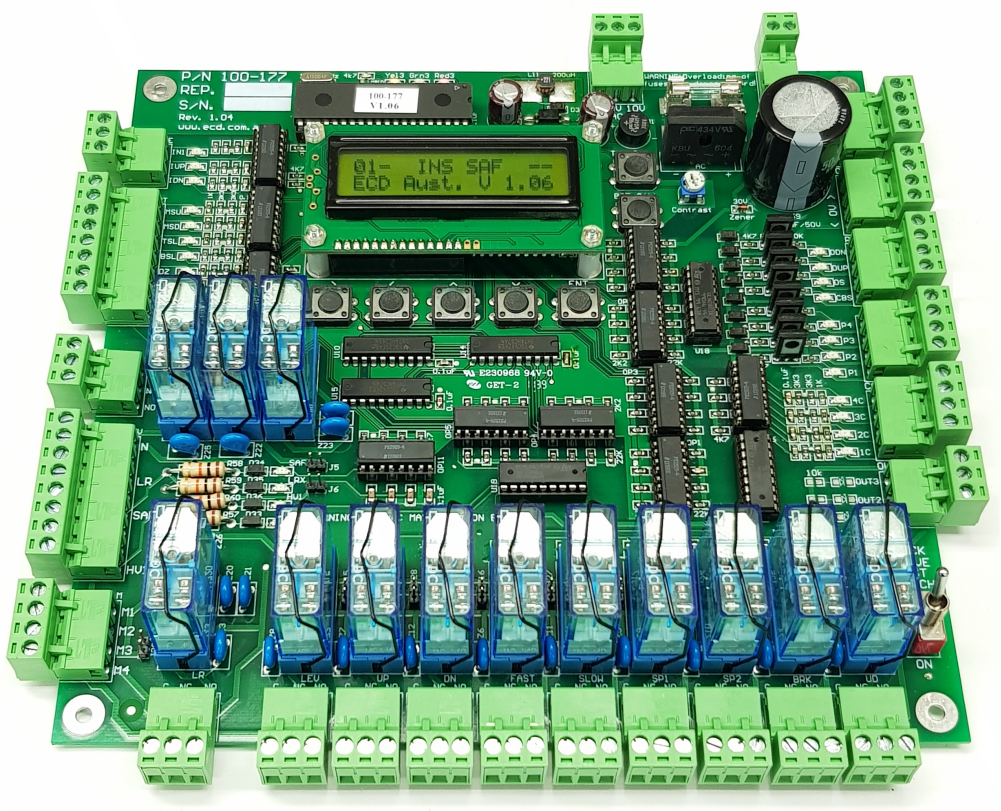
100-177 Controller Manual



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ECD System Manual

MANUAL ELECTRONIC CIRCUIT DESIGNS PTY. LTD.

Operation Guide

This manual covers all versions of 100-177 hardware and software. Some features and operative descriptions mentioned in this manual may differ or not be available on earlier 100-177 versions

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Section 1

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.

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.

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.

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.

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.
- 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 100-177 lift controller operates as a 4 stop simplex with **manual doors only** and can run as automatic or with constant pressure buttons.

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

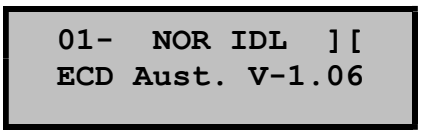
Section 2: EEProm Settings

EEProm How to read and modify settings

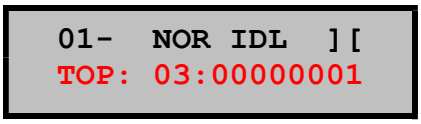
This EEProm holds settings for the particular contract data including number of floors, call masks and drive types.

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.

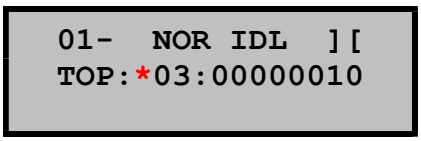
To inspect the settings from the power up state, press the forward ">" button located to the left below the LCD until the EEPROM setting appears.



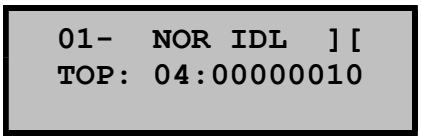
To inspect the settings from the power up state, press the forward ">" button located to the left below the LCD until the EEPROM setting appears.



Now you can use the up "∧" and down "∨"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.



Now use the up "∧" and down "∨" buttons to change the setting. When you are at the required value press the enter "ENT" button again and the * shall disappear.



EEProm Version 1.06 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

TOP Top floor number (VALUE)
Setting example:- TOP 04: 00000100 (Level 4 is top floor)
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 C0: 11000000 (Levels 1&2)
ZON Zone floor. (MASK)
Setting example:-ZON 40: 01000000 (Zone to Level 2)
ZTM Zoning time. (VALUE)
Setting example:-ZTM 06: 00000110 (= 60seconds)
--1 Spare
--2 Spare
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)

CPB Constant Pressure buttons. (VALUE)
Setting example:-CPB 01: 00000001 (requires constant pressure buttons)
--3 Spare
--4 Spare
ADO Advanced Door Opening. NOT APPLICABLE
Set ADO to 00: 00000000 (Off)
DTC Door time car call. (VALUE)
Setting example:-DTC 32: 00110010 (= 5000ms, "5 seconds")
--5 Spare
--6 Spare
PI Position Indication
Setting example:-PI 00: 00000000 (Decimal outputs.)

EEProm Definitions (Full description)

ADO - Advanced Door Opening setup

ADO EEPROM Not used.
N/A. Set to 00

CCM - Car Call Mask setup

CCM EEPROM Car call mask. Floors allowed. (MASK).
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)

CPB – Constant Pressure (on car call) Buttons

CPB EEPROM Constant pressure buttons. (VALUE)
CPB 00: 00000000. For the lift to run, constant pressure is NOT required to be applied on car call button once car call is registered..
CPB 01: 00000001. For lift to run constant pressure is to be applied on car call button during the entire run. If pressure is released from car call button (ie, car call input is removed) the lift will stop.

DTC - Door Time Close setup

Sets the amount of time before the doors close (simulated) whilst on normal operation.
This is to allow time for passengers to approach the doors to be manually opened,
before the lift answers the next call.

DTC 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.) Refer to HEX to DEC table
.

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"
02: 00000010 "Soft valve. 3010/2CH/S"
03: 00000011 "VF type 1; Keb VF drive, Zetadyn VF drive"
04: 00000100 "1,2 speed AC"
05: 00000101 "Valve 3010/S, Blain EV100"

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.”

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).

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

Spares

--1 EEPROM Spare
--2 EEPROM Spare
--3 EEPROM Spare
--4 EEPROM Spare
--5 EEPROM Spare
--6 EEPROM Spare

ST2 - Star Delta Time setup

Star/Delta changeover time. The amount of time the machine stays running in Star.
ST2 EEPROM Star Delta time. (VALUE)
Set value for star to delta change over time.
The time is set in 100ms increments.
08: 00001000 = 800ms
0a: 00001010 = 1000ms, “1 second”
12: 00010010 = 1800ms, “1.8 seconds”
(01 to FF valid values.) Refer to HEX to DEC table.

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)

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

Section 3. Group. N/A .

Group operation is not applicable to this controller.

Section 4

Section 4. Inputs – Outputs .

All inputs except LR,SAF,HV1 and HV2 switch low to "0V" 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.

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

CBS - Hall Button Stop Output

CBS TRANSISTOR OUTPUT
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

DDN - Direction Down Output

DDN TRANSISTOR OUTPUT Down Direction indication output.
Output switches to 24VDC for indication of lift advanced down direction.

DN - Down Relay Output

DN RELAY OUTPUT Down relay 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

EDP - Electronic Door Protection

EDP - Electronic Door Protection input.
LED off when light ray is interrupted.
EDP scans the car entrance in situations where no car doors are present, to stop the lift from moving.
If EDP input switches off while running, the lift will stop.

FAST - Fast Relay Output

FAST RELAY OUTPUT
Up and down fast speed output
See Section 6: Motion, for more on the relay operation

HV1 - High Voltage Input

HV1 - High voltage input
Spare high voltage input - not used

IDN - Inspection Down

IDN - Inspection down signal input
IDN LED shall be on when down inspection button pressed.
On valve type drives, lift shall run at fast speed until slowing limits are opened.

IN1 - Emergency Power Input

For hydraulic elevator operation only
IN1 LED shall be on when emergency power is activated.
When IN1 input is activated the lift shall return to the lowest level.
Lift shall remain out of service (OS output will activate.) while IN1 is on.

INSP - Inspection Control

INSP - Inspection input.
INSP LED shall be off when on inspection.

IUP - Inspection Up

IUP - Inspection up signal input
IUP LED shall be on when up inspection button pressed.
On valve type drives, lift shall run at fast speed until slowing limits are opened.

LEV - Leveling Relay Output

LEV RELAY OUTPUT Leveling relay output
Relay pulls up when lift leveling or re-leveling to floor

LR – Lock Relay input.

LED on when primary door locks made.
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)
Also lock input for **Processor.** LR - Ram address R:44

LR – Lock Relay Output

LR RELAY OUTPUT
Relay pulls up when LR input is on.
See also Inputs – Outputs LR

M3 - Door Lock Input

LED on when secondary door locks made.
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, 3 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.

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, 3 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.

OS - Out of Service Output

OS TRANSISTOR OUTPUT Out of service output
This signal turns on whenever the lift is not available to answer calls..
If safeties are lost or the lift is not in normal mode of operation this signal shall activate.

OUT1 – Spare Output 1

N/A

OUT2 – Spare Output 2

N/A

OUT3 – Spare Output 3

N/A

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

P1 TRANSISTOR OUTPUT Position 1 output
P2 TRANSISTOR OUTPUT Position 2 output
P3 TRANSISTOR OUTPUT Position 3 output
P4 TRANSISTOR OUTPUT Position 4 output

PRV - Proving Circuit

PRV - Proving control circuit input low.
The lift shall be prevented from activating a new run until this signal is high. This is used to ensure drive contactors are released on stopping.
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
PRV input is also used to complete a run on DRV setting 03.

SAF - Safety Circuit

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

SLOW - Slow Relay Output

SLOW RELAY OUTPUT
Up and down slow speed output
See Section 6: Motion, for more on the relay operation

SP1 - Multi Purpose Output 1

SP1 RELAY OUTPUT Star contactor output
See Section 6: Motion, for more on the relay operation

SP2 - Multi Purpose Output 2

SP2 RELAY OUTPUT Delta contactor output
See Section 6: Motion, for more on the relay operation

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 UP/DN output.
See Section 6: Motion, for more on the relay operation

UP - Up Relay Output

UP RELAY OUTPUT Up relay output
See Section 6: Motion, for more on the relay operation

Section 5. Liquid Crystal Display.

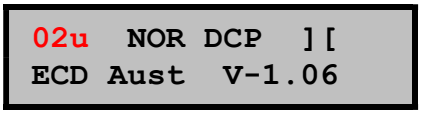
Understanding the LCD

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

Note: LCD contrast is set via POT located near the LCD.

LCD Status Line

LCD Position & Direction



The lift position is shown to the top left of the display followed by the current demand direction.
The example shows the lift on the 2nd floor with an up direction

- 2u Lift on level 2 going up.
- 2d Lift on level 2 going down

LCD Lift Modes

The lift modes are shown to the top left centre of the display.
The above example shows the lift on Normal

- INS Lift on Inspection
- NOR Lift on normal
- EP Lift on emergency power
- ZON Lift zoned/zoning to floor

LCD Lift Status

The lift modes are shown to the top right centre of the display.
The above example shows the lift Running Down

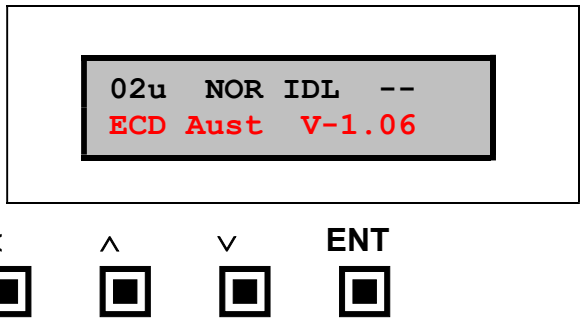
- IDL Lift idle
- LCK Lost door locks

LIQUID CRYSTAL DISPLAY

- LDN Leveling down, displays on re-level down.
- LEV Leveling blocked, displays on re-leveling failed and disabled.
- LUP Leveling up, displays on re-level up.
- RDN Running down
- RPT Run protection time exceeded. *Fatal error. See EEprom settings - RPT*
- RUP Running up
- SAF Lost safety circuit

LCD Control Buttons

The Control buttons control the action of the second display line.



Buttons -

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

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

- Text plus software version
- Software build date
- EEProm settings and values
- Ram address' and values
- Number of runs log.

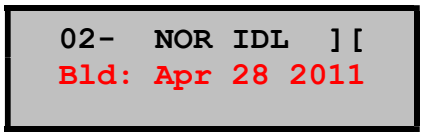
  These now count in decimal rather than binary. If existing job has counted up and holds a partial hex count value "A-F" the value shall be counted up until it clocks over to zero, then the count shall continue in decimal.

LCD Display Options

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

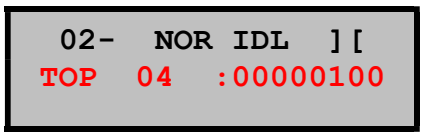
Text plus software version

∧ UP



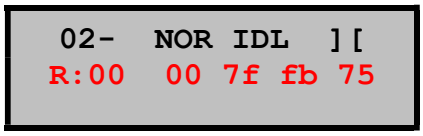
Software Build date

> FORWARDS



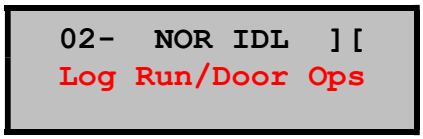
EEProm settings and values
Press ∧ and ∨ to scroll through the adjustable EEprom settings.
See Section 2, EEprom settings

> FORWARDS



R - internal **ram address'** and values

> FORWARDS



Number of runs
Records the number of runs since last power on. Earlier software versions count in hex. Later software versions count in decimal.

Section 6

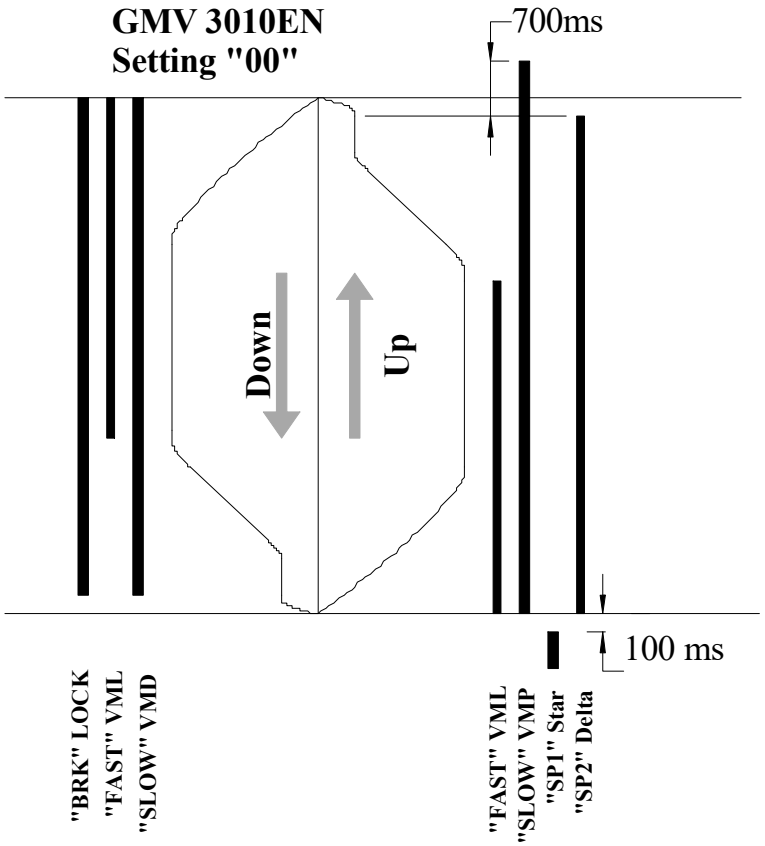
Section 6. Motion

Motion Control Outputs

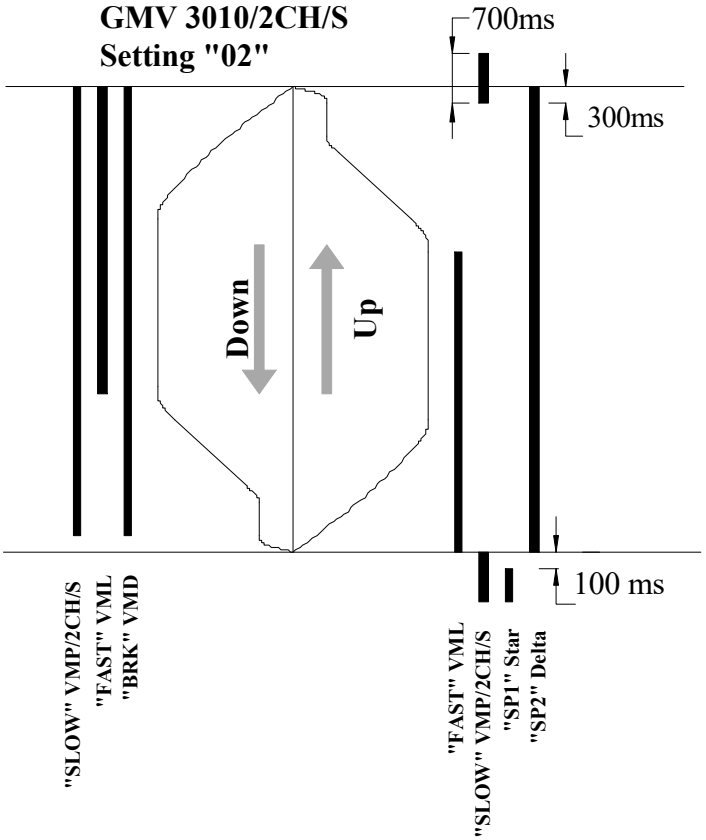
Drive settings and their output status.

The controller may output to various different drive 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.

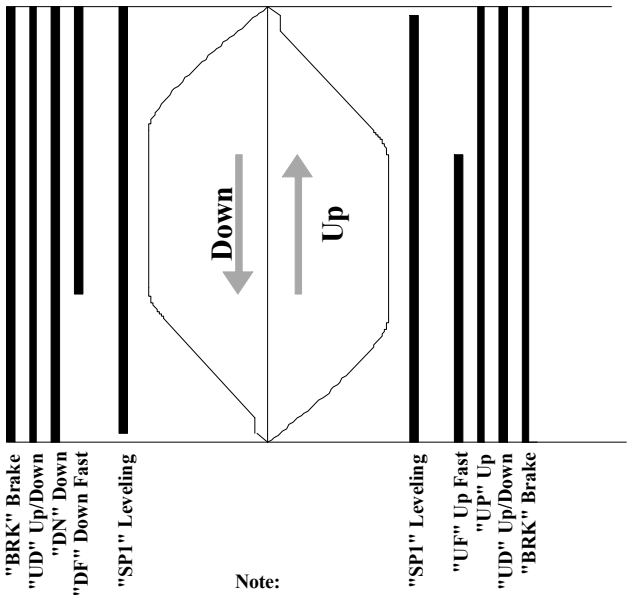
DRV…EEPROM…Drive control type.



GMV 3010/2CH/S
Setting "02"

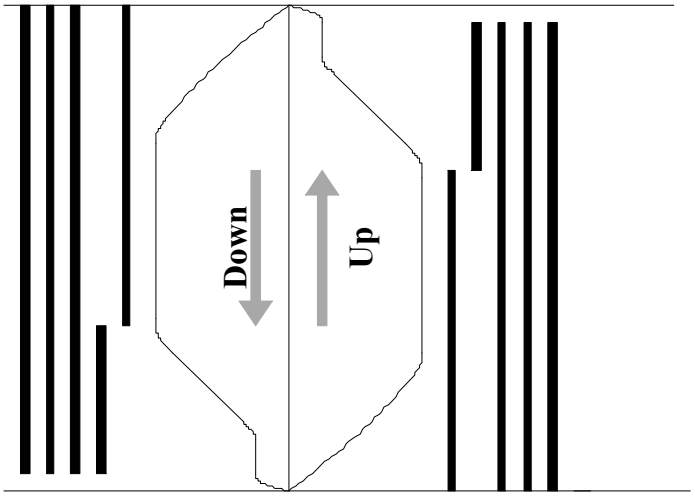


VF Drive Type 1 KEB-VF, ZETADYN-VF.
Setting "03"

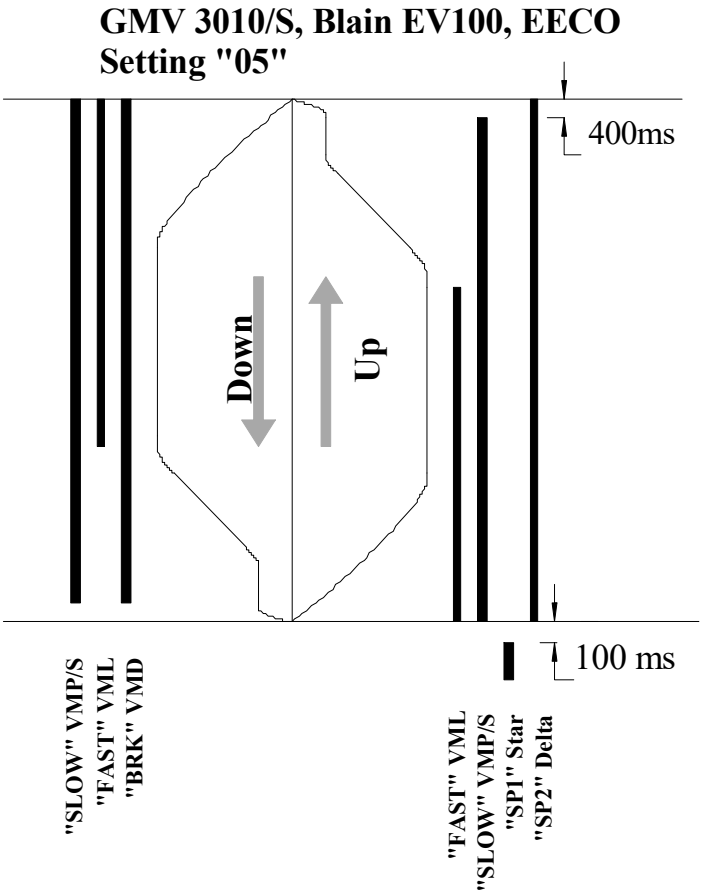


Note:
1. To initiate a run, "PRV" must be active prior to run. "PRV" turns off during entire run and becomes active to complete the run. "PRV" is not required on inspection.

2 Speed AC
Setting "04"



Note:
1.To initiate a run, "PRV" must be active prior to run.



Counting.

Counting Method "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.

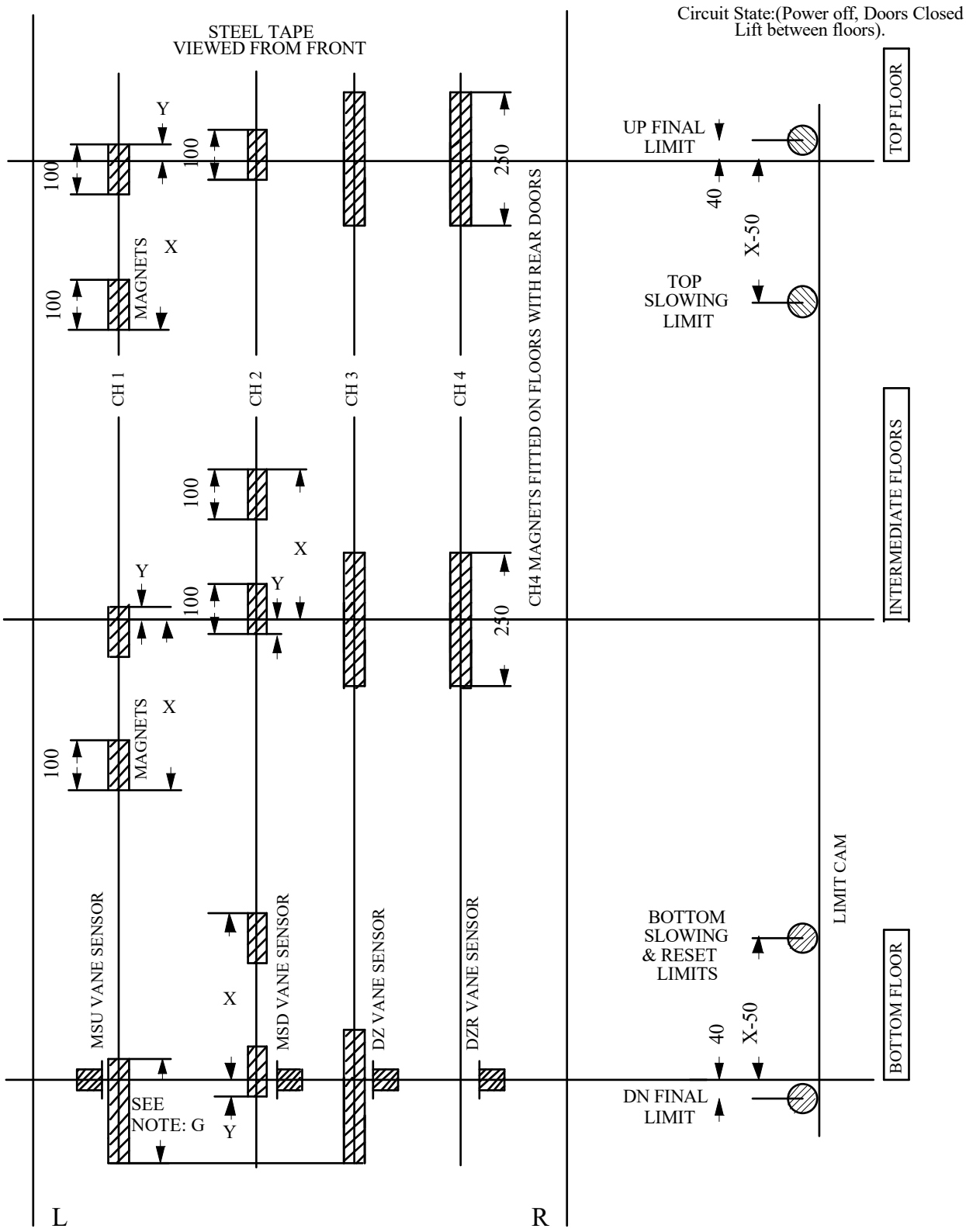
If the lift is stationary or running up and TSL input is removed, the lift shall reset to the top floor. If running up in fast speed, the fast speed inputs shall be turned off.

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.



Counting Method "00' 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

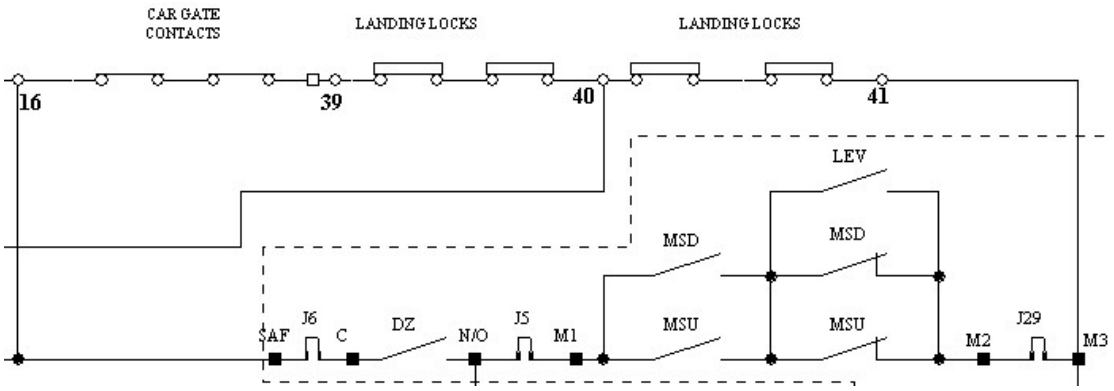
A leveling failure has been added to stop the lift from re-leveling after 3 attempts of 10 seconds.
See Section5. LCD lift status - **LEV**

Run protection timer/counter "RPT"

RPT – Run protection time exceeded.
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 25s. If this process is cycled 3 times, then the controller shall display RPT error message on the LCD screen.
RPT does not operate on inspection
RPT is a fatal error and can be reset only via a processor POR or Inspection on/off 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 switch through a "LR" or "DZ" contact onboard. This switches "N" through to M4.

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

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.

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

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.

AAA-AAA - B - C - DD - EE - FF - GG - HH - II - JJ - KK - LL - MMMM

A: CONTROL BOARD TYPE;
- 100-170
- 100-172
- 100-173
- 100-174
- 100-177
- CAR_SR

B: ELEVATOR TYPE;
- H - HYDRAULIC
- T - TRACTION
- D - DUAL HYD

C: ELEVATOR CONTROL;
- S - SIMPLEX
- D - DUPLEX

D: No OF STOPS;
- 04 - 4 STOP
- 08 - 8 STOP
- 12 - 12 STOP
- 16 - 16 STOP
- 32 - 32 STOP

E: MOTOR CONTROL;
- 00 - GMV 3010EN
- 01 - DYNAHYD DA VALVE
- 02 - GMV 3010/2CH/S
- 03 - VF TYPE 1; KEB;ZETADYN
- 04 - 2 SPEED AC
- 05 - GMV 3010/S BLAIN EV100
- 06 - VF TYPE 2
- 07 - VF TYPE 3;ABB
- 08 - BERRINGER
- 09 - GMV CARD 3100ES

F: MOTOR SIZE;
- 01 - 00-10KW (14HP)
- 02 - 10-20KW (27HP)
- 03 - 20-30KW (40HP)
- 04 - 30-40KW (54HP)
- 05 - 40-50KW (66HP)
- 06 - 50-60KW (80HP)
- 07 - OVER 60 KW

G: DOOR CONFIGURATION;
- 01 - FRONT DOORS
- 02 - FRONT & REAR DOORS
- 03 - SELECTIVE F& R DOORS
- 04 - FRONT DOORS W/CAM
- 05 - F & R DOORS W/CAM

H: DOOR CONTROL;
- 01 - RELAY OPERATED
- 02 - CONTACTOR OPERATED

I: EMERG. LOWERING;
- 00 - NA
- 01 - 100-145 SW/OVER
- 02 - 100-145 & UPS

J :GONGS/CHIMES;
- 00 - NA
- 01 - GONG RELAYS
- 02 - 100-125/4 GONG BOARD
- 03 - 100-125/8 GONG BOARD
- 04 - 100-125/12 GONG BOARD

K: SECURITY;
- 00 - NA
- 01 - SECURITY RELAYS
- 02 - 100-126/4 BOARD
- 03 - 100-126/8 BOARD
- 04 - 100-126/12 BOARD

L: BINARY BOARDS;
- 00 - NA
- 01 - 100-128 DEC-BINARY BOARD
- 02 - 100-128 REVERSE DEC-BINARY BOARD
- 03 - 100-148 DEC-GREYCODE BOARD

M: SERIAL NUMBER;
- S/N OF MAIN CONTROL BOARD

AUXILIARY EQUIPMENT
- 100-127 INSPECTION RUN/CALL BOARD
- 100-133 POSITION DISPLAY
- 100-135 SEGMENT POSITION DISPLAY
- 100-141 POSITION DISPLAY
- 100-143 POSITION DISPLAY
- 100-144 POSITION DISPLAY
- 100-146 DISPLAY PROGRAMMER
- 100-152 POSITION DISPLAY
- 100-154 RS485-RS422 BOARD
- 100-157 POSITION DISPLAY
- 100-162 POSITION DISPLAY
- 100-163 POSITION DISPLAY
- 100-175 SHAFT INFORMATION SYSTEM
- COP80 CAR OPERATING BOARD 8 STOP
- COP160 CAR OPERATING BOARD 16 STOP
- COP240 CAR OPERATING BOARD 24 STOP
- COP320 CAR OPERATING BOARD 32 STOP
- GROUP_SR GROUP SERIAL BOARD
- HALLSIO4_SR 4 IN/OUT SERIAL BOARD
- SEC_SR SERIAL SECURITY BOARD
- GONG CTRL SERIAL BOARD
- POS8 8 STOP SERIAL POS. OUT. BOARD
- POS24 24 STOP SERIAL POS. OUT. BOARD
- POS32 32 STOP SERIAL POS. OUT. BOARD

	DATE:	Drawn	Rev:	Date DEC 2003	Drawing No: Controller ID

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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