

# RS485 Communication Output Module (16 Relay Output)

## AR-401-IO-0016R



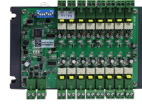
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## 01. Specification



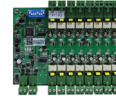
Metal Box

OR



Panel Mounting Base

OR



PCB

Serial port	RS485 X1
Baud Rate	9600 bps (N,8,1)
Outputs	16 Relay Output (Form C)1A/30VDC
Protocol	Modbus, Soyal
LED Indicator	Power: Tx/Rx, D.O./D.I
Watchdog Function	YES
Built-in linkage function	YES
Fuses	Power & RS485 both with PTC Protector
Isolation	Input optical isolation 5kV
Power Supply	9-24 VDC

Dimension(mm)	PCB: 117(H)x148(W)x20(D)
	Panel Mounting Base : 117(H)x175(W)x30(D)
	Metal Box : 180(H)x231(W)x62(D)
Net Weight (g)	PCB: approx.100
	Panel Mounting Base : approx.182
	Metal Box : approx.1760
Network/Device setting	701Server, 701Client, Commview.exe
OS Supported	Windows 7/8/10, Win Server 2008/2012/2016
Operating Temperature	-20°C ~ +70°C
Power Consumption	<8W

## 02. How to Order

**AR-401-IO-XXXXR-XX-X-X**

**Input Qty / Output Qty**

- 0016 = 16 Output
- 0808 = 8 Input & 8 Output
- 1709 = 17 Input & 9 Output

**Output Type**

R = Relay

**Additional Features**

- N/A = No Additional Features
- U2 = UART x 2

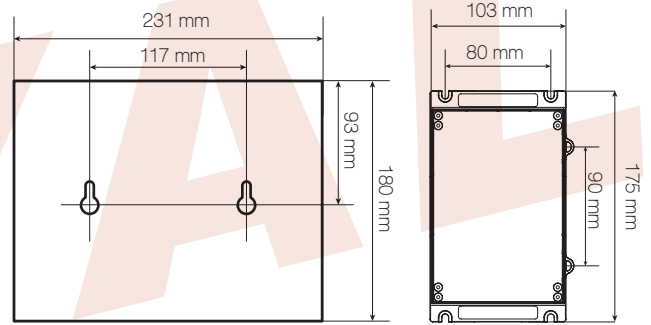
**Additional Module**

- N/A = No Additional Module
- P = POE Features

**Type**

- N/A = PCB
- M = Metal Case
- X = Plastic Mounting Base

## 03. Installation(mm)



(Metal Case)

(Plastic Mounting Base)

## 04. Node ID Setting



Node ID is set by DIP\_Switch, Node ID: 001~254

(BAUD4800: SW5 : fixed to ON / SW6 : fixed to OFF)

(BAUD9600: SW5 : fixed to OFF / SW6 : fixed to OFF)

(BAUD19200: SW5 : fixed to OFF / SW6 : fixed to ON)

Value	1	2	4	8	16	32	64	128
DIP SW	1	2	3	4	5	6	7	8
Node 01	ON	Off	Off	Off	Off or On	Off	Off	Off
Node 02	Off	ON	Off	Off	Off or On	Off	Off	Off
Node 03	ON	ON	Off	Off	Off or On	Off	Off	Off
⋮								
Node 253	ON	Off	ON	ON	Off or On	ON	ON	ON
Node 254	Off	ON	ON	ON	Off or On	ON	ON	ON

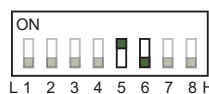
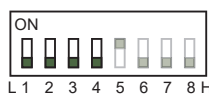
## BAUD4800 for lift Control

Compatible to Model No.: Home Series Controller

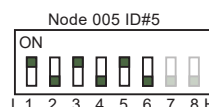
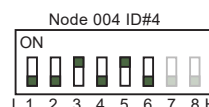
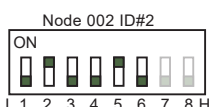
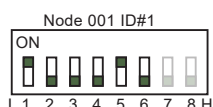
(AR-101-H / AR-321-H / AR-331-H / AR-721-H / AR-723-H / AR-725-H / AR-757-H)

SW1-4: Node ID Selection

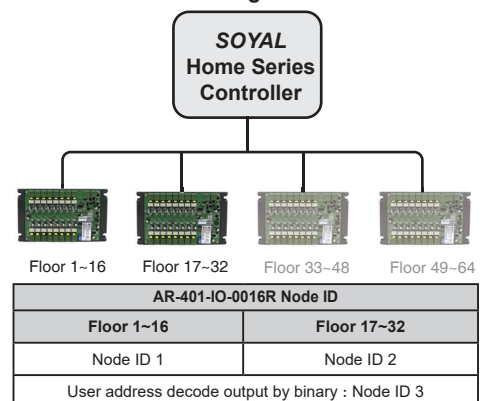
SW5 : fixed to ON / SW6 : fixed to OFF



Node 1~16 , Example Setting of Node ID 1-5

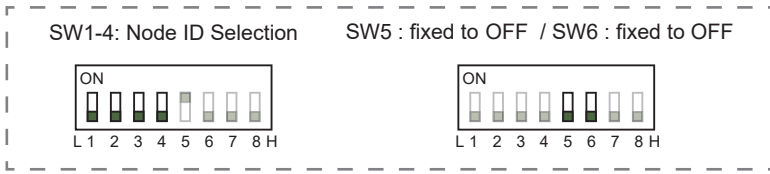


## User Floor Access Setting

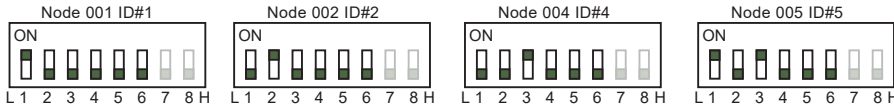


### BAUD9600 for lift Control

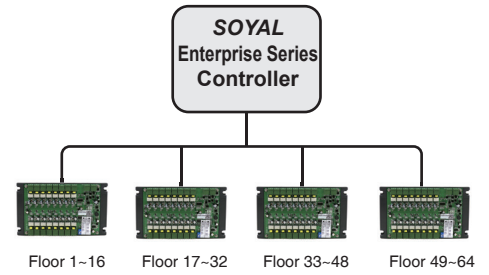
**Compatible to Model No.:** Enterprise Series Controller  
(AR-725-E/AR-331-E/AR-727-E/ AR-837-E/AR-837-EF/AR-331-EF)/AR-837-ER



Node 1~16, Example Setting of Node 1~5

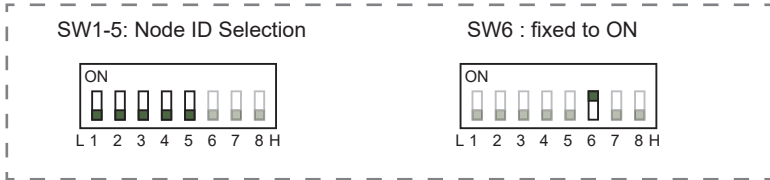


### User Floor Access Setting



AR-401-IO-0016R Node ID			
Floor 1~16	Floor 17~32	Floor 33~48	Floor 49~64
Node ID 1	Node ID 2	Node ID 4	Node ID 5
User address decode output by binary : Node ID 3			

### BAUD19200

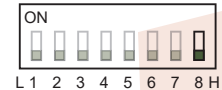


Node 1~32, Example Setting of Node 1~5

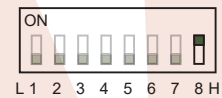


### N.C./N.O. Type Switch

N.O. -- SW8 : fixed to OFF

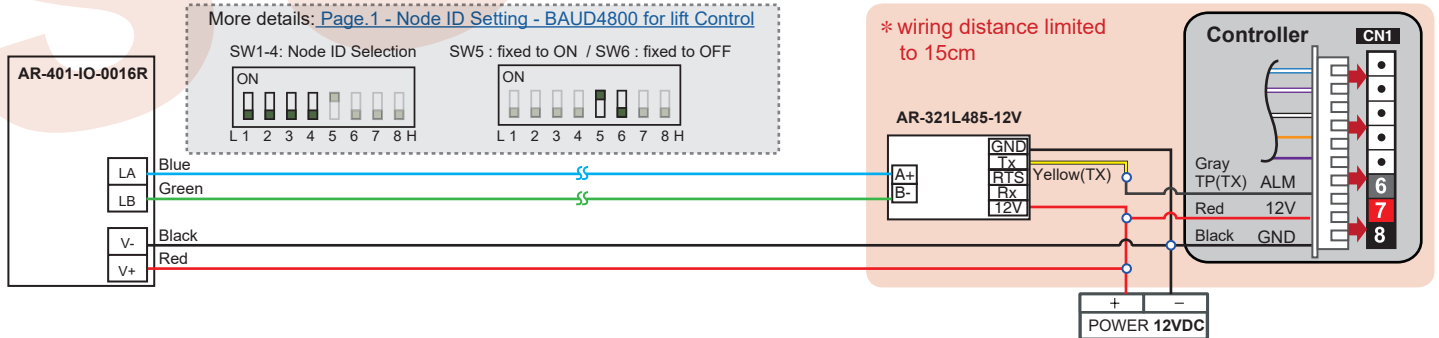


N.C. -- SW8 : fixed to ON



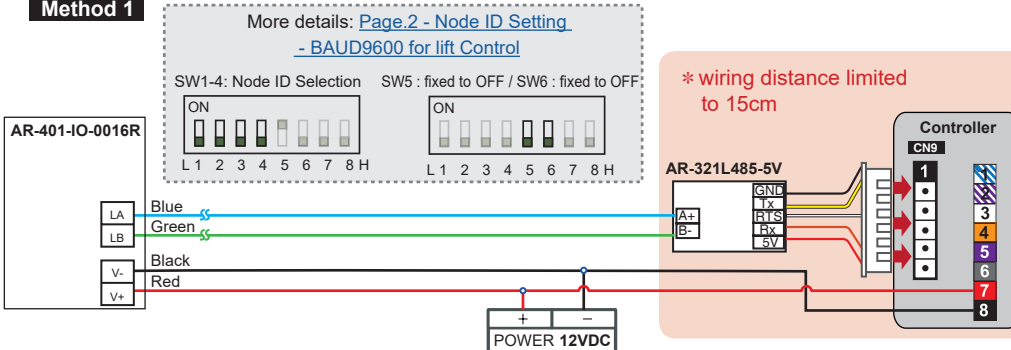
## 05. AR-401-IO-0016R Wiring to Access Controller

**A. Home Series(H Series) Controller (BAUD 4800) Wiring** AR-101-H / AR-321-H / AR-331-H / AR-721-H / AR-723-H / AR-725-H/AR-757-H

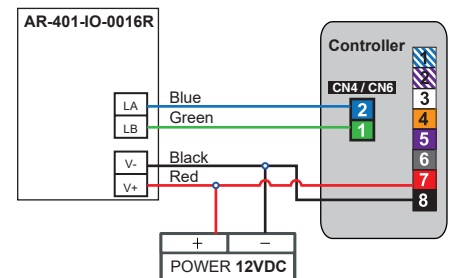


**B. Enterprise Series(E Series) Controller (BAUD 9600) Wiring** AR-725-E/AR-331-E/AR-727-E/ AR-837-E/AR-837-EF/AR-331-EF/AR-837-ER

#### Method 1



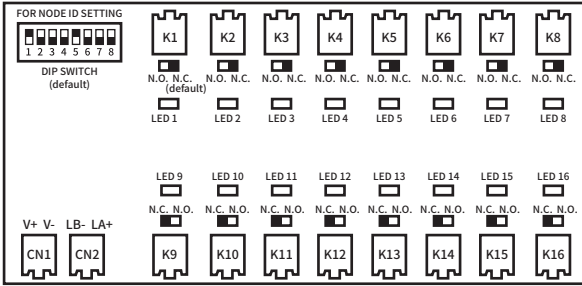
#### Method 2



※ Followed by the wiring terminal position, freely choose the lift control options CN11(RS485-2) / CN9(RS485-3).  
**Note:** CN11 (RS485-2) is occupied for biometric module if you purchase fingerprint or face recognition controller

※ Wiring through this method setting of RS485-1 must change into [Lift Controller]. This wiring method occupied RS485 communication to PC. That way, through this wiring controller can only work as standalone except purchase controller has Ethernet module that can be used to communicate to software.

## 06. Diagram of AR-401-RO16 and Push button of Elevator

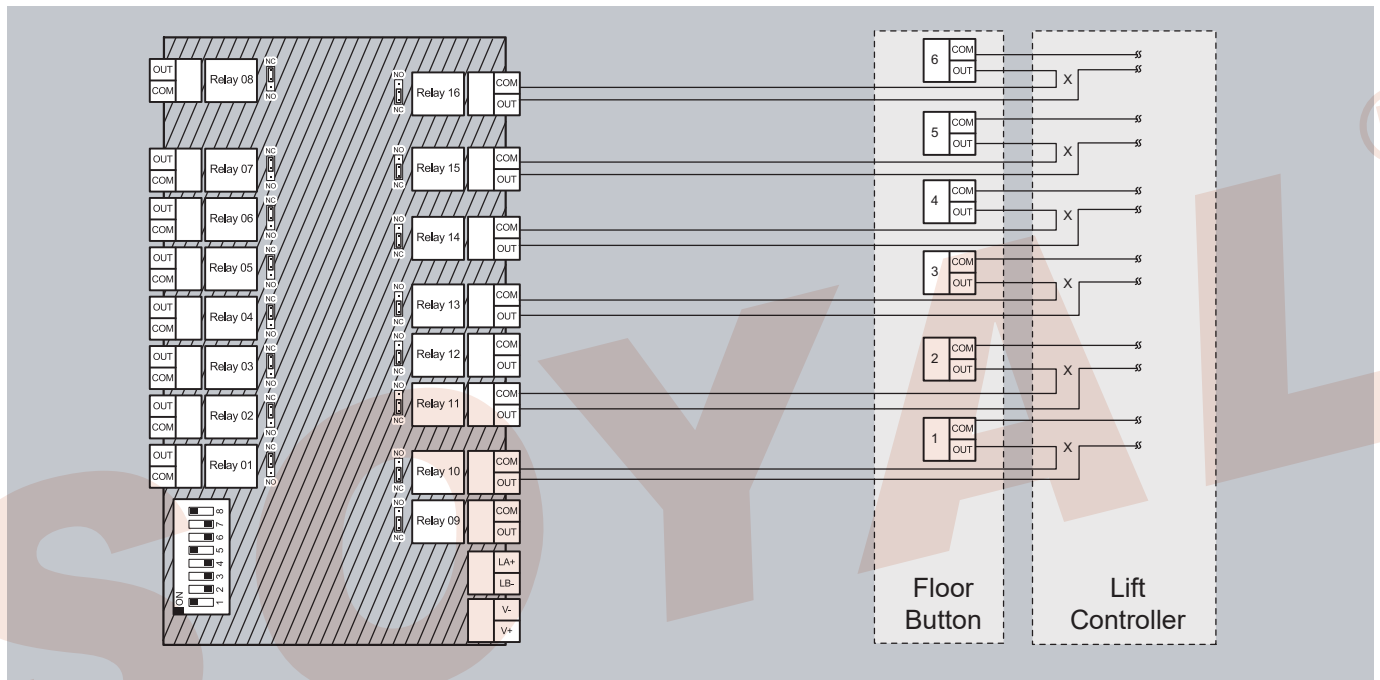


— P.S. —

If AR-401-RO16 is set to be a NC (Normal Close) device, all contacts of 16 relays will stay “close” status when the power is cut. In this case, the lift is not under the control of AR-401-RO16; on the contrary, when the power is on, each contact of relay is “open” status and the lift is under the control of AR-401-RO16.

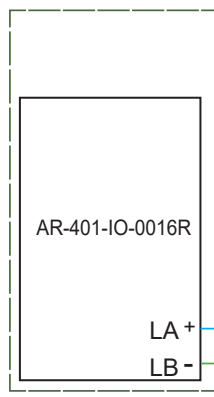
Please note that Dip-Switch PIN 8 must be switched to “ON” position for the type pf AR-401-RO16NC.

- Diagram of lift button to AR-401-IO-0016R (common point) :

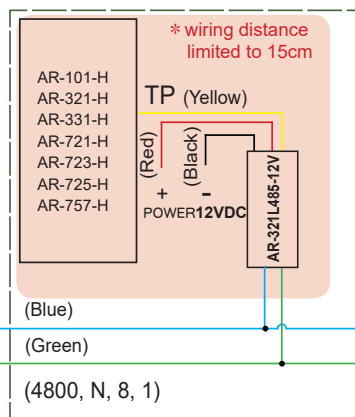


- There are 16 Relay Output. 16 COM were dispatched to 16 Relay separately.
- Diagram of lift button to AR-401-RO16:

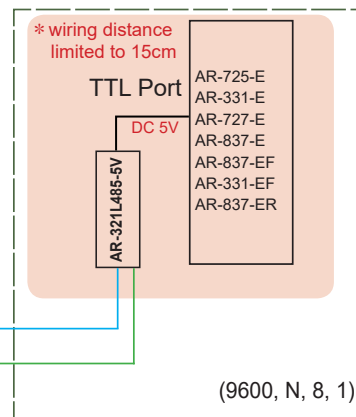
[ Installed on the top of lift car ]



Installed near to lift button



Installed near to lift button



Note:

1. DIP SW1~ 4 is used for setting AR-401-IO-0016R Node ID.
2. Node ID 003 is the binary decoder output, which is used in the automatic control system such as the parking lot.
3. Node ID #1, #2, #4, #5 is used for lift control.

### 07. AR-401-IO-0016R Command List

#### Enable Lift Control Function

Access Controller Type		Connection No.	Command to Enable Lift Control
Home Series		CN1 (Gray cable*)	24 * 002 #
Enterprise Series	Without LCD	CN4/6 (RS485)	37 * 00 #
		CN9 (TTL)	Default for Lift
		CN11 (TTL)	Default for Lift
	With LCD	CN6 (RS485)	5 Tools → 4 Terminal Port → 0 Lift → 0 9600
		CN9 (TTL)	5 Tools → 0 UART Port → 0 Lift9600
CN11 (TTL)		5 Tools → 5 Ex. Comm Port → 1 Lift → 1 9600	

\* Home Series : Gray cable is for Alarm, which is disable if used for Lift.

#### User Access Floor Setting

Connect with AR-401-IO-0016R to control access floors of users.

Access Controller Type		Single floor	Multi floors	Software
Home Series		V (Refer to 1-1)	V (Refer to 2-1)	V (Refer to 3-1)
Enterprise Series	Without LCD	V (Refer to 1-2)	V (Refer to 2-2)	
	With LCD	V (Refer to 1-3)	V (Refer to 2-3)	

#### Single floor

##### 1-1 H Series single-floor setting

Enter program mode → 27 \* UUUUU \* FF #

UUUU=User Address FF=Floor number (01~32 floor)

[e.g.] User Address NO. 45, allowed to access the 24th floor: 27 \* 00045 \* 24 #

##### 1-2 E Series (with LCD) single-floor setting

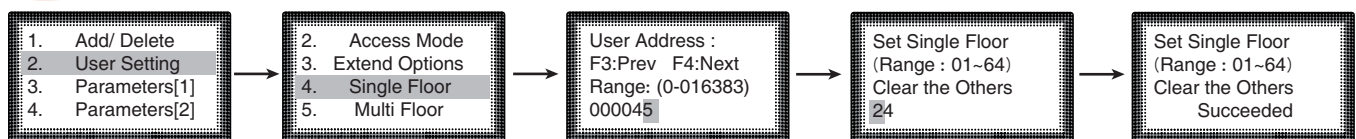
Access programming mode → 27 \* UUUUU \* LL #

UUUU=User Address LL=Floor number (01~64 floor)

[e.g.] User address NO. 45 only can reach the elevator to the 24th floor: 27 \* 00045 \* 24 #

##### 1-3 E Series (without LCD) single-floor setting

[e.g.] User address NO. 45 only can reach the elevator to the 24th floor



#### Multi floors

##### 2-1 H Series multi-floor setting

Enter program mode → 21 \* UUUUU \* S \* FFFFFFFF #

[UUUUU=User Address S: 4 sets of lift control (Input: 0~3) FFFFFFFF: 8 floors setting (F=0: Disable, F=1: Enable)

[e.g.] User Address NO. 168, only to the 6th and the 20th floor:

Enter program mode → 21 \* 00168 \* 0 \* 00100000 # → 21 \* 00168 \* 2 \* 00001000 #

Please refer to below floor chart

Set	Floor/ Stop							
	F	F	F	F	F	F	F	F
0	8	7	6	5	4	3	2	1
1	16	15	14	13	12	11	10	9
2	24	23	22	21	20	19	18	17
3	32	31	30	29	28	27	26	25

### 2-2 E Series (with LCD) multi-floor setting

Access programming mode → 21 \* UUUUU \* G \* LLLLLLL #  
 [UUUUU=User address G: 8 sets of lift control (Input: 0~7) LLLLLLL:  
 8 floors setting (L=0=Disable, L=1=Enable)  
 [e.g.] User address NO. 168 can reach only the 6th and 20th floor:

Access programming mode → 21 \* 00168 \* 0 \* 00100000 #  
 → 21 \* 00168 \* 2 \* 00001000 #

Set (G)	Floor							
	L	L	L	L	L	L	L	L
0	8	7	6	5	4	3	2	1
1	16	15	14	13	12	11	10	9
2	24	23	22	21	20	19	18	17
3	32	31	30	29	28	27	26	25
4	40	39	38	37	36	35	34	33
5	48	47	46	45	44	43	42	41
6	56	55	54	53	52	51	50	49
7	64	63	62	61	60	59	58	57

### 2-3 E Series (without LCD) multi-floor setting

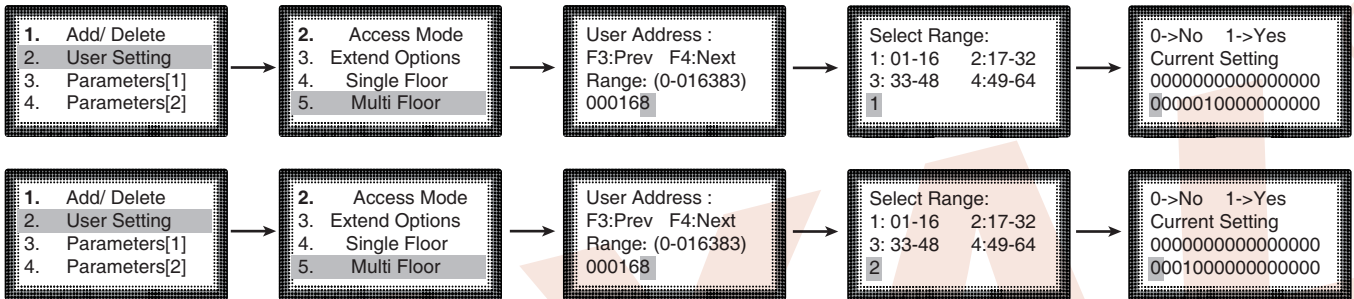
[e.g.] User address NO. 168 can reach only the 6th and 20th floor:

Access programming mode

→ Select [ 2. User Setting ] → Select [ 5. Multi Floor ] → User Address → Select Range [ 1:01-16 ] → Enter [ 0000100000000000 ]

→ Select [ 2. User Setting ] → Select [ 5. Multi Floor ] → User Address → Select Range [ 2:17-32 ] → Enter [ 0001000000000000 ]

→ Finished access setting

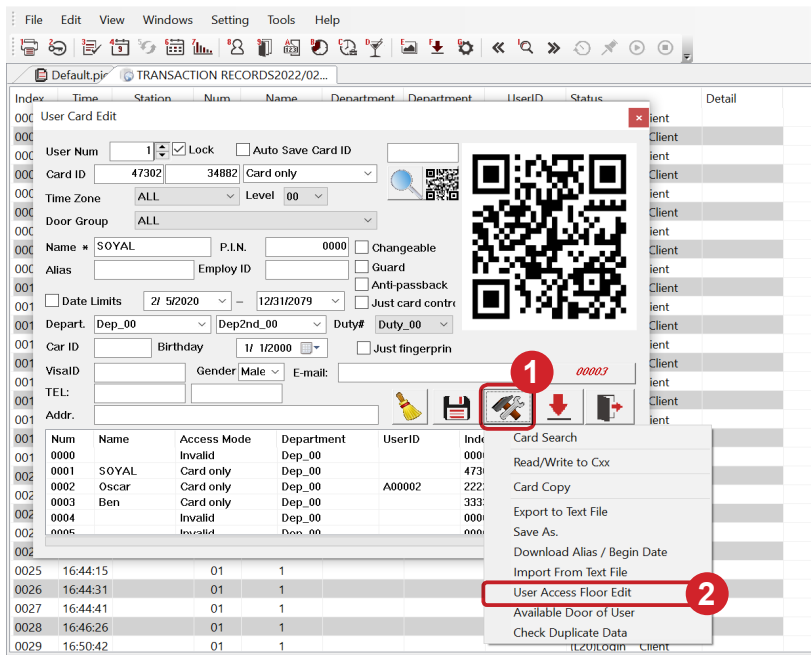


## Software

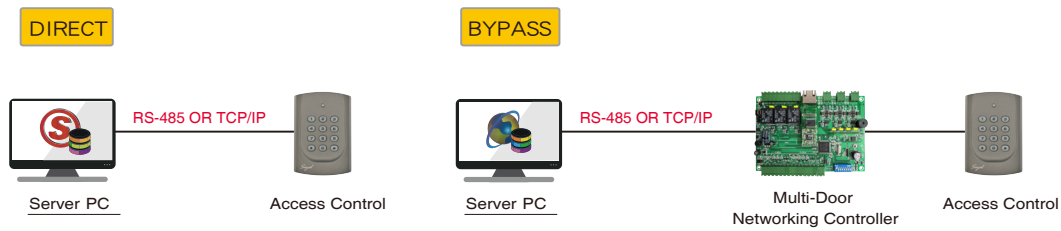
### 3-1 H/E Series setting from software of single floor or multi-floor access

Use 701ClientSQL to set user floor for lift control, manage different floors by assigning access permissions for each user.

- Step 1. Select "8 User Cards Edit"
- Step 2. Select "Tools Box" --> "User Access Floor Edit"



Step 3. Select [Direct download] or [Bypass through]; [Direct download] means directly download user floors setting to controller reader; [Bypass through] means download user floors setting to reader via Multi-door controller.



Step 4. Select Node ID

Step 5. Select User Number

Step 6. Select the floor number that the user is allowed to access

Step 7. Floor Number is up to 64

Step 8. Click [Write One] to write one user floor setting to the lift controller

Click [Read One From 1st Node] to read one user floor setting from the lift controller

Step 9. Save to Text File: Save all the user floor settings to a .TXT text file. The file can be used for Read from File: Load the user floor setting from .TXT text file

### Floor Control Button Relay Time Setting

- Home(H) Series Controller (M4/M8 Mode)

※ for AR-101-H / AR-321-H / AR-331-H / AR-721-H / AR-723-H / AR-725-H/AR-757-H

AR-401-IO-0016RLift Relay Activated TM :

Access programming mode → 23 \* NNN \* TTT # → Enter program mode

( NNN=site number, TTT= relay time: 000~600=1~600 sec.)

• **Enterprise(E) Series Controller**

※ for AR-725-E/AR-331-E/AR-727-E/ AR-837-E/AR-837-EF/AR-331-EF/AR-837-ER

**Method 1. Keyboard Setting :**

AR-401-IO-0016R Lift Relay Activated TM

Access programming mode → 23 \* MMM \* TTT # → Enter program mode

( NNN=site number, TTT= relay time: 000~600=1~600 sec.)

**Method 2. Software Setting :**

After make sure controller has been online via 701ServerSQL,

Step 1. Select [ E Serial Controller Parameter Edit ]

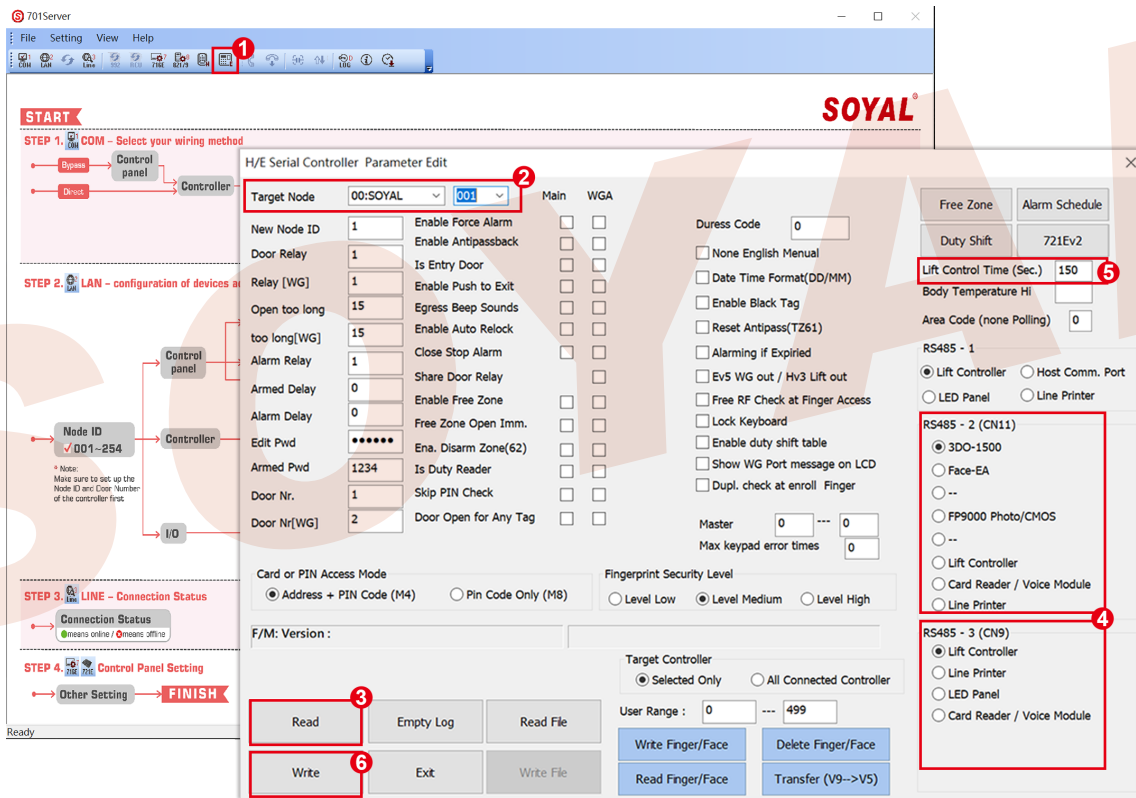
Step 2. Select Controller's node ID

Step 3. Select [Read]

Step 4. Following the wiring terminal position, CN11(RS485-2) or CN9(RS485-3) option change into [Lift Controller]

Step 5. Change the time delay setting on 'Lift Control Time (Sec.)'

Step 6. Select [Write] to saved change.



**Reference document :**

- [Software Manual - LiftControl](#)

(※Note: If required auto-scheduled elevator setting, please proceed to customized firmware “Auto Lift Control” , more information and detail refer to the Lift Control manual. )

**More Details :**

- FAQ : [Enabling free access time zone for specific floors via Lift Control software](#)
- FAQ : [There is a 15-storey mixed-type residential building. How to set the software for floor control at a specified time?](#)
- Youtube : [《Lift Control & Fingerprint Enroll》 Lift Control & EnrollTool Features Guide](#)

### 09. Extension Function

#### Unlock Lift Door by Fire Alarm

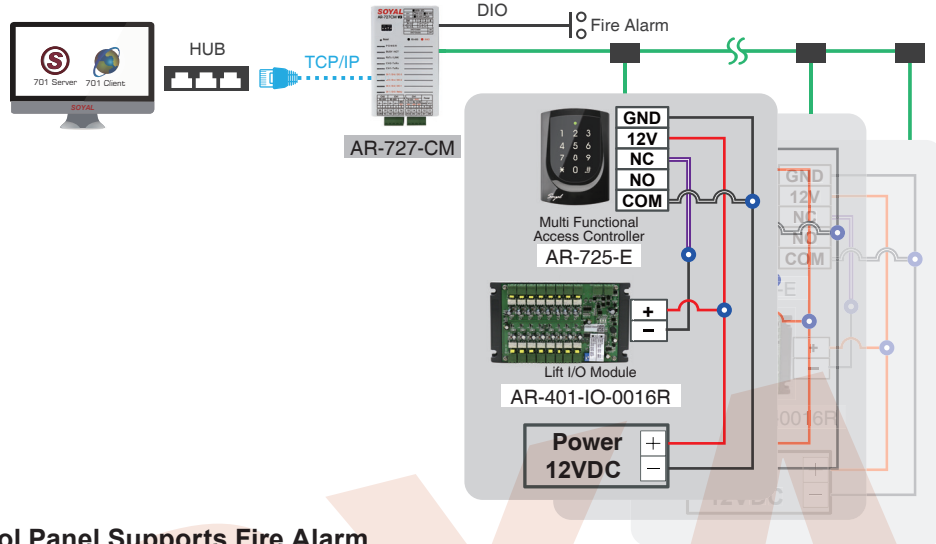
##### • Lift Access Controller Support Fire Alarm

Under AR-727CM-IO-0804M, the lift access controller supports connection to Fire Alarm. With special firmware, in normal situation, when users swipe RFID tags, the controller's relay doesn't act. It only acts once receiving fire alarm signal. Relay is controlled by fire alarm signal instead of valid tags.

This function is available at the firmwares:

725-E : APS725Ev2\_\_V0403\_200415 ACCESS\_DONT\_OPEN\_DOOR.STM

725-HD : 725HD\_7V3 190530 ACCESS\_DONT\_OPNE\_DOOR.ISP



##### • Multi-door Control Panel Supports Fire Alarm

With AR-716-E18 (multi-door control panel), have it connect to Fire Alarm System and lift system. Once a fire, Fire Alarm System will trigger DI1 of AR-716-E18 to unlock all doors connected to controllers, but it cannot unlock the lift door. To avoid this situation, add one more access controller under AR-716-E18 as the following example:

Add one AR-723-H. Positive charge of AR-401-IO-0016R (lift control panel) connects to power, and negative charge connects to NC contact of AR-723-H. COM contact connects to ground.

