Thames Valley Controls

hylogic

Hylogic Hydraulic Microprocessor Collective lift Control manual

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SECTION 1
INTRODUCTION

1.1 GENERAL

The TVC HYLOGIC 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 Open Push

j) Door Close Push

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

l) Reverse 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, control board and expansion board. 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 switch mode/power supply 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, open or closed 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.

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 24V DC and all other incoming signals are at 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

	HYLOGIC POWER SUPPLY		
Input Voltage	230V AC		
Output Voltage	5V DC	+12V/-12V	24V

Please note:

In order for the power supply to operate correctly it must have a minimum load connected to the output rails. If the power supply is disconnected from the printed circuit board the power supply outputs will shut down and all rails will read 0 Volts if voltage measurements are attempted.

Voltage measurement of the power supply output rails should only be carried out whilst it is connected to the Hylogic printed circuit board.

If the power supply is disconnected from the Hylogic printed circuit board while the power supply is powered up, the power supply will immediately go into a thermal shutdown and no voltage will be output. After re-connecting the power supply to the Hylogic printed circuit board while the mains supply is on, the power supply will stay in thermal shutdown for approximately one minute.

After this period the power supply will then return to normal operation and power will be restored to the Hylogic printed circuit board.

Call Inputs	-	Each input signal is activated by ref. to OV
Outputs	-	Output Relays
	-	Single contact per relay
	-	Contact Rating 5A at 250Vac
	-	Coil Voltage 24Vdc
All Other External Inputs	-	Each input signal is sourced from 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	235mm
	Width	224mm
	Depth	45mm
	Weight	700g

1.5 MICROPROCESSOR SYSTEM DESCRIPTION

The Microprocessor System comprises of three printed circuit cards.

a) The Motherboard itself which contains the basic pilot motion control relays and the inputs which go to and come from the Motor Panel.

b) The control board which contains the program, control components Door Disable, Prepare to Test, RESET PUSH and DIL switches and user interface consists of an LCD display and four push buttons.

Three LEDS are provided giving indication of committed direction (UP, DN) and correct execution of software (LOOP).

c) The expansion board contains inputs for calls, output relays for call acceptance and position indicators for floors five and six. Also there are two RS232 serial ports for Duplex control and communication with other serial devices. In addition there is a parallel port for direct connection to a speech control board.

SECTION 2
INSTALLATION & COMMISSIONING

2.1 GENERAL

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

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

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

2.2 CONNECTOR ACCESS

All external wiring to the HYLOGIC processor is made to the Motherboard terminals and expansion board terminals (if fitted).

2.3 MICROPROCESSOR/SYSTEM CONNECTION (Ref. Fig 1.0)

a) Power Supply (mounted on the Motor Panel)

The Power Supply Unit is connected via a separate loom to socket Con 12 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 12 at the Microprocessor Motherboard.

b) Disconnect all connectors on the right hand side and the two right hand connectors on the bottom of the motherboard (con 6 to con 10) and the connector on the right hand side of the expansion board (if fitted).

c) Switch on the control panel and ensure that no 110V AC wiring has been connected to any of the connectors that have been disconnected in 2.4b.

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

2.5 MICROPROCESSOR SWITCH-ON

After switching on, the following checks should be made:

a) The green LED on the control card designated "Loop" should flash continuously.

b) The LCD Display 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, if enabled a "PRE-FLIGHT" check will be performed to check the integrity of the lock circuits.

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

d) Any of the red LED's illuminated shows that an incoming or output signal is present (refer to Para 2.12 for signal notations).

2.6 CALL ENTRY (ELECTRICALLY AND VIA KEYPAD)

Car calls and landing calls can be entered by grounding any of the appropriate terminals. C1 to C4 (C6) for Car Calls and L1U to L4D (L6D) for Landing Calls. If done correctly the corresponding output relay will energise and LED will light indicating that the call has been accepted. (C6) and (L6D) will be found on the expansion board (if fitted).

Alternatively car and landing calls can be entered using the LCD keypad. See section 3.9.8 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 pushbuttons and the LCD. Details of their functions, ranges, increments and default settings may be found in Section 3.9.13.

2.9 STUCK PUSH BUTTON

The Control Board 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

Opto-isolated inputs are rectified and smoothed.
Direct input from control circuit (110V AC and 24V DC)
*

Main panel monitoring inputs (24V DC)

LAR	Normal control relay
MUP	Motion UP Relay
MDN	Motion DOWN Relay
SPX	Selector stepping switch/gate closed (manual landing doors)
LU	Levelling UP switch
LD	Levelling DOWN switch
TTR	Test Control
DOL	Door open limit
DCL	Door close limit
CG	Car gate contact
GL	Landing gate/locked contact
MC	Main motion contactor/Delta
DZ	Door Zone switch
LSC	Relevel enable monitor
NOERR	Return to bottom floor, shutdown and park with doors closed.

Motherboard Outputs to main panel

Main panel pilot relays

PUR	UP direction pilot
PDR	DOWN direction pilot
REL	REL Relevel enable
LDL	Movement enable
HSRU	High speed UP pilot
HSRD	High speed DOWN pilot
LSRU	Low speed UP pilot
LSRD	Low speed DOWN pilot
DOPR	Door open pilot
DCLR	Door close pilot
SP01	Spare output (door nudging)
SP02	Spare output (zone locking/scrolling)

2.11 CALL DESIGNATIONS

FULL COLLECTIVE

FLOOR	CAR CALLS	UP-LANDING CALLS	DN-LANDING CALLS
6	(CC6)		(L6D)
5	(CC5)	(L5U)	(L5D)
4	CC4	(L4U)	L4D
3	CC3	L3U	L3D
2	CC2	L2U	L2D
1	CC1	L1U	

DOWN COLLECTIVE/APB

FLOOR	CAR CALLS	LANDING CALL
6	(CC6)	
5	(CC5)	(L5D)
4	CC4	L4D
3	CC3	L3D
2	CC2	L2D
1	CC1	L1U

( ) Expansion board only.

Note: APB operation

Ensure DIL switch 1 position 3 is "ON" refer to section 3.2 - SWITCHES.

2.12 INPUT DESIGNATIONS AND OUTPUTS

INPUTS RECTIFIED AND SMOOTHED
DIRECT INPUT FROM CONTROL CIRCUIT (24V DC and 110V AC)

<u>24vDC</u>
LAR Lift on Normal
MUP Motion UP Relay
MDN Motion DOWN relay
<u>110vAC</u>
SPX Selector Stepping Switch/Gate Closed (Manual Landing doors)
LU Levelling UP switch
LD Levelling DOWN switch
TTR Test control
DOL Door Open Limit
DCL Door Close Limit
CG Car Gate Contact
GL Landing Gate Closed/Locked Contact (Manual Landing doors)
MC Main Motion Contactor/Delta
DZ Door Zone switch
LSC Relevel enable monitor
ERR Return to bottom floor, shutdown and park with doors closed.

INPUTS (24VDC SMOOTHED)

FSR Fire Control Switch
SSR Car Preference Switch
WS110 Weight Switch 110% (Overload)
WS95 Weight Switch 95% (By-Pass)
TFL Top Final Limit Operated
DCP Door Close Push
BB Light Beam Broken
SE Safety Edge
DOP Door Open Push
BFR Bottom Floor Reset
TFR Top Floor Reset
EMR Emergency Recall Switch
MRT Motor Room Temperature switch

CALL I/O DESIGNATIONS

- 10 OPTO-ISOLATED INPUTS
- 10 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.

LPF Landing Call Indicator Feed
L3U Landing Up Call Floor 3
L2U Landing Up Call Floor 2
L1U Landing Up Call Floor 1
L4D Landing Down Call Floor 4
L3D Landing Down Call Floor 3
L2D Landing Down Call Floor 2
CPF Car Call Indicator Feed
CC4 Car Call Floor 4
CC3 Car Call Floor 3
CC2 Car Call Floor 2
CC1 Car Call Floor 1

Note: Shown for full collective - see page 10 for alternative Call Designations.

CALL I/O DESIGNATIONS – EXPANSION BOARD

- 6 OPTO-ISOLATED INPUTS
- 8 RELAY OUTPUTS

COM2 Call Common Return
L5U Landing Up Call Floor 5
L4U Landing Up Call Floor 4
L6D Landing Down Call Floor 6
L5D Landing Down Call Floor 5
CC6 Car Call Floor 6
CC5 Car Call Floor 5

OUTPUT DESIGNATIONS

OUTPUTS - RELAYS ARE MOUNTED ON MOTHERBOARD.

CONTROL CIRCUIT OUTPUTS

PUR UP direction pilot
PDR DOWN direction pilot
REL Relevel enable
LDL Movement enable
HSRU High speed UP pilot
HSRD High speed DOWN pilot
LSRU Low speed UP pilot
LSRD Low speed DOWN pilot
DOPR Door open pilot
DCLR Door close pilot
SP01
SP02

EXTERNAL OUTPUTS

CGU Car Gong Up
CGD Car Gong Down
FCI Fire Control Indicator
OLI Car Overloaded Indicator
LSI Lift in/out of Service Indicator
SO1 Spare Output 1
SO2 Spare Output 2
IU Direction Indicator Up
ID Direction Indicator Down
PI4 Position Indicator Floor 4
PI3 Position Indicator Floor 3
PI2 Position Indicator Floor 2
PI1 Position Indicator Floor 1
CLR Car Light Control

EXTERNAL OUTPUTS – EXPANSION BOARD

PI6 Position Indicator Floor 6
PI5 Position Indicator Floor 5
COM1 Position Indicator Supply Common

SECTION 3
OPERATING PROCEDURES

3.1 OPERATION OF THE CONTROLS AND SIGNIFICANCE OF INDICATORS

Visual Indicators

LCD Display for event log, timer configuration and status. LED's for all inputs and outputs.

3.1.1 Power Supply Unit

The voltages developed by the PSU are: 5V DC
+/-12V DC
24V DC

3.1.2 Control 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.

c) Yellow LED's (2) - These show the direction of travel of the lift, "Up" or "Down".

d) Green LED (Flashing) - This "Loop" LED indicates that the microprocessor is operating correctly.

3.1.3 Inputs and Outputs

a) Red LED's - There are a number on the motherboard and expansion board illuminated LED indicates that an incoming signal is present or an Output Relay is energised.

3.1.4 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.

3.2 SWITCHES

3.2.1 Control Board Configuration Switches

In order to configure the software 2 X 8 way DIL switches are fitted (see fig. 1).

Switch 1 (8 way)

Positions 1 and 2 configure the total number of floors.

Position 1 (FL1)
Position 2 (FL2)

FL2	FL1	Levels
OFF	OFF	2
OFF	ON	2
ON	OFF	3
ON	ON	4

Positions 3 and 4 configure the call collection

Position 3 (COL1)

Position 4 (COL2)

COL2	COL1	Call Collection
OFF	OFF	Full/Down Collective
OFF	ON	APB
ON	OFF	Non-selective Collective
ON	ON	Full/Down Collective

Position 5 (HO1) Set main floor for homing

ON = Level 2
OFF = Level 1

Position 6 (FR1) Set fire floor return level

ON = Level 2
OFF = Level 1

Position 7 (HOMEN) ON = Homing enabled
OFF = Homing disabled

Position 8 (LISI) ON = Lift in service indicator
OFF = Lift out of service indicator

Switch 2 (8 way)

Position 1	(POSB)	ON	=	Binary position indicator
		OFF	=	Discreet position indicator
Position 2	(POSI)	ON	=	Positive position trigger
		OFF	=	Negative position trigger
Position 3	(DIRM)	ON	=	DIR message on slowing
		OFF	=	DIR message on door open
Position 4	(PFLT)	ON	=	Pre-flight enabled (optional refer
		OFF	=	Pre-flight disabled to factory)
Position 5	(SP01)	ON	=	Door nudge enabled
		OFF	=	Door nudge disabled
Position 6	(SP02)	ON	=	Zone locking enabled / scrolling disabled
		OFF	=	Zone locking disabled / scrolling enabled
Position 7	(ELRV)	ON	=	ELRV (Soft brake down) enabled
		OFF	=	ELRV disabled
Position 8	(ERPKO)	ON	=	Emergency recall park open
		OFF	=	Park closed

Expansion Board Configuration

Position 1 (DX)
Position 2 (TF)

DX	TF	Function
ON	X	Duplex Master
OFF	X	Duplex Slave
X	OFF	5 Floor Lift
X	ON	6 Floor Lift

X Don't Care

Ensure that only one lift is set to Master on duplex applications else incorrect hall call handling will be experienced.

3.2.2 Reset Push Button (Located Bottom Left of Facia)

This momentary action push resets the processor.

3.2.3 Door Disable and Prepare to Test Switches

In order to invoke maintenance functions two toggle switches are fitted.

DOOR DISABLED	=	Door operation disabled by processor
DOOR ENABLED	=	Door operation as normal dependent on mode (test, service, fire etc.)
PREPARE TO TEST	=	Responds to car calls only, doors park closed in absence of car calls
NORMAL	=	Calls accepted as normal dependent on mode (test, service, fire, etc.)

TIMERS TABLE

NO	TIMER REF	DOOR TYPE	FUNCTIONS	RANGE	INCRE-MENT	DEFAULT SETTING		REMARKS
						VALUE	DELAY	
1	PMD	N/A	Pump Motor Delay	0 - 3s	0.2s	0	0s	
2	AOT	AUTO	Advance Door Open (0 = Disable)	0 - 4.5s	0.3s	4	1.2s	
	GWB1	MANUAL	Gate Open Warning "Off" Delay	0 - 1m	4.0s	1	4s	
3	DJR		Double journey relay	20 - 45s	1.7s	0	0s	
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	N/A							
9	ELRV	N/A	Hydraulic ELRV Soft Brake (Down)	0 - 1.5s	0.1s	2	0.2s	
A	DHLD	AUTO	Door Hold Delay (BB Input)	0 - 120s	8.0s	8	64s	On request only
B	HOMT		Homing delay	0 - 150s	10.0s	3	30s	
	HOMT		Homing delay	1 - 16 min	1.0 min	1	1min	On request only
C	TIMC							
D	MFRT		Multi-floor Run Speech Delay	0 - 15s	0.1s	5	0.55	
E	SFRT		Single-floor Run Speech delay	0 - 15s	0.1s	5	0.55	

Notes 1) REFER TO MAIN CONTRACT DRAWINGS FOR APPLICATION

KEY

	DOOR TYPE
AUTO	ONLY USED FOR AUTOMATIC POWER DOORS
MANUAL	ONLY USED FOR MANUALLY OPERATED DOORS
N/A	TIMER NOT APPLICABLE TO 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.

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.

3.3 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.

Ensure that the serial communication cable is connected to both Hylogic expansion boards (PL3) and that the LED (TXA) is flickering. Also ensure that the DIL switch SW1 position one is switched 'ON' on the lift only.

CAUTION: The reader should be aware that the Landing call terminals LPF, L2D to L6D and L1U to L5U of the lift switched off, will still be live (24VDC) because they are sourced from the operational lift.

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 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 are 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.

3.5 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, 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.

3.7.1 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 control board pushbuttons and the LCD.

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

1) Displays the last 50 events, event positions, their frequency and time of event
2) Displays a table of all possible events, event positions, their frequency and time of event
3) Allows the engineer to make an "electronic note" of their attendance
4) Allows the engineer to clear the log if required
5) Displays the number of Journeys made and Door Operations.

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) NOT USED	
(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) LOSS OF POWER	Lost power to control panel
(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) LOST 24V SUPPLY	Simultaneous loss of car and landing push feeds
(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 let 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) - (41) NOT USED	
(42) *TEST CONTROL*	The lift is currently under Engineer's test control
(43) MULT LEVEL ERROR	Recorded when event 34 has occurred consecutively three times at the same floor
(44) MULT HEAD ERRORS	Recorded when event 34 has occurred three times on consecutive journeys
(45) - (48) NOT USED	
(49) DJR TRIP CLEARED	Recorded when condition is cleared
(50) DJR TIME OUT	Time out of the motor run time limiter stops lift

(51) LIGHT DUTY	System bias to DOWN calls
(57) RTC CLOCK CHANGE	Adjustments to RTC are recorded with new time/date
(58) RTC UPDATE	Corruption of the real time clock data registers has been detected
(61) EMERGENCY RECALL	Recorded when the Emergency Recall switch has been operated
(62) - (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) NOT USED	
(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	
(73) TOP FINAL LIMIT	Top final limit has been operated
(74) LSC MONITOR ERR	LSC output error
(82) PWR ON MEM TEST	Memory error detected on power up
(83) RUN MEM TEST	Memory error detected while running

Note (1) - The HYLOGIC 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 - 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. 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. The event display table however stores the last 5 occurrences of all events.

3.10.1 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.

3.10.2 ACCESSING AND USING THE EVENT LOG SUB-MENU

Please refer to figure 2, Overview of Menu System

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 5 options available. Press **''ENTER''** to select the option, or **''ESC''** to return to menu level 1.

3.10.3 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 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.

3.10.4 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 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.

3.10.5 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. This recorded attendance will now form the latest event in the event log.

3.10.6 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 and the system will display the event.

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

3.10.7 ACCESSING AND USING OPERATION COUNTERS MENU

Every time the lift moves or opens its doors internal counters are incremented. It is possible to view these counters via the menu system on the LCD display.

From the event log sub-menu, select **[5 –VIEW COUNTERS]** and press **''ENTER''.**

From here the **''UP''** and **''DOWN''** buttons may be used to select one of 2 options available, either **[1 –VIEW JOURNEYS]** or **[2 –VIEW DOOR OPS]**

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

VIEW JOURNEYS

From the view counters sub menu, select **[1–VIEW JOURNEYS]** and press **"ENTER"**

The LCD will change to indicate:

JOURNEY COUNTER
0,000,013

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

VIEW DOOR OPS

From the view counters sub menu, select **[2–VIEW DOOR OPS]** and press **''ENTER''**

The LCD will change to indicate:

DOOR OPERATIONS 0,000,025

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

The counters are non-resettable and will keep their contents even on the removal of power.

If required the counters can be reset by simultaneously pressing the UP and DOWN buttons whilst viewing the particular counter.

3.10.8 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.

3.10.9 ENTERING CAR CALLS

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
□	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
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).

3.10.10 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**	
□	**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 :

1	**2**	**3**	**4**	
O	**O**	**▲**	**O**	

Example : UP call at level 4.

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).

3.10.11 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.

3.10.12 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

Pressing 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.

3.10.13 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.

3.10.14 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.

3.10.15 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.

3.10.16 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.

3.10.17 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.

3.11 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 Control Board.

(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]

The lift has stopped but is not in the correct door zone. When the lift has stopped DZ and LU or LD must be present.

(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 a 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, 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) NOT USED

(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) [LOSS OF POWER]

If the feed to DOL and DCL inputs is lost simultaneously it is assumed that the control panel power supply has been lost. For manual gates the DOL input is wired to a permanent 110VAC feed at MS terminal.

(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) [LOST 24V SUPPLY]

If the feed to the car and landing pushes is lost simultaneously it is assumed that the 24 volt supply has been lost. As a result numerous events may have been generated due to loss of signals to the MPU, these can be ignored if this event is logged at the same time. The Hylogic LCD will continuously display "NO 24 VOLT SUPPLY" during this condition.

(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) [LEVELLER ERROR]

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, or if operated in an incorrect sequence, or if two attempts at re-levelling have occurred, both exceeding five seconds and without the relevant proximity/relay contact being operated. The event is recorded and advance door opening/re-levelling will be inhibited, the lift returns to the bottom floor and shuts down - to be reset by pressing the (ESC) push button once the fault has been investigated and resolved. The check is performed on each run. The DOP will remain operative provided the lift is in a door zone.

(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) - (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) [MULT LEVEL ERROR]

The LU, LD and DZ inputs are monitored by the MPU, if an incorrect signal is detected an event 34 LEVELLER ERROR will be logged. If event 34 occurs on three consecutive journeys to the same floor this is considered to be a MULTIPLE LEVELLER ERROR and indicates a problem with the magnet set-up at a particular floor. The MPU will initiate a downward 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.

(44) [MULT HEAD ERRORS]

The LU, LD and DZ inputs are monitored by the MPU, if an incorrect signal is detected an event 34 LEVELLER ERROR will be logged. If event 34 occurs on three consecutive journeys this is considered to be a MULTIPLE HEAD ERROR and indicates a fault with the tape head device. The MPU will initiate a downward 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.

(45) - (48) NOT USED

(49) [DJR TRIP CLEARED]

When the lift has returned to bottom floor this event is recorded when the condition is cleared.

(50) [DJR TIME OUT]

This event is logged when the lift is stopped by the processor due to time out of the Motor Run Time Limiter. To be reset by pressing the [ESC] pushbutton, Reset button on facia or by power supply interruption.

(51) [LIGHT DUTY]

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

(52) - (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 registers and has rectified the error, however some events may have recorded bad time and date data or may not appear in chronological order.

(59) - (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 the position of the ERPKO switch, refer to section 3.2.

(62) - (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 Service the lift will stop at the next floor without opening its doors, then return to the bottom 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 and remain there with the doors open.

(65) [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.

(66) [FB LOST : HI-SPEED]

This event is recorded if the MPU loses 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) NOT USED

(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

(73) [TOP FINAL LIMIT]

Indicates that the double pole top final limit switch as been operated which disconnects the power to the control circuit. When the switch is remade and power returned the MPU returns the lift to the bottom floor and shuts down. To be reset by pressing the [ESC] pushbutton, provided the lift is in door zone at the bottom floor. The DOP will remain operative provided the lift is in a door zone.

(74) LSC MONITOR ERR]

The LSC output is monitored via the LSC input. The output allows movement whilst the doors are open, for re-levelling purposes, or allows advance opening. If the monitored inputs is on when not expected then this constitutes an error, the MPU returns the lift to the bottom floor and shuts down. To be reset by pressing the [ESC] pushbutton - provided the lift is at the bottom floor. The DOP will remain operative provided the lift is in a door zone.

(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

4.1 MOTHERBOARD (FIG 1.0)

The Motherboard contains sockets to mount the plug-in control board.

4.2 POWER SUPPLY

The power supply module is a switched mode type mounted adjacent to the microprocessor unit.

4.3 CONTROL BOARD

The Control board contains the 6809 Microprocessor, RAM, EPROM and all support circuitry. It also contains the configuration switches, Prepare to Test, Door Disable Switches and LCD display with control push buttons.

4.4 PUSHBUTTONS

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

4.5 EXPANSION BOARD

The expansion provides additional I/O to give two extra floors of service, giving a total call capability of six floors for the Hylogic system.

In addition the expansion board provides two serial communication ports, one for Duplex control and the other is spare for later use.

SECTION 5
OVERHAUL & REPAIR

5.1 HANDLING OF EPROMS

WARNING 27C512 EPROMS ARE DEVICES WHICH REQUIRE CAREFUL HANDLING DURING REMOVAL AND INSERTION, 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 Control Board are operating satisfactory. Check voltages as detailed in 1.4.1.

2) Check the loop LED is pulsing on the front facia proving correct software execution.

If this condition cannot be achieved then the control board 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.

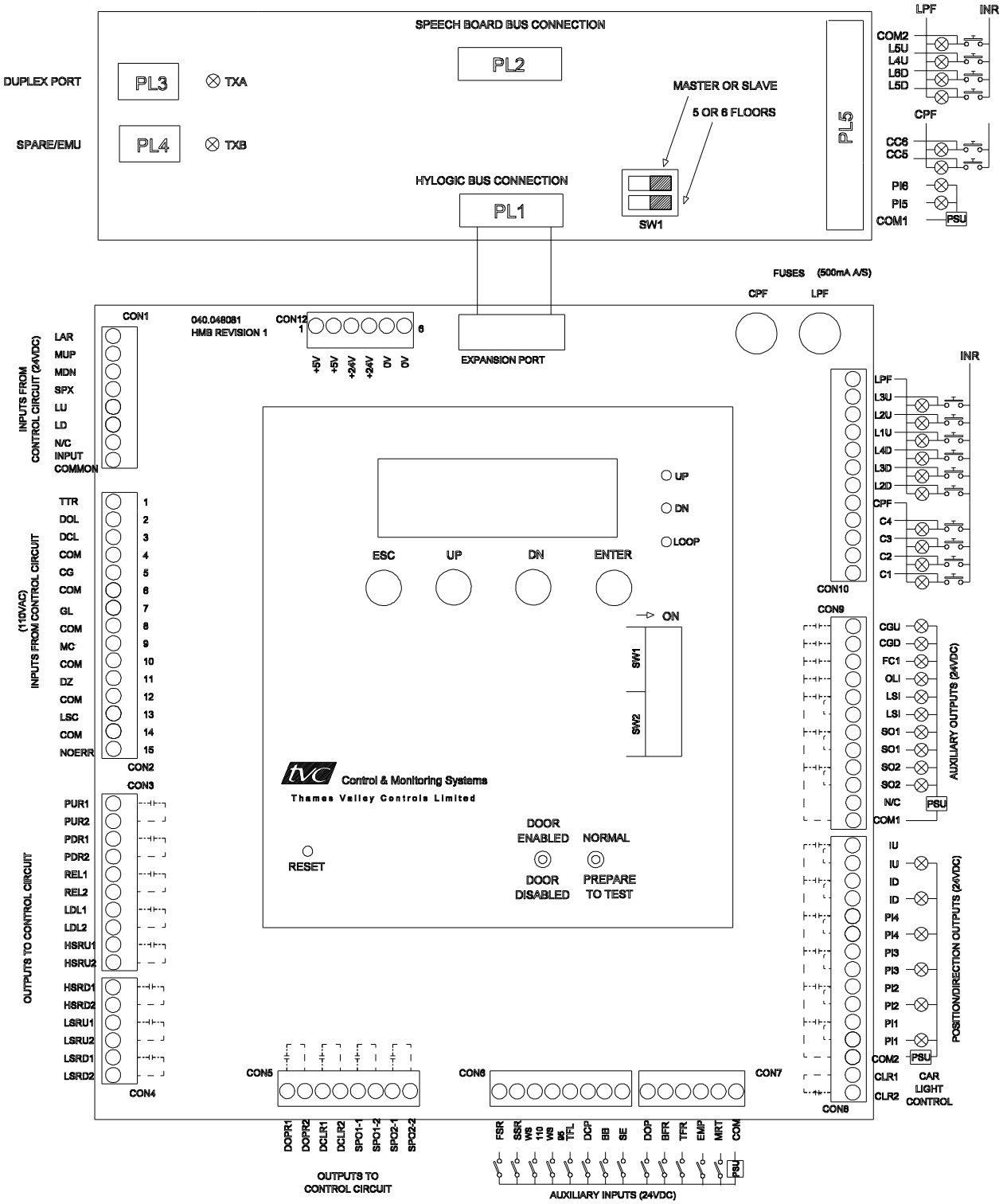
3) Having achieved pulsing operation of the loop LED attention should be turned to the I/O status.

4) With the control board fitted the motherboard the lift should be ready for initial operation.

   Switch the lift to car top test and observe the LED signals. 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 LED's do not coincide with input terminal voltages then wiring should be checked.

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/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 LU/LD/DZ 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.

MICROPROCESSOR ASSEMBLY/WIRING SCHEMATIC
FIG. 1



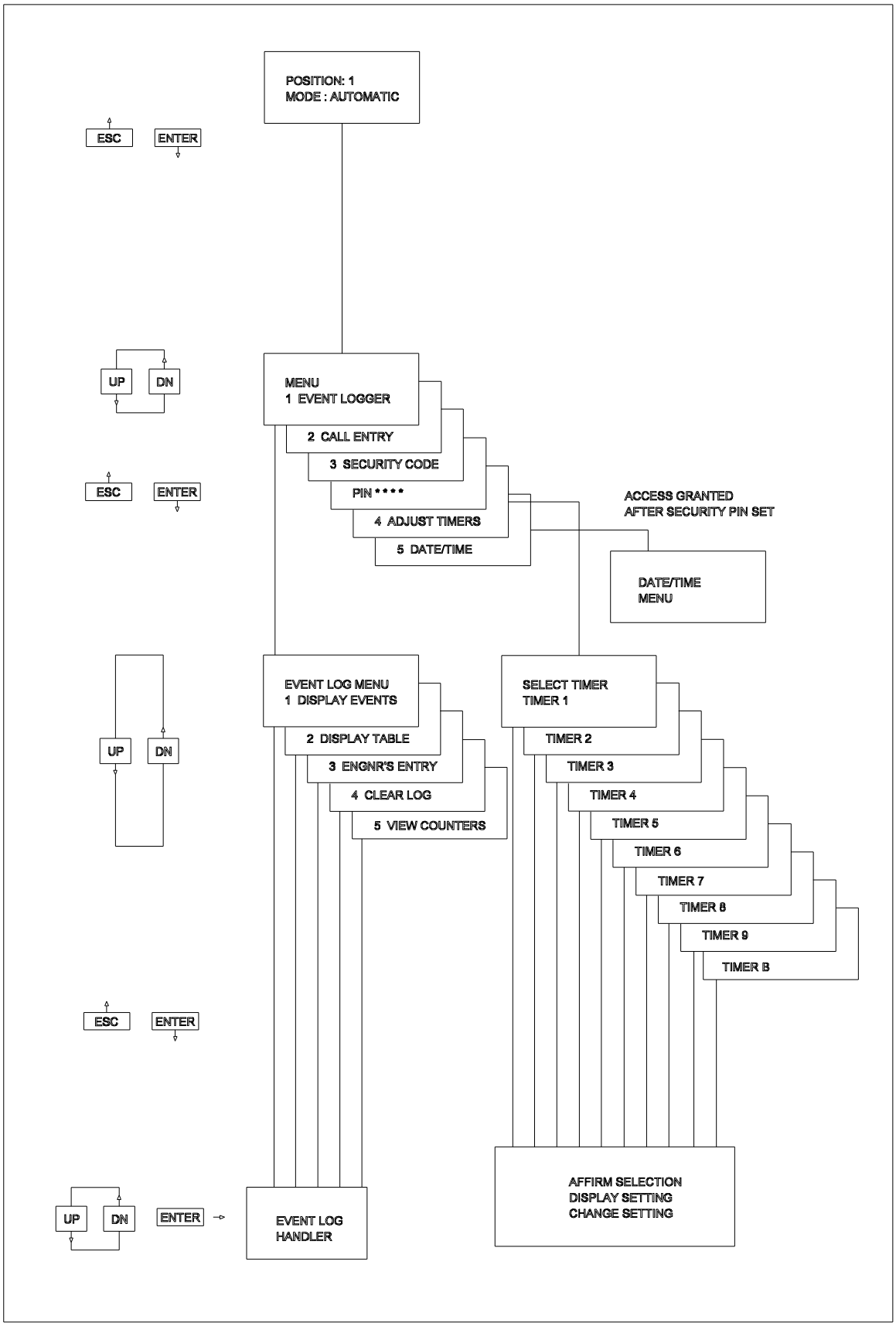


FIG. 2 OVERVIEW OF MENU SYSTEM