SOYAL®
ACCESS CONTROL SYSTEM

AR-721E-V2

Contents

❶ Product	❷ User Guide	❸ Panel Mounting Base (AR-721E-V2-X)	❹ Metal Box (AR-721E-V2-M)

AR-701B-X
Fit 35mm DIN Rail or Mount directly

Option

Option

Specification

CPU	32bit / ARM32 72MHz / Flash 512KB	Temperature	−20℃ ～ +60℃	Aux. WG Port	WG 26 / WG 34
Memory	2048KB (2MB)	Digital Input	2 Door Open Button/ 2 Door Sensor/ 1 Fire-alarm	Anti-pass-back	Reserved
Power Supply	12 ~ 24VDC	Relpy Output	2 Door Relay / 1 Alarm Relay	Lift Control	Yes
Power Consumption	< 3W	Door Relay Time	Toggle, 0.1~600 Sec.	Door Group	255
Interface /	RS-485 : 9600 bps (N, 8, 1)	Alarm Relay Time	Toggle, 0.1~600 Sec.	Time Zone	63 (stand-alone /networking)
Baud Rate	Ethernet : 10/100M Base T	User Capacity	16,000	Real-time Clock	YES
External Readers	2 RS-485 + 2 WG	Event log	32,000	DIP_SW	8 (Node ID: 1~254)

Connector Table
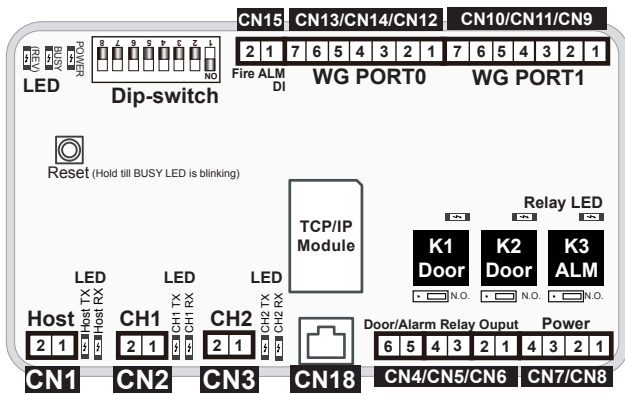
● Node ID is set by
DIP_Switch, Node ID: 001~254

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	Off	Off	Off
Node 02	Off	ON	Off	Off	Off	Off	Off	Off
Node 03	ON	ON	Off	Off	Off	Off	Off	Off
∫								
Node 253	ON	Off	ON	ON	ON	ON	ON	ON
Node 254	Off	ON	ON	ON	ON	ON	ON	ON

Connector CN18 Host TCP/IP

Code	Pin	Description
TCP/IP Socket	1	CAT5

Connector CN1 Host RS-485

Code	Pin	Description
LA+	1	Host RS-485(A+)
LB-	2	Host RS-485(B-)

Connector: CN2 CH1 Slave RS-485

Code	Pin	Description
LA+	1	RS-485(A+)
LB-	2	RS-485(B-)

Connector CN3 CH2 Slave RS-485

Code	Pin	Description
LA+	1	RS-485(A+)
LB-	2	RS-485(B-)

Connector CN4/CN5/CN6 WG Door / Alarm Relay

Code	Pin	Description
Alarm Relay Output	1	K3-N.O./N.C.
	2	COM
Door 1 Relay Output (WG1)	3	K2-N.O./N.C.
	4	COM
Door 0 Relay Output (WG0)	5	K1-N.O./N.C.
	6	COM

Connector CN7/CN8 Power Supply

Code	Pin	Description
GND	1	0V Input
VIN (721E-V2)	2	12VDC Input
GND	3	0V Output
VOUT(Slave units)	4	12VDC Output

Connector CN9/CN10/CN11 WG Port 1

Code	Pin	Description
WG0	1	Wiegand DAT: 0 Input
WG1	2	Wiegand DAT: 1 Input
BZ	3	Beeper Output
LEDG	4	LED Green Output
LEDR	5	LED Red Output
SEN (N.C.)	6	Door Status Input
EGR: PB (N.O.)	7	Exit Button Input

Connector CN12/CN13/CN14 WG Port 0

Code	Pin	Description
WG0	1	Wiegand DAT:0 Input
WG1	2	Wiegand DAT:1 Input
BZ	3	Beeper Output
LEDG	4	LED Green Output
LEDR	5	LED Red Output
SEN (N.C.)	6	Door Status Input
EGR: PB (N.O.)	7	Exit Button Input

Connector CN15 Fire-alarm Input

Code	Pin	Description
Fire-ALM	1	Fire-alarm Input
GND	2	DC Power 0V Output

Wiring Diagram

CN18 Connect to PC via TCP/IP
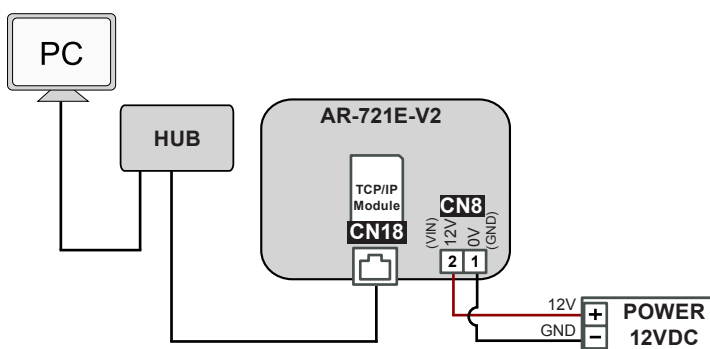
CN1 Connect to PC via Host (RS-485)
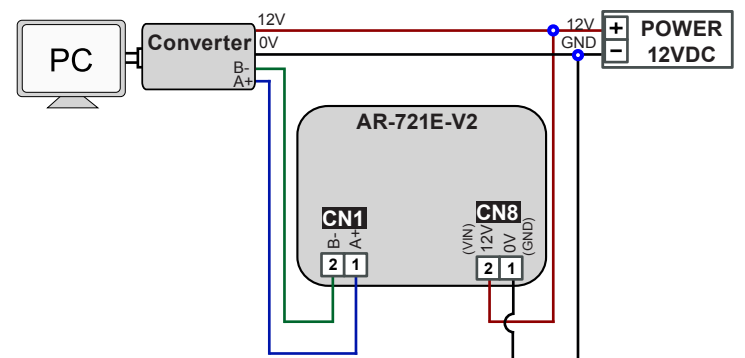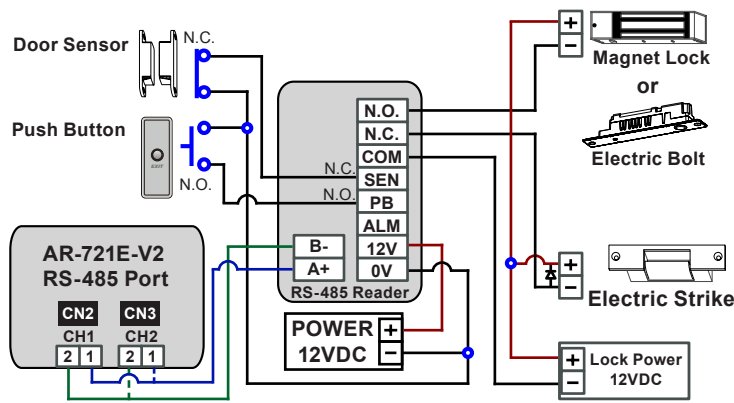
WG Port 0/1 Connect to Electric Strike

N.C.

Door Sensor

N.O.

Push Button

EXIT

N.C.(Jumper)   N.C.(Jumper)

POWER + − 12VDC

Electric Strike

CN9-CN13   7 6 5 4 3 2 1   PB SEN LR LG BZ WG1 WG0

AR-721E-V2 WG Port 0/1

N.C.   N.C.

CN4 CN5 CN6   CN7

COM Door0 COM Door1 COM Alarm   (VOUT) 12V 0V (GND)

6 5 4 3 2 1   4 3

BZ GLED RLED WG 1 WG 0 0V 12V

WG Reader A/B

★ POWER + − 12VDC

POWER + − 12VDC
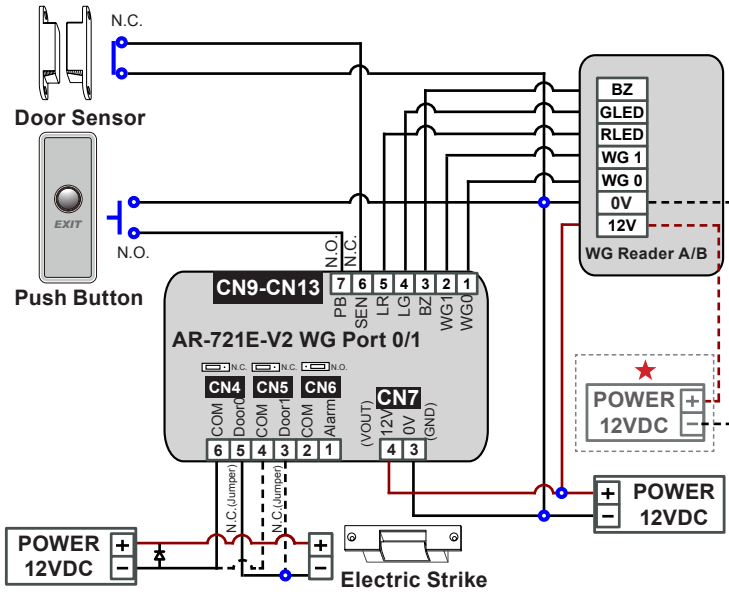
WG Port 0/1 Connect to Magnet Lock or Electric Bolt

N.C.

Door Sensor

N.O.

Push Button

EXIT

N.O.(Jumper)   N.O.(Jumper)

POWER + − 12VDC

Magnet Lock   or   Electric Bolt

CN9-CN13   7 6 5 4 3 2 1   PB SEN LR LG BZ WG1 WG0

AR-721E-V2 WG Port 0/1

N.O.   N.O.

CN4 CN5 CN6   CN7

COM Door0 COM Door1 COM Alarm   (VOUT) 12V 0V (GND)

6 5 4 3 2 1   4 3

BZ GLED RLED WG 1 WG 0 0V 12V
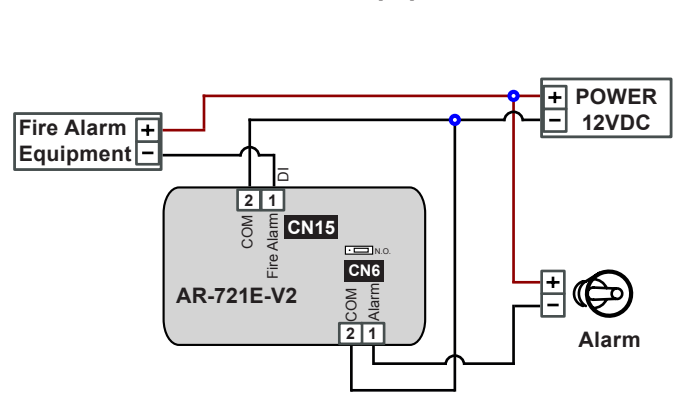
WG Reader A/B

★ POWER + − 12VDC

POWER + − 12VDC
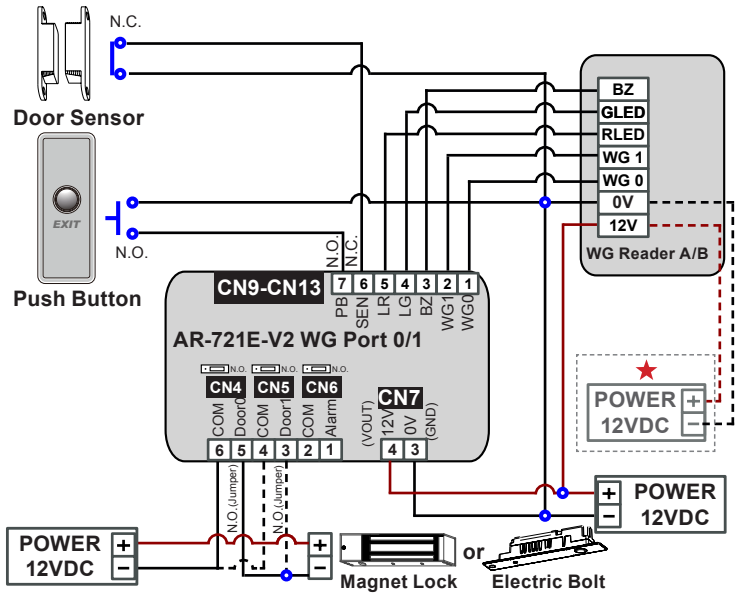
★ • If the wire length of Controller and Reader is more than 100 meters, it is recommended **NOT** to use the **"Wiegand Power."**
• Check connection mode within the dashed box: Controller and Reader must use the **"common-COM-point."**

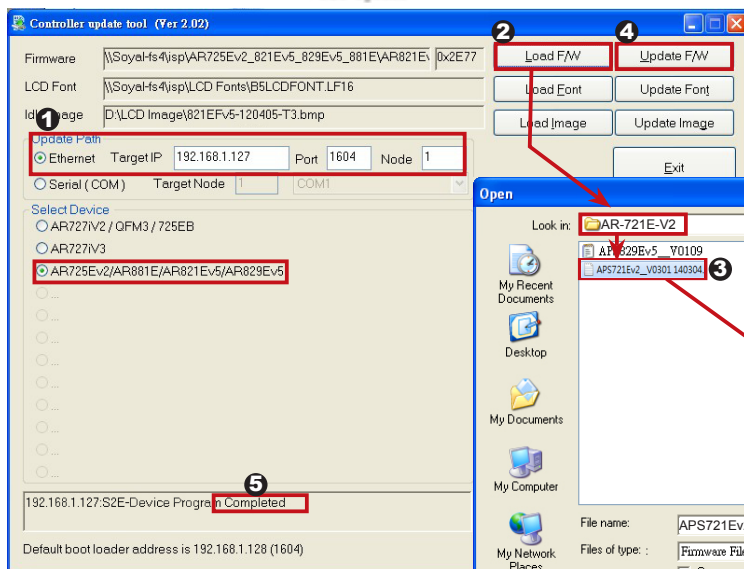**RS-485 CH1/CH2 Port Connect to Electric Lock**

N.C.

Door Sensor

Push Button

EXIT

N.O.

AR-721E-V2 RS-485 Port

CN2 CN3
CH1 CH2
2 1   2 1

N.O.
N.C.
COM
SEN
PB
ALM
12V
0V

B−
A+

N.C.
N.O.

RS-485 Reader

POWER + − 12VDC

Magnet Lock or Electric Bolt

Electric Strike

Lock Power + − 12VDC

Connect to Alarm or Other Equipment

Fire Alarm + − Equipment

POWER + − 12VDC

2 1   DI
COM Fire Alarm   CN15

N.O.
CN6
COM Alarm

AR-721E-V2

2 1

Alarm

Firmware Upgrade

Get the upgrade software from SOYAL or our distributor and run "UdpUpdater" software, which has been included in SoyalDeviceTools.exe

• **Execute the software**   UDP Updater   The software is within SOYAL CD or please login the SOYAL website to download

Controller update tool (Ver 2.02)

Firmware   \\Soyal-fs4\isp\AR725Ev2_821Ev5_829Ev5_881E\AR821E\   0x2E77   Load F/W   Update F/W
LCD Font   \\Soyal-fs4\isp\LCD Fonts\B5LCDFONT.LF16   Load Font   Update Font
Idle Image   D:\LCD Image\821EFv5-120405-T3.bmp   Load Image   Update Image

Update Path
Ethernet   Target IP   192.168.1.127   Port   1604   Node   1   Exit
Serial (COM)   Target Node   1   COM1

Select Device
AR727iV2 / QFM3 / 725EB
AR727iV3
AR725Ev2/AR881E/AR821Ev5/AR829Ev5

192.168.1.127:S2E-Device Program Completed ⑤

Default boot loader address is 192.168.1.128 (1604)

Open

Look in: AR-721E-V2

AR829Ev5_V0109
APS721Ev2_V0301 140304 ③

My Recent Documents
Desktop
My Documents
My Computer
My Network Places

File name: APS721Ev2_V0301 140304   Open
Files of type: Firmware Files(*.uif;*.stm)   Cancel
Open as read-only

① ② ④

• **Update the firmware [Please login the SOYAL website: *www.soyal.com* to download the new ISP Firmware.]**

1. Input the Target Address and Port
2. [Load F/W] open the documents that have the new ISP Firmware
3. Click the new ISP Firmware and [Open] it
4. Click [Update F/W] to start the firmware update
5. Done when the screen shows [Firmware Update is Complete]

IP Setting

- **Open your Web Browser and input factory default IP address: http://192.168.1.127**

  If the IP address of AR-721E-V2 has been changed, we must enter the new IP address.
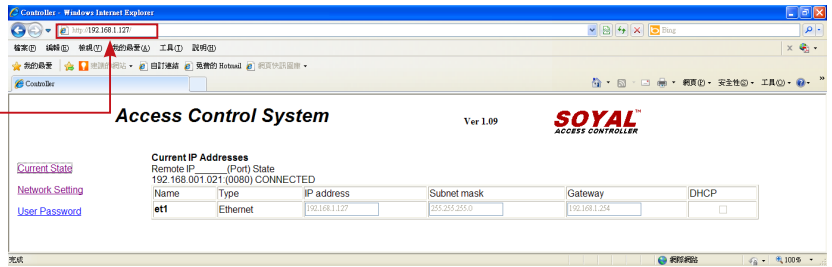
- **Page menu**
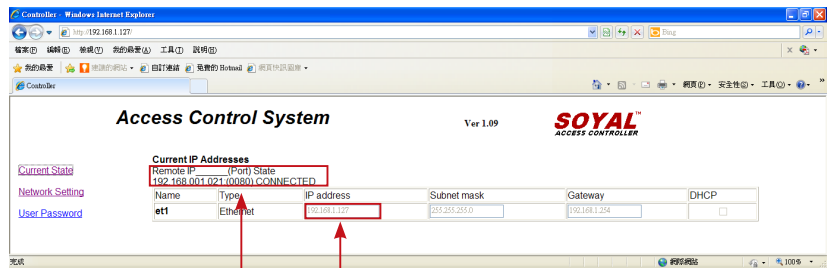
  Current Status ← Monitor the on-line computer

  Network Setting ← IP Setting

  User Password ← Change the Log-in information

- **Current State**

  Online Status is able to be monitored showing which computer is linking on Ethernet Module

  Show which computer is linking on Ethernet Module.

  Current IP address of the AR-721E-V2

- **Log-in User Password**

  When you choose the "Networking Setting" or "User Password," Log-in window will pop out and please input user name and password.
  ※ At the Factory Default Status -
  User name: admin
  Password: None by default, so please just go skip and click "OK" to log-in

- **Networking Setting**

  You will see initial IP Address 192.168.1.127 and make sure MAC Address is identical to the sticker on Ethernet Module device. Please alter the IP address as you want, and then click "Update" button. After updating the IP, please re-connect the Web Browser with the new IP address.
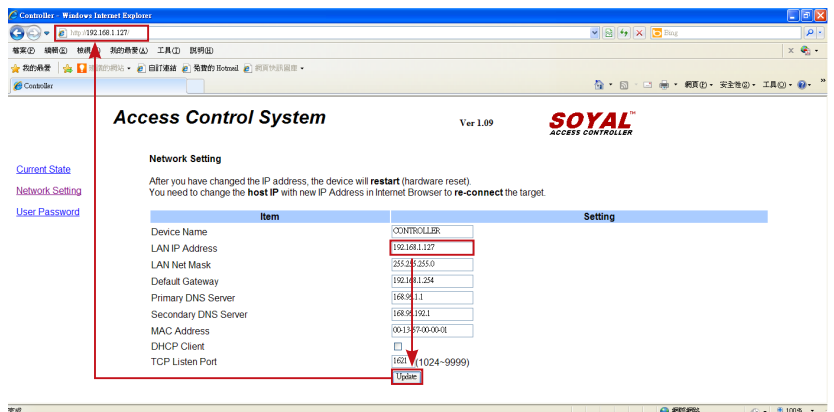
- **User Password**

 Change the log-in password to lock the IP setting of Ethernet Module.
  The password can be made up of 10 characters at most, and it can be either A~Z or 0~9.
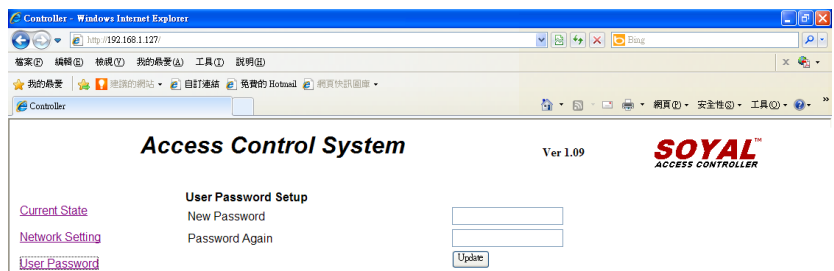
Factory Reset

Reset Button:

When the device's power is on, press the 【RESET】 button on the main board untill the BUSY LED is blinking. Once RESET the IP, the IP address will be changed back to default value : 192.168.1.127 (Refer to picture)
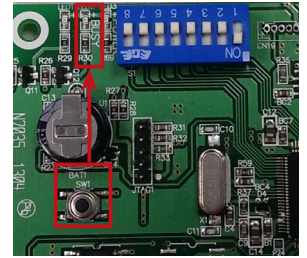
Remarks: LED Description

- **POWER LED**
  When the controller is connected to the power, [POWER] will turn on green LED; if there is no light, it means the power supply has some problems.

- **BUSY LED**
  When the red LED is lit, the memory is being cleared and restored to the factory default action.
  ※ **If you do not perform "Flash Restoring", but the [RESET] and [BUSY] has been blinking in red, that indicates a PCB problem should be excluded.**

- **RS-485 Connection: HOST RX & HOST TX LED**

  [HOST RX] : When receiving incoming data from the host PC, the green LED will keep blinking
  [HOST TX] : When transmitting the data back to the host PC, the red LED will be blinking

Initial Setup:

Hardware: Node ID / Reader ID Setting

- 721E-V2 Node ID is set up by shifting the 8-pin dip-switch on the main board.
  Power Off → Set up node number by 8 dip-switch (Please Refer to the value chart of Connector Table)→ Re-apply the power

  [e.g.]: Node: 002 Node: 003 Node: 007 Node: 008

  2 1+2 1+2+4 8
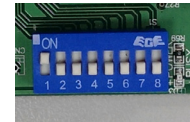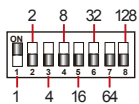
- CH1 Slave RS-485 Reader: Node ID fixed to start at 003
  Key-Panel Type: Access programming mode: Input ✳ 123456 # or ✳ PPPPPP # → 00 ✳ 003 # → Exist programming mode ✳ #

  LCD Type: Access programming mode → 3 Parameters[1] → 1 Node ID → **Input New Node ID : 3 or 003** (default value:001, **CH1 Node ID fixed to 003**) → **Door Number (H) : 0~255** (Default Value: 001, Skip or Set up as same as 721E-V2's Node ID) → **Door Number (L): 0~255** (Default Value: 001, Skip or Set up as same as Door Number on 701Server) → **Show UID** (0=No, 1=WG, 2=ABA, 3=HEX) → Succeeded → ✳ #

  CH1 RX & CH1 TX LED
  [CH1 RX] : When receiving incoming data from Access Controllers of Node 3, the green LED will keep blinking
  [CH1 TX] : When transmitting data back to Access Controllers of Node 3, the red LED will be blinking

- CH2 Slave RS-485 Reader: Node ID fixed to start at 009
  Key-Panel Type: The same as above CH1 but Node ID must be 009
  LCD Type: The same as above CH1 but Node ID must be 009

  CH2 RX & CH2 TX LED
  [CH2 RX] : When receiving incoming data from Access Controllers of Node 9, the green LED will keep blinking
  [CH2 TX] : When transmitting the data back to Access Controllers of Node 9, the red LED will be blinking

- WG Port 0: Fixed at Node ID 017 in system and no need to set up
- WG Port 1: Fixed at Node ID 018 in system and no need to set up

Software: Connection

1. Open the "701 Server" Software → There are two ways to open the Communication Port setting window: [Com 1] and → Communication Port Setting
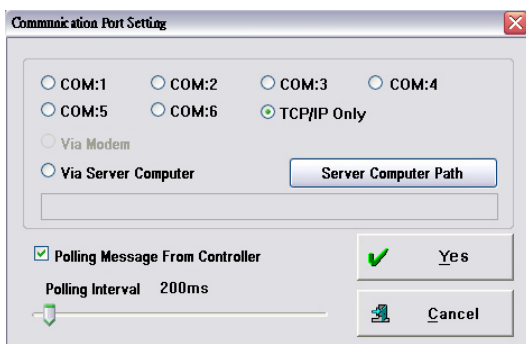
a. According to the computer Detection results to select the port (Use the RS-485)
b. Select [TCP/IP Oonly] (Use the Ethernet)
c. Select the option: Polling Message From Controller
d. Polling Interval: 200ms - meaning the PC polls the controller every 200ms once it accesses the message from the controller
e. Click YES

Software: Connection

2. After COM Port setting, there are two ways to open the Node Number for Polling window: **LAN 2** and

→ Node Number for Polling

Setting
- Select Serial Port
- LAN Configuration
- 701E On 992
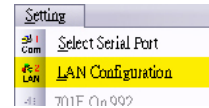
f. Select node ID (for example:001) and access controller " **881/837/82x_727Hv5/725Ev2/721Ev2**"

g. If use the Ethernet mode, please check the "IP"; if use the RS-485 mode, there's no need to check

h. If use the Ethernet mode, input IP in "IP Address" column (Default value: 192.168.1.127)

i. Input 1621 in "Port" column

  (Default value: 1621; the Port number is predetermined by SOYAL for connection to the network)

j. Select LAN BASE

k. Click YES

3. Open Controller On/Off Line window to check the device connection status: **Line 3** →
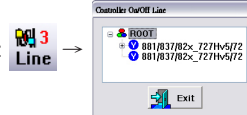
- Well: controller successfully connected to PC.
- Not connected well: the following checks are required.

Software: Parameters Settting: Door Number and Users Edit

1. After the 701Server Software connection, go click 82x Parameters Setting to set up 721E-V2's door number
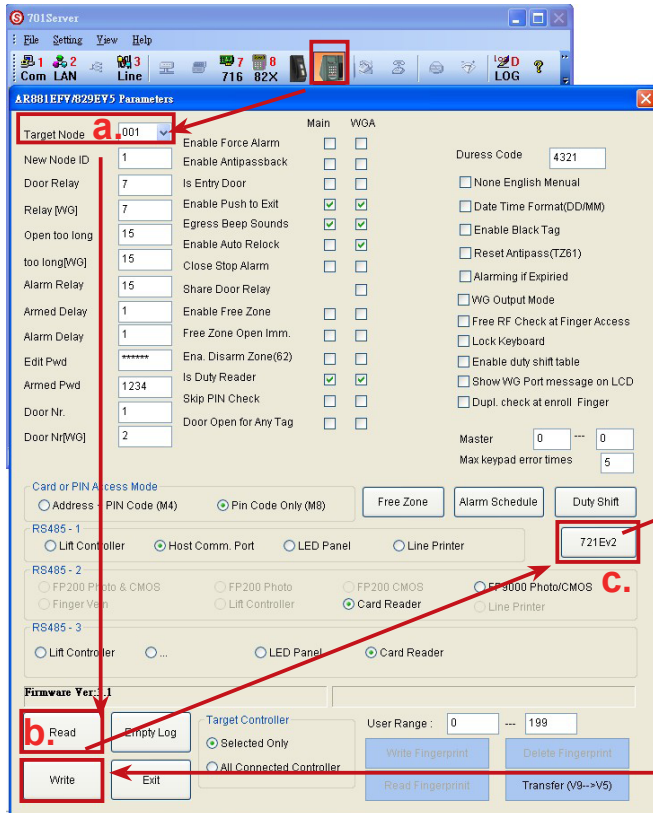
a. Roll and select the Targe Node ID of 721E-V2 (The same as the dip-switch)

b. Click "**Read**" to read back the parameter of 721E-V2

c. Click "**721E-V2**" button to set up Door Number

d. Input the new Door Number of Slave Reader, which door number must be unique and non-repetitive
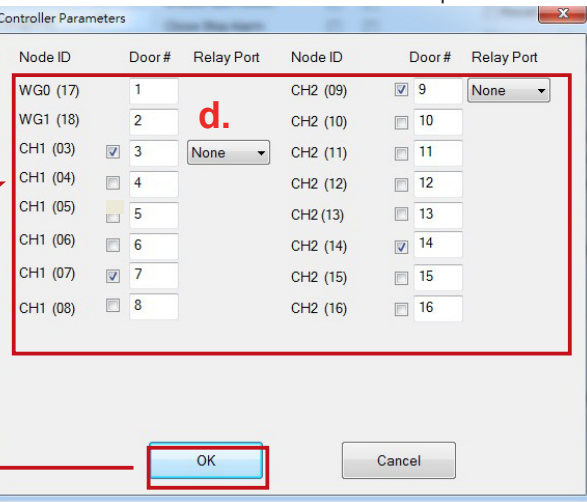
Remarks:

WG0: Node ID fixed to 17 while connected and Fixed to trigger the K1 Relay

WG1: Node ID fixed to 18 while connected and Fixed to trigger the K2 Relay

CH1: RS-485 Reader Node ID must be set up from 03 to 08

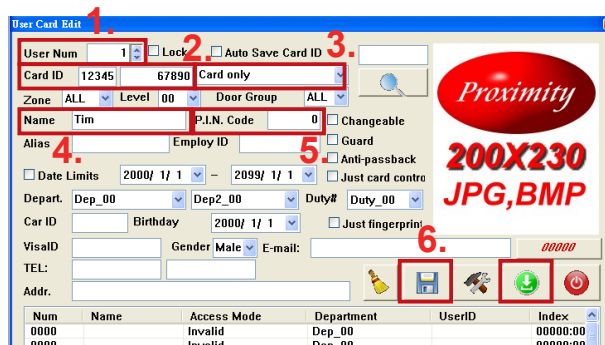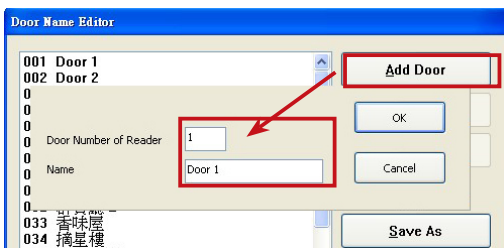CH2: RS-485 Reader Node ID must be set up as 09 to 16

2. Set up the Door Name on 701Client Software by clicking

A. Door Name Edit

; then, the even log will show Door Name while the user gets access

3. Add/Delete/Modify Users in User Card Edit

Required Information:
1. Input user number
2. Input card code
3. Select the access mode
4. User name
5. If necessary, add Pin
6. Save Download info to controller