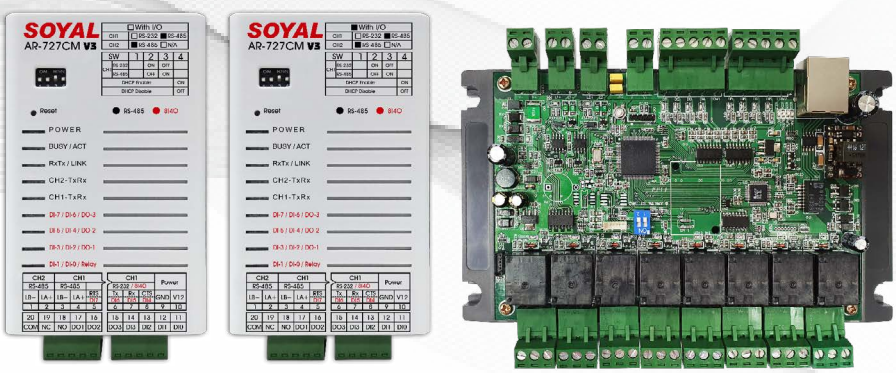
SOYAL®
ACCESS & INDUSTRIAL CONTROL

Operation Manual
AR-727-CM HTTP Server

System Requirements

- Web Browser Setting Interface
- Cross-Platform Services does not limit to particular operating system, smartphone, or tablet
- Setting Fire Alarm Auto Release Doors and TCP/IP Remote I/O Control Setting



SOYAL Website

Software Download

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1. HTTP Server Introduction

1-1 / Main Features

- Easy setup via Smartphone, Tablet, and PC by entering IP address of the devices through web browser

- HTTP Server is compatible for SOYAL Enterprise Series (listed on separate manual refer to 'Operation Manual Enterprise Series HTTP Server'), SOYAL Industry Series (TCP), AR-716-E18 Ethernet module AR-727i-V3 and Converter AR-727-CM.

- HTTP Server Comparison Table

	Interface Menu	Enterprise Series	Industry Series (TCP) AR-727-CM-0804M AR-401-IO-0808R-U2	AR-727i-V3 (AR-716-E18 Ethernet module)	Converter AR-727-CM
1	Current State	V	V	V	V
2	Network Setting	V	V	V	V
3	Controller Setting: Event Log /User List / Controller Parameter / User Add/Change / Timezone / Clock	V			
4	Login Password	V	V	V	V
5	RS485 Setting: Channel 1 Setting / Channel 2 Setting		V		V
6	I/O Control Setting: Direct Control IO 0~3 / Direct Control IO 4~7		V		

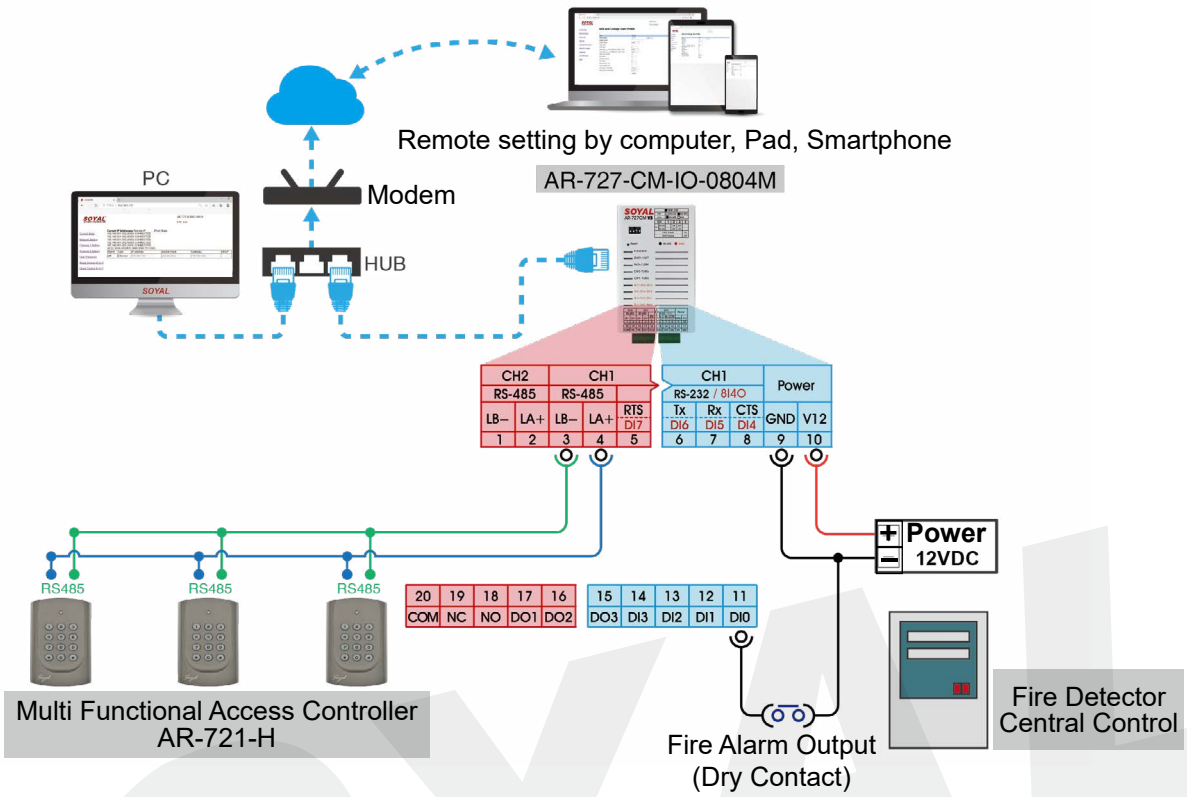
- Devices with DI/DO onboard, through HTTP Server could directly control and monitor recent status of onboard DI/DO

- Connect to Fire Detector Central Control when fire alarm occurred, automatically notified designated controller to open door

- Establish a Server-Client connection bridge to extend wiring, limitless wiring distance, or to provide wireless connection.

- AR-727-CM-IO-0804M through its DI/DO features provides TCP to Wiegand signal conversion, at the same time all of Industrial Series built-in Modbus communication protocol that could easily works with third party integration of Monitoring Software and SCADA.

2. Interface Overview



2. Interface Overview

2-1 / Log in HTTP Server page

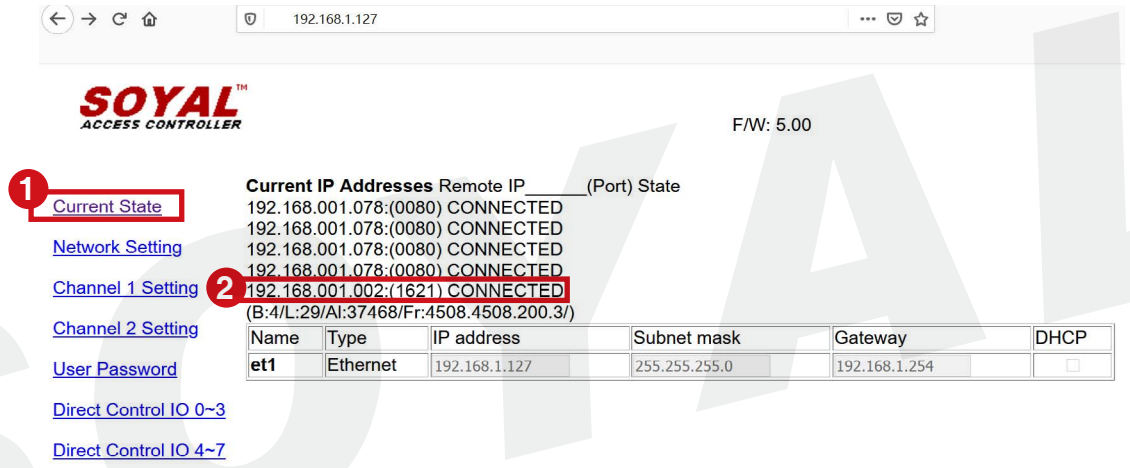
1 Through PC, Tablet, or Smartphone web browser software/app, enter device IP Address and enter HTTP Server interface (default IP Address 192.168.1.127)

2. Interface Overview

2 When entering HTTP Server page required entering ID and Password. Default ID: SuperAdm / Password: 721568 which can also be found on serial no. sticker that include on the packaging.
(For older version, default ID: admin / password: admin)

3 Device Model no. and Firmware Version
After logged in, on the top right side will show the controller's model no. including the firmware version

2-2 / Device Connection Status



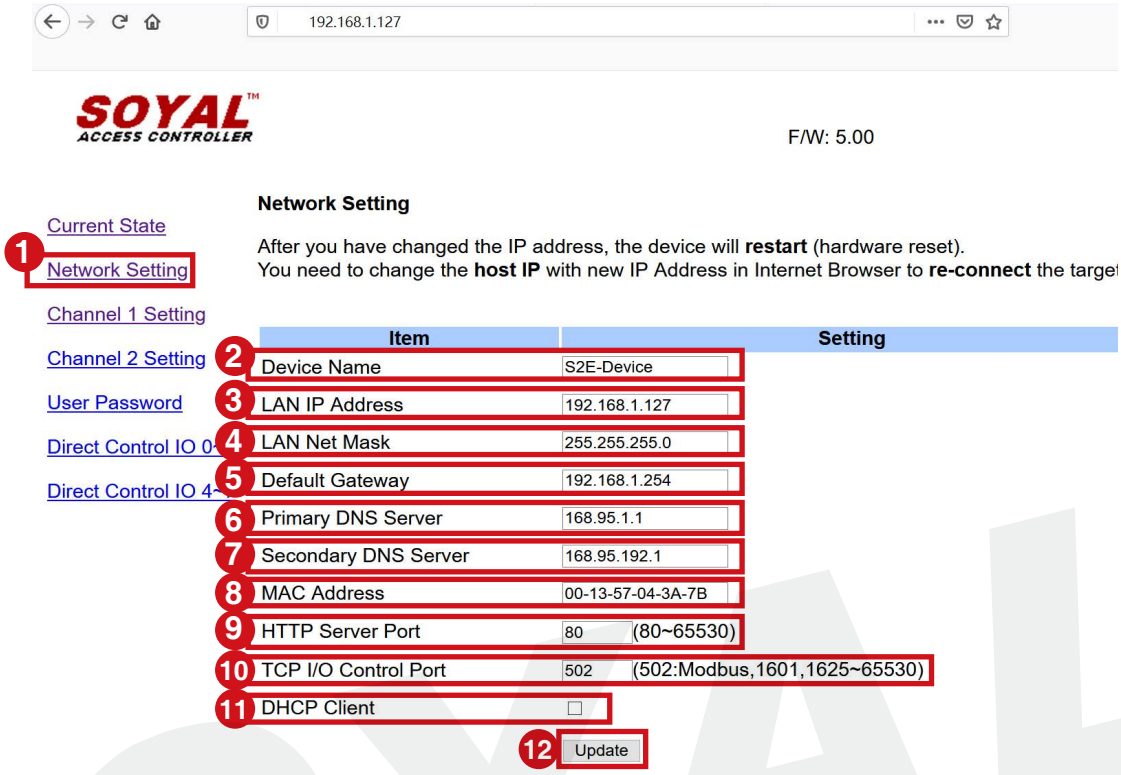
1 After logged in, the first menu that will automatically show Current State that will indicate connection status

2 Connection Status can be seen between devices to HTTP Server (Port 80) and device to 701Server (Port 1621 for Enterprise Series Controller or via AR-727-CM CH1 / Port 1623 if via AR-727CM CH2)

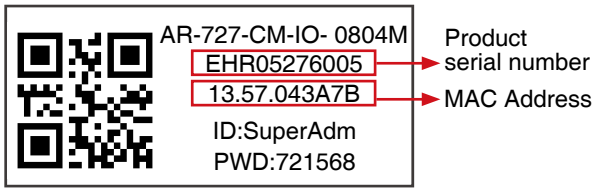
Note :

- From the example above:
  1. 192.168.001.078:(0080) CONNECTED -> indicated device with IP address 192.168.1.78 has connected to HTTP Server
  2. 192.168.001.002:(1621) CONNECTED -> indicated device with IP address 192.168.1.2 has connected to 701Server

2-3 / Network Setting



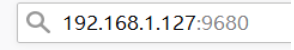
1. Click the 'Network Setting' on the left side menu
2. Device Name: Rename network device, could be used to differentiate between one device and another
3. LAN IP Address: Enter IP address designated for the device of the intranet. Default setting is 192.168.1.127
4. LAN Net Mask: Subnet Mask of the intranet
5. Default Gateway: Default gateway of the intranet.
   if there is Internet connection access, this IP address must point to the router or the gateway provided by the ISP
6. Primary DNS Server: Domain Name Server 1
7. Secondary DNS Server: Domain Name Server 2
8. MAC Address:Network physical address (this field cannot be changed).
   Each TCP/IP device has designated MAC address that could be found on the serial number sticker



9 HTTP Server Port: 80

Web browser service port, it can be change if there is information security consideration but should not have the same TCP Port with 701Server connection to devices which is 1621 or 1623

For Example: changing into 9680, to enter the HTTP Server you need to enter IP address followed with Port



***the designated Port should be remembered all time, if not necessary to change the Port, please let it remain default which is 80.**

10 TCP/IP Control Port:

Setting of I/O Control Port.

Enter 1601 when using 727APP or mobile app connection

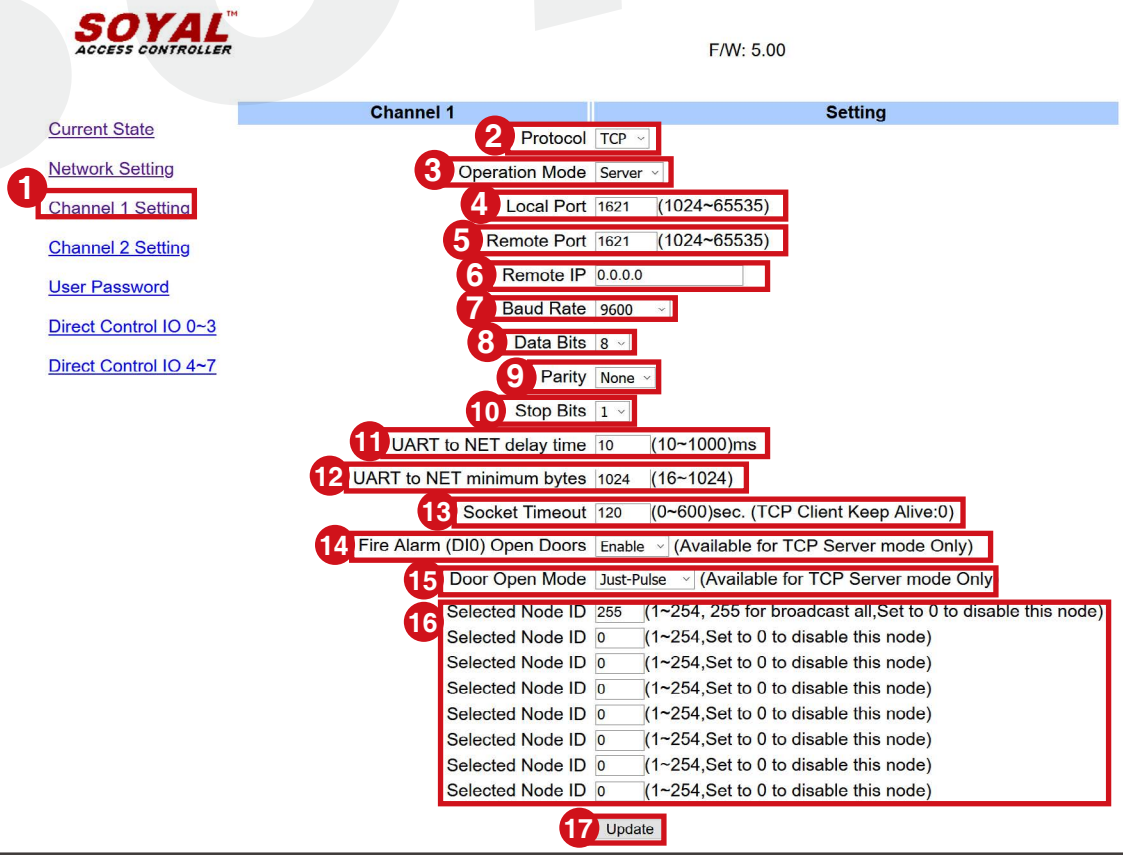
Enter 502 for Modbus communication protocol application

11 DHCP Client: Ticking this feature will enable dynamic host protocol which means devices will automatically obtain IP address without manually typing and assigned device to a designated IP address.

12 Update: Press Update button to save changed.

When you changed the LAN IP Address, after entering Update button, on the browser field required to type new IP address.

2-4 / RS485 Parameter Setting



2. Interface Overview

1. Select ‘Channel 1 Setting’ to setup RS485 connection on Channel 1
2. Protocol: Choose TCP
3. Operation Mode: Server (Default)
4. Local Port:
   Default Value 1621 (it is changeable to other Port but should not have the same TCP Port with Server HTTP Port 80)
5. Remote Port: Default Value 1621, change into 0.
6. Remote IP: Set as 0.0.0.0

   Note: Step no. 3-6 required a setup when applying Server-Client Mode connection bridge (Refer to 3-3)

7. Baud Rate: Fixed value 9600
8. Data Bits: Default Value 8, if required to do parity check, please include parity bit.

   For example: Serial Port Parameter Setting for 9600,0,8,1
   AR-727-CM Data Bits set to 9 (the actual output will be 8 bit + 1 parity = 9), then set the Parity into ‘Odd’

9. Parity: Default Value None
10. Stop Bits:Default Value 1

    Note: Step no. 7-10 required a setup when wiring to third party devices that have different Serial Port Setting.

11. UART to NET delay time: Transmission delay time in milliseconds
12. UART to NET minimum bytes: Data transfer length default value 1024 (please do not change)
13. Socket Timeout: Time waiting for connection, set to 0 means to keep the connection alive or keep alive (if it is unnecessary refrain from set up into 0)
14. Fire Alarm (DI0) Open Doors:
    Enabling this feature will activate release all doors or specified doors under fire alarm event (triggered DI0 signal), only available under Server Mode
15. Door Open Mode:
    Release lock mode, there are two options to choose 'Just-Pulse' or 'Keep Latch'. Under a connection to Fire Alarm System, for safety purpose during Fire Event select ‘Keep Latch’. For other purpose such as remote open door for visitor, select ‘Just-Pulse’.

2. Interface Overview

16 Selected Node ID:

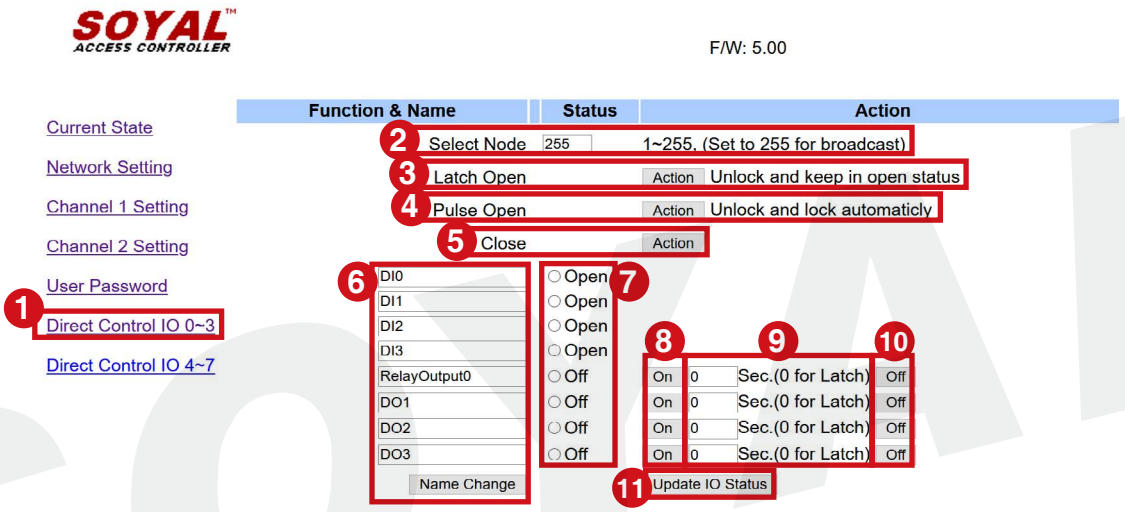
Select broadcast or specified group of doors to release lock under Fire Event (each RS485 Channel could specified up to 8 doors).

Note: Step no.14-16 required a setup when applying Fire Alarm Auto Release Doors (Refer to 3-2)

17 Update:

Press Update button to save changed.

2-5 / I/O Direct Control and Query



1 IO Direct Control includes DI/DO direct and remote control over devices. This also includes direct control of devices connected to Industry Series (TCP) over RS485.

'Direct Control IO 0~3'
Direct control over DI0, DI1, DI2, DI3 and DO0, DO1, DO2, DO3
Direct control over RS485 CH1&CH2

'Direct Control IO 4~7'
Direct control over DI4, DI5, DI6, DI7 and DO4, DO5, DO6, DO7
Direct control over RS485 CH1&CH2

2 Select Node: Enter broadcast or specified node ID to do control between Latch Open(3)/Pulse Open(4)/Close(5) remotely on RS485 CH1&CH2.

Enter 255 to release doors for all controllers under RS485 CH1&CH2.

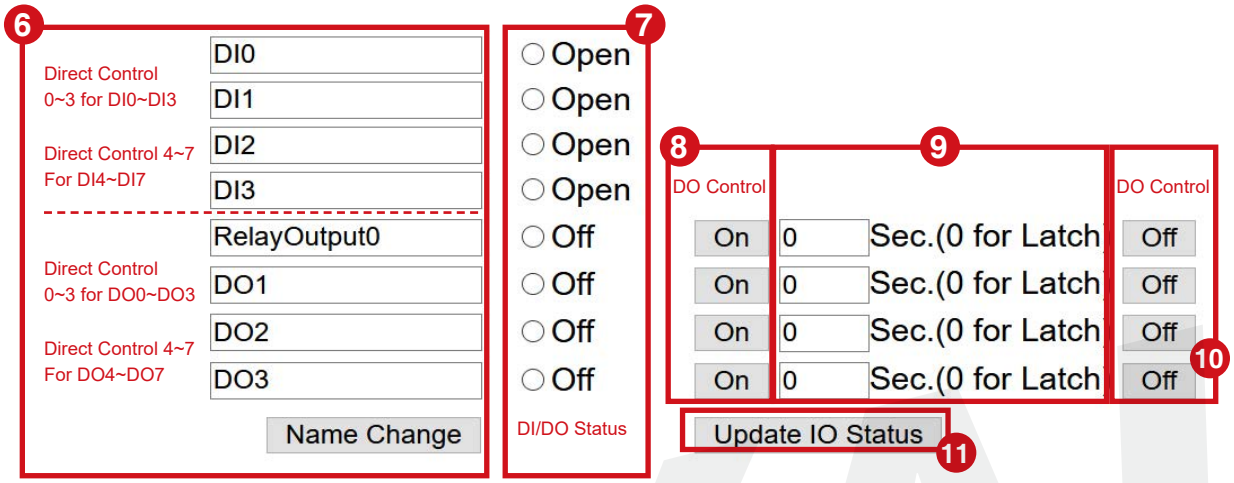
Enter specified node ID to control only one specific node ID under RS485 CH1.

(Example enter 'Select Node 1' means to do actions for Node ID 1 on RS485)

Action Control over RS485 CH1&CH2

3. Latch Open: Release lock continuously
4. Pulse Open: Release lock and lock automatically door relay time limit reached (according to devices Door Relay Time Setting)
5. Close: Lock door

Press ‘Action’ to implement direct control from step 3-5.



6. Rename DI/DO:

Change the name of DI/DO and select ‘Name Change’ to save changed.

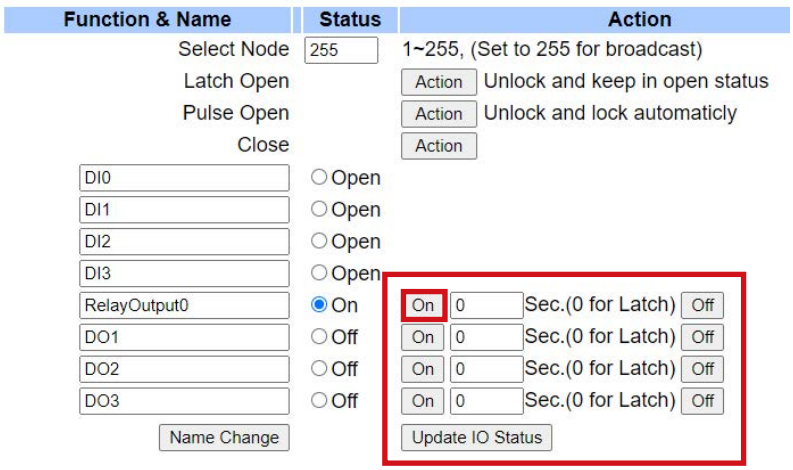
7. DI/DO Status:

The status change of DI/DO will be displayed here

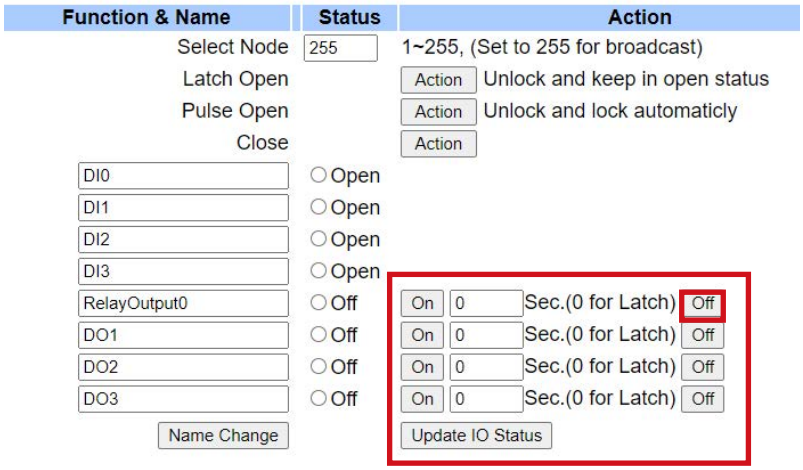
8. DO Control:

Click ON to trigger DO, and click OFF to disable DO from triggering

Clicking ON for DO0, the DI status will automatically ON



Clicking OFF for DO0, the DI status will automatically returned to OFF status



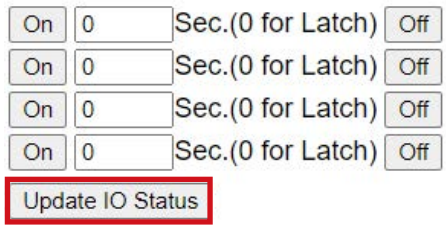
9 DO Control (Output Time)

Change the Output Time of DO control between the range of 0~600 seconds.

Entering 0 means latch mode, output continuously.

Entering between 1~600 seconds means output ON according to output time set.

10 Update IO Status: Get real time IO current status by clicking Update IO Status



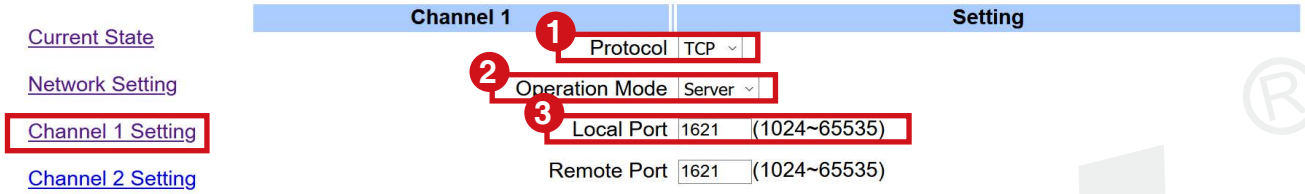
3. Interface Overview

3-1 / TCP/IP Converter Setting

Wiring SOYAL access controller to PC can be done via RS485 or TCP/IP interface. For SOYAL access controller that built-in RS485, via Industry Series (TCP) or AR-727-CM achieve RS485 to TCP/IP connection.

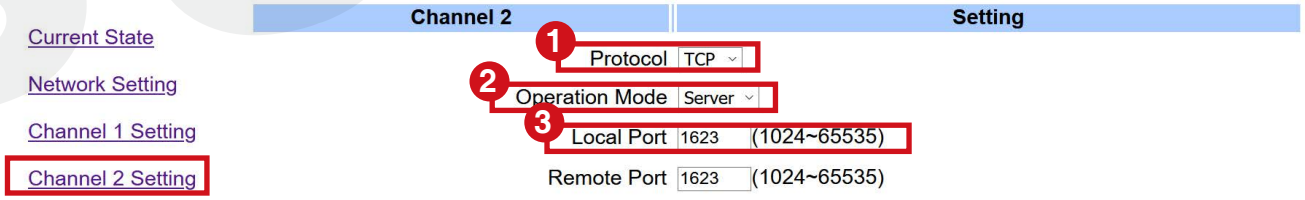
Each device built in two RS485 channels that differentiate between CH1 and CH2.

CH1 Setting:



1. Protocol : TCP
2. Operation Mode: Server
3. Local Port 1621

CH2 Setting:



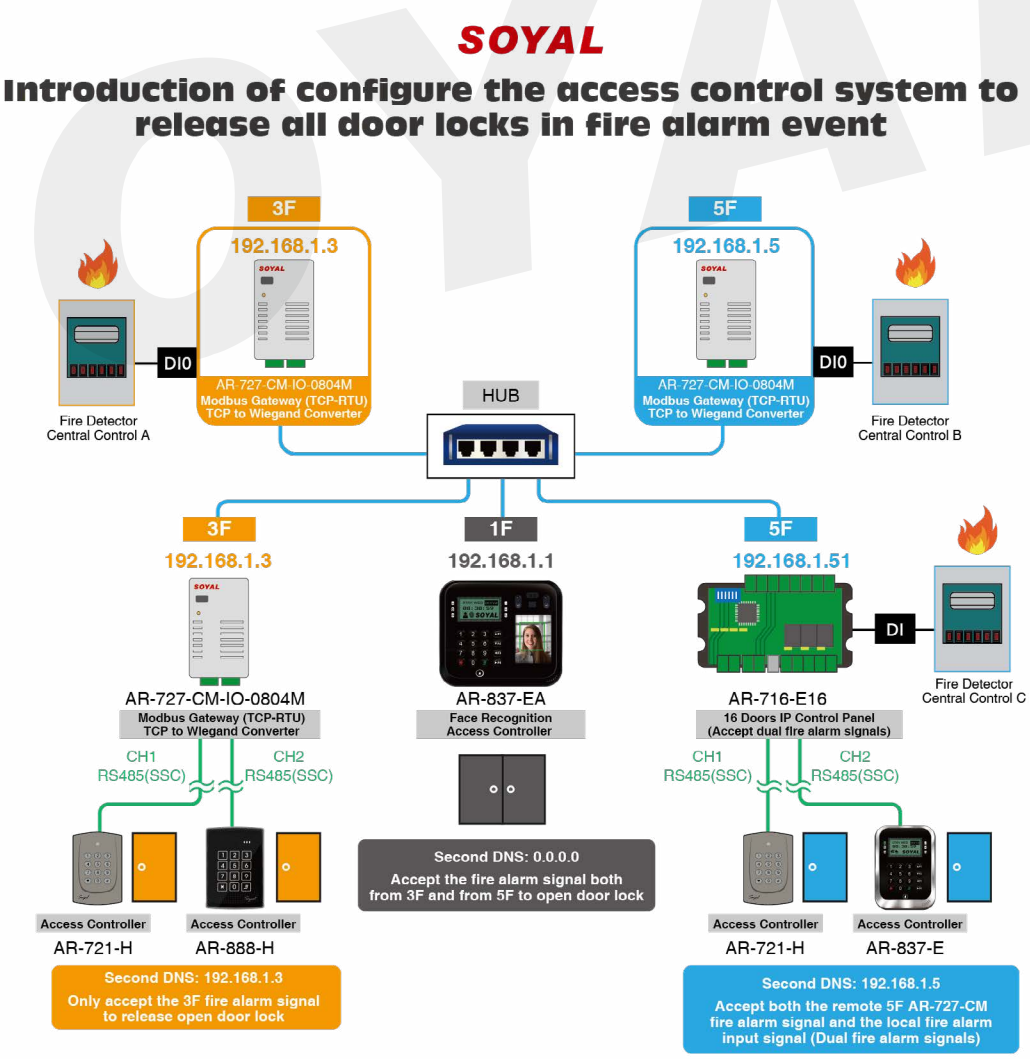
1. Default Value Protocol UDP change into TCP
2. Operation Mode: Server
3. Local Port 1623

3-2 / Fire Alarm Auto Release Doors

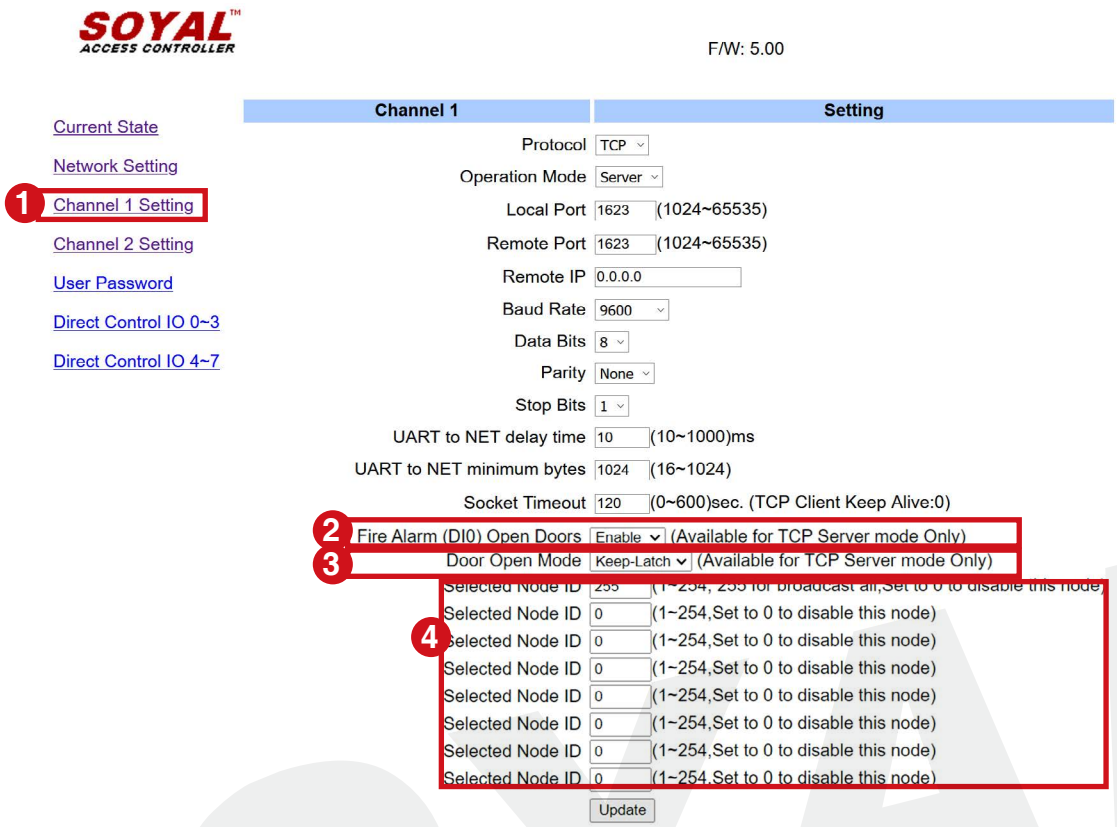
SOYAL provides various options for Fire Event Solution. This is taking a consideration of onsite situation and human safety when escaping fire and evacuation while maintaining safety for authorized area.

SOYAL Fire Alarm Auto Release Doors available on AR-727-CM-0804M & AR-401-IO-0808R-U2 using its onboard DI0 specifically made for Fire Event. There are two modes to choose: Auto Alarm Auto Release Doors via RS485 method and UDP method. For each mode, there are two options available to release locks via broadcast (release all doors) and release only specified doors.

Releasing all doors is suggested for public spaces where user could directly escape building for safety precaution and quick evacuation process. Meanwhile releasing only a specified doors is suitable to keep doors remain locked for high authorized area or for building with warehouses, treasure room, or server IT room.



● 3-2-1 Fire Alarm Auto Release Doors (RS485 method)



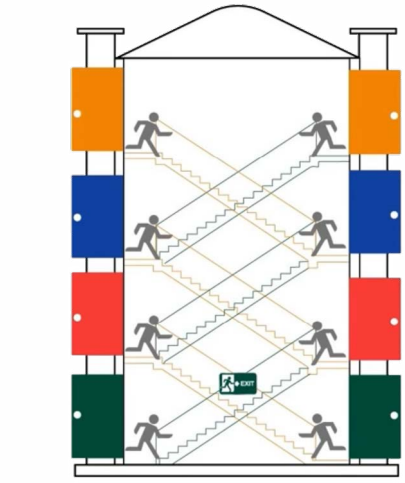
STEP 1 : Select 'Channel 1 Setting'

STEP 2 : Fire Alarm (DI0) Open Doors: 'Enable'

STEP 3 : Door Open Mode Select 'Keep Latch'

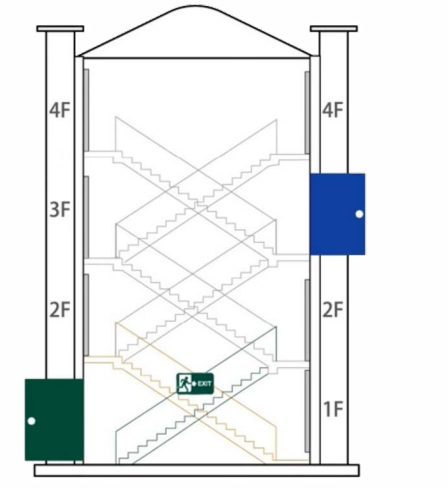
STEP 4 : Select broadcast or specified group of doors to release lock under Fire Event (each RS485 Channel could specified up to 8 doors).
The specified station number range between Node ID 1-254.

Release all doors



Setting:
Selected Node ID enter 255 on the first field, the rest of the field enter 0 to disable (because entering 255 on the first field has enabling broadcast to release all doors open on RS485 CH1)

Release specified doors only



Setting:

Example shows release doors only for the affected floors (up and below) or specified floor

Node ID 1 and Node ID 6 via RS485 CH1

● 3-2-2 Fire Alarm Auto Release Doors (UDP method)

Compatible Controller: Enterprise Series Controller.

Enterprise Series controller could accept “Release door lock” command via UDP from any of the serial servers AR-727-CM-0804M or AR-401-IO-0808R-U2 (required customized firmware, refer to Ref 3.)

The condition to this setup is only available for Enterprise Series Controller with Ethernet connection and under the same intranet.

Release all doors

Setting:

Each of the controller’s Secondary DNS Server set to 0.0.0.0

Network Setting

After you have changed the IP address, the device will **restart** (hardware reset).
Please update the IP address in the browser after any changed.

Item	Setting	
Device Name	CONTROLLER	(Can be any unique identifier)
LAN IP Address	192.168.1.127	
LAN Net Mask	255.255.255.0	
Default Gateway	192.168.1.254	
Primary DNS Server	168.95.1.1	
Secondary DNS Server	0.0.0.0	
MAC Address	00-13-57-02-04-2C	

Release specified doors only

Setting:

Each of the controller's Secondary DNS Server that will accepts "release door lock command" set as specified IP address of the serial servers AR-727-CM-0804M or AR-401-IO-0808R-U2.

Network Setting

After you have changed the IP address, the device will **restart** (hardware reset).
Please update the IP address in the browser after any changed.

Item	Setting
Device Name	CONTROLLER (Can be any unique identifier)
LAN IP Address	192.168.1.127
LAN Net Mask	255.255.255.0
Default Gateway	192.168.1.254
Primary DNS Server	168.95.1.1
Secondary DNS Server	192.1681.1.171
MAC Address	00-13-57-02-04-2C

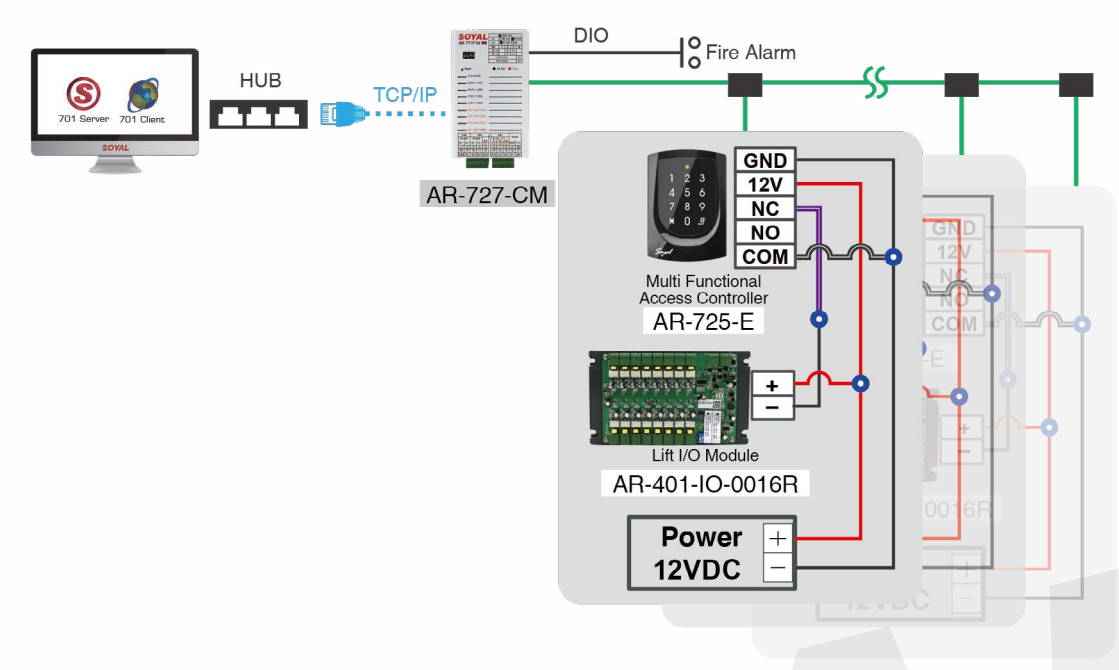
Youtube Video Tutorial regarding
Fire Alarm Event Release All Doors

● 3-2-3 Fire Alarm Auto Release Lift Door

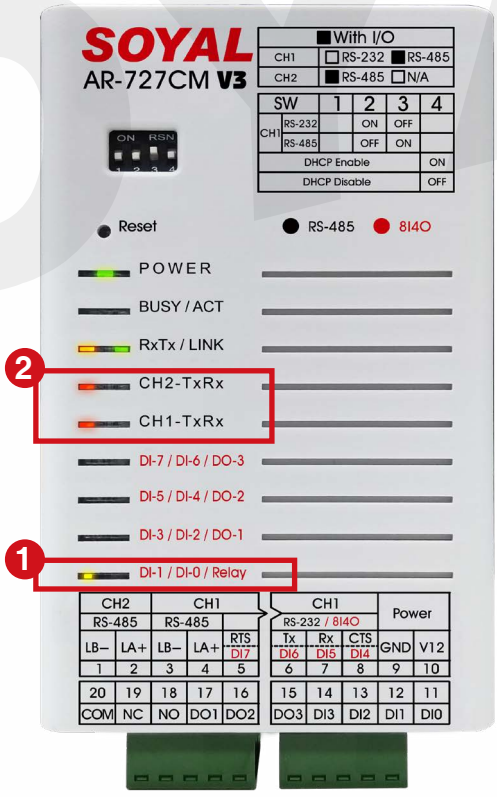
Under AR-727CM-IO, the lift access controller supports connection to Fire Alarm. With special firmware, in normal situation, when users swipe RFID tags, the controller' s relay doesn't act. It only acts once receiving fire alarm signal. Relay is controlled by fire alarm signal instead of valid tags.

This function is available at the firmwares:
725E-V2: APS725Ev2__V0403_200415 ACCESS_DONT_OPEN_DOOR.STM
725HD: 725HD_7V3 190530 ACCESS_DONT_OPNE_DOOR.ISP

3. Interface Overview



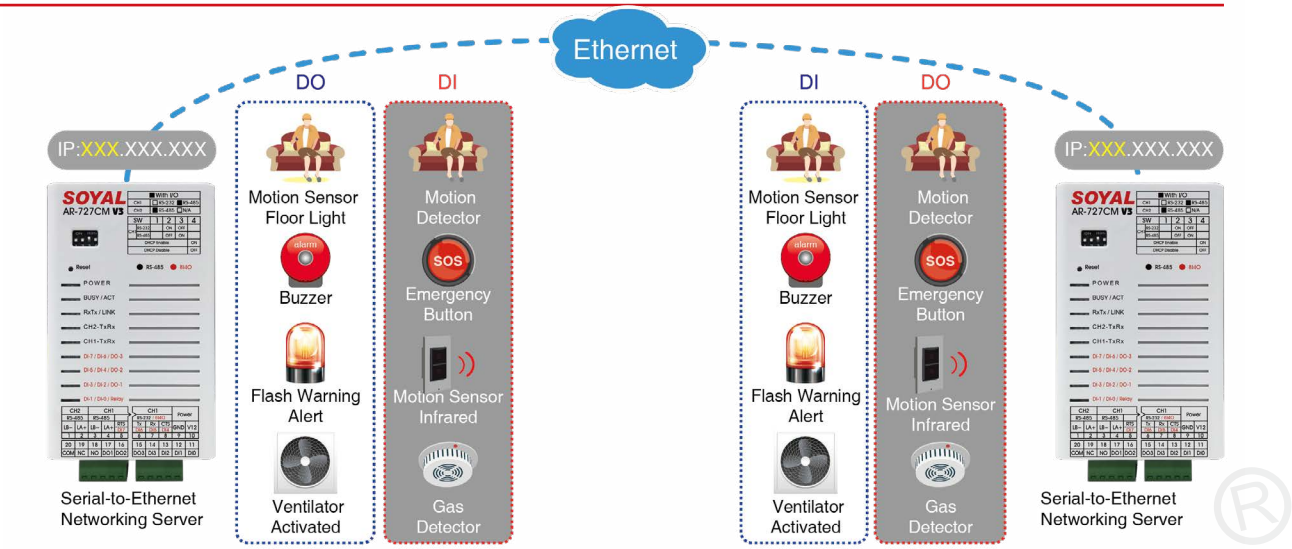
• 3-2-4 Fire Alarm Indicator



Indicator when Fire Alarm Event is happening:

1. DI0 LED will continuous blinking > sensing Fire Alarm Event
2. CH1 or/and CH2 TX red LED will fast blink > Release doors

3-3 / TCP/IP Remote I/O Control Setting

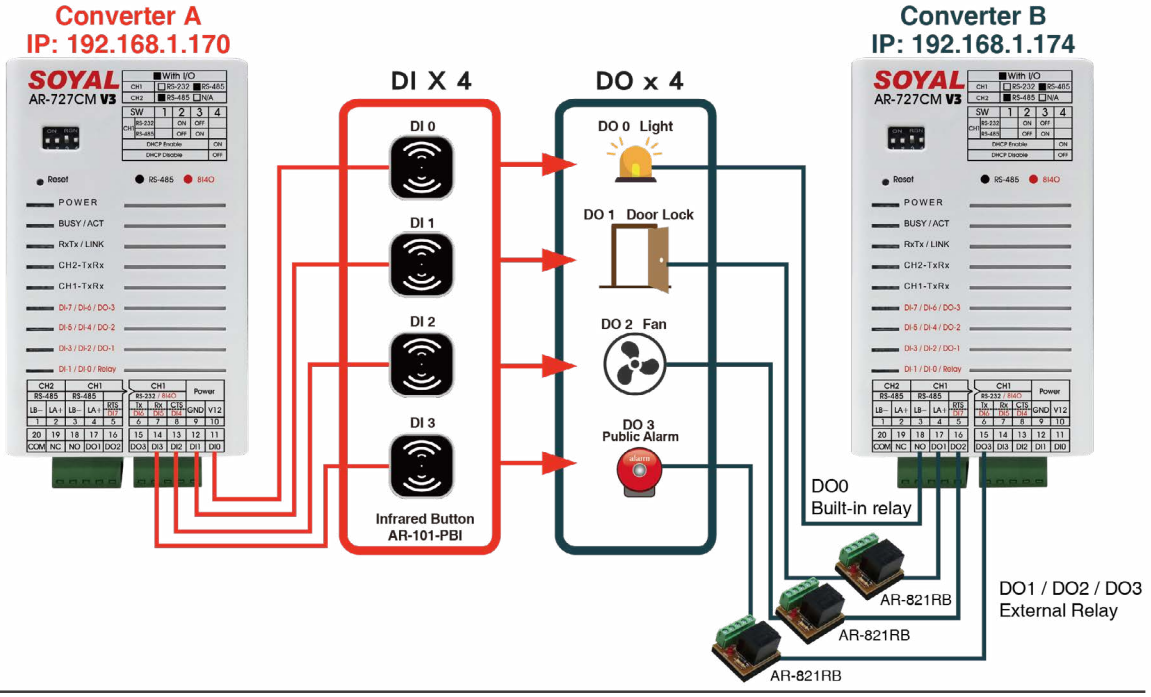


Remote I/O Control Setting is a function where when DI is triggered, the DO with linkage control will control remote device or sending a warning (i.e: if temperature in a factory is too high, it will send alert to AR-727CM-IO, the network linking to a remote fan that connected to AR-727CM-IO too, will activate ventilation system and send an alarm to Emergency Status Board in Main Factory).

Conditions:

- Both serial servers AR-727-CM-0804M or AR-401-IO-0808R-U2 that will operate interlinkage IO control must be on intranet or the same subnet mask, or implement connection using VPN.
- Required customize firmware for this feature (refer to Ref 4.)
- One-to-one control, fixed direction control

Serial Server A	→	Serial Server B
DI0	→	DO0
DI1	→	DO1
DI2	→	DO2
DI3	→	DO3



3. Interface Overview

Setting:

Example Serial Server A IP Address is 192.168.1.170 and Serial Server B IP Address is 192.168.1.174

Set Serial Servers A as Server

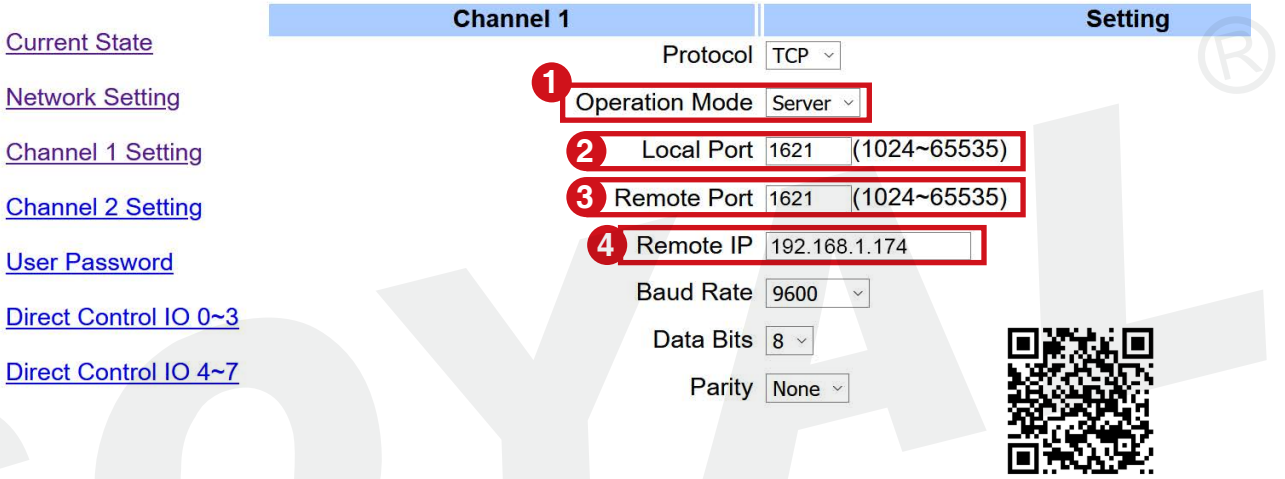
STEP 1 : Operation Mode: Set as Server

STEP 2 : Local Port: Enter 1621

STEP 3 : Remote Port: Enter 1621

STEP 4 : Remote IP: Enter Serial Server B IP Address 192.168.1.174

STEP 5 : There is no need to do any set up for Converter B

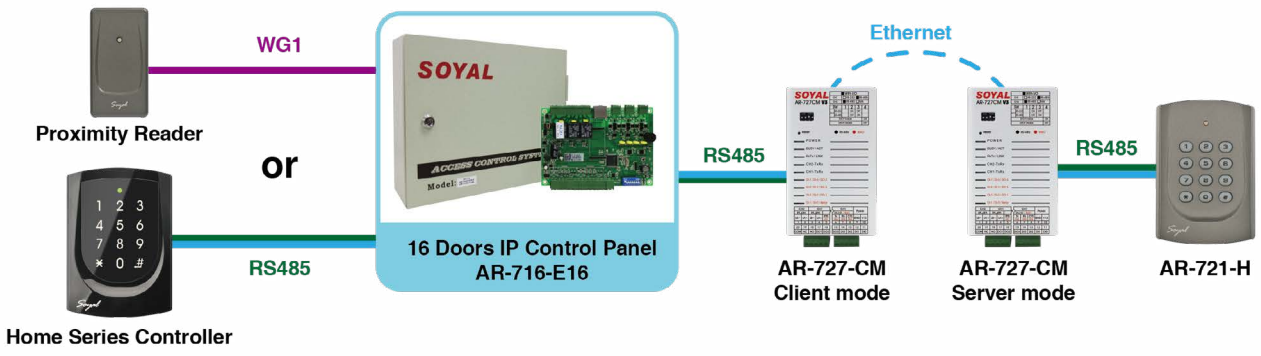


Youtube Video Tutorial regarding TCP/IP Remote IO Control Setting

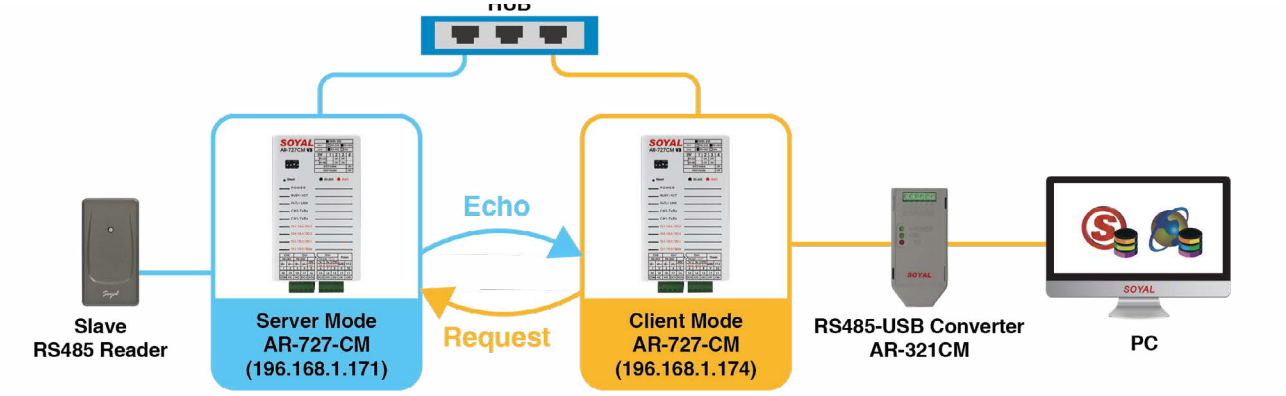
3-4 / Server-Client Mode Communication Bridge

Industry Series (TCP) AR-727-CM-0804M, AR-401-IO-0808R-U2 and AR-727-CM converter offer a communication bridge as Server-Client Mode that could solve issue with:

1. Master and Slave Reader cable wiring into wireless

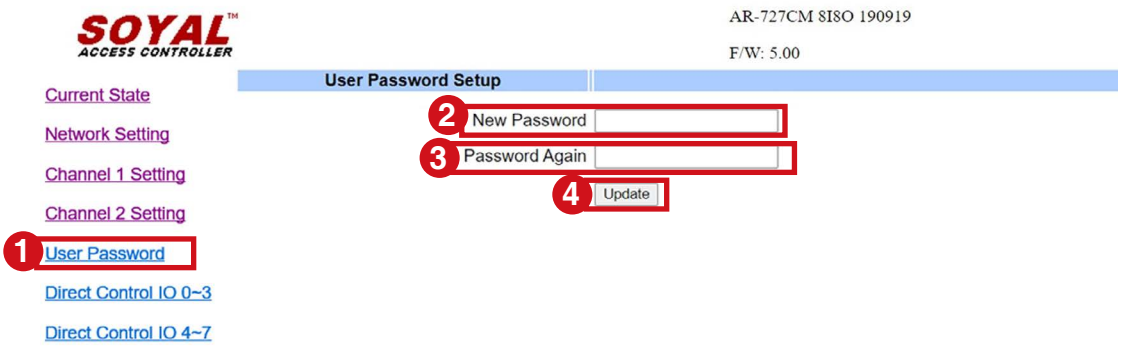


2. Data transfer between two devices via TCP/IP



SETTING	AR-727CM CLIENT MODE (for MASTER RS485 DEVICE)	AR-727CM SERVER MODE (for SLAVE RS485 DEVICE)
NETWORK SETTING	**Network Setting** After you have changed the IP address, the device will **restart** (hardware reset You need to change the **host IP** with new IP Address in Internet Browser to **re** Item / Device Name: S2E-Device / LAN IP Address: 192.168.1.174 / LAN Net Mask: 255.255.255.0 / Default Gateway: 192.168.1.254 / Primary DNS Server: 168.95.1.1 / Secondary DNS Server: 168.95.192.1 / MAC Address: 00-13-57-04-36-25 / HTTP Server Port: 80 (80~65530) / TCP I/O Control Port: 502 (502:Modbus, / DHCP Client / Update	**Network Setting** After you have changed the IP address, the device will **restart** (hardware rese You need to change the **host IP** with new IP Address in Internet Browser to **re** Item / Device Name: S2E-Device / LAN IP Address: 192.168.1.171 / LAN Net Mask: 255.255.255.0 / Default Gateway: 192.168.1.254 / Primary DNS Server: 168.95.1.1 / Secondary DNS Server: 168.95.192.1 / MAC Address: 00-13-57-04-39-B9 / HTTP Server Port: 80 (80~65530) / TCP I/O Control Port: 502 (502:Modbus, / DHCP Client / Update
	IP Address: 192.168.1.174	IP Address: 192.168.1.171 (Remote IP)
CH 1& CH2 SETTING	Channel 1 / Setting 1621 for CH1/ 1623 for CH2 of remote AR-727CM Protocol: TCP Operation Mode: Client Local Port: 1621 (1024~65535) Remote Port: 1621 (1024~65535) Remote IP: 192.168.1.171 IP位址指向接收端(485收到資料後主動傳送至另一IP位址(Server)) Baud Rate: 9600 Data Bits: 8 Parity: None Stop Bits: 1 UART to NET delay time: 10 (10~1000)ms UART to NET minimum bytes: 1024 (16~1024) Socket Timeout: 120 (0~600)sec. (TCP Client Keep Alive:0) Update	Channel 1 / Setting Protocol: TCP Operation Mode: Server Local Port: 1621 (1024~65535) Remote Port: 1621 (1024~65535) Remote IP: 0.0.0.0 Baud Rate: 9600 Data Bits: 8 Parity: None Stop Bits: 1 UART <> NET delay time: 10 (10~1000)ms UART to NET minimum bytes: 1024 (16~1024) Socket Timeout: 120 (0~600)sec. (TCP Client Keep Alive:0) Fire Alarm (DI0) Open Doors: Disable (Available for TCP Server mode Only)
	Protocol = TCP Operation Mode = Client Remote Port for CH1 = 1621; Remote Port for CH2 = 1623 Remote IP: 192.168.1.171 (Server Mode AR-727CM' s IP for Slave RS485 devices)	Protocol = TCP Operation Mode = Server Remote IP = 0.0.0.0

3-5 / Change Login Password



STEP 1 : Select 'User Password'

STEP 2 : Enter new password (there's capital letter differentiation)

STEP 3 : Retype the new password

STEP 4 : Press Update button to save changed.

4. References

4-1 / FAQ

Q 1 : How many units of access controller that can be connected to each of RS485 channel?

A : There is no limitation to it but we suggest to wire up to 8 units access controller per channel, combining both channel up to 16 units access controller per unit of AR-727-CM/Industry Series (TCP).

Q 2 : How long wiring distance of RS485?

A : RS485 wiring can support up to 1000M, but due to environment conditions the suggested wiring distance is 300M (parallel wiring), more than that please consider purchasing RS485 signal enhancer AR-RS485REP.

Q 3 : What cable type for RS485 wiring?

A : We recommend using twist AWG22 cable

- We connect controller to CH2 of 727CM, but there is no response from PC. Why?
- How to use DHCP function for 727CM?

4-2 / YouTube Videos

- 《Product Application》 TCP/IP Remote IO Control Setting
- 《Peripheral expansion application》 Release locks Solution in Fire Alarm Event(2018)
- 《Peripheral expansion application》 Release locks Solution in Fire Alarm Event(2017)

4-3 / Firmware

Firmware of AR-727-CM in different applications:
(latest firmware version will keep updated, contact SOYAL team for more information)

Ref no.	Functions	Firmware Version
Ref 1.	Support Modbus protocol	APX727i3___V0500 8I4O 201112 MODBUS_TCP.STM
Ref 2.	Support TCP/IP to Wiegand Converter	APX727i3___V0500 8i4o WG Converter 200417.STM
Ref 3.	Fire Alarm Event UDP Mode	APX727i3___V0500 8I8O 190930 UDP FireMessage.STM
Ref 4.	TCP/IP Remote I/O Control Setting	APX727i3___V0500 200814 MODBUS_TCP DI03_Trigger_DO03.STM