tvc **Controller Manual**

TVL 234
ISSUE 2
08/05

MICROPROCESSOR LIFT CONTROL MANUAL

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1.0 INTRODUCTION

1.1 GENERAL

The TVC M6809 'Evolution' Microprocessor Lift Control Module is one of the latest modules supplied by TVC which make up a lift control system. The module is designed using current technology to provide a cost-effective lift control panel whilst maintaining all the safety, reliability and flexibility features associated with Thames Valley products and at the same time giving even more customer facilities.

In addition to the normal features a number of refinements are included as standard; these include, for example, recognition of a stuck button (which is consequently ignored), LED indication of each incoming and outgoing signal, a numerical display of the lift position and direction of travel and on request displays of certain past and present lift events which are displayed in 'English Language'.

Features provided by the system include:

a) Fireman Control and Indicator

b) Special Service Control

c) Homing

d) Landing Door Re-open Once

e) Light Ray Failure

f) Stuck Button Detection

g) Differential Door Timing

h) Advance Call Cancel

i) Optional Separate Door Close Push

j) Weight Switch 95% FL, & By-pass Indicator

k) Weight Switch 110% FL & Overload Indicator

l) Car Call Dumping

m) Event Message Display (in 'English Language' and real time)

n) Door Opening and Closing Protection

o) Floor security facility

p) Journey and Door operation counters

1.2 CONSTRUCTION

The system comprises a motherboard onto which a number of printed circuit cards are mounted (see Fig 1.0). Connections to the motor panel are achieved via two part connectors on the motherboard. Shaft and car wiring are via screw-clamp type terminals also on the motherboard.

An additional expansion motherboard is necessary for systems over 11 floors.

The system voltages are derived from a transformer/power supply module mounted on the motor panel and are fed via a wiring loom to the microprocessor motherboard.

1.3 OVERALL SYSTEM DESCRIPTION (FIG. 1)

The overall TVC Microprocessor Collective Lift Control System comprises a Microprocessor Unit and a Motor Panel Section plus Shaft and Car wiring.

The microprocessor unit is mounted on the Motor Panel section & the whole is contained in a single cabinet (simplex).

The overall system is built around the 6809 Microprocessor, which is used as the control centre for monitoring and addressing all incoming and outgoing signals to the remainders of the system.

The lift motor operation is controlled by the Motor Panel Section which receives signals from the Microprocessor, such as pilot up, pilot down, pilot high speed, pilot open doors and pilot close doors. The Motor Panel Section sends signals back to the Microprocessor Unit regarding which lift function it is carrying out, i.e. moving up, moving down, opening or closing doors, door zone or locks made etc.

The Motor Panel Section also transmits signals to and receives signals from the shaft and car, these being locks and safety circuit signals from the shaft wiring, door operator, car gate and safety circuit signals from the car wiring.

Signals to and from the shaft and car are also transmitted and received by the Microprocessor Unit. These include landing calls, position indicators, position resets and fire switch etc, from the shaft wiring and car calls, position indicators, service switch attendant controls etc, from the car wiring.

Duplex & triplex operation is possible, as is connection to an 'EMU' remote monitoring system.

High reliability, field proven industrial standard components are used throughout the system and are readily available from many sources.

The system has signal protection, where all external incoming signals are optically isolated and filtered. Motor Panel signals are normally at 110V AC and all other incoming signals are at 100V DC, with the exception of landing and car push feed which is 24V DC.

Other system voltages are also available.

The Microprocessor System regularly tests itself throughout its operation and in its program, if an error is detected the system will automatically reset itself.

1.4 PERFORMANCE CHARACTERISTICS

1.4.1 Electrical

System Input voltage: 400V ac + 10% - 15% 50 HZ.
Note: other voltages available - consult factory.

Power Supply Module Voltages (Part No 450.008034.1 only)

	M6809 POWER SUPPLY		
Input Voltage	9V (30VA)	19V (50VA)	75V (75VA)
Fuse Ident Rating	F3/3A a/s	F2/3A a/s	F1/1A
Output Voltage	+10V dc	+24V dc	+100V dc
Fuse Ident Rating	F9/5A	F8/2A CPF 100v LPF	Test Point F4/50mA F7/250mA F5/500mA F6/250mA

Note 1: Fuses not denoted a/s are quick-blow.
Note 2: The 5V supply is derived from the 10V supply via a voltage regulator fitted on the motherboard.
Note 3: Please see panel wiring diagrams for alternative CPF & LPF supply when part number 450.008007.1 is used.

CPU Card
- +5Vdc Power
- +10Vdc Power

I/O Card
- +5Vdc Power
- +24Vdc Power
- Each input signal is sourced from *100Vdc (and must exceed 75V dc)
  *24V dc for all call buttons

- Output Relays
- Single contact per relay
- Contact Rating 5A at 250Vac
- Coil Voltage 24Vdc
- 16 relays per I/O Card

Position Card	-	+5Vdc Power
	-	+24Vdc Power
Serial Card	-	+5Vdc Power
	-	+10Vdc Power
	-	Two/Four RS232 serial communications ports

Environmental Range

Humidity Operating Range	0 - 90% relative humidity (non-condensing)
Temperature Operating Range	5 - 40 deg. C ambient

1.4.2 Mechanical

Main Motherboard Assembly	Height	320mm
	Width	250mm
	Depth	170mm
	Weight	6Kg
Extension No. 1 Motherboard Assembly (large)	Height	230mm
	Width	250mm
	Depth	170mm
	Weight	2Kg
Extension No. 2 Motherboard Assembly (small)	Height	160mm
	Width	120mm
	Depth	170mm
	Weight	0.5Kg

1.5 MICROPROCESSOR SYSTEM DESCRIPTION

The Microprocessor System comprises a number of printed circuit cards, all of which are mounted on the motherboard. These are namely:

a) The Motherboard itself which contains the basic pilot motion control relays and the inputs which go to and come from the Panel. It also contains the DJR journey timer.

b) The Position Card provides outputs to indicate actual position and direction of the car and also receives absolute binary floor position inputs.

c) A number of I/O cards provides call inputs and acceptance outputs.

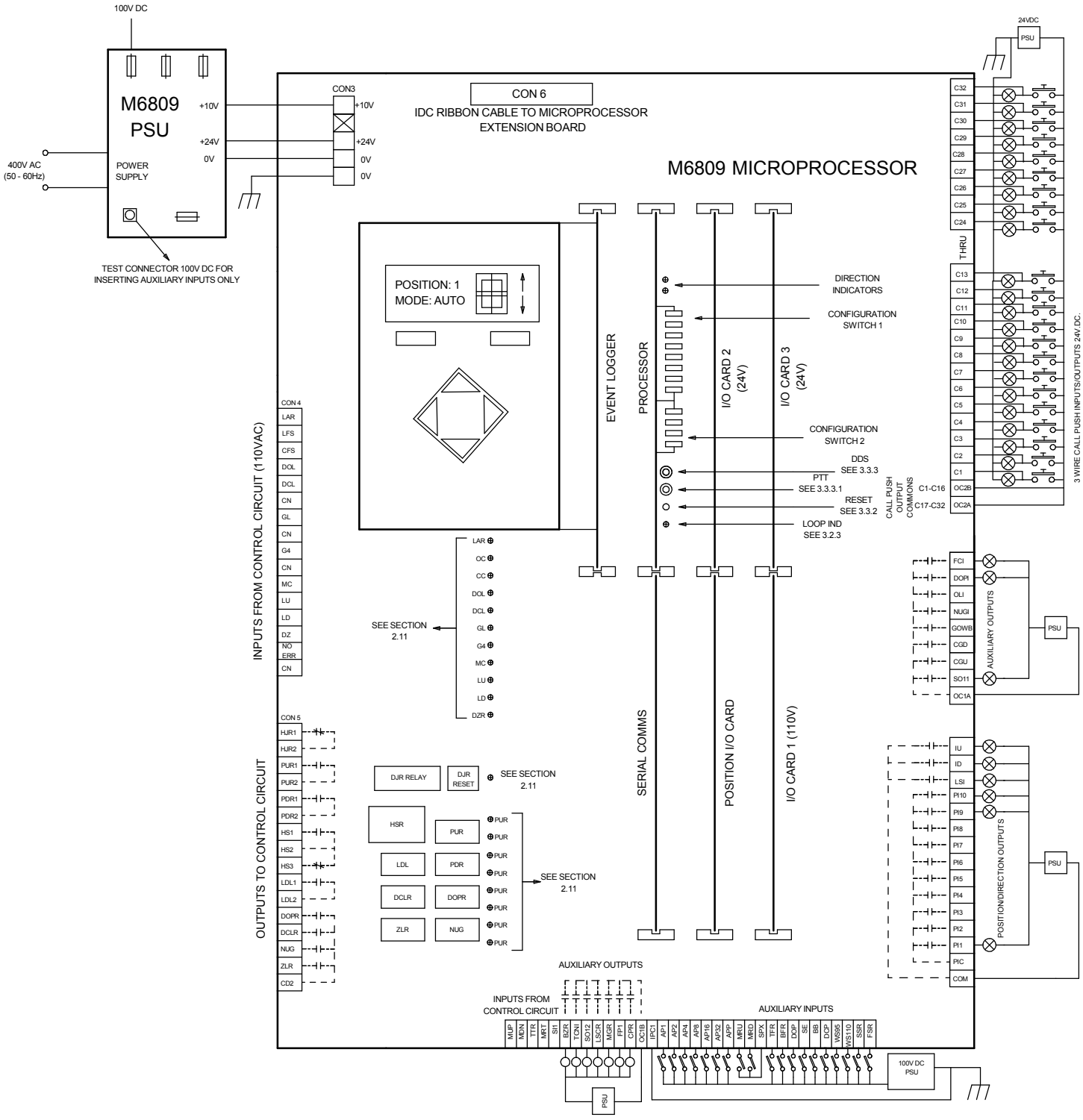
d) An event Log Card which contains six pushbuttons to allow examination of the Liquid Crystal Display.

e) A Serial Communication Card which provides two/four RS232 ports (for Duplex, Triplex or group operation and/or a shaft encoder, EMU etc.).

Further expansion of the system is provided by a choice of expansion Motherboards connected to the primary motherboard by means of a ribbon cable. There are two alternative expansion motherboards:

a) The ‘small’ expansion which provides for one additional I/O Card. This card can be used for increased call inputs (increases the number of floors served from 10 to 15).

b) The ‘full’ expansion motherboard which provides for four additional I/O Cards and the circuitry necessary for rear door operation. This allows full collective control with up to 27 floors of which any four can include rear doors.



MOTHERBOARD CARD POSITIONS/WIRING SCHEMATIC
FIG 1

2.0 INSTALLATION & COMMISSIONING

2.1 GENERAL

The external wiring for the Microprocessor controlled system is as shown in Fig 1

All user incoming wiring to the Unit are at 100V dc with the exception of Car and Landing pushes which are 24V dc and all outgoing wiring for Indicators are at 12/24V dc (other voltages available on request).

2.2 CONNECTOR ACCESS

All external wiring to the M6809 processor unit is made to the Motherboard terminals.

The common indicator return (INR) terminal is located with the main Motor Panel terminals, although the indicator output terminals are on the Motherboard.

2.3 MICROPROCESSOR / SYSTEM CONNECTION (REF. FIG 1)

a) Transformer /PSU Connections (mounted on the Motor Panel)

i) Transformer Input
The appropriate voltage tapping should be selected on the PSU transformer to suit the application.

ii) PSU Outputs
Power Supply Unit outputs go via a separate loom to socket Con 3 on the Microprocessor Motherboard.

Note: Keep Input & Output looms Separate.

b) LAR Line

Connects from the Main Panel, to LAR terminal on the Microprocessor Motherboard.

2.4 CONTROL PANEL SWITCH-ON

Before switching on for the first time, carry out the following procedure:

a) Disconnect the power loom from connector Con 3 at the Microprocessor Motherboard.

b) Pull all the plug-in Cards out approximately 1/2".

c) Interrupt the supply to the transformer/PSU (this is done because at this stage microprocessor operation is not required).

d) Switch on the control panel and ensure that no 240 VAC wiring has been connected to any of the connectors on the right hand side or the bottom of the motherboard.

e) When the wiring has been fully checked out, reverse the procedures a, b and c above.

2.5 MICROPROCESSOR SWITCH-ON

After switching on, the following checks should be made:

a) i) The two power supply LED indicators (top left) should be illuminated, to show that the +5V and +24V are available at the Motherboard.

ii) Earth Faults

Car push feed (CPF) earth fault	-	CPF fuse will blow.
Landing push feed (LPF) earth fault (See 1.4.1 – note 3)	-	LPF fuse will blow.

b) The position indicator LED's on the position card will show the position of the lift when it was last switched off. If not on a terminal reset with a door zone registered, after a short delay the lift will, "Dive" to the bottom floor.

c) The yellow LED on the CPU card designated "Loop" should flash continuously.

d) For a short time the EVENT CODE will display "POWER ON RESET". It maybe over-ridden by a "LOST LAR" which remains displayed. A "LOST LAR" indicated that the lift has a primary safety circuit failure because the LAR relay is de-energised.

e) On the I/O cards, any of the top 16 red LED's illuminated shows that an incoming signal is present (refer to 2.11 for signal notations). The bottom 16 LED's indicate that the associated output relay has been energised.

2.6 CALL ENTRY

Car & landing calls can be entered by applying 24V dc on the call terminals. If done correctly the corresponding LED on the button will light indicating that the call has been accepted.

LCD Event Logger – see section 3.8 for further details.

2.7 HOMING (Homing/Main Floor set via menu system)

The lift will "Home" to the main floor (or a floor specified by the customer) when HOMEN is switched to on. See 3.3.1.

On Duplex systems both lifts must be set to the same level.

2.8 STUCK PUSH BUTTON

The MPU automatically reads the input signal when a call button is pressed, memorises it and compares it with the previous input signals.

If both signals are the same the command is ignored by the system until the stuck button is released and re-operated.

2.9 DUPLEX/TRIPLEX OPERATION (WITHOUT DISPATCHER)

The Duplex/Triplex system consists of two/three Simplex lift control panels communicating with each other via a special interconnecting cable. The landing calls are then handled between the two/three lifts.

If the interconnection is unplugged, the lift will lose communication with other lifts and will assume Simplex operation.

After installation has been completed on the first lift of a Duplex/Triplex system, it can be commissioned for use i.e. Simplex operation, whilst the second lifts installation is being completed. The connecting of the communications cabled and the landing calls, LPF, LAF and INR is done last to achieve Duplex and Triplex operation.

There is a common Landing Call Acceptance Feed (LAF) between lifts.

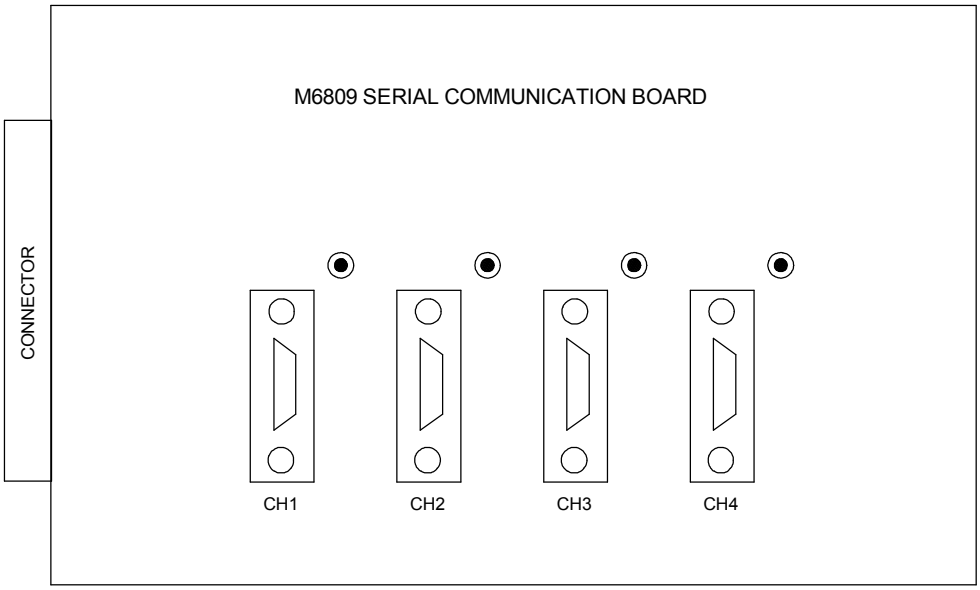
Therefore, one lift can work in the Simplex mode whilst the other lift is switched off for maintenance work etc.

CAUTION: The reader should be aware that the LPF (24V dc) LAF (24V dc), and transitory signals from the landing call pushes of the lift, which is switched off, are still live because they are being sourced from the operational lift.

Note: TIM8 on the motherboard must be set to different values on each lift i.e. Lift A = 2, Lift B = 1 and Lift C = 0

- The 'master' lift must be set to the highest value.
- In cases where the lifts do not serve an equal amount of floors, the lift serving the most amount of floors must be set as the 'master lift'.

FIG. 2



'MSN' VERSION SOFTWARE

CONNECTOR	BAUD
CH1 TO EMU OR TVMP	(1K2)
DUPLEX - CH2 TO CH2 ON OTHER LIFT	(9K6)
GROUP - CH2 TO CON1 ON ADS ISOLATOR BOARD (040.000083)	(9K6)
TRIDENT - CH2 TO CH3 ON OTHER LIFT	(9K6)
CH4 TO SHAFT ENCODER 1200	(1K2)
SE500 P - CH4 TO SE500 P	(19K2)

'P' VERSION SOFTWARE

CONNECTOR	RATE
DUPLEX - CH1 TO CH1 ON OTHER LIFT	(9K6)
CH4 TO EMU	(1K2)

DRAWN: A.W.	
CHECKED:	
DATE:11/11/98	
REV:	
FILE NAME:SERVER:\TVC MANUALS\234\FIG 2	

THAMES VALLEY CONTROLS LTD
TVLD 360

Communication Cable Connection

The following procedure should be adhered to when connecting the communications cable.

a) Run separate from all other mains cabling, ideally in separate trunking.

b) Switch off system.

c) Plug communications cable into the correct socket on the Serial Comms (see fig 2) supporting the card with the other hand.

d) Ensure that the “TIM8” switch on the motherboard is set to a different value on each lift. The higher value will be the master lift.

e) Switch on system.

f) When the lifts are connected together correctly, the RED LED for the relevant channel should flicker.

On a duplex/triplex application, ensure all main floors are set the same in each lift processor.

2.10 CALL DESIGNATIONS MAIN MOTHERBOARD

The call designations will vary, depending on the type of system required, as follows:

INPUTS				OUTPUTS			
TERMINAL	FULL COLL	DOWN COLL/APB	GROUP	TERMINAL	FULL COLL	DOWN COLL	GROUP
C1	CP1	CP1	CP1	C1	CI1	CI1	CI1
C2	N/U	LIU/LP1	CP2	C2	N/U	I1U	CI2
C3	LIU	CP2	CP3	C3	I1U	CI2	CI3
C4	CP2	L2D/LP2	CP4	C4	CI2	I2D	CI4
C5	L2D	CP3	CP5	C5	I2D	CI3	CI5
C6	L2U	L3D/LP3	CP6	C6	I2U	I3D	CI6
C7	CP3	CP4	CP7	C7	CI3	CI4	CI7
C8	L3D	L4D/LP4	CP8	C8	I3D	I4D	CI8
C9	L3U	CP5	CP9	C9	I3U	CI5	CI9
C10	CP4	L5D/LP5	CP10	C10	CI4	I5D	CI10
C11	L4D	CP6	CP11	C11	I4D	CI6	CI11
C12	L4U	L6D/LP6	CP12	C12	I4U	I6D	CI12
C13	CP5	CP7	CP13	C13	CI5	CI7	CI13
C14	L5D	L7D/LP7	CP14	C14	I5D	I7D	CI14
C15	L5U	CP8	CP15	C15	I5U	CI8	CI15
C16	CP6	L8D/LP8	CP16	C16	CI6	I8D	CI16
C17	L6D	CP9	CP17	C17	I6D	CI9	CI17
C18	L6U	L9D/LP9	CP18	C18	I6U	I9D	CI18
C19	CP7	CP10	CP19	C19	CI7	CI10	CI19
C20	L7D	L10D/LP10	CP20	C20	I7D	I10D	CI20
C21	L7U	CP11	CP21	C21	I7U	CI11	CI21
C22	CP8	L11D/LP11	CP22	C22	CI8	I11D	CI22
C23	L8D	CP12	CP23	C23	I8D	CI12	CI23
C24	L8U	L12D/LP12	CP24	C24	I8U	I12D	CI24
C25	CP9	CP13	CP25	C25	CI9	CI13	CI25
C26	L9D	L13D/LP13	CP26	C26	I9D	I13D	CI26
C27	L9U	CP14	CP27	C27	I9U	CI14	CI27
C28	CP10	L14D/LP14	CP28	C28	CI10	I14D	CI28
C29	L10D	CP15	CP29	C29	I10D	CI15	CI29
C30	L10U	L15D/LP15	CP30	C30	I10U	I15D	CI30
C31	CP11	CP16	CP31	C31	CI11	CI16	CI31
C32	L11D	L16D/LP16	CP32	C32	I11D	I16D	CI32

2.11 CALL DESIGNATIONS - EXTENSION BOARD

CALL DESIGNATIONS (ON SMALL EXTENSION BOARD)

INPUTS				OUTPUTS			
TERMINAL	**FULL COLL**	**DOWN COLL/APB**	**GROUP**	**TERMINAL**	**FULL COLL**	**DOWN COLL**	**GROUP**
C33	L11U	CP17	CP33	C33	I11U	CI17	CI33
C34	CP12	L17D	CP34	C34	CI12	I17D	CI34
C35	L12D	CP18	CP35	C35	I12D	CI18	CI35
C36	L12U	L18D	CP36	C36	I12U	I18D	CI36
C37	CP13	CP19	CP37	C37	CI13	CI19	CI37
C38	L13D	L19D	CP38	C38	I13D	I19D	CI38
C39	L13U	CP20	CP39	C39	I13U	CI20	CI39
C40	CP14	L20D	CP40	C40	CI14	I20D	CI40
C41	L14D	CP21	CP41	C41	I14D	CI21	CI41
C42	L14U	L21D	CP42	C42	I14U	I21D	CI42
C43	CP15	CP22	CP43	C43	CI15	CI22	CI43
C44	L15D	L22D	CP44	C44	I15D	I22D	CI44
C45	L15U	CP23	CP45	C45	I15U	CI23	CI45
C46	CP16	L23D	CP46	C46	CI16	I23D	CI46
C47	L16D	CP24	CP47	C47	I16D	CI24	CI47
C48	L16U	L24D	CP48	C48	I16U	I24D	CI48

LIMIT OF SMALL EXTENSION BOARD

CALL DESIGNATIONS (FULL EXTENSION BOARD)

INPUTS				OUTPUTS			
TERMINAL	**FULL COLL**	**DOWN COLL/APB**	**GROUP**	**TERMINAL**	**FULL COLL**	**DOWN COLL**	**GROUP**
C49	CP17	CP25	CP49	C49	CI17	CI25	CI49
C50	L17D	L25D	CP50	C50	I17D	I25D	CI50
C51	L17U	CP26	CP51	C51	I17U	CI26	CI51
C52	CP18	L26D	CP52	C52	CI18	I26D	CI52
C53	L18D	CP27	CP53	C53	I18D	CI27	CI53
C54	L18U	L27D	CP54	C54	I18U	I27D	CI54
C55	CP19	CP28	CP55	C55	CI19	CI28	CI55
C56	L19D	L28D	CP56	C56	I19D	I28D	CI56
C57	L19U	CP29	CP57	C57	I19U	CI29	CI57
C58	CP20	L29D	CP58	C58	CI20	I29D	CI58
C59	L20D	CP30	CP59	C59	I20D	CI30	CI59
C60	L20U	L30D	CP60	C60	I20U	I30D	CI60
C61	CP21	CP31	CP61	C61	CI21	CI31	CI61
C62	L21D	L31D	CP62	C62	I21D	I31D	CI62
C63	L21U	CP32	CP63	C63	I21U	CI32	CI63
C64	CP22	L32D	CP64	C64	CP23	I32D	CI64

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| | | | --- | | | | ---
LIMIT | | | | LIMIT |
|---|---|---|---|---|---|---|---|
| C65 | L22D | CP33 | | C65 | I22D | CI33 | |
| C66 | L22U | L33D | | C66 | I22U | I33D | |
| C67 | CP23 | CP34 | | C67 | CI23 | CI34 | |
| C68 | L23D | L34D | | C68 | I23D | I34D | |
| C69 | L23U | CP35 | | C69 | I23U | CI35 | |
| C70 | CP24 | L35D | | C70 | CI24 | I35D | |
| C71 | L24D | CP36 | | C71 | I24D | CI36 | |
| C72 | L24U | L36D | | C72 | I24U | I36D | |
| C73 | CP25 | CP37 | | C73 | CI25 | CI37 | |
| C74 | L25D | L37D | | C74 | I25D | I37D | |
| C75 | L25U | CP38 | | C75 | I25U | CI38 | |
| C76 | CP26 | L38D | | C76 | CI26 | I38D | |
| C77 | L26D | CP39 | | C77 | I26D | CI39 | |
| C78 | L26U | L39D | | C78 | I26U | I39D | |
| C79 | CP27 | CP40 | | C79 | CI27 | CI40 | |
| C80 | L27D | L40D | | C80 | I27D | I40D | |

ALTERNATIVE ARRANGEMENT FOR REAR DOORS

INPUTS

TERMINAL	FULL COLL	DOWN COLL/APB
C65	RCP1	
C66	RL1D	
C67	RL1U	
C68	RCP2	
C69	RL2D	
C70	RL2U	
C71	RCP3	
C72	RL3D	
C73	RL3U	
C74	RCP4	
C75	RL4D	
C76	RL4U	
C77	RCP5	
C78	RL5D	
C79	RL5U	
C80	-------	

OUTPUTS

TERMINAL	FULL COLL	DOWN COLL
C65	RCI1	
C66	RI1D	
C67	RI1U	
C68	RCI2	
C69	RI2D	
C70	RI2U	
C71	RCI3	
C72	RI3D	
C73	RI3U	
C74	RCI4	
C75	RI4D	
C76	RI4U	
C77	RCI5	
C78	RI5D	
C79	RI5U	
C80	-------	

2.12 KEY TO REFERENCES

N	=	Floor Level (Not Floor Name)
C P N	=	Car Call Push
C I N	=	Car Call Indicator and APB Landing Call Indicators
L N U	=	Landing Call Up Push
I N U	=	Landing Call Up Indicator
L N D	=	Landing Call Down Push
I N D	=	Landing Call Down Indicator
L P N	=	Landing Call Push APB/Non Directional
L I N	=	Landing Call Indicator Non Directional

REAR DOOR CALLS

M	=	Nominated Floor Level (To Suit Installation)
R C P M	=	Rear Car Call Push
R C I M	=	Rear Car Call Indicator
R I M U	=	Rear Landing Call Up Push
R I M U	=	Rear Landing Call Up Indicator
R L M D	-	Rear Landing Call Down Push
R I M D	=	Rear Landing Call Down Indicator

Note:

a) SYS switch ignored by the program if APB or NS collective flags are set in EPROM. See section 3.3.1.

b) If APB or down collective control is required and the main floor is not the bottom floor, the software will set the main floor landing push as an UP call. If two landing pushes are required at the main floor (other than the bottom floor) then the controller should be set up as a full collective system.

2.13 MOTHERBOARD I/O DESIGNATIONS

Motherboard Inputs from the main panel:-

12 Opto-isolated inputs rectified and smoothed.
Direct input from control circuit (110/230V ac or 110V dc)

Main panel monitoring inputs:

1	LAR	Normal control relay
2	LFS	Landing push feed monitor
3	CFS	Car push feed monitor
4	DOL	Front door open limit
5	DCL	Front door close limit
6	GL	Landing gate contact
7	G4	Car Gate contact/Landing Lock contact
8	MC	Main motion contactor/Delta (Hydraulic)
9	LU	Levelling up switch
10	LD	Levelling down switch
11	DZ	Door zone switch
12	NO ERR	Drive failure (eg DJR, FDR)
		Traction – Shutdown and park with doors closed

Hydraulic – Return to bottom floor, shutdown and park with doors closed

Motherboard Outputs to Main Panel

Main panel pilot relays

1	DJR	Double Journey Pilot (see section 3.3.5)
2	PUR	UP direction pilot
3	PDR	DOWN direction pilot
4	HSR	High speed pilot (c/o contact)
5	LDL	Low speed time limit
6	DOPR	Door open pilot
7	DCLR	Door close pilot
8	NUG	Door nudging pilot
9	ZLR/RC	Zone locking/retiring ramp

Call inputs and outputs are referenced C1-C80.

Note: 1 – 32 on main motherboard 33 – 80 on the extensions

2.14 I/O CARD DESIGNATIONS (MAIN MOTHERBOARD)

I/O CARD 1 INPUT (on main motherboard)

16 Opto-isolated inputs (100V dc smoothed)

Standard Inputs

1	UP	UP direction signal
2	DN	DOWN direction signal
3	SPX	Selector stepping switch
4	TTR	Lift on test
5	TFR	Top floor reset limit
6	BFR	Bottom floor reset limit
7	DOP	Door open push
8	SE	Safety Edge
9	BB	Light beam broken
10	DCP	Door close push
11	MRT	Motor room thermistor input
12	SI1	Spare input 1
13	WS95	Weight switch 95% (by-pass)
14	WS110	Weight switch 110 (overload)
15	SSR	Car preference switch
16	FSR	Fire fighting control switch

I/O CARD 1 OUTPUTS

16 relay outputs (n/o contact unless stated)
Indicator outputs (Ref to indicator supply)

1	SO11	Spare output 1
2	CGU	Top of car arrival gong
3	CGD	Bottom of car arrival gong
4	GOWB	Buzzer/Gate open warning
5	NUGI	Door Nudging O/P
6	OLI	Car overload indicator
7	DOPI	Door open push indicator
8	FCI	Fire fighting control indicator

Miscellaneous outputs (Ref to Neutral)

9	TCNI	This car next indicator
10	BZR	Speed selection**
11	SO12	Spare output 2/Regulator Inhibit Delay**
12	LSCR	RLS buffer shorting control/pump motor delay (LST)/Brake Release Timer**
13	MGR	MG set control (SDT/FMT)
14	FP1	Fire control phase 1
15	CPR	Force Field (FFR)
16	*	Not terminated on M/Board

** When used with VVVF Direct Interface REF: TVL201 manual

I/O FEATURE DESIGNATIONS

I/O CARD 2 INPUTS (on extension Motherboard)

16 Opto-isolated inputs (100V dc smoothed)

Feature inputs

1	FAM	Emergency recall/fire alarm
2	FDC	Fire fighting duty car
3	ASF	Main floor smoke sensor
4	SCE	Shaft count error
5	ESUP	Emergency power supply signal
6	ERET	Emergency return in sequence
7	DHP	Extended door hold push
8	UPK	Up peak clock input
9	DPK	Down peak clock input
10	RDOP	Rear Door Open Push
11	RSE	Rear Safety Edge
12	RBB	Rear Light Beam
13	RDCP	Rear Door Close Push
14	LRET	Lobby return switch
15	RST	Call reset push
16	APX	Advanced selector stepping switch

I/O CARD 2 OUTPUTS

16 Relay outputs (n/o contact unless stated)

Indicator outputs (Ref. to indicator supply)

1	HMFI	Heavy main floor indicator
2	HDDI	Heavy down demand indicator
3	DCPI	Door close push indicator
4	EMRI	Emergency recall indicator
5	DCWB	Door Close warning buzzer
6	SO21	Spare Output 1
7	SO22	Spare Output 2
8	SO23	Spare Output 3

Miscellaneous outputs (Ref. to Neutral)

9	RDUN	Emergency power sequence complete
10	LEVX	Levelling enable
11	ROPI	Rear Open Push Indicator
12	RAGR	Rear Arrival Gong
13	RHLD	Rear Hall Lantern DOWN
14	RHLU	Rear Hall Lantern UP
15	UNDEFINED	Spare Output 8
16	UNDEFINED	Spare Output 9

POSITION I/O CARD

POSITION I/O CARD INPUTS

7 Opto-isolated inputs
Inputs for up to 64 floors potential

1	AP1	Absolute position binary 1/Special assignment
2	AP2	Absolute position binary 2/Special assignment
3	AP4	Absolute position binary 4/Special assignment
4	AP8	Absolute position binary 8/Special assignment
5	AP16	Absolute position binary 16/Special assignment
6	AP32	Absolute position binary 32/Special assignment
7	APP	Absolute position parity bit/Special assignment

POSITION I/O CARD OUTPUTS

13 relay outputs (n/o contact unless stated)
Outputs for up to 32 floors potential

1	PI1/B1	Position indicator 1/binary 1
1	PI2/B2	Position indicator 2/binary 2
1	PI3/B4	Position indicator 3/binary 4
1	PI4/B8	Position indicator 4/binary 8
1	PI5/B16	Position indicator 5/binary 16
1	PI6/AGR	Position indicator 6/arrival gong
1	PI7/HLD	Position indicator 7/Hall Lantern DOWN
1	PI18/HLU	Position indicator 8/Hall Lantern UP
1	PI9	Position indicator 9
1	PI10	Position indicator 10
1	LSI	Lift out of service indicator
1	ID	Direction indicator down
1	IU	Direction indicator up

Absolute position binary coded inputs and parity. The position outputs are configurable for binary or decimal by the setting of switch 2:

i) Position 1 will output in decimal (one output per floor)
ii) Position 2 will output in binary

Note: Switch 2 must be set to binary (Position 2) for floors greater than 10 and for use with Hall Lanterns and gongs board (which have binary decoding).

Binary will be output in two forms by the program depending on the position of SW 1 switch.

i) AB Position will output binary 1 for level 1
ii) 0V Position will output binary 0 for level 1

EXTENSION MOTHERBOARD I/O DESIGNATIONS

EXTENSION MOTHERBOARD INPUTS

5 Opto-isolated inputs, rectified and smoothed
Direct input from control circuit (110/240V ac or 100V dc)

Rear selective door inputs

1	ROC	Rear door open relay/contactor
2	RCC	Rear door close relay/contactor
3	RDOL	Rear door open limit
4	RDCL	Rear door close limit
5	RDZ	Rear door zone switch

EXTENSION MOTHERBOARD OUTPUTS

3 High switching capacity outputs (n/o contact)

Rear selective door outputs

1	ROPR	Rear door open pilot
2	RCLR	Rear door close pilot
3	RNUG	Rear door nudging pilot

3.0 OPERATING PROCEDURES

3.1 VISUAL INDICATORS

There are a number of visual indicators used on the M6809 processor module to give status of all inputs and outputs and indication of key functions of the system to aid trouble shooting. A brief description of the indicators on the system is given below.

3.1.1 Power Supply Unit

Each voltage developed by the PSU has a red LED associated with it to indicate that power is available to the system. They also show that the relevant fuse is intact. The LED's are: +10Vdc, +24Vdc, +100Vdc, +CPF (see 1.4.1 note 3), +LPF (see 1.4.1 note 3), TEST.

3.1.2 Event Log Card

LCD display / navigation keys. There are a number of functions available which are detailed in 3.5

3.1.3 CPU Card

a) Position Displays - This displays the current position of the lift.

b) Yellow LED's - These show the direction of travel of the lift, the top one being "Up" and the bottom one being "Down".

c) Yellow LED (Flashing) - This is the "Loop" indicator and it indicates that the microprocessor is operating correctly.

3.1.4 I/O Cards

a) Red LED's - There are 16 on each I/O Card and an illuminated LED indicates that an incoming signal is present.

b) Yellow LED's - There are 16 on each I/O Card and an illuminated LED indicates that an Output Relay is energised.

3.1.5 Position Card

a) Red LED's - These seven LED's indicate the status of the Binary Absolute Floor Position Inputs that are used by the COU to check the current position of the lift. NOTE: Only used on certain optional installations.

b) Yellow LED's - These 13 LED's indicate the status of the position output Relays. An illuminated LED indicates that an output relay is energised.

3.1.6 Serial Card

a) Red LED's - Two/Four LED's one for each serial port, indicate, when flashing that transmission is taking place.

3.1.7 Motherboard

a) Red LED's - There are two red LED's located at the top left hand side (TXA and TXB). These LED's signify that serial communication (Duplexing ect) is active at the relevant port (CON1 and CON2).
A third red LED will be found bottom left, when lit signifies the DJR relay has tripped.

b) Green LED's - There are two green LED's located in the left hand corner of the motherboard (+5V and +24V). These LED's signify that the 5V DC and the 24VDC supplies are present on the motherboard.

3.2 AUDIBLE INDICATORS

3.2.1 Key pad

An audible 'bleep' will be heard on operation of the keypad buttons.

3.2.2 Event Log

A 'bleep' warning is initiated when an EVENT CODE is registered.

3.2.3 Attendant Buzzer

A buzzer sounds discontinuously at the Attendant panel in the car if the attendant fails to respond to demand for service.

3.2.4 Limited Force Door Closing (Nudging) (Event Code 15) (optional)

Car mounted buzzer, which sounds discontinuously if any of the following conditions occur.

a) Four door reversals have occurred.

b) Doors fail to close in 25 seconds due to being held open by the safety edge or, door open push.

3.3 SWITCHES

There are a number of switches located on the front of M6809 CPU board for configuration and feature setting; details of the switches are given below.

3.3.1 CPU and Configuration Switches

In order to configure the processor 1 off 8 way and 1 off 4 way DIL switches are fitted (SW1 and SW2) these are found on the front edge of the CPU board.

SW1 (8 way, Position 1 at the top)

Top Floor Position Reset
Positions 1 to 5 configure the total number of floors.

Position 1	(FL1)	Binary 1 floor
Position 2	(FL2)	Binary 2 floors
Position 3	(FL4)	Binary 4 floors
Position 4	(FL8)	Binary 8 floors
Position 5	(FL16)	Binary 16 floors

LEV	FL1	FL2	FL4	FL8	FL16
8	OFF	OFF	OFF	ON	OFF
7	ON	ON	ON	OFF	OFF
6	OFF	ON	ON	OFF	OFF
5	ON	OFF	ON	OFF	OFF
4	OFF	OFF	ON	OFF	OFF
3	ON	ON	OFF	OFF	OFF
2	OFF	ON	OFF	OFF	OFF

Examples for up to 8 floors

Position 6 selects the call collection options:

	(SYS)	ON	=	Down collective
		OFF	=	Full collective
Position 7	(LISI)	ON	=	Lift In Service Indicator
		OFF	=	Lift Out Of Service Indicator
Position 8	(RLVD)	ON	=	Relevelling Disabled
		OFF	=	Relevelling Enabled

See SW2 for other features that can be configured.

SW2 (4 way, Position 1 at the top)

Position 1 invokes the homing feature:

(HOMEN)	ON	=	Homing enabled
	OFF	=	Homing disabled

Position 2 invokes the lift self test feature:

(LISEN)	ON	=	Lift self test enabled
	OFF	=	Lift self test disabled

Position 3 invokes the anti-nuisance feature:

(ANUEN)	ON	=	Anti-nuisance enabled
	OFF	=	Anti-nuisance disabled

Position 4 invokes the door nudging feature:

(NUGEN)	ON	=	Door nudging enabled
	OFF	=	Door nudging disabled

Ensure the door operator supports door nudging before enabling this feature, as the 'Safe Edge' will be overridden during the nudging process.

3.3.2 Reset

This momentary action push resets the processor.

3.3.3 Door Disable Switch

To assist in maintenance functions two toggle switches are fitted (SW3 & SW4).

SW3	(DDS)	ON	=	Door operation disabled by processor
		OFF	=	Door operation as normal dependent on mode (test, service, fire etc.)

3.3.3.1 Prepare To Test Switch

SW4	(PTT)	ON	=	Responds to car calls only, doors park closed in absence of car calls
		OFF	=	Calls accepted as normal dependent on mode (service, fire, etc.)

3.3.4 Timers in Software

User adjustable timers are available via the LCD event logger to allow for performing adjustments on site. For typical timers, functions and ranges see section 3.9.2.1 – Timers Table.

3.3.5 Double Journey Relay (DJR)

The DJR timer has two ranges:

	x 1	20 - 60 seconds
	x 2	40 - 120 seconds

The range is selected by jumper link. Fine adjustment is made by potentiometer P1 see Fig 1.0. DJR operation will cause the following sequence of events:

i) Traction

The DJR timer will start timing when inputs MC and LAR are present and will be reset each time the input LU is operated.
Should the LU signal not be received within the set time limit, the device will trip and light the 'DJR' LED, The DJR will stay tripped until manually reset even after power down.

The contact of the DJR relay is brought out to terminals for use in the main panel circuitry to remove power from the motion contactors and relays. This contact, is placed in series with other drive fault condition outputs which if tripped will remove the ERR input into the motherboard, thus initiating a shutdown and removal from service.

This mode requires jumper TR to be installed. See Fig. 1.

Note: Since the DJR is reset at each floor it can usually be left at the factory setting (for Traction) of 20 seconds.

ii) Hydraulic

The contacts of the DJR relay are brought out to terminals for use in the main panel circuitry to remove power from the pump motor contactors S, D and M. The hardware DJR timer will start timing when input MC and LAR are present. This contact, in series with MOL (n/c) and PFRR (n/o), will also remove the ERR input into the Motherboard, thus initiating an emergency hydraulic recall sequence. This mode requires jumper TR to be removed.

Note: The DJR Timer should be set for the appropriate site full travel time.

3.4 CONTROL FUNCTIONS

The control functions of the M6809 are similar to the other microprocessor modules manufactured by TVC, the general operation of the main functions are detailed below.

3.4.1 Normal Control (Simplex Full Collective)

Momentary operation of a car or landing push will register that call and its related call acceptance indicator will be illuminated.

Car Calls

Car calls will be intercepted in the order in which the destinations are reached, regardless of the sequence in which they were registered or the current direction of the lift. Car calls are cancelled on intercept at the appropriate landing.

Landing Calls

Landing calls are cancelled on intercept at the appropriate landing if the car is available to accept that particular call. When travelling up the car will stop at a landing for which a car call or an up landing call has been registered, but will not stop at a landing at which only a down landing call has been registered unless the down call is the highest outstanding call.

Similarly, when travelling down, the car will not stop at a landing at which only an up call is registered unless this is the lowest call outstanding. If the car stops at a landing at which both up and down calls are registered, only the call for the direction in which the car is committed will be accepted (and cancelled). Should a car without registered car calls arrive at a landing at which both up and down calls are registered only the landing call for the last direction of travel will be accepted and the previous direction will continue. If no car call is inserted the doors will close after a pre-set interval and if there is then no landing call registered beyond this floor in the last direction of travel, the doors will re-open and cancel the landing call.

If the car fails to start in response to calls within 100 seconds all calls will be cancelled.

The doors are normally arranged to park closed. When fully open, momentary operation of any car call push will cause the doors to close immediately; otherwise the doors will close automatically after a pre-set time interval. The safety-edge contact and/or the light-ray contact connect directly in the microprocessor unit. Opening of the doors cannot be prevented by continuous operation of car-push or door-close push.

3.4.2 Duplex Control

The Duplex system consists of two per car lift control panels communicating with each other via a special interconnecting cable. The landing calls are then shared between the two lifts.

The landing calls are entered into both control panels simultaneously by the landing call terminals being interconnected. The assigned 'Master' controller then allocates the call to the most suitable lift taking into account, status, direction, and loading.

If there is communication failure or the serial communication cable is not connected, both lifts will chase any landing calls that are entered.

See section 2.9 for connection details.

3.4.3 Attendant Control (If Fitted)

Attendant control is established by closing a single-pole switch in the car, which allows the attendant start pushes and pilot direction indicators to become operational. The doors park open and may now only be closed by continuous operation of the attendant start pushes. All calls are registered in the normal way but cannot of themselves either close the doors or start the car. The logic system determines a preferred direction and illuminates only the appropriate attendant pilot direction indicator, but the attendant is free to ignore this and override it by pressing the opposite direction push to close the doors and start the car. He cannot override the preferred direction once the car has started. When the attendant operates a start push the appropriate main direction indicators are illuminated. In addition, the car will not start in the opposite direction unless calls actually exist for that direction. The call will only be cancelled on intercept as on automatic.

Should the attendant fail top respond to a demand for service within a pre-set time after the doors have opened, a car-mounted buzzer will begin to sound discontinuously until he starts the doors to close. If he fails to take action within 100 seconds then the outstanding calls are cancelled and the buzzer ceases operation.

At any time after the lift has started, the attendant may, by momentary operation of a by-pass push button (where fitted), cause all landing calls to be by-passed and the car to proceed to the nearest car call outstanding in the direction in which it is moving. If only landing calls were outstanding, the car would travel to the furthest such call in the direction of travel.

3.4.4 Fire Control

Operation of a single pole Fire Control Switch installed on the main landing will immediately initiate Phase 1 Fire Control Return.

Phase 1 Fire Control, the lift will return to the main floor as quickly as possible. The following sequence of operations will occur.

1) All calls will be cancelled except the main floor car call.

2) If the lift is travelling away from the main floor, the car will slow and stop at the next available landing, the doors will remain closed and following a short delay the lift will start to return to the main floor.

3) If the lift is travelling towards the main floor, the lift will continue to the main floor without interruption.

4) If the lift is at a landing with its doors open, the doors will close immediately and the lift will proceed to the main floor.

5) Throughout the Fire Service Control sequence the "Fire Control" indicator will be illuminated, landing calls will remain inoperative and the Light Ray (or the heat sensitive door devices) will be disabled.

6) Once at the main floor the fire fighting lift will park with its doors open and Phase 2 Fire Service operation will begin.

Note: A non-fire fighting lift will close its doors after a short delay to allow for the discharge of passengers and will not respond to any calls.

Phase 2 Fire Service, the following operations will exist on the fire fighting lift:

a) The doors will only open via constant pressure on the door open push, once they are fully closed. If the push is released before the doors have fully opened they will automatically close. Once the doors are fully open they will remain open until constant pressure of a call push causes them to close. If the call push is released before doors are fully closed, the doors will re-open, all calls be cancelled and the lift will park with its doors open until a car push is re-operated.

b) The safety edge will be disabled.

c) Once the lift is moving, extra car calls can be inserted, but the lift will slow at the first call reached in its direction of travel and will cancel all calls upon stopping. The doors will remain closed until signalled to open by constant pressure operation of the door open push.

d) The lift will only return to normal operation if the fire control switch is in its 'Off' position, the lift is at the main floor and the doors are fully open.

e) Switching the fire control switch 'Off' for a minimum of five seconds and then to 'On' again, at any time, will always cause the lift to return to the fire floor.

3.4.5 Service Control (Car Preference)

Service or car-preference control is established by operation of a switch in the car. All outstanding calls are cancelled and landing calls cannot be registered.

On SERVICE CONTROL the system is non-collective and all outstanding car calls will be cancelled whenever the doors fully open. If more than one car call push is operated simultaneously then the car will travel to the nearest call and all calls will be cancelled when the doors open.

3.4.6 Weight Switch 95% (By-Pass)

If the car is fitted with a load sensing switch and this switch is closed when the doors are closing, then the by-pass feature operates so that the car cannot stop for intermediate landing calls and will only stop at the first car call encountered. Acceleration or retardation cannot cause inadvertent operation of the by-pass feature.

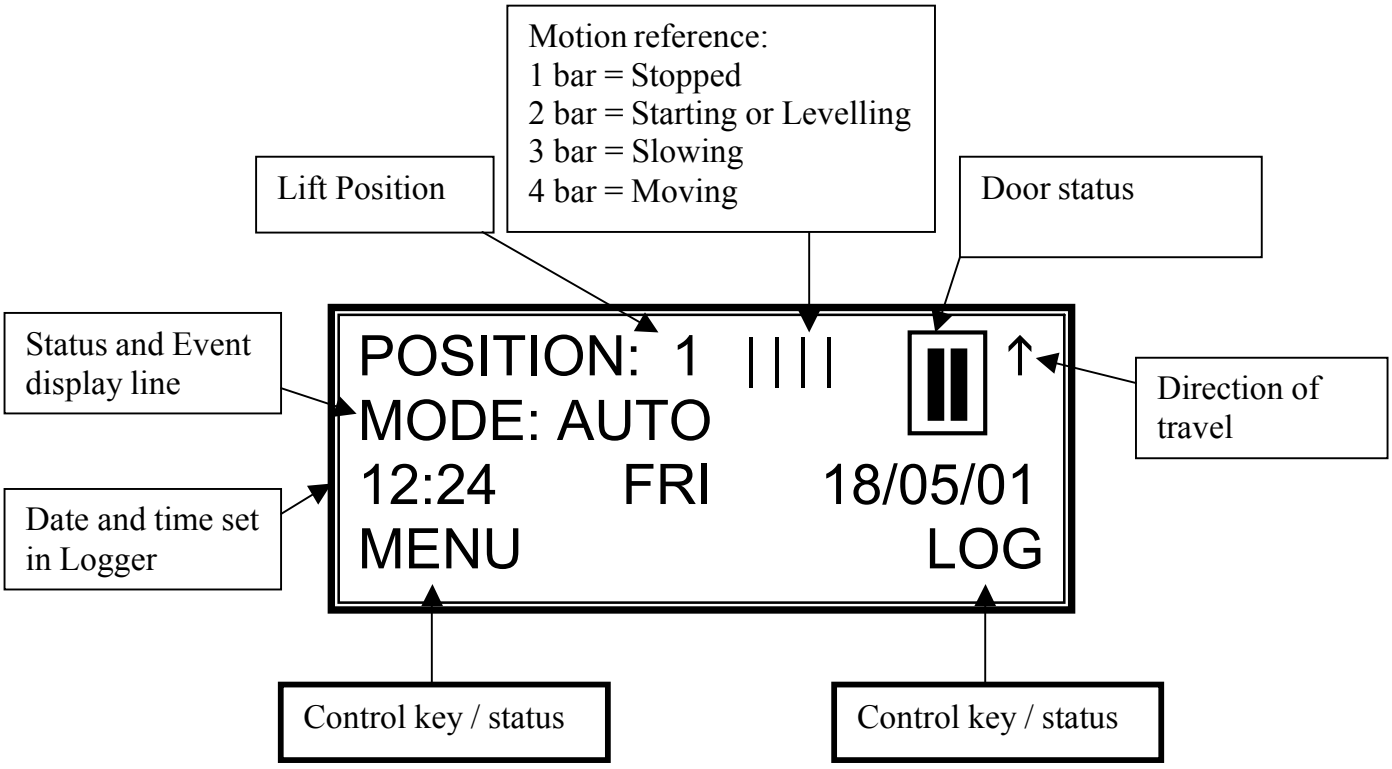
3.4.7 Weight Switch 110% (Car Overload)

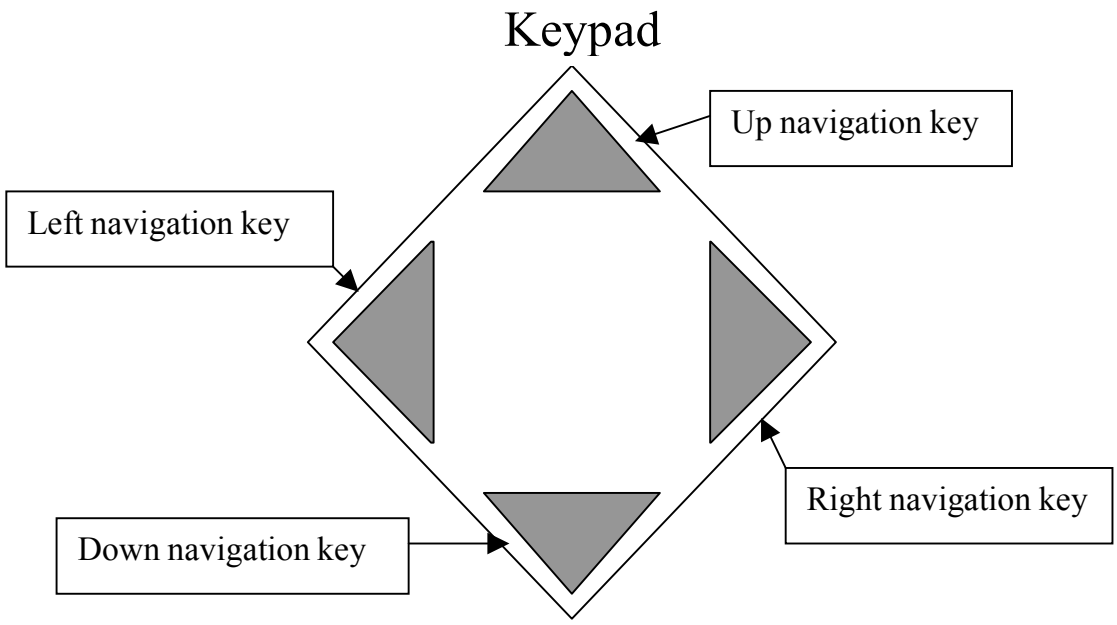
If the car is fitted with a load sensing switch and this switch is closed while the doors are open, the doors will remain open and the OLI (lift overload) output will be turned on until the WS110 is removed.

3.5 M6809 EVOLUTION MMI (Man / Machine Interface)

The M6809 Evolution MMI is an easy to use tool that enables the engineer to view and adjust details stored in the microprocessor. The MMI is used for viewing the lift status, Event Log and adjusting parameters.

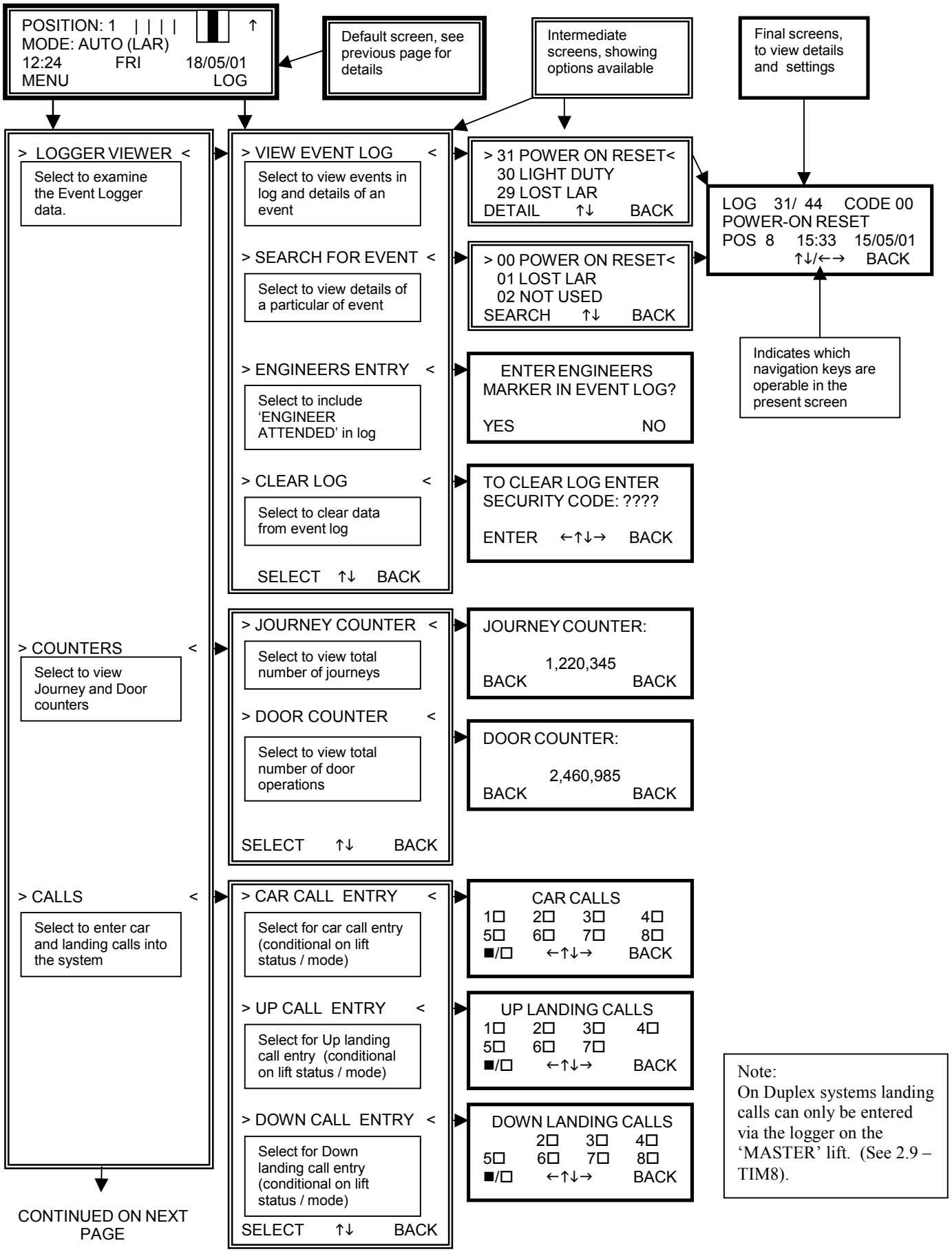
3.5.1 Overview of MMI control panel





For details of menu options, levels of menu and screens available, please see the following pages

3.5.2 Overview of Menu System



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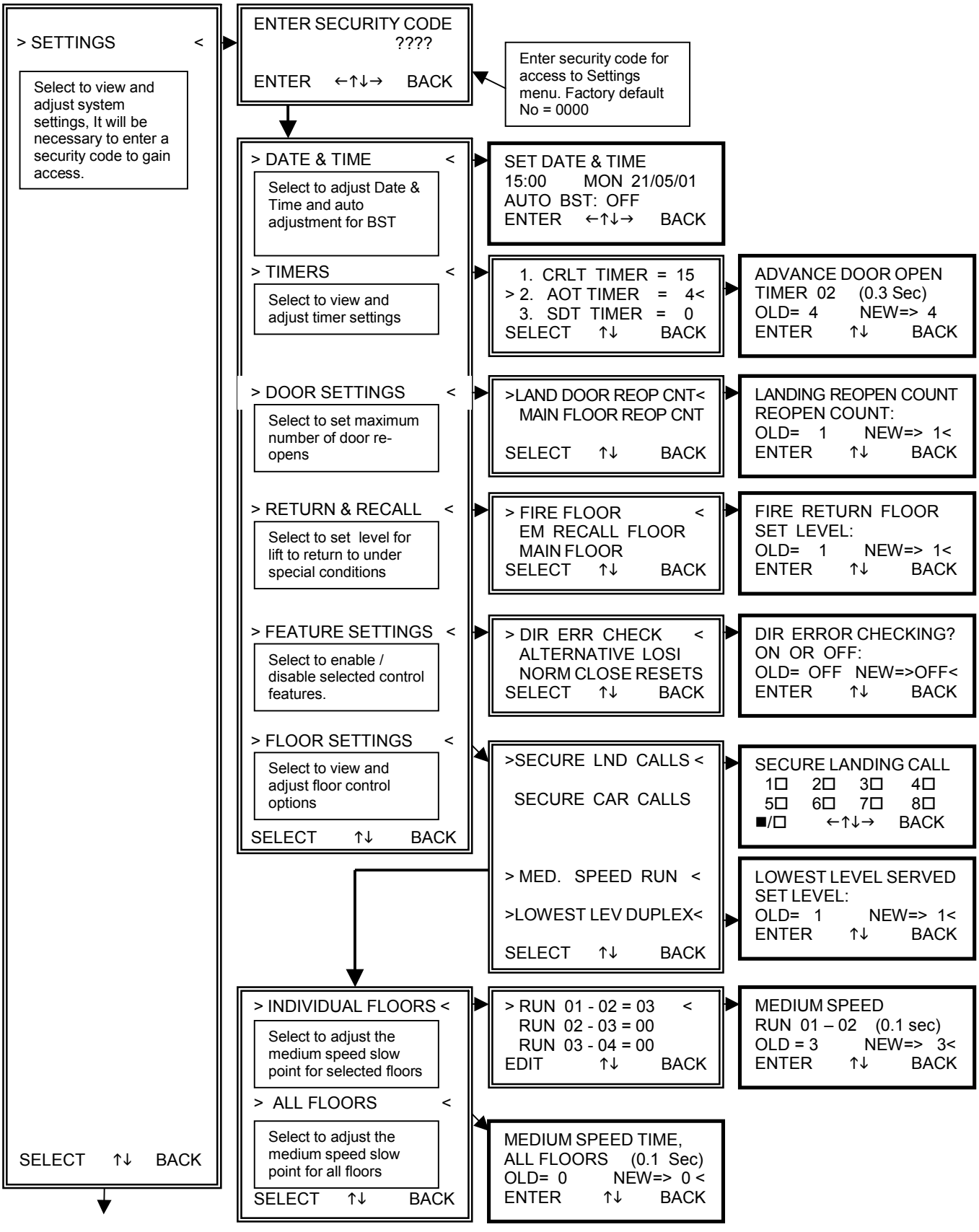

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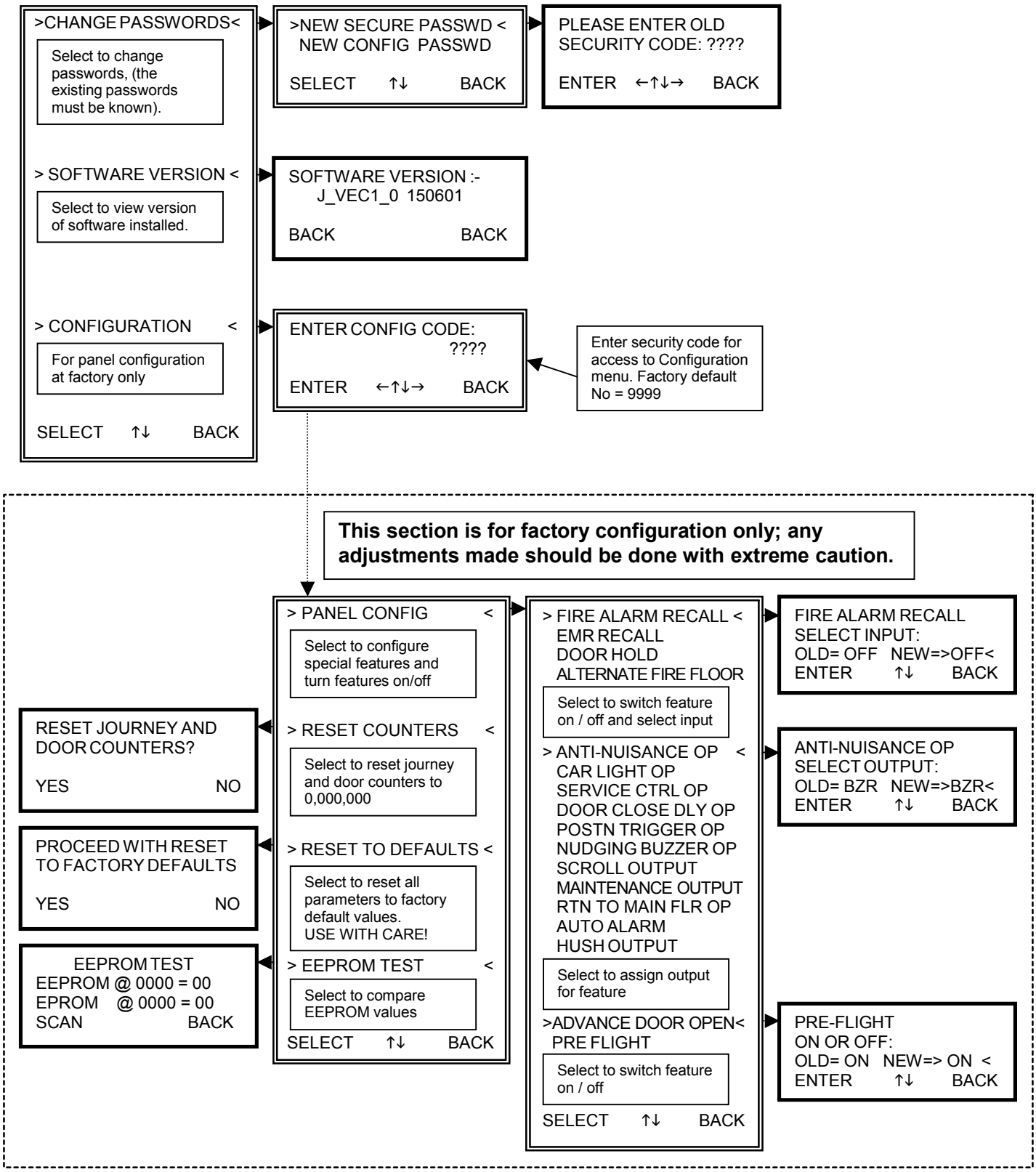


3.6 The Event Messages

As Displayed…	Verbose Description…
(0) POWER-ON RESET	CPU has reset after power-up or "reset" button pushed (see Note 1)
(1) LOST LAR	Lift Available Relay de-energised
(2) NOT USED	
(3) NOT IN DOOR ZONE	Lift stopped outside door zone
(4) D/OPEN PR. T/OUT	Door opening protection fault
(5) GL LOST : STOPPED	Gate lock fault whilst the lift was idle
(6) GL LOST : HI-SPEED	Gate lock tipped whilst the lift was on high speed
(7) GL LOST : LO-SPEED	Gate lock tipped whilst the lift was on low speed
(8) PRE-LOCK FAIL	Gate pre-lock failure
(9) D/CLOSE PR T/OUT	Door closing protection fault
(10) 110% OVERLOAD	Weight switch indicates 110% of full load
(11) ENGN'R ATTENDED	Engineer made note of a previous visit
(12) CALL TF'D/CNCL'D	Call transferred or cancelled
(13) POSITION RESET	The MPU lift position has been reset at a terminal floor
(14) MULT START FAILS	Multiple start failures
(15) DOOR NUDGING	Limited force door closing in operation
(16) RAM FAILURE	CPU Non-Volatile Random Access Memory Failure
(17) STACK ERROR	CPU NVRAM or program failure
(18) SELF-TEST ERROR	Lift-in service self-test error
(19) EPROM FAILURE	CPU program failure
(20) FRONT SE OVERTIME	Safety edge is holding the front doors open for too long
(21) START FAILURE	Lift has failed to start
(22) EVENT LOG RESET	Event Logger has been reset
(23) – (25) NOT USED	
(26) LOST CAR PUSH FD	The feed to the car push has been lost
(27) LOST LDG PUSH FD	The feed to the landing push has been lost
(28) EARTHQUAKE	Earthquake routine activated
(29) EMERGENCY SUPPLY	Normal power replaced by emergency power
(30) NOT USED	
(31) GT LOCKS BRIDGED	Gate lock signal present after doors have opened
(32) NOT USED	
(33) LTLR TIMEOUT	Lift has taken excessive time to obtain floor level
(34) STUCK LEVELLER	Levelling proximity/relay contact operated incorrectly
(35) DRIVE ERROR	A drive monitor device has led to motor power removal
(36) STUCK CAR CALL	A car push is stuck or is being held in
(37) STUCK DOWN CALL	A landing down push is stuck or is being held in
(38) STUCK UP CALL	A landing up push is stuck or is being held in
(39) STUCK REAR CCALL	Rear car call is stuck or being held
(40) STUCK REAR DCALL	Rear down landing call is stuck or being held
(41) STUCK REARUCALL	Rear up landing call is stuck or being held
(42) *TEST CONTROL*	The lift is currently under Engineer's test control

(43) REAR SE OVERTIME	Safety edge is holding the rear doors open for too long
(44) REAR D/OPEN PR.	Rear doors opening protection fault
(45) RR. DOOR NUDGING	Limited force rear door closing in operation
(46) SEEK NXT FLR SE5	Shaft encoder SE500P seeking next floor
(47) FULL DIVE SE5	Shaft encoder SE500P lost its position – seeking terminal floor
(48) SE COMMS FAILURE	Communication failed between M6809 & shaft encoder
(49) RR. CLOSE PR T/O	Rear door closing protection fault
(50) SE COMMS OK SE5	Shaft encoder SE500P communications successful
(51) LIGHT DUTY	System bias to DOWN calls
(52) UP HEAVY DUTY	System bias to UP calls
(53) DOWN HEAVY DUTY	System bias to DOWN calls
(54) UP PEAK DUTY	Car returns to main floor & ignores intermediate down calls
(55) HEAVY MAIN FLOOR	Invokes UP peak for a limited time
(56) DOWN PEAK DUTY	Ignore intermediate UP calls & return car to uppermost hall call
(57) HOSPITAL SERVICE	Adjustments to RTC are recorded with new time/date
(58) M-G SET SHUT DOWN	Corruption of the real time clock data register has been detected
(59) LOBBY RETURN	Hall calls cancelled/transferred, lift returns to main floor until LRET released
(60) VIP RETURN	Lift calls to predetermined floor
(61) EMERGENCY RECALL	Lift calls to predetermined floor & shuts down
(62) LEVELLER/DIR ERR	Leveller or direction error
(63) NOT USED	
(64) THERMISTER TRIP	Recorded when the Motor Room Temperature monitoring device is exceeded
(65) COMPENSATOR RESET	Load weighing device auto calibration has taken place
(66), (67) NOT USED	
(68) FIRE ALARM RECALL	Lift returns to fire floor - no calls can be entered
(69) LANDING INHIBIT	Set if Landing Calls Disabled due to DDS or PTT
(70) *FIRE SERVICE*	Lift on Fire Service
(71) *SPECIAL SERVICE*	Lift on Special Service
(72) DESPATCH FAILURE	'Bus-stop' routine invoked due to loss of LPF or CPF and homing is enabled.
(73) – (81) NOT USED	
(82) PWR ON MEM TEST	Memory error detected on power up
(83) RUN MEM TEST	Memory error detected while running
(84) – (85) NOT USED	
(86) RTC CLOCK RESET	Out of range time/date value recorded
(87) RTC CLOCK CHANGE	Adjustments to RTC are recorded with new time/date
(88) RTC REGS UPDATE	Corruption of the real time clock data registers has been detected
(89) NOT USED	
(90) COUNTERS RESET	Journey and door counters have been reset to

	0,000,000
(91) LCD OVERFLOW ERROR	LCD screen construction error
(92) LCD INIT FAILURE	LCD module initialisation failure
(93) SETTINGS MENU ENTRY	User has entered the Settings Menu from the secure password entry screen
(94) CONFIG MENU ENTERED	User has entered the Configuration Menu from the config password entry screen
(95) SETTINGS PWD ALTERED	User has changed the settings security password
(96) CONFIG PWD ALTERED	User has changed the config security password
(97) FACTORY DEFAULTS	All parameters have been reset to factory defaults including the event logs, timers, passwords and feature settings
(98) SHADOW SET	Shadow RAM majority verdict
(99) EEPROM BUSY	Miscellaneous serial EEPROM error

NOTE: (CODE 31) THE CONTROL PANEL MAY BE FITTED WITH "PRE-FLIGHT" LIFT SAFETY ENHANCEMENT SOFTWARE (OPTIONAL).

If the lift lies in an unsafe condition due to a short circuit in the safety circuit wiring, trailing cables, terminal connections etc, relative to the door interlock circuitry, PRE-FLIGHT WILL PREVENT LIFT MOVEMENT.

For this feature to operate effectively it is imperative that all door and lock status signals are working correctly, otherwise unnecessary "lockups" may be experienced.

3.6.1 Event Logger Card

Whenever one of the above events occurs, the system will display the Event Code for approximately four seconds and "bleep" a warning. The code is also stored in a queue in memory together with the position of the lift when the event occurred.

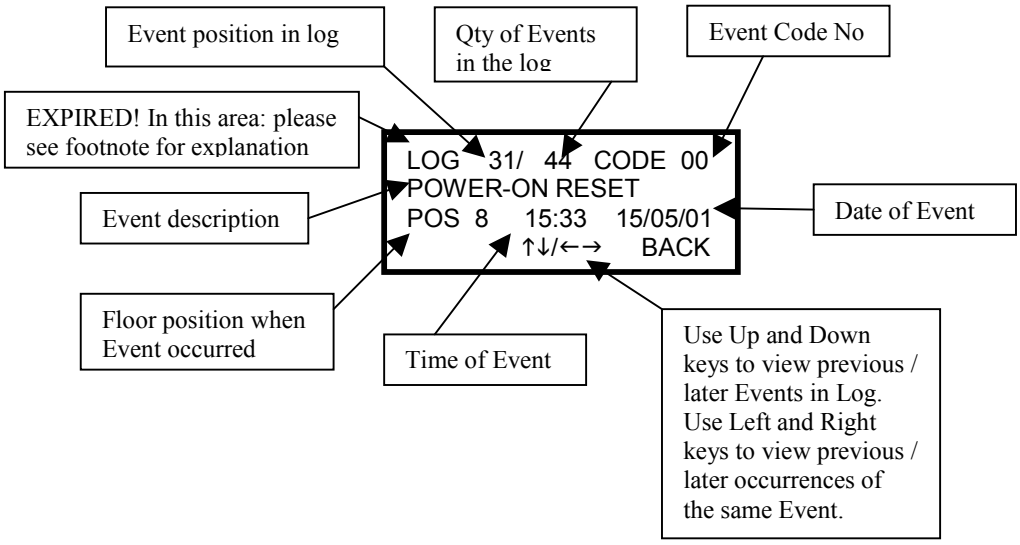
3.6.2 Event Logger with Date and Time Recording

The event logger has the facility to store up to 200 events in a queue, together with the date and time the event happened. It is possible to not only interrogate the log for the sequence of events but also to view the occurrences of a specific event and obtain exactly when the event happened and at what floor position, this can be an invaluable aid in troubleshooting and servicing.

When the event log is full, introducing another entry will cause the oldest event in the queue to be lost.

Example of Event Log – Detail screen

It is possible to step through the Event queue with the Up and Down keys to obtain details of the Events, also, by using the Left and Right keys view other occurrences of the same event.



EXPIRED! Means that the old records of the selected event have fallen outside the capacity of the data log, only the last record of the event has been kept for information

3.6.3 Event Code Description

(N) = Code Number
[EVENT] = As displayed on LCD (if fitted)

(0) [POWER ON RESET]

When the lift is switched on, the Microprocessor Unit (MPU) will begin its reset routine and store it in the event queue and then enter the lift program. The MPU can also be manually reset at any time by operation of the "Reset" Push on the CPU card.

(1) [LOST LAR]

The LAR Relay (Lift Available Relay), on the motor panel provides this signal to the MPU. Whenever LAR Relay is de-energised, for example, due to the stop switch being operated, or the lift switched to maintenance control, the event will be displayed.

The event will remain displayed while this situation continues to exist. All car and landing calls will be cancelled and the 'LSI' (Lift Service Available) indicator will be off. (This LSI indicator is only provided when requested).

(2) NOT USED

(3) [NOT IN DOOR ZONE]

Here an attempt has been made by the MPU, to pilot open the doors but the "Door Open Contactor" (OC) has not energised. After a short delay and the "Door Zone Relay" (DZ) is not energising, the event will be recorded and the MPU will then seek another car or hall call elsewhere, to send the lift to.

This fault for example, could be caused by a gate lock trip on low speed, or 'Low Speed Time Limit' (LSTLR) time out.

(4) [D/OPEN PR.T/OUT]

This is when the door has failed to finish opening within 30 seconds. The event will be recorded, the MPU will stop piloting the "Door Open Contactor" (OC) and the "LSI" indicator will be cancelled. After a short delay the MPU will pilot the doors to close, so that the lift may move to another floor.

This fault, for example, could be caused by an obstruction in the landing door track.

(5) [GL LOST : STOPPED]

The lift is idle with the doors closed and with the gate locks made up. If a gate lock is then broken, the event will be recorded. The event will remain displayed while this situation continues to exist. This event can occur through excessive gate lock bounce, or by someone opening a landing door (not necessarily at the same floor as the lift's position).

(6) [GL LOST : HI-SPEED]

Tipping a gate lock on high speed will cause the lift to stop immediately. The MPU will record the event in the log.

After a short delay, the lift will re-start provided that the gate lock has re-made. If the gate lock is still broken, the event (Gate Lock Fault) will be recorded as well.

(7) [GL LOST : LO-SPEED]

Tipping a gate lock on declaration or slow speed will cause the lift to stop immediately. The MPU will record the event. After a short delay, the lift will try to open the doors, (since it is most likely that the lift was intercepting that floor, in response to a call registered there). If the lift is in the door zone, the doors will open.

If the lift is not in the door zone, a code (3) will be generated. The lift will then re-start provided that the gate lock is re-made and there are calls elsewhere. If the gate lock is still broken a code (5) will also be generated.

(8) [PRE-LOCK FAIL]

In this case, the lift is in the door zone, but unable to move in response to a call because of lock failure. The event will be recorded and the lift will re-open its doors in order to make another attempt to close and make up the gate lock.

After three unsuccessful attempts to start, the lift will then park with its doors open and a code (14) will be generated.

(9) [D/CLOSE PR T/OUT]

This is when the doors have failed to close within 30 seconds. The event will be recorded, the doors will reverse and park open and all calls will be cancelled. The "LSI" indicator will also be cancelled.

Prior to this situation occurring and if there are calls present, the MPU will reverse the doors if they failed to finish closing within 7 seconds, (without a code "9" generated or call loss etc). Three attempts are made to close within 10 seconds and then the doors will go for the full 30 seconds to close.

Following a door closing protection fault, the doors will park open and will only close again if a car or hall call is operated. If a door closing protection fault occurs again, the lift will then only respond to car calls.

This fault may be caused by an obstruction in the door track, or persons reluctant to move clear of the doors.

(10) [110% OVERLOAD]

Where the input WS110 is active the MPU will record the event, cause the doors to re-open and refuse to close until the load is reduced. The event will remain displayed while this situation continues to exist, also the OLI output (Car Overload Indicator) will be on.

(11) [ENGN'R ATTENDED]

An engineer has added an entry into the Event Log as a marker in the event queue.

On the engineers next visit to the lift installation, the engineer can integrate the MPU to find out what faults have occurred since the last visit.

(12) [CALL TF'D/CNCL'D]

If the lift has not moved in response to calls present for 45 seconds, hall calls to which it should have attended will be released to the other lift (if one exists), the event is recorded and the "LSI" indicator will be cancelled.

If "[DOOR NUDGING]" feature has been specified, the MPU will sound a "Selfish User Buzzer" discontinuously (if fitted), in the lift car, in order to encourage the occupant to let the lift go.

If the lift still has not moved in response to the calls present for over 100 seconds all car calls will be cancelled. The buzzer will stop and the "LSI" indicator will remain cancelled. If the lift is operating as a simplex, all hall calls will be cancelled as well.

(13) [POSITION RESET]

On arrival at terminal floor, the MPU has reset its lift position as it does not correspond with that of the top or bottom floor, indicating that the lift was out of step. **It is important that the stepping signal is encountered before the terminal reset signal to avoid false events being recorded. (Not applicable on 2 floor systems).**

(14) [MULT START FAILS]

After three successive pre-lock failures code (8), or three start failures code (21), all car calls will be cancelled, hall calls released, the "LSI" indicator cancelled, and the event recorded.

The lift doors will park open and will only close again if a car or a hall call is operated. If another code (14) is again generated, following a further three unsuccessful attempts to start, the doors will again park open, but will only respond to car calls.

(15) [DOOR NUDGING]

This feature is only available if the door operator is suitable. Provided that there are calls present, limited force door closing will come into operation if the doors are held open for over 25 seconds by safety edge or door open push, or if there have been 3 door reversals caused by the safety edge, light-ray etc.

A buzzer will sound discontinuously in the lift car, and the doors will close under limited force disregarding safety edge or light-ray operation. (The door open push is still effective in reversing and holding open the doors, but the doors will start closing immediately the door open push is released).

If the doors fail to finish closing after 15 seconds, so that the lift can move, door close protection will operate and code (9) will be generated. The doors will then reverse park open (see code (9)).

(16) [RAM FAILURE]

The MPU has found fault with the integrity of its RAM. (Included for completeness).

(17) [STACK ERROR]

The MPU has found fault with its "Book Keeping" and has reset its "Stack Pointer". (Included for completeness).

(18) [SELF-TEST ERROR]

(Lift In Service Indicator) If the lift has been idle for more than 10 minutes, it will test itself by going to an adjacent floor and returning, seeking a …(lift moving - lift stopped - doors opening)… sequence of events. If this sequence does not occur within defined time limits, the "LSI" is cancelled. Another attempt is made after a further 10 minutes of idleness for confirmation.

If all is well, no further attempts will be made. If another failure occurs the event is recorded, the doors will park open, and the lift will only try to respond to car calls. The lift will automatically test itself if the lift has been moving or has its doors open or an unusually long time.

Code (18) is also generated if any other condition should cause the "LSI" indicator to illuminate.

(19) [EPROM FAILURE]

The MPU has added up all its program instructions and data and the resultant number does not match with a "Checksum" number also fixed into the program. (Included for completeness).

(20) [FRONT SE OVERTIME]

If the lift doors are held open by continuous operation of the safety edge for more than 20 seconds, the event is recorded.

(21) [START FAILURE]

The MPU has signalled for the lift to start and the lift has not done so. After a short delay, the lift doors will re-open and the event is recorded. After three unsuccessful attempts to start, the lift will then park with its doors open and event code (14) will be generated. This fault, for example, could be caused by operation of the 'Phase Failure and Reversal Relay' (PFRR), or the Motor Overload Trip.

(22) [EVENT LOG RESET]

The Event log has been manually reset

(23) - (25) NOT USED

(26) [LOST CAR PUSH FD]

If the feed to the car pushed is lost, which could be caused by blown CPF fuse, the event is recorded. The lift will run in bus stop routine and be removed from group.

(27) [LOST LDG PUSH FD]

If the feed to the landing pushed is lost, which could be caused by blown LPF fuse, the event is recorded the lift will run in bus stop mode and respond only to car calls.

(28) [EARTHQUAKE]

The earthquake routine has been activated.

(29) [EMERGENCY SUPPLY]

Indicates that normal power has been replaced by emergency power. In this condition the doors will park on the open position until the lift is requested to return to the main floor by the sequential return unit.

(30) NOT USED

(31) [GT LOCKS BRIDGED]

If a gate lock signal is present after the doors have finished opening then the gate locks are assumed to be bridged.

In this event several things occur:

i) Lift movement on normal service is inhibited
ii) Landing, Car and Homing calls are cancelled/disabled
iii) Service control, Attendant control and Prepare to test feature are all disabled
iv) Emergency recall is disabled
v) Fire service is disabled, if not already operating in phase II mode. If phase II is active then the PRE-FLIGHT check is disabled
vi) During dormant parking on hydraulic systems the PRE-FLIGHT check is disabled.

(32) NOT USED

(33) [LTLR TIMEOUT]

If during the slowing cycle the lift has taken an excessive time to obtain floor level the MPU will cause the direction to be lost, thus stopping the lift, the event is recorded and the lift will be reset by a car call or MP reset.
(If nuisance tripping occurs check value of LTLR timer setting.)

(34) [STUCK LEVELLER]

If during running the MPU considers a proximity/relay contact in the levelling circuit to be operated at a time when it should not be operated, the event is recorded and advance door opening will be inhibited. The check is performed on each run.

(35) [DRIVE ERROR]

This signifies that a manual reset device has tripped (i.e. DJR or FDR) and that power has been removed from the motor circuitry on the controller. For traction lift applications the MP will shutdown and not accept any further calls. For hydraulic lift applications the MP will initiate a downwards dive. Once at the bottom floor the lift will park with its doors closed after allowing any passengers to alight. The DOP will remain operative in all instances providing the lift is in a door zone.

(36) [STUCK CAR CALL]

If one car push is not released within the expected time, it will be presumed stuck. The call will be ignored in future until it is released and reinserted; the fault is recorded along with the floor level that is affected.

(37) [STUCK DOWN CALL]

Similar to (36) except the call is a down landing call.

(38) [STUCK UP CALL]

Similar to (36) except the call is an up landing call.

(39) [STUCK REAR CCALL]

Similar to (36) except the call is a rear call.

(40) [STUCK REAR DCALL]

Similar to (36) except the call is a rear down landing call.

(41) [STUCK REAR UCALL]

Similar to (36) except the call is a rear up landing call.

(42) [*TEST CONTROL*]

Indicates that the control system is in "Test control mode", i.e. Car top control or Panel test. During this time no calls will be accepted and all features such as Fire or Service control are disabled.

(43) [REAR SE OVERTIME]

Similar to (20) but for the rear doors.

(44) [REAR D/OPEN PR.]

Similar to (4) but for the rear doors.

(45) [RR. DOOR NUDGING]

Similar to (15) but for the rear doors.

(46) [SEEK NXT FLR SE5]

Shaft Encoder SE500P seeking next floor.

(47) [FULL DIVE SE5]

Shaft Encoder SE500P has lost its position and is seeking a terminal floor.

(48) [SE COMMS FAILURE]

This event is recorded if communication fails between the M6809 and the Shaft Encoder unit (if fitted).

(49) [RR. CLOSE PR T/O]

Similar to (9) but for the rear doors.

(50) [SE COMMS OK SE5]

Shaft Encoder SE500P communications successful.

(51) [LIGHT DUTY]

This event is recorded after heavy duty or peak duty has finished, to indicate the system is back to normal.

(52) [UP HEAVY DUTY]

If the MPU sensed a heavy demand on UP Hall Calls, the event is recorded and the system is biased to UP calls where possible.

(53) [DOWN HEAVY DUTY]

If the MPU senses a heavy demand on Down Hall Calls the event is recorded and the system is biased to Down calls where possible.

(54) [UP PEAK DUTY]

While the 'UPK' input is activated, the system will ignore all intermediate Down Hall Calls and return the car to the main floor.

(55) [HEAVY MAIN FLOOR]

If the MPU detects a consistent demand at the main floor the system will invoke UP peak for a limited period.

(56) [DOWN PEAK DUTY]

While the 'DPK' input is activated the system will ignore all intermediate Up Hall Calls and return the car to the uppermost hall call.

(57) [HOSPITAL SERVICE]

Indicates that the system is in Hospital or Priority mode, the lift will cancel any existing calls or transfer hall calls if in group. The lift will then go immediately to the priority floor call and wait for car call entry. The lift will travel to the call floor, open doors then return to normal service.

(58) [M-G SET SHUT DOWN]

On DCVV applications this event is recorded for reference.

(59) LOBBY RETURN]

Indicates that the system is in LOBBY RETURN mode. This requires an external signed LRET to return the lift to the main floor. All hall calls are cancelled or transferred, all remaining car calls are answered, then the lift will return to the main floor and remain there until the LRET is released.

(60) [VIP RETURN]

Indicates that the system is in VIP return mode. This requires an external signal (defined per job), to call the lift to a predetermined floor, after which the lift will return to normal service.

(61) [EMERGENCY RECALL]

Indicates that the system is in EMERGENCY RECALL mode. This requires an external signed (defined per job), to return the lift to a predetermined floor (usually main). The lift will immediately return to the floor ignoring all calls and shutdown.

(62) [LEVELLER/DIR ERR]

If the LU/LD signals are received by the MPU in an incorrect sequence, the event is recorded and at what level. On some drive applications, i.e. Open Loop VVVF, it is important to know that the lift is travelling in the expected direction. The sequence in which the LU/LD signals are received can determine the actual direction of the car, i.e:

Travelling Up:	LU, LU & LD, LD
Travelling Down:	LD, LD & LU, LU

The event may also be triggered if the LU/LD overlap is incorrect.

(63) NOT USED

(64) [THERMISTER TRIP]

If the motor room temperature sensor detects an excessive temperature the lift will respond in the following manner. On normal or special service the lift will stop at the next floor and open its doors. On Fire Service the lift will stop at the next floor and remain there with its doors closed. On Special Service the lift will stop at the next floor & remain there with the doors open.

(65) [COMPENSATOR RESET]

The load weighing device has undergone its periodical reset.

(66), (67) NOT USED

(68) [FIRE ALARM RECALL]

As Fire Service the lift will stop at the next floor and without opening its doors return to the fire floor. The doors will open and dwell closed or remain open (specify at time of ordering). No car or landing calls can be entered.

(69) [LANDING INHIBIT]

Door disable or Prepare to test activated.

(70) [*FIRE SERVICE*]

Indicates that the system is in Fire Service mode. See section 3.4 for further information.

(71) [*SPECIAL SERVICE*]

Indicates that the system is in Special Service mode. See section 3.5 for further information.

(72) [DESPATCH FAILURE]

This event will be recorded if the car enters bus-stop mode i.e. when the lift is in service, LPF or CPF are lost and homing is enabled. Bus stop mode will automatically enter calls

at alternative floors to give a limited lift service. To switch off the feature, disable Homing (see 3.3.1 SW2)

(73) [NORMAL OPERATION]

Indicates that the system is in normal operation.

(74) – (81) NOT USED

(82) [PWR ON MEM TEST]

The MPU had detected a data error in memory during power up and reset default values.

(83) [RUN MEM TEST]

The MPU had detected a data error in memory while the program was running and reset default values.

(84) – (85) NOT USED

(86) [RTC CLOCK RESET]

If an out of range time or date value is detected this event will be recorded and the Real time clock will be reset to default setting 00:00 1/1/00.

(87) [RTC CLOCK CHANGE]

If the user makes adjustment to the RTC this event will be recorded with the new time and date setting.

(88) [RTC REGS UPDATE]

The MPU has found corruption within the real-time clock data registers and has rectified the error, however some events may have recorded bad time and date data or may not appear in chronological order.

(89) NOT USED

(90) [COUNTERS RESET]

The Journey and Door Counters have been reset to 0,000,000

(91) [LCD OVERFLOW ERROR]

The system has detected an error in the LCD screen data.

(92) [LCD INIT FAILURE]

The system has detected an error with the LCD display during power up.

(93) [SETTINGS MENU ENTRY]

The system has recorded entry into the Settings Menu from the secure password entry screen.

(94) [CONFIG MENU ENTERED]

The system has recorded entry into the Configuration Menu from the config password entry screen.

(95) [SETTINGS PWD ALTERED]

The system has recorded that the 'Settings' security password has been changed.

(96) [CONFIG PWD ALTERED]

The system has recorded that the 'Config' password has been changed.

(97) [FACTORY DEFAULTS]

All parameters have been reset to factory default values, this includes, Event Logs, Timers, Passwords and Feature Settings, (all data that is viewed / accessed through the LCD display).

(98) [SHADOW SET]

The shadow RAM has taken majority verdict, (used for internal data monitoring only). If event is recurring please refer to factory.

(99) [EEPROM BUSY]

Generation of this event indicates a read or write failure of the on-board serial EEPROM device. Recurring faults of this nature may indicate a CPU board hardware failure that may require replacement of the processor board to remedy.

'-' [END OF EVENT QUEUE]

When the last event in the logger has been recalled, the code '-' will be the next code recalled to show the end of the event queue.

3.7 COUNTERS

There are two counters built in to the MMI as standard.

[JOURNEY COUNTER]

The journey counter increments by one each time the lift starts in either direction giving a total journey count since installation, this can useful to take note of during maintenance.

[DOOR COUNTER]

The door counter increments by one each time the doors open or close giving a total count of door operations since installation, this can be useful to take note of during maintenance.

3.8 CALLS

It is possible to enter Car calls, Up and Down landing calls via the MMI without the need of link wires that could inadvertently case damage to the microprocessor.

[CAR CALL ENTRY]

Selecting this will take you to a CAR call entry screen, the calls will only be shown for the levels available. i.e. only 4 calls will be shown on a system configured for 4 floors. Please note calls can only be entered through the MMI that are available in normal use, any levels that have been secured will not respond. Calls can be inserted or removed by toggling the level required, (a hollow square represents no call entered; a solid square represents a call registered).

[UP CALL ENTRY]

Selecting this will take you to a UP Landing call entry screen, the calls will only be shown for the levels available, i.e. only 4 calls will be shown on a system configured for 4 floors. Please note calls can only be entered through the MMI that are available in normal use and normal service, any levels that have been secured will not respond. Calls can be inserted or removed by toggling the level required, (a hollow square represents no call entered; a solid square represents a call registered).

[DOWN CALL ENTRY]

Selecting this will take you to a DOWN Landing call entry screen, the calls will only be shown for the levels available, i.e. only 4 calls will be shown on a system configured for 4 floors. Please note calls can only be entered through the MMI that are available in normal use and normal service, any levels that have been secured will not respond. Calls can be inserted or removed by toggling the level required, (a hollow square represents no call entered; a solid square represents a call registered).

3.9 SETTINGS

The M6809 Evolution has many features that can be configured through the MMI that makes the M6809 control system more flexible, with the ability to change site related settings without the need of changing the main program EPROM.

The options available can be found in the 'SETTINGS' menu and are secured behind a password code before adjustment can be made, details of the features are detailed below. **(Please see 3.5.2 for menu overview)**

3.9.1 Date and Time

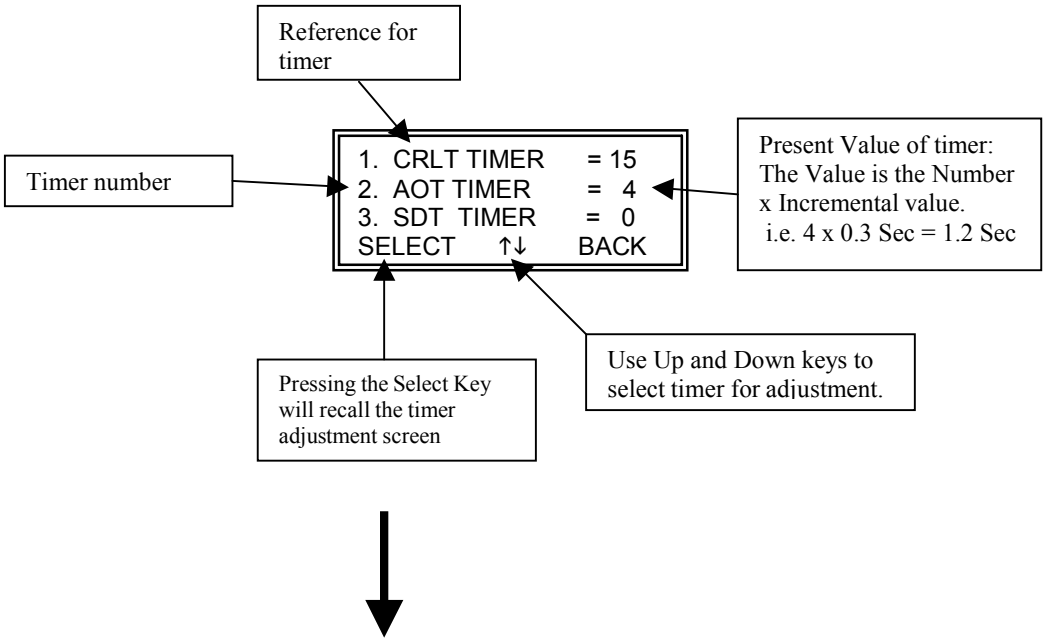
The Date and Time used for Event logging is adjustable through the MMI, the Date and Time will normally be factory set and should not need setting, however, it may be necessary to reset if the CPU board is changed or data corrupted. There is also the option for automatic date adjustment for British Summer Time, which can be disabled if required.

3.9.2 Timers

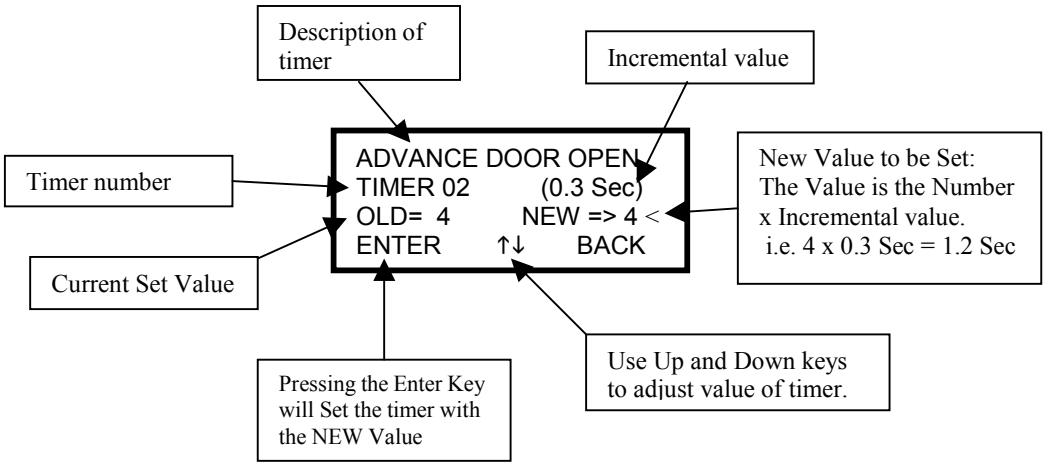
User adjustable timers are accessed through the MMI.

To view or adjust timer settings it will be necessary to enter the Settings Menu and enter a security password. **Please see 3.5.2 for details**.

Once the Timers selection is made the following screen will be found:



Selecting the timer will take you to the adjustment screen; an example is given below for the AOT timer.



For details of all other timers please see 3.9.2.1 Timer Settings.

3.9.2.1 Timer Settings

NO	TIMER REF	DOOR TYPE	DRIVE TYPE							FUNCTION	RANGE	INCRE-MENT	DEFAULT SETTING		REMARKS
			SSD	2SD	HYD	V3F	DCV	ACV	SCR				VALUE	DELAY	
1	CRLT	N/A	✔	✔	✔	✔	✔	✔	✔	Car Light Turn Off Delay	1 - 15m	1m	15	15m	
2	AOT	AUTO				✔	✔	✔	✔	Advance Door Open (0 = Disable)	0 - 4.5s	0.3s	4	1.2s	Closed Loop Only
	GWB1	MANUAL	✔	✔	✔	✔	✔	✔	✔	Gate Open Warning "Off" Delay	0 - 1m	4.0s	1	4s	
3	SDT	N/A					✔			MG Set Shut Down	0 - 15m	1m	5	5mins	Ward Leonard only
4	1SR	AUTO	✔	✔	✔	✔	✔	✔	✔	Door Re-Open Delay	0 - 1.5s	0.1s	6	0.6s	A.C. Doors only
5	LTLR	N/A		✔	✔	✔	✔	✔	✔	Low Speed Time Limit	4 - 30s	2.0s	7	14s	
6	LDDT	AUTO	✔	✔	✔	✔	✔	✔	✔	Landing Call Door Dwell	0 - 15s	1.0s	7	7s	
	GWB2	MANUAL	✔	✔	✔	✔	✔	✔	✔	Gate Open Warning "On" Delay	0 - 1m	4.0s	1	4s	Collective Only
7	CDDT	AUTO	✔	✔	✔	✔	✔	✔	✔	Car Call Door Dwell	0 - 15s	1.0s	3	3s	
	PREX	MANUAL	✔	✔	✔	✔	✔	✔	✔	Manual Gate Pause Extension	0 - 15s	1.0s	3	3s	
8	FMT	N/A					✔			Sequential Start Interval	0 - 15s	1.0s	0	0s	
9	BKRL	N/A				✔			✔	Brake Release Time	0 - 3s	0.2s	2	0.4s	
A	ELRV	N/A			✔					Hydraulic ELRV Soft Brake (Down)	0 - 1.5s	0.1s	2	0.2s	
B	DHLD	AUTO	✔	✔	✔	✔	✔	✔	✔	Door Hold Delay Timer	0 - 5s	10s	0	0s	Beringer Hydraulic Only
C	DRVH								✔	Drive Enable Output Hold Timer	0 - 1.5s	0.1s	10	1s	
D	MULT	N/A	✔	✔	✔	✔	✔	✔	✔	Multi Floor Run, Position Trigger Delay Time	0 - 4.5s	0.3s	5	1.5s	
E	SING	N/A	✔	✔	✔	✔	✔	✔	✔	Single Floor Run, Position Trigger Delay Time	0 - 4.5s	0.3s	5	1.5s	
F	LST	N/A		✔						Low Speed Buffer Shorting	0 - 4.5s	0.5s	0	0s	
	PMD	N/A			✔					Pump Motor Delay	0 - 4.5s	0.3s	3	0.9s	Hydraulic Only
G	LWDS	N/A				✔	✔	✔	✔	Load weighing device shutdown timer	1 - 30m	1m	20	20m	
H	HOMT	N/A	✔	✔	✔	✔	✔	✔	✔	Homing Delay Timer	0 - 60s	1.0s	30	30s	

Notes
1) REFER TO MAIN CONTRACT DRAWINGS FOR APPLICATION
2) ✔ = USED ON DRIVE/DOOR TYPE
3) SEE KEY TO ABBREVIATIONS
4) THE FUNCTION MAY VARY IN SPECIAL CASES

KEY

DRIVE TYPE

SSD	SINGLE SPEED/SLIP RING
2SD	TWO SPEED POLE CHANGE
HYD	HYDRAULIC
V3F	VARIABLE VOLTAGE VARIABLE FREQUENCY/VECTOR DRIVE
DCV	D.C. VARIABLE VOLTAGE (WARD LEONARD)
ACV	A.C. VARIABLE VOLTAGE
SCR	D.C. STATIC DRIVE

DOOR TYPE

AUTO	ONLY USED FOR AUTOMATIC POWER DOORS
MANUAL	ONLY USED FOR MANUALLY OPERATED DOOR

Gate Open Warning

GWB1 & GWB2 timers must be set correctly or gate open warning may not function. GWB2 should be set for a period before the GOW activates.
GWB1 should be set for the period that the GOW is to continue for before switching off.
Note: on collective systems if GWB1 is set to 0, GOW will not function.

3.9.3 Return and Recall

This feature allows the facility to configure the level for the 'Fire Return', 'Emergency Recall' and 'Main Floor' for homing purposes. Please note: on Duplex systems the main floor must be set to the same level on both panels.

3.9.4 Door Settings

This feature allows the facility to configure the number of door reopens allowed when the lift has committed direction. The main floor can be set independently of all other floors.

3.9.5 Feature Settings

There are a number of options available for configuration to suit the site requirements, the options available are detailed below.

- **[DIR ERR CHECK]**

  This feature uses the levelling signals to detect actual direction of travel if no other means of direction feedback is available, this feature is used for 'Open Loop' applications.

- **[ALTERNATIVE LOSI]**

  This feature enables an alternative set of rules for the 'Lift Out of Service Indicator',
  In addition to the normal conditions that trigger the LOSI, the additional conditions that are included in the alternative LOSI are:
  Fire Service, Special Service (Car Preference) and Emergency Recall.

- **[NORM CLOSE RESETS]**

  The terminal floor position resets can be configured in two modes, 'Normally Closed' contacts which is the TVC default standard, can be changed to 'Normally Open' contacts if required.

- **[FIRE RECALL PARK OP]**

  This feature gives the option for the doors to park open or closed following a Fire Alarm Recall.

- **[FAM FCI ENABLE]**

  This feature enables/disables the usage of FCI output on fire alarm recall.

- **[EMR RCLL PARK OP]**

  This feature gives the option for the doors to park open or closed following an Emergency Recall.

- **[NORM CLOSED WS110]**

  The 110% overloaded weight switch can be configured in two modes, 'Normally Open' contacts which is the TVC default standard, can be changed to 'Normally Closed' contacts if required.

- **[POS TRIG POLARITY]**

  The position trigger for speech units can be configured in two modes. A positive edge trigger, as required by some units and is the TVC default standard, can be changed to a negative edge trigger if required.

- **[INH. LSI ON TEST]**

  This feature inhibits the 'lift out of service' indicator when the panel is under Car Top Test control.

3.9.6 Floor Settings

There are a number of options available for floor configuration, it is possible to secure floors from lift service and to adjust the single floor run slow points. Details of the options are given below.

- **[SECURE LND CALLS]**

  It is possible to secure any floors from Landing Calls, this may be used on a temporary or permanent basis, for instance a change in building use or building works. The floors can be secured / unsecured by toggling the level on the screen, (a hollow square signifies unsecured, a solid square signifies secured).

  Note: If a floor is secured it is not possible to enter an Up or Down Landing call via the MMI.

- **[SECURE CAR CALLS]**

  It is possible to secure any floors from Car Calls, this may be used on a temporary or permanent basis, for instance a change in building use or building works. The floors can be secured / unsecured by toggling the level on the screen, (a hollow square signifies unsecured, a solid square signifies secured).

  Note: If a floor is secured it is not possible to enter a Car call via the MMI.

- **[MED SPEED RUN] (VVVF panels only)**

  This feature is used if the speed of the lift is such that it is not possible to obtain a suitable slowing distance on a single floor run, either, because the lift may be still accelerating to obtain top speed when asked to slow due to contract speed being high, or there are odd floor heights that make it difficult to obtain a common slowing / deceleration profile for all levels.

  The panel will be deigned with a medium speed facility that can be set-up for a ‘top speed’ on single floor runs only. So that optimum speed profiles can be obtained there are timers available via the MMI to allow additional slow points to be obtained on a ‘per floor’ or ‘all floor’ basis.

  Selection of this feature will take you to a further screen with the following options:

  [INDIVIDUAL FLOORS]

  This will take you to screens that will allow selection of individual single floor travels and adjustment of their own time delay. This should be used if there are any odd floors heights that need individual adjustment.

[ALL FLOORS]

This will take you to a screen that will allow adjustment to all floors simultaneously. This should be used when medium speed control is required and all floors heights are the same.

Please see - FIG 2 – 'Setting up of single floor run' at the back of this manual and 3.9 for clarity of timer settings.

- **[LOWEST LEV DUPLEX]**

  This facility is to be used on Duplex applications when the bottom levels served are not equal, the lift that travels to the lowest level should also be set as the 'Master' lift. Please see 3.3.1

  Warning: If the lowest level duplex setting exceeds any of the return and recall settings then that feature will no longer work e.g. fire control, emergency recall, homing.

3.10 CHANGE PASSWORDS

The controller leaves the factory with default passwords installed (details can be found in 3.5.2). These numbers can be changed to the customer's choice if required for additional security against parameter changes.

3.11 SOFTWARE VERSION

The controller is fitted with a specific version of software to suit the controller type; the software version can be viewed on this screen for information purposes. It may be useful to note the version when contacting the factory for technical support.

3.12 CONFIGURATION

The configuration section is primarily for use by the factory for configuring the microprocessor to suit the panel design and application. There should be no reason for this section to be entered by the customer therefore no further detail is being given.

The options available in this section are shown in the 'Overview of Menu System' but no attempt should be made to adjust settings without contacting Customer Service at TVC as this may impair the operation and Warrantee of the controller.

4.0 TECHNICAL DESCRIPTION

4.1 MOTHERBOARD (FIG 1.0)

The Motherboard contains sockets to mount the plug-in boards:

1. Event logger
2. Processor
3. Serial Sports
4. Position
5. I/01, I/02, I/03

It also contains the Control Inputs and Outputs to the Panel, the Double journey Relay and eight system timer adjustments.

4.2 POWER SUPPLY

The Power supply Module is mounted directly on the top of the mains transformer to conserve panel space. AC voltages are connected directly from the transformer into the PSU module where they are fused, rectified, filtered and fused again. Each output of the PSU has an LED to indicate that it is operating correctly.

The Output Voltages of the PSU module are as follows:

+10vDC	Input to the 78s 05 + 5v regulator on the Motherboard supplying power to the Microprocessor Logic circuits.
+24vDC	Power for the relays on the I/O Cards etc.
+100vDC	Power for the External Input signals to the I/O Cards
CPF	Car Push Feed (If applicable see section 1.4.1)
TEST	A 'Quick-Connect' Terminal supplying 100V dc to allow connection of a test probe wire to allow a Service Engineer to enter calls at the Call Terminal.

PSU Module Fuse Values (All fuses are 20mm)

9Vac	3A	Anti-surge
19Vac	3A	Anti-surge
75Vac	1A	Anti-surge
+10Vdc	2A	Quick-blow
+24Vdc	2A	Quick-blow
+100Vdc	500mA	Quick-blow
LPF1 & CPF	250mA	Quick-blow (For alternative supply see section 1.4.1)
TEST	50mA	Quick-blow

4.3 CPU CARD (CENTRAL PROCESSING UNIT)

The CPU Card contains the 6809 Microprocessor, RAM, EPROM and all support circuitry. It also contains the Two Digit Car Position indicator, configuration switches and PTT (prepare - to - test) and DDS (door disable) switches.

4.4 POSITION CARD

The Position Card provides Outputs to Lift Position displays. It contains a switch so that either Binary or 'Wire Per Floor' Output can be selected as required by the installation. The Position Card also contains inputs for Absolute Floor Resets (Binary) as required by certain Fire Codes.

4.5 EVENT LOG CARD

The Event Log Card contains the Event Display, the Loop-Flag Monitor, Audible Warning Device and Pushbuttons for recalling Events (See Event Codes in section three).

Watchdog-Loop Flag Monitor

The end command of the main lift program instructs the MPU to go back to the start of the program, this loop continues servicing all the routines and signifies correct operation of the system. A Counter counts the number of loops completed and causes the LOOP FLAG indicator to flash.

If in any event the MPU stays in a particular routine, the LOOP FLAG indicator discontinues flashing and the fault is recognised by the LOOP FAILURE MONITOR which will reset the MPU, and cause it to re-enter the loop (EVENT CODE '0').

The MPU, during the reset routine, tests to see if the LOOP FAILURE MONITOR had called for a reset, if so the MPU generates an EVENT CODE '2'.

Audible Warning

A warning bleep will occur in conjunction with the EVENT CODE display, whenever an event occurs in the microprocessor system.

Pushbuttons

Four Pushbuttons are situated on the front of the Event Log card and are used for re-calling events which have occurred within the system and other special functions (Ref. EVENT CODES SECTION 3 PARAGRAPH 3.9).

4.6 I/O CARD (INPUT/OUTPUT INTERFACE)

Each I/O card consists of 16 I/P's and 16 O/P's each having an LED indicator (Ref. SECTION 3 Para. 3.1.4). Each I/P is sourced from 100V dc or 24V dc for calls and is opto-isolated. Each O/P uses a relay capable of switching 250V ac at five amps.

The system monitors all I/P signals changes, if the I/P signal state does change, the system executes a 3 'loop' check i.e. the signal state is checked three times to verify it is a valid signal state change before it is accepted into the remainder of the system.

If during this 'loop' check, the signal state changes, the system will not accept it as a valid signal and ignores it. Such an event could occur due to relay contact bounce during relay energisation.

Output Interface

The relay "COMMON" contact are commoned in two groups of eight O/P's. The N.O. (normally open) contacts go to O/P's OP1 - OP16. In parallel with each relay is an LED with a serial current limiting resistor, which gives a visual indicator of its state, i.e. illuminates when relay energised. All O/P signals can be set by the MPU by 'writing' to each interface card in turn.

5.0 OVERHAUL & REPAIR

5.1 HANDLING OF EPROM'S

WARNING EPROM'S ARE DEVICES WHICH REQUIRE CAREFUL HANDING IN THE REMOVAL AND INSERTION STAGE, AS THEY CAN EASILY BE DAMAGED BY STATIC ELECTRICITY.

To change EPROM - see instructions in back of this manual.

5.2 FAULT FINDING PROCEDURES

Initial Checks

1) Ensure all power supplies on MPU are operating satisfactory.

   a) 100V dc supply LED illuminated on power board

   b) 24V dc supply LED illuminated on power board

   c) 10V dc supply LED illuminated on power board and on Motherboard

   d) +24V supply LED illuminated on Motherboard

   e) +5V dc supply LED illuminated on Motherboard.

If the power supply LED's are extinguished, check the fuses on the power supply card (situated in holders mounted on the card). If fuses persist to blow, remove all cards and reinsert one card at a time until fault is localised to a card which can then be replaced.

2) Check loop flag is pulsing on CPU card proving that the MPU program is continually scanning its programme loop.

If this condition cannot be achieved then the CPU card should be replaced. Remember when replacing the card that the EPROM contained on the original card must be moved into the test replacement card, (EPROMS must have labels with contract details covering a transparent window, label must not be removed). If satisfactory operation of the loop flag indicator is not achieved then replacement EPROMS must be tried, and closer monitoring of the power supplies must be carried out, this time with a meter.

3) Having achieved pulsing operation of the loop flag attention should be turned to the I/O cards. Individual testing of each I/O card may now be obtained by the following procedures:

a) Operate together, and continuously the red reset and engineers entry pushes on the event card.

b) For a period of approx. 5 - 10 seconds any input operated on an I/O card (by push or shorting pins at front of card) will be 'written' to operate the corresponding relay output on the same card (i.e. top input operates to relay).

This action proves that the MPU program is scanning its inputs and writing to its corresponding outputs using its basic program and hardware facilities. After 5 - 10 seconds the engineers/reset buttons on the event card must be released and re-operated to continue further I/O card testing.

This test checks the primary operation of the MPU structure and also a major section of the I/O card. It does not test the initial opto-isolator input stages of the I/O card, nor relay output contact wiring.

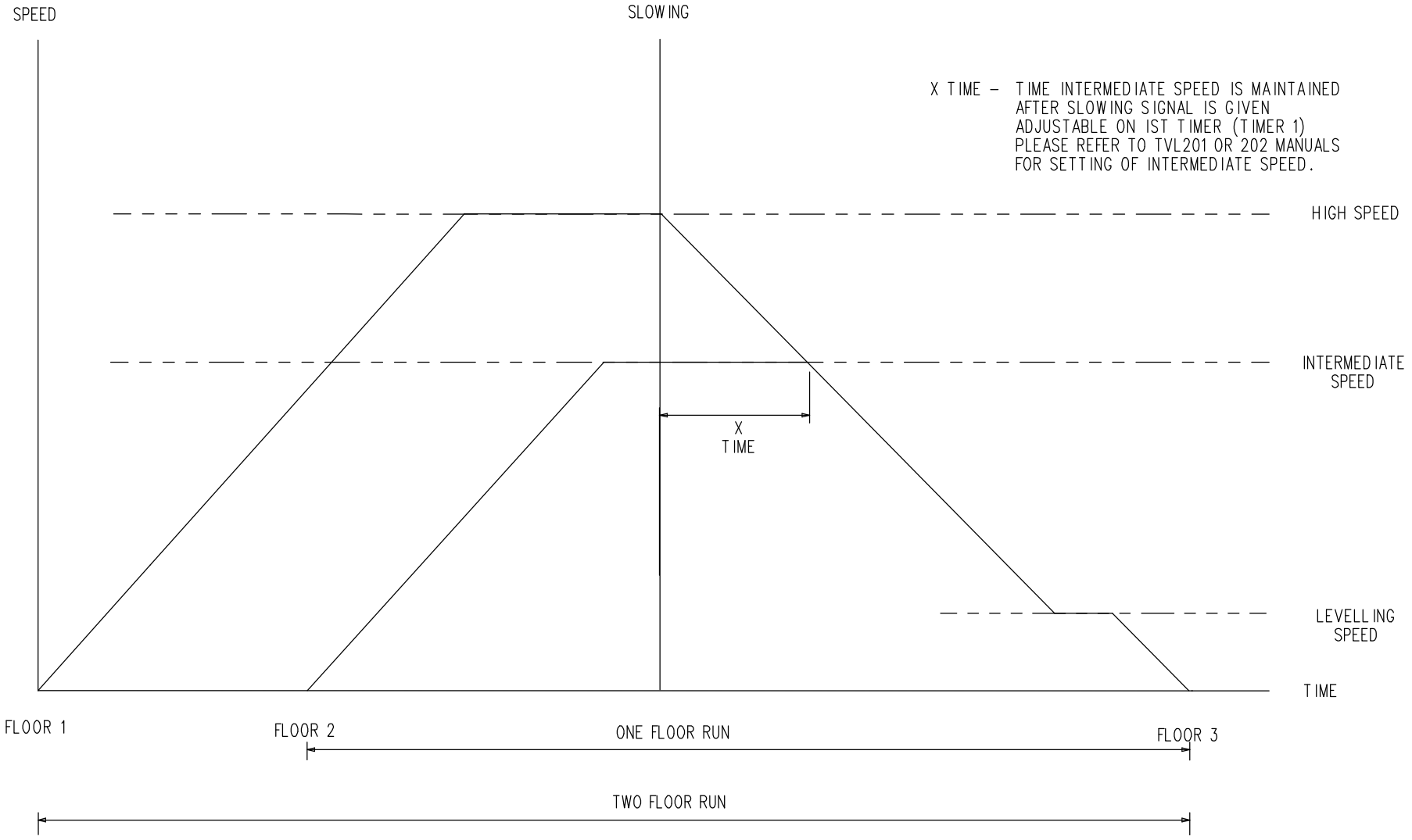
4) With all cards inserted into the motherboard the lift should be ready for initial operation.

Switch the lift to car top test and observe the LED signals on the I/O cards. Check that the selected I/O signals are "ON". If LED's are not as expected, then check voltage to terminals at inputs to motherboard to verify that external signals are correct. If I/O card LED's do not coincide with input terminal voltages then wiring should be checked or cards replaced to isolate fault.

5) Door open and close operation on normal service is controlled by output signals DOPR and DCLR respectively. With doors closed DCLR, GL and DZ if in door zone, should be illuminated. Operation of SE or DOP signal on normal service should operate DOPR signal to open the doors providing DZ signals are present (lift in door zone). When doors open first GL and then DZ are extinguished. If lift is on normal service then after approximately seven seconds (adjustable by LDDT dwell timer) the doors should park closed.

FIG 3 SETTING UP OF SINGLE FLOOR RUN

ONLY APPLICABLE TO VVVF/VECTOR APPLICATIONS WHEN REQUIRED



EPROM CHANGING INSTRUCTIONS

Severe electrical transient voltages can be generated during handling. These static voltages are ruinous when discharged into electrical components, i.e. EPROM's. Nylon or other static generating materials must not come into contact with EPROM devices and personnel should discharge themselves to ground prior to handling. Both Eprom's IC4 and IC23 will need to be changed in the following manor:

1. Switch controller power supply OFF.
2. Remove the M6809 CPU board from the controller taking care not to damage the connector pins.
3. Remove the existing EPROM IC4 with a small screwdriver blade under one end of the pin socket. Ease it carefully, until it is nearly out of the board DIL socket. Then grasp the EPROM with as many fingers in contact with as many pins of the EPROM as possible and transfer it straight to anti-static foam. Similar care should be taken when inserting the replacement EPROM into the board DIL socket.
4. Fit the new EPROM ensuring that the notch is in the correct position according to Figure 1 below.
5. Replace the M6809 CPU board with care, make sure all pins are lined up with the connector before pushing the board into position, then switch controller supply ON.

Replacement Software

IC4 contains the program and IC23 contains the personality settings configured by the menu system. If contract consists of multiple like panels e.g. Duplex, Triplex; ensure that all software supplied is fitted so all panels contain the same program release. Failure to do so may result in intermittent problems.

Note

If the Eprom's are being transferred to another board because of a faulty board ensure both IC4 and IC23 are transferred. Whilst carrying out this procedure care must be taken not to upset the switch settings of SW1 and SW2. It is recommended that the positions of these switches be recorded before undertaking this procedure.

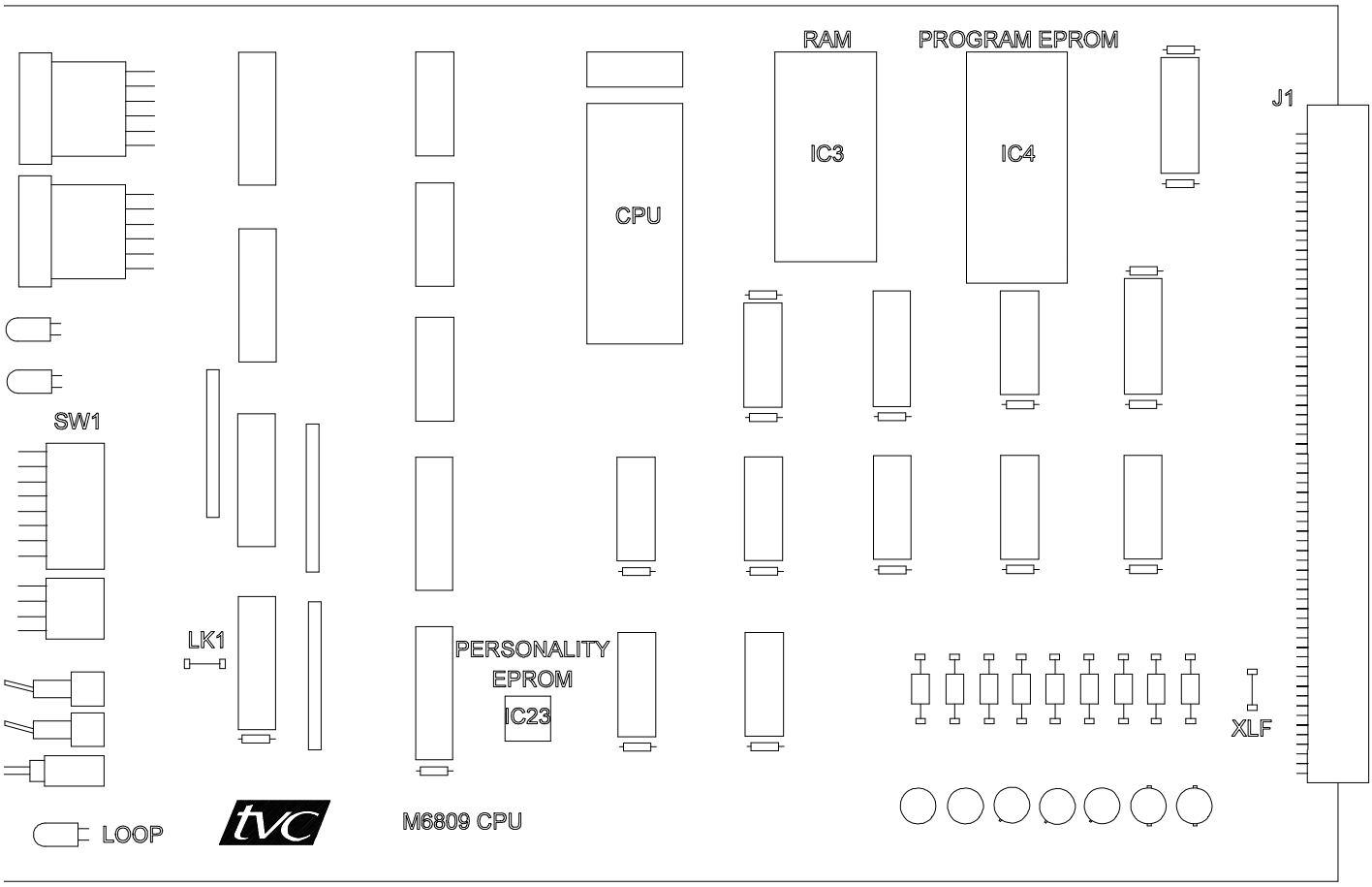


Figure 4 M6809 CPU Board