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ONIX MKII

TRACTION MICROPROCESSOR COLLECTIVE LIFT CONTROL MANUAL

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We reserve the right to alter, without giving prior notice, technical data, dimensions and weights described in this manual

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1.1 GENERAL

The TVC ONIX Microprocessor Lift Control Module is one of a number of modules supplied by TVC which together 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.

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 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 (Car preference)

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) Door Close Push

j) Door Close Push

k) Weight Switch 95%, 110% and Overload Indicator

l) Car Call Dumping

m) Event Message Display (in 'English Language')

n) Door Opening and Closing Protection

o) 3 Wire Indicator System

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.

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

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

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, etc, from the car wiring.

Duplex operation is possible, as is connection to an 'EMU' remote monitoring system. There is a separate manual detailing connection requirements etc, for these features.

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.

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

Specific Fault Events which may occur during lift operation are recognised and recorded by the system.

1.4 PERFORMANCE CHARACTERISTICS

1.4.1 Electrical

System Input voltage: 400V ac + 10% - 10% 50/60 HZ.
Note: other voltages available - consult factory.

Power Supply Module Voltages

	ONIX POWER SUPPLY		
Input Voltage	9V (30VA)	19V (50VA)	75V (75VA)
Fuse Ident Rating	9V 2A a/s	19V 3A a/s	75V 1A a/s
Output Voltage	+10V dc	+24V dc	+100V dc
Fuse Ident Rating	10V 1A	CAF LAF 24V 1A 1A 2A	100V 500mA

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.

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

24 Input I/O Card (Calls)
- +5Vdc Power
- +24Vdc Power
- Each input signal is activated by ref. to OV

22 Outputs
- Output Relays
- Single contact per relay
- Contact Rating 5A at 250Vac
- Coil Voltage 24Vdc

28 Input Card (All Other Inputs)
- +5Vdc Power
- +24Vdc Power
- Each input signal is sourced from 100Vdc (and must exceed 75Vdc) via Motherboard

28 Output Board
- +5Vdc Power
- +24Vdc Power

Display/Function
- +5Vdc Power

Board	-	24Vdc Power
Motherboard	-	+24Vdc Power
	-	+10Vdc Power
	-	Two /RS232 serial communications ports
	-	Output Relays
	-	Single contact per relay
	-	Contact Rating 5A at 250Vac
	-	Coil Voltage 24Vdc

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	223mm
	Width	260mm
	Depth	145mm
	Weight	4.5Kg

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 and serial communication ports.

b) The Central Processor Unit (CPU) board which contains the program, control components SW3, SW4, RESET PUSH and DIL switches are also mounted on the board for configuration purposes.

c) A 24 way I/O board for call inputs and call acceptance outputs.

d) A 28 way Input board for all other incoming signals (external and main panel).

e) A 28 way Output board for driving the Motherboard relays.

f) A display/function board which contains an LCD display for Position, EVENTS and parameter viewing. Four Pushbuttons for obtaining the above information and parameter adjustment.

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2.1 GENERAL

The external wiring for the Microprocessor controlled system is as shown in Fig 2.0.

All car and landing call pushes are at 24Vdc potential - switched to ground.

All other incoming wiring to the Unit are at 100V dc and all outgoing wiring for Indicators are at 24V dc.

2.2 CONNECTOR ACCESS

All external wiring to the ONIX is made to the Motherboard terminals.

2.3 MICROPROCESSOR CONNECTION TO THE SYSTEM (Ref. Fig 1.0)

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: This is normally factory wired...

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 12mm.

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

Switch on the control panel and ensure that no 110 or 230 VAC wiring has been connected to any of the connectors on the right hand side or the bottom of the motherboard.

When the wiring has been fully checked out, switch off and then reverse the procedures a, b and c above.

2.5 MICROPROCESSOR UNIT 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) If there is an earth fault on CT1 or CT2 the 100V fuse will blow.

(All fuses on the ONIX Power Supply are 20mm fuses).

b) The LCD Display Board shows the position of the lift when it was last switched off. If not on a terminal reset with a door zone registered the lift will, after a short delay "Dive" to the bottom floor.

c) The green 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 red LED's illuminated shows that an incoming signal is present (refer to Para 2.12 for signal notations). Any of the yellow LED's indicate that an output relay has been energised (refer to page 15).

2.6 CALL ENTRY (ELECTRICALLY AND VIA KEYPAD)

Car calls and landing calls can be entered by grounding any of the appropriate terminals. CC1 to CC8 for Car Calls and LU1 to LD8 for Landing Calls. If done correctly the corresponding output relay will energise and LED will light indicating that the call has been accepted.

Alternatively car calls can be entered using the ONIX LCD keypad. See section 3.9.7 for further details.

2.7 HOMING

The lift will "Home" to the main floor (or a floor specified by the customer) when HOMEN is switched to on. See Section 3.2.1.

2.8 TIMERS

The user adjustable timers may be set to customer requirements via the menu software which makes use of the display board pushbuttons and the LCD. Details of their functions, ranges, increments and default settings may be found in Section 3.9.12.

2.9 STUCK PUSH BUTTON

The MPU automatically reads the input signal when a push 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.

2.10 MOTHERBOARD I/O DESIGNATIONS

Motherboard Inputs

15 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	MUP	Motion up relay
3	MDN	Motion down relay
4	SPX	Selector stepping switch/gate closed (manual landing doors)
5	TTR	Test control relay
6	OC	Door open relay
7	CC	Door close relay
8	DOL	Door open limit
9	DCL	Door close limit
10	CG	Car gate contact
11	GL	Landing gate closed/locked contact (manual landing doors)
12	MC	Main motion contactor
13	LU	Levelling up switch
14	LD	Levelling down switch
15	NO ERR	Drive failure (e.g. DJR, FDR). Shutdown and park with doors closed.

Motherboard Outputs to main panel

Main panel pilot relays

1	LDL	Low speed time limit
2	PUR	UP direction pilot
3	PDR	DOWN direction pilot
4	HSR	Speed pilot
5	LSR	Speed pilot
6	LSC	Low speed buffer shorting contactor/Regulator enable
7	SP01	Spare output pilot/Brake release pilot
8	DOPR	Door open pilot
9	DCLR	Door close pilot
10	NUG	Door nudging pilot

2.11 CALL DESIGNATIONS

FULL COLLECTIVE

FLOOR	CAR CALLS	UP-LANDING CALLS	DN-LANDING CALLS
8	CC8		LD8
7	CC7	LU7	LD7
6	CC6	LU6	LD6
5	CC5	LU5	LD5
4	CC4	LU4	LD4
3	CC3	LU3	LD3
2	CC2	LU2	LD2
1	CC1	LU1	

DOWN COLLECTIVE/NON SELECTIVE COLLECTIVE/APB

FLOOR	CAR CALLS	LANDING CALL
8	CC8	LD8
7	CC7	LD7
6	CC6	LD6
5	CC5	LD5
4	CC4	LD4
3	CC3	LD3
2	CC2	LD2
1	CC1	LU1

Note: APB operation

Ensure DIL switch 1 position 5 is "ON" refer to section 3.2 - SWITCHES.

2.12 I/O CARD DESIGNATIONS

INPUT CARD 1 - 28 OPTO-ISOLATED INPUTS

INPUT 1 - 15 RECTIFIED AND SMOOTHED
DIRECT INPUT FROM CONTROL CIRCUIT (110V AC/DC)

IP1	LAR	Lift on Normal
IP2	MUP	Up Direction Signal
IP3	MDN	Down Direction Signal
IP4	SPX	Selector Stepping Switch/Gate Closed (Manual Landing doors)
IP5	TTR	Lift on Test Control
IP6	OC	Door Opening
IP7	CC	Door Closing
IP8	DOL	Door Open Limit
IP9	DCL	Door Close Limit
IP10	CG	Car Gate Contact
IP11	GL	Landing Gate Closed/Locked Contact (Manual Landing doors)
IP12	MC	Main Motion Contactor
IP13	LU	Levelling Up Switch
IP14	LD	Levelling Down Switch
IP15	NO ERR	Error/Drive Failure (e.g. DJR, FDR) Shutdown and park doors closed.

INPUTS 16 - 28 (100VDC SMOOTHED)

IP16	FSR	Fire Control Switch
IP17	SSR	Car Preference Switch
IP18	WS110	Weight Switch 110% (Overload)
IP19	WS95	Weight Switch 95% (By-Pass)
IP20	EMR	Emergency Return Switch
IP21	DCP	Door Close Push
IP22	BB	Light Beam Broken
IP23	SE	Safety Edge
IP24	DOP	Door Open Push
IP25	BFR	Bottom Floor Reset
IP26	TFR	Top Floor Reset
IP27	SI1	Thermistor Overheat
IP28	SI2	Selector Step Switch (Power car manual landing doors only)

I/O CARD DESIGNATIONS

INPUT/OUTPUT CARD 2 - 24 OPTO-ISOLATED INPUTS
- 24 RELAY OUTPUTS

Each Input/Output is 24V potential pulled to ground to activate, then held to ground by the on board relay, apart from CAF and LAF which are sourced from 24Vdc.

1	LAF	Landing Call Indicator Feed
2	CAF	Car Call Indicator Feed
3	LU7	Landing Up Call Floor 7
4	LU6	Landing Up Call Floor 6
5	LU5	Landing Up Call Floor 5
6	LU4	Landing Up Call Floor 4
7	LU3	Landing Up Call Floor 3
8	LU2	Landing Up Call Floor 2
9	LU1	Landing Up Call Floor 1
10	LD8	Landing Down Call Floor 8
11	LD7	Landing Down Call Floor 7
12	LD6	Landing Down Call Floor 6
13	LD5	Landing Down Call Floor 5
14	LD4	Landing Down Call Floor 4
15	LD3	Landing Down Call Floor 3
16	LD2	Landing Down Call Floor 2
17	CC8	Car Call Floor 8
18	CC7	Car Call Floor 7
19	CC6	Car Call Floor 6
20	CC5	Car Call Floor 5
21	CC4	Car Call Floor 4
22	CC3	Car Call Floor 3
23	CC2	Car Call Floor 2
24	CC1	Car Call Floor 1

Note: Shown for full collective - see page 12 for alternative Call Designations.

I/O CARD DESIGNATIONS

OUTPUT CARD - 28 SOLID STATE OUTPUTS, 24V POTENTIAL THAT ARE PULLED TO GROUND TO OPERATE RELAYS MOUNTED ON MOTHERBOARD.

CONTROL CIRCUIT OUTPUTS

OP1	LDL	Low Speed Time Limit
OP2	PUR	Up Direction Pilot
OP3	PDR	Down Direction Pilot
OP4	HSR*	Speed Pilot
OP5	LSR*	Speed Pilot
OP6	LSC*	Low Speed Buffer Shorting Contactor/Regulator Enable
OP7	SPO1	Spare Output/Brake Release Pilot
OP8	DOPR	Door Open Pilot
OP9	DCLR	Door Close Pilot
OP10	NUG	Door Nudging Pilot

EXTERNAL OUTPUTS

OP11	CGU	Car Gong Up
OP12	CGD	Car Gong Down
OP13	LSI	Lift in/out of Service Indicator
OP14	BZR	Door Warning Buzzer
OP15	FCI	Fire Control Indicator
OP16	OLI	Car Overloaded Indicator
OP17	SO1	Spare Output 1/Ramp Output
OP18	SO2	Spare Output 2/EMR Output
OP19	IU	Direction Indicator Up
OP20	ID	Direction Indicator Down
OP21	PI8	Position Indicator Floor 8
OP22	PI7	Position Indicator Floor 7
OP23	PI6	Position Indicator Floor 6
OP24	PI5	Position Indicator Floor 5
OP25	PI4	Position Indicator Floor 4
OP26	PI3	Position Indicator Floor 3
OP27	PI2	Position Indicator Floor 2
OP28	PI1	Position Indicator Floor 1

*Where direct interface drive systems are used please see associated drive manual for functioning and sequence of these outputs.

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3.1 OPERATION OF THE CONTROLS AND SIGNIFICANCE OF INDICATORS

Visual Indicators (Fig. 1.0)

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

3.1.2 Display/Function Board

a) Event Code Display - This shows the EVENT CODE and displays it for approximately four seconds.

b) Position Display - This displays the current position of the lift.

3.1.3 CPU Card

a) Red LED's (2) - These show the direction of travel of the lift, the top one being "Up" and the bottom one being "Down".

b) Green 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 is a number on each Input Card and an illuminated LED indicates that an incoming signal is present.

b) Yellow LED's - There are 28 on the Output Card and an illuminated LED indicates that an Output Relay is energised.

3.1.5 Audible Indicators

3.1.5.1 Engineering Code

When the engineer enters the code, i.e. 'CODE 11' a 'bleep' warning will accompany it.

3.1.5.2 Event Log

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

3.1.5.3 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.

3.1.5.4 Selfish User Buzzer (Event Code 15)

Car mounted buzzer sounds discontinuously to encourage occupants to let the lift go.

3.2 SWITCHES

3.2.1 CPU and Configuration Switches

In order to configure the processor an 8 way DIL switch is fitted (switch 1).

Switch 1 (8 way)

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

E.g. Position 1 and 3 being 'ON' would select a 1 + 4 = 5 floor application.

Position 5	(APB)	ON	=	APB
		OFF	=	Full collective/down collective

The main floor is typically factory set to level No 1 Position 6, 7 and 8 selects the homing floor offset.

(On Duplex Systems both panels must be set to the same level).

Position 6	(HO1)	Binary 1 floor offset
Position 7	(HO2)	Binary 2 floor offset
Position 8	(HO3)	Binary 4 floor offset

E.g: Position 6 and 7 being on would select the homing floor offset to the floor 1 + 1 + 2 = 4.

In order to set some of the other built-in functions an 8 way DIL switch is fitted (switch 2).

Switch 2 (8 way)

Position 1 invokes the homing feature

Position 1	(HOMEN)	ON	=	Homing enabled
		OFF	=	Homing disabled

Position 2 invokes the lift self test feature

Position 2	(LISEN)	ON	=	Lift self test enabled
		OFF	=	Lift self test disabled

Position 3 invokes the anti-nuisance feature

Position 3	(ANUEN)	ON	=	Anti-nuisance enabled
		OFF	=	Anti-nuisance disabled

Position 4 invokes the door nudging feature

Position 4	(NUGEN)	ON	=	Door nudging enabled
		OFF	=	Door nudging disabled

*MUST BE PRE CONFIGURED IN SOFTWARE

Position 5	(LISI)	ON	=	LISI
		OFF	=	LOSI
Position 6	Not Used			
Position 7	(MOTION)	ON	=	Lift motion enabled
		OFF	=	Lift motion disabled
Position 8	(Master)	ON	=	Master lift (Duplex only)
		OFF	=	Slave lift (Duplex only)

3.2.2 Reset Push Button

This momentary action push resets the processor.

3.2.3 Door Disable Switch and Prepare to Test Switch

In order to invoke maintenance functions two toggle switches are fitted (switch 3 and 4).

SW3	(DDS)	ON	=	Door operation disabled by processor
		OFF	=	Door operation as normal dependent on mode (test, service, fire etc.)
SW4	(PTT)	ON	=	Responds to car calls only, doors park closed in absence of car calls
		OFF	=	Calls accepted as normal dependent on mode (test, service, fire, etc.)

TIMERS

NO	TIMER REF	DOOR TYPE	DRIVE TYPE			FUNCTION	RANGE	INCREMENT	DEFAULT SETTING		REMARKS
			SSD	2SD	V3F				VALUE	DELAY	
1	LST	N/A		✔		Low Speed Buffer Shorting	0 - 4.5s	0.3s	0	0s	
	IST	N/A			✔	Intermediate Speed Timer	0 - 3s	0.2s	0	0s	When Using Direct Interface (TVL 201 Manual)
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									
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	0 - 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	10	10s	
	DHLD	N/A				Drive/Direction Hold	0 - 1.5s	0.1s	10	1s	
9	BKRL	N/A			✔	Brake Release Time	0 - 3s	0.2s	2	0.4s	
A	N/A										
B	SPAR					Spare Timer					
C	SPAR					Spare Timer					

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
V3F	VARIABLE VOLTAGE VARIABLE FREQUENCY/VECTOR DRIVE

DOOR TYPE

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

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.

3.2.4 Motherboard Features

DJR Timer

The DJR timer has two ranges:	S	20 - 60 seconds
	L	40 - 120 seconds

The range is selected by jumper link (LK2). Fine adjustment is made by potentiometer P1 see Fig 1.0. DJR operation will cause the following sequence of events:

The contacts of the DJR relay are brought out to terminals for use in the main panel circuitry to remove power from the motion contactors and relays. The hardware DJR timer will start timing when input MC and LAR are present and will be reset each time the input LU is operated. This contact, in series with any drive fault condition outputs (e.g. FDR), will also remove the ERR input into the motherboard, thus initiating a shutdown and removal from service. This mode requires jumper LK1 to be installed. See Fig. 1.0.

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

3.3 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 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 FIRE CONTROL

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

During Phase 1 Fire Control return, the lift will return to the main floor as quickly as possible. The following operation 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.

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

a) The doors will open automatically upon arrival at a landing. (Option available for: 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. This must be specified at time of order to configure software). 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. (Optional: 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) (Optional) 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.

3.5 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.

3.6 BY-PASS (WEIGHT SWITCH 95%)

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.

3.6.1 Weight Switch 110%

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.

3.7 EVENT LOG

The event log may be inspected via the menu software which makes use of the display board pushbuttons and the LCD.

The event log sub-menu provides for the following three options:

1) Display events, event positions, their frequency and time of event
2) Allows the Engineer to make an "electronic note" of their attendance
3) Allows the Engineer to clear the log if required.

3.8 THE EVENT MESSAGES

As Displayed…	Verbose Description…
(0) POWER-ON RESET	CPU has reset after power-up or "reset" button pushed (note 1)
(1) LOST LAR	Lift Available Relay de-energised
(2) WATCHDOG RESET	CPU reset after power-up, "reset" push or program fail (note 1)
(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) SE OVERTIME	Safety edge is holding the doors open for too long
(21) START FAILURE	Lift has failed to start
(22) EVENT LOG RESET	Event Logger has been reset
(23) NOT USED	
(24) END OF EVENT LOG	There are no further event log entries
(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) NOT USED	
(29) NOT USED	
(30) TIMER VALUE ERR.	CPU has reset the system following memory corruption
(31) GT LOCKS BRIDGED	Gate lock signal present after doors have opened
(32) GATE CLOSE FAULT	Gate lock signal not present after doors have closed
(33) LTLR TIMEOUT	Lift has taken excessive time to obtain floor level
(34) LEVELLER ERROR	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) NOT USED	
(40) NOT USED	
(41) NOT USED	
(42) *TEST CONTROL*	The lift is currently under Engineer's test control
(43) NOT USED	
(44) NOT USED	
(45) NOT USED	
(46) NOT USED	

(47) NOT USED	
(48) NOT USED	
(49) NOT USED	
(50) NOT USED	
(51) LIGHT SUPPLY	System bias to DOWN calls
(52) NOT USED	
(53) NOT USED	
(54) NOT USED	
(55) NOT USED	
(56) NOT USED	
(57) RTC CLOCK CHANGE	Adjustments to RTC are recorded with new time/date
(58) RTC UPDATE	Corruption of the real time clock data register has been detected
(59) NOT USED	
(60) NOT USED	
(61) EMERGENCY RECALL	Recorded when the Emergency Recall switch has been operated
(62) LEVELLER/DIR ERR	Leveller or direction error
(63) NOT USED	
(64) THERMISTOR TRIP	Recorded when the Motor Room Temperature monitoring device is exceeded
(65) RTC CLOCK RESET	Out of range time/date value recorded
(66) FB LOST : HI-SPEED	Feedback failed whilst the lift was on high speed
(67) FB LOST : LO-SPEED	Feedback failed whilst the lift was on low speed
(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) NOT USED	
(82) PWR ON MEM TEST	Memory error detected on power up
(83) RUN MEM TEST	Memory error detected while running

Note (1) - The ONIX does not discriminate between a system reset following restoration of the power supply, or a system reset caused by manual operation of the "reset" pushbutton on the CPU card - either will result in "POWER-ON RESET" and "WATCHDOG RESET" entries being made respectively in the event log.

Whenever one of these events occurs, the system displays the appropriate event message for four seconds and bleeps a warning. The event and the corresponding position of the lift are appended to the event log, which is held in non-volatile memory, so that the contents are maintained even if power is lost.

Note: Event "GT LOCKS BRIDGED" (Gate Locks Bridged) - The control panel may be fitted with "Pre-Flight" lift safety enhancement software.

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 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.

Note: Pre-Flight is only enabled on controllers with suitable door operators. Please refer to Event Log on door for confirmation.

The event log is capable of holding up to 50 events. Appending another entry will cause information about the oldest event to be lost.

3.9.1 EVENT LOGGER WITH DATE AND TIME RECORDING

(Y2K Compliant)

The event logger has the facility to store up to 50 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.

3.9.2 ACCESSING AND USING THE EVENT LOG SUB-MENU

From the default display, press the **''ENTER''** button to access the main menu. The display will change to show **''1 – EVENT LOGGER''**. Subsequently pressing **''ENTER''** again will access the event log sub-menu level 2.

From here the **''UP''** and **''DOWN''** buttons may be used to select one of 4 options available. Press **''ENTER''** to select the option, or **''ESC''** to return to menu level 1.

3.9.3 RECALLING THE EVENT LOG

Recalling the event log does not interfere with normal lift service and may be done at any time provided the supply is available. Whilst the event log is being inspected, new events are still recognised, displayed for 4 seconds with an accompanying bleep, and appended to the log.

From the event log sub-menu, select **[1 – DISPLAY EVENTS]** and press **''ENTER''**. The LCD will change to indicate the latest event, its number in the event log and its code number.

Pressing **''UP''** and **''DN''** buttons enable the inspection of the event log in both directions, with the **''DN''** button enabling inspection of increasingly earlier events, i.e. Those with lower event numbers and the **''UP''** button enabling inspection of increasingly recent events, i.e. Those having higher event numbers.

Pressing **''ENTER''** toggles the display to show the date and time of the event and the position of the lift when the event occurred.

Pressing **''ENTER''** again will show the previous occurrence of the same event if there is one or return to the event display.

Whilst viewing the event log as described above, pressing the **''ESC''** at any time will return to the event log sub-menu.

3.9.4 RECALLING THE EVENT TABLE

The event table gives the facility to view the history of a selected event that is stored in the log.

From the event log sub-menu, select **[2 – DISPLAY TABLE]** and press **'ENTER''**.

The LCD will change to indicate :

POWER ON RESET
EVENT #25 CODE #0

Pressing the **''UP''** button will step through the event table in event number order. When the desired event is displayed pressing **''ENTER''** toggles the display to show the date and time of the event and the position of the lift when the event occurred.

Pressing **''ENTER''** again will show the previous occurrence of the same event if there is one or return to the event display.

Whilst viewing the event log as described above, pressing the **''ESC''** at any time will return to the event log sub-menu.

3.9.5 ENGINEERS ENTRY

At any time during a lift inspection or repair, the engineer may record their attendance by appending an entry to the event log recording the date and time; this is so that reference can be made against subsequent events since the engineer's entry.

From the event log sub-menu, select **[3 – ENGNR'S ENTRY]** and press **''ENTER''**.

The LCD will change to :

LOG ATTENDANCE ?
NO YES

The system will wait for either the **''ESC''** or **'ENTER''** buttons to be pressed.

Pressing the **''ESC''** will return to the event log sub-menu without changing the event log.

Pressing the **''ENTER''** will log the event with date and time; the system will display the event for 4 seconds and issue a bleep. This recorded attendance will now form the latest event in the event log.

3.9.6 CLEARING THE EVENT LOG

It may be useful at times to clear the event log, perhaps following a lift inspection or repair, or simply to avoid cluttering the log unnecessarily.

From the event log sub-menu, select **[4 – CLEAR LOG]** and press **'ENTER''**.

The LCD will change to **:**

CLEAR EVENT LOG?
NO YES

The system will wait for either the **''ESC''** or **''ENTER''** buttons to be pressed.

Pressing the **''ESC''** will return to the event log sub-menu without clearing the event log.

Pressing the **''ENTER''** will clear the log; the system will display the event and issue a bleep.

Inspection of the event log, after clearing it, will simply result in the **''*** END OF EVENT LOG ***''** message being displayed.

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3.9.7 ACCESSING AND USING THE CALL ENTRY SUB-MENU

From the default display, press the **''ENTER''** button to access the main menu. The display will change to show **[1 – EVENT LOGGER]**.

Press the **''UP''** button and the display will change to **[2 – CALL ENTRY].** Press the **''ENTER''** button will access the call entry sub-menu level 2. From here the **''UP''** and **''DOWN''** buttons may be used to select one of 3 options available. Press **''ENTER''** to select the option, or **''ESC''** to return to menu level 1.

3.9.8 ENTERING CAR CALLS

6 From the call entry sub menu, select **[1 – CAR CALLS]** and press **''ENTER''**. The LCD will change to indicate :

Example of 5 floor system.

1	2	3	4	5
□	O	O	O	O

The **''UP''** and **''DN''** buttons can be used to move the cursor position to the level for call entry, pressing **''ENTER''** puts a car call in the system for that level.

Once a call is accepted the LCD will indicate :
Example : car call on level 3.

1	2	3	4	5
O	O	●	O	O

The entered car call will be subjected to the normal car call operation (i.e. lift on normal operation, blank or secure floors, car call reject operation and so on).

3.9.9 ENTERING UP LANDING CALLS

From the call entry sub menu, select **[2 – UP CALLS]** and press **''ENTER''**. The LCD will change to indicate :

1	2	3	4	5
□	O	O	O	O

The **''UP''** and **''DN''** buttons can be used to move the cursor position to the level for call entry, pressing **''ENTER''** puts a UP call in the system for that level.

Once a call is accepted the LCD will indicate :

Example : UP call at level 4.

1	2	3	4	5
O	O	O	▲	O

The entered landing call will be subjected to the normal landing call operation (i.e. lift on normal operation, not on car preference, blank or secure floors and so on).

3.9.10 ENTERING DOWN LANDING CALLS

From the call entry sub menu, select **[3 – DOWN CALLS]** and press **''ENTER''.**

The function is similar to entering UP calls except that pressing **''ENTER''** puts a DOWN call in the system for that level.

3.9.11 ACCESSING AND USING THE SECURITY SUB-MENU

The menu system has the added feature of a user defined four digit **P**ersonal **I**dentification **N**umber. The purpose of this is to protect the adjustable parameters from being tampered with by unauthorised personnel.

When the panel is supplied from the manufacturer the **PIN** number is **''0000''**, therefore allowing the new user to input their own four digit number. To input the **PIN** you must select the security code menu level 3.

From the default display, press the **''ENTER''** button to access the main menu. The display will change to show **[1 – EVENT LOGGER]**.

Press the **''UP''** button twice.
The display will change to [**3 – SECURITY CODE].**

Press the **''ENTER''** button will access the security code menu level 2.
The display will show :

USER I.D. **1 – PRESS ENTER**

Press the **''ENTER''** button will access the security code menu level 3.

The display will show :

USER I.D. **PIN No: 0*****

To enter the numbers, use the **''UP''** and ‘**'DN''** buttons to select the required numeral 0 – 9 and press **''ENTER''** to confirm. The next digit is automatically selected. If you change your mind at any time before all four digits have been entered, you may exit the process by pressing the **''ESC''** button.

If all four digits are entered you will be prompted with **[* CORRECT *]**.

The number you have just entered is now set and stored, even if the controllers power is removed.

You will now have access to the Menu levels to adjust parameters; these levels are only available for a set time (30 mins) and will be inhibited after the timer expires. To regain access you must re-enter your **PIN** as above.

If you wish to change your **PIN** at any time you must enter or have already entered your current **PIN** and from the **PIN** entry display **([USER I.D. PIN No:**

0*]**) press the **''UP''** and **''DN''** buttons simultaneously. This will clear your current **PIN** and you will be prompted by **[* CLEARED *]** and will allow you to enter a new **PIN.**

If at any time you enter a **PIN** and are prompted **[* INCORRECT *]**, the **PIN** you have entered does not correspond to the one stored.

3.9.12 ACCESSING AND USING THE TIMERS SUB-MENU

The timers that may need adjustment to suit customer requirements are available via the LCD menu system.

The security code must be entered before access is given to the Timers Sub-Menu. (see ACCESSING AND USING THE SECURITY SUB-MENU).

From the default display, press the **''ENTER''** button to access the main menu. The display will change to show **[1 – EVENT LOGGER]**.

Press the **''UP''** button three times.
The display will change to **[4 – ADJUST TIMERS].**

Press the **''ENTER''** button will access the Timers menu level 2.
The display will show :

SELECT TIMER
1 – PMD TIMER

From here the **''UP''** and **''DOWN''** buttons may be used to select the timer that requires adjustment. Press **''ENTER''** to select , or **''ESC''** to return to menu level 1 without making any changes.

Pressing the **''ENTER''** button will access the Timers menu level 3.
For example, the display will show :

TIMER # 1 (PMD)
SET TO: 3 NEW>3

To alter the value indicated by 'NEW>' use the **''UP''** and **''DN''** buttons to select the required value and press **''ENTER''** to store the new timer value.

Alternatively pressing **''ESC''** at any time, even if the value has been changed, will return to menu level 2 without altering the timer value.

See **TIMERS TABLE** for details of timers and their settings.

3.9.13 ACCESSING AND USING THE DATE/TIME SUB-MENU

The date and time is used for recording when each 'Event' is stored in the Event Log, because the 'Event' is stored in real time it is possible to determine exactly what happened at what time of day and what day of the year.

The date and time are set during manufacture, therefore, the date and time will only need adjustment if there is a change of hardware i.e., a new PCB has been fitted or there has been RAM corruption.

The security code must be entered before access is given to the Date & Time Sub-Menu. (See ACCESSING AND USING THE SECURITY SUB-MENU).

From the default display, press the **''ENTER''** button to access the main menu. The display will change to show **[1 – EVENT LOGGER]**.

Press the **''UP''** button four times.
The display will change to **[5 – DATE/TIME].**

Press **''ENTER''** to select, from here the **''UP''** and **''DOWN''** buttons may be used to select one of 2 options available, either **[1 – VIEW DATE/TIME]** or **[2– SET DATE/TIME]**

Press **''ENTER''** to select, or **''ESC''** to return to menu level 1.

3.9.14 VIEW DATE & TIME

From the date/time sub menu, select **[1–VIEW DATE/TIME]** and press **''ENTER''**

The LCD will change to indicate:

DDMMYY TIME
2 0 0 4 9 8 1200

The date and time shown represents: 12 noon on the 20th of April 1998.

Press **''ESC''** to return to menu level 2.

3.9.15 SET DATE & TIME

From the date/time sub menu, select **[2–SET DATE/TIME]** and press **''ENTER''**

The LCD will change to indicate:

YEAR MONTH DATE
98 12 11

When the 'Adjust date' menu is selected the numerical values for the day, month and year can be adjusted. Initially the year, displayed hear as **[*98*],** will be flashing to indicate change by pressing **''UP''** or **''DN''**.

When the desired value is selected and **''ENT''** is pressed, the new value will remain and the month will then begin to flash and so on to the date, hours and minutes.

3.9.16 SET BRITISH SUMMER TIME

When the date and time is set the user is then prompted to select whether to auto adjust the time for British Summer Time.

The LCD will change to indicate:

AUTO ADJUST BST
NO YES

The system will wait for either the **''ESC''** or **'ENTER''** buttons to be pressed.

Pressing the **''ESC''** will return to the date/time sub-menu without setting auto correction for BST.

Pressing the **''ENTER''** will require the setting of the day of the week.

The LCD will change to indicate:

SET DAY OF WEEK
WEDNESDAY

From here the **''UP''** and **''DOWN''** buttons may be used to select the day of the week. Press **''ENTER''** to select, or **''ESC''** to return to the date/time sub-menu without making any changes.

British Summer Time is adjusted at 02.00 on the last Sunday of March and October. If the panel is switched off during the adjustment time the software has the facility to update the time on the next power up.

The day of the week is not stored as part of the date information when events occur, nor is it displayed in the view date/time menu. It is used solely by the software to determine the correct time to adjust for BST.

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3.10 EVENT CODE DESCRIPTION

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

(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 in Service) indicator will be off. (This LSI indicator is only provided when requested).

(2) [WATCHDOG RESET]

This indicates that the MPU was unable to function properly through part of the lift program, such that it gets "stuck" and nothing else gets done. (Under normal circumstances this is unlikely to occur, but it is included for completeness).

After a short delay, the "Loop Flag Monitor" will deliberately reset the MPU. The MPU will again enter its reset routine, record the event and re-enter the lift program.

Part of the reset routine checks to see whether the call to reset was made by the "Loop Flag Monitor" circuit. If true, the MPU will also record the event.

(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 Input" (MPU) not energised, the event will be recorded and the MPU will then seek another car or landing call elsewhere, to send the lift to.

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

This is when the door has failed to finish opening within 25 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.

(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 25 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 25 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, also the OLI output (Car Overload Indicator) will be on.

(11) [ENGN'R ATTENDED]

See section 3.9.5.

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

If the lift has not moved in response to calls present for 45 seconds, landing 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 landing 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 f2 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, landing 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 landing 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 40 seconds by safety edge or door open push, or if there have been 6 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] MUST BE PRE-CONFIGURED IN SOFTWARE

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) [SE OVERTIME]

If the lift doors are held open by continuous operation of the safety edge for more than 15 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.

(22) [EVENT LOG RESET]

Event log has been reset

(23) NOT USED

(24) [END OF EVENT LOG]

There are no further event log entries

(25) NOT USED

(26) [LOST CAR PUSH FD]

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

(28) NOT USED

(29) NOT USED

(30) [TIMER VALUE ERR]

The MPU has found corruption of values within "RAM" and will initiate a full RESET of the system.

(31) [GT LOCKS BRIDGED] (PRE-FLIGHT)

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 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) [GATE CLOSE FAULT]

During a normal closing cycle of the doors a contact of the door closing relay is fed back into the microprocessor. If, having initiated a door closing cycle (i.e. operated DCLR), the feedback signal is not present within one second, then the doors will be reversed and will open. The lift will then only respond to car calls.

(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 MPU reset.

(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 PFRR or MOL) and that power has been removed from the motor circuitry on the controller. The MPU 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) NOT USED

(40) NOT USED

(41) NOT USED

(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) NOT USED

(44) NOT USED

(45) NOT USED

(46) NOT USED

(47) NOT USED

(48) NOT USED

(49) NOT USED

(50) NOT USED

(51) [LIGHT DUTY]

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

(52) NOT USED

(53) NOT USED

(54) NOT USED

(55) NOT USED

(56) NOT USED

(57) [RTC CLOCK CHANGE]

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

(58) [RTC UPDATE]

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

(59) NOT USED

(60) NOT USED

(61) [EMERGENCY RECALL]

Indicates that the system is in EMERGENCY RECALL mode. This requires an external input (usually EMR), to call the lift to a predetermined floor (usually main). The lift will return to the floor ignoring all calls and shutdown, after allowing any passengers to alight the doors will park open or closed depending on customer specification at time of order.

(62) [LEVELLER/DIR ERR]

If the LU/LD/MUP signals are received by the MPU in an incorrect sequence, the event is recorded and at what level.

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

(63) NOT USED

(64) [THERMISTOR 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, park with its doors open and remain out of service until the

thermistor is de-activated. On Fire Service the lift will stop at the next floor and remain there with its doors closed.

(65) [RTC CLOCK ADJUST]

If an invalid time or date is detected within the real time clock RAM due to corruption, the event will be recorded and the time and date set to a default of 1/1/99 00:00.

(66) [FB LOST : HI-SPEED]

This event is recorded if the MPU losses the direction or MC feedback from the main panel while the lift is travelling on high speed.

(67) [FB LOST : LO-SPEED]

This event is recorded if the MPU loses the direction, or MC feedback from the main panel while the lift is travelling on low speed.

(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) 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.

SECTION 4

TECHNICAL DESCRIPTION

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4.2	Power Supply	47
4.3	CPU Card	47
4.4	Watchdog-Loop Flag Monitor	48
4.5	Audible Warning	48
4.6	Pushbuttons	48

4.1 MOTHERBOARD (FIG 1.0)

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

1. Processor

2. I/01, I/02, I/03

It also contains the Control Inputs and Outputs to the Panel, the Double journey Relay and external terminals.

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 7805 + 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

PSU Module Fuse Values (All fuses are 20mm)

9Vac	2A	Anti-surge
19Vac	3A	Anti-surge
75Vac	1A	Anti-surge
+10Vdc	1A	Quick-blow
+24Vdc	2A	Quick-blow
+100Vdc	500mA	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 configuration switches and PTT (prepare - to - test) and DDS (door disable) switches.

4.4 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".

4.5 AUDIBLE WARNING

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

4.6 PUSHBUTTONS

Four Pushbuttons, are situated on the front of the Event Log card which are used for adjusting timers and re-calling events which have occurred within the system and other special functions.

SECTION 5

OVERHAUL & REPAIR

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5.1	Handling of EPROM's	50
5.2	Fault Finding Procedures	50

5.1 HANDLING OF EPROMS

WARNING 27C512 EPROMS 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 and on Motherboard

    c) 10V dc supply LED illuminated on power board

    d) 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.

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 LU/LD/MUP 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 LU/LD/MUP signals are present (lift in door zone). When doors open first GL and then DOL are extinguished. If lift is on normal service then after approximately seven seconds (adjustable by LDDT dwell timer) the doors should park closed.

SECTION 6

ILLUSTRATIONS

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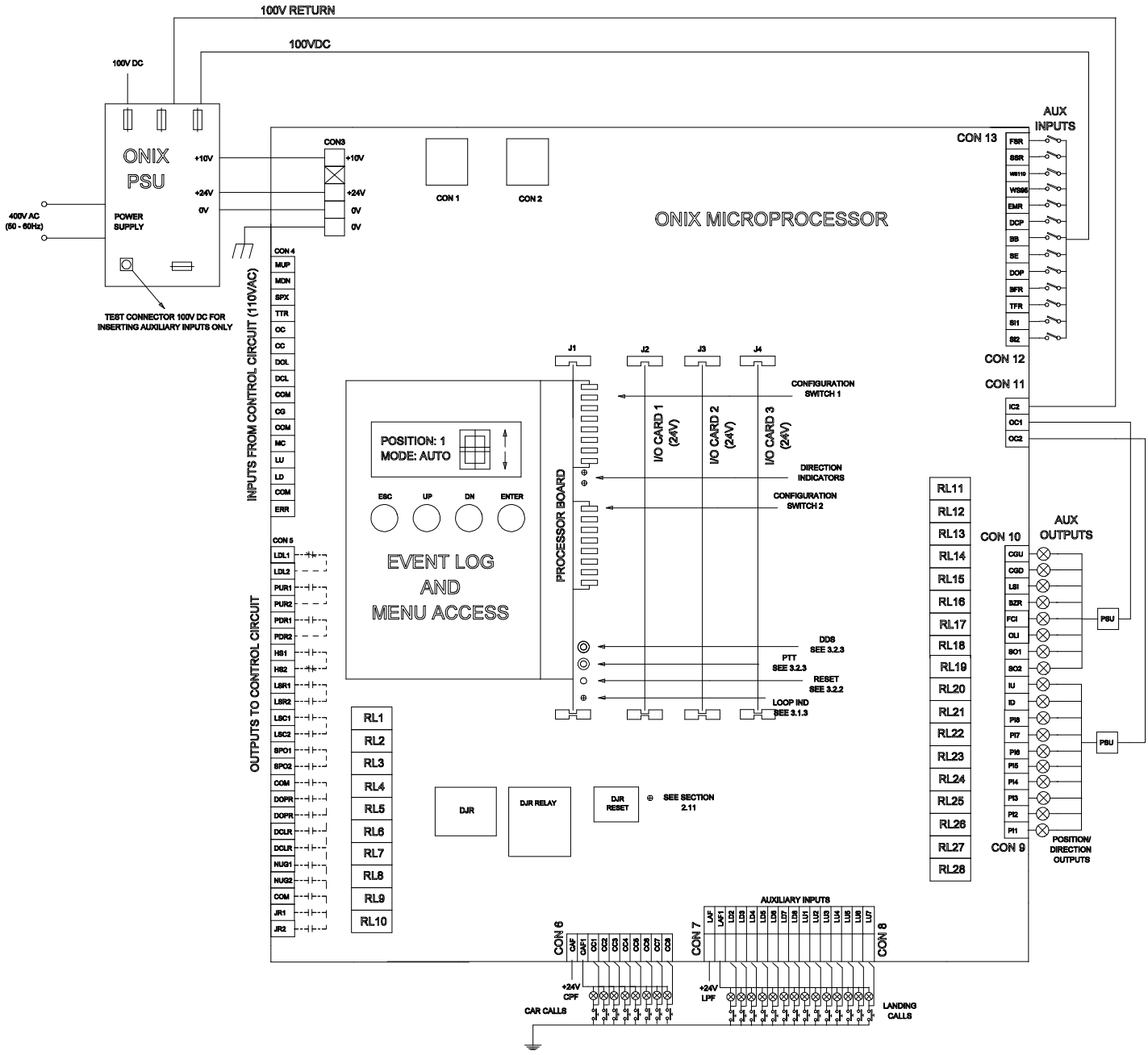
Fig 1	Motherboard Card Positions/Wiring Schematic	53
Fig 2	Overview of Menu System	54
Fig 3	Setting Up of Single Floor Run	55
Fig 4	Eprom Changing Instructions	56



MOTHERBOARD CARD POSITIONS/WIRING SCHEMATIC
FIG 1.0

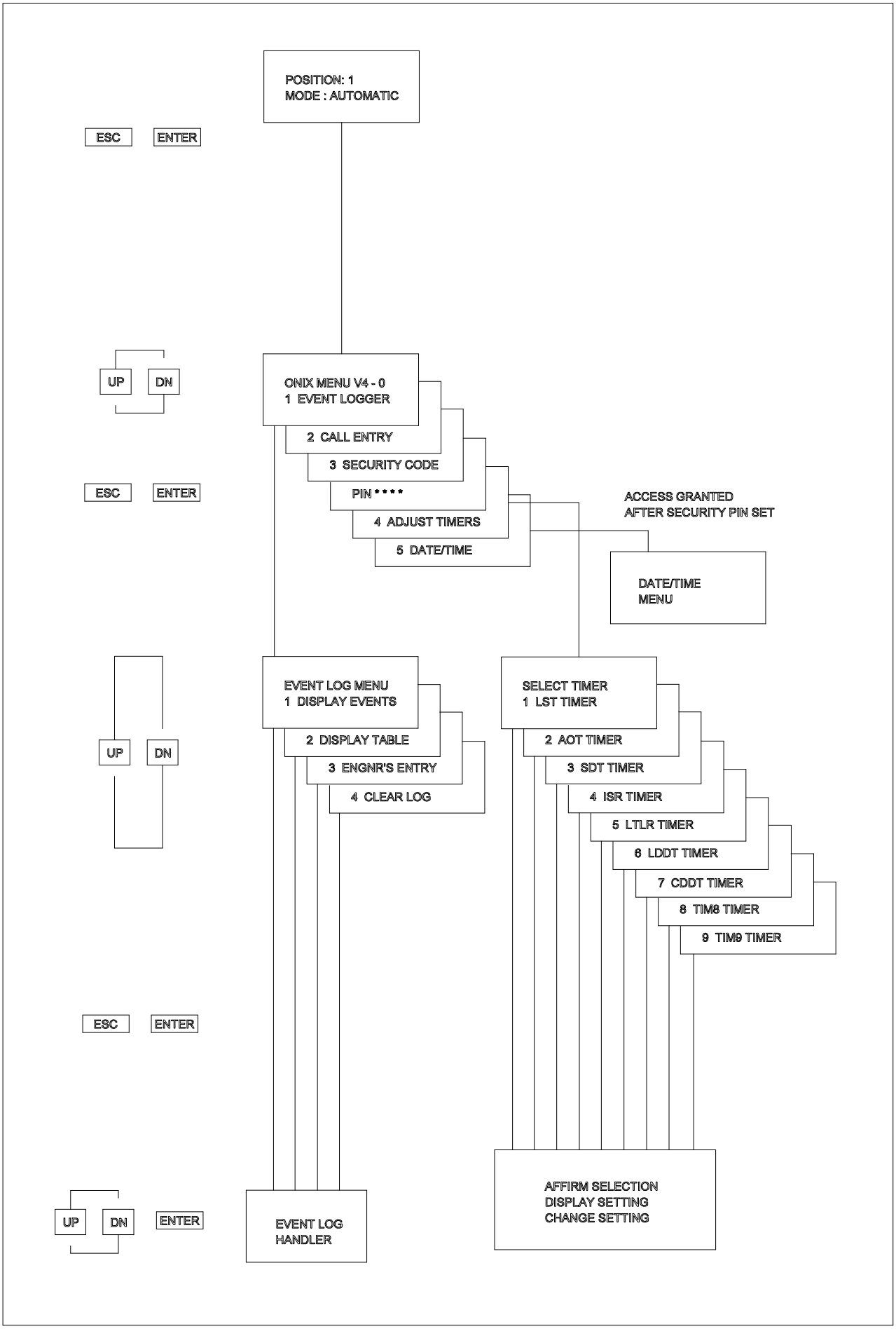
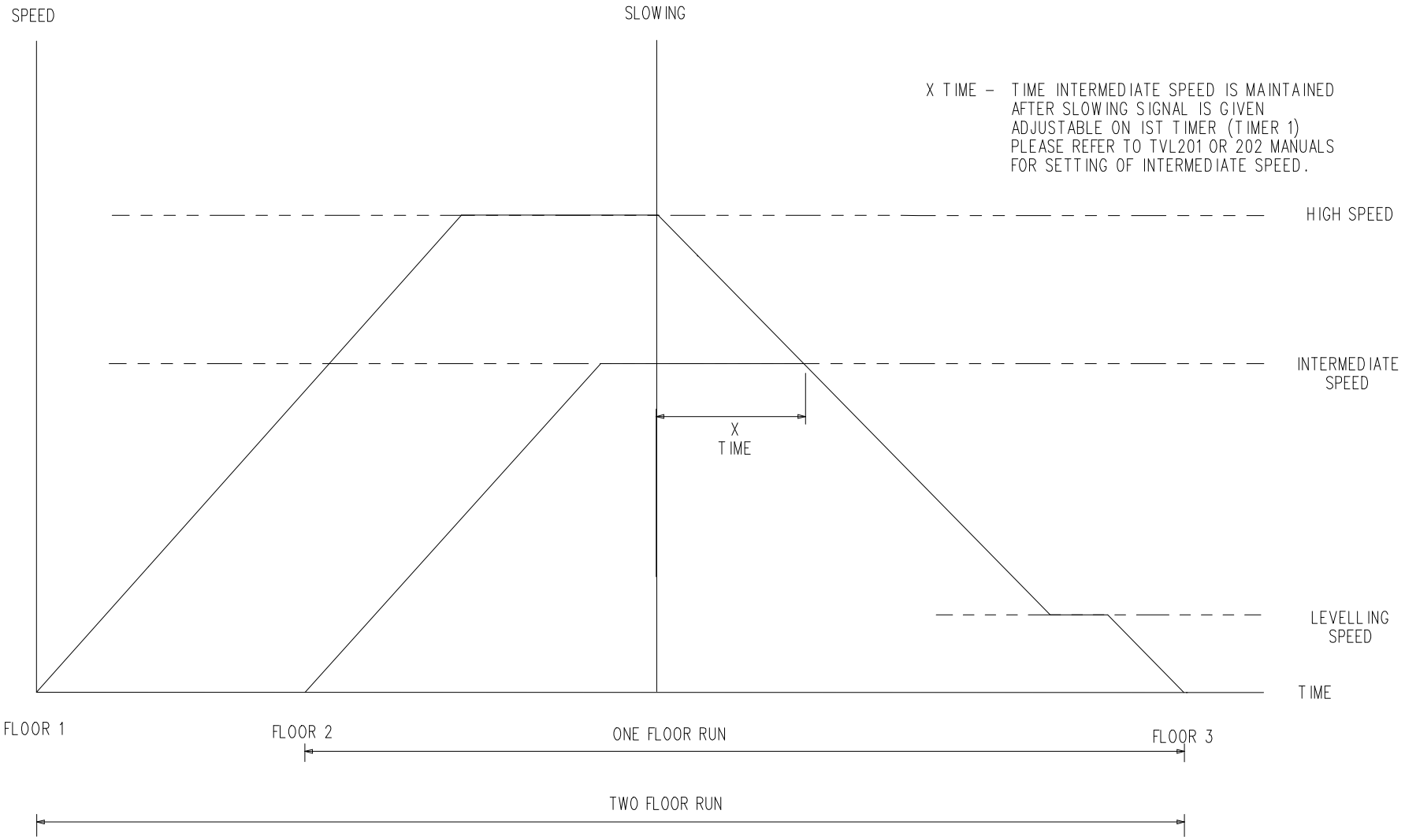


FIG. 3 OVERVIEW OF MENU SYSTEM

FIG 3 SETTING UP OF SINGLE FLOOR RUN

ONLY APPLICABLE TO VVVF/ VECTOR APPLICATIONS WHEN REQUIRED



SEE 3.9.12 TO ACCESS TIMER MENU

Insert Eprom Changing Instructions here