-DCPfail flow chart for more detail.

INPUTS - OUTPUTS



Nb: On earlier software versions, the DCPfail delay time is set to 15 secs.

DCP n/a when DLM = 02

DFO - Door Fully Open Input

DFO input must change state when the doors reach the fully open limit/position.

Single Doors:

Input state can be inverted with DLI setting. See DLI in EEPROM settings.

To open the doors, DO relay shall pull up and stay up until the DFO input is switched. **If DFO input does NOT switch, DOPfail** shall appear on the LCD after a period of 25 seconds and drop DO relay. After 3-5 seconds

INPUTS - OUTPUTS

(depending on the state of locks and DFC) DC will then pull in and display **DOP (Door Open Protection)** on the LCD and close the doors. If a demand to open still exists, the doors will try to re-open. If not NOR-IDL shall appear on the LCD.

Alternatively, **If DFO input is switched and the door locks are still made, BDL (Bridged Door Lock monitoring)** shall appear on the LCD. Lift will remain in BDL state with doors open until the bridge has been removed from the locks, therefore insuring the lift cannot run with the doors open and the locks bridged.

When on inspection BDL is still displayed as previous, however the lift can run via inspection buttons or access control (USA Only).

While in DOP/DOPfail mode, the controller switches the OS output on. See Input - Output, OS.

Dual Doors:

DLM EEPROM setting must be set to 01 for dual doors.

DLI EEPROM setting shall be ignored. . See DLI in EEPROM settings.

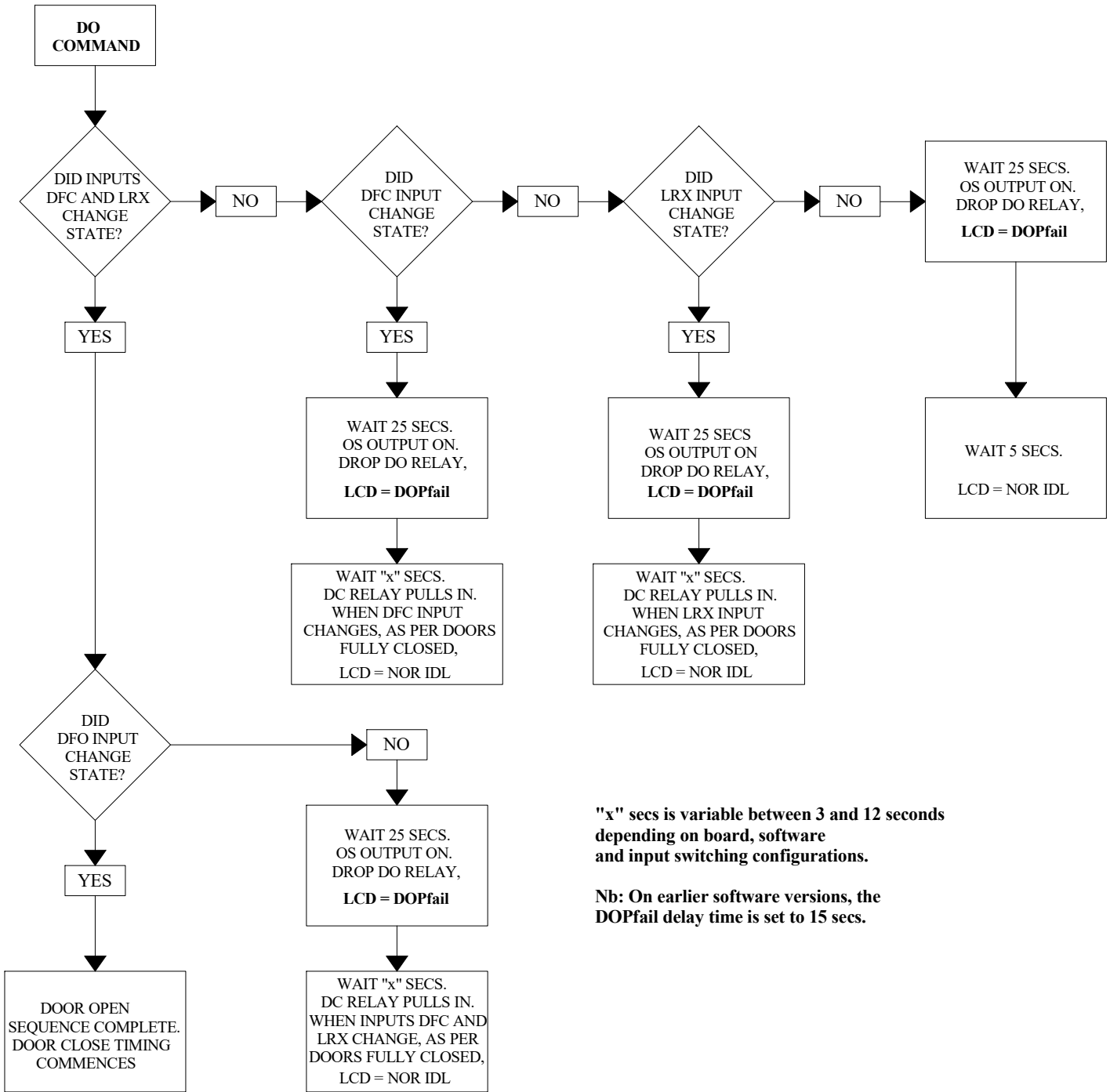
DFO input is switched via the external front or rear door open relay n/o contacts.

The door open relays drop out via the door fully open limit switches.

When the external front or rear door open relay is in DFO LED will be on.

See the following DO-DOPfail flow chart for more detail.

INPUTS - OUTPUTS



DHC - Down Hall Call Inputs/Darlington Outputs

inputs	/	outputs
2D	I/O	2 nd floor DN call/tell tale light
3D	I/O	3 rd floor DN call/tell tale light
4D	I/O	4 th floor DN call/tell tale light

DN - Down Relay Output

DN RELAY OUTPUT Down relay output
See Section 6: Motion, for more on the relay operation

DO - Door Open Relay Output

DO RELAY OUTPUT Door Open relay output. See also DFO Input.

INPUTS - OUTPUTS

DOB - Door Open Button Input

LED off when door open button is pressed unless inverted with CNT setting.

The door open button is used to open the doors at floor level. (DZ on)

The DOB shall override the door close button (DCB).

When DOB input is off for extended periods (doors being held open) OS output will turn on as per EDP operation. See Inputs – Outputs, EDP.

DS - Down Slow Relay Output

DS RELAY OUTPUT Down slow output

See Section 6: Motion, for more on the relay operation

DUP - Direction Up Output

DUP TRANSISTOR OUTPUT Up Direction indication output.

Output switches to 24VDC for indication of lift advanced up direction.

DZ - Door Zone Input

DZ LED shall be on when lift is in the Door Zone.

DZ input controls DZ relay.

See also Inputs – Outputs, DZ - Door Zone Relay Output

Note: At floor level both MSD and MSU zones must be within the door zone (DZ).

DZ – Door Zone Relay Output

DZ RELAY OUTPUT

DZ relay pulls up when DZ input is on.

The external DZ C, N/O and N/C contacts are NOT to be used. Both contacts are already used. (see P2 of ECD circuit diagrams).

See also Inputs – Outputs, DZ – Door Zone Input

DZR – Rear Door Zone Output

DZR – DARLINGTON OUTPUT Rear door output.

Used to control DZR (rear door zone relay) when using RD1 EEPROM setting

Also used for selective rear door operation. See EEPROM settings, RD1 and SD1

EDP - Electronic Door Protection Input

EDP - Electronic Door Protection input.

EDP LED shall be off when the light ray is obstructed, unless inverted with CNT setting.

The loss of EDP input shall reopen the doors when on normal or independent modes. The doors shall remain open until the obstruction is removed and EDP input turns back on.

EDP operation with EEPROM setting NR = 00 or 03;

After 30 secs with EDP off and demand exists for the lift via latched hall or car calls, the lift shall be determined Out of Service. OS output will turn on, cancelling all hall calls (not car calls). Lift will remain in OS state until EDP turns back on and doors are allowed to close.

EDP operation with EEPROM setting NR = 04;

After 180 secs with EDP off and demand exists for the lift via latched hall or car calls, the lift shall be determined Out of Service. OS output will turn on, cancelling all hall calls (not car calls).

Lift shall remain in OS state for 10 secs. OS then turns off and lift goes back into service and hall calls can be latched again. Sequence repeats if EDP remains off. This setting is used for nursing homes to allow for longer door open times.

See Inputs – Outputs, OS.

See also EEPROM settings, NR

INPUTS - OUTPUTS

EQK – Earthquake Detection input. (Siesmic or Counterweight displacement switch)

EQK LED shall be on when EQK input is activated.

EQK shall be shown as the lift status on the LCD screen.

a: If the lift is in motion and EQK is activated, the lift shall stop at the next possible floor and remain stopped with the doors open.

b: If the lift stops between floors due to a power failure and power is restored with EQK input on, the lift shall remain stopped.

c: If the lift is stopped at a floor and EQK is activated, the lift shall remain stopped with the doors open.

d: If a power failure occurs while at the floor, then is restored with EQ activated, the lift shall remain stopped at that floor and re open the doors.

EQK status, once activated, shall not reset if the EQK input turns off.

EQK status, once activated, shall not reset, if a power off/on cycle occurs as the EQK status is stored in Eeprom

EQK status shall reset by an inspection on/off cycle with EQK input off

Lifts with rear doors shall require a DRZ relay, operated by an inductor, rather than by DZR output;

This will ensure the correct front or rear door opens when power is restored (as per “d” above) as the controller will not know the current lift position unless at a terminal floor.

EP - Emergency Power Input

EP – For hydraulic elevator operation only

EP LED shall be on when emergency power is activated.

When EP input is activated the lift shall return to the lowest level and open its doors. The doors will then close and shall remain closed until the signal is lost or the door open button is pressed.

Lift shall remain out of service (OS output will activate.) while EP is on.

HFA - Hall Fire Alternate Input

HFA - Hall fire alternate input

USA Only. Fire Service Code 17.1. FS Eeprom setting must be set to 01

HFA LED shall be on when the fire alarm initiating device is activated at the designated floor. When on normal operation mode, the lift shall return to the HFA floor as defined by EEProm setting HFA.

HFL - Hall Fire Light Output

HFL – DARLINGTON OUTPUT

USA Only. Fire Service Code 17.1. FS Eeprom setting must be set to 01

This output shall be activated when on fire service to control HFL relay which disconnects HF- (see page 3 and 4 of ECD circuit diagrams) to render call registered, directional lights and landing indicators inoperative as per code requirement.

Note: Car position indicators and position indicators at the designated level and fire control station shall remain operative when on fire service.

HFM Hall Fire Machine Room/Hoist way Input

HFM/SIN1

USA Only. Fire Service Code 17.1. FS Eeprom setting must be set to 01

HFM LED shall be on when a fire alarm initiating device is activated in the machine room or in the lift shaft.

Causes the illuminated visual signal to turn on intermittently (flash)

See Inputs – Outputs, HFV.

HFR - Hall Fire Reset Input

HFR - Hall fire reset input

USA Only. Fire Service Code 17.1. FS Eeprom setting must be set to 01

HFR input used to remove elevator from Phase 1 operation

HFR LED shall be on when keyed to HFR (reset).

INPUTS - OUTPUTS

HFS - Hall Fire Service Input

HFS initiates the fire service recall operation

Australia: HFS LED shall be on when HFS recall is activated. (Unless inverted with MOD setting) via the fireman's hall fire service key switch

If lift is on normal operation mode and HFS is activated, the lift shall return to the HFS floor as defined by EEPROM setting HFS.

USA: Fire Service Code 17.1. FS EEPROM setting must be set to 01

HFS LED shall be on when **HFS/PHASE 1** recall is activated. (Unless inverted with MOD setting) via the fire recall switch or a fire alarm initiating device

If lift is on normal operation mode and HFS/PHASE 1 is activated, the lift shall return to the HFS floor as defined by EEPROM setting HFS.

See also EEPROM setting HFA.

HFV - Hall Fire Visual signal Output

HFV – DARLINGTON OUTPUT

USA Only. Fire Service Code 17.1. FS EEPROM setting must be set to 01

This output shall be activated to control the illuminated visual signal.

HFV output will turn on intermittently (flash) if the HFM input is activated. See Inputs – Outputs, HFM.

HV2 - High Voltage Input

USA Only. HV2 – High voltage processor input for monitoring 'BDL' (Lift Status) for the landing locks.

HV2 LED shall be on when door locks are made.

HV2 - Ram address R:43

IDN - Inspection Down Input

IDN - Inspection down signal input

IDN LED shall be on when down inspection button pressed.

Momentary push button switch also provided on board for IDN

IN3 – Spare Input 3

N/A

IN4 – Spare Input 4

N/A

IN5 – Spare Input 5

Used with DRV=0B for control of UD relay

IN6 – Spare Input 6

N/A

IND - Independent Service Input

IND - Independent service input.

IND LED shall be on when keyed to IND unless inverted with MOD setting.

Independent service is the same as exclusive service.

If the lift is on normal operation mode and the lift is keyed to independent service the operation shall be as follows.

The car doors shall remain open. When a car call is entered the doors shall close only whilst the call button is being pressed. This call button operates as a dual call enter and door close button. Alternatively you may enter the call with the car call button and then use the door close button to close the doors.

Only one call may be entered at a time.

To change the desired destination floor, press the new car call button to toggle the call.

INPUTS - OUTPUTS

Operation modes including Car Fire Service, Hall Fire Service, Inspection and Emergency lowering operation shall override Independent Service.

INSP - Inspection Control Input

INSP LED shall be off when on inspection.

Toggle switch also provided on board for INSP. When switch is down, INSP is ON.

Note: Top of car inspection must be OFF for on board Inspection switch/buttons to be operative.

IRO – Inspection Relay Output

IRO – DARLINGTON OUTPUT

This output shall be activated when the lift is on inspection.

Used for driving an external inspection relay, where extra inspection contacts may be required. E.g. Inspection contact in series with up fast speed valve, so lift travels on slow speed when on inspection.

Not applicable when DRV is set “OA”. When DRV = 0A, this output shall be activated when the lift is performing a correction run. To be used for driving an external relay, where the contacts may be required for a correction speed input to the drive.

IUP - Inspection Up input

IUP - Inspection up signal input

IUP LED shall be on when up inspection button pressed.

Momentary push button switch also provided on board for IUP

IN1/HFM – Multi Purpose Input

See Inputs – Outputs HFM

IN2/BKSW – Multi Purpose Input

See Inputs – Outputs BKSW

IN3 – IN6 – Multi Purpose Input 3 to 6

Spare Inputs

LEV - Leveling Relay Output

LEV RELAY OUTPUT

Relay pulls up when lift leveling or re-leveling to floor

LR – Lock Relay Input.

LR - Lock Relay input for **LR Relay**. High voltage input.

LR input controls LR relay. The LR n/o contacts are used in the safety circuit. (See page 2 of ECD circuit diagrams)

LR and LRX inputs are wired in parallel. See also Inputs – Outputs LRX

LR – Lock Relay Output

LR RELAY OUTPUT

Relay pulls up when LR input is on.

See also Inputs – Outputs LR

LRX – Aux LR Input.

LRX/HV1 - Lock input for **processor**. High voltage input. Also used for monitoring ‘BDL’ (Lift Status).

LRX and LR inputs are wired in parallel. See also Inputs – Outputs LR

(See page 2 of ECD circuit diagrams)

LRX - Ram address R:44

INPUTS - OUTPUTS

M3 - Door Locks Input

M3 - Lock input for **processor**. High voltage input
(See page 2 of ECD circuit diagrams)
M3 - Ram address R:46

MSD - Down Count Input

MSD – Input pulls up on board relay MSD which is used in the masking/re-leveling circuit and inputs to tell the lift to re-level and count.

Ensure the MSD slowing input is activated **before** the Bottom Slowing Limit (BSL) at the bottom floor.

Counting Operation (MSL=00) – When the lift is running down between floors it shall advance the position count when a MSD input is received. The lift indicator outputs 1P to 8P shall change accordingly. The LCD position shall remain the same until the lift passes through DZ. At floor level the MSD magnets must be within the DZ magnet or a dual advance count may occur.

Re-leveling Operation – If the lift is stationary at a floor and MSD is off with DZ and MSU on then the lift shall re-level up (**LUP** displayed on LCD) until MSD is switched on again. If the lift fails to re level to the floor after 3 consecutive, 10 second attempts, **LEV** will be displayed on the LCD. Lift shall no longer attempt to re level.

Note: LEV status does not take the lift out of service.

A re-level shall only occur approximately 3 seconds after a run or previous re-level whilst lift is on an appropriate mode.

A re-level shall only occur if the doors are fully closed or fully open

MSU - Up Count Input

MSU – Input pulls up on board relay MSU which is used in the masking/re-leveling circuit and inputs to tell the lift to re-level and count.

Ensure the MSU slowing input is activated **before** the Top Slowing Limit (TSL) at the top floor.

Counting Operation (MSL=00) – When the lift is running up between floors it shall advance the position count when a MSU input is received. The lift indicator outputs 1P to 8P shall change accordingly. The LCD position shall remain the same until the lift passes through DZ. At floor level the MSU magnets must be within the DZ magnet or a dual advance count may occur.

Re-leveling Operation – If the lift is stationary at a floor and MSU is off with DZ and MSD on then the lift shall re-level down (**LDN** displayed on LCD) until MSU is switched on again. If the lift fails to re level to the floor after 3 consecutive, 10 second attempts, **LEV** will be displayed on the LCD. Lift shall no longer attempt to re level.

Note: LEV status does not take the lift out of service.

A re-level shall only occur approximately 3 seconds after a run or previous re-level whilst lift is on an appropriate mode.

A re-level shall only occur if the doors are fully closed or fully open

NR - Nudging Relay Output

NR RELAY OUTPUT Nudging relay output

NR relay pulls up when the lift is on door nudging mode.

In door nudging mode, the doors will close regardless of “EDP” input state. The NR relay contacts are used to signal the door operator to close the doors at a reduced speed and torque to avoid injury.

Nudging mode occurs when doors are held open via EDP for more than 20 seconds after door timing (DTC, DTH, DTL) has expired. Lift must be in NOR mode (normal operation) for nudging to operate.

See also Inputs – Outputs, OUT1/BUZ

See also EEPROM settings, NR

INPUTS - OUTPUTS

OUT1/BUZ - Nudging Buzzer Output

See Inputs – Outputs BUZ

OUT2/DZR – Rear Door Zone Output

See Inputs – Outputs DZR

OS - Out of Service Output

OS TRANSISTOR OUTPUT Out of service output

This signal turns on whenever the lift is out of the group and therefore not available to answer hall calls.

If safeties are lost or the lift is not in normal mode of operation this signal shall activate.

NB: If EEPROM setting, DRV = 0A, CFS and IND do not turn on OS output

PI - Position Output

PI transistor position outputs switch high to 24VDC and are used for indication of lift position.

This signal is the advanced lift position count.

Note: The LCD displays the actual and not the advanced position (PI) count.

The PI output may be in decimal, binary or grey code depending on the PI Setting. See EEPROM settings, PI

1P	TRANSISTOR OUTPUT	Position 1 output
2P	TRANSISTOR OUTPUT	Position 2 output
3P	TRANSISTOR OUTPUT	Position 3 output
4P	TRANSISTOR OUTPUT	Position 4 output

PRK - Parking Function Input

PRK LED shall be on when lift is on park.

When PRK input is active, the lift shall remain at the floor with the doors open, when on normal or independent operation.

All car calls and door close buttons shall be ignored.

The controller switches the OS output on. See Input - Output, OS.

USA Only. Fire Service Code 17.1. FS EEPROM setting must be set to 01

PRK input shall be activated via the “hold” key switch position when on Fire Operation - Phase 2. The lift will remain at the floor with the doors open. Door close buttons shall be inoperative and car calls shall not be registered.

PRV - Proving Circuit Input

PRV input may be required to be on prior to a run being initiated, depending on the DRV setting. See Section 6: Motion, for more on PRV input conditions

The PRV input is used to ensure the drive contactors have been released on stopping

Some DRV settings do not require the PRV input to be on prior to a run, (see Section 6: Motion) however, if EEPROM setting PRV is set to "01" PRV input is required to be on prior to starting a run, irrelevant of DRV type selected.

PRV input is also used to complete a run on DRV setting 03.

See also EEPROM settings, PRV

PULSE – Pulse Counting Input

PULSE – Pulse Counting input.

The controller uses this input only when EEPROM MSL is set to “01”. See section 6: Motion – EEPROM MSL setting “01”

0V input pulse recommended every 20mm of car travel.

INPUTS - OUTPUTS

SAF - Safety Circuit Input

SAF – Safety Circuit input for **processor**. High voltage input

SAF LED shall be on when safety circuit is made.

Safety circuit input SAF must be on for normal operation. SAF input is supplied from the end of the safety circuit (normally terminal 16 - See page 2 of ECD circuit diagrams). If this input is lost then the SAF LED shall be off and the LCD lift status shall show SAF.

SAF - Ram address R:45

SO4/IRO – Inspection Relay Output

See Inputs – Outputs IRO

SO5 – Spare Output 5

N/A

SO6 – Spare Output 6

N/A

SO7 – Spare Output 7

N/A

SO8 – Spare Output 8

N/A

SO9 – Spare Output 9

N/A

SP/EP - Emergency Power Input

See Inputs – Outputs EP

SP1 - Multi Purpose Output 1

SP1 RELAY OUTPUT Star contactor output

See Section 6: Motion, for more on the relay operation

See also EEPROM settings ST2 - Star/Delta changeover time and SDX - Star Delta Exchange time

SP2 - Multi Purpose Output 2

SP2 RELAY OUTPUT Delta contactor output

See Section 6: Motion, for more on the relay operation

See also EEPROM settings ST2 - Star/Delta changeover time and SDX - Star Delta Exchange time

SP3 - Multi Purpose Output 3

SP3 RELAY OUTPUT Spare relay output 3

SP3 may be used for Inspection Speed input, depending on DRV setting

SP3 may be used for auxiliary leveling pump operation, depending on DRV setting. See also EEPROM settings ALP

See Section 6: Motion, for more on the relay operation

SP4 - Multi Purpose Output 4

SP4 RELAY OUTPUT Spare relay output 4

Australia: SP4 relay pulls in when SAF input is active.

On loss of safety circuit (and SAF input), SP4 relay drops out.

SP4 relay contacts may be used to disconnect the door operator from the supply on loss of the safety circuit.

USA: Fire Service Code 17.1. FS EEPROM setting must be set to 01

INPUTS - OUTPUTS

When Fire Recall - Phase 1 activated, SP4 n/o relay contact is used to override the emergency stop switch in the car.

TSL – Top SLowing input

Top floor position correction limit and forced slowdown limit for terminal floor.

TSL LED shall be off when TSL limit is activated.

TSL LED must remain off when lift is at the highest point in the shaft, ie counterweight landed or ram fully extended

UD - Up/Dn Relay Output

UD RELAY OUTPUT Com. UP/DN output.

See Section 6: Motion, for more on the relay operation

UF - Up Fast Relay Output

UF RELAY OUTPUT Up fast output

See Section 6: Motion, for more on the relay operation

UHC - Up Hall Call Inputs / Outputs

inputs / outputs

1U I/O 1st floor UP call/tell tale light

2U I/O 2nd floor UP call/tell tale light

3U I/O 3rd floor UP call/tell tale light

UP - Up Relay Output

UP RELAY OUTPUT Up relay output

See Section 6: Motion, for more on the relay operation

US - Up Slow Relay Output

US RELAY OUTPUT Up slow output

See Section 6: Motion, for more on the relay operation

Section 5. Liquid Crystal Display

Understanding the LCD

Reading the liquid crystal display Modes, Position, Address' and status

Note: LCD contrast is set via POT located to the upper left of LCD. (POT 2.)

LCD Status Line

LCD Position & Direction

```
02u  NOR IDL  ><
ECD Aust. V-0.42
```

The lift position is shown in the top left of the LCD display, followed by the current demand direction.

The above example shows the lift on the 2nd floor with an up direction

LCD Lift Modes

```
02d  NOR RDN  ] [
ECD Aust. V-0.42
```

The lift modes are shown in the top left centre of the LCD display.

The above example shows the lift on Normal

- CFS Lift on Car Fire Service
- DDO Door Open Disable (*Toggle switch provided on board*)
- EP Lift on Emergency power
- EQK Earthquake input activated
- HFA Lift on Hall Fire Alternate Service (*USA-Fire Service Code 17.1 only*)
- HFS Lift on Hall Fire Service
- IND Lift on Independent service
- INS Lift on Inspection (*Toggle switch provided on board*)
- NOR Lift on Normal
- NPT No Pulse Time out (*Fatal error. See Section 6, Counting method 01, NPT*)
- PRK Lift on Parking
- ZON Lift zoned/zoning to floor
- COR Lift performing a correction run due to loss of position

LIQUID CRYSTAL DISPLAY

LCD Lift Status

The lift status is shown to the top right centre of the LCD display.
The above example shows the lift Running Down

```
02d  NOR  RDN  ] [  
ECD Aust. V-0.42
```

- BDL Bridged door lock. Doors shall remain open until bridge is removed. *See DFO input*
- BSD Brake did not drop. *Fatal error. See BKS_W input*
- BST Brake did not lift. *Fatal error. See BKS_W input. See EEPROM settings - BST*
- DCP Fail door close protection. *See DFC input*
- DOP Fail door open protection. *See DFO input*
- IDL Lift idle
- LCK Door Locks not made. *See DFC input*
- LDN Leveling down, displays on re-level down. *See MSU input*
- LEV Leveling blocked, displays on re-leveling failed and disabled. *See MSD/MSU input*
- LRN Learning floor operation in progress.
- LUP Leveling up, displays on re-level up. *See MSD input*
- PRV Waiting PRV input to run. *See PRV input*
- RDN Running down
- RPT Run protection time exceeded. *Fatal error. See EEPROM settings - RPT*
- RUP Running up
- SAF Lost safety circuit. *See SAF input*

LCD Door Modes

The door mode is shown to the top right of the LCD display.
It has the following status.

```
02-  NOR  LCK-bad  
ECD Aust. V-0.42
```

- <> Doors opening
- [] Doors open
- >< Doors closing
-] [Doors closed
- -bad Doors fully closed but door locks not made. *See DFC input*
- -fail Doors failed on DOP or DCP. *See DFC/DFO input*
- -- Doors on other control. ie – Inspection.

LCD Control Buttons

The Control buttons are used for accessing and programming the second line of the LCD display

```
02u  NOR  IDL  ><  
ECD Aust. V-0.42
```

Buttons -



LIQUID CRYSTAL DISPLAY

- > =FORWARDS
- < = BACKWARDS
- ^ = UP
- v = DOWN
- ENT = ENTER

LCD Display Options

Use the forwards and backwards buttons to cycle through the available options

```
02-  NOR IDL  ][
ECD Aust. V-0.42
```

Text plus software version

^ UP

```
02-  NOR IDL  ][
Bld: Jan 12 2017
```

Software Build date

> FORWARDS

```
02-  NOR IDL  ][
BOT  01  :00000000
```

EEProm settings and values

Press ^ and v to scroll through the adjustable EEPROM settings.

See Section 2, EEPROM settings

> FORWARDS

```
02-  NOR IDL  ][
R:00  00 fc fe e9
```

R - internal ram address' and values

X - internal ram address' and values (V3 software only).

> FORWARDS

```
02-  NOR IDL  ][
Log Run/Door Ops
```

Number of runs or door operations

Earlier software versions count in hex. Later software versions count in decimal.

> FORWARDS

```
02-  NOR IDL  ][
Flr Positioning
```

Floor Positioning

See Motion. Counting method 01.

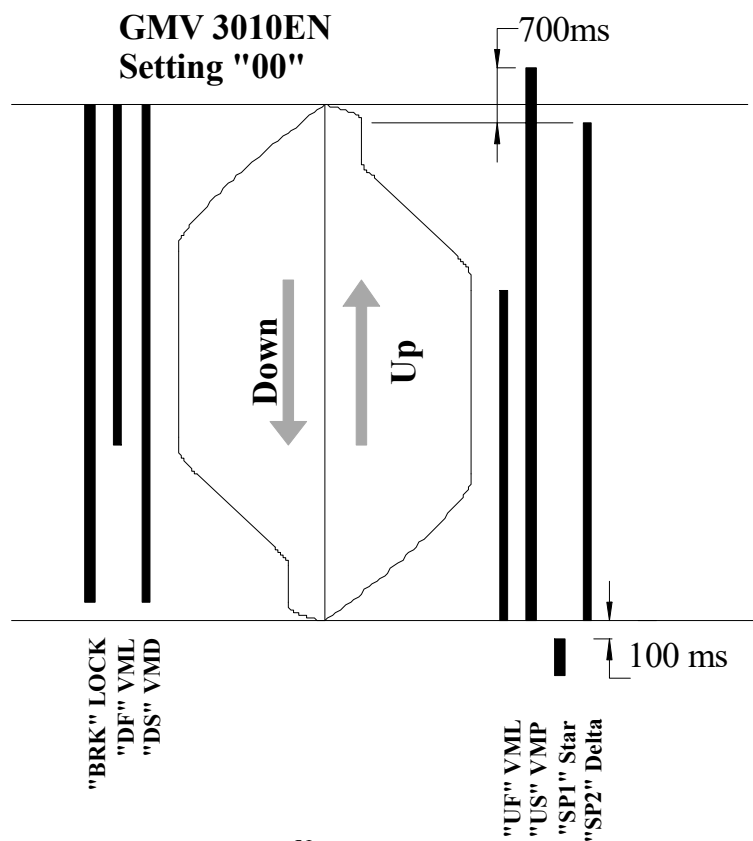
Section 6. Motion

Motion Control Outputs

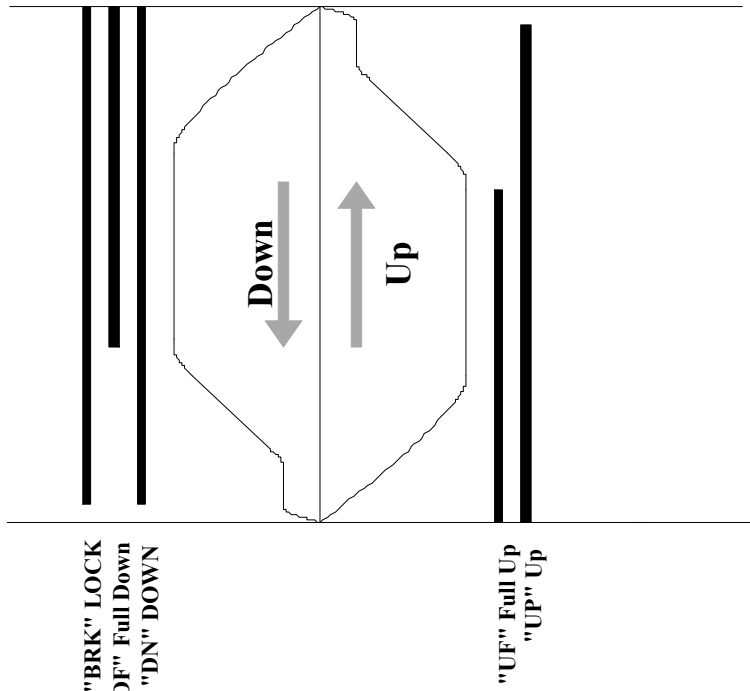
Drive settings and their output status.

The controller may output to various different drives as per the list below depending on the DRV EEPROM setting. The following diagrams only indicate the drive outputs but do not show re-leveling functions and timing.

DRV...EEPROM...Drive control type.

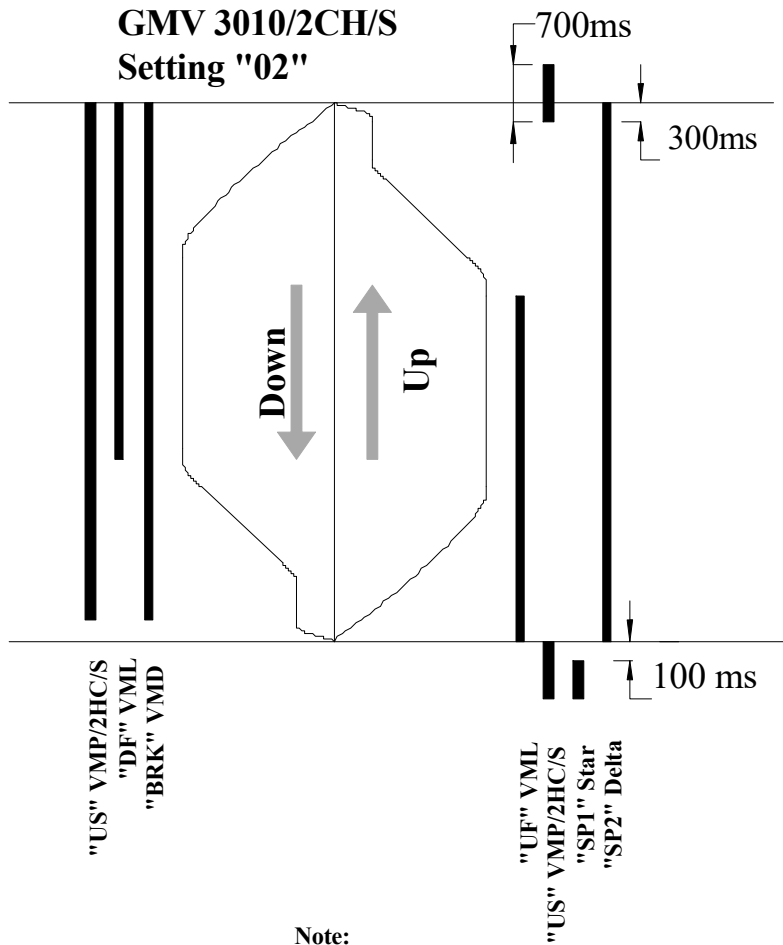


**DYNAHYD "DA VALVE"
Setting "01"**



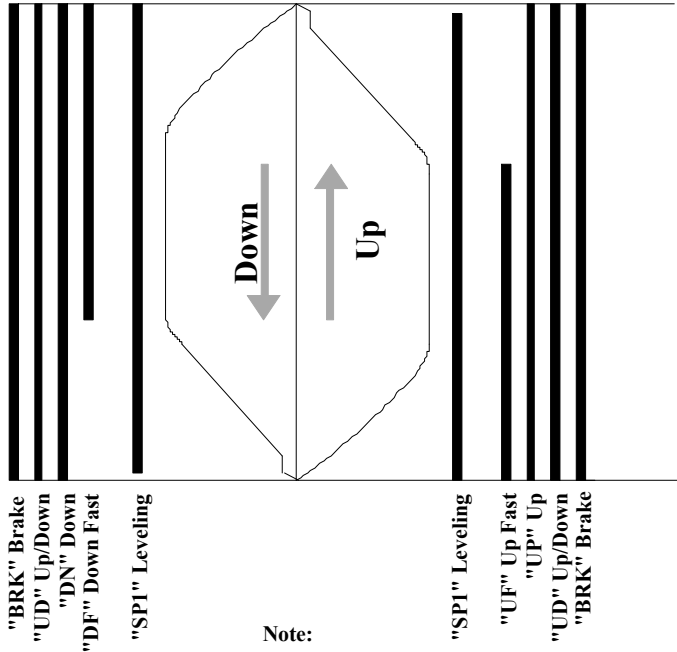
- Note:
1. On inspection SP3 turns on for inspection speed
 2. To initiate a run, PRV input must be on

**GMV 3010/2CH/S
Setting "02"**



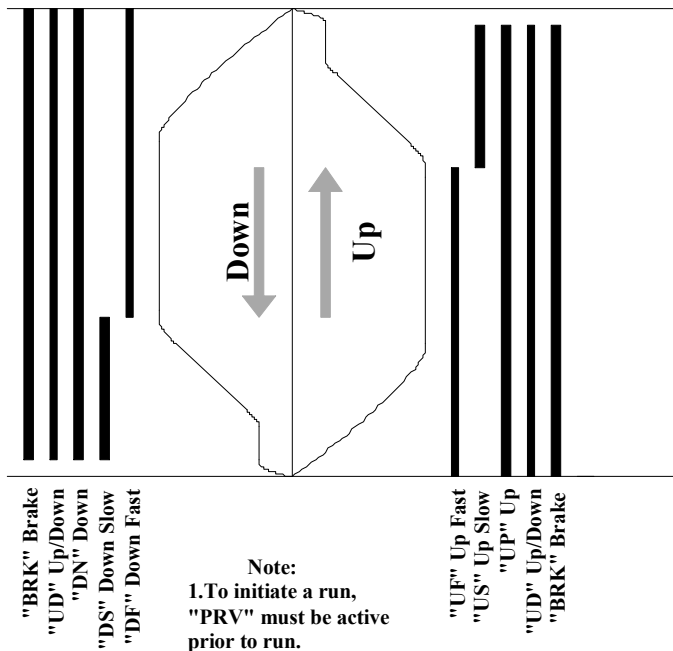
- Note:
1. On inspection SP3 turns on for inspection speed

**VF Drive Type 1 KEB-VF, ZETADYN-VF.
Setting "03"**



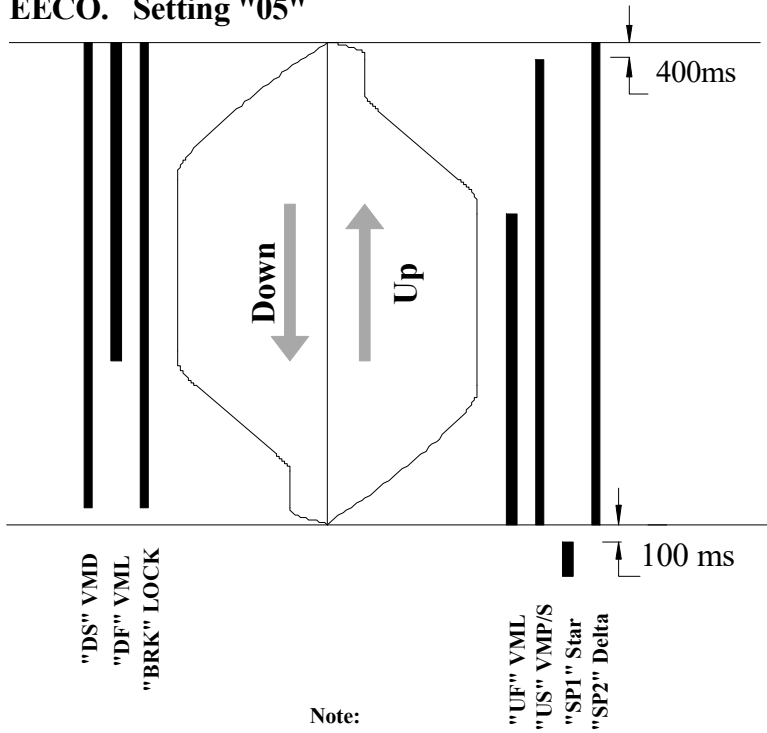
- Note:**
1. To initiate a run, "PRV" must be active prior to run. "PRV" turns off during entire run and becomes active to complete the run. "PRV" is not required on inspection.
 2. On inspection SP3 turns on for insp speed. On inspection UF and DF turn off.
 3. SP2 turns on for intermediate speed (MSL=01 only)

**2 Speed AC
Setting "04"**



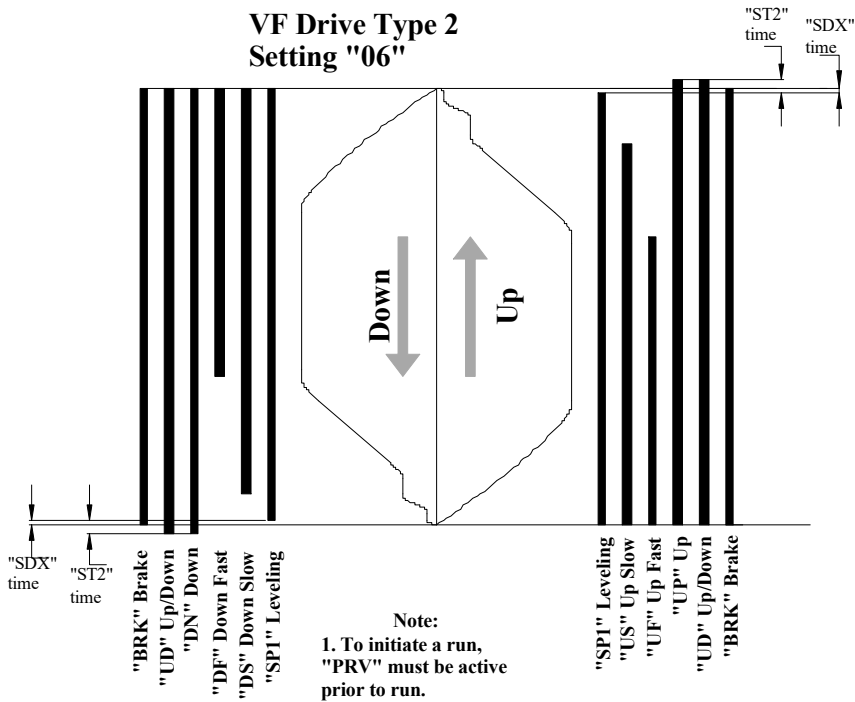
- Note:**
1. To initiate a run, "PRV" must be active prior to run. "PRV" is not required on inspection.
 2. On inspection SP3 turns on for inspection speed.

GMV 3010/S, Blain EV100, Maxton, Bucher LRV,
EECO. Setting "05"



- Note:
1. On inspection SP3 turns on for inspection speed

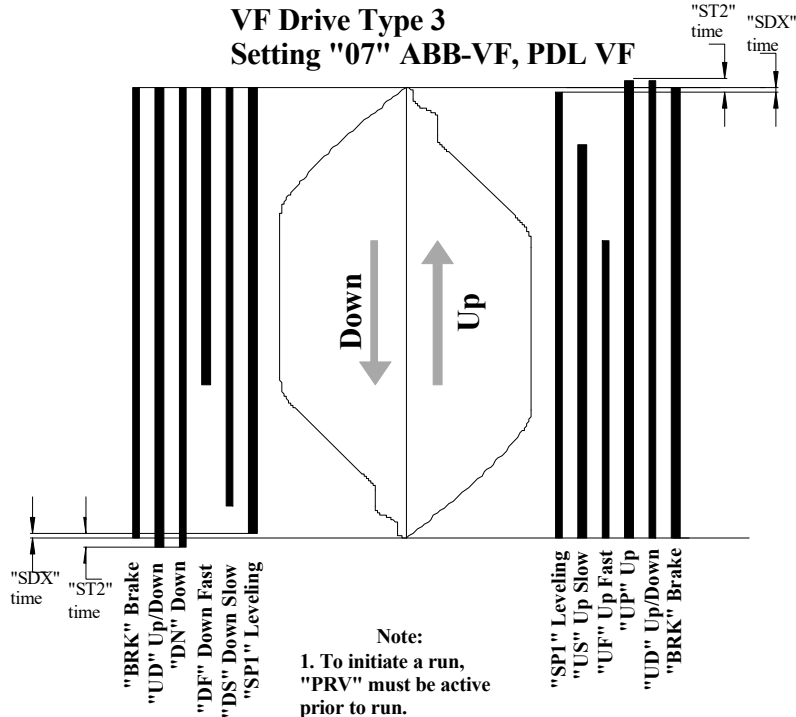
VF Drive Type 2
Setting "06"



- Note:
1. To initiate a run, "PRV" must be active prior to run. "PRV" is not required on inspection. The end of the run is initiated by loss of leveling. BRK then holds up for SDX time and then UD,U/D is held up for ST2 time in 10ms increments. SDX time must be less than ST2 time

2. On inspection SP3 turns on for insp speed. On inspection UF and DF turn off.

**VF Drive Type 3
Setting "07" ABB-VF, PDL VF**



- Note:**
- To initiate a run, "PRV" must be active prior to run. "PRV" is not required on inspection. The end of the run is initiated by loss of leveling. BRK then holds up for SDX time and then UD,U/D is held up for ST2 time in 10ms increments. SDX time must be less than ST2 time
 - On inspection SP3 turns on for insp speed. On inspection SP1 turns off.

ABB VF

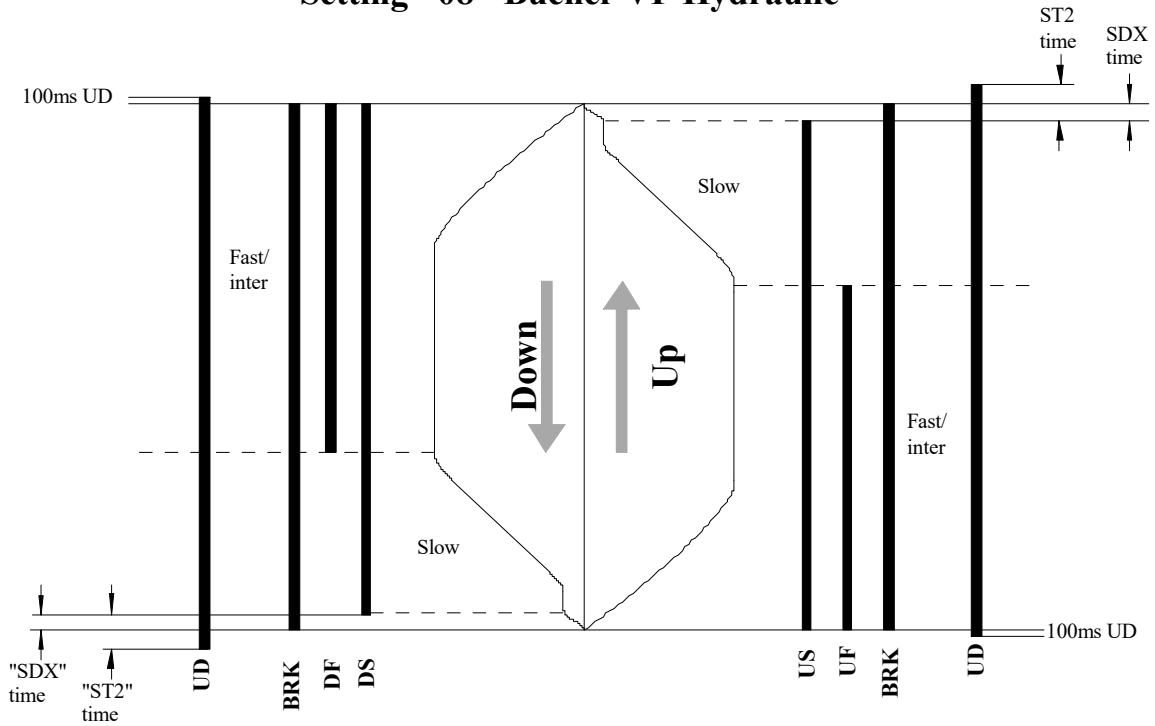
SPEED	DS/US	UF/DF	SP1	FUNCTION
N/A	1	0	0	N/A 0 rpm
INSP SLOW	0	1	0	RPM / Contract fpm x 10 = set for 10fpm
INSP FAST	1	1	0	RPM / Contract fpm x 50 = set for 50fpm
LEV	0	0	1	RPM / Contract fpm x 10 = set for 10fpm
SLOW	1	0	1	RPM / Contract fpm x 25 = set for 25fpm
INTER	0	1	1	RPM / 0.75 = set for 75% Cont Spd
FAST	1	1	1	Set as per motor rpm sync spd (RPM)

PDL VF. MULTI REF.
3 WIRE CONTROL

SPEED	MF14 MF15 MF16			MULTI REF. FUNCTIONS
	DS/US	UF/DF	SP1	
N/A	1	0	0	N/A 0 rpm
INSP SLOW -M2	0	1	0	Set for 10fpm
INSP FAST -M6	1	1	0	Set for 50fpm
LEV -M1	0	0	1	Set for 10fpm
SLOW -M5	1	0	1	Set for 25fpm
INTER -M3	0	1	1	Set for 75% Cont Spd
FAST -M7	1	1	1	Contract Speed (as a %)

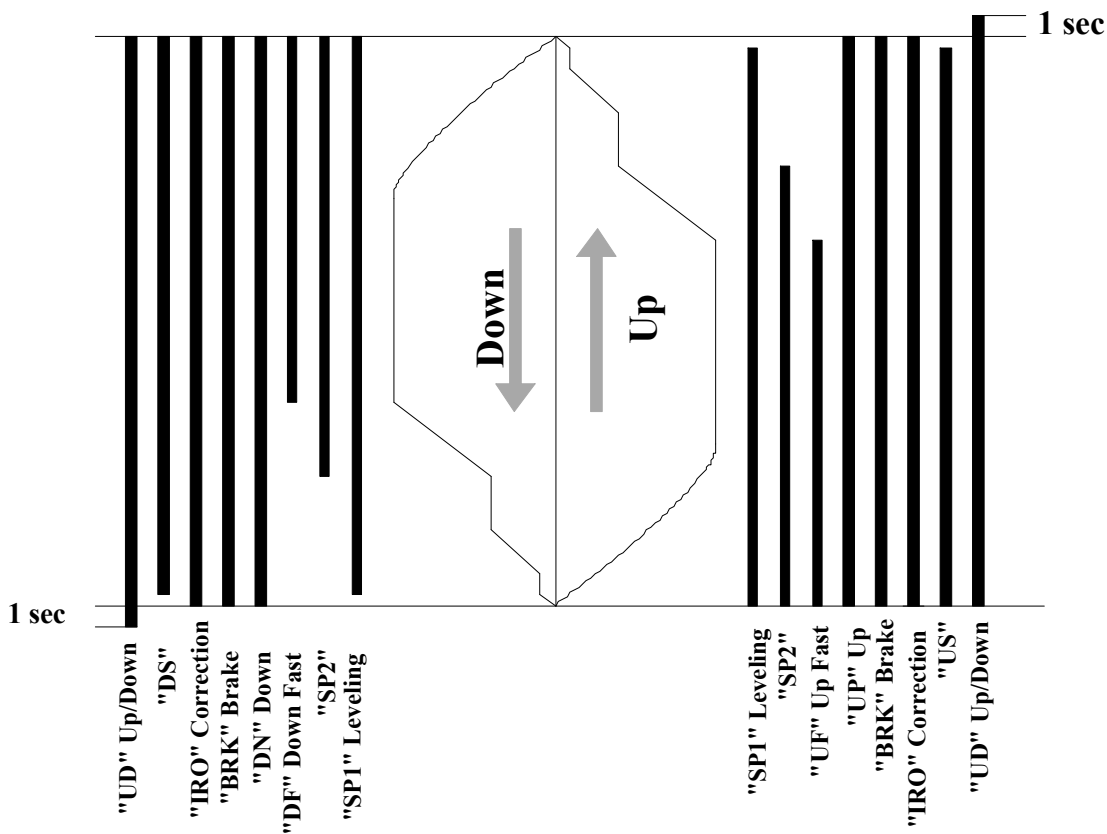
ECD DRV Setting - "07"

**VF Drive Type 4
Setting "08" Bucher VF Hydraulic**



Note:
 PRV must be active prior to run.
 PRV is not required on inspection.
 SP3 turns on for insp speed.
 The end of the run is initiated by loss of leveling.
 BRK then holds up for SDX time and then UD is held up for ST2 time in 10ms increments.
 SDX time must be less than ST2 time.
 Default SDX=32, ST2=33

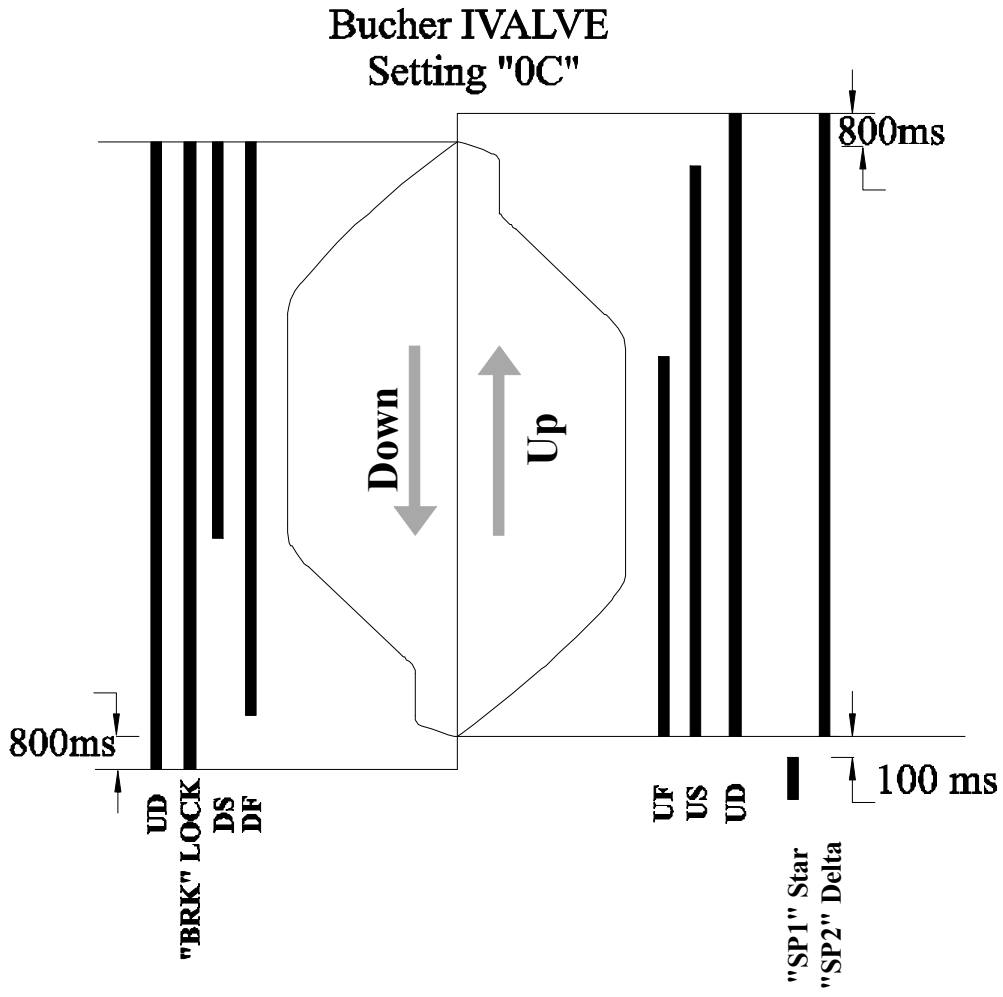
VF Drive Type 6
Setting "0A" Gefran with DB
Similar to "03" with UD delay off for
Synch gearless AC. (drop DB contactor)



Note:

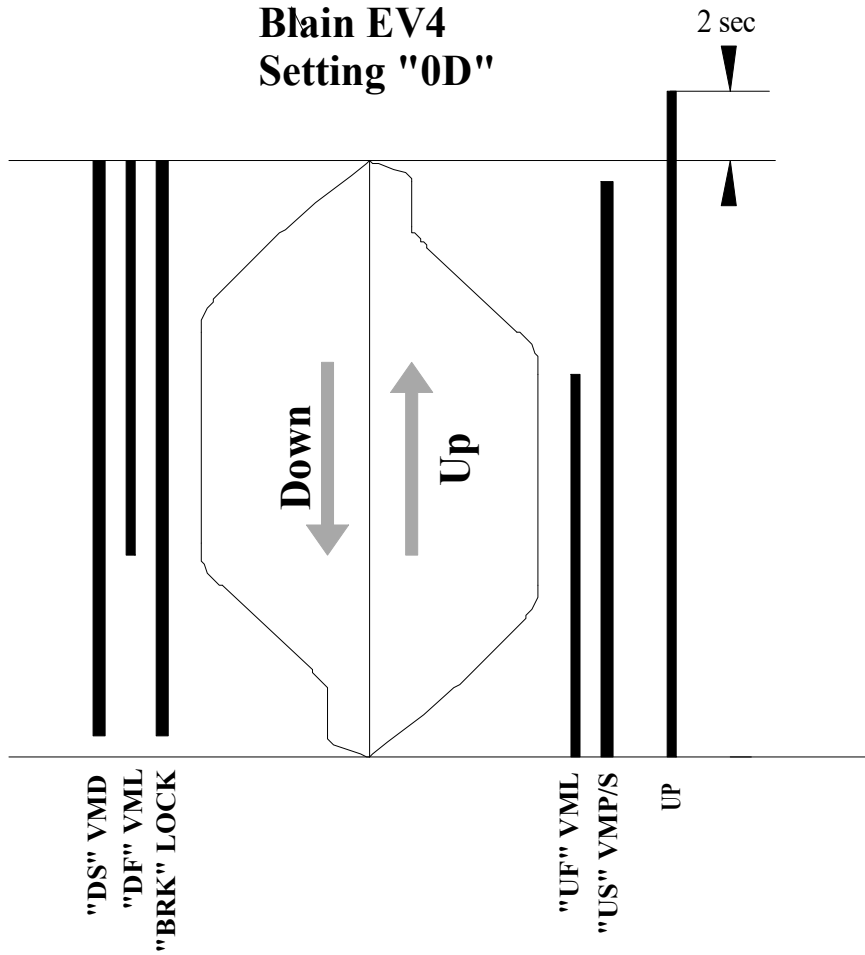
1. To initiate a run, "PRV" must be active prior to run. "PRV" turns off during entire run and becomes active to complete the run. "PRV" is not required on inspection.
2. On inspection SP3 turns on for insp speed. On inspection UF and DF turn off.
3. SP2 turns on for intermediate speed (MSL=01 only)
4. UD relay has 1.0 sec delay off after completion of run
5. US/ DS used for terminal speed check on lifts above 1m/s
6. SO4/IRO turns on when performing a correction run. NOT used for INSP output
7. CFS and IND do not turn on OS output

MOTION



MOTION

**Blain EV4
Setting "0D"**



Note:

- 1. On inspection, SP3 turns on for inspection speed.**
- 2. PRV input must be ON, prior to a run.**

MOTION

Counting Method “00” - Magnet Counting.

EEProm MSL setting “00”

The controller counts its position within the lift shaft using the DZ – Door Zone Input, MSU – Magnet Switch Up Input, MSD – Magnet Switch Down Input, TSL – Top Slowing Limit and BSL – Bottom Slowing Limit.

If the lift is stationary or running down and BSL input is removed, the lift shall reset to the bottom floor. If running down in fast speed, the fast speed inputs shall be turned off.

If the lift is stationary or running up and TSL input is removed, the lift shall reset to the top floor. If running up in fast speed, the fast speed inputs shall be turned off.

The shaft information at floor level must be as per the Counting Method “00” Shaft Layout drawing in that the MSD and MSU vanes must be within the door zone. See the diagram; “Counting Method “00” Shaft Layout” at the end of this section.

If the lift was to leave the bottom floor in the up direction heading to the third landing it would count as follows.

- While traveling up fast all MSD out of the DZ shall be ignored.
- As the lift travels up fast and passes MSU slowing magnet for level 2, the advance count is shown by transistor outputs 1P-8P.
- As the lift travels up fast and passes the DZ magnet for level 2 (MSU and MSD ignored/masked by DZ) the position count as shown on the LCD shall increment to level 2.
- As the lift travels up fast and passes MSU slowing magnet for level 3, the advance count is shown by transistor outputs 1P-8P. As the lift advance counts, slowing shall be initiated for level 3.
- The lift shall now level into the third floor. The position count shall increment to level 3 when the DZ vane is entered. The lift shall remain running until both MSU and MSD are on. LEV relay output shall turn on when either MSU or MSD is on.

MOTION

Counting Method “01” - Pulse Counting.

Also used for short floors that requires an intermediate speed, to avoid long creep times. Long creep times can be caused on a shorter floor where the lift does not reach rated speed before receiving a slow down signal. As the lift has not reached rated speed, it will decelerate quicker and arrive at leveling speed further away from floor level, than had it been at rated speed. This results in the long creep time into the floor.

EEProm MSL setting “01”

The controller counts its position within the lift shaft using the pulse input. See also Inputs-Outputs, PULSE The number of pulses are counted from the lowest landing.

The number of pulses are converted to a HEX value and stored for each level. (for processor calculations) (The lowest level is recorded with a HEX value of 40)

Using these values in conjunction with the associated **EEProm settings Stf, Stm, Slf and SIm**, the processor makes calculations for speed selections and slowing distances.

The 0V input pulse is recommended approximately every 40mm of car travel.

No MSU or MSD inputs are required between the floors for slowing (as per setting 00).

DZ, MSU and MSD inputs are required at floor levels for accurate leveling and position count check/reset and learn floor procedures.

TSL and BSL operate as per setting 00

The shaft information at floor level must be as per the Counting Method “01” Shaft Layout drawing in that the MSD and MSU vanes must be within the door zone. See the diagram; “Counting Method “01” Shaft Layout” at the end of this section.

Note: For a learn floor (Learn Run), if the MSU and MSD vanes are not in the correct order – the position shall not be stored at those floors.

Learn Run:

To perform a learn run to store the Hex count for each floor

- **Ensure BSL and TSL operate to slow lift from fast speed.**
- **Set MSL to “01”**
- **Ensure all DZ, MSU and MSD inductors/magnets are accurately placed at each floor level.**
- MSU and MSD magnets between floors are not required (as per setting MSL “00”)
- From the “text plus software version” display on the LCD, scroll through the available options using the “>” button until you get to the Floor Positioning display. (See Section 5, LCD Display Options). Now use the “^” button to scroll through to Learn Floor and press [ENT]. Lift is now “out of service” - OS output on.

```
02- NOR IDL ] [
Learn Flr [ENT]
```

- The cycle shall first run the lift to the bottom floor (if not already there).
- The lift shall then run to the top, counting and saving the floor position data into each floor address while running up. (The position data is calculated by the processor from the DZ, MSU and MSD inputs at each floor level).

```
01u LRN RUP ] [
Wait.....learning
```

- As the lift passes floors you shall see the green LED beside the watchdog flash to confirm the saving of the floor data.
- Once the lift has reached the top floor the lift shall revert to normal operation.

MOTION

- The HEX value/count of each floor can be viewed by pressing the “^” button to scroll through to the various levels

```
01-  NOR IDL  ][  
Pos.Count.  0040
```

“Pos Count” displays the
current lift position in HEX

```
01-  NOR IDL  ][  
Level 1    0040
```

Level 1 **stored** HEX
Position Count

```
01-  NOR IDL  ][  
Level 2    012C
```

Level 2 **stored** HEX
Position Count

The hex count for each floor/level should be recorded in the following Pulse distance table;

MOTION

Pulse distance table:

Level	Hex Count	Diff. in Hex	Diff. in Decimal	Multiply by pulse distance in mm	= Floor Height in mm
12.	_____				(11 to 12)
		>			
11.	_____				(10 to 11)
		>			
10.	_____				(9 to 10)
		>			
9.	_____				(8 to 9)
		>			
8.	_____				(7 to 8)
		>			
7.	_____				(6 to 7)
		>			
6.	_____				(5 to 6)
		>			
5.	_____				(4 to 5)
		>			
4.	_____				(3 to 4)
		>			
3.	_____				(2 to 3)
		>			
2.	_____				(1 to 2)
		>			
1.	_____				

STF	SLF	STF + SLF		STM	SLM	STM + SLM

- No MSU or MSD magnets between floors when MSL = 01

Variable speed selection:

MOTION

All values are referred to in HEX.

Before a run, the speed (fast, medium or slow) is selected after calculating the distance to the selected floor.

- Rated (max) speed is selected when $(Stf + Slf) <$ the commencing floor run hex value.
- Medium speed is selected when $(Stf + Slf) >$ the commencing floor run and $(Stm + Slm) <$ the commencing floor run hex value.
- Slow or leveling speed (depending on DRV setting) shall be selected when $(Stm + Slf) >$ the commencing floor run hex value.

On EEprom DRV setting 03;

- Fast speed is selected by DF and UF relay. The relay contacts are used for the max/rated speed input to the drive.
- Medium or intermediate speed is selected by SP2 relay. The relay contacts are used for the intermediate speed input to the drive.

Example:

Speed selection. Nb: HEX calculator recommended

A lift needs to travel from level 1 to level 2.

Level 2 hex count = 12C.

Level 1 hex count = 40.

Distance between level 1 and 2 is $12C - 40 = EC$. (the commencing floor run hex value)

Assuming equal accel and decel rates and lift slows as soon as the rated speed is reached, the minimum distance required for a fast speed run will be $5A(Stf) + 5A(Slf) = B4$

As shown in Fig 6a, B4 is less than EC, which means the processor will calculate that the full speed relay **can** be picked for a run between level 1 and 2. Ie, rated (max) speed is selected when $Stf + Slf (B4) <$ the commencing floor run hex value (EC).

Pulses to get to Fast speed (Stf) + Pulses to slow from Fast speed (Slf) = distance required for a fast speed run.

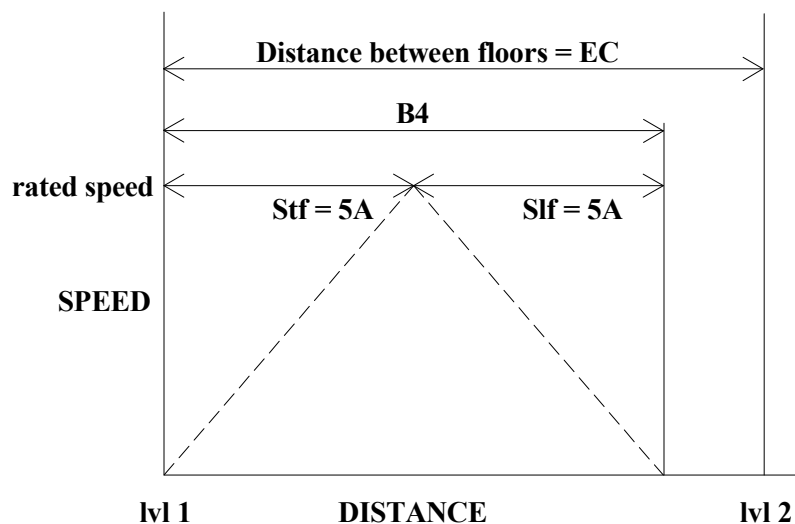


Fig 6a. (Ref. TurboCad – Pulse Graphs)

A run from level 1 to 2 will look like the following graph, Fig 6b;
As explained by Fig 6a, fast speed can be selected.

MOTION

After Stf distance of 5A hex pulses lift is at full speed.

Lift stays at full speed for distance of 38 hex pulses

At a distance of Slf (5A hex pulses) from level 2, the fast speed relay is dropped to initiate the slowdown (5A + 38 + 5A = EC)

MSU, MSD and DZ inputs are then used to control the final stop.

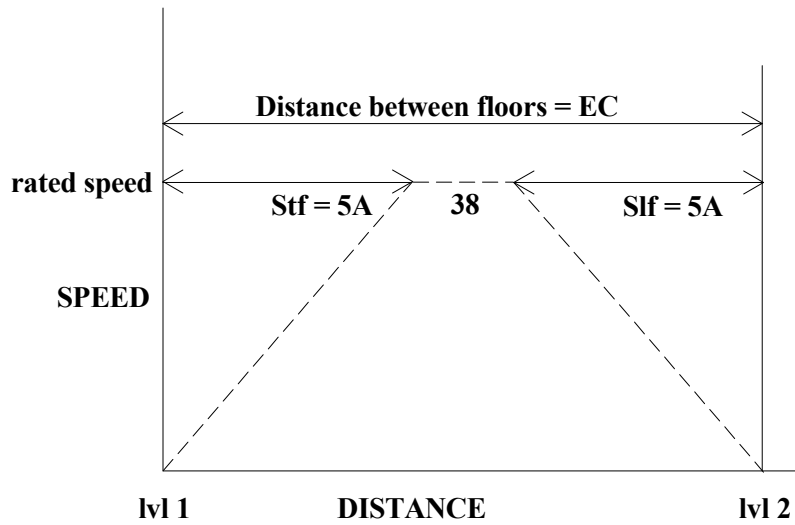


Fig 6b. (Ref. TurboCad – Pulse Graphs)

If, for example, the drive is adjusted for a quicker decel rate, you can decrease Slf. This lower value allows the lift to stay at rated speed longer (now distance of 48 hex pulses) by dropping the fast speed relay later (closer to, or 4A hex pulses from, level 2).

This will mean a faster floor to floor run than Fig 6b.

Nb: If the decel rate is made quicker and Slf is not decreased, the lift will slow down too early, which will result in long “creep time” into the floor

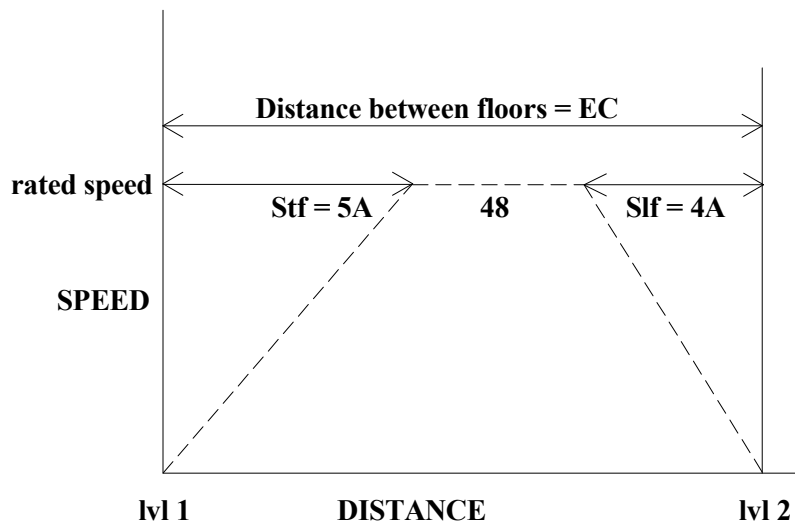


Fig 6c. (Ref. TurboCad – Pulse Graphs)

The medium or intermediate speed is used for shorter floor(s). See Fig 6d.

Assume the distance between another 2 floors has a hex pulse count of **A6**.

A6 is less than B4, which is the minimum count required for a fast speed run.

Therefore a fast speed run **cannot** be selected (not enough distance) between these 2 floors.

MOTION

The required distance for a medium speed run is now checked.

$$4C(Stm) + 4C(Slm) = 98.$$

98 is less than A6 so a medium speed run is now selected. Ie, the medium speed is selected when $Stf + Slf (B4) >$ the commencing floor run (A6) and $Stm + Slm (98) <$ the commencing floor run (A6).

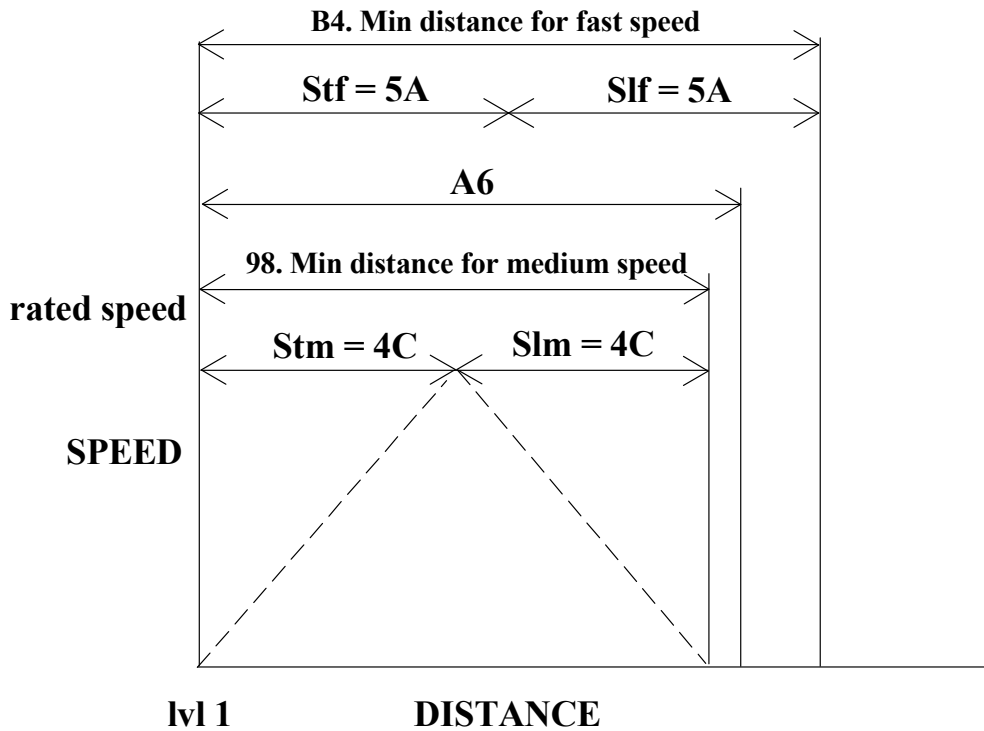


Fig 6d. (Ref. TurboCad – Pulse Graphs)

Terminal floors:

BSL and TSL drop out the fast speed relay, which overrides Slf. These limits do not affect medium speed.

Depending on the medium speed, an additional limit at the top and bottom may be required to drop out the medium speed input to the drive.

If the fast speed slowing is required more than a floor from the terminal floors, additional limits (to the TSL and BSL) shall be required to drop out the fast speed input to the drive. This is because BSL & TSL must not overlap other floors. If they did, this would cause the lift to set to a terminal floor before the lift was actually there.

On a correction run the lift shall perform a correction run to the lowest floor unless BSL is off. In some circumstances the lift may require a correction run just above BSL. In this situation the lift will take off on fast speed, then get its slow down very soon afterwards, resulting in a very long creep time. The XTM and RTM settings may be used to overcome this.

NPT: No Pulse Time out Mode. (MSL = 01)

MOTION

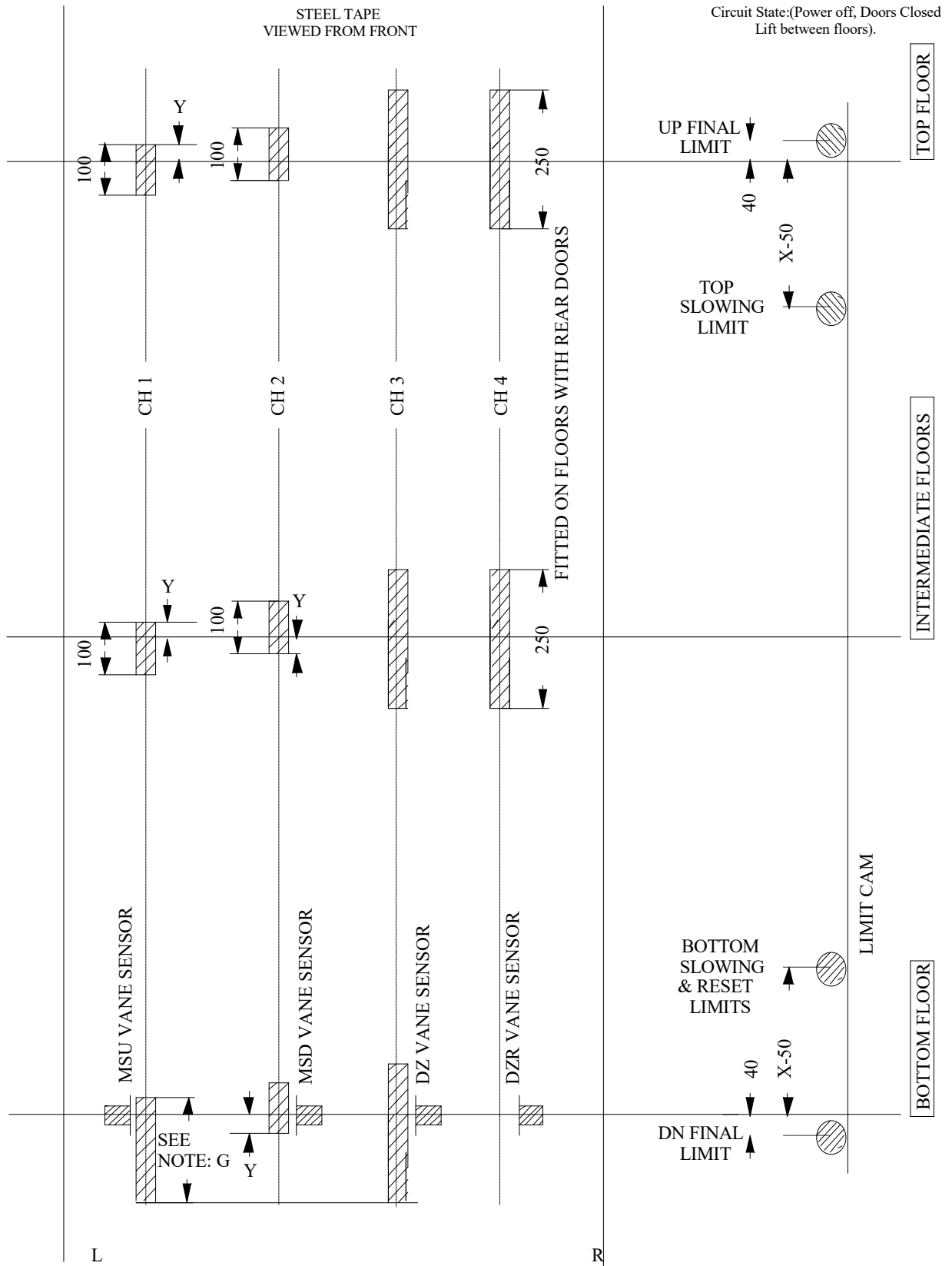
During an up run, if the controller detects an irregular or loss of pulse input, the lift shall travel to the top floor and stop, then perform a correction run down to the bottom floor and display NPT on the LCD.

See also Inputs-Outputs, PULSE

Check by observing flashing of PULSE – LED input

NPT is a fatal error. Reset is only via a processor POR or Inspection on/off sequence.

MOTION



Counting Method "01" Shaft Layout

Section 7: Faults – Fault finding.

Upgrade Controller software.

Controller software may be required to be updated depending on the version installed and the options the lift has. While we try to make it as simple as possible for software upgrades, unfortunately some EEPROM address' may be required to be edited due to additional features being added.

It is recommended that the Service Mechanic that changes this software knows how to change EEPROM settings and has a definition list for the new version being installed.

Leveling inhibit. LEV

A leveling failure has been added to stop the lift from re-leveling after 3 attempts of 10 seconds. See Section 5. LCD lift status - LEV

Run protection timer. RPT

RPT is a fatal error and can be reset only via a processor POR or Inspection on/off sequence. See also EEPROM setting RPT for more information on RPT sequence.

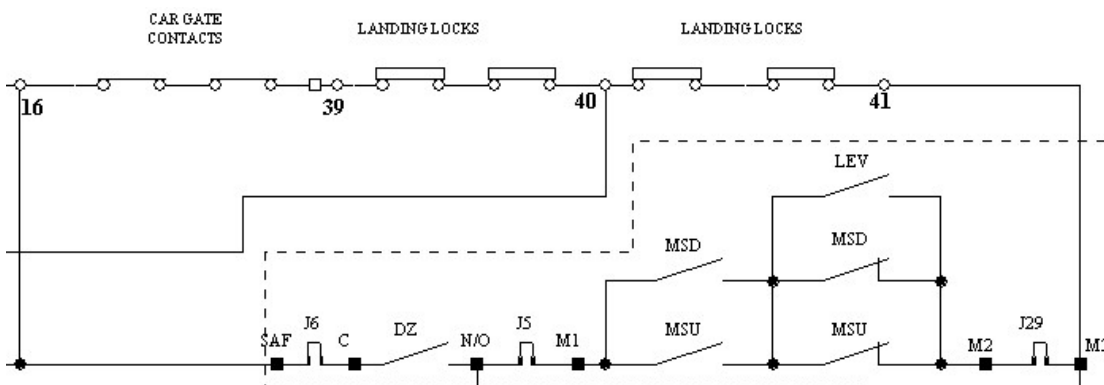
Lift won't re-level with doors open

The most common cause for this is the masking circuit.

Note: For this to operate correctly you require one of MSU or MSD inputs but not both. This shall initiate a re-level, which shall be indicated by the UP or DN and slow speed onboard relays to energize.

Also ensure lift is on operating mode normal.

We must ensure we have a circuit from terminal 16 through to M3. Check your links and status of onboard relays.



If you have the supply to M3 and onboard direction relays up you can then check the neutral side. The neutral is also switched through a “LR” or “DZ” contact onboard. This switches “N” through to M4.

FAULTS – FAULT FINDING

On board fuse blows

There are 2 fuses mounted on the controller board.

The 2A fuse protects the 5VDC supply to all the logic on board.

The 4A fuse protects the 24VDC supply.

If 2A (5V) fuse blows check that the **6V Zener diode** is not short circuited. (return for repairs)

If 4A (24V) fuse blows.

1. Test for fault on 24VDC circuits (inputs/outputs)
2. Remove all external plugs except 18VAC and 10VAC
3. Replace fuse. If 4A fuse still blows, check that the **30V Zener diode** is not short circuited. (return for repairs)
4. If fuse does not blow plug in external inputs/outputs one plug at a time and test for external fault.

Testing 24VDC

Ensure 0v and 24v are free from other voltages. High voltages may be superimposed on 0v and 24VDC lines as no reference to ground exists. See Warning 1.2.14

1. Turn the meter to the HIGH VAC range.
2. Meter between 0v and Neutral. (Should be 0V)
3. Meter between 0v and L2A (if applicable). (Should be 0V)
4. Meter between 24VDC and Neutral. (Should be 0V)
5. Meter between 0VDC and 24VDC. (Should be 24VDC)

If 24vdc is low or unstable, check large capacitor C69 on PCB. This capacitor may have been hit or knocked, which can break off one of the legs soldered into the PCB. A gentle twist will reveal if one leg has broken. If so, replace the capacitor

Doors do not open

Check door disable switch DDO on PCB is off

See Inputs-Outputs, DDO

Doors close on park

If the doors close when keyed to park after EDP is opened you may require a software update. Upgrade to latest Version software.

Doors don't open at terminal floors

Ensure the MSU slowing input is activated **before** the Top Slowing Limit (TSL) at the top floor

Ensure the MSD slowing input is activated **before** the Bottom Slowing Limit (BSL) at the bottom floor.

Lift gets out of step

If the lift gets out of step check the following.

1. MSU and MSD magnets must be within DZ (DoorZone) at floor level.
2. If lift resets incorrectly at top floor check TOP EEprom setting.

Lift does not answer car calls

Check CCM, CC1 setting.

Lift does not answer hall calls

Check UCM, UC1, DCM, DC1 setting.

FAULTS – FAULT FINDING

Lift misses hall calls

If the lift misses only some hall calls but answers car calls whilst on normal operation

1. Ensure SIS unit is mounted firmly.
2. Some magnets may have dead spots. Change faulty magnets.
3. Ensure software is latest Version.
4. On terminal floors – ensure that MSU/MSD initiates slowing before TSL/BSL respectively.

Re-leveling won't operate

Check RLV setting.

Red3 LED is not blinking

The microprocessor has locked up (possibility caused by electrical noise interference, power failure). Reset via a processor power on reset (POR);

- Turn the power supply off
- Wait for 10s
- Turn the power supply back on
- Observe LEDs status.

Under normal operation;

- The red Red3 LED blinks to confirm that the microprocessor is running.
- The yellow Yel3 LED comes on to confirm outputs are enabled.
- The green Grn3 LED comes on during power up and turns off during normal operation. It will also flash once when a new value has been written in to EEPROM.

When re-powering; ensure the lift is off for 10 seconds before turning back on.

On power up, a delay of approximately 2 seconds is given on start up to ensure voltages are stable prior to reading and writing outputs.

Processor errors/Lockup:

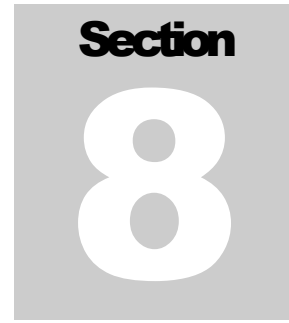
Ensure 0V and 10V AC supply present at board terminal

Try new microprocessor IC.

35V 470uF capacitor damaged.

Crystal damaged.

Lockup may be due to spike/noise. All relays, valves, brakes, door motors etc must be suppressed with an appropriate filter or surge absorber unit to prevent voltage spikes and back emf/noise.

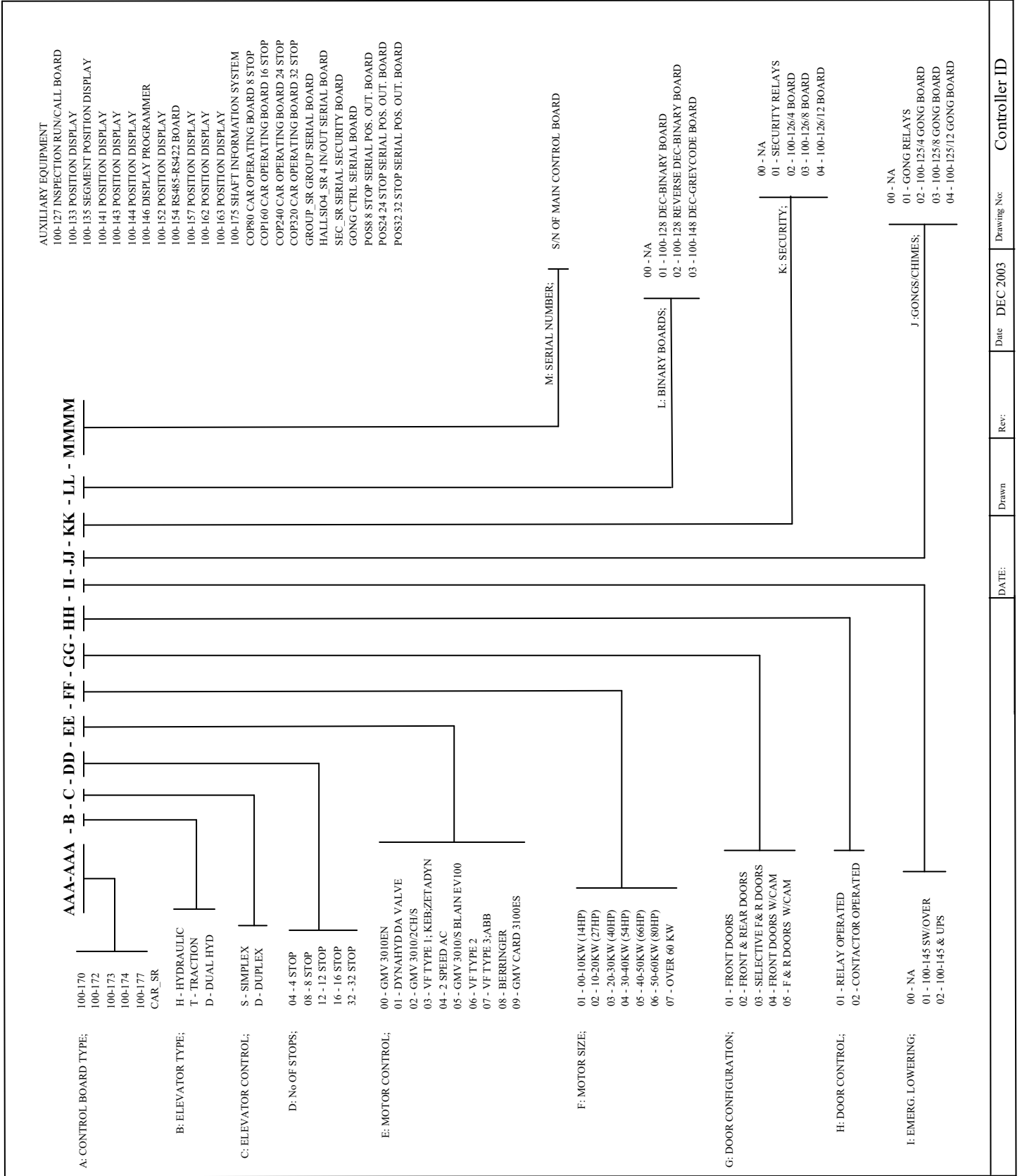


Section 8. Upgrades, Changes & Technical Information

Upgrades, changes and modifications

When contacting us please have the board's part number (printed in white on PCB), software version and software build date (see Section 5).

Controller ID.



Controller ID

Drawing No:

Date DEC 2003

Rev:

Drawn

DATE:

Terminal Screw Torque Settings.

TIGHTENING TORQUES FOR 3 POLE CONTACTORS

TYPE	CONTACTOR TERMINAL SCREW SIZE	TORQUE (Nm)	TORQUE (Ft-lbs)
GMC-9	M4	2.3	1.7
GMC-12	M4	2.3	1.7
GMC-18	M4	4.0	3.0
GMC-22	M4	4.0	3.0
GMC-32	M5	4.0	3.0
GMC-40	M5	4.0	3.0
GMC-50	M6	5.0	3.7
GMC-65	M8	5.0	3.7
GMC-75	M8	5.0	3.7
GMC-85	M8	5.0	3.7
GMC-100	M8	9.0	6.6

TIGHTENING TORQUES FOR THERMAL OVERLOADS

TYPE	TERMINAL SCREW SIZE	TORQUE (Nm)	TORQUE (Ft-lbs)
GTK-22	M4	2.3	1.7
GTK-40	M4	4.0	3.0
GTK-85 (28-40A)	M6-M8	5.1	3.8

TIGHTENING TORQUES FOR MODULAR SCREW TERMINALS

TYPE	TERMINAL SCREW SIZE	TORQUE (Nm)	TORQUE (Ft-lbs)
2.5mm	M2.5	0.4 - 0.6	0.30 - 0.44
4.0mm	M3	0.5 - 0.7	0.37 - 0.52
10.0mm	M5	2.0 - 2.5	1.48 - 1.84
16.0mm	M6	2.5 - 3.0	1.84 - 2.21
35.0mm	M8	6.0 - 10.0	4.00 - 7.38
75.0mm	M8	6.0 - 10.0	4.00 - 7.38

ELECTRONIC CIRCUIT DESIGNS PTY. LTD.

Operation Guide

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