

LIFT CONTROL WITH FLOOR BUTTON FEEDBACK (V3 OR LATER)

Lift control logic can be used to control Floor security for a number of Lift Cars. The security of up to 64 floors can be controlled for a maximum of 32 Lift Cars depending on interface method used, memory size, memory configuration and system traffic.

There are three methods of Lift Control available. All methods use a standard Reader Module mounted in each Lift Car for interface to the Reader. An optional LCD Terminal may also be installed in each Lift Car if Card+PIN is required for high security applications:

- 1) Floor Button Enable via simple Relay interface.
-Expander Module/s are installed in the Lift motor room to provide Auxiliary Outputs to enable/disable each Floor selection button. (The Auxiliaries control Relays that provide the interface to the Lift Controller.)

See “Basic Lift Programming” in the Basic Programming Guide section.

- 2) Floor Selection via Button Feedback. (V3 or later)
-Universal Expander Module/s with Lift Interface board/s fitted are installed in the Lift motor room. These provide an Isolated Zone Input and Relay output that are effectively connected in series with each Floor selection button.

-When a User presents a valid card at the reader in the Lift Car, the system monitors the floor selection buttons for a fixed period of time. When a button is pressed, the system checks the floor against the User's permissions (“Lift Car List”, “Floor List”, etc.), and if allowed, pulses the Relay to select that Floor, and cancels the button time.

-Only one floor button will be accepted each time a valid card is presented. Since the floor selection buttons are monitored, details of the User, Lift Car and Floor selected are saved to Review.

- 3) High Level Interface via RS232 UART Port. (V3 or later)
-A single RS232 connection is established between a UART Port fitted to the Control Module, and a High Level Elevator Management System (EMS). This allows security mask information to be transferred to the EMS without the need for Expander modules to provide Auxiliaries and Zones for Button Inputs. At present the OTIS protocol is supported with logging of lift buttons.
The High Level interface drastically reduces the amount of cabling and labour associated with the installation which can also lead to a greater level of reliability.

See “Lift Control with High Level Interface” in the Applications Programming Guide section.

Installation Notes:

- 1) CAUTION: If a Control Module is being upgraded from an earlier version firmware to Version 3 for Lift Control features, the Memory will need to be re-configured as new Memory structures have been added.
- 2) State and/or National Building regulations may govern the type of Lift control allowed on any particular site.
- 3) The Lift Controller may already allow for security control of the floor selection buttons. Check if this is the case, and if so, ascertain the type of interface required.
- 4) Check that the button voltage and switched current value are within the specifications of the interface that you propose to use. i.e. Relays, Lift Interface board, etc.
- 5) The Reader, along with a standard Reader Module and Power Supply, are normally installed in the Lift Car.
i.e. Allow one Reader Module per Lift Car.
The Reader Module is connected to the LAN via twisted pair cable, preferably shielded, up the Lift shaft. It is recommended that a LAN Isolator is installed in the Lift motor room to isolate the LAN cable in the Lift shaft from the rest of the LAN. One LAN Isolator will provide isolated LAN branches for two Lifts.
- 6) In some circumstances, the Reader Module can be installed in the Lift motor room, and provide the interface to Readers in two Lift Cars. The following points must be noted:
-The total length of trailing cable from the Reader to the Reader Module must be within the maximum cable length allowed as specified by the Reader manufacturer.
-The cable from the Reader to the Reader Module must be as specified by the Reader manufacturer. i.e. shielded data cable and not twisted pairs.
-Only one of the two Readers can be processed at a time. i.e. While Lift buttons are enabled in one Lift Car, the Reader in the other Lift Car will not accept cards.
- 7) When Floor button monitoring is required, Universal Expander Modules in conjunction with Lift interface boards must be used. The Zones used for button feedback will be the Zones that correspond to the Auxiliary numbers used for floor button enables. e.g. If Auxiliaries B05:X09 (1st Floor Auxiliary) to B05:X16 are used for a particular Lift Car, then Zone Inputs B05:Z09 to B05:Z16 must be used for button feedback.
- 8) Expander Type must be chosen to support the number of Floors required.
a) Mini Expander if up to 8 floors and no button feedback required.
b) Universal Expander configured as “E” Type if up to 16 floors.
c) Universal Expander configured as “B” Type if up to 32 floors.
-Where less than 32 Floors are controlled, the Floor Auxiliaries (and Button Sense Inputs if required) must all reside on the same Expander Module.
-Where more than 32 Floors are controlled, the Floor Auxiliaries (and Button Sense Inputs if required) must all reside on two sequentially numbered “B” Type Universal Expander Modules.
-Expander Modules will be installed with the Lift Control equipment in the Lift motor room.
-If Button feedback is used, set Universal Expanders to 40mS (fast) Zone De-bounce. (SW1 switch 2 to ON)
- 9) When Lift Interface boards are used, a Button Sense/Relay circuit on the Interface is connected in series with each of the floor selection buttons and not via separate relays. The actual button voltage is used to sense what floor has been selected and then the Lift Interface board will allow this signal to connect through to the Lift Controller if a valid card has been presented.

Operation with Button feedback.

The sequence below shows the logic that the system applies in determining what floor buttons to enable for a particular lift car when a card is presented at a reader.

- Process card according to reader format & mode.
- Check card exists in system. (Check Issue # if required)
- Check if card has an expiry date that has expired.
- Check if card is cancelled (User type = 0).
- Adjust user type by time-zone if required.
- Check if time-zone has cancelled the user type.
- Turn on valid code Aux for this user type if programmed.
- Ensure that a lift car has been assigned to this reader.
- Check that lift car access group is not zero.
- Adjust access group by time-zone if required.
- Check that lift car access group not cancelled by a time-zone.
- Check that a lift car list exists for this user type.
- Adjust lift car list by time-zone if required.
- Check that lift car list not cancelled by a time-zone.
- If need dual user & no dual code over-ride & allowed to provide 1st user, then go get 2nd user.
- If need pin then wait for this users pin to be entered.
- Cancel user type if required (“Card Cancel” option)
- Check that user type floor list is not zero.
- Adjust user type floor list by time-zone if required
- Set up required floor button list based on what floors are in the user type floor list. If time-zone disabled then no buttons.
- If lift car floor list is defined then adjust for time-zone if required and remove any buttons from the button list for any floors not in the lift car floor list. If time-zone disabled then no buttons.
- If a user type area off list is defined (non zero) then adjust area list for time-zone if required and for every floor in this lift car that has an area assigned to it that is not in the area off list remove the button from the button list. If the floor has no assigned area then ignore.
- Turn on Reader Module “Valid” auxiliary for the button on time. (If user type has (d)isabled flag set then used disabled button time.

Every time a lift button is pushed (zone seals) then:

- If relevant floor is in free access then save a review message and ensure auxiliary is still off.
- If relevant floor is secure and the valid auxiliary is still on and the last user is allowed this floor, then save a review message, and turn off the relevant floor auxiliary and turn off the valid auxiliary early. If the user was not allowed access or the valid auxiliary wasn't on, then save a review message and turn on the error auxiliary.

Every time a lift button is released (zone alarms) then set the relevant floor auxiliary back to its secure/free access state.

Programming

1. Note Lift details.

- 1.1 Plan your Lift programming requirements. For each Lift Car note the:
- Lift Car number to be used. (LC002, LC002, etc.)
 - Reader Module being used. (R001, R002, etc.)
 - Reader Module Port that the Reader for each Lift Car is connected to. (Rdr 1 or Rdr 2)
 - Any LCD Terminal/s used for Card + PIN access in Lift Cars.
 - Any restrictions on floors accessed by particular Lift Cars.
 - Any Areas to be assigned to floors. IF required for prevention of entry into Areas that are turned On.
 - The Expander Module Auxiliaries to be used for floor enable for each Lift Car. This will also determine the Zone Inputs used for button feedback as the Zone number corresponds with the Auxiliary used for the particular floor. e.g. If B05:X12 controls floor 5, then B05:Z12 is used for floor button 5.
- Note: Where a smaller number of floors are used, the same Expander can be used for more than one Lift Car, although this will compromise redundancy.

The table at the end of this section may be copied and used to record this information before programming is commenced.

2. Program the Reader Module/s [MENU 7, 2, 4]

Program the attributes required for each Reader Module used for Lift Control.

- 2.1 Adjust the Reader Module "Poll Time" and "LAN Priority" IF this is considered necessary. LAN Priority programming is accessed by pressing the <ON> key when the "Poll Time" is displayed.
- 2.2 Check that the Reader Module Purpose is set to "Lift Control".
- 2.3 Assign the 1st Lift to be controlled by this Reader Module.
- 2.4 IF the Reader Module is to be used in "2 Door/Lift" Mode;
Assign the 2nd Lift to be controlled by this Reader Module. (NOT RECOMMENDED)
- 2.5 Program the Reader Module Options. [C E X F W N T 2]
Comms (LAN) Fail Options:
Not relevant to Lift Control.
Other Options:
-No Valid/Invalid LED control. Set to Yes IF the LED Auxiliaries need to be used for other purposes.
-2 Door/Lift Mode. Set to Yes IF Reader Module is to be used to control 2 Lift Cars.
- 2.6 Program the parameters for the first Reader (Rdr 1) connected to the Reader Module.
- Reader location. Set to Outside (the Reader is used to Enter).
 - Reader Format. Choose the correct Card data format.
 - Reader Mode. Credit Card/Direct Entry/Site Code/Any Card
 - Keypad for PIN code Entry. IF Lift requires Card + PIN for floor access.
 - Module for PINs. IF "LCD Terminal" is selected as the Keypad for PIN in the previous option, program the module number (Txxx) of the LCD Terminal to be used.
- 2.7 Program the parameters for second Reader (Rdr 2) connected to the Reader Module.
Note: In 2 Door/Lift Mode, Rdr 1 controls the 1st Lift and Rdr 2 controls the 2nd Lift.
Options are the same as those for the first Reader.

3. Initialize the LAN

Whenever any programming is done that effects Module parameters, (especially Reader Modules, LCD Terminals and Mini Expanders) the LAN must be initialized to ensure that all changes take effect.

If all modules are connected and operational, and the system is complete, perform the **Secure LAN [MENU 7, 8, 1]** or **Initialize LAN [MENU 7, 8, 2]** functions. (“Secure LAN” Initializes the LAN and sets the Encryption)

4. Program Access Groups. [MENU, 2, 4, 2]

- 4.1 It is recommended that one or more new Access Groups are programmed to define Lift Control requirements.
- 4.2 Program a name for any new Access Groups that you create.
- 4.3 IF it is necessary to restrict the valid period of the Access Group, or provide an alternate set of Access Group permissions for different times of day and/or days of the week, assign an appropriate TimeZone to specify when the Access Group is Valid.
e.g. If “Card Only” operation is adequate during the day, but “Card+PIN” is required after hours.
- 4.4 If a TimeZone is assigned, you may then specify an Alternate Access Group that will be used when the TimeZone specified in the previous step is Invalid.
- 4.5 Program the Entry Parameters required.
 - Entry Mode. Card only / Card AND PIN. (“PIN only” & “PIN or Card” are not relevant for Lift Control)
 - Entry Options. [B L A D]
 - Dual User. Set to Yes IF two User Codes / Cards are required to allow entry.
- 4.6 Program the Exit Parameters required.
 - Exit Mode. Card only / Card AND PIN. (“PIN only” & “PIN or Card” are not relevant for Lift Control)
 - Exit Options. [B L A D]
 - Dual User. Set to Yes IF two User Codes / Cards are required to allow exit.

5. Program Floor Lists [MENU 2, 3, 4]

IF any Lift Cars are to be restricted to servicing only specific floors, Floor List/s must be programmed to define the floors allowed for each Lift Car.

- 5.1 Determine the Floor/s that different Lift Cars will be restricted to.
From this information you can program the **Floor Lists** required [MENU 2, 3, 4].
- 5.2 IF it is necessary to restrict the valid period of the Floor List, or provide an alternate List of Floors for different times of day and/or days of the week, assign an appropriate TimeZone to specify when the Floor List is Valid.
- 5.3 If a TimeZone is assigned, you may then specify an Alternate Floor List that will be used when the TimeZone specified in the previous step is Invalid.
- 5.4 Assign the Floor/s to each Floor List. A Floor List can support any number of Floors up to the maximum number of Floors allowed in the Memory configuration.

6. Define the Button Area/s. [MENU 7, 1]

IF button feedback is used, a separate Area must be programmed for every Lift Car to be controlled.

- 6.1 Select a new Area to program.
- 6.2 Program an Area Name. e.g. Lift 1 buttons, Lift 2 buttons, etc.

7. Program the Lifts [MENU, 7, 6]

Each Lift Car to be controlled is individually programmed.

- 7.1 Select the Lift Car number to program.
- 7.2 Assign a suitable "Access Group". This will determine the way that the Lift is controlled.
- 7.3 IF the Lift Car is to be restricted to servicing only specific floors, assign a "Floor List".
- 7.4 Define the total "Number of Floors" to be controlled in this Lift Car.
- 7.5 Define the 1st Floor Auxiliary that will be used to control Floors for this Lift Car.
Floor button enable Auxiliaries start at this Auxiliary and run in sequence to the number of floors specified in the previous step.
If the required number of Auxiliaries overruns the first module, the sequence automatically rolls over to Auxiliary 1 of the next module of the same type. (Only recommended if control of more than 32 floors is required.)
- 7.6 Assign the "Valid Auxiliary" for the Lift.
This Auxiliary is turned On for the "button time" and must be programmed if button feedback is used.
The Auxiliary specified may be a Reader LED control Auxiliary (e.g. Rxx:X02) or just a phantom Auxiliary. (e.g. C01:X11 to C01:X32)
- 7.7 Assign the "Error Auxiliary" for the Lift.
This Auxiliary is turned On if an illegal floor selection button is pushed. If turned On, the Error Auxiliary needs to be turned Off again by another mechanism. e.g. Auxiliary Timer.
- 7.8 Assign the "Button Area" for the Lift.
When button feedback is used, the "Button Area" must be defined for each Lift.
- 7.9 Program the "Button Time". This is the maximum time the floor buttons will remain active for a normal User. Typically set to about 5 seconds.
- 7.10 Program the "Disabled Time". This is the maximum time the floor buttons will remain active for a "disabled" User. i.e. User Type with the "Disabled" option set to Yes.
Note: Disabled time does not operate with High Level Interface.
- 7.11 Program the number of "Unused Floors". If a Lift Car starts at any Floor other than the 1st Floor that is controlled by the system, program the number of floors to be skipped. e.g. If the Lift Car starts at Floor15, then this option should be set to 14.
This allows the unused Auxiliaries and Zones associated with this Lift Car to be used for other purposes.
- 7.12 Assign the "Floor Areas" if required. Normally left at "None" unless User access is to be restricted based on the Area status and the User Type's Area Off permissions.

8. Assign Floor button Zone Inputs to the “Button Area/s.”

IF Button feedback is used, the Zone Inputs used for monitoring the Button state, **must** be assigned to their appropriate “Button Area” and the Area always turned ON 24hrs. A separate Area must be used for every Lift Car to be controlled.

The Zones to be assigned will be the Zones that correspond to the Auxiliary numbers used for floor button enables.

e.g. If Auxiliaries B05:X09 (1st Floor Auxiliary) to B05:X16 are used for a particular Lift Car, then Zone Inputs B05:Z09 to B05:Z16 must be used for button feedback and assigned to the Area designated as the “Button Area” for this Lift Car.

8.1 Program the Zone Inputs. [MENU, 7, 0]

-Program the Input names. e.g. Lift 1. Floor button 3.

-Program any of the Input Attributes required for these inputs. [s C X S R A N T]

Set the “R” (No Review) option to Yes, so that changes of state on these Zones are not saved to Review.

8.2 A new Process Group must be programmed for monitoring Floor buttons. [MENU, 2, 4, 3]

-Program a name. e.g. Button monitor.

-Input Type options. [T A E X U P L S] Set “A” (Alarm) option to Yes. All other options to No.

-All Comms options to No.

-All Area Auxiliaries to No.

-All Siren options disabled.

-All Message Types to No.

-Extra Options. [R N L] Set “L” (Lift buttons) option to Yes. All other options to No.

8.3 Assign the Zone Inputs to the appropriate Button Area that will be permanently On. [MENU, 7, 1]

Use the Area/s defined in Step 6 specifically for this purpose.

When assigning the Inputs use the Process Group programmed in the previous step.

9. Program the General System Options. [MENU, 7, 5, 1]**9.1 Program the “Panel Options”. [N D F R f + I .]**

-Set the “F” option (Fast zone processing) to Yes when Button feedback is used.

9.2 “Reader for User Programming”. Reader Module #001 is normally used for Testing Cards, Enrolling User’s Cards & programming Backup Cards.

IF another Reader Module is to be used for these purposes, program the Reader Module number in the “Reader for User Programming” option in the General System Options.

e.g. Reader Module #001 may be used in a Lift Car making it inconvenient to use for testing and enrolling Cards etc.

Note: If Door Access Control is already programmed in the system, this option may already be programmed.

10. Program the Site Code/s. [MENU, 2, 5]

- 10.1 IF cards are to be entered into the system using the Site Code method, at least one Site Code will need to be programmed. The Site Code method simplifies card programming, allowing cards to be entered without the need to present the card at a Reader. Site Code method can be used with Inner Range Magnetic Swipe Cards, or Wiegand Cards/ID Tokens with a format in which the system supports Site Codes. e.g. 26 Bit Wiegand.

If Door Access Control is already programmed in the system, the Site Code/s may already be programmed.

- 10.2 Program the Site Code in Hex or Decimal format.
- 10.3 Program a Card Offset if required.
- 10.4 Set "Site Code Present" to Yes.

11. Program Access Alarm processing

When Lift Access Control is implemented in a system additional System Inputs are available to be processed and/or monitored as required. e.g.

Relevant Reader Module System Inputs:

Cabinet Tamper, Low Volts, Illegal Card and LAN Comms.

Relevant LCD Terminal System Inputs:

Cabinet Tamper, Panic, Operator Duress, Too many tries and LAN Comms.

- 11.1 Identify the Lift Access Control System Inputs that you wish to process and/or monitor in some way.
- 11.2 Return to "Alarm Processing"; Steps 1 (Program the Inputs), 2 (Check/Program Process Group Requirements), and 4 (Program the Areas) to add the System Inputs and any additional Zone Inputs on Reader Modules and LCD Terminals used for Access Control.

NOTE: You may choose to simply use the "Add System Inputs" default feature in Area Programming to add the Access Control System Inputs to an Area if this fulfils system monitoring requirements.

12. Securing the Floors

When Lift Access Control operation is being commissioned the required Floors must be placed on security by a Floor Control operation. This can be done via "Lift Control" in the Control Menu [MENU, 9, 4]

- 12.1 Select "Lift Control" in the Control Menu. [MENU, 9, 4]
- 12.2 Enter the Lift Car number to control. ("00" = All Lifts)
- 12.3 Enter the Floor number to control. ("00" = All Floors)
- 12.4 Press the "7" (S) key to Secure the Floor/s. (The "1" (A) key is used to Access Floor/s)

13. Automated Free Access and Securing of Floor/s

It may be necessary to have a facility to provide automatic “Free Access” and/or “Securing” of Floors.

This can be a useful feature in sites where free access is required on specific floors during specified times and/or under certain circumstances.

IMPORTANT NOTE:

When powered up, the system will normally turn Off all Floor Auxiliaries, thereby setting all floors to free access. This means that in the rare event of the Control Module being Reset (e.g. Due to having power and battery removed then restored), all floors for all Lift Cars will be placed in free access.

To re-secure the required floors, the relevant Floor Auxiliaries must be turned On by a Floor Control operation.

This can be done:

- Manually via the Control Menu (MENU, 9, 4) as described in Step 13. (Requires a User operation)
- Automatically via a Calculated Auxiliary “Secure on +ON” or “Secure on -OFF” action triggered by an Auxiliary that is always turned On after a system Reset. To obtain an Auxiliary that turns On after a System Reset, assign a “Close Auxiliary” to an Area that is always On 24Hrs. This could be one of the Button Areas if Button feedback is used in the system, or a “System” Area. (Any Area that was On will automatically be turned On again after a Control Module is Reset)

- 14.1 At Specific Times and/or for Specified period/s of Time. Program TimeZone/s. [MENU, 5, 2]
Refer to the “TimeZone Function” options under TimeZone programming in the Programmer’s Reference section:
- Lift Car & Floor*
 - Lift Car & Floor List*
 - Lift Car List and Floor*
 - Lift Car List & Floor List*

- 14.2 As a result of any event in the system that can control an Auxiliary.
e.g. Keyswitch, Area On/Off, Alarm, etc.
Program Calculated Auxiliaries. [MENU, 7, 5, 4]
Refer to the “Calculated Auxiliary Action” options under Calculated Auxiliary programming in the Programmer’s Reference section:
- Secure on +ON*
 - Free on +ON*
 - Secure on -OFF*
 - Free on -OFF*

Lift Programming Planning Sheet - Floor Button Feedback.

LIFT NUMBER [Menu, 7, 9]	DESCRIPTION	ACCESS GROUP [Menu, 2, 4, 2]	READER connected to Reader Module: [Menu, 7, 2, 4]	LCD Terminal for PINs [Menu, 7, 2, 1]	FLOOR LIST [Menu, 2, 3, 4]	NUMBER OF FLOORS (max 64)	1st FLOOR AUXILIARY	BUTTON AREA [Menu, 7, 1]
LC _ _ _ _		AG _ _ _ _ Name:	R _ _ _ _ Rdr 1 / Rdr 2	T _ _ _ _	FL _ _ _ _		_ _ _ : X _ _	A _ _ _ _ Name:
LC _ _ _ _		AG _ _ _ _ Name:	R _ _ _ _ Rdr 1 / Rdr 2	T _ _ _ _	FL _ _ _ _		_ _ _ : X _ _	A _ _ _ _ Name:
LC _ _ _ _		AG _ _ _ _ Name:	R _ _ _ _ Rdr 1 / Rdr 2	T _ _ _ _	FL _ _ _ _		_ _ _ : X _ _	A _ _ _ _ Name:
LC _ _ _ _		AG _ _ _ _ Name:	R _ _ _ _ Rdr 1 / Rdr 2	T _ _ _ _	FL _ _ _ _		_ _ _ : X _ _	A _ _ _ _ Name:
LC _ _ _ _		AG _ _ _ _ Name:	R _ _ _ _ Rdr 1 / Rdr 2	T _ _ _ _	FL _ _ _ _		_ _ _ : X _ _	A _ _ _ _ Name:
LC _ _ _ _		AG _ _ _ _ Name:	R _ _ _ _ Rdr 1 / Rdr 2	T _ _ _ _	FL _ _ _ _		_ _ _ : X _ _	A _ _ _ _ Name:
LC _ _ _ _		AG _ _ _ _ Name:	R _ _ _ _ Rdr 1 / Rdr 2	T _ _ _ _	FL _ _ _ _		_ _ _ : X _ _	A _ _ _ _ Name:
LC _ _ _ _		AG _ _ _ _ Name:	R _ _ _ _ Rdr 1 / Rdr 2	T _ _ _ _	FL _ _ _ _		_ _ _ : X _ _	A _ _ _ _ Name:
LC _ _ _ _		AG _ _ _ _ Name:	R _ _ _ _ Rdr 1 / Rdr 2	T _ _ _ _	FL _ _ _ _		_ _ _ : X _ _	A _ _ _ _ Name:
LC _ _ _ _		AG _ _ _ _ Name:	R _ _ _ _ Rdr 1 / Rdr 2	T _ _ _ _	FL _ _ _ _		_ _ _ : X _ _	A _ _ _ _ Name:
LC _ _ _ _		AG _ _ _ _ Name:	R _ _ _ _ Rdr 1 / Rdr 2	T _ _ _ _	FL _ _ _ _		_ _ _ : X _ _	A _ _ _ _ Name:
LC _ _ _ _		AG _ _ _ _ Name:	R _ _ _ _ Rdr 1 / Rdr 2	T _ _ _ _	FL _ _ _ _		_ _ _ : X _ _	A _ _ _ _ Name: