EMU3 (Ver 2.00)

Installation & Commissioning Manual
(including Network Communications)

TVL314

Issue No. 8

20/08/2015

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Contents

List of Tables

1 INTRODUCTION

The EMU 3 Master unit comes in four variants depending on the type of communication module fitted. Module consist of: - PSTN for standard telephone connections, GSM for mobile phone data communication, Ethernet for network connections, and Micro Exchange, where a PSTN connection has to be shared between the EMU and an auto-dialler. Each type of communication has its own individual requirement, which is detailed later. The general installation is simplified by the easy removal of all the electronics from the EMU case. This enables the wiring to be routed in a convenient manner, from an interface rail mounted within the controller to the EMU itself. When all the connections are made there is an initial setup procedure that commissions the EMU to the signals and features required for the site.

2 MOUNTING

The location should be chosen bearing in mind that the lid opens down.
Dimensions in mm: - 350 wide x 345 high x 105 deep

To help installation the electronics are mounted on an easily removed back plate. Unscrewing the top thumbscrew and disconnecting the back plate earth strap allows this assembly to be lifted out. The enclosure can then be mounted at a convenient location and the conduit entries drilled.

For any GSM versions, further consideration needs to be taken regarding the mounting of the GSM Aerial as this will determine the reliability of future communications. In general the aerial should be mounted vertically in a static location as high as possible and close to an external wall or window. If required a GSM extension lead can be supplied for this purpose. It is also important to avoid being close to any other sensitive electronics and in particular it should be at least one meter away from any other GSM aerial and at a different height. Avoid mounting the aerial close to any metal work that is likely to screen it from the GSM radio signal and in particular avoid locating it inside metal enclosures, lift shafts, basements or close to heavy electrical machines.

The best guide to mounting the aerial is the signal strength, which can be monitored on the Main Status Screen (5.1). A good signal strength will have a value in the range 15 to 31 while a signal below 10 is likely to prove intermittent. A value of 99 indicates no signal at all. Try moving the aerial to different locations and checking the signal strength, but be aware that holding the aerial in your hand can change its sensitivity.

3 WIRING

EMU 3 requires a 240v mains supply, independent of the controller's supply, via 2.5mm^2 twin and earth from a 5A-fused spur. Main wiring runs should be installed with conduit protection compatible with the existing electrical installation.

The Main Inputs MI 1-16 at the bottom of the EMU mother board are provided for monitoring the equipment's control signals while the inputs at the top right are for auxiliary low voltage signals. Space is provided behind the back plate to allow wires to be routed to their appropriate connectors before the back plate and its electronics are replaced. **Routing of wires across the surface of the motherboard or between the motherboard and the other processor cards MUST BE AVOIDED**.

A printed label on the inside of the lid details the signal designations for a Lift application and allows auxiliary signals and non-lift applications to be marked up. Use this to detail any special signals used for a specific application.

All controller signals are to be wired through the EMU 3 interface rail terminals, which provide suitable signal conditioning to prevent external wiring faults from affecting the controllers operation. Signals that share a common return path should be wired separately between the EMU 3 and the interface rail, but may be linked up on the controller side of the interface rail. All the main lift input signals and the alarm circuit monitoring can be connected through a 36 way multi core cable, with the TFC and BFC output signals being wired separately. This signal separation is important as the output signals potentially carry unconditioned voltages. Table 2 – Lift I/O Mapping details the input allocation for a Lift application.

3.1 Voltage range selection

For the main equipment inputs the interface rail and the links SW 2-17 above each of the MI inputs determine the operating voltage range. The links are used to prevent false triggering in the same way as changing the opto-isolator would on EMU 1. In 2014 the Main Input sensitivity was changed to make the input work with the 12V wetting supply when wired directly, all other inputs and outputs remained the same. These mother boards will have their 400.level label marker with "048105 rev3 iss4".

New Sensitivity

Main Input MI 1- 16	**Link to the Left (2-3)** Standard sensitivity	**Link to the Right (1- 2)** Low sensitivity
Via standard 47K interface rail	77V – 240V AC/DC	205V – 240V AC/DC
Via low voltage 5.5K interface rail	18V – 175V AC/DC	45V – 175V AC/DC
Direct wire, no interface resistors	10V – 150V AC/DC	23V – 150V AC/DC

Original Sensitivity

Main Input MI 1- 16	**Link to the Left (2-3)** Standard sensitivity	**Link to the Right (1- 2)** Low sensitivity
Via standard 47K interface rail	70V – 240V AC/DC	195V – 240V AC/DC
Via low voltage 5.5K interface rail	20V – 175V AC/DC	55V – 175V AC/DC
Direct wire, no interface resistors	14V – 150V AC/DC	40V – 150V AC/DC

All Boards

Low Voltage Inputs	
Auxiliary Inputs **AI 1 – 4**	9V – 30V AC/DC
Alarm Supply **ALS** & Alarm Push **ALM**	4.5V – 26V AC/DC
TAM	Is tracked to the WET supply and is not volt free.

Main Outputs MO 1 - 4	**Contact Rating**
AC	250V 5A
DC	30V 5A

Input & Output Voltage Ratings

Value	**Resistor Only**	**Resistor + Bridge**	**Top Colour**	
47k		2007100.1	CLEAR	EMU 1/ EMU 3
5.6k	2007100.7	2007100.8	RED	EMU 3
All blocks with a bridge in have their terminals coloured Red, Black & Green.				

Interface Rail resistor blocks

3.1.1 EMU specific I/O

The majority of the EMU's I/O is general purpose with its function being dependent on the equipment being monitored and the allocations made during commissioning. There is however a few inputs and outputs that are specific to the EMU's function and can't be used for other purposes: -

Aux Supply	**WET** + & –	**12V 400ma** Auxiliary Supply	Provides wetting current for auxiliary input circuits or a supply for auxiliary equipment such as the Micro Exchange.
AI 5	**TAMP**	**EMU Cabinet tamper micro switch input.** Internally tracked to WET.	Optional feature provides an alert event if the EMU cabinet is opened without a TVC engineer login.
AI 6	**AUXS**	**Wetting supply monitor.** Internally tracked to monitor the WET supply.	Provides an alert event if the wetting supply fails, and so possibly monitoring is lost.
AI 7	**ALM**	**Low Voltage Input for the alarm verification circuit.**	Lift alarm verification input with fail safe.
AI 8	**ALS**	**Alarm Circuit Supply monitor.** Internally tracked through ALSC contact.	Monitors the alarm circuit voltage periodically when ALSC is triggered
MO 5	**ALSC** Alarm Supply Connect	**LS 5** connects the alarm circuit supply to the EMU's input for a periodic supply test.	The test can be triggered manually through the "Test Alarm Supply" Setup menu item 6.12.
MO 6	**ALV** Verified Alarm	**LS 6** output to trigger an autodialler when a verified trapping is detected.	If ALE is not enabled the ALM input is passed directly through to ALV as a failsafe alarm by-pass.
MO 7	**ALE** Alarm Enable	**LS 7** enable the verified alarm circuit 15 seconds after an EMU reset. Also provides a charging voltage for the battery.	This output provides a failsafe alarm by-pass if the EMU fails. It also provides a charging voltage to the Battery and so should NEVER be disabled, even if the alarm circuit is not used.
MO 8	**DISC** Disconnect Charger	**LS 8** periodically disconnect the charger as part of the battery test.	The test can be triggered manually through the TEST option on the "Battery Status" screen in Setup 6.12.1.

3.2 Equipment type wiring

When an equipment type is selected as part of commissioning (See section 6.10.2) the Input and Output terminals are automatically mapped to a set of logical I/O required for that application. This default configuration can be adjusted during commissioning to suit a particular application, but forms a starting point for that process.

3.2.1 Lift Equipment

When a Lift application is selected as part of commissioning the Main Input terminals MI 1-16 are automatically mapped to the logical input signals required by the LiftWatch monitoring software. The majority of these signals are the same as those for EMU 1. However there are some important differences.

Door Open Limit (DOL) A signal to indicate that the doors are fully open. If a signal is not available then this input can be disabled in configuration. However the LiftWatch "Door open time" must be set to the time the door takes to open. (See Section 6.10.13)

Door Zone (DZ) This needs to be a true indication of the lift entering/leaving the door zone. While the lift is travelling it may be used to count floor levels and so determine lift position, provided this option is selected during commissioning. (See Section 6.10.8)

Demand (UDF) A new signal that picks up the early stage of a lift cycle such as a Ramp or Break lifting. *This was labelled as (DMD) before the Mk 2 Interface was released.*

Alarm Supply (ALS) A new low voltage input which monitors the alarm circuit power supply. This input is only activated periodically and so the LED input indicator will only illuminate when an alarm supply

test is performed through the Setup menu. (See Section 6.12). This avoids a constant drain being placed on the alarm supply if the old fashioned flag cells are used.

3.2.1.1 Lift I/O Mapping (Mk 2 Interface)

Appropriate returns need to be selected for each of the connections described.

Term ID	Cable Colour	Signal	Connection	Notes
MI 1A MI 1B	Red White	**MS** Main Supply	Wire to the supply that feeds the control panel and shaft after any input fusing.	
MI 2A MI 2B	Blue Green	**TTR** Car top/panel test control	Wire to a point that is supplied or cut by use of the car top or panel test control.	
MI 3A MI 3B	Brown Purple	**GF** (PSC) Primary Safety Circuit	Wired to a point at the end of the primary safety circuit before the gate feed.	
MI 4A MI 4B	Yellow Black	**CG** Car Gate	Wired to a point after the car gate locks.	
MI 5A MI 5B	Pink Light Blue	**GL** Gate Lock	Wired to a point after the landing door locks.	
MI 6A MI 6B	Orange Grey	**DZ** Door Zone	Wire to a point that is supplied or cut when the lift moves into or out of the door zone.	Must remain functional while lift is moving if it is to be used for lift position.
MI 7A MI 7B	White/Red Yellow/Red	**OC** Open Contactor	Typically wired across the coil of the contactor that makes the door open.	
MI 8A MI 8B	White/Blue Yellow/Blue	**CC** Close Contactor	Typically wired across the coil of the contactor that makes the door close	
		PRLK Pre-Lock	Landing doors closed (but not locked) signal.	Manual gates option – auto doors may use SUP for pre-lock monitoring
MI 9A MI 9B	White/Green Yellow/Green	**DOL** Door Open Limit	Wire to a point that is supplied or cut when the door is fully open	If not available disable the input and set the Door open time (See 6.10.13)
MI 10A MI 10B	White/Brown Yellow/Brown	**UDF** (DMD) Demand	Signal to indicate the start of the lift cycle.	Monitor break or ramp lifting. If not available disable the input.
MI 11A MI 11B	White/Purple Yellow/Purple	**UP** Up Contactor	Typically wired across the contactor that causes or indicates Up movement.	
MI 12A MI 12B	Red/Black Green/Black	**DN** Down Contactor	Typically wired across the contactor that causes or indicates Down movement.	
MI 13A MI 13B	Red/Blue Green/Blue	**LPF** Landing Push Feed	Wire to the supply that feeds the landing call buttons after any fusing.	For buttons that ground their inputs. Monitor the call card supply.
MI 14A MI 14B	Red/Brown Green/Red	**LIN** On Independent Service	Wire to a point that is supplied or cut when on independent service.	
MI 15A MI 15B	Orange/Blue Orange/Green	**FS** On Fire Service	Wire to a point that is supplied or cut by use of the fire service switch.	
MI 16A MI 16B		**SPI** Supplementary input	Spare input for supplementary reporting. Can be used for pre-lock monitoring on auto doors.	
MO 1A MO 1B	Wired in Singles	**TFC** Top Floor Call	Output 1 to place a car call to the highest floor level.	
MO 2A MO 2B	Wired in Singles	**BFC** Bottom Floor Call	Output 2 to place a car call to the lowest floor level.	
ALM 1 ALM 2	Grey/Green Grey/Blue	**ALM** Alarm Push	Wired across the bell or a contact that supplies voltage when the alarm is pressed.	See EMU Specific I/O (3.1.1)
ALS 1 ALS 2	Grey/Brown Grey/Blue	**ALS** Alarm Supply	Wired across the supply to the alarm circuit.	See EMU Specific I/O (3.1.1)
ALV 1 ALV 2		**ALV** Verified Alarm	Output (**LS6**) to trigger an auto-dialler when a trapping is verified.	Also triggers if push is held for 10 seconds or EMU is faulty.

Lift I/O Mapping

3.2.2 Escalator

Term ID	Cable Colour	Signal	Connection	Reported Event
MI 1A MI 1B	Red White	Moving Up IP_UP	Escalator Controller Output Relay provides voltage to the EMU, when the escalator is running in the UP direction.	Started Moving Up / Stopped Moving Up
MI 2A MI 2B	Blue Green	Moving Down IP_DN	Escalator Controller Output Relay provides voltage to the EMU when the escalator is running in the DOWN direction.	Started Moving Down / Stopped Moving Down
MI 3A MI 3B	Brown Purple	Main Supply IP_MS	Escalator Controller Output provides voltage when all the Escalator supplies are healthy and reports a fault on the loss of this input. Should monitor both the high voltage supply for the motors and the low voltage supply for the logic.	**if IP_UP & IP_DN off:-** Regained Main Supply/ Lost main Supply **if IP_UP or IP_DN on:-** Main supply signal fault/ Main supply not faulty
MI 4A MI 4B	Yellow Black	Equipment Flt IP_GF	Escalator Controller Output Relay provides voltage when the escalator has stopped due any fault condition.	**if IP_UP & IP_DN off:-** Equipment Flt / Equipment OK
Signals below this point are supplementary, providing more accurate reporting if used.				
MI 5A MI 5B	Pink Light Blue	Emergency Stop IP_STOP_EMG	Escalator Controller Output Relay provides voltage when the escalator is required to stop due the Emergency stop button being pressed.	Emergency Stop/ Emergency OK
MI 6A MI 6B	Orange Grey	Fire Alm. Stop IP_ STOP_FIRE	Escalator Controller Output Relay provides voltage when the escalator is required to stop due to a suspected fire condition, either within the equipment or if interfaced to the fire alarm system, within the building.	Fire Alarm Stop/ Fire Alarm OK
MI 7A MI 7B	White/Red Yellow/Red	Engineer Access IP_ENG	Escalator Controller Output Relay provides voltage when an inspection cover is opened, indicating the presence of an Engineer working on the escalator. It also turns recording off to prevent his activity on the escalator causing reportable faults.	Engineer Access, Recording Off / Engineer Access Ends, Recording On
MI 8A MI 8B	White/Blue Yellow/Blue	Motor Fault IP_MOTOR	Escalator Controller Output Relay provides voltage when a Motor fault occurs.	Motor Fault/ Motor OK
MI 9A MI 9B	White/Green Yellow/Green	Step Band Flt IP_STEP_BAND	Escalator Controller Output Relay provides voltage when a Step Band fault occurs.	Step Band Fault/ Step Band OK
MI 10A MI 10B	White/Brown Yellow/Brown	Step Inlet Flt IP_ STEP_INLET	Escalator Controller Output Relay provides voltage when a Step Inlet fault occurs.	Step Band Entry Fault/ Step Band Entry OK
MI 11A MI 11B	White/Purple Yellow/Purple	Handrail Broke IP_HRAIL_BROKE	Escalator Controller Output Relay provides voltage when a Handrail broken fault occurs.	Handrail Broken/ Handrail OK
MI 12A MI 12B	Red/Black Green/Black	Handrail Entry IP_HRAIL_ENTRY	Escalator Controller Output Relay provides voltage when a Handrail entry fault occurs.	Handrail Entry Fault/ Handrail Entry OK
MI 13A MI 13B	Red/Blue Green/Blue	Break Release IP_BREAK_REL	Escalator Controller Output Relay provides voltage when a Break release fault occurs.	Break Release Fault/ Break Release OK
MI 14A MI 14B	Red/Brown Green/Red	Break Adjust IP_BREAK_ADJ	Escalator Controller Output Relay provides voltage when Break Adjustment is required.	Break Adjustment Fault/ Break Adjustment OK
MI 15A MI 15B	Orange/Blue Orange/Green	Low Oil Level IP_LOW_OIL	Escalator Controller Output Relay provides voltage when the Oil level gets low.	Oil Level Low/ Oil Level OK
MI 16A MI 16B	Blue/Black Purple/Black	Interface OK IP_INTERFACE_OK	Escalator Controller Output provides voltage when the wetting supply to the escalator's status relay contacts is healthy. I.e. the supply to the EMU's inputs is good and reports a fault on the loss of this input.	Interface Supply OK/ Interface Supply fault

Escalator I/O Mapping

3.2.3 MRL Lifts (Using Auxiliary Inputs to accommodate lower voltages)

Term ID	Cable Colour	Signal	Connection	Notes
AI 1A AI 1B	Red White	**ENG**	Engineer Key Switch	
AI 2A AI 2B	Blue Green	**NIS2**	Not In Service Indicator	
AI 3A AI 3B	Brown Purple	**AlmPr**	Alarm Pressed (Across the Bell)	
AI 4A AI 4B	Yellow Black	**NOP4**	Not Operational Indicator	Active Low

MRL Lift I/O Mapping

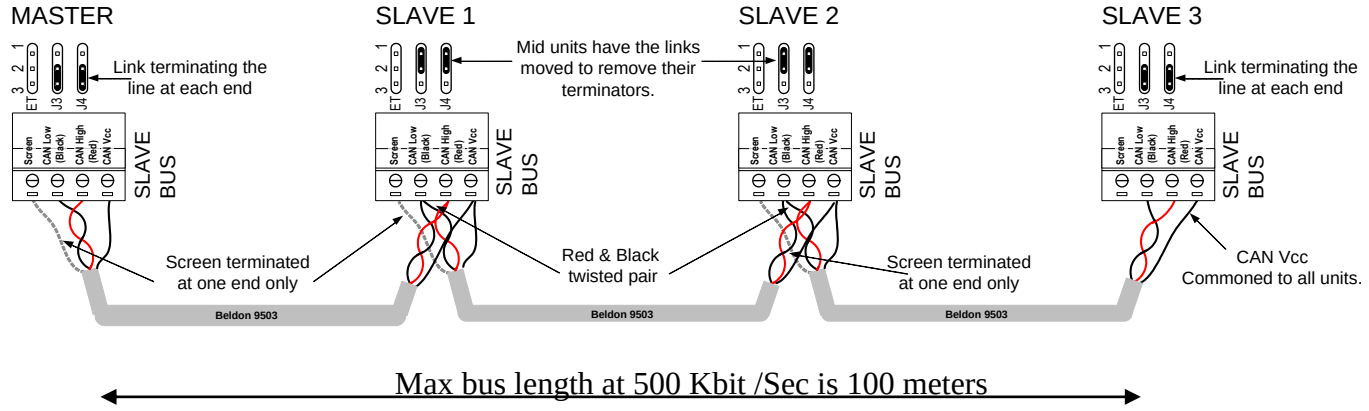
3.2.4 Airbridge

Term ID	Cable Colour	Signal	Connection	Notes
MI 1A MI 1B	Red White	**ENG**	Engineer Key Switch	
MI 2A MI 2B	Blue Green	**NIS2**	Not In Service Indicator	
MI 3A MI 3B	Brown Purple	**FLT3**	Fault indicated.	
MI 4A MI 4B	Yellow Black	**SUP**		
MI 5A MI 5B	Pink Light Blue	**NOP5**	Not Operational Signal	

Airbridge I/O Mapping

3.3 Linking to Slaves

The wiring of a Master EMU 3 to Slave EMU 3's is via a CAN Bus system. This is different to and NOT COMPATIBLE WITH EMU 1. The most significant difference is the need for the bus to be terminated with 120-Ohm resistors at the two ends of the Bus; jumpers J3 & J4 are provided for this purpose. On the EMU's at both ends of the linking cable, these jumpers should link pins 2&3, while on all the intermediate units they should be moved to link pins 1&2.



3.4 Linking to Ethos

Connecting an EMU 3 to the ethos lift controller using a serial connection is made using the CAN 2 port on the EMU's serial card and an ethos style lead. For the connection to operate properly the emu and ethos serial ports must be set to the same baud rate, this is detailed in section **6.9.3**. For connections to the ethos panel please refer to the engineering drawings.

4 INITIAL SETUP

Check the slide switch on the left of the CPU card. This should be in its lower position for normal running. The middle and upper settings are for testing and software loading, respectively.

4.1 Commissioning

Before EMU 3 can start reporting, it needs to be commissioned and then see a successful lift cycle. The following section outlines this procedure and references more detailed sections that describe the commissioning in more detail. Selections are made using the Left Hand Soft Key (LHSK) and Right Hand Soft Key (RHSK) and the Navigation Buttons, while Text and Numeric entries are made using the mobile phone style keypad.

Step	Section	Operation
Login as TVC from the Main Status Screen.	**5.5**	LHSK to get login list and LHSK again to **select "TVC". Enter the login code on the keypad & OK** with the LHSK. Engineer on site LED comes on.
Check Date and time.	**6.13**	This is shown at the top of the display. If not showing the current time select Main MENU with LHSK and **scroll down to the 12th item, "Set Time / Date"**. Use LHSK to select. RHSK to return BACK to the previous level.
Start Commissioning	**6.10**	From the top of Main MENU select the 9th item "Commission", and then **scroll down to "Restart from default"** and select with LHSK.
Personality	**6.10.1**	**Select customer specific defaults or standard EMU using the LHSK.**
Equipment Type	6.10.2	**Select the Equipment Type to be monitored with LHSK**. i.e. "LIFT"
Ethos Serial link	6.10.3	*This Screen is only seen if "LIFT" was selected in 6.10.2* **Select NO if wired conventionally , and then OK with LHSK**
Manual Gates	6.10.4	*This Screen is only seen if "LIFT" was selected in 6.10.2* **Select NO if powered doors are fitted, and then OK with LHSK**
Floor Level Type (Position Indication)	**6.10.8**	If DZ is wired to a signal that registers each level as it passes, then floor level can be left at "COUNT" otherwise change to "NO" **Scroll down until LHSK label show Finish and then select it.**
From this point on settings can be changed later using "Configuration"		
Group Setup Set the number of Slaves	**6.10.9**	If no slaves are present then just scroll down to Finish. Otherwise use LHSK to change the Number of Slaves in this group, and if this is not the Master to set the group ID of the slave. **Scroll down until LHSK label show Finish and then select it.**
Identification	**6.10.10**	The following must be set by selecting CHANGE with LHSK. **EMU Identifier**. Enter a 4 digit identifier in the form "0123" Other entries are made as a mobile phone text message would be. **Scroll down until LHSK label show Finish and then select it.**

Phone Number A	**6.10.11**	The following must be set by selecting CHANGE with LHSK. **Number.** Enter the primary telephone number to dial for the central system using the keypad. **Scroll down until LHSK label show Finish and then select it.**
Reporting	**6.10.12**	**Scroll down until LHSK label show Finish and then select it.**
LiftWatch	**6.10.13**	Review the default settings for the Lift monitoring timers. If no DOL input set "Door Open Time" to the actual opening time for this lift.
Commission review complete		**Select BACK with RHSK to display the Main Status Screen**
Run the Lift	**6.10**	**Review the "Waiting for" sequence until a full cycle is seen.**
Return to Commission		Select Main "Menu" and then "Commission".
Start Monitoring		Select Item 5 "Start Monitoring" If a complete lift cycle has been monitored the screen will confirm that monitoring has started.

Commissioning steps

4.2 *Configuring*

Configuration is the 9th Item on the Main Menu and allows the changing of some of the settings made during commissioning and the addition of a number of optional EMU features which may be require for a particular installation.

4.2.1 Optional Features

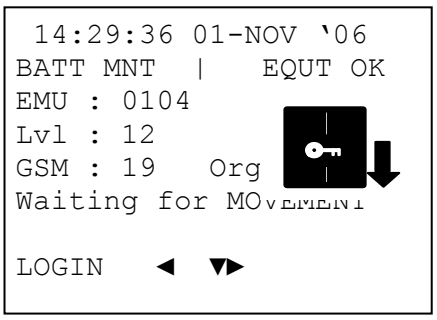
Lift Test	6.9.9.1	Sets when and how many times the EMU will actively test the lift. As the EMU 1 LSA test program.
Non-Invasive Monitoring	6.9.9.2	Set if this EMU is connected to a non-invasive monitoring unit via the CAN link.
Ethos Coms	6.9.9.3	Set if this EMU is part of an Ethos Panel and wired serially.
Manual Gates	6.9.9.4	Set's if the Lift is operating with Manual Gates.
Eng. Safety Alert	6.9.9.5	Enable the Engineer Safety alert feature for EOS protection. Will trigger an alert event if the Engineer does not re-login when the Confirmation timer expires. The EMU will issue a warning sound for the Warning time before conformation timer expires.
Motor Room Intruder	6.9.9.6	Enables the Motor Room Intruder feature. This requires the feature to be enabled, and then a spare Physical input to be mapped to the Logical Input 5 (MRINT) using "Input Config"
Shaft Intruder	6.9.9.7	Enables the Shaft Intruder feature. This requires the feature to be enabled, and then a spare Physical input to be mapped to the Logical Input 4 (SHAFT) using "Input Config"
Cabinet Tamper	6.9.9.8	Allows the cabinet tamper feature to be disabled and the timers adjusted.
Alarm Trapping	6.9.9.9	Allows the alarm verification feature to be disabled and the timers adjusted.
Isolation Program	6.9.9.10	Enables a Time Program with manual override to Isolate a Lift. A feature requested for Network Rail. The Logical Output 22 (ISOLA) must be mapped to a Physical Output using "Output Config" for this feature to operate.
Time Switch	6.9.9.11	Enables the Time Switch feature, which allows an output to be turned on and off at set times. The Logical Output 15 (TIMSW) must be mapped to a Physical Output using "Output Config"
Rear Doors	6.9.9.12	Allows the feature set during commissioning to be Enabled/Disabled.
CSL	6.9.9.13	Allows the feature set during commissioning to be Enabled/Disabled.
Safety Chain	6.9.9.14	Allows the feature set during commissioning to be Enabled/Disabled.
Floor Level	6.9.9.15	Allows the feature set during commissioning to be Enabled/Disabled.
Daylight Saving	6.9.9.16	Enable/Disable automatic BST/GMT time change and allows the setting of when the changes will be made.

Optional Features

5 STATUS & LOGIN SCREENS

Before an engineer logs in it is possible to view the following status screens. These show the condition of both the EMU and its associated equipment, and if the EMU is part of a Master/Slave group, the status of the other member of the group.

5.1 Main Status Screen



The Main Status Screen is in generally the first screen displayed and can always be reached by repeatedly pressing the RHSK (Back) or by resetting the unit. For a fully commissioned Lift EMU this screen will have an animated Lift Icon displaying the current state of the lift.

The top line shows the current time and date as set in the EMU. The second line shows the status of the EMU and the equipment it is monitoring.

5.1.1 The EMU statuses can be: -

"CAN DUPL"	– No CANBus comms as another node with the same ID has been detected
"CAN FAULT"	– the node has stopped broadcasting on the CANBus
"ON BATT"	– EMU power has failed
"TAMPER"	– cabinet tamper has been detected
"BATT MNT"	– EMU battery failed its monitoring
"EMU MNT"	– EMU maintenance required (MS or PSC signal faulty)
"EOS"	– an engineer is on site
"Call Limit"	– daily call limit has been reached. (a Test Phone Call will reset this to 0)
"Modem Fail"	– Modem failed to initialise.
"OutCallOff"	– Out calls are turned off, See SETUP (6.12)
"Call Fail"	– The last call failed to connect to the central system.
"AutoDialr"	– ALV output is triggering the auto dialler, wait before reporting an event.
"NOT COMMIS"	– EMU not commissioned
"EMU OK"	– none of the above

5.1.2 Monitored equipment statuses can be: -

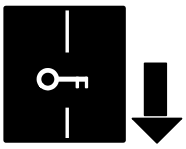
"TRAPPING"	– confirmed trapping
"EQUT FAULT"	– equipment is not operational
"SEC ALERT"	– security breach in the equipment or monitoring unit (EMU cabinet tamper, motor room intruder, or shaft intruder)
"NO SERVICE"	– equipment is operational, but will not respond to user requests
"MAINT DUE"	– reserved for future implementation of planned maintenance schedules
"ALM SUPP"	– alarm supply low, it failed its monitoring test.
"EQUT OK"	– none of the above

The left hand side of the third line shows the EMU ID. The left hand side of the fourth line shows the current floor level, if known, while for a GSM EMU the fifth line shows the signal strength and current network. The right hand side of the third to fifth lines shows the lift animation. The sixth line shows the current state of the LiftWatch algorithm.

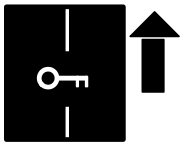
5.1.3 Equipment Status Display

5.1.3.1 Lift Mimic Graphic

Lift equipment door and motion status is graphically on the main display. The current direction of travel is shown as a directional arrow to the right of the door mimic. The arrow indicates the lift's current direction of travel and is dependent upon the movement inputs UP and DN.

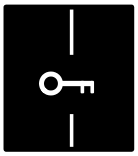


Lift movement is downward.
(DN input activated)

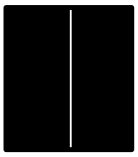


Lift movement is upward.
(UP input activated)

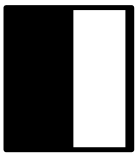
Seven door states are derived and are displayed a[illegible]w together with a brief indication of input status and door status text (in quotes) as vie[illegible]MDO display (see section 5.4.1): -



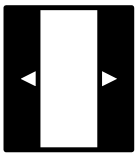
Car and landing doors are closed and locked (CG and GL inputs active).
"CLSD LCKD"



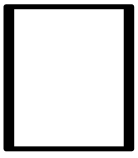
Car and landing doors closed but not locked (CG and PRLK inputs active).
"CLOSED" If "Pk" is seen to the right the lift is parked



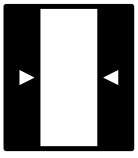
Car or landing door closed but not both (CG or GL active).
"PART CLSD"



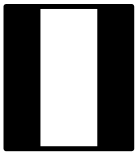
Doors are opening (CG and GL inputs inactive, OC input active).
"OPENING"



Doors have fully opened (CG and GL inputs inactive, OC has timed on, DOL input active).
"OPENED" If "Pk" is seen to the right the lift is parked



Doors are closing (CG and GL inputs inactive, CC input active).
"CLOSING"



Door state is indeterminate.
"NOT CLSD"

5.1.3.2 Lift Status Text

The current focus of the EMU's lift monitoring algorithm is displayed immediately below the lift mimic graphic. Upon completion of each phase of the monitoring cycle the EMU outputs the lift state it is waiting for next: -

"STIMULUS"	Waiting for the start of a new lift cycle, EMU is looking for demand, insertion of a test call or movement.
"DOORCLOSE"	Waiting for the lift doors to close. The doors are considered closed when the inputs CG and PRLK are active. This step is bypassed if the door inputs CG and GL are active.
"DOORLOCKD"	Waiting for the car and landing doors to locked i.e. inputs CG and GL active.
"MOVEMENT"	Waiting for lift movement, assumed when UP or DN inputs are active for a period of *Move Dly Time*. and the lift has moved out of Door Zone (DZ lost)
"LCKCONFRM"	Indicates the doors are being confirmed as closed and locked prior to a door opening cycle. To satisfy this condition CG and GL must still be active at the end of the *Move Dly Time*.
"DEST. FLR"	Waiting to see the gate-locks break after entering DZ. The check for door zone is made as the gate locks break. (Message was "DOOR ZONE" in previous versions.
"DOOR OPEN"	Waiting for the doors to open by checking for activation of DOL after OC has been active for at least *Door Open Time*, whilst CG and GL are inactive.
"FINAL CHK"	The final check ensures each of the preceding states, if applicable, have been observed and that the lift has stopped moving (UP and DN inputs inactive).
"PARK CHK"	Waiting to see if the doors attempt to close. If no CC is seen within the set time the lift has parked with its doors open.
"_____"	No text indicates the EMU has yet to be commissioned, follow the commissioning procedure (see section 6.10).

5.1.4 Soft key options and navigation arrows: -

The bottom line shows the LHSK & RHSK options, which are LOGIN|<blank> if no-one is logged in, or MENU|<blank> after login.

The down arrow displays the Group Status screen (see below), and the left and right arrows adjust the LCD contrast

5.2 *Group Status Screen*

```
 0104 OK   OK     1
 0111 PWR  FLT   12
>0112 BATT FLT    4
 0113 TAMP OK     2
 0114 OK   OK    11
 0115 EOS  OK     0
 0116 OK   FLT   21
SELECT           BACK
```

This screen shows the status of the whole group of EMUs connected to the same master EMU. It is accessed by pressing the DOWN key on the keypad. Return to the main status screen is by pressing the RHSK (labelled BACK). The master EMU is shown at the top, and the slave EMUs below it. The first column is the EMU's identifier, the second an abbreviated form of the EMU's status, the third column is an abbreviated form of the lift (equipment) status, and the last column is the lift floor level or blank if floor position is disabled.

By scrolling down to select a member of the group and then pressing the RIGHT arrow, or the LHSK, the EMU statuses screen be reached.

EMU status can be: -

"DupID"	– Another EMU with the same CAN bus ID has been detected.
"CanFt"	– CAN Fault; CAN bus wiring problem or unit powered down.
"OnBat"	– EMU power has failed, operating on battery.
"Tamp"	– Cabinet tamper has been detected.
"BatFt"	– EMU battery failed its monitoring test.
"Maint"	– EMU maintenance required (MS or PSC signal faulty)
"EOS"	– An engineer is on site
"BCall"	– Outgoing calls being blocked for one of a number of reasons. (See section 5.1 EMU main screen for possible reasons)
"NtCom"	– EMU is not yet commissioned.
"OK"	– None of the above

Lift (equipment) statuses can be: -

"Trap"	– Confirmed a passenger trapping.
"NOP"	– Equipment is not operational.
"NIS"	– No service (equipment is operational, but not providing service to the public)
"Maint"	– Reserved for future implementation of planned maintenance schedules.
"AlmSp"	– Alarm supply failed its monitoring test
"SecAl"	– Security breach in the equipment or monitoring unit.
"OK"	– None of the above.

5.3 *EMU Statuses*

```
    EMU STATUSES
TRAPPING
EQUT FAULT
NO SERVICE
CAN DUPL
BATT MNT

                 BACK
```

Select LHS key to allow more detailed information about the status of any unit in the group a particular unit can be selected from the Group Status Screen. It shows all the equipment statuses, followed by all the EMU statuses for the selected EMU.

5.4 *Toolbox Menu*

The toolbox key (spanner) reveals a supplementary Menu Screen for diagnostic routines; currently with three selections.

5.4.1 LMDO Status

```
    LMDO STATUS
Wait. For: STIMULUS
Doors (F): CLOSED
Rear  (R): CLOSED
Monitor T:
Delay Tim:
Tst Calls:
MORE                BACK
```

This screen provides more detailed information on the Lift Moving Door Opening (LMDO) tests performed by the EMU. The information is split between two screens, the second screen being accessed by the MORE key.

- **Wait For** Shows the current state of the lift cycle, as detailed in Section 5.1.3.
- **Doors (F)** The state of the Front Doors.
- **Doors (R)** State of the Rear Doors if monitored independently through an expansion unit.
- **Monitor Time** Starts with a lift cycle and shows the time allowed for the run to complete. If this timer expires before all the stages of a lift cycle have been seen then the test fails. This can then result in EMU placing a second call in the opposite direction, and if that fails recording a lift fault. *The initial value is set by the LiftWatch parameter "LMDO Cmpl Time" (LCT), or "Alarm LCT" (ALCT) depending on the reason for the test. (See 6.10.13)*
- **Delay Time** Is the time the EMU will wait before placing its own test call on the lift if there are outstanding test calls remaining. *The initial value is set by the Lift Test Feature "Idle Time" (IDLE).* (See 6.9.9.1)
- **Tst Calls** Is the number of remaining test calls the EMU is able to make on the lift. *The initial value is set by the Lift Test Feature "Max Lift Tests" (MXTST).* (See 6.9.9.1)

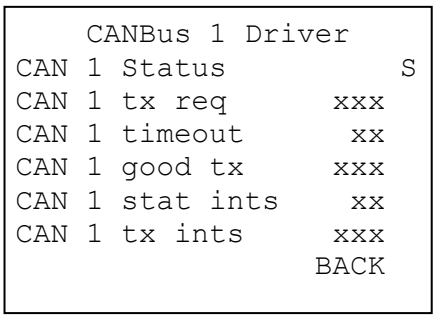
5.4.1.1 More LMDO Status

Select MORE to show the continuation screen.

```
    STATUS cntd
Test Calls  : 23
Passed      : 32
Failed      : 18
Last Failure:-
State = MOVEMENT

                    BACK
```

- **Test Calls** the number of active lift calls made by EMU.
- **Passed** the number of successful lift runs (passive + active).
- **Failed** the number of failed lift runs (passive + active).
- **Last Failure** the point of failure of the last faulty lift run.

5.4.2 CAN 1 Status

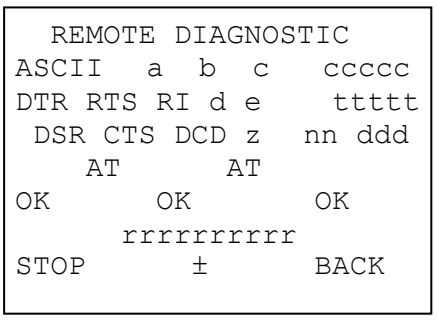


This screen shows the status of the interface between the Maser EMU and its Slave units along with statistics on the number of good and bad transmissions etc.

The status code S has the following values.

0	OK	3	Ack Error
1	Bus Offline	4	Send Error
2	EWARN	5	Receive Error

5.4.3 Remote Port Diag (Miniscope Screen)



It shows the status of the port used for remote communications, which could be the internal socket modem, or an external modem, depending on how "Startup Comms" on Configuration Menu has been set.
The capture of data is enabled by default, but must be stopped for reviewing.
Press the LHSK while running and the capture is stopped. The LHSK label changes to "RUN" to clear & restart monitoring.

While running, the modem control signals DTR, RTS, RI, DSR, CTS and DCD are the current state of the signals, but when reviewing the data, they represent the state of the signals at the review (cursor) point. Also displayed are:-

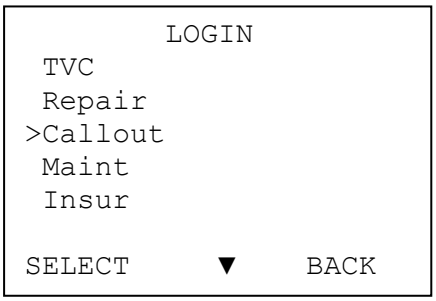
ASCII/HEX	Type of display of the remote communications.
ccccc	Count of the Tx & Rx characters displayed.
a	Remote Access main State
b	Remote Access command in progress
c	Remote Access Upload command's high level state
d	Modem connection state code (4 = Idle)
e	Call back off level when in Call Fail. 0=Last Call was successful.
ttttt	Timer in seconds to the next scheduled call from the EMU.
z	Reporting connection State code (0 = Idle).
nn	The number of successful calls made today. Used to trigger the Call Limit.
ddd	Reporting delay timer prevents dial out if further events are expected shortly.
rrrrrr	Reason for blocking an outgoing call.

The following controls are available in review mode: -

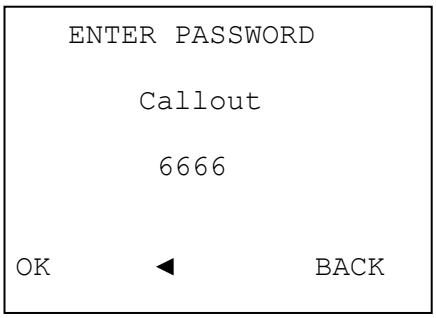
UP	Toggle the display between hex and ascii – the current mode is shown on the second line
LEFT	Move the review point back one character
RIGHT	Move the review point forward by one character
DOWN	Move the review point one screens worth forward or back depending on which of the LEFT or RIGHT keys was pressed last.

5.5 Login Screens

To allow the EMU to provide accurate information, it is important that any engineer logs onto the EMU before starting work on the lift. This enables the EMU to ignore any fault conditions that might arise from the work he is performing and prevents the EMU from placing any test calls on the lift and so causing unexpected movement. Depending on the role the engineer is to perform there are a set of user levels with appropriate access rights, as shown below.



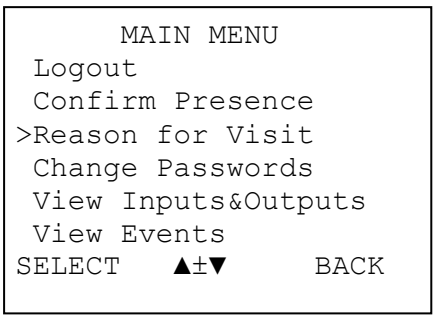
This screen is entered by pressing the Left Hand Soft Key (LHSK) on the main status screen while not logged in. A list of the defined User Ids is presented, which the user selects by using the UP and DOWN cursor keys to move the selection to the required entry, and pressing the LHSK to select.



This screen is presented when the user has selected a user id on the LOGIN screen. The engineer uses the keypad (in multi-tap mode) to enter the password, which is displayed on the screen as he types, then presses the LHSK when finished. The LEFT cursor key deletes the last character entered.

6 MAIN MENU

The management and settings of the EMU 3 are accessed through a series of cascading menu screens, with each item on a screen leading either to a further menu screen, or to detailed items.



This screen appears when the user has pressed the LHSK on the main status screen after logging in. The user selects a menu option by using the UP and DOWN cursor keys to move the selection to the required entry, and pressing the LHSK to select. Where there are more than six items in the menu, the items will scroll when the selection point reaches the top or bottom of the screen.

For the TVC engineer, the following menu items will be available:

- Logout
- Confirm presence
- Reason for Visit
- Change Passwords
- View Inputs&Outputs
- View Events
- Fixcodes
- Test Phone Call
- Configuration
- Commission
- Trace Log
- Setup
- Set Time/Date
- Switch Applications
- Modem Status

For a client engineer, the following restricted menu items may be available, depending on the engineer's configured capabilities:

- Logout
- Confirm Presence
- Reason for Visit
- Change Passwords *if configured with OWNPWD capability*
- View Inputs&Outputs
- View Events
- Test Phone Call *if configured with TESTCALL capability*
- Configuration
- Trace Log
- Setup *if configured with SETUP capability*
- Modem Status

6.1 Logout

Select with LHSK to logout. Some users are required to select a reason for visit before they are allowed to logout. This is done from the "Reasons For Visit" Main Menu Item.

6.2 Confirm Presence

```
  CONFIRM PRESENCE

        Maint

        MN2


OK       ◄ ±       BACK
```

This screen is presented when the user has selected the "Confirm Presence" main menu item. It is used if the engineer's safety alert feature is enabled and allows the engineer to confirm he has not had an accident. When the alert period sounds the engineer is required to enter his password using the keypad (in multi-tap mode) and then LHSK. This confirms he is still OK and prevents a safety alert message being sent to the central system. The LEFT cursor key deletes the last character of the password entered.

6.3 Reason For Visit

```
  REASON FOR VISIT
 Maintenance Visit
>Clean Gate Tracks
 Door operator adjust
 Floor level adjust
 Controller adjust
 Shaft equip. adjust
SELECT    ▲±▼      BACK
```

This screen is displayed when the user selects the "Reason for Visit" main menu item and displays a list of the reasons that are valid for the logged-on user. Use the UP and DOWN cursor keys to move to the required entry and then press the LHSK to select. Each selection operation causes the corresponding event to be added to the database. Multiple reasons for visit may be given and the screen remains displayed until the user presses the RHSK.

6.4 Change Password

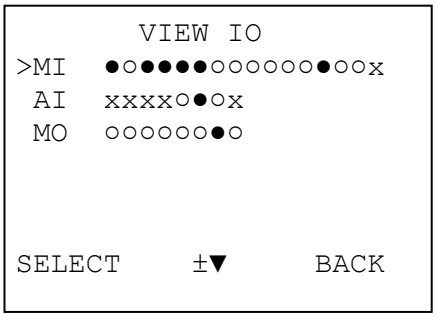
```
   CHANGE PASSWORD
 TVC
 5678
 Repair
 Callout
>Maint
 Insur
SELECT    ▲ ▼      BACK
```

This screen is presented when the user has selected the "Set Passwords" main menu item. A list of the defined User Ids is presented, which the user selects by using the UP and DOWN cursor keys to move to the required entry and pressing the LHSK to select.

```
   CHANGE PASSWORD

        Maint

        MN2


OK       ◄ ±       BACK
```

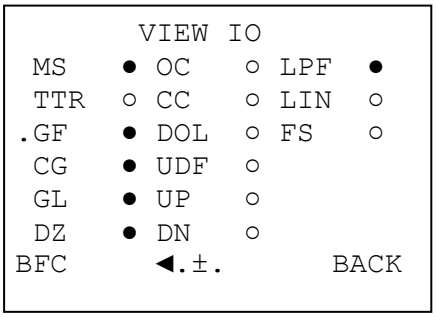
This screen is presented when the user has selected a user id on the CHANGE PASSWORD screen. The engineer uses the keypad (in multi-tap mode) to enter the password, which is displayed on the screen, then presses the LHSK when finished. The LEFT cursor key deletes the last character entered.

6.5 *View Inputs & Outputs*



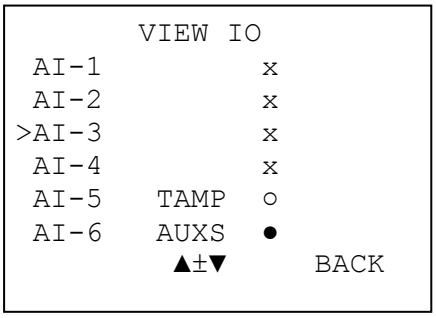
This screen appears when the user has selected the "View Inputs & Outputs" main menu item. The list of configured input and output groups (the three fixed ones and those on any expansion cards) and their states are presented to the user. Un-commissioned I/O are shown as an **x** while asserted I/O is shown as a spot **●;** this being a combination of the applied signal and invert status of the I/O. More detailed information can be seen by scrolling to a particular I/O block and selecting it with the LHSK.

6.5.1 View IO Screen (Main Input Selected)



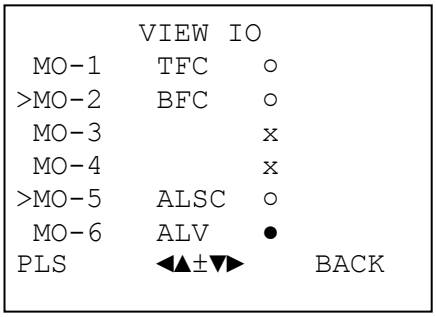
This screen is displayed when the user has selected a starting group of Main Inputs on the screen above, and shows the input's label and state. The user can place a Bottom Floor Call using the LHSK or of a Top Floor Call is required by using the Left hand cursor key to change the LHSK function to TFC.

6.5.2 View IO Screen (Auxiliary Input Selected)



This screen is displayed when the user has selected a starting group of Auxiliary Inputs on the screen above. The user scrolls through the list using the UP and DOWN cursor keys. Pressing UP at the beginning of a group displays the last point in the previous group, and pressing DOWN at the end of a group displays the first point in the next group. For an output point, the soft key options are different (see below).

6.5.3 View IO Screen (Output Selected)



With this screen, the user can use the LEFT and RIGHT cursor keys to cycle the LHSK between the three output control operations of SET, CLEAR and PULSE. Pressing the LHSK performs the operation on the selected output point.

6.6 *View Events*

```
     VIEW EVENTS
 View Latest Event
>View Oldest Event
 Find Record Number
 Find Event Code
 View Marked

SELECT    ▲±▼      BACK
```

This screen is displayed when the user has selected the "View Events" main menu item. The user selects a menu option by using the UP and DOWN cursor keys to move the selection to the required entry, and pressing the LHSK to select.

- View Latest Event — Display the most recent event in the events database.
- View Oldest Event — Display the oldest record in the events database.
- Find Record Number — Enter a record number and select the FIND LHSK.
- Find Event Code — Enter an event code and select the FIND LHSK.
- View Marked Event — Display a record previously marked.

6.6.1 Main View Event Screen

```
     VIEW EVENTS
Rec 31692    Code 123
Doors Not Closed Over
time
S/W  0000100000000000
Lvl 13     E/P 0x0000
Fri 02/06/06 14:35:23
OPTIONS  ▲±▼►    BACK
```

This screen is presented when the user has selected one of the "View" menu items from the above menu. The user selects other events by using the UP and DOWN cursor keys to display more recent or older events respectively. The LHSK allows the user to mark the record or find the next (oldest) record with the previously specified event code. The RIGHT cursor key steps to the next screen for the current event, the Input State screen.

The screens second line shows Rec, an incremental record number for this event in the list of stored events, followed by Code the event code for this event. The following two lines show the Event description for this event as specified in the Fixcode table. Line 5 (S/W) lists the status flags at the time of the event, a '1' indicating that state was active. Reading from left to right these are:-

- Equipment not operational. [MSB] The equipment has shown a fault.
- No lift service available. [4] The lift is on a special service and not generally available.
- Equipment maintenance due. [2] The equipment requires a maintenance visit.
- Lift trapping. [1] The alarm was pressed and the lift is not operational.
- Alarm push supply low. (8) The alarm supply is below 4.5 volts.
- EMU not commissioned. (4) The EMU has not been fully commissioned.
- Status Not Available (2) Status Information is not currently valid.
- Duplicate CAN id on slave link. (1) Two EMU's with the same "Group ID" setting.
- Outgoing Calls Blocked because: - [8] Call Limit, Out Calls Off, Call Fail, Modem Fail.
- CAN link communications failure. [4] The EMU has failed to communicate on the CAN link.
- Security Alert. [2] A security event, Shaft or Motor room intruder, triggered.
- EMU maintenance due. [1] An EMU maintenance event occurred.
- Engineer on site. (8) A local engineer is logged on.
- Battery test failed. (4) The last battery test failed to run for 30 minutes.
- EMU cabinet tamper. (2) The EMU cabinet was opened without a TVC login.
- EMU Supply lost. (LSB) The supply to the EMU unit was lost.

Line 6 shows the level that the lift was at when the event occurred, if lift position is enabled and this is followed by event specific supplementary data. The last line shows the date and time the event occurred at.

6.6.2 Input State Screen

```
     VIEW EVENTS
Inputs
   oo●oooo● o●●●oooo
   oooooooo
Previous Inputs
   oo●oooo● o●●●oooo
   oooooooo
        ◄ ± ►     BACK
```

This screen appears when the user has pressed the RIGHT cursor key on the main View Event screen. It displays the current and previous state of the inputs at the time the event occurred. The LEFT cursor key returns to the main View Event screen and the RIGHT cursor key steps to the next screen for the current event, the Output State screen.

6.6.3 Output State Screen

```
     VIEW EVENTS
Outputs
   oo●ooooo

Previous Outputs
   oo●ooooo

        ◄ ±       BACK
```

This screen is displayed when the user has pressed the RIGHT cursor key on the Input State screen. It displays the current and previous state of the outputs at the time the event occurred. The LEFT cursor key returns to the Input State screen.

6.7 Fixcodes

```
       FIXCODES
>123 39 ENA REC REP D
 Moving Overrun
 Inc:99999 Dec:99999
 125 40 DIS REC     S
 Maintenance Visit
 Inc:2600  Dec:100
OPTIONS  ▲±▼      BACK
```

This screen is displayed when the user selects the "Fixcodes" main menu item. The user selects the required fixcode by using the UP and DOWN cursor keys to move the selection to the required entry, and pressing the LHSK to change, which displays the options screen (see below).

6.7.1 Fixcodes Options

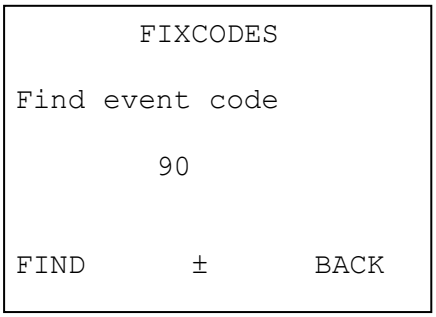
```
       FIXCODES
 Toggle ena/dis
 Toggle recording
>Toggle reporting
 Toggle dbl/sngl
 Change event inc
 Change timer dec
SELECT   ▲±▼      BACK
```

This screen is presented when the user selects a fixcode. The user selects the required action by using the UP and DOWN cursor keys to move the selection, and presses the LHSK.

The full set of options are: -

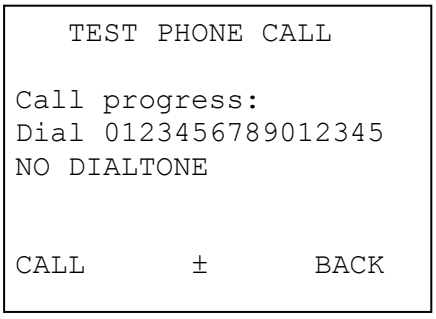
- Toggle ena/dis — Enable / Disable this event.
- Toggle recording — Enable / Disable recording this event.
- Toggle reporting — Enable / Disable reporting this event immediately back to central.
- Toggle dbl/sngl — Record both the assert and restore or just the asserting of the event.
- Change event inc — See event over reporting (Event code 3). Section 7.1
- Change timer dec — See event over reporting (Event code 3). Section 7.1
- Change event text — Update the event description.
- Find event code — Go to the screen below.

6.7.2 Fixcodes – Find an event code.

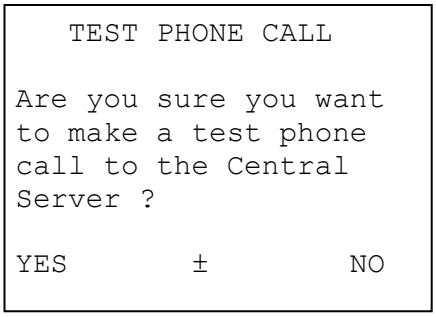


This screen is displayed when the user has selected the "Find event code" menu item from the Fixcodes option menu. The engineer uses the keypad to enter the required event code then presses the LHSK when finished. The LEFT cursor key deletes the last character entered.

6.8 Test Phone Call



This screen is displayed when the user selects the "Test Phone Call" main menu item. It displays the details of the current or last call, including number dialled, and the result of the call. Pressing the LHSK displays the "call" screen (see below).



This screen is displayed when a test phone call is to be initiated. Pressing the LHSK will initiate a new call before returning to the progress screen.

6.9 *Configuration*

6.9.1 Group Setup

This is the same screen as used for commissioning the group (Section 6.10.9), and allows the reconfiguring of the group after the initial installation.

6.9.2 Identification

This is the same screen as used for commissioning the EMU (Section 6.10.10), and allows the reconfiguring of the EMU after the initial installation.

6.9.3 Startup Comms

```
    Startup Comms
 Modem Init 1
 "E0V1"
>Modem Init 2
 "&C1&D2S0=2"
 Remote Port

DETAIL    ▲±▼      BACK
```

This series of screens provides the modem and port configuration information for the EMU's serial devices.

- `Modem Init 1` — First set of modem commands to initialise the modem.
- `Modem Init 2` — Second set of modem commands to initialise the modem.
- `Remote Port` — Access the modem port configuration screen.
- `Local Port` — Access the local CPU serial port configuration screen.
- `CANBus 1 Speed` — Select the speed of the slave linking bus. Must be the same for all EMUS in the group.
- `CANBus 2 Speed` — Select the speed of CAN bus 2. Should be set to the same speed as the ethos controller.
- `External Modem` — NO Selects the socket modem as the remote port.
  YES Selects the 9 pin D connector on the serial card.

6.9.3.1 Remote Port Settings

```
    Remote Port
 Rem Line Speed
 B115200
>Rem Data Bits
 8
 Rem Stop Bits
 1
DETAIL    ▲±▼      BACK
```

The remote port provides access to the modem used to communicate with the central system. One of two ports can be assigned for this purpose using the last setting on the Startup Comms screen. COM 1 is the socket on the serial card in which a socket modem is inserted. COM 2 is the 9 pin D connector on the serial card to which an external modem can be plugged.

- `Rem Line Speed` — Select the required baud rate from the list. For Ethernet connections this should be B115200
- `Rem Data Bits` — Enter the number of data bits, either 7 or 8.
- `Rem Stop Bits` — Enter the number of stop bits, either 1 or 2.
- `Rem Parity` — Select the parity option from the list.
- `Rem Flow Cntrl` — Select the flow control method from the list.

6.9.3.2 Local Port Settings

```
    Local Port
 Loc Line Speed
 B57600
>Loc Data Bits
 8
 Loc Stop Bits
 1
DETAIL    ▲±▼      BACK
```

The local port provides access for a local PC to connect to the EMU for interrogation and software updated. The port settings should match those of the connected PC and to initiate communications the engineer should type SPACE SPACE on the PC's keyboard. This will trigger the login screen.

- `Loc Line Speed` Select the required baud rate from the list.
- `Loc Data Bits` Enter the number of data bits, either 7 or 8.
- `Loc Stop Bits` Enter the number of stop bits, either 1 or 2.
- `Loc Parity` Select the parity option from the list.
- `Loc Flow Cntrl` Select the flow control method from the list.

6.9.4 Input Config

```
  Input Config MI-1
>Enabled
 YES
 Logical I/P Sig
 MS
 Description
 "Main Supply"
CHANGE   ◄▲±▼►     BACK
```

These screens displaying the input configuration applied when the Equipment Type was selected, See Lift I/O Mapping. A specific input is selected using the Left & Right Cursor keys, with the selected Input identification being shown at the top of the screen. Using this screen default configurations can be change to suite site conditions and uncommitted inputs assigned to special functions See Auxiliary Wiring Details

- Enabled — Signal is wired and in use. Some signals can be disabled if the input can't be found.
- Logical I/P Sig — Which logical input, this signal will control. The software is controlled by logical inputs which are linked to a physical input through this setting.
- Description — Text description of the signal the input is monitoring.
- Mnemonic — The signal name for this input.
- Invert — Is the input inverted. If YES then when voltage is lost the signal is asserted.
- Invert Depend — If the input is inverted then it will be dependent on another signal being present before its loss should be registered.
- On Delay — Delay when the On edge is seen in increments of 0.1 Sec.
- Off Delay — Delay when the Off edge is seen in increments of 0.1 Sec.
- Protected — All pre-allocated inputs are protected to prevent reallocation later.

6.9.5 Output Config

```
  Output Config MO-1
>Enabled
 YES
 Logical O/P Sig
 TFC
 Description
 "Btm Floor Call"

CHANGE  ◄▲±▼►     BACK
```

In a similar way to the inputs these screens shows the configuration of the EMU's Outputs. Use the Left & Right cursor keys to select an output. Only the first two outputs relate to Lift Control though others may be added to meet specific installation requirement.

- Enabled — The output is controlled by some internal logic.
- Logical O/P Sig — The logical output that controls this relay.
- Description — Text description of the signal the output provides.
- Mnemonic — The signal name for this output.
- Invert — Inverts the operation of the relay, breaking when an assert is seen.
- Power Up State — What state the relay should take when power is applied and before the logic has time to take control of the output.
- Protected — Protection prevents reallocation of the output later.

6.9.6 Reporting

```
     Reporting
 Phone Numbers

 Number Order
 "AB"
>Max Rprt Calls
 12
DETAILS ◄▲±▼►     BACK
```

This screen configures how events are reported back to the central system. It allows a number of alternate telephone numbers to be stored within the EMU to provide alternate numbers in case the first number is unavailable. It also allows the number of calls made per day to be limited and to force an integrity call if no calls have been made for the set time.

- Phone Numbers — Access a sequence of screens, which allow 8 alternate telephone numbers to be defined.
- Number Order — Having defined alternate telephone numbers, the order they are tried is set by listing their ID letter in the order they are to be tried. If one number fails to answer the next in the sequence is tried.
- Max Reportable calls — This sets the maximum number of phone calls the EMU can make in a day. When this limit is approached the Call Limit event is sent warning the central system that the EMU will not report faults for the rest of the day.
- Call Interval — Sets the max time allowed between calls to the central system. If no faults have occurred for this period the EMU makes a routine call to confirm the integrity of the communications system.
- EMU IP Address — EMU's local network IP address.
- EMU Port No. — EMU's network port number.
- EMU Net Mask — EMU's subnet mask.
- EMU Gateway — The local network's gateway address.
- CMS IP Address — The external IP address of the CMS it is to report too.
- CMS Port No. — The external Port number for the CMS.

6.9.6.1 Phone Numbers (Not required for Ethernet connections)

```
   Phone Numbers A
>Enabled
 YES
 Office Name
 "CMS Line 1"
 Number
 "01352793222"
```

Accessed from the Reporting screen. This is a sequence of 8 screens, which can be scrolled through using the Left & Right cursor keys. Scrolling to the Right the phone number records A to H are displayed, each permitting the definition of an alternate telephone number.

- Enable — Enable this record to be used for dialling out.
- Office Name — The Name of the place this number will connect to.
- Number — The number to dial. This can also contain non-numeric characters provided they are valid for the modem being used, such as ',' to introduce an inter character delay.

6.9.7 Users

```
      Users A
 Enabled
 YES
>User Identity
 "TVC"
 Capabilities
 TETCALL, TIMSW IO
```

The users configuration screen allows the existing or new users to be set to particular client requirements. It is a sequence of 9 screens, which can be scrolled through using the Left & Right cursor keys. Scrolling to the Right the users records A to I are displayed, each permitting the configuration of what that user can access within the EMU, the reasons for a visit that are available for selection and whether a selection is mandatory before logging out. Settings for each user are shown in section 7.3 User Defaults

- Enabled — Enable this user for logging onto the EMU.
- User Identity — The user name for selection from the Login Screen 5.5
- Capabilities — Access a screen for selecting the functionality available to this user.
- Valid Reasons — Enable/Disable the reasons for visits that this user can select from.
- Mandatory — If "YES" this user must select a reason for visits before logging out.
- Disable Record — If "YES" recording of lift events will be disabled when the user is logged in.
- Logon Source — Allow logon from LOCAL keypad, REMOTE computer or BOTH.

6.9.8 LiftWatch

This is the same screen as used for commissioning the Lift algorithm (Section 6.10.13), and allows the reconfiguring of these settings.

6.9.9 Features

This sub-menu allows EMU 3 Feature options to be configured as follows.

6.9.9.1 Lift Test

```
       Lift Test
  Enabled
  YES
 >Start Time
  08:00
  End Time
  18:00
DETAIL    ±     BACK
```

To ensure the Lift is in a fully working condition the EMU has the capability of placing routine test calls on the lift. By default the Lift Test feature is enabled allowing these checks to be performed. Having seen the Lift perform a successful run the EMU waits the "Idle Time" before placing its own active test on the Lift. The number of active test and the time of day active testing is allowed are configured here.

- Enabled — Enable the EMU to place routine test calls on the lift to check its operation.
- Start Time — Time of day to start active lift tests.
- End Time — Time of day to stop active lift tests. Used for residential blocks to limit lift movement during the night.
- Max Lift Tests — The number of active test that can be placed on the lift after a passive run. (Note: 1 lift test may consist of 2 lift calls if the first call fails)
- Idle Time — The time the lift must remain Idle before an active test can be placed on the lift.

6.9.9.2 Non-Invasive Monitoring

```
       Non-Inv Mon
  Enabled
  YES
 >Accl for Up/Dn
  YES
  Min Accl Time
  4x100ms
DETAIL    ±     BACK
```

On some lift controllers signals can difficult to acquire directly from within the controller itself. To ensure the EMU has all the signals required to properly monitor the lift a Non-Invasive monitoring unit can be placed on top of the lift car in order to monitor various signals and transmit them via the CAN network back to the EMU.

See section 7.7 for a diagrammatic representation of the following parameter descriptions.

- Enabled — Enables the CAN link between the EMU and the Non-Invasive monitoring unit.
- Accl for Up/Dn — Enables the use of the Non-Invasive monitoring unit's on-board accelerometer for determining direction of travel, rather than discrete Up and Down wired inputs.
- Min Accl Time — Sets the minimum period of time that continuous acceleration must be detected to indicate the start of a new journey.
- Min Dcel Tests — Sets the minimum period of time that continuous deceleration must be detected to indicate the deceleration phase of the current journey.
- End Stop Time — Sets the minimum period of time that the lift must be observed at rest to terminate the current journey sequence.
- Idle Stp Time — If no acceleration/deceleration is observed for this period of time the lift is assumed to have stopped moving.
- Zero G Tol. — Sets the minimum observable G reading for background noise elimination.

6.9.9.3 Ethos Comms

Enabling this feature remaps all the Main Inputs (MI1-16) from the physical inputs on the mother board to the CAN 2 connection to a TVC Ethos Lift controller. This simplifies wiring when integrating EMU and Ethos equipment. The baud rate for this connection must be the value as on the ethos controller. See section **6.9.3**

6.9.9.4 Manual Gates

Enabling this feature modifies how the LiftWatch algorithm checks the lift and permits the monitoring of a pre-lock input, if available, to determine if an active lift test can be placed on the lift. For manual gates lift the OC and CC inputs are not available, however CC or SUP can be used to pick up the pre-lock signal.

6.9.9.5 Engineer Safety Alert

```
    Eng Sfty Alert
  Enabled
  NO
 >Confirm Time
  3Hrs
  Warning Time
  15Min
DETAIL     ±      BACK
```

The Engineer Safety Alert is intended to raise an alert if the engineer is unable to re-login to the EMU whilst working on site. If this feature is enabled and having logged in a timer is started and the engineer must re-login to the EMU before the "Confirm Time" has expired. If not the EMU will alert the central system that the engineer may be injured. To remind the engineer that the confirm time is about to expire the EMU will sound a repeated alert beep for the "Warning Time" period prior to the confirm timer expiring.

6.9.9.6 Motor Room Intruder

```
    Motor Rm Intrd
  Enabled
  NO
 >Login Time
  3Min
  Reset Time
  2Min
DETAIL     ±      BACK
```

Triggered by a switch or sensor when the engineer enters the motor room, the EMU allows him the "Login Time" to enter a valid login code at any EMU keypad within the motor room. If this is not done a Motor Room Intruder event is sent to the central system. If the event is triggered inadvertently then logging into any of the EMUs restores the event. If an engineer fails to login the event will clear automatically after 3 days providing the motor room door remains closed. This prevents a build-up of events at the central

IMPORTANT: To allow this feature to operate an input must be allocated using "Input Config" (Section 6.9.4 and the notes below).

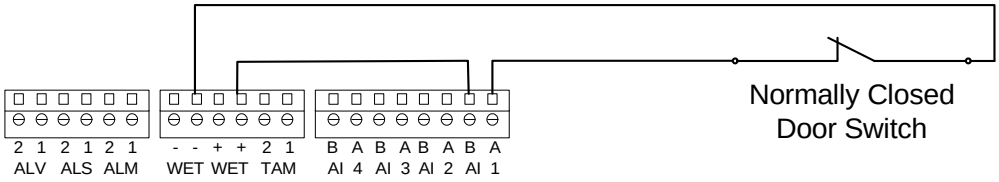
- Enabled — Enable the EMU to report a Motor Room Intruder.
- Login Time — Time allowed for the engineer to login after entering the motor room. The EMU will start to beep until the login is accepted.
- Reset Time — Time allowed, after logging out, for the engineer to leave the motor room before the alarm becomes enabled again.
- Use Local Alarm — Set to YES and configure one of the EMU's output relays to LALM, will provide a local alarm signal, if the login timer expires without a valid login.

In addition to these settings the input used for monitoring the door switch must be mapped to this feature.

Use “Input Config” to select the Auxiliary input that the door switch is wired to (any of the 4 AI inputs can be used) and assuming a normally closed door contact as shown below then the input should be configured as follow :-

- Enabled YES Enable the Selected Input
- Logical I/P Sig MRINT This setting maps the physical input to the software that will monitor and report a motor room intruder event.
- Description (Skip) This setting will automatically fill when the logical input is selected.
- Mnemonic (Skip) This setting will automatically fill with “MRINT” when the logical input is selected.
- Invert YES Because the normally closed contact is used the loss of the signal is the assert condition, so the inputs operation needs inverting.
- Invert Depend AUXS The signal is dependent on the Auxiliary Supply (WET) being present. If the Supply is lost this dependency prevents the false reporting of an intruder event.
- On Delay 0 Should not normally be needed.
- Off Delay 0 Should not normally be needed, but could be set to suppress momentary breaks due to a door rattling.
- Protected. NO This input is not part of the Lift configuration and so is not protected.

Typical motor room intruder wiring using a normally closed door contact, supplied from the auxiliary wetting supply.



6.9.9.7 Shaft Intruder

```
    Shaft Intruder
  Enabled
  YES
 >Reset Time
  5Min


DETAIL     ±      BACK
```

Triggered by a shaft protection device; this feature will immediately report when the signal is asserted. When the signal is reset it will restore and rearm itself after the designated Reset Time.

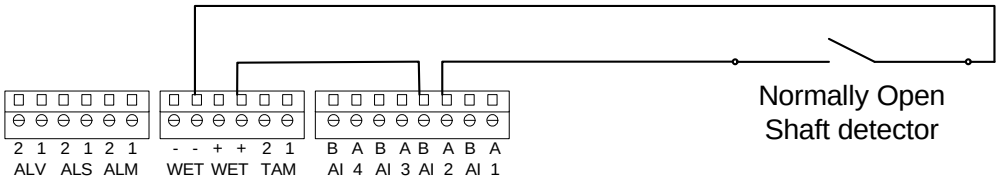
IMPORTANT: To allow this feature to operate an input must be allocated using “Input Config” (Section 6.9.4 and the notes below).

In addition to these settings the input used for monitoring the Shaft Intruder signal must be mapped to this feature.
Use “Input Config” to select the Auxiliary input that Shaft Intruder detector is wired to (any of the 4 AI inputs can be used) and assuming a normally open contact as shown below then the input should be configured as follow :-

- Enabled YES Enable the Selected Input
- Logical I/P Sig SHAFT This setting maps the physical input to the software that will monitor and report a shaft intruder event.
- Description (Skip) This setting will automatically fill when the logical input is selected.

• Mnemonic	(Skip)	This setting will automatically fill with “SHAFT” when the logical input is selected.
• Invert	NO	Because a normally open contact is used the assert condition is detected normally.
• Invert Depend	(Skip)	The signal is not inverted and so this setting is ignored.
•		
• On Delay	0	Should not normally be needed.
• Off Delay	0	Should not normally be needed.
• Protected.	NO	This input is not part of the Lift configuration and so is not protected.

Typical shaft intruder wiring using a normally open contact supplied from the auxiliary wetting supply.



6.9.9.8 Cabinet Tamper

```
    Cabinet Tamper
  Enabled
  YES
 >Reset Time
  120secs


DETAIL     ±      BACK
```

Optional Feature triggered by the pre-wired micro switch in the cabinet this feature will immediately report a cabinet tamper event if the EMU is opened without the TVC login code being entered. The event will remain triggered until a valid TVC login is made even if the cabinet is closed again. The feature is reactivated “Reset Time” seconds after the TVC engineer Logs out.

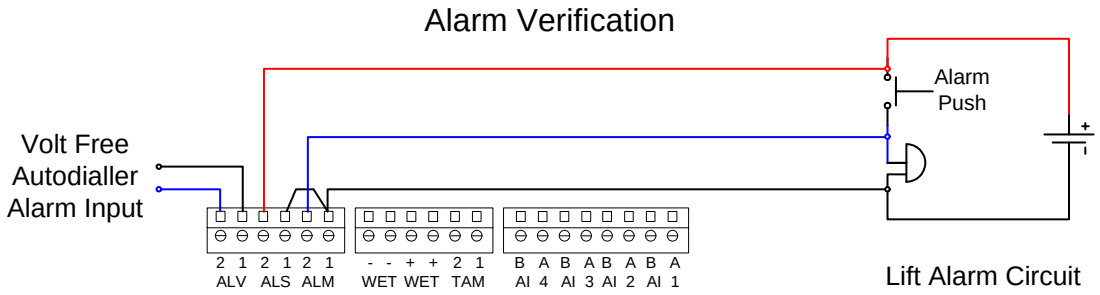
By default this feature is inactive, but the Auxiliary Input AI-5 is tracked to the auxiliary supply ready for it.

6.9.9.9 Alarm Trapping

```
    Alarm Trapping
  Enabled
  YES
 >Alarm Push Time
  3secs
  Trap Pulse Len
  1sec
DETAIL     ±      BACK
```

The Trapping Alarm feature is enabled by default and allows the EMU to verify that a passenger is genuinely trapped if the Alarm Push is pressed. It does this by placing a call on the lift to see if it will move and open its doors. If the doors open then the passenger can't be trapped and the EMU will not trigger the autodialler. If however the lift fails to open its doors then the verified alarm output ALV is pulsed to signal the autodialler to make its call.

- Enabled — Enable the EMU to verify and report trapping events.
- Alarm Push Time — Time the Alarm Push must be pressed before it accepted as a call.
- Trap Pulse Len — The length of the Pulse given to the autodialler through the ALV output relay.
- Reporting Delay. — Before reporting any event, delay it for this length of time to allow the sequence of reporting to be set.
- CSL Delay. — Having confirmed a trapping event delay the CSL reporting it for this length of time to allow the sequence of reporting to be set.
- Trapping Delay — Having confirmed a trapping event delay pulsing the Verified Alarm Output ALV by this length of time to allow the sequence of reporting to be set.



6.9.9.10 Isolation Pr

```
    Isolation Pr
 >Enabled
  NO
 Isolation Strt
 20:00
 Isolation Ends
 05:00
DETAIL     ±      BACK
```

The Isolation Time Program is an optional feature for Network Rail to automatically isolate a lift at certain times of the day. It controls the ISOLA logical output. This needs to be allocated to a physical output to allow the feature to work regardless of whether it is to be wired directly to the lift or if the feature is controlled serially to an Ethos.

A remote user can use the ViewIO screen to override the ISOLA output should the lift need to be used during the isolation period.

- Override Dur. — The number of minutes a manual override of the isolation program will last.

6.9.9.11 Time Switch

```
     Time Switch
  Use LSA Times
  NO
 >Start Time
  09:00
  End Time
  20:00
DETAIL     ±      BACK
```

The time switch feature allows a selected relay output to be programmed to switch at a given time of the day. This can follow the LSA time program or can be set to have its own Start and End time as shown.

IMPORTANT: To allow this feature to operate an output must be allocated using "Ouput Config" (Section 6.9.5 and the notes below).

- Enabled — YES — Enable the Selected Output
- Protected. — NO — This output is not part of the Lift configuration and so is not protected.
- Mnemonic — (Skip) — This setting will automatically fill with "TIMSW" when the logical input is selected.
- Description — (Skip) — This setting will automatically fill when the logical input is selected.
- Invert — NO — This can be changed to YES to invert the output function from Normally Open to Normally Closed.
- Power Up State — OFF — Set the state the relay should be set to while it is powering up and before the software has full control of the output.
- Logical O/P Sig — TIMSW — This setting maps the time switch's logical state to this physical output.

6.9.9.12 Rear Doors

```
    Rear Doors Tamper
 >Enabled
  NO



DETAIL     ±      BACK
 OK      ◄ ±      CLEAR
```

Enabling the Rear Doors feature provides independent monitoring and fault reporting of the Rear Doors, however to achieve this the additional inputs provided by an expansion unit are required and need to be allocated during commissioning. (See section 6.10.6**).**

If independent reporting is not required and rear doors are being monitored by combining front and rear door signals on the interface rail, then this feature can be left disabled.

6.9.9.13 CSL

```
        CSL
 >Enabled
  NO



DETAIL     ±       BACK
```

Enabling the CSL feature provides equipment status information to a CSL expansion unit. This unit must be identified and allocated during the Commissioning phase (See Section 6.10.5).

Its function is to allow 4 status conditions for the Master EMU (The EMU the CSL expansion is connected to) and optionally 4 conditions for a designated slave EMU to be sent to the LiftCall24 monitoring service. The status event transmitted are :-

Trapping, Lift Not Operational, Engineer On site & EMU OK.

6.9.9.14 Safety Chain

```
    Safety Chain
 >Enabled
  NO
  Num of Inputs
  1


DETAIL     ±       BACK
```

This feature enables more detailed information to be reported when a Lost Primary Safety Circuit event is triggered. It enables a block of expansion inputs allocated at commissioning time (See Section 6.10.7) to be connected to the safety chain in order, and so determine the stage at which the break occurs.

6.9.9.15 Floor Level

```
    Floor Level
 >Enabled
  YES




DETAIL     ±       BACK
```

This feature enables the lift position to be determined by reading a block of inputs allocated at commissioning time (See Section 6.10.8). The type of signals monitored is chosen at commissioning and can range from a single pulsed input such as DZ which can be counted to determine position. Discrete inputs where each input is wired to an individual floor sensor. BCD where the block of inputs are wired to an indicator output using BCD coding or finally a Binary input where the indicator output is a binary code.

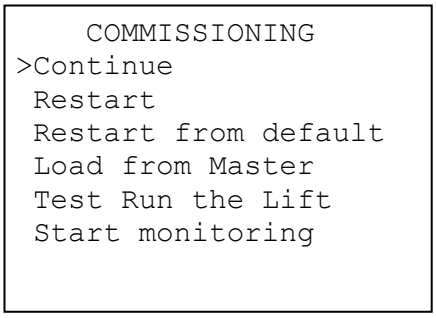
6.9.9.16 Daylight Saving

```
   Daylight Svngs
>Enabled
 YES
 Start Params

 Stop Params

DETAIL     ±       BACK
```

This feature enables the automatic update of the EMU's clock when a daylight saving (BST/GMT) time change is required.
The Start and Stop Parameters enable the exact time of the year that daylight saving should come into operation and when it is cancelled. These times are set by default for the current British Summertime rules starting at 1:00am on the last Sunday in March, and stopping at 2:00am on the last Sunday in October.
These settings can be changed for different locations in the world using the following :-

- Hour of Day — The Time at which the change will be made.
- Day of Week — This determines which day the change will take place on.
- Week of the Month — The last week of the month is set by entering 5 while for a rule which required the change on the second week in the month then 2 would be entered.
- Month — The month that the change is to occur in.

6.10 Commission



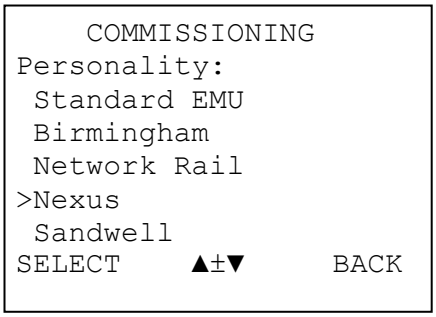
This is the initial commissioning screen that guides the user through a sequence of screens to configure the essential items for a functioning EMU. The engineer may **Continue** with a previous commissioning sequence, in which case it starts from the current point. **Restart** the commissioning, starts from the beginning again with the current values retained. **Restart from default**, starts from the beginning again with values set to their defaults. **Load from Master,** which loads a Slave's configuration from a previously configured Master EMU. **Test Run the Lift** triggers a lift call using one of the main output relays. **Start monitoring** or attempt to start monitoring. This is the final step in the commissioning process and it tests the configuration and requires the EMU to monitor a successful LMDO run of the lift before marking the EMU as commissioned. Monitor the progress of the test from the Main Status Screen A failure to follow the lift's sequence will be indicated by the "Waiting for" state giving an indication which of the signals configuration needs to be altered.

Before the EMU can start monitoring it must be successfully commissioned.

The first few screens gather information about the overall configuration of the EMU and the monitored equipment. After this information has been gathered, the remaining screens require the engineer to review the configuration items and accept or update them. These screens will follow the form and content of the Configuration screens for the relevant items.

The sequence of screens and items are as follows:

6.10.1 Personality



This is the first screen in the commissioning sequence, and applies customer specific default settings. Certain customers have non-standard configuration requirements, which are applied by selecting their personality option on this screen. For all other customers the "Standard EMU" option should be selected and any special options configured individually.

6.10.2 Equipment Type

```
    COMMISSIONING
Equipment type:
 LIFT
 H.ROW MRL
>ESCALATOR
 AIRBRIDGE
.OTHER

SELECT     ▲±▼      BACK
```

This is the second screen in the commissioning sequence, and requires the engineer to enter the type of equipment being monitored. If Lift or Escalator is selected, then the EMU will set up the committed signals defined for this equipment. If Other is selected, then all I/O must be set up manually.

6.10.3 Non-Invasive Monitoring

```
    COMMISSIONING
Non-Inv Mon:
 >No
  Yes


OK         ±▼       BACK
```

If the EMU is linked to the TVC Non-Invasive Monitoring unit via the CAN link select YES. This allows various I/O signals to be reassigned to the NIM unit for monitoring purposes.

If enabled the CAN2 Baud rate may need to be changed to match the ethos controller. See **Section 6.9.3**

6.10.4 Ethos Serial link (Only seen if Equipment type "LIFT" is selected at 6.10.2)

```
    COMMISSIONING
Ethos Comms:
 >No
  Yes


OK         ±▼       BACK
```

If the EMU is linked to the TVC Ethos lift controller using a serial CAN link select YES. Otherwise it will be connected using the physical inputs MI 1-16 and the default selection of NO is used.

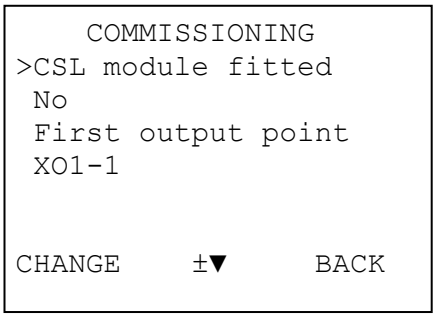
If enabled the CAN2 Baud rate may need to be changed to match the ethos controller. See **Section 6.9.3**

6.10.5 Manual gates (Only seen if Equipment type "LIFT" is selected at 6.10.2)

```
    COMMISSIONING
Manual Gates:
>NO
 YES


OK         ±▼       BACK
```

Select **NO** and the input configuration for automatic doors will be configured or **YES** to select the manual gates input configuration (pre-lock monitoring on MI-7) and to turn off door open and close monitoring. Pre-lock monitoring may still be enabled on auto doors by manually assigning the logical input PRLK to an unused physical input.

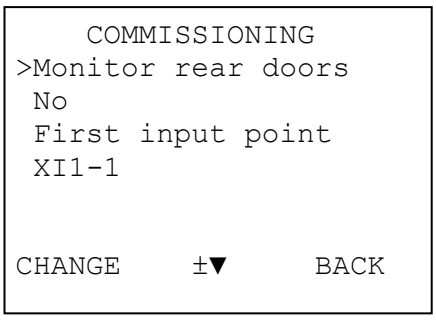
6.10.6 CSL Module (Only seen if eXpansion Input card is added)



This is the fourth screen in the commissioning sequence and requires the engineer to specify whether a CSL module is fitted and where it is connected. This is only applicable to a Master unit. The first output point will be preset with the first valid point that is compatible with the requirements.

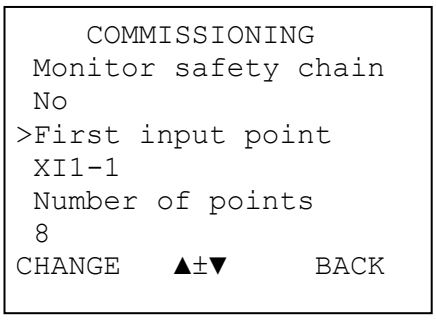
There is a blank item at the end of the list of values. When this is selected, the LHSK will show FINISH to allow the user to move to the next stage of commissioning.

6.10.7 Rear Doors (Only seen if eXpansion Input card is added)



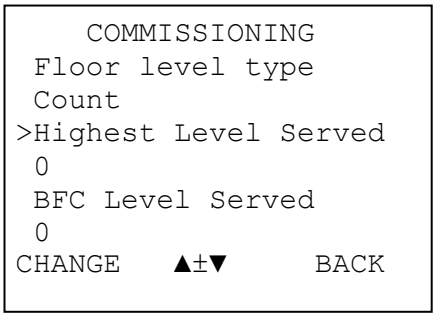
This is the fifth screen in the commissioning sequence and requires the engineer to specify whether separate rear door signals are available on an expansion input module and where they are connected. The first input point will be preset with the first valid point that is compatible with the requirements. There is a blank item at the end of the list where the FINISH option is displayed.

6.10.8 Safety Chain (Only seen if eXpansion Input card is added)



This is the sixth screen in the commissioning sequence and requires the engineer to specify whether full safety chain monitoring using an expansion input module is to be performed and where the signals are connected. The first input point will be pre-set with the first valid point that is compatible with the requirements. There is a blank item at the end of the list where the FINISH option is displayed.

6.10.9 Position Indication



This is the seventh screen in the commissioning sequence and requires the engineer to specify whether floor level monitoring is to be performed and if so, what type: -

NONE No lift position available.
COUNT Use DZ signal to count floor levels.

When COUNT is selected the following options are available: -

- Highest Level Served The total number of levels served by this lift.
- BFC Level Served Reserved for future use.

Where a block of expansion inputs are then the first input is specified along with the number of elements in the block. There is a blank item at the end of the list where the FINISH option is displayed. (See also 6.9.9.13)

This is the end of the screens that make I/O allocations and are therefore only accessible through the commissioning option. The subsequent screens continue the commissioning process but the settings can be updated later through the "Configuration" main menu option.

```
     Group Setup
>Num of Slaves
 1
 Group ID
 MASTER
 Slave for CSL
 None
CHANGE    ▲±▼      BACK
```

6.10.10 Group Setup

This is the next screen in the commissioning sequence, and requires the engineer to specify how many slave EMU's will be connected together on the slave link to makeup the group.

Then to select the group identity for this EMU from the list i.e. MASTER or SLAVE 1-7. The ID selected must be unique within the group or one of the EMU's will fail to communicate when commissioning is complete, and a "CAN DUPL" status will show on the Main Status Screen.
Finally if this is a slave then it can be set to report to the CSL module fitted to the Master. Only one slave in the group can report to this module. There is a blank item at the end of the list where the FINISH option is displayed.

6.10.11 Identification

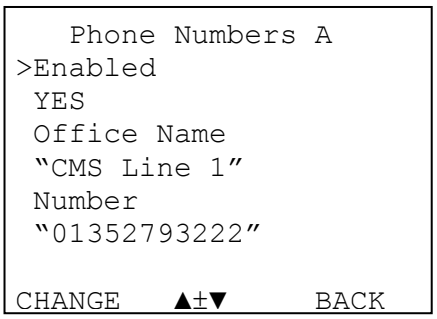
```
   Identification
>EMU Identifier
 "0030"
 Site Name
 "Flint Tower"
 Equipment Ref
 "CRG-436"

CHANGE    ▲±▼      BACK
```

This is the next screen in the commissioning sequence, and requires the engineer to specify an EMU Id. **This is a 4 digit number with the leading 0's present**. It is used to identify the unit back at the central system, and therefore must be unique within this clients system. The Site Name, Equipment Ref & Equipment Description are additional text which can be entered with the multi tap keypad to identify the site and its equipment.

```
   Identification
>Equipment Desc
 "Serv.Odd levels"
 Equipment Type
 LIFT


CHANGE    ▲±▼      BACK
```

The final item Equipment Type was setup at Step 2 Equipment Type and is displayed for information only. It can't be changed here. There is a blank item at the end of the list where the FINISH option is displayed.

6.10.12 Phone Numbers A



This is the next screen in the commissioning sequence, and is required for PSTN &GSM modems. For Ethernet connections go directly to FINISH. Enter a telephone number for the EMU to dial when reporting events back to the central system. This record is the first entry in a table of 8 optional numbers A- H that can only be configured later through the "Configuration" main menu option 6.9.6.1. For now this should be Enabled and a description of where it will dial given as the "Office Name".

There is a blank item at the end of the list where the FINISH option is displayed.

6.10.13 Reporting

```
     Reporting
>Number Order
 "A"
 Max Rprt Calls
 12
 Call Interval
 7Days
CHANGE    ▲±▼      BACK
```

This is the next screen in the commissioning sequence, and allows the dial order to be configured later See 6.9.6
Max Reportable Calls sets the number of phone calls this EMU can make in a day. When this limit is approached the Call Limit event is sent warning the central system that the EMU will not report faults for the rest of the day. Call Interval sets max time allowed between calls to the central. If no faults have occurred for this period the EMU makes a routine call to confirm the integrity of the communications system.

- EMU IP Address — EMU's local network IP address.
- EMU Port No. — EMU's network port number.
- EMU Net Mask — EMU's subnet mask.
- EMU Gateway — The local network's gateway address.
- CMS IP Address — The external IP address of the CMS it is to report too.
- CMS Port No. — The external Port number for the CMS.

There is a blank item at the end of the list where the FINISH option is displayed.

6.10.14 LiftWatch (Only seen if the "LIFT" equipment type was selected at 6.10.2)

```
      Liftwatch
>Car Stop Time
 6sec
>Move Dly Time
 3sec
 Max Move Time
 120secs
CHANGE    ▲±▼      BACK
```

This is the next screen in the commissioning sequence, and requires the engineer to confirm or adjust the LiftWatch Settings to suit the Lift it is connected to. Settings can be adjusted after the commissioning phase is complete through the configuration menu. (See Section 6.9.8)

There is a blank item at the end of the list where the FINISH option is displayed.

- Car stop time — At the end of a run, wait this time to see if it tries to open its doors. If no attempt to open, then assume it parked door closed.
- Move delay time — Movement signal (UP or DN) must be present for this time before the lift is registered as moving.
- Max move time — If the movement signal (UP or DN) is still present after this time record a Moving Overrun Event.
- Door open time — OC signal must be present for this time before the door is seen as opening. If no DOL signal is available (Enable=NO) then this setting should be adjusted to the time the door takes to open.
- Opening protection timer — If OC signal is present for this length of time, then DOPT fault. The doors have been driving open for too long.
- Closing protection timer — If CC signal is present for this length of time, then DCPT fault. The doors have been driving closed for too long.
- No longer in use — Retained for compatibility with earlier versions.
- Park Open Timer — If the doors remain open for this length of time without CC then they are determined to be parked open.
- Pre-Lock Time — The maximum time allowed for the GL input to go active after the door closed signal (PRLK) has gone active.

• LMDO Completion timer	The maximum time an active lift test should take.
• Alarm LCT	The maximum time an active lift test should take in response to an alarm push.
• Test call hold	Time to wait before placing a test call after an Engineer logs off.
• Max fault calls	The maximum number of lift tests per day as a result of loosing a signal (MS or PSC). To enable signal faults to be reported as opposed to out of service.
• Journey reporting level.	The journey counter threshold at which the Journey Counter Event is sent. Event Code 31
• Door reporting level.	The door operations counter threshold at which the Door Counter Event is sent. Event Code 32

There is a blank item at the end of the list where the FINISH option is displayed.

6.11 Trace Log

The Trace log provides a historic record of all the I/O changes seen by the EMU for the duration of the log. This can be used as a diagnostic tool for monitoring the actual signals produced by the lift and to help reproduce unusual fault conditions. The trace can be uploaded to LiftStore and used as part of a diagnostic procedure.

```
      TRACE LOG  TRIG
 Set trigger
 Continuous trace
 Stop trace
>View trace log
 Clear trace log

SELECT    ▲±▼      BACK
```

This screen is entered from the "Trace Log" main menu item. The user selects an option by using the UP and DOWN cursor keys to move the selection to the required entry, and pressing the LHSK to select. The current state of tracing is shown at the right hand end of the title line, this is one of: -

`STOP` – No tracing in progress
`CONT` – Continuous tracing in progress
`WAIT` – Tracing while waiting for trigger
`TRIG` – Trigger detected (stopped tracing)

```
     SET TRIGGER
>123 39
 Moving Overrun
 125 40
 Maintenance Visit
 126 41
 Clean Gate Tracks
SELECT    ▲±▼      BACK
```

This screen is entered from the "Set trigger" menu item. The user selects an event code by using the UP and DOWN cursor keys to move the selection to the required entry, and pressing the LHSK to select.

```
      TRACE LOG
Time: 596240ms
MI  oo●ooooo● o●●●oooo
AI  oooooooo
XI1 oo●ooooo oooooooo
MO  oo●ooooo
XO1 ooo●ooo●
        ◀▲±▼▶     BACK
```

This screen is entered from the "View trace log" menu item. The user scrolls within the entry using the UP and DOWN cursor keys to display further input/output groups, and moves between events using the LEFT and RIGHT cursor keys

```
      TRACE LOG

Do you really want to
  delete all entries
 from the trace log ?


YES       ±        NO
```

This screen is entered from the "Clear trace log" menu item. The user presses the LHSK to confirm the operation .

6.12 *Setup*

```
        SETUP
 Recording control
>Out Calls control
 LSA test control
 Clear events
 Clear Retained State
 Restart event nos
SELECT    ▲±▼      BACK
```

This screen appears when the user has selected the "Setup" main menu item. The user selects an option by using the UP and DOWN cursor keys to move the selection to the required entry, and pressing the LHSK to select.

The full list of options is as follows: -

- Recording control. Manually override the state of event recording.
- Out Calls control. Turn event-reporting On/Off.
- LSA test control. Turn active lift testing On/Off.
- Clear events. Clear all stored events after confirming the operation.
- Clear Retained State. Reset all status information immediately. (No confirmation)
- Restart event nos. Reset the event record numbers after confirming the operation.
- Battery Status. View & Test battery status. See Battery Status below.
- Test Alarm Supply Test the alarm circuit supply voltage immediately.

6.12.1 Battery Status

```
    BATTERY TEST
Test In Progress
NO
Latest Supply Reading
13.7V
Last Test Reading:
12.5V
TEST       ±▼      BACK
```

This screen is entered from the "Battery Status" setup menu . It displays the current state of the battery test, charging supply voltage and the results of the last battery test. Use the LHSK to initiate a new battery test. This will run the EMU on its battery for 30 minutes or until the battery voltage drops below 11.2V.

- Test In Progress (YES/NO) Whether a manual or timed battery test is in progress
- Latest Supply Reading (V) The current supply voltage. (13.6-13.8V mains on)
- Last Test Reading (V) The supply (battery) voltage at the end of the last test
- Last Test Duration (mins) Length of the last test. If less than 30mins, then it was aborted either because the battery voltage fell below the failing threshold (11.2V), or because the EMU supply failed.

6.13 *Set Time and Date*

```
   SET TIME & DATE

 HR MIN DD MM YY
 10:43  05/06/06 Mon
 ^^
 GMT

SET      ◄▲±▼►     BACK
```

This screen is entered from the "Set Time/Date" main menu item and sets the time reference for all the EMU's event recording. The user moves between sections using the LEFT and RIGHT cursor keys. The values may be adjusted using the UP and DOWN cursor keys, or entered using the keypad.

6.14 Switch Application

```
 SWITCH APPLICATIONS
      Current:
V1.030 24/05/06 New
config item DST
     Alternate:
V1.021 01/02/06 Bug
fix 1142
SWITCH    ±      BACK
```

This screen is entered from the "Switch Applications" main menu item. It displays the version information for the software currently running in the EMU, and for the alternate application. Use the LHSK to switch to the alternate application code.

6.15 Modem Status

```
    MODEM STATUS
Init 1 Response:
OK
Init 2 Response:
OK
Init 3 Response:
OK
          ±      BACK
```

This screen is entered from the "Modem Status" main menu item. The user presses the RHSK to exit from the screen, and the UP and DOWN keys to display the remainder of the items.

The full set of items displayed is: -

- Init 1 Response — Response to the 1st modem initialisation string. "ATE0V1".
- Init 2 Response — Response to the 2nd modem initialisation string.
- Init 3 Response — Response to the 3rd (fixed) modem initialisation string
- Init Last response — Response to the Last modem initialisation string.
- Inquiry Response — Response to the "ATI" command.
- Signal Strength — Value returned from a poll to a GSM modem (value is modem-dependent in the range 1-31. 99 indicates no signal).
- Signal Registration. — A value of 1 indicates the modem is registered onto a cell.
- Last Modem Response — Response to the last modem command.
- Last Call Response — Response to the last attempt to connect.
- Call Fail Response — Response to the last failed attempt to connect.

7 APPENDIX

7.1 *Event Codes*

Event Code	E-Line	Enable, Record, Report, Double Sided	Description	Reason
1	74	YYNS	EMU Reset Sequence	
2	5	YYND	Lost Gate Feed or Primary Safety Circuit	
3	2	YYYD	Event Over Reporting	An event has exceeded a set number of occurrences in a given time. The event is asserted when the (no of events X the event Inc) count exceeds 100,000 and clears when this count falls below the timer Dec threshold. The count being reduced by this amount every 20 ms. Typical values are: - **Event Inc = 10,000 Stop reporting after 10 events** **Timer Dec = 100 Restore 20 sec after event stops**
4	30	YYYD	Monitored Input 1 Active/Inactive	
4	108	YYYD	Started Moving Up	
5	8	YYND	Door Open Protection Timer Overrun	
5	11	YYND	Rear Door Open Protection Timer Overrun	
6	25	YYYD	Alarm Supply Low	
7	24	YYYD	EMU Battery Bad	
8	21	YYNS	BST-GMT Changeover	
9	7	YYND	Door Close Protection Timer Overrun	
9	10	YYND	Rear Door Close Protection Timer Overrun	
10	26	YYYD	Cabinet Tamper Active	
11	13	YYYD	Equipment Not In Service	
12	15	YYND	On Fire Service Control	
13	31	YYYD	Monitored Input 2 Active/Inactive	
13	109	YYYD	Started Moving Down	
14	107	YYYD	Auxiliary (Wetting) Supply Lost	
15	4	YYYD	Main Supply Signal is Faulty	
16	106	YYND	Door Locked Fault Occurred	
17	95	YYND	Lift Failed to Move	
18	96	YYND	Door Lock Fault	
19	105	YYND	Pre-Lock Fault Occurred	
20	97	YYND	Dest. Floor Fault Occurred (Pre V1.0 this was DOOR ZONE Fault)	Failed to see both locks break while in DZ
21	98	YYND	DOOR OPEN Fault	Failed to see OC in for DOT time.
22	99	YYND	FINAL CHECKS Fault	
23	100	YYND	LMDO Cycle Fault	
24	32	YYYD	Monitored Input 3 Active/Inactive	
24	110	YYYD	Awaiting Restart	
25	33	YYYD	Monitored Input 4 Active/Inactive	
25	111	YYYD	Equipment Fault	
26	12	YYYD	Lift Not Operational	
27	34	YYYD	Monitored Input 5 Active/Inactive	
27	112	YYYD	Emergency Stop	
28	46	YYYD	Lost Landing Push Feed	Lost for more than MMT+20Sec
29	18	YYNS	Alarm Push Pressed	
30	35	YYYD	Monitored Input 6 Active/Inactive	
30	113	YYYD	Fire Alarm Stop	

Event Code	E-Line	Enable, Record, Report, Double Sided	Description	Reason
31	71	YYNS	10,000 Journeys Done	
32	72	YYNS	10,000 Door Operations	
33	36	YYYD	Monitored Input 7 Active/Inactive	
34	37	YYYD	Monitored Input 8 Active/Inactive	
34	115	YYYD	Motor Fault	
35	14	YYND	On Test Control	
36	16	YYND	On Car Preference Control	
37	3	YYND	Lost Main Supply	
38	102	YYYD	Monitoring Suspended	
39	0	YYNS	Moving Overrun	Up or Dn in for more than MMT
40	61	YYNS	Miscellaneous	Engineer Selection
41	62	YYNS	Clean Gate Tracks	Engineer Selection
42	63	YYNS	Gate lock Adjust	Engineer Selection
43	64	YYNS	Door Operator Adjust	Engineer Selection
44	65	YYNS	Floor Level Adjust	Engineer Selection
45	66	YYNS	Controller Adjust	Engineer Selection
46	67	YYNS	Shaft Equip. Adjust	Engineer Selection
47	69	YYNS	Working on Arrival	Engineer Selection
48	69	YYNS	No Fault Found	Engineer Selection
49	70	YYNS	Maintenance Visit	Engineer Selection
50	79	YYND	Call Failed	
51	19	YYYD	Alarm Trapping On	
52	38	YYYD	Monitored Input 9 Active/Inactive	
52	54	YYND	Safety Chain Input 8 Active/Inactive	
52	116	YYYD	Step Band Fault	
53	39	YYYD	Monitored Input 10 Active/Inactive	
53	53	YYND	Safety Chain Input 7 Active/Inactive	
53	117	YYYD	Step Band Entry Fault	
54	40	YYYD	Monitored Input 11 Active/Inactive	
54	52	YYND	Safety Chain Input 6 Active/Inactive	
54	118	YYYD	Handrail Broken	
55	41	YYYD	Monitored Input 12 Active/Inactive	
55	51	YYND	Safety Chain Input 5 Active/Inactive	
55	119	YYYD	Handrail Entry Fault	
56	42	YYYD	Monitored Input 13 Active/Inactive	
56	50	YYND	Safety Chain Input 4 Active/Inactive	
56	120	YYYD	Break Release Fault	
57	43	YYYD	Monitored Input 14 Active/Inactive	
57	49	YYND	Safety Chain Input 3 Active/Inactive	
57	121	YYYD	Break Adjustment Fault	
58	44	YYYD	Monitored Input 15 Active/Inactive	
58	48	YYND	Safety Chain Input 2 Active/Inactive	
58	122	YYYD	Oil Level Low	
59	45	YYYD	Monitored Input 16 Active/Inactive	
59	47	YYND	Safety Chain Input 1 Active/Inactive	
59	123	YYYD	Interface Supply Fault	
60	29	YYYD	Engineer Safety Alert Active	
61	9	YNND	Spare Event Code 61	
62	76	YYNS	Database Reset	
63	77	YYYD	Recording Off	
64	91	YYND	Outcalls Off	
65	60	YYNS	Encoded configuration too big	

Event Code	E-Line	Enable, Record, Report, Double Sided	Description	Reason
66	28	YYYD	Motor Room Intruder Active	
67	59	YYNS	EEPROM Fail	
68	75	YYNS	Database Error	
69	27	YYYD	Shaft Intruder Active	
70	20	YYNS	Time Clock Changed	
71	73	YYND	Modem Fail	
72	23	YYYD	EMU Supply Lost	
73	103	YYYD	Stuck Alarm Button	
74	92	YYNS	Logon Abandonment	
75	55	YYYS	Callback Test	
76	22	YYYD	Power Cut	
77	125	YYYD	Equipment Isolated	
78	101	YYNS	Lock Tip	
79	56	YYYS	Test Phone Call	
80	93	YYND	LSA Test Disabled	
81	80	YYNS	Update Central's Database	
82	78	YYYS	EMU Database Nearly Full	
83	1	YYYS	Database Overrun	
84	81	YYYD	Site Access Commencing	
85	17	YNND	On/Off Night Service	
86	82	YYND	TVC Engineer Login	A
87	83	YYND	Central System Login	B
88	84	YYND	User Ident 'C'	C
89	85	YYND	User Ident 'D'	D
90	86	YYND	User Ident 'E'	E
91	87	YYND	Repair Engineer Arrival'	F
92	88	YYND	Callout Engineer Arrival	G
93	89	YYND	Maintenance Engineer Arrival	H
94	90	YYND	Insurance Engineer Arrival	I
95	57	YYYS	AUTO CALL	
96	104	YYYD	Engineer Key Login	
96	114	YYYD	Engineer Access	
97	6	YYYD	Primary Safety Circuit Is Faulty	
98	94	YYND	Door Close Fault Occurred	
99	58	YYYD	Call Limit Reached/Reset	

Event Codes

7.2 *Menu Map*

7.2.1 Main Menu

Screen	Item	
Logout	Engineer logout - may require a reason for visit to be selected before allowing the logout	
Confirm presence	If the Engineer Safety alert feature is enabled, enter the login code here when the alert tone sounds.	
Reason for Visit	Select one or more reasons for visit from the list	
Change Password	Select a user ID and then enter the new password.	
View Input & Outputs	Display all input & Output status dynamically. Select a line for detailed display.	
View Events	View Latest Event	Display selected event and provide options to move through the list, to mark an event and to view the IO state before and after the event occurred.
	View Oldest Event	
	Find Record Number	
	Find Event Code	
	Find Marked Event	
Fixcodes	Display an event's properties and provide options to step through the event code list and to edit it.	Enable or Disable the event.
		Record the event when it occurs
		Report the event when it occurs
		Double/Single sided event. ie record both assert and restore conditions.
		Event increment value
		Event decrement time interval
		Change the event text
		Find an event code
Test Phone Call	Make a test phone call back to the Server	
Configuration	*See Configuration Menu (7.2.3)*	
Commission	*See Commissioning Menu (7.2.2)*	
Trace log	Set trigger	Set a trigger event to stop the trace log
	Continuous trace	Start a continuous trace
	Stop trace	Stop trace logging
	View trace log	Display IO status for each signal change
	Clear trace log	Clear the trace log and restart.
Setup	Recording Control	Turn event recording on or off
	Out Calls control	Turn modem dial out on or off
	LSA Test Control	Turn LSA lift tests on or off
	Clear Events	Clear the events database and reset the record numbers.
	Clear Retained states	Clear the currently displayed status back to defaults and restore active events.
	Restart Event Nos	Reset event record numbers but retain older events.
	Battery Status	Display the battery test status and the result of the last test performed.
		Option to manually trigger a battery test.
	Test Alarm Supply	Perform an alarm supply test.
Set Time/Date	Set the EMU' s current time and date	
Switch Applications	View the current and alternate application software versions and provide the option to switch between them.	
Modem Status	View the Modems latest responses to initialisation, identification and outgoing calls.	

Screen	Item	
	Also for GSM modems show signal strength and cell registration.	Signal Strength 10 to 31 Good 99 = No Signal Registration 1 = OK

Main Menu

7.2.2 Commissioning Menu

Screen	Item	Default Value
Personality	Select Customer default settings	Standard EMU
Equipment Type	Select from:- LIFT - Mk2 Lift interface (See 3.2.1.1) MRL - 4 Input low voltage (See 3.2.2) Escalator - 4 Input min + advisory signals (3.2.3) Airbridge - 3 Input min + optional NOP (3.2.4)	LIFT
Non-Inv Mon	Select from: - YES/NO	NO
Ethos Comms	Select from: - YES/NO	NO
Manual Gates	Select from: - YES/NO	NO
Floor Level Type	Floor level type	NONE
	Highest Level served	0
	BFC Level Served (For Future USE)	0
Group Setup Identification Phone Numbers * Reporting LiftWatch	*See Configuration Menu for remaining settings (7.2.3)*	

Commissioning Menu

7.2.3 Configuration Menu

Level 1	Level 2	Level 3	Level 4	Mnemonic	Default Value
Group Setup	Num of Slaves			NSLAV	0
	Group ID			GRPID	MASTER
	Slave for CSL			CSLCL	NONE
Identification	EMU Identifier			EMUID	“”
	Site Name			SITE	“”
	Equipment Ref			REF	“”
	Equipment Desc			DESC	*As selected in commissioning*
	Equipment Type			EQUIP	*As selected in commissioning*
Startup Comms	Modem Init 1			MD1IN	“E0V0”
	Modem Init 2			MD2IN	“&C1&D2S0=2”
	Remote Port (REM)	Rem Line Speed		RSPD	B5760
		Rem Data Bits		RDATA	8
		Rem Stop Bits		RSTOP	1
		Rem Parity		RPAR	NONE
		Rem Flow Cntrl		RFLOW	RTSCTS
	Local Port (LOCAL)	Loc Line Speed		SPEED	B5760
		Loc Data Bits		DATA	8

Level 1	Level 2	Level 3	Level 4	Mnemonic	Default Value
		Loc Stop Bits		STOP	1
		Loc Parity		PAR	NONE
		Loc Flow Cntrl		FLOW	RTSCTS
	CanBus 1 Speed			CAN1	CAN500 kBit/s
	CanBus 2 Speed			CAN2	CAN125 kBit/s
	EXTERNAL MODEM			EXTMD	NO
Input Config *	Enabled			ENA	*Dependent on the equipment type selected*
	Logical I/P Sig			INP	
	Description			DESC	
	Mnemonic			MNE	
	Invert			INV	
	Invert Depend			DEP	
	On Delay			ONCT	
	Off Delay			OFFCT	
	Protected			PROT	
Output Config *	Enabled			ENA	*Dependent on the equipment type selected*
	Logical O/P Sig			OP	
	Description			DESC	
	Mnemonic			MNE	
	Invert			INV	
	Power Up State			PWRUP	
	Protected			PROT	
Reporting	Phone Numbers *	Enabled		ENA	*Specific to the Telephone entry selected*.
		Office Name		NAME	
		Number		NUM	
	Number Order			ORD	A
	Max Rprt Calls			MRPTC	12
	Call Interval			CALLI	7 days
	EMU IPAddress			EADDR	192.168.1.10
	EMU Port No.			EPORT	10001
	EMU Net Mask			EMASK	255.255.255.0
	EMU Gateway			EGATE	192.168.1.1
	CMS IPAddress			CADDR	212.84.72.86
	CMS Port No.			CPORT	10002
Users *	Enabled			ENA	*See Default Users Table*
	User Identity			UDI	
	Capabilities			CAP	
	Valid Reasons			REASN	
	Mandatory			MAND	
	Disable Record			DISRC	
	Logon Source			LSRCE	
LiftWatch	Car Stop Time			CST	6 sec
	Move Dly Time			MDT	3 sec
	Max Move Time			MMT	120 sec
	Door Open Time			DOT	1 sec
	Open Prot Time			DOPT	30 sec
	Cls Prot Time			DCPT	45 sec
	No longer used			NIU1	11 min

Level 1	Level 2	Level 3	Level 4	Mnemonic	Default Value
	Park Drs. Open			PRKOP	10 sec
	Pre Lock			PRLKT	3 sec
	LMDO Cmpl Time			LCT	120 sec
	Alarm LCT			ALCT	60 sec
	Test Call Hold			THCT	30 sec
	Max Flt Calls			MFLTC	4
	Journey Cnt Limit			JRCNT	10,000
	Door Cnt. Limit			DRCNT	10,000
Features	Lift Test	Enabled		ENA	YES
		Start Time		STATR	6:30
		End Time		END	22:25
		Max Test Calls		MXTST	1
		Idle Time		IDLE	10 min
	Non-Inv Mon	Enabled		ENA	NO
		Accl for Up/Dn		AUPDN	YES
		Min Accl Time		ACCTM	4 (x100ms)
		Min Dcel Time		DECTM	4 (x100ms)
		End Stop Time		ESZTM	3 (x100ms)
		Idle Stp Time		ISZTM	1200 (x100ms)
		Zero G Tol.		ZGTOL	100 (x0.001m/s)
	Ethos Comms	Enabled		ENA	NO
	Manual Gates	Enabled		ENA	NO
	Eng Sfty Alert	Enabled		ENA	NO
		Confirm Time		CNFTM	3 hrs
		Warning Time		WRNTM	15 min
	Motor Rm Intrd	Enabled		ENA	NO
		Login Time		LOGTM	3 min
		Reset Time		RESTM	2 min
		Use Local Alrm		LOCAL	YES
	Shaft Intrude	Enabled		ENA	NO
		Reset Time		RESTM	5 min
	Cabinet Tamper	Enabled		ENA	NO
		Reset Time		RESTM	120 sec
	Alarm Trapping	Enabled		ENA	YES
		Alarm Psh Time		PSHTM	3 sec
		Trap Pulse Len		TRPLN	6 sec
		Reporting Delay		REPDY	2 sec
		CSL Delay		CSLDY	80 sec
		Trapping Delay		TRPDY	45 sec
	Isolation Pr.	Enabled		ENA	NO
		Isolation Strt		START	20:00
		Isolation Ends		END	05:00
		Override Dur.		OVERD	15 min
	Time Switch	Enabled		ENA	NO
		Use LSA Times		USELS	NO
		Start Time		START	9:00
		End Time		END	20:00
	Rear Doors	Enabled		ENA	NO
	CSL	Enabled		ENA	NO
	Safety Chain	Enabled		ENA	NO

Level 1	Level 2	Level 3	Level 4	Mnemonic	Default Value
		Num of Inputs		NINP	0
	Floor Level	Enabled		ENA	YES
	Daylight Svngs	Enabled		ENA	YES
		Start Params	Hour of Day	HOUR	1:00
			Day of Week	DAYWK	SUN
			Week in Month	WEEK	5
			Month	MONTH	MAR
		Stop Params	Hour of Day	HOUR	2:00
			Day of Week	DAYWK	SUN
			Week in Month	WEEK	5
			Month	MONTH	OCT

Configuration Menu

* Marks a section that is repeated i.e. It represents one of a number of instances, each of which have the same set of items. These sections all have an "Enabled" item which, when set to YES, indicates that the instance is valid.

7.3 User Defaults

User	TVC	Repair	Callout	Maint	Insurance
Default Password		5555	6666	9999	1234
Actual Password					
Enabled	YES	YES	YES	YES	YES
Capabilities	TESTCALL TIMSW IOUPDATE OWNPWD OTHPWD CNFUPDATE SETUP	TESTCALL IOUPDATE	TESTCALL IOUPDATE	TESTCALL IOUPDATE	TESTCALL IOUPDATE
Disable Recording	NO	YES	YES	YES	YES
Mandatory Reason	NO	YES	YES	NO	NO
Valid Reason	MISCELLANEOUS MAINTENANCE GATETRACKCLEAN GATELOCKADJUST DOORADJUST FLOORADJUST CTRLRADJUST SHAFTADJUST VALVEADJUST NOFAULT	MISCELLANEOUS MAINTENANCE GATETRACKCLEAN GATELOCKADJUST DOORADJUST FLOORADJUST CTRLRADJUST SHAFTADJUST VALVEADJUST NOFAULT	MISCELLANEOUS MAINTENANCE GATETRACKCLEAN GATELOCKADJUST DOORADJUST FLOORADJUST CTRLRADJUST SHAFTADJUST VALVEADJUST NOFAULT	MISCELLANEOUS MAINTENANCE GATETRACKCLEAN GATELOCKADJUST DOORADJUST FLOORADJUST CTRLRADJUST SHAFTADJUST VALVEADJUST NOFAULT	MISCELLANEOUS MAINTENANCE GATETRACKCLEAN GATELOCKADJUST DOORADJUST FLOORADJUST CTRLRADJUST SHAFTADJUST VALVEADJUST NOFAULT

7.4 *Logical I/0*

7.4.1 Logical Inputs

	Mnemonic		Name	Description
0	NONE		No Input	Not allocated to a logical input
1	ALS	AI 8	Alarm Supply	Monitor the Alarm Circuit Supply voltage and report if it drops below 2.5V
2	AUXS	AI 6	Aux. Supply	Signal which monitors the state of the Auxiliary wetting supply and can provide an event if the supply fails or is shorted out.
3	ENG		Eng. Keyswitch	Signal to indicate when an engineer's key switch has been operated.
4	SHAFT		Shaft Intruder	Signal to indicate when a shaft intruder has been detected.
5	MRINT		Mtr Rm Intrudr	Signal to indicate when the motor room door has been opened.
6	LPI		Land Psh Inhib	Inhibit the Landing Push feed lost event if this signal is triggered.
7	UDF	MI 10	Demand Was DMD	Signal, which indicates to the LiftWatch algorithm that a request for the lift to move has been made. Possibly taken from the Ramp or the break lifting.
8	GL	MI 5	Gate Lock	Signal, which indicates to the LiftWatch algorithm that the landing gates are locked.
9	DZ	MI 6	Door Zone	Signal, which indicates to the LiftWatch algorithm that the lift is in a door zone.
10	OC	MI 7	Open Contactor	Signal, which indicates to the LiftWatch algorithm that the door open contactor is active.
11	CC	MI 8	Cls Contactor	Signal, which indicates to the LiftWatch algorithm that the door closing contactor is active.
12	UP	MI 11	Up Contactor	Signal, which indicates to the LiftWatch algorithm that the Up contactor is active.
13	DN	MI 12	Down Contactor	Signal, which indicates to the LiftWatch algorithm that the Down contactor is active.
14	DOL	MI 9	Dr Open Limit	Signal, which indicates to the LiftWatch algorithm that the door is fully open.
15	CG	MI 4	Car Gate	Signal, which indicates to the LiftWatch algorithm that the car gate is locked.
16	MS	MI 1	Main Supply	Signal, which indicates to the LiftWatch algorithm that the main supply is present.
17	LPF	MI 13	Lndg Push Feed	Signal, which indicates to the LiftWatch algorithm that the landing push feed is present.
18	GF	MI 3	Gate Feed Was PSC	Signal, which indicates to the LiftWatch algorithm that the Primary Safety Circuit is made and feeding the gate locks.
19	LIN	MI 14	Indep. Service	Signal, which indicates to the LiftWatch algorithm that the lift is operating on an independent service.
20	TTR	MI 2	Car Preference	Signal, which indicates to the LiftWatch algorithm that the lift is operating on car preference control.
21	FS	MI 15	Fire Service	Signal, which indicates to the LiftWatch algorithm that the lift is operating on fire service control.
22	ALM	AI 7	Alarm Push	Signal, which indicates to the alarm verification algorithm that the lift car alarm has been pressed.
23	RDMD	EXP	Rear Demand	Signal, which indicates to the LiftWatch algorithm that a request for the lift to move has been made. Possibly taken from a rear door Ramp.
24	RPSC	EXP	Rear Sfty Circ	Signal, which indicates to the LiftWatch algorithm that the rear Primary Safety Circuit is made
25	RCG	EXP	Rear Car Gate	Signal, which indicates to the LiftWatch algorithm that the rear car gate is locked.
26	RDZ	EXP	Rear Door Zone	Signal, which indicates to the LiftWatch algorithm that the lift is in a rear door zone.

	Mnemonic		Name	Description
27	ROC	EXP	Rear Open Cntc	Signal, which indicates to the LiftWatch algorithm that the rear door open contactor is active.
28	RCC	EXP	Rear Cls Cntc	Signal, which indicates to the LiftWatch algorithm that the rear door closing contactor is active.
29	RDOL	EXP	Rear Dr Op Lm	Signal, which indicates to the LiftWatch algorithm that the rear door is fully open.
30	FLR1	EXP	Flr Level 1	Signal, which indicates to the lift positioning software what the lift position is. The signal meaning depends on the type of lift position measurement selected.
31	FLR2	EXP	Flr Level 2	- As Above -
32	FLR3	EXP	Flr Level 3	- As Above -
33	FLR4	EXP	Flr Level 4	- As Above -
34	FLR5	EXP	Flr Level 5	- As Above -
35	FLR6	EXP	Flr Level 6	- As Above -
36	FLR7	EXP	Flr Level 7	- As Above -
37	FLR8	EXP	Flr Level 8	- As Above -
38	FLR9	EXP	Flr Level 9	- As Above -
39	FLR10	EXP	Flr Level 10	- As Above -
40	FLR11	EXP	Flr Level 11	- As Above -
41	FLR12	EXP	Flr Level 12	- As Above -
42	FLR13	EXP	Flr Level 13	- As Above -
43	FLR14	EXP	Flr Level 14	- As Above -
44	FLR15	EXP	Flr Level 15	- As Above -
45	FLR16	EXP	Flr Level 16	- As Above -
46	SFT1	EXP	Sfty Circ 1	Signal, which indicates to the Safety chain monitoring algorithm where the safety chain is broken.
47	SFT2	EXP	Sfty Circ 2	- As Above -
48	SFT3	EXP	Sfty Circ 3	- As Above -
49	SFT4	EXP	Sfty Circ 4	- As Above -
50	SFT5	EXP	Sfty Circ 5	- As Above -
51	SFT6	EXP	Sfty Circ 6	- As Above -
52	SFT7	EXP	Sfty Circ 7	- As Above -
53	SFT8	EXP	Sfty Circ 8	- As Above -
54	FLT1	EXP	FLT Input 1	Signal, which can be used for general purpose event monitoring.
55	FLT2	EXP	FLT Input 2	- As Above -
56	FLT3	EXP	FLT Input 3	- As Above -
57	FLT4	EXP	FLT Input 4	- As Above -
58	FLT5	EXP	FLT Input 5	- As Above -
59	FLT6	EXP	FLT Input 6	- As Above -
60	FLT7	EXP	FLT Input 7	- As Above -
61	FLT8	EXP	FLT Input 8	- As Above -
62	FLT9	EXP	FLT Input 9	- As Above -
63	FLT10	EXP	FLT Input 10	- As Above -
64	FLT11	EXP	FLT Input 11	- As Above -
65	FLT12	EXP	FLT Input 12	- As Above -
66	FLT13	EXP	FLT Input 13	- As Above -
67	FLT14	EXP	FLT Input 14	- As Above -
68	FLT15	EXP	FLT Input 15	- As Above -
69	FLT16	EXP	FLT Input 16	- As Above -
70	LFTST		Lift Test Push	Trigger an EMU Lift Test sequence.
71	LADS		LADS Request	Allocated for auto-dialler handshaking but not implemented yet.
72	PRLK		Pre-Lock	Signal, which indicates to the EMU that the landing door is closed (but not locked). Most commonly found on manual gate retiring ramp type installations.
73	TAMP	AI 5	Cabinet Tamper	Signal to the EMU's security software
74	NOP1	All		Non LIFT equipment is Not Operational.

	Mnemonic		Name	Description
75	NOP2	All		- As Above -
76	NOP3	All		- As Above -
77	NOP4	All		- As Above -
78	NOP5	All		- As Above -
79	NOP6	All		- As Above -
80	NOP7	All		- As Above -
81	NOP8	All		- As Above -
82	NIS1	All		Non LIFT equipment is Not In Service.
83	NIS2	All		- As Above -
84	NIS3	All		- As Above -
85	NIS4	All		- As Above -
86	NIS5	All		- As Above -
87	NIS6	All		- As Above -
88	NIS7	All		- As Above -
89	NIS8	All		- As Above -
90	ALMPR	All		Alarm Push for non-LIFT applications (Does not trigger a lift test)
91	LSIND	All		Lift Service Indication. If the controller indicates it is out of service and not on TTR, FS or LIN Test the lift.
92	EmStp	MI 5	Emergency Stop	Escalator Controller Output Relay provides voltage when the escalator is required to stop due the Emergency stop button being pressed.
93	FAStp	MI 6	Fire Alm. Stop	Escalator Controller Output Relay provides voltage when the escalator is required to stop due to a suspected fire condition, either within the equipment or if interfaced to the fire alarm system, within the building.
94	Motor	MI 8	Motor Fault	Escalator Controller Output Relay provides voltage when a Motor fault occurs.
95	StepB	MI 9	Step Band Flt	Escalator Controller Output Relay provides voltage when a Step Band fault occurs.
96	StepI	MI 10	Step Inlet Flt	Escalator Controller Output Relay provides voltage when a Step Inlet fault occurs.
97	RailB	MI 11	Handrail Broke	Escalator Controller Output Relay provides voltage when a Handrail broken fault occurs.
98	RailE	MI 12	Handrail Entry	Escalator Controller Output Relay provides voltage when a Handrail entry fault occurs.
99	BrkRl	MI 13	Break Release	Escalator Controller Output Relay provides voltage when a Break release fault occurs.
100	BrkAj	MI 14	Break Adjust	Escalator Controller Output Relay provides voltage when Break Adjustment is required.
101	LoOil	MI 15	Low Oil Level	Escalator Controller Output Relay provides voltage when the Oil level gets low.
102	IntOK	MI 16	Interface OK	Escalator Controller Output provides voltage when the wetting supply to the escalator's status relay contacts is healthy. i.e. the supply to the EMU's inputs is good and reports a fault on the loss of this input.
103				
104				
105				
106				
107				
108				
109				
110				

Logical Inputs

7.4.2 Logical Outputs

No	Mnemonic		Name	Description
0	NONE		No Input	Not allocated to a logical output
1	ALSC	MO 5	Alm. Supp Cnct	Signal used to connect the alarm supply monitoring circuit for periodic tests of the alarm supply.
2	DISC	MO 8	Disconnect Chg	Signal used to disconnect the battery charging circuit as part of routine battery testing.
3	ALV	MO 6	Verified Alarm	Signal used to trigger the auto-dialler when a verified trapping is determined.
4	ALE	MO 7	Alarm Enable	Signal used to enable the alarm verification circuit and to reconnect the battery after a power down or a CPU reset. The default delay from a reset to the signal being enabled is 15 seconds.
5	TFC	MO 1	Top Floor Call	Signal controlled by the LiftWatch algorithm to place a top floor call on the lift.
6	BFC	MO 2	Btm Floor Call	Signal controlled by the LiftWatch algorithm to place a bottom floor call on the lift.
7	MTRP	CSL	Mast Trapping	Signal allocated to the CSL Expansion unit to indicate the Master EMU has a verified trapping.
8	MOOS	CSL	Mast Not Op	Signal allocated to the CSL Expansion unit to indicate the Master EMU's Lift is Not Operational.
9	MEOS	CSL	Mast Eng. Site	Signal allocated to the CSL Expansion unit to indicate the Master EMU has an Engineer On Site.
10	MOK	CSL	Mast EMU Ok	Signal allocated to the CSL Expansion unit to indicate the Master EMU is working normally. This is a failsafe output such that if the EMU resets it will drop out signalling a problem.
11	STRP	CSL	Slave Trapping	Signal allocated to the CSL Expansion unit to indicate the Slave EMU has a verified trapping.
12	SOOS	CSL	Slave Not Op	Signal allocated to the CSL Expansion unit to indicate the Slave EMU's Lift is Not Operational.
13	SEOS	CSL	Slave Eng Site	Signal allocated to the CSL Expansion unit to indicate the Slave EMU has an Engineer On Site.
14	SOK	CSL	Slave EMU Ok	Signal allocated to the CSL Expansion unit to indicate the Slave EMU is working normally. This is a failsafe output such that if the EMU resets it will drop out signalling a problem.
15	TIMSW	MO or EXP	Time switch	Signal controlled by the Time Switch feature, which can be used to switch an output at set times of the day.
16	LALM		Local Alarm	Signal to trigger the Intruder Alarm Output
17	MDMPO	MO or EXP	Modem Pwr On	Signal controlled by the communications software if it detects a problem with the modem. Used for external modem whose supply can be routed through and output controlled by this signal. Allows the modem to be reset by powering it off and on again.
18	LADS	MO or EXP	LADS Inhibit	Allocated for auto-dialler handshaking but not implemented yet.
19	OPIND	MO	Eq. Operational	Signal to control an equipment operational indicator.
20	SAIND	MO	Serv. Available	Signal to control a service available indicator.
21	MANOP	MO	Manual Control	Signal under manual control by an operator using Set and Clear.
22	ISOLA	MO	Isolation Prog.	Signal under the control of the Network Rail Isolation Program.

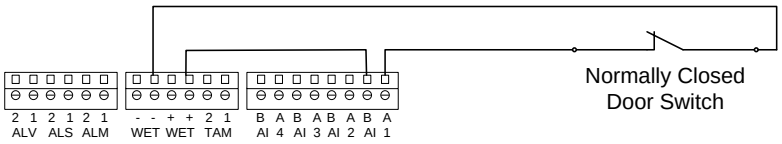
Logical Outputs

7.5 *Auxiliary Wiring Details*

From the Configuration menu select Input Config, and use > to select the input concerned.

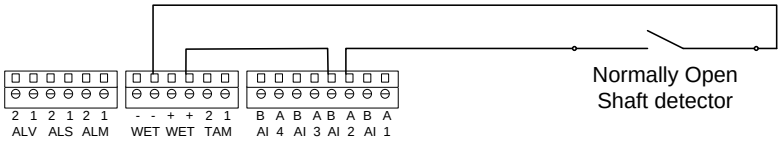
Inputs shown are for example only. Any free input with the correct voltage range can be used.

Motor Room Intruder Wiring



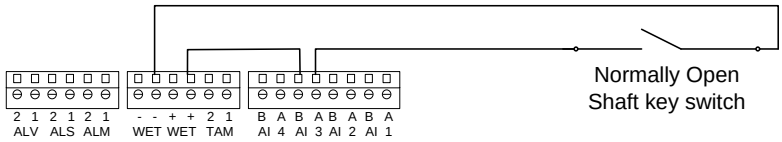
Input Config AI-1	
Enabled	YES
Logical I/P Sig	MRINT (5)
Description	(Skip)
Mnemonic	(Skip)
Invert	YES
Invert Depend	AUXS (2)
On Delay	0
Off Delay	0
Protected	NO

Shaft Intruder Wiring



Input Config AI-2	
Enabled	YES
Logical I/P Sig	SHAFT (4)
Description	(Skip)
Mnemonic	(Skip)
Invert	NO
Invert Depend	(Skip)
On Delay	0
Off Delay	0
Protected	NO

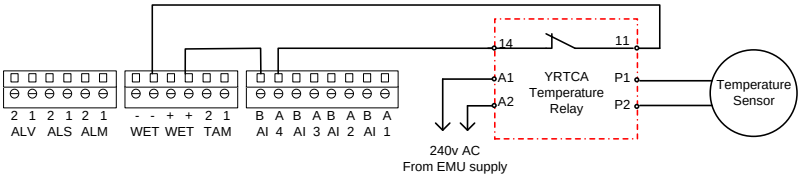
Shaft Logon



Input Config AI-3	
Enabled	YES
Logical I/P Sig	ENG (3)
Description	(Skip)
Mnemonic	(Skip)
Invert	NO
Invert Depend	(Skip)
On Delay	0
Off Delay	0
Protected	NO

Motor Room Thermostat

+5C to +40C

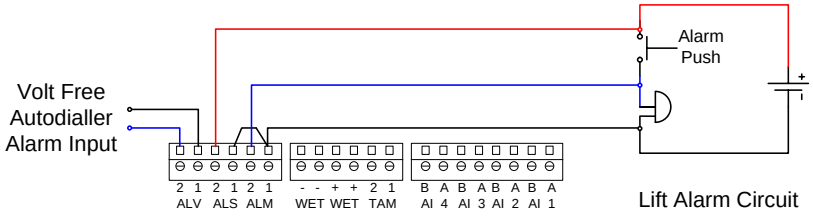


Input Config AI-4	
Enabled	YES
Logical I/P Sig	FLT1 (54)
Description	Temperature
Mnemonic	TWARN
Invert	YES
Invert Depend	AUXS (2)
On Delay	0
Off Delay	0
Protected	NO

FIXCODES

Scroll down to line 30 Event 4 and change the description from Monitored Input 1 to TEMPERATURE WARNING/OK
Using the Options menu – Change event text

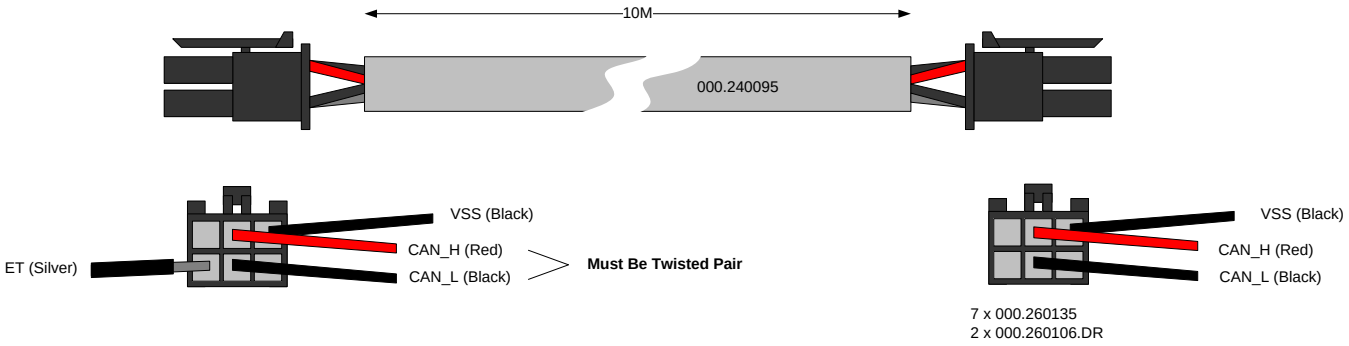
Alarm Verification



Auxiliary Wiring2.vsd

7.6 ***EMU to Ethos Wiring Loom***

EMU to Ethos CAN Loom
(LiftStore Assembly No. 110.008092.010)

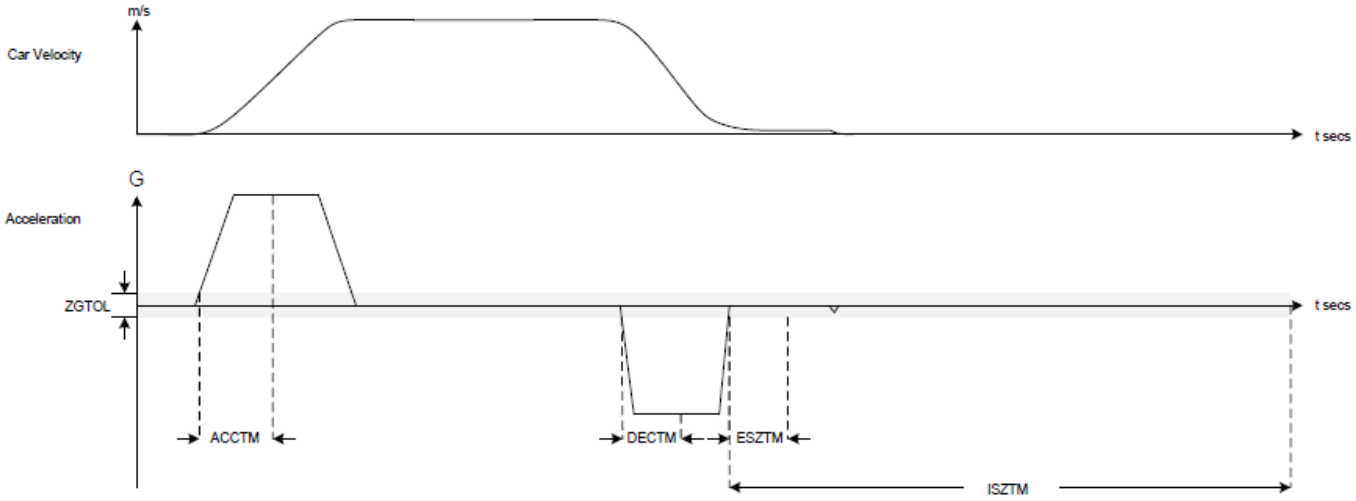


ETHOS end

EMU end

7.7 *Non-Invasive Monitoring unit parameters*

EMU 3 Accelerometer Parameters Rev1.01



Key

ZGTOL = zero G tolerance, minimum observable G reading for background noise elimination

ACCTM = acceleration time, the minimum period of time continuous acceleration must be detected for the start of a new journey sequence

DECTM = deceleration time, the minimum period of time continuous deceleration must be detected for the deceleration phase of a journey sequence

ESZTM = end stop zero time, the minimum period of time the lift must be observed at rest to terminate the current journey sequence

ISZTM = idle stop zero time, if no accel/decel is observed for this period of time the lift is assumed to have stopped moving

AUPDN = YES = derive lift movement from integral accelerometer, NO = derive lift movement from discrete inputs

8 F.A.Q.

Problem	Things to check
Front display is either clear or black	If power is present at the CPU; the Green +5V LED is lit. Then the problem could be with the contrast adjustment. Press reset to ensure you are at the Main Status Screen and use the Left hand cursor key to lighten the screen and the Right hand cursor key to darken the screen.
Door Open Fault	On a lift with a rapid door opening the LiftWatch Door Open Time (DOT) may need to be set lower. This is the time the OC contactor must be in, After the gate locks have broken for the Door Opening to be registered. The setting may be reduced to 0 in which case a minimum value of 0.3 sec will be applied.
Door Open Fault	On a lift with advanced door opening the GL signal may be artificially delayed by the bridging circuit. Either ensure the Advanced door opening setting is selected if available, or delay the off side of OC so the signal can be seen for (DOT) seconds after GL is finally lost.
Waiting for Door Open	By default(V1.02) the DOL input is inverted with a dependency on MS. If MS is not connected then the dependency should be removed to allow the LSA test to complete properly. It can be set to NONE.
Waiting for Stimulus	If the EMU show Waiting for Stimulus even if a movement signal is present i.e. UP or DOWN then check that the MS signal is present. LMDO monitoring can be suspended if the EMU thinks it has a Power supply problem.
EMU will not run on battery very long when the mains are lost.	This can be due to a low charge in the battery or the EMU not having been commissioned. Use the SETUP – Battery Status Menu option to view the current charging status. Battery support and charging is only enabled once the EMU is commissioned.
Alarm Supply Input (ALS) does not light the input LED.	Even with a healthy alarm supply, when connecting it to the ALS input the LED does not light and the signal is not seen. This is normal. The connection to the EMU's input is made via the ALSC relay on MO5 and needs an Alarm Supply Test to be triggered from the SETUP menu before the supply can be monitored. This is done periodically by the EMU to test the supply and is then removed, thus preventing a constant current drain on the alarm circuit.
When commissioning a non-lift application I get prompted for LiftWatch Settings.	This is a problem with the menu structure and will be resolved in future versions. It is safe to ignore the settings and Finish this step.
DUP ID showing on the group status screen.	When commissioning a group of EMU's linked through the can bus, each slave must have a different group ID as configured in Group Setup. This is NOT the same as the EMU Identifier which is only used when communicating to the CMS
EMU reports Lift OOS at night following a Failed to Move event. Restores when LSA testing starts in the morning	This can be caused by Hydraulic re-levelling at night. Because LSA testing is off the short movement is seen as the start of a run which does not complete. Can be fixed by delaying the on transition of the UP and UDF (DMD) inputs by typically 3.5 Seconds. This value may very between lifts.
EMU Resets when a battery test is done.	This can appear as the EMU resetting once a day. Possible causes are the battery is disconnected, or the Fuse F2 has blown or been removed.
LMDO Tests not being performed. CHECK:-	The EMU's Time is correct. Set Time/Date from the Main Menu. SETUP – LSA Test Control is ON CONFIG – FEATURES – Lift Test is Enabled and the start and end time is correct. CONFIG – LIFTWATCH – Max Flt Calls has been exceeded. The count is reset each day.

Problem	Things to check
EMU not reporting Events / Unable to dial out	If the alarm input ALM is stuck on, or inverted, it can inhibit the EMU from dialling out in some circumstances due the ALV Alarm Verification Output (marked EAL on the mother board) being held on. V1.04 software overrides this condition when the Stuck Alarm Pushbutton is detected after 15 minutes of continues input.
Battery Test Fails and EMU immediately Resets.	1) Check Fuse F2 (2 Amp Slow Blow) 2) Check the Alarm Enable Output (ALE) is enabled and ON. Red LED under LS7 3) Disconnect battery and check its voltage is > 12 v 4) With the leads disconnected check the charging voltage to the battery >13.2V
EMU unable to dial out	1) Check Setup – Outcalls are ON (Sec 6.12) 2) Check for a Blocked Call (BCall) (Sec 5.2 & 5.1.1) 3) Check Modem Status reason for failure (Sec 6.15) 4) For V1.03 or earlier check for a stuck alarm push and ALV being ON.
All EMU's LEDs flashing slowly (Including the green PWR LED on the mother board)	**This may be a lose wire, software resetting, or the power supply going into current limit due to a heavy load or short circuit.** 1) Check the power lead from the mother board to the CPU board (multi coloured cable at the bottom right corner of the CPU card.) 2) Move the slide switch on the left of the CPU board to its middle position. (Remember to return it to the lower position when you finish testing) 3) Disconnect any external wiring. Especially any connection to WET + & -. 4) Disconnect the battery. 5) Remove the power connector from the motherboard and check the voltage output from the power supply. It should be 13.7v
ALL keypad LED's On & Screen is blank at power up.	Check the slide switch on the left hand side of the CPU board (Just above the reset button) This should be slid down towards the reset button.
Repeated - Movement Fault Occurred /Cleared	This will occur after a test call if the Lift is already at the floor it is being called to. 1) Check TFC is wired to a high floor call and that BFC to a low one. 2) Check the UP and DN inputs are wired to the correct direction contacts. 3) Check the DZ signal is lost when movement starts. Earlier versions did not require this 4) A re-levelling movement can cause the next test to be made in the wrong direction. Adding a delay to the ONCT setting for the UP or DN input can resolve this problem. (V1.05 and earlier)
Serial Link to ethos not working.	Check the CAN cable is plugged into the EMU3 and Ethos. The cable should be plugged into connector CAN4 on the Ethos and connector CAN2 at the EMU3. Check the EMU configuration settings:- Feature – Ethos comms – ON also Startup comms – CANbus 2 speed - CAN125k Check the Ethos configuration settings:- Log on as TVC R&D Access (password = TVCR&D) Check Factory Settings:- Serial Net.Setgs – Serial EMU 3 Fitted current value = ON Check the R&D System Tools settings:- Serial Board Setts – CAN Car net Baud current value = [2 125k] Serial Board Setts – Quad CAN Brd Fitted current value = ON **If any settings are changed reset that unit (ensure the processor is reset).** Check the CAN linking cable for correct wiring and Continuity. Power off both EMU and Ethos boards and with the cable plugged into both boards the resistance between the Red & Black twisted pair should be between 55 & 65 ohms.

F.A.Q.