Technical manual for the Skycom Solo microprocessor

Issue 2 – 05/12/2023 - Last technical change 06/07/2010

WE RESERVE THE RIGHT TO ALTER WITHOUT GIVING PRIOR NOTICE TECHNICAL DATA, DIMENSIONS AND WEIGHTS DESCRIBED IN THIS MANUAL

Contents

Contract Number…………….
Solo Software Version Number……….......
Handheld Software Version Number…………….

London Tel: 0208 527 9669
London Fax: 0208 527 0936
Website: www.ilegroup.co.uk

Leicester Tel: 0116 269 0900
Leicester Fax: 0116 269 0939
Email: service@ilegroup.co.uk

Introduction

The manual gives details on the skycom Solo lift controller, detailing the hardware that goes to make up the controller along with instructions for the setup of the lift. The modular system allows variable lift configurations.

Skycom Solo consists of a main processor board, with expandable I/O via the addition of I/O, RELAY, and MAINS Modules. The controller is fully configurable and all peripherals connected to the processor via the CAN network are also configurable.

A handheld with an LCD screen is provided to help in both the setup and fault diagnosis of the lift. The handheld can be used to modify parameters in order to fine tune the operation of the lift.

LED indication is provided for each input/output on all modules. Green for low voltage inputs, red for outputs and yellow for mains inputs.

The processor connects directly via a CAN network to all ILE peripheral products such as serial indicator, LCD indicator, and speech unit.

EcoMode

The Skycom Solo controller also incorporates EcoMode offering two reduced power modes:

REDUCED POWER MODE ONE switches off the car lights and fan after an adjustable period of inactivity.

The savings using just Reduced Power Mode One are 1035.3 kW/h per annum. This equates to a saving indicative of £120 per annum.*

REDUCED POWER MODE TWO switches off indicators, dual illumination and auxiliary equipment after an adjustable period of inactivity. This mode starts once Reduced Power Mode 1 has timed out.

The savings using both Reduced Power Mode One & Two are 4554.893 kW/h per annum. This equates to a saving indicative of £525 per annum.*

*Calculations based on 240 starts per hour between the hours of 5.30am to 7.30pm on a 12 floor lift with position indicators at all landings and 60 watts of car lighting with dual illuminated landing and car pushes.

Instructions

The instruction for the procedure detailed in this guide to get the lift system running correctly, are laid out as follows:

The instructions can be divided into 3 stages:
Condition
Action
Question

The **Condition** relates to the state of the system before performing the **Action** and once the action is complete then the **Question** can be answered if necessary.

The Condition is written in italics, e.g. *the indicator should be turned off; the test equipment (skycom) should be powered.* The Action is marked with **Action**. The question is marked with a **Q** in the No. column.

If the action is successful or the answer to the question is yes then move on to the next stage, if the action is unsuccessful or the answer is no then remedy the situation in order to continue with the procedure.

London Tel: 0208 527 9669
London Fax: 0208 527 0936
Website: www.ilegroup.co.uk

Leicester Tel: 0116 269 0900
Leicester Fax: 0116 269 0939
Email: service@ilegroup.co.uk

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TEST operation for the first time

The following set of instructions detail how to get the lift running in test operation for the first time. If you have any problems then please refer to the fault finding section of this manual.

No.	Condition/Action/Question	Yes/No	Notes
	Condition: *The motor, thermistors, fan, brake and other supplied equipment should be connected to the control panel.*		
1	**Action:** Check the safety circuit provides continuity from terminal **MES** to **CTS**, and **CTS** to **CTS1**.		
2	**Action:** Check the door contacts provide continuity from terminal **CTS1** to **CDC**, and **CDC** to **LDC**.		
3	**Action:** Check all wiring and make sure all cables are connected correctly.		
4	**Action:** Check the fuses are in the correct place and of the correct size and type.		
5	**Action:** Switch the lift to Test via the Car Top Control, Panel Test, or manually by leaving the connection between **TS** and **TRS** open circuit.		
6	**Action:** Check there are no obstructions in the lift shaft.		
7	**Action:** Provisionally set the overloads (if fitted).		
8	**Action:** Check the car and landing doors are fully closed (if fitted).		
9	**Action:** Check the handwinding switch is on Normal.		
10	**Action:** Check the slowing/reset, terminal/stopping and overtravel limits are all in place and are functional.		

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London Fax: 0208 527 0936
Website: www.ilegroup.co.uk

Leicester Tel: 0116 269 0900
Leicester Fax: 0116 269 0939
Email: service@ilegroup.co.uk

No.	Condition/Action/Question	Yes/No	Notes
	Condition: *The checks above have all been carried out and the lift has been switched on.*		
1	**Action:** Check the incoming three phase sequence is correct (PFRR relay is energised).		
2	**Action:** Check the LEDs **MI1**, **MI2**, **MI3**, MI4 (**EMER, CARL, LANL, TEST**) are illuminated on the Mains input board, or use the handheld to view via IO Viewer.		
	Condition: *The lift can now be driven by using Panel Test Control or by making temporary connections:-* *To travel up* **TUD** *to* **TUP** *To travel down* **TUD** *to* **TDN** *The following checks should be made before continuing with moving the lift.*		
1	**Action:** Check and verify that the emergency stop buttons, locks and safety circuit will stop the lift instantaneously shortly after the lift motor starts to rotate.		
2	**Action:** Check that the brake, valve and ramp voltages are correct.		
3	**Action:** Check the direction of rotation is correct.		
4	**Action:** Check the door operation (if fitted) by using the car top control.		
5	**Action:** Move the lift to the lowest level possible, park with doors closed and switch off the control system.		

The Lift can now be put into normal operation for the first time.

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The Hardware

All cards are mounted in an individual module that is DIN rail mounted. Each module plugs into the adjoining modules to provide bus connections.

Solo Processor Module

The Skycom Solo processor module has the following features:

- USB serial connection to PC
- CAN connection to peripherals
- Web server & email facility
- RTC with external battery
- Automatic discovery of I/O boards
- LED Indication (loop, comms, fault)
- Energy efficient switch mode power supply
- Non-active processor hardware components power down

IO Module
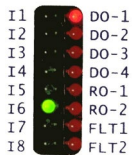
The IO module has the following features:

- 8 inputs discrete/linked via software
- 4 discrete outputs
- 2 relay outputs (N/O or N/C selectable via wiring and on board link)
- Diagnostic and thermal monitoring

The input stage
- 5-30VDC opto-isolated
- Over voltage and reverse polarity protection
- Current limiting and dissipation
- LED Indication (green)

The relay outputs
- 2 single pole changeover contacts
- Contact rated 5A
- Opto-isolated
- LED Indication (red)

Discrete outputs
- 24VDC (internal/external supply)
- 0.7A per channel output current
- Upto 36V operating voltage
- Short circuit and overvoltage protection
- Loss of ground protection
- Under voltage diagnostic
- Overvoltage shutdown
- Over temperature shutdown
- Shorted load protection
- Suitable for inductive loads
- Opto-isolated
- LED Indication (red) output
- LED Indication (red) fault condition

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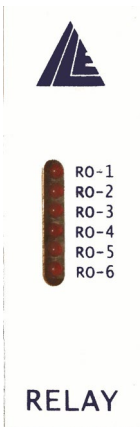
Relay Module

The Relay module has the following features:

- 4 Relay outputs (N/O)
- 2 Relay outputs (N/O or N/C user selectable via wiring)
- Thermal monitoring
- Single pole N/O contact rated 6A
- Single pole changeover contact rated 5A
- Opto-isolated driver
- LED Indication (red)

Mains Module
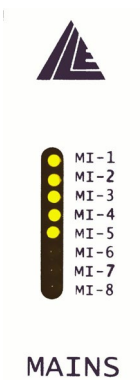
The Mains module has the following features:

- 8 AC inputs
- 110/240V AC versions
- Diagnostic and thermal monitoring
- Neutral line feed through
- Input and output filter
- Under voltage lockout
- Opto-isolated driver
- LED Indication(yellow)

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Handheld

The Handheld module has a 128x64 pixel resolution LCD screen, with a 6 button keypad interface to enable easy configuration and modification of parameters. The LCD screen has a backlight timeout, the handheld also has an energy efficient switch mode power supply and any non active hardware components are intelligently powered down when not being used.
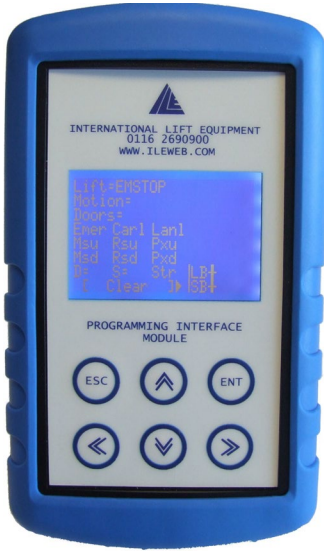
The handheld has 6 buttons as follows:

ESC – to go back one level in the menu system
ENT – to select an item in the menu
UP – to move up
DN – to move down
LEFT – to move left
RIGHT – to move right

For a full explanation on how to utilise the handheld to parameterise or modify the lift installation please refer to the Menu System section of this manual.

London Tel: 0208 527 9669
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Website: www.ilegroup.co.uk

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Menu System

The main menu is accessed by pressing the ENT key from the ILE splash screen. This will present you with a screen giving the following options:

```
    Operating Mode
 No Password View Mode
 Password L1 Edit Mode
 Password L2 Edit Mode
```
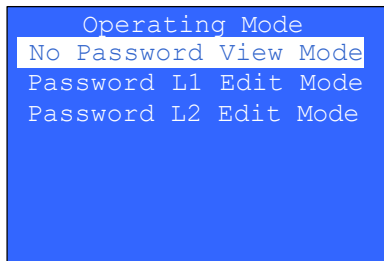
If you select 'No password View Mode' then you will be able to view all data but any parameters that require a password will not be editable.

If you select 'Password L1 Edit Mode' or 'Password L2 Edit Mode' then you will be prompted for a password. Level 1 Password is '111111', for password level 2 please contact ILE.

Once you have selected the relevant option the main menu will be presented as follows:

```
 Event History
 Parameters
 I/O
 Lift Viewer
 Speech & Ind
 Allocations
 Prepare to Test
 Parameter Control
```

You can traverse the menu system using the **UP** and **DN** buttons. If you wish to select an option then please press the **ENT** button. If you wish to go back in the menu structure please press the **ESC** button.

Event History

```
    Event History
 Event Viewer
 Clr Solo Events
 Clr Handheld Events
 Door Cycle Counter
 Journey Counter
```
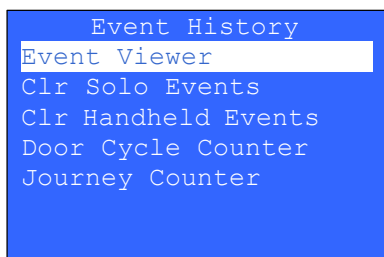
The Event history menu allows you to access the log of events and also gives you the ability to clear the events on the processor or just on the handheld.

The number of door cycles and journeys that have occurred on the lift can be viewed and these counters can also be reset if required.
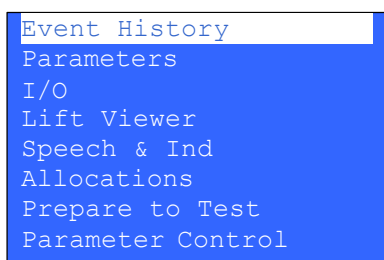
The Event Viewer

Once this option is selected the events will be downloaded from the solo processor to the handheld, while this is occurring the following screen with be visible.

```
 Retrieving Event Log



     045 Left
```
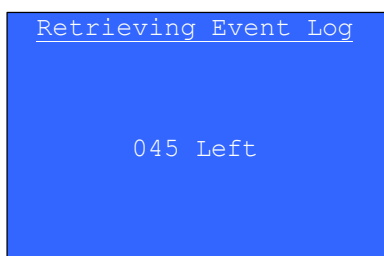
The number of events left to be downloaded is displayed on the screen. To do a full download of 50 events will take approximately 12 seconds.

London Tel: 0208 527 9669
London Fax: 0208 527 0936
Website: www.ilegroup.co.uk

Leicester Tel: 0116 269 0900
Leicester Fax: 0116 269 0939
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```
 Event History 01-07 >
SELECTOR RESET BOTTOM
LOST DIR ON HIGH SPEED
MSU STUCK
SLOWED: DN SLOW LIMIT
EMERGENCY STOP
FAULT RELAY DROPPED
PRIORITY SERVICE 1
```

The events being displayed in this example are number 1-7 in the event history, and the history can be traversed using the **UP** and **DN** buttons, or each page can be skipped by using the **LEFT** and **RIGHT** arrow buttons. If it is possible to skip a page then the '<' and/or '>' characters are displayed in the top left and right hand corners of the screen respectively.

```
   INSPECTION CONTROL
Event List No=41
Position=1     Occur=1
18/01/2010    14:32:28
_____

 Lift operating under
  Inspection control
   Engineer on site
```

More information about an event can be accessed by pressing the **ENT** button while an event is selected. This will give you information about the position the lift was at, the number of occurrences of the event, the time and date, and if relevant possible solutions to the problem. In order to return to the event history, press the ESC button.

Parameters

The parameters section of the menu has a number of sub menus as follows:

- Job & System
- Doors
- General
- Homing
- Travel

- Hydraulic
- Anti Nuisance
- OSI Indication
- Time & Date
- ERET 1-7

For a full list of the parameters and their constraints please see appendix A of this manual or contact ILE for assistance. For information on the functionality that the parameters provide see the Parameters Section of this manual.

I/O

If you want to see what inputs are on then you can use the label on the inside of the door of the controller to match up the relevant LED to the relevant I/O, or you can use the I/O viewer as follows.

```
         I/O
I/O Editor
I/O Viewer
I/O Timer Reference
I/O Timer Value
```

The I/O screen gives a number of options for editing the I/O along with the I/O timers, for full explanation of these please refer to the Skycom Solo Reference Manual.

In order to help with diagnosis of faults an I/O Viewer is provided.

```
    I/O Viewer
Module 1 – I/O
Module 2 – I/O
Module 3 – I/0
Module 4 – RELAY
Module 5 – MAINS
```

The I/O Viewer screen gives the option of which module to view, detailing the type of each module. Once a module has been selected the relevant data is displayed. Inputs show the I/O reference and whether the input is inverted and/or linked. Outputs just show the I/O reference.

London Tel: 0208 527 9669
London Fax: 0208 527 0936
Website: www.ilegroup.co.uk

Leicester Tel: 0116 269 0900
Leicester Fax: 0116 269 0939
Email: service@ilegroup.co.uk

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Screens for I/O and RELAY are shown below, with highlighted I/O currently on.

```
   Mod 2-I/O I/P 1-4 >           Mod 4-RELAY    1-6
  [PXU    ]  [NI – NL]         [UPR    ]
  [PXD    ]  [NI – NL]         [DNR    ]
  [MSU    ]  [NI – NL]         [DCR    ]
  [MSD    ]  [NI – NL]         [STR    ]
                               [RSD    ]
```

Lift Viewer

```
Lift=NORMAL  |  8  ⊢
Motion=      |  7  ⊢
Doors= CLOSED | 6  ⊢
EMER CARL LANL | 5 ⊢
MSU  RSU  PXU |  4  ⊢
MSD  RSD  PXD |  3  ⊢
D=   S=   STR |  2  ⊢
 [  Clear  ]> |  1  ⊢ ■
```
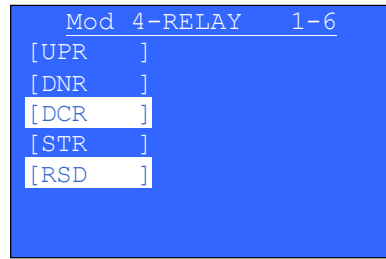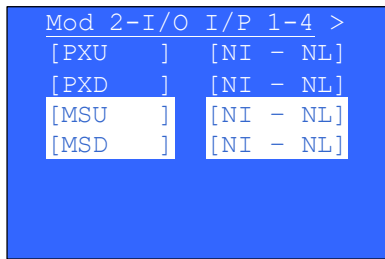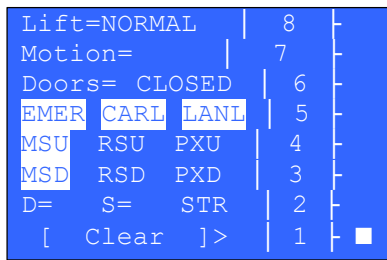
The Lift Viewer is the heart of the Skycom Solo handheld, this screen gives a lot of information about the status of the lift. It details the lift mode, motion, direction of travel, doors status, vanes (both door and stepping), resets, destination, and speed, as well as providing the ability to enter any kind of call.

Speech & Indicators

The Speech and Indicator menu allows the modification of speech positions and events, as well as I/O triggered messages, along with indicator floor designations, I/O triggered messages for the indicators and configuration of position in travel and enabling/disabling of the indicator hall lanterns. For further explanation of how to modify these parameters please refer to Appendix B or contact ILE for assistance.

Allocations

The allocations menu provides an interface to change the allocations of the lift installation for all types of call, (car, landing up, landing down, and priority). This menu also provides the settings for timed allocations.

Prepare to Test

This allows the site engineer to put the lift into an intermediary state while calls are still being answered in readiness for putting the lift into full inspection/test control.

Parameter Control

The parameter control menu allows the handheld to be synchronised with the Solo processor in 3 different ways, either from the solo processor to the handheld, from the handheld to the processor or by asking the direction on parameters that do not match. This screen also allows the auto synchronisation facility to be turned off (default is for this facility is on). You can also default all the parameters on the handheld if required.

London Tel: 0208 527 9669
London Fax: 0208 527 0936
Website: www.ilegroup.co.uk

Leicester Tel: 0116 269 0900
Leicester Fax: 0116 269 0939
Email: service@ilegroup.co.uk

Parameters

Job & System

The first 4 parameters, **Job Number**, **Solo Version Number**, **Customer Name**, and **Site Name** all provide information about the lift installation.

Collective Type details the way in which the calls are collected.

The **Number of Floors, Bottom Floor** and **Top Floor** give the basic amount of floors that the lift installation will service and the lower and upper bounds of the lift.

Doors

The **Spec** of the doors details whether the doors on the lift installation are automatic or manual. The **ACK Feedback** parameter details the type of feedback acknowledgment the doors will give to the lift controller.

DCR on When Closed dictates whether you want the door close relay (DCR) on or off when the doors are fully closed and **DOR on when Opened** dictates whether you want to door open relay (DOR) on or off when the doors are fully opened.

Stop Closing on Locks dictates when the DCR relay will be dropped by the lift controller.

Adv Doors Opening dictates whether the doors will start to open as the lift arrives at floor or once arrived at a floor.

Quick Close dictates whether the doors will close on a car call and bypass the dwell time or wait until the dwell time has passed before commencing the close sequence.

Park Open dictates whether the doors park open or closed.

Relax Locks dictates whether the doors need to be re closed before a travel can occur.

SE Count gives the threshold for the number of safe edge events seen before the doors park open.

DLR Count gives the threshold for the number of door light ray events seen before the doors nudge closed. In order to turn nudging off set to 0 in conjunction with DLR held time set to 0.

Norm Const Open and **Norm Const Close** dictate whether the normal operation of the doors requires constant pressure.

Open on Init, **Open on Reset**, **Open on Homing**, and **Open on Lost Dir** dictate the reaction of the doors and whether they will open or stay closed in each situation.

Disable Doors dictates whether the doors are in operation.

Door Close on Rev dictates whether the doors need to close before accepting a reverse landing call at a floor when no other calls and no car calls have been entered in reaction to answering a landing call.

London Tel: 0208 527 9669
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Website: www.ilegroup.co.uk

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Leicester Fax: 0116 269 0939
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Reverse Time dictates the earliest amount of time after the close relay has been dropped that the open relay can be activated and vice versa.

Car Preference Time is used only when the APB collective parameter has been set, landing calls are inhibited while this timer is still running.

CC Drop Time dictates the time from the doors being fully closed to the time the door close relay drops.

Lock Time dictates the amount of time after the doors have fully closed before the checking of the limits and the locks.

DOP Held Time, ***SE Held Time***, ***DLR Held Time*** give the threshold value of when the processor will ignore the input still being held and close the doors. In order to turn nudging off set to 0 in conjunction with DLR Count set to 0.

ACK Time is the amount of time allowed for the feedback from the doors to be given to the controller.

Ramp Time is the amount of time the processor gives before starting for the ramp to retract.

Car LAN Dwell Time, ***LAN Dwell Time***, ***Car Dwell Time***, ***DOP Dwell Time***, ***SE Dwell Time***, ***DLR Dwell Time***, ***Door Hold Dwell Time*** all give the threshold value when the processor will initiate the doors to close.

Locktip Reopen Time is the amount of time after a locktip is seen that the processor will then attempt to cycle the doors to get the lift back in service.

Landing Call Ignore is the threshold value at which the processor will ignore repeated future landing calls at a floor in order to let the lift car get away from that landing and give priority to the people already in the lift car.

Door Close Prot Time and **Door** ***Open Prot Time*** give the threshold value when the processor will stop the current door sequence, this is in order to not burn out the door gear.

Nudge Release Time is the threshold value after a nudge condition has occurred that the processor will release the condition, this is so that the lift can get away to answer calls but that at the next floor a nudge condition can be assessed if necessary.

General

No of Self Test dictates the number of times the lift controller will attempt to get the lift back into service.

Self Test Top Floor and ***Self Test Bot Floor*** dictate the bounds of the self test, so if the lift is in the bottom half of the shaft a call will be entered according to the self test top floor parameter, and vice versa if the lift is in the top half of the shaft.

Man Gate Late Cancel keeps the acceptance on until the gates open.

LISI Indicator gives a lift in service indication rather than a lift out of service indication.

Position Outputs dictates the type of the position outputs, they can be normal, binary, gray code or seven segment.

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Daylight Saving automatically adjusts the real time clock according to GMT.

Pre Flite Checking dictates whether a check is made of the acknowledge feedback once the locks are made before a travel will commence.

Reset Top Power Init ditates whether the lift will reset to the top or bottom floor on a power initialisation.

Dis CAR Acceptance and **Dis LAN Acceptance** disable/enable the respective acceptances.

Seven Segment Start dictates whether the seven segment indictors start at 0 or 1.

Self Test Time is the amount after a lift fault that the self test will be initiated.

Dive Time is the amount of time before a dive is initiated on initialisation or when leaving inspection mode to enter normal mode.

Speech Timeout Time the amount of time before a timeout of communication event with the speech unit is logged.

Eco Mode 1 Time and **Eco Mode 2 Time** are the timers that dictate when the lift has been idle for a period of time and as a result certain devices will be shutdown. The mode 2 timer starts when the mode 1 timer has timed out.

Re-leveling dictates whether the lift has the releveling facility.

Show Limit Events removes or includes the limit events in the event logger.

Homing

Homing Floor is the floor the lift will home to after the lift has been idle for the **Homing Time**.

Travel

Low Speed Prot Time is the amount of time the lift will travel at low speed/levelling speed before reporting a fault.

Start Fail Time is the amount of time the controller will allow, after the travel outputs are set, before a start failure event is logged, if the correct feedback is not seen from the drive.

Stop Time is the amount of time, after seeing the second vane, before the controller will drop the travel and direction relays.

Journey Time is the amount of time allowed without seeing a px signal before the lift controller will issue a journey timer event.

Pause Time is the amount of time after the end of a journey before the controller will try to start another journey.

Stop Fail Time is the amount of time, after seeing the second vane, before which the controller will issue a str stop timeout event, if the str feedback has not been dropped by the drive.

London Tel: 0208 527 9669
London Fax: 0208 527 0936
Website: www.ilegroup.co.uk

Leicester Tel: 0116 269 0900
Leicester Fax: 0116 269 0939
Email: service@ilegroup.co.uk

Start Delay Time is the time by which the start will be delayed.

Enable Time is the amount of time, after the lift has stopped, before the enable output is dropped.

Stuck Vane Time is the amount of time that a vane needs to be on in order for the controller to issue a stuck vane event.

Hydraulic

Hyd Homing Time is the amount of time after normal homing has been achieved that the hydraulic homing call will be entered at the bottom floor of the lift.

Max Relev Period is the maximum time that the controller will allow the relevel output to be on.

Relev Yoyo count is the maximum number of times the controller will keep releveling, each time the lift successfully relevels at a floor a counter is incremented, when it exceeds this value it will no longer attempt to relevel, and will put a call into the bottom floor.

Relev Yoyo Period is the amount of time the controller will allow for the yoyo count to be incremented and eventually exceeded.

Anti Nuisance

DOP Held Dump Calls dictates whether, when the door open push is permanently held in, the calls in the system will get dumped or not.

Num of Reverse Calls this is the number of reverse calls that are allowed in the previous direction of travel just prior to a change in direction.

Fwd Calls Remaining this is the number of calls entered in front of the lift in its current direction of travel that are allowed if no light ray is seen repeatedly.

Stops No Light Ray is the number of stops with no door light ray being seen before all car calls will get cleared.

Stuck Button Detect is the amount of time a button is to be held before it will register a stuck button event.

Stuck Button Reinit is the amount of time, after seeing a stuck button event for a button, before it will reinitialise the button.

OSI Indication

All parameters in this section dictate whether the out of service indication is shown or not.

London Tel: 0208 527 9669
London Fax: 0208 527 0936
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Leicester Tel: 0116 269 0900
Leicester Fax: 0116 269 0939
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ERET 1-7

There are 7 emergency return profiles that are fully configurable using the following set of parameters.

Name is the name of the profile.

Drop off Floor this is the floor at which passengers, in the lift when the eret input is seen, will be dropped off at.

Return Floor is the floor the lift will return to once the drop off facility has been completed.

Alt Return Floor if the return floor can not be achieved this floor will be used instead.

Const Pres Open and *Const Pres Close* dictate whether constant pressure open and closed are used within the eret.

Park Open and *Park Closed* dictate what the doors do when arriving at a floor.

LAN Call Open dictates whether a landing call at the floor the lift car is at will open the door or not.

Car Calls dictates whether car calls are allowed in the eret.

Enable DLR dictates whether the DLR input is active or not.

Dwell Time is the time used for the door dwell while in the eret condition.

Ph1 Clear Calls dictates whether the calls are cleared or not when the eret condition is first entered.

Ph2 Activation dictates whether phase 2 of the eret needs an input to initiate it or not.

Dive Power Init dictates whether the lift will dive on a power initialisation in the eret.

No Entry Sign dictates whether the no entry sign output is set when in the eret condition.

OSI Indication dictates whether the out of service indicator is activated when in the eret condition.

Ignore DOP dictates whether the door open push is ignored or accepted in the eret condition.

Time & Date

Year, Month, Day, Hour, and *Minute* allow the setting of the real time clock.

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Leicester Fax: 0116 269 0939
Email: service@ilegroup.co.uk

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APPENDIX A – Parameter List

Job & System

Name	Type	Min	Max	Default	Step	Password Level
Job Number				xxxx		V
Solo Version Number	a-z			xxx		V
Customer Name	a-z					1
Site Name	a-z					1
Collective Type	Spec			Full Collective		2
Number of Floors	0-9	2	8		1	2
Bottom Floor	0-9	1	7		1	2
Top Floor	0-9	2	8		1	2

Collective Type – Full Collective/Down Collective/Non Sel Collective/APB

Doors

Name	Type	Min	Max	Default	Step	Password Level
Spec	Spec			Auto Car/Lan		2
ACK Feedback	Spec			Door Limits		2
DCR on when Closed	Yes/No			No		2
DOR on when Opened	Yes/No			No		2
Stop Closing on Locks	Yes/No			No		2
Adv Doors Opening	Yes/No			No		1
Quick Close	Yes/No			Yes		1
Park Open	Yes/No			No		1
Relax Locks	Yes/No			No		1
SE Count	0-9	0	30	4	1	1
DLR Count	0-9	0	30	4	1	1
Norm Const Open	Yes/No			No		2
Norm Const Close	Yes/No			No		2
Open on Init	Yes/No			Yes		1
Open on Reset	Yes/No			Yes		1
Open on Homing	Yes/No			Yes		1
Open on Lost Dir	Yes/No			Yes		1
Disable Doors	Yes/No			No		1
Door Close on Rev	Yes/No			No		1

Spec - Auto CarLan/Auto Car Man Lan/Man Gates
Ack Feedback – Door Limits/DOC Input

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Name	Type	Min	Max	Default	Step	Password Level
Reverse Time	MS	20	1000	100	20	2
Car Preference Time	MS	0	30	1	1	2
CC Drop Time	MS	20	3000	400	20	2
Lock Time	MS	20	3000	1000	20	2
DOP Held Time	S	0	60	20	1	1
SE Held Time	S	0	60	20	1	1
DLR Held Time	S	0	60	20	1	1
ACK Time	S	0	10	2	1	2
Ramp Time	S	0	30	0	1	1
CAR LAN Dwell Time	S	0	60	7	1	1
LAN Dwell Time	S	0	60	5	1	1
CAR Dwell Time	S	0	60	3	1	1
DOP Dwell Time	S	0	60	4	1	1
SE Dwell Time	S	0	60	1	1	1
DLR Dwell Time	S	0	60	1	1	1
Door Hold Dwell Time	S	0	1200	45	1	1
Locktip Reopen Time	S	0	10	4	1	1
Landing Call Ignore	S	0	600	10	1	1
Door Close Prot Time	S	0	60	20	1	1
Door Open Prot Time	S	0	60	20	1	1
Nudge Release Time	S	0	60	5	1	1

General

Name	Type	Min	Max	Default	Step	Password Level
No of Self Test	0-9	0	10	5	1	1
Self Test Top Floor	0-9	1	8	8	1	1
Self Test Bot Floor	0-9	1	8	1	1	1
Man Gate Late Cancel	Yes/No			No		1
LISI Indicator	Yes/No			No		1
Position Outputs	Spec			Normal		1
Daylight Saving	Yes/No			Yes		1
Pre Flite Checking	Yes/No			Yes		1
Reset Top Power Init	Yes/No			No		1
Dis CAR Acceptance	Yes/No			No		2
Dis LAN Acceptance	Yes/No			No		2
Seven Segment Start	0-9	0	1	0	1	1
Self Test Time	S	0	600	120	1	1
Dive Time	S	0	600	15	1	2
Speech Timeout Time	S	0	600	30	1	2
ECO Mode 1 Time	MS	1	20	10	1	1
ECO Mode 2 Time	MS	1	20	10	1	1
Re-leveling	Yes/No			No		1
Show Limit Events	Yes/No			Yes		1

Position Outputs – Normal/Binary/Gray Code/Seven Segment

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Homing

Name	Type	Min	Max	Default	Step	Password Level
Homing Time	S	20	1200	360	1	1
Homing Floor	0-9	1	8	1	1	1

Travel

Name	Type	Min	Max	Default	Step	Password Level
Low Speed Prot Time	S	0	120	20	1	1
Start Fail Time	S	0	30	2	1	1
Stop Time	MS	20	3000	200	20	1
Journey Time	S	0	120	20	1	1
Pause Time	S	0	10	2	1	1
Stop Fail Time	S	0	30	2	1	1
Start Delay Time	MS	20	3000	200	20	1
Enable Time	MS	20	3000	200	20	1
Stuck Vane Time	S	0	30	10	1	1

Hydraulic

Name	Type	Min	Max	Default	Step	Password Level
Hyd Homing Time	S	0	1200	0	1	1
Max Relev Period	S	0	60	20	1	2
Relev Yoyo Count	0-9	1	24	11	1	2
Relev Yoyo Period	S	0	120	60	1	2

Anti Nuisance

Name	Type	Min	Max	Default	Step	Password Level
DOP Held Dump Calls	Yes/No			Yes		1
Num of Reverse Calls	0-9	0	10	3	1	1
Fwd Calls Remaining	0-9	0	10	3	1	1
Stops No Light Ray	0-9	1	10	3	1	1
Stuck Button Detect	S	10	50	20	1	1
Stuck Button Reinit	M	1	20	2	1	1

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OSI Indication

Name	Type	Min	Max	Default	Step	Password Level
Error In Position	Yes/No			Yes		1
Double Journey Time	Yes/No			Yes		1
Hydraulic Overtravel	Yes/No			Yes		1
Start Failure	Yes/No			Yes		1
Relevel Error	Yes/No			Yes		1
Open Prot Fault	Yes/No			Yes		1
Close Prot Fault	Yes/No			Yes		1
Lan Lock Failure	Yes/No			Yes		1
Car Lock Failure	Yes/No			Yes		1
Motion Failure	Yes/No			Yes		1
Inspection	Yes/No			Yes		1
LW90	Yes/No			No		1
LW110	Yes/No			No		1
Thermistor Tripped	Yes/No			Yes		1
Prepare To Test	Yes/No			Yes		1
EMER Stop Broken	Yes/No			Yes		1
Both Resets	Yes/No			Yes		1
Pre Flite Failure	Yes/No			Yes		1
Stuck Vanes	Yes/No			Yes		1

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ERET 1-7

Name	Type	Min	Max	Default	Step	Password Level
Name	a-z					1
Drop off Floor	0-9	0	8	0	1	1
Return Floor	0-9	0	8	1	1	1
Alt Return Floor	0-9	0	8	0	1	1
Const Pres Open	Yes/No			No		2
Const Pres Close	Yes/No			No		2
Park Open	Yes/No			No		1
Park Closed	Yes/No			No		1
LAN Call Open	Yes/No			No		1
Car Calls	Yes/No			No		1
Enable DLR	Yes/No			No		1
Dwell Time	0-9	0	180	5	1	1
Ph1 Clear Calls	Yes/No			No		1
Ph2 Activation	Yes/No			No		1
Dive Power Init	Yes/No			No		1
No Entry Sign	Yes/No			No		1
OSI Indication	Yes/No			Yes		1
Ignore DOP	Yes/No			Yes		1

Prepare To Test Setup

Name	Type	Min	Max	Default	Step	Password Level
Prep to Test Control	Spec			Disabled		1

Prep to Test Control – Disabled/PTT Park Open/PTT Park Closed

Speech & Indicator

Name	Type	Min	Max	Default	Step	Password Level
Pos in Travel	Yes/No			Yes		1
Ind HLR Enable	Yes/No			Yes		1

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Time & Date

Name	Type	Min	Max	Default	Step	Password Level
Year	0-9	7	99	9		1
Month	0-9	1	12	1		1
Day	0-9	1	31	1		1
Hour	0-9	0	23	1		1
Minute	0-9	0	59	1		1

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APPENDIX B – Speech List

1:	THIS LIFT IS OVERLOADED		65:	SEVENTEEN
2:	THIS LIFT IS UNDER MAINTENANCE CONTROL		66:	EIGHTEEN
3:	THIS LIFT IS OUT OF SERVICE		67:	NINETEEN
4:	THIS LIFT IS UNDER FIRE CONTROL OPERATION		68:	TWENTY
5:	THIS LIFT IS UNDER EVACUATION CONTROL		69:	TWENTYX
6:	MAIN EXIT FLOOR		70:	THIRTY
7:	THIS LIFT IS RETURNING		71:	THIRTYX
8:	TO		72:	FORTY
9:	TO THE		73:	FORTYX
10:	THIS LIFT IS RETURNING UNDER FIRE SERVICE		74:	FIFTY
11:	THIS LIFT IS		75:	SUB BASEMENT
12:	ARRIVING AT		76:	THIS WAY OUT
13:	xxxxxxxxxx		77:	1ST
14:	THE ALARM HAS BEEN ACTIVATED		78:	2ND
15:	ACCESS		79:	3RD
16:	UNDER GOODS CONTROL		80:	4TH
17:	THIS LIFT IS UNDER SERVICE CONTROL		81:	5TH
18:	UNDER FIRE FIGHTERS CONTROL		82:	6TH
19:	CAR		83:	7TH
20:	PLEASE MIND THE DOORS		84:	8TH
21:	LIFT		85:	9TH
22:	ON TEST		86:	10TH
23:	FAILED TO START		87:	11TH
24:	COMING		88:	12TH
25:	DOORS OPENING		89:	13TH
26:	DOORS CLOSING		90:	14TH
27:	STAND CLEAR		91:	15TH
28:	STAND CLEAR OF THE DOORS		92:	16TH
29:	PLEASE REDUCE WEIGHT IN LIFT		93:	17TH
30:	PLEASE EXIT LIFT		94:	18TH
31:	GOING UP		95:	19TH
32:	GOING DOWN		96:	20TH
33:	UNDER EVACUATION CONTROL		97:	xxxxxxxxxx
34:	UNDER PRIORITY SERVICE		98:	A
35:	UNDER FIRE SERVICE		99:	B
36:	UNDER FIRE CONTROL OPERATION		100:	C
37:	UNDER FIRE CONTROL		101:	D
38:	UPPERX		102:	E
39:	LOWERX		103:	F
40:	XFLOOR		104:	G
41:	FLOORX		105:	H
42:	XLEVEL		106:	I
43:	LEVELX		107:	J
44:	ZERO		108:	K
45:	MINUS ONE		109:	L
46:	BASEMENT		110:	M
47:	MINUS TWO		111:	BEING SERVICED
48:	GROUND		112:	UNAUTHORISED CAR TOP ACCESS
49:	ONE		113:	PENTHOUSE
50:	TWO		114:	PODIUM
51:	THREE		115:	CAR PARK
52:	FOUR		116:	MEZZANINE
53:	FIVE		117:	RECEPTION
54:	SIX		118:	SERVICE
55:	SEVEN		119:	SHOP
56:	EIGHT		120:	FRONT
57:	NINE		121:	REAR
58:	TEN		122:	MINUS
59:	ELEVEN		123:	BING
60:	TWELVE		124:	BONG
61:	THIRTEEN		125:	BING BONG
62:	FOURTEEN		126:	WAY OUT
63:	FIFTEEN		127:	PAUSE (100 MilliSeconds)
64:	SIXTEEN			

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APPENDIX C – Event List

EMERGENCY STOP	The live voltage feed to input EMER was removed
LAN LOCK TIP HIGH SPD	The live voltage feed to input LANL was removed on high speed
CAR LOCK TIP HIGH SPD	The live voltage feed to input CARL was removed on high speed
LAN LOCK TIP LOW SPD	The live voltage feed to input LANL was removed on low speed
CAR LOCK TIP LOW SPD	The live voltage feed to input CARL was removed on low speed
LAN LOCK NOT MAKING	Landing lock failed to make contact whilst doors closing
CAR LOCK NOT MAKING	Car lock failed to make contact whilst doors closing
FAILURE TO START	No STR input to processor, check THERM, limit, RunContact, PFRR
RE-LEVELING ERROR	Lift error whilst releveling due to wrong or no vanes
RE-LEVELING TIMEOUT	Lift releveling erro due to excess releveling time
SELECTOR RESET BOTTOM	the lift has reset to bottom floor: input RSD on
LOW SPEED TIMER	Lift travelling on low speed exceeded low speed protection timer
JOURNEY TIMER	Lift travelling on high speed and exceeded journey time
DOOR OPEN PROT TIMER	Door timer exceeded whilst doors opening
DOOR CLOSE PROT TIMER	Door timer exceeded whilst doors closing
LAN LOCK FAILED	Landing lock failed to make contact 4 times consecutively
CAR LOCK FAILED	Car lock failed to make 4 times consecutively
RE-LEVELING FAULT	Releveling fault, check levelling vanes
110% OVERLOADED	The lift has been overloaded by 10% check car/load device
MOTION FAILURE	STR input lost when moving, check THERM, limit, RunContact, PFRR
90% OVERLOADED	The lift has been loaded with 90% load, check car/load device
RE-LEVELING YOYO ERR	Releveling error doe to excess yoyo levels in yoyo relev time
HYDRAULIC OVERTRAVEL	Hydraulic fault overtravel at top floor input HYDOTL asserted
MSU AND MSD STUCK	MSU MSD levelling proximity switches stuck on
MSU STUCK	MSU up levelling proximity stuck on
MSD STUCK	MSD dn levelling proximity stuck on
SELECTOR RESET TOP	The lift has reset to the top floor, input RSU on
RESETS TOP AND BOT ON	Selector resets top and bottom, both on, inputs RSU/RSD on
TOP FLOOR SELF TEST	Lift has performed top floor self test
BOT FLOOR SELF TEST	Lift has performed bottom floor self test
SELF TEST PASSED	Self test performed by the lift passed
SELF TEST FAILED	Self test performed by the lift failed
LEVEL VANE FAULT UP	Processor seen the wrong vane going UP, MSD instead of MSU
LEVEL VANE FAULT DN	Processor seen the wrong vane going DN, MSU instead of MSD
THERMISTOR TRIPPED	Motor thermistors tripped
SLOWED: UP SLOW LIMIT	Lift slowed on limit instead of PX vane, check vanes/tapehead
SLOWED: DN SLOW LIMIT	Lift slowed on limit instead of PX vane, check vanes/tapehead
STR STOP TIMEOUT	Processor time dout whilst waiting for STR input to disable
PRIORITY SERVICE 1	Lift operating according to priority service 1
PRIORITY SERVICE 2	Lift operating according to priority service 2
PRIORITY SERVICE 3	Lift operating according to priority service 3
PRIORITY SERVICE 4	Lift operating according to priority service 4
PRIORITY SERVICE 5	Lift operating according to priority service 5
PRIORITY SERVICE 6	Lift operating according to priority service 6
PRIORITY SERVICE 7	Lift operating according to priority service 7
PROCESSOR REBOOTED	The processor has rebooted whilst the power was on
INSPECTION CONTROL	Lift operating under inspection control, engineer on site
PREP TO TEST CONTROL	Lift operating under prepare to test control
STUCK CAR BUTTON	Stuck button in lift car, check car pushes
STUCK UP LAN BUTTON	Stuck button on landing, check UP landing pushes
STUCK DN LAN BUTTON	Stuck button on landing, check DN landing pushes
STR INPUT HELD ON	STR input held on lift will not restart check, BKC, STR, MC
PRE FLITE CHK FAILED	Short circuit detected on the locks when doors fully open
IO BOARD/S REMOVED	Lift travel inhibited due to removal of boards
IO BOARD/S ADDED	Lift travel inhibited due to addition of boards
IO BOARD TYPE CHANGED	IO board type changed, possible faulty board or corrupt data
PX SIGNAL FAULT	PX signal stuck on or on with MSU/MSD sequence incorrect
LOW SPEED ERROR FAULT	Low speed timer timed four time consecutively
CAR LOCK TIP FAIL	Locks failed to make after locktip on doors

DOOR OPEN PUSH HELD	Door open push held, all calls cancelled
SAFE EDGE HELD	Safe edge held all calls cancelled
DETECTOR EDGE HELD	Detector edge held, check door light ray
SPEECH UNIT COMS LOST	Serial communication to speech unit lost, check cables
SPEECH UNIT COMS REST	Serial communication to speech unit restored
LOST DIR ON HIGH SPEED	On high speed a call allocation was removed forcing lift slowdown
ACK F.BAK NOT SEEN OP	Door open limit/doc feedback not seen within ack timer
ACK F.BAK NOT SEEN CL	Door close limit/doc feedback not seen within ack timer
SE COUNT EXCEEDED	Lift out of service safe edge repeatedly operated
DLR COUNT EXCEEDED	Door light ray seen repeatedly, nudging invoked
DOOR CLOSE PROT FAULT	Door close protection timeout seen repeatedly
START FAILURE	No STR input to micro processor check THERM limit, RunContact, PFRR
LAN LOCKTIP FAILURE	Lan locks not remade after locktip timeout
PRE FLIGHT CHK FAULT	Short circuit detected on the locks when doors fully open
DOOR OPEN PROT FAULT	Repeated door open protection timeouts
HANDHELD DISCONNECTED	Lift out of service until handheld reconnected
FAULT RELAY DROPPED	Lift out of service due to unsafe panel condition

APPENDIX D – INPUT LIST

LU1	DCP
LU2	ERET1
LU3	ERET2
LU4	ERET3
LU5	ERET4
LU6	ERET5
LU7	ERET6
LD2	ERET7
LD3	ERET8
LD4	LW90
LD5	LW110
LD6	SERV
LD7	FIRE
LD8	THERM
LP1	EMER
LP2	CARL
LP3	LANL
LP4	TEST
LP5	T OPEN
LP6	T CLOSE
LP7	T UP
LP8	T DOWN
CP1	D OL
CP2	D CL
CP3	D OC
CP4	D HOLD
CP5	D DIS
CP6	ALARM
CP7	PH2 ACT
CP8	ERET 1A
PXU	ERET 2A
PXD	ERET 3A
MSU	ERET 4A
MSD	ERET 5A
RSU	ERET 6A
RSD	ERET 7A
STR	ERET 8A
DOP	HYDOTL
SE	* OSI *
DLR	

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APPENDIX E – OUTPUT LIST

LU1	IU
LU2	ID
LU3	HLRU
LU4	UPR
LU5	DNR
LU6	DOR
LU7	DCR
LD2	NUDGE
LD3	HSR
LD4	MSR
LD5	LSR
LD6	STOP
LD7	STAR
LD8	DELTA
LP1	OSI
LP2	OLI
LP3	FIRE I
LP4	LW90 I
LP5	LW110 I
LP6	HLU1
LP7	HLU2
LP8	HLU3
CP1	HLU4
CP2	HLU5
CP3	HLU6
CP4	HLU7
CP5	HLD2
CP6	HLD3
CP7	HLD4
CP8	HLD5
POS 1	HLD6
POS 2	HLD7
POS 3	HLD8
POS 4	DRV EN
POS 5	DRV LEV
POS 6	D HOLD
POS 7	DOP ILL
POS 8	HLRD
POS A	ECO M1
POS B	ECO M2
POS C	RAMP
POS D	NO E SI
POS E	RPR
POS F	RE-LEV
POS G	GATE OP
POS H	

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