Contents

AR-821 (EF-V5):Fingerprint
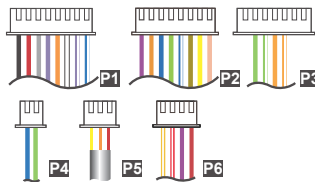
❶ Products   ❷ User Guide   ❸ Terminal Cables   ❹ Tools   ❺ Optional
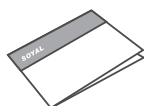
P1 P2 P3 P4 P5 P6
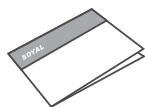
AR-821RB   AR-721RB Digital Relay

AR-821 (EV-V5):Vein

❶ Products   ❷ User Guide   ❸ Terminal Cables   ❹ Tools   ❺ Optional
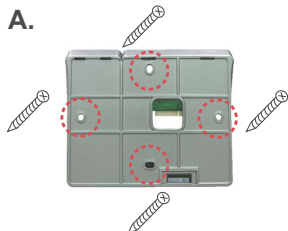
P1 P2 P3 P4 P5 P6
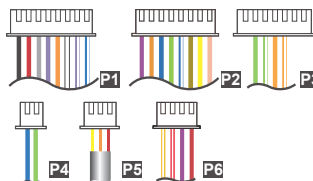
AR-821RB   AR-721RB Digital Relay

Installation

A.   B.

1

2

- Use a screwdriver to screw the mounting plate to the wall.
- Pull cables ends through the access hole in the mounting plate.
- Attach AR-821 (EF-V5) or AR-821 (EV-V5) to the mounting plate and install screws (supplied) into the holes at the bottom with the allen key.
- Apply power. LED (green) will light up with one beep.

Notice

1.Tubing: The communication wires and power line should NOT be bound in the same conduit or tubing.
2.Wire selection: Use AWG 22-24 Shielded Twist Pair to avoid star wiring ,CAT 5 cable for TCP/IP connection
3.Power supply: Don't equip reader and lock with the same power supply. The power for reader may be unstable when the lock is activating, that may make the reader malfunction.
    The standard installation: Door relay and lock use the same power supply, and reader use independent power supply.

Connector Table (1)

P3: 7 6 5 4 3 2 1
P2: 8 7 6 5 4 3 2 1
P4: 2 1
P6: 4 3 2 1
P5: 3 2 1
P1: 8 7 6 5 4 3 2 1
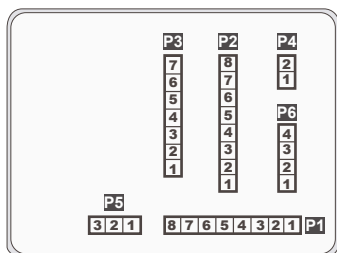
Cable: P1

Wire Application	Wire	Color	Description
Lock Relay	1	Blue White	(N.O.)DC24V1Amp
	2	Purple White	(N.C.)DC24V1Amp
Lock Relay COM	3	White	(COM)DC24V1Amp
Door Contact	4	Orange	Negative Trigger Input
Exit Switch	5	Purple	Negative Trigger Input
Alarm Relay	6	Gray	N.O./N.C. Optional (by jumper)
Power	7	Thick Red	DC 12V
	8	Thick Black	DC 0V

Cable: P2

Wire Application	Wire	Color	Description
Beeper	1	Pink	Beeper Output 5V/100mA, Low
LED	2	Yellow	Red LED Output 5V/20mA, Max
	3	Brown	Green LED Output 5V/20mA, Max
Door Output	4	Blue White	Transistor Output Max. 12V/100mA (Open Collector Active Low)
Wiegand	5	Thin Green	Wiegand DAT: 0 Input
	6	Thin Blue	Wiegand DAT: 1 Input
WG Door Contact	7	Orange	Negative Trigger Input
WG Exit Switch	8	Purple	Negative Trigger Input

Cable: P3

Wire Application	Wire	Color	Description
	1	---	---
	2	---	---
TCP/IP Output	3	Orange White	Net - TX+
	4	Orange	Net - TX-
	5	Green White	Net - RX+
	6	Green	Net - RX-
	7	---	---

Cable: P4

Wire Application	Wire	Color	Description
RS-485 for Lift Controller	1	Thick Green	RS-485(B-)
	2	Thick Blue	RS-485(A+)

Connector Table (2)

Cable: P5

Wire Application	Wire	Color	Description
Anti-Tamper Switch	1	Red	N.C.
	2	Orange	COM
	3	Yellow	N.O.

Cable: P6

Wire Application	Wire	Color	Description
Power	1	Red	DC 12V Output
Security trigger signal	2	Purple	Security trigger signal Output
Arming	3	Red White	Arming Output
Duress	4	Yellow White	Duress Output

Front Panel & Indicator

Power(Green) — OK(Green)
Alarm(Red) — Error(Red)
Alarm(Green) — In processing(Green)

Attendance/Duty Functions

		Press "1 time"	Press "2 times"
F1	Up	Duty on	Break out
F2	Down	Duty off	Break RTN
F3	Left	Overtime on	Go
F4	Right	Overtime off	Return
*	Esc / Quit	#	Enter / OK

1. System will automatically exit from Programming Mode when inactivating for 30 seconds.
2. LED status indicates controller's mode and status.
   OK (green) – blinking constantly when operates in Programming Mode
   – or flashing an existed card in card learn mode, it comes 2 beeps warning and LCD panel displays "Same Card: user address / card number"
   Error (red) – invalid card with 2 beeps warning and LCD panel displays "Card Number Err!"
   – or in anti-pass-back mode, when violates the access, it comes one beep warning and LCD panel displays "Anti-pass Error!"
   Arming (green) – arming on status
   Alarm (red) – any abnormal condition occurs
3. Keypad will be locked up 30 sec. when constantly entering incorrect pin code or master code.
4. Maximum error in[ut of pin code and master code can be changed via the software 701Server (default: 5 times)
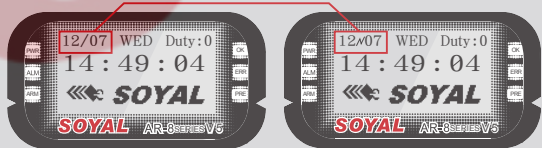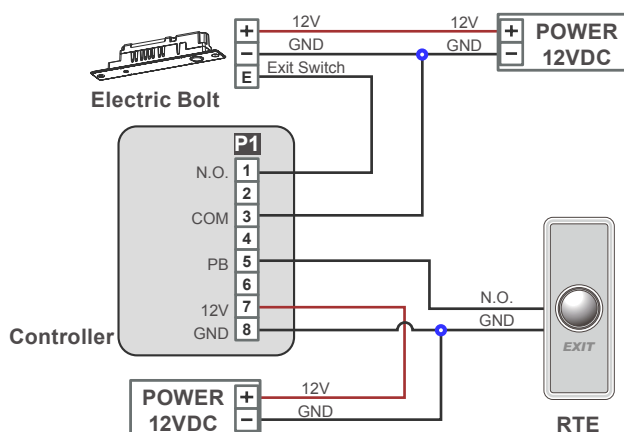
Networking : / and ∥ interactively flash between the Month and DAY.
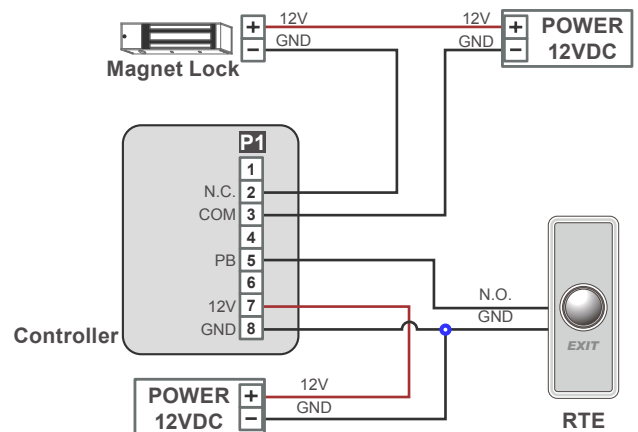[e.g.] 12/07 ←→ 12∥07

Stand-alone : No flashing   [e.g.] 12/07

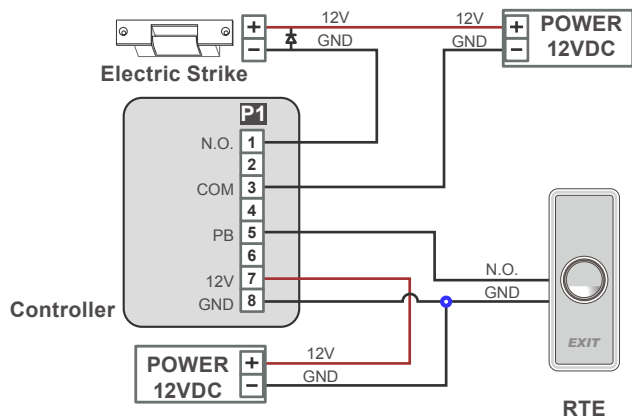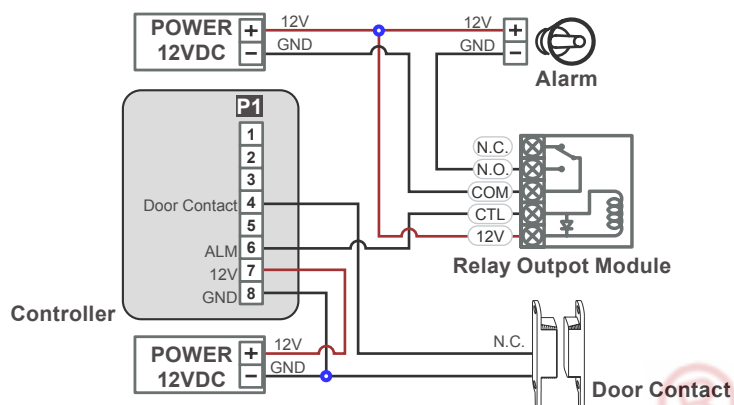(←Reference to picture)

Wiring Diagram
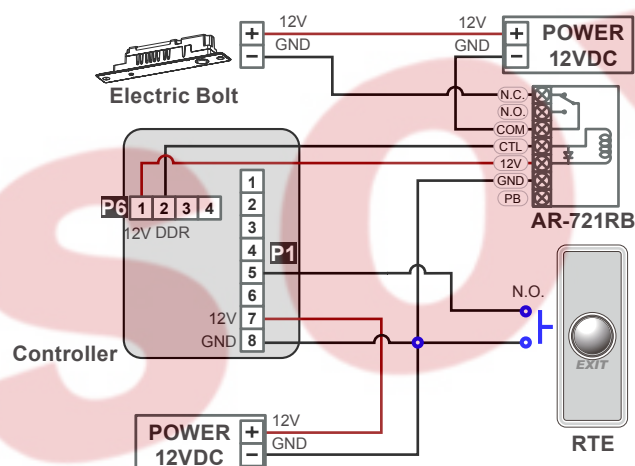
Connect to Electric Bolt
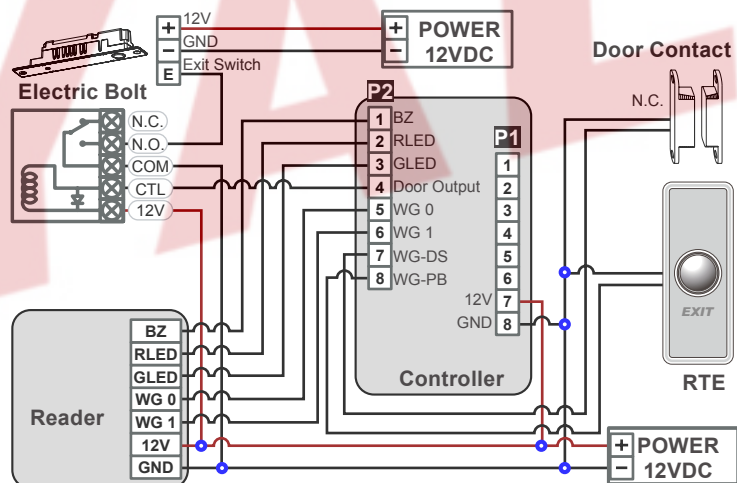

Connect to Magnet Lock

Connect to Electric Strike

Electric Strike
12V / GND
12V / GND
POWER 12VDC

Controller — P1
- N.O. 1
- 2
- COM 3
- 4
- PB 5
- 6
- 12V 7
- GND 8

POWER 12VDC — 12V / GND

RTE — N.O. / GND — EXIT

Connect to Door Contact

POWER 12VDC — 12V / GND — 12V / GND — Alarm

Controller — P1
- 1
- 2
- 3
- Door Contact 4
- 5
- ALM 6
- 12V 7
- GND 8

N.C. / N.O. / COM / CTL / 12V — Relay Outpot Module

POWER 12VDC — 12V / GND

N.C. — Door Contact

Strengthen security with AR-721RB

Electric Bolt
12V / GND
12V / GND
POWER 12VDC

N.C. / N.O. / COM / CTL / 12V / GND / PB — AR-721RB

Controller — P6 1 2 3 4 — 12V DDR

P1
- 1
- 2
- 3
- 4
- 5
- 6
- 12V 7
- GND 8

POWER 12VDC — 12V / GND

RTE — N.O. — EXIT

Connect to Reader

Electric Bolt
12V / GND / E — Exit Switch
POWER 12VDC

N.C. / N.O. / COM / CTL / 12V

Controller — P2
- BZ 1
- RLED 2
- GLED 3
- Door Output 4
- WG 0 5
- WG 1 6
- WG-DS 7
- WG-PB 8

P1
- 1
- 2
- 3
- 4
- 5
- 6
- 12V 7
- GND 8

Door Contact — N.C.

RTE — EXIT

Reader
- BZ
- RLED
- GLED
- WG 0
- WG 1
- 12V
- GND

POWER 12VDC

If any fire emergency, the people can escape by press a switch to open all doors

Electric Strike
12V / GND
POWER 12VDC

P1
- N.O. 1
- 2
- COM 3
- 4
- PB 5
- 6
- 12V 7
- GND 8

RTE — EXIT

Transistor IN4007

Magnet Lock
12V / GND
POWER 12VDC

P1
- 1
- N.C. 2
- COM 3
- 4
- PB 5
- 6
- 12V 7
- GND 8

RTE — EXIT

Fire Emergency

Electric Bolt
12V / GND / E
POWER 12VDC

P1
- N.O. 1
- 2
- COM 3
- 4
- PB 5
- 6
- 12V 7
- GND 8

RTE — EXIT

Transistor IN4007

Biometrics Device Access controller

RoHS Compliant SOR FC CE MA NCC

Fingerprint & Finger Vein
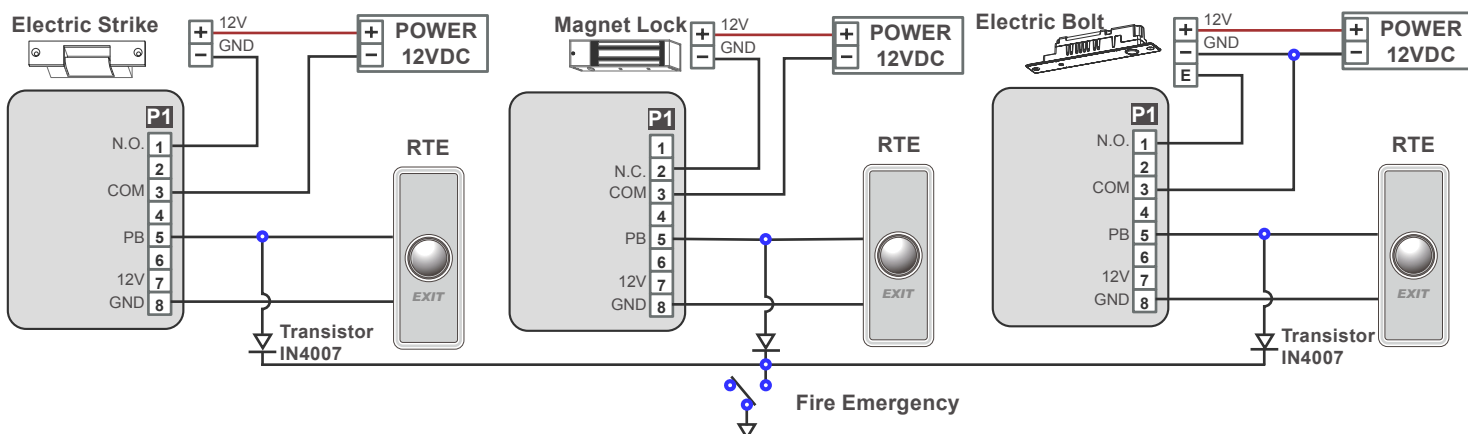
Programming

A. Keyboard Lock/ Unlock

● **Lock/ Unlock**

Press ***** and **#** , and at the same time to lock keyboard. Press again to unlock.

B. Entering and Exiting Programming Mode

● **Entering**

Input ***** 123456 **#** or ***** PPPPPP **#**

[e.g.] The Default Value= 123456. If already changed the Master Code= 876112, input ***** 876112 **#** → Access programming mode

P.S.If entering no instruction within **30 sec.**, it will automatically leave the programming mode.

● **Exiting**

Press the ***** ***** repeatedly → **6** Quit or **7** Quit and Arming (Please refer to alarm / arming setting)

● **Changing the Master Code**

Access programming mode → **5** Tools → **2** Master Code → Input the 6-digit new master code → Succeeded

C. Initial setup

● **Language Setting**

Access programming mode → **5** Tools → **1** Language → **0** EN → Succeeded → Initial system...
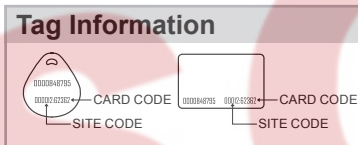
● **Node ID of Reader Setting**

Access programming mode → **3** Parameters[1] → **1** Node ID → **Input New Node ID : 1~254** (default value:001) → **Main Door Number : 0~255**
→ **WG1 Door Number : 0~255** → **Show UID (0=No,1=WG,2=ABA,3=HEX)** → **Enable DHCP(0:No,1:En,2=Exit)** → Succeeded

D. Adding and Deleting Tag

※ **User capacity: 16384 (00000~16383)**

Tag Information

CARD CODE / SITE CODE — CARD CODE / SITE CODE

● **Adding Tag by Tag ID**

Access programming mode → **1** Add/Delete → **1** Add -> Card ID → **Input 5-digit user address** → **Input Site Code** → **Input Card Code**

● **Adding Tag by RF Learn Function**

Access programming mode → **1** Add/Delete → **2** Add -> RF-Learn → **Input 5-digit user address**
→ **Input Tag Units(pcs)** → **Close Tag into RF Area**
※If a batch of tags are **Sequential**, input Tag Units(pcs) in the quantity of the tags and present the tag with
the **lowest number** to the controller.

● **Suspend User Address**

Access programming mode → **1** Add/Delete → **3** Suspend -> Addr → **Input Start address** → **Input End address**

● **Suspend Tag by Tag ID**

Access programming mode → **1** Add/Delete → **4** Suspend -> ID # → **Input Site Code** → **Input Card Code**

● **Recover User Address**

Access programming mode → **1** Add/Delete → **7** Delete -> Addr → **Input Start address** → **Input End address**

● **Recover Tag by Tag ID**

Access programming mode → **1** Add/Delete → **8** Delete -> ID # → **Input Site Code** → **Input Card Code**

● **Deleteing User Address**

Access programming mode → **1** Add/Delete → **5** Delete -> Addr → **Input Start address** → **Input End address**

● **Deleteing Tag by Tag ID**

Access programming mode → **1** Add/Delete → **6** Delete -> ID # → **Input Site Code** → **Input Card Code**

● **Setting up the access mode**

Access programming mode → **2** User Setting → **2** Access Mode → **Input User Address** → **0: Invalid; 1: Card ; 2: Card or PIN; 3: Card & PIN**

E. PIN Code

Access programming mode → **2** User Setting → **1** Password → **Input 5-digit user address** → **Input 4-digit PIN (0001~9999)** → Succeeded
Or via 701Client set it on Users screen

F. Adding / Deleting Fingerprint or Finger-Vein

- **Adding**

  Access programming mode → **2** User Setting → **6** Enroll FP → Key in 5-digit user address →1 or 2 different fingers on the sensor lens → Succeeded

  P.S. The AR-821EF need to collect twice for each fingerprint, and the AR-821EV need to collect three times.

- **Deleting**

  Access programming mode → **2** User Setting → **7** Delete FP → Key in 5-digit user address → Succeeded

  P.S. If you want to delete all users' FP, key in **99999** **#**

G. Access Mode

Access programming mode → **2** User Setting
→ **2** Access Mode
→ Key in 5-digit user address (00000~08999)
→ **0:Invalid; 1:Card; 2: Card or PIN; 3: Card and PIN**
→ Finger Identify: 0: Must ; 1: Ignore
→ Succeeded

Access Mode		Finger Identify		Result
Hardware	701Client	Hardware	701Client	
0:Invalid		0: Must	☐ Just fingerprint ☐ Just card control	Invalid User
		1: Ignore	☑ Just fingerprint ☑ Just card control	
1:Card		0: Must	☐ Just fingerprint ☐ Just card control	Finger+Card
		1: Ignore	☑ Just fingerprint ☑ Just card control	1. Card Only 2. Finger Only
2:Card or PIN		0: Must	☐ Just fingerprint ☐ Just card control	1. Finger+Card 2. Finger+PIN 3. Card+Finger+PIN 4. Card+Finger+Card 5. PIN+Finger+PIN 6. PIN+Finger+Card
		1: Ignore	☑ Just fingerprint ☑ Just card control	1. Card Only 2. PIN Only 3. Finger Only
3:Card and PIN		0: Must	☐ Just fingerprint ☐ Just card control	Finger+Card+PIN
		1: Ignore	☑ Just fingerprint ☑ Just card control	1. Card+PIN 2. Finger+PIN

H. Arming Password

Access programming mode → **3** Parameters[1] → **8** Arming PWD → **Input 4-digit PIN (0001~9999; Default: 1234)** → Succeeded
Or via 701Server and set it on AR-829E screen

I. Arming Delay Time

Access programming mode → **3** Parameters[1] → **7** ArmingDelayTm → **Enter armed sta. Delay time(Sec) ,Range:000~255 ；**
Armed pulse out-put time. (10ms) ,Range : 000~255 → Succeeded

J. Duress Code

Access programming mode → **4** Parameters[2] → **7** Duress Code → **4 sets (select one)** → **Input 4-digit PIN (0001~9999)** → Succeeded
Or via 701Server to set it on AR-829E-V5 screen
※Duress Code is only available in networking mode. It will substitute a personal pin code and send the message of Duress to computer as a warning signal.

K. Terminal Port

Access programming mode → **5** Tools → **4** Terminal Port → **0:Lift ; 1:Host ; 2:LED ; 3:PRN (default value:1)** → **Baud Selection (default value:9600)** → Succeeded

L. Setting up the alarm / arming

- **Conditions:**
  1. Arming enabled
  2. Alarm system connected
- **Application:**
  1. Door open too long: Door is open longer than door relay time plus door close time.
  2. Force open (Opened without a valid user card): Access by force or illegal procedure.
  3. Door position abnormal: When power is off and then on, reader on arming before power off.

- **Enable/Disable the arming status:**

Standby Mode			
Card only		Card or PIN	Card and PIN
Open the door	No open the door	**Input user address → Input 4 digits individual PWD → #→ Input 4 digits arming PWD → #**	Present the tag to reader → **Input 4 digits individual PWD → # → Input 4 digits arming PWD → #**
Present the tag to reader → **Input 4 digits arming PWD → #**	***** → **Input 4 digits arming PWD** → Present the tag to reader		
Access Programming mode			
Enable: Access programming mode → **7** Quit & Arming		**Disable:** Access programming mode → **6** Quit	

※ **[Use FP] can substitute for [Induct valid card].**

M. Anti-pass-back

While connect with AR-721U, AR-737H/U(WG mode) and AR-661U for anti-pass-back function, the access mode needs to be "Card" only.

- **Device enable**

  Access programming mode → [4] Parameters[2] → [6] Anti-pass-back → master controller select [1: Yes] → WG select [1: Yes]

- **Card user enable**

  Access programming mode → [1] Add/ Delete → [9] Antipass Group → **Input 5-digit starting user address** → **Input 5-digit ending user address** → must select [1: Yes]

N. Lift control

[e.g.] Connect with **AR-401RO16B** to control which floors the user will be able to access. (BAUD9600)

- **Setting Lift control**

  Access programming mode → [5] Tools → [4] Terminal Port → **0 : Lift Controller** → **Baud Selection 0 : 9600**

  Access programming mode → [5] Tools → [5] Terminal Port → **1 : Lift Controller**

  (need to use **725L485**)

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

- **Single floor**

  Access programming mode → [2] User Setting → [4] Single Floor →
  Input 5-digit user address → **Input single floor number: 1~64**

- **Multi floors**

  Access programming mode → [2] User Setting → [5] Multi Floor → **Input 5-digit user address** → **Select range: 1 or 2 or 3 or 4** → **Input 16 digits multi floors number [0:disable, 1: enable]**

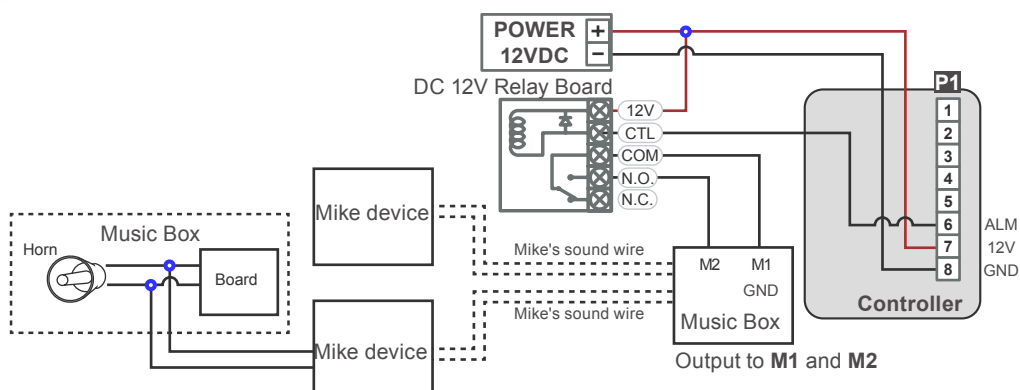 [e.g.] Set NO. 114, can use it with the 8 F and 16F:

  Access programming mode → [2] User Setting → [5] Multi Floor → **114** [#] → **1** [#] → **0000000100000001** [#]

O. Alarm Clock (for Factory)

Access programming mode → [5] Tools → [9] Daily Alarm → **Set (00~15)** → **Set Start Tm (24 Hours)**；**Set Effect Sec. (Seconds as the bell time, Range:1~255)** → **Set Weekday (0:disable, 1: enable)** → Succeeded

- **Hardware installation**

P. OpenZone

Access programming mode → [3] Parameters[1] → [2] OnOff OpenZone → **Main Controller Auto Open Zone (0:disable,1:enable)** → **Open Door Imm. During Open Zone (0:No,1:Yes)** → **WG1 Port Auto Open Zone (0:disable,1:enable)** → **Open Door Imm. During Open Zone (0:No,1:Yes)** → Succeeded

Q. Open TimeZone

Access programming mode → [5] Tools → [6] Open TimeZone → **Set (00~15)** → **Time (24 Hours)；Main Port (0:disable, 1: enable)；WG Port (0:disable, 1: enable)** → **Weekday (0:disable, 1: enable)** → succeeded

Firmware Upgrade

Get the upgrade software from SOYAL or our distributor and run "UdpUpdater" software

- **Execute the software** ⬙ The software is within SOYAL CD or Login the SOYAL web to downloads
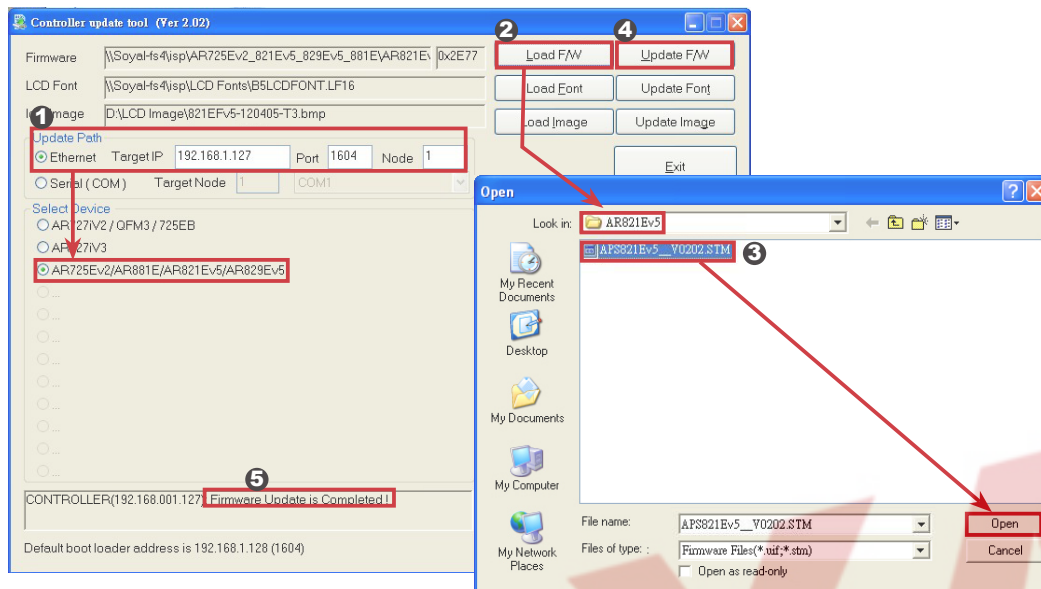
- **Update the firmware**

  [Please login the SOYAL web 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. Till the screen shown [Firmware Update is Complete]

Restoring Factory Settings

Reset all device parameters and user card data

- **Reset all device parameters and user card data:**

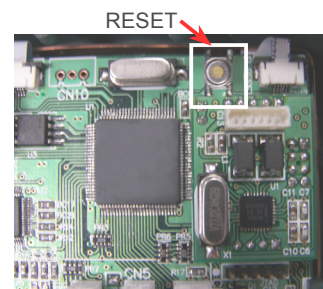 Access programming mode → 4 Parameters2 → 9 Factory Reset → **0 : System Param ;**

  1 : User Setting ; 2 : System & User

- **Reset IP Setting:**

  When the device's power is on, press the【RESET】button the main board untill the ERR (Red) LED of

  screen lights up. (Reference to picture)

RESET

※ **After operation as above, you will hear the long reminder sound,and wait until the sound disappear then reset the power of the controller,the device will restore factory setting.**

※ **After done the "Factory Reset", the External Communication Port must be reset. Or the biometric sensor won't be functional.**

  5 **Tools** → 5 **Ext. Comm Port (0:FP-200 ; 1:Lift ; 2:Vein2000 ; 3:FP-9000 ; 4:Reserved)**

Manu Tree

1. Add/ Delete	2. User Setting	3. Parameters[1]	4. Parameters[2]	5. Tools	6. Quit
1. Add > Card ID	1. Password	1. Node ID	1. Auto Relock	1. Language	
2. Add > RF Learn	2. Access Mode	2. OnOff OpenZone	2. Egress(R.T.E)	2. Master Code	**7. Quit & Arming**
3. Suspend > Address	3. Extend Options	3. Door Relay Tm	3. Miscellaneous	3. Master Range	
4. Suspend > ID #	4. Single Floor	4. Door Close Tm	4. Force Open	4. Terminal Port	
5. Delete > Address	5. Multi Floor	5. Alarm Relay Tm	5. Close & Stop	5. Ext.Comm Port	
6. Delete > ID #	6. Enroll Finger	6. Alarm Delay Tm	6. Anti-pass-back	6. Open Time Zone	
7. Recover > Address	7. Delete Finger	7. Arming Delay Tm	7. Duress Code	7. Informations	
8. Recover > ID #		8. Arming PWD	8. Password Mode	8. Clock Setting	
9. Antipass Group			9. Factory Reset	9. Daily Alarm	

IP Setting

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

If the IP address of AR-821 (EF/EV-V5) has changed We must enter the new IP address.
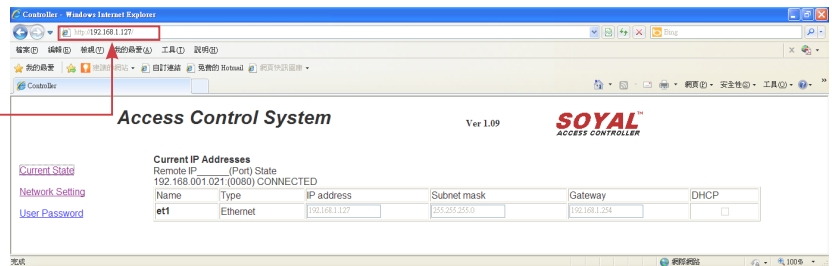
● **Page menu**

Current State ◄──── Monitor the on-line computer
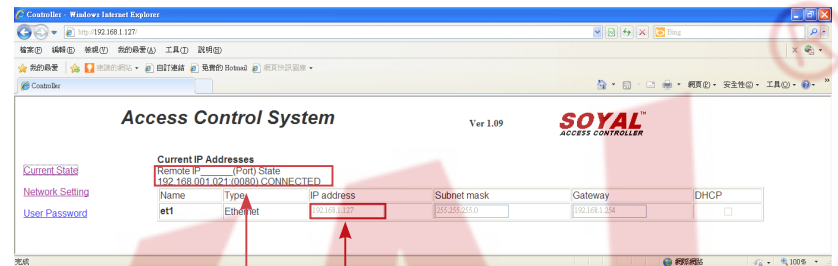
Network Setting ◄──── IP Setting

User Password ◄──── Change the Log-in information

● **Current State**

Online Status is able to monitor and show which computer is linking on Ethernet Module

Show which computer is linking on Ethernet Module.

Current IP address of the AR-821 (EF/EV-V5)

● **Log-in User Password**

When you choose the "Networking Setting" or "User Password" at first.
Log-in window will pop out and please input
※ At the Factory Default
User name: admin
Password: No as default value,so please just press "OK" to log-in

● **Networking Setting**

You will find initial IP Address 192.168.1.127 and check MAC Address is the same as sticker on Ethernet Module device. Please revise IP address you want, and then click "Update" button. After updating the IP, please re-connect the Web Browser by new IP address.
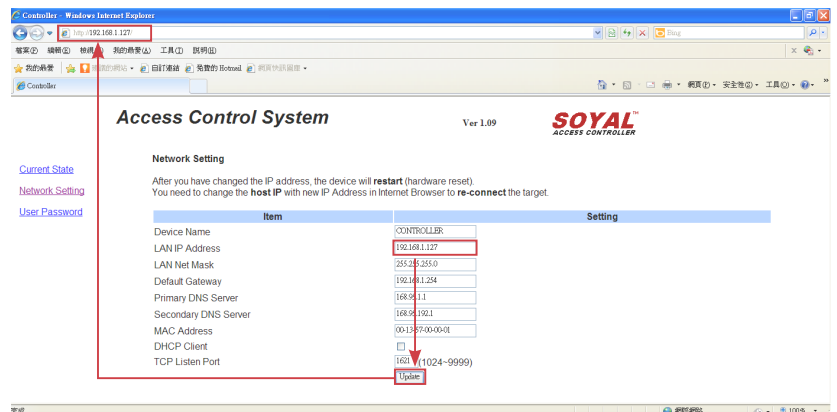
● **User Password**

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