



Operation Manual

AR-901A01

Intelligent license plate recognition camera



- 2.8-12mm motorized lens with automatic zoom, intelligent focus, remote focus, and day-night focal length calibration capabilities.
- Sony Starvis™ 2-megapixel CMOS sensor, providing starlight-level sensitivity.
- Capable of recognizing vehicles traveling at speeds of approximately 40 km/h.
- Built-in Taiwanese license plate recognition (including military, foreign, and diplomatic Chinese license plates), as well as vehicle detection functionality.



SOYAL Website

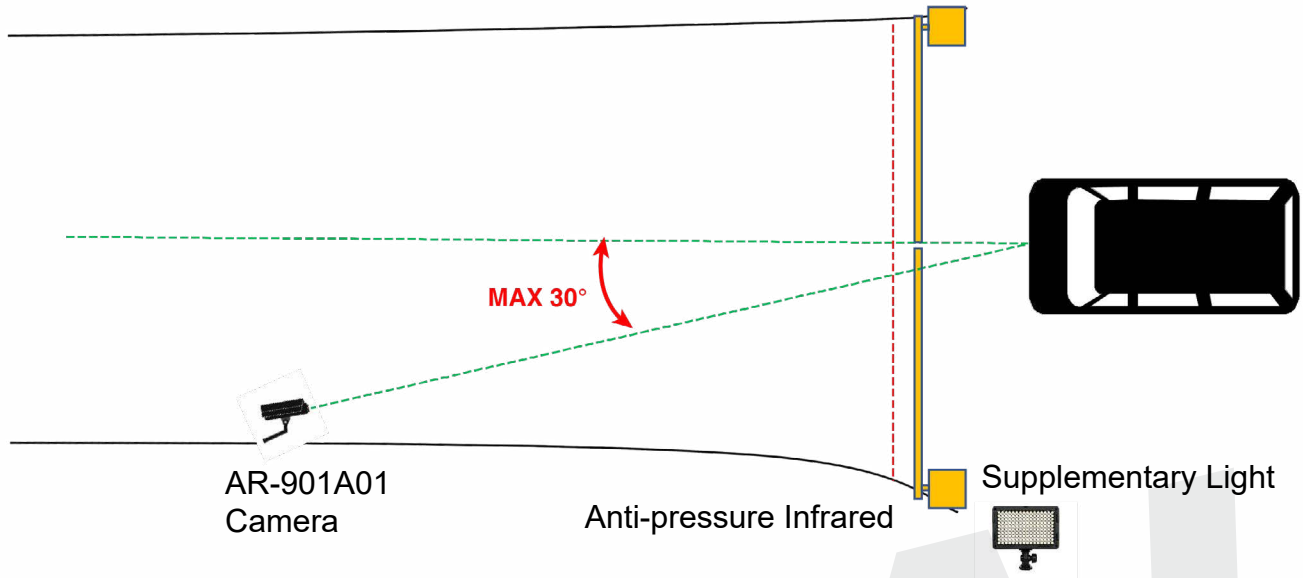
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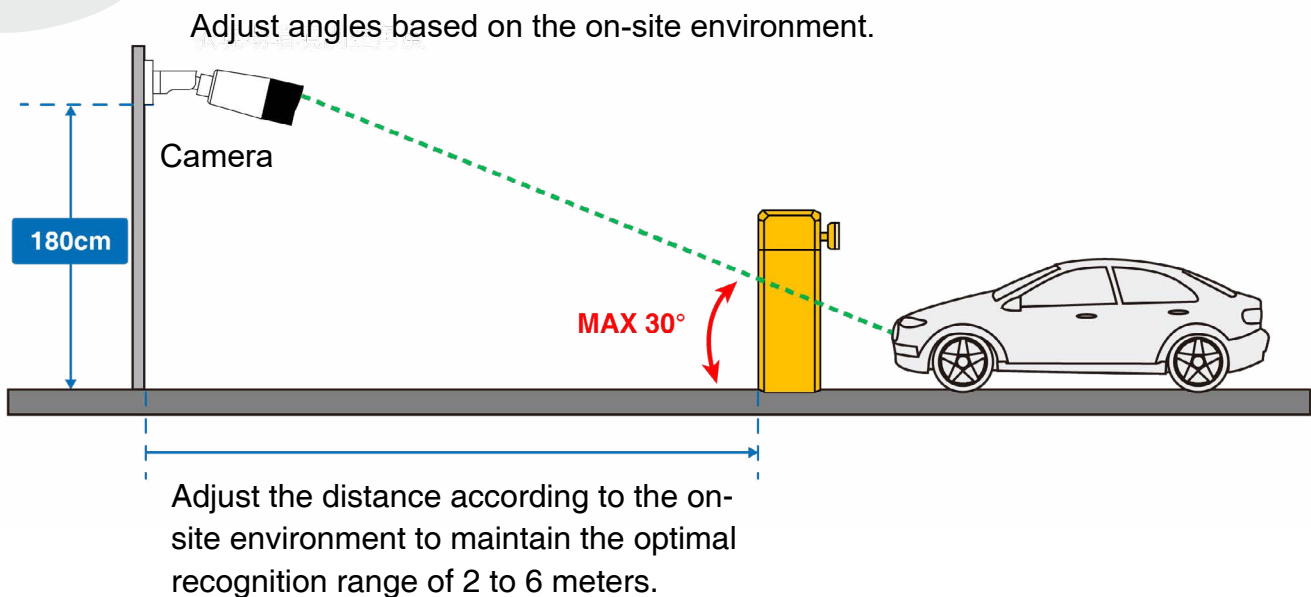
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1. License Plate Recognition Architecture

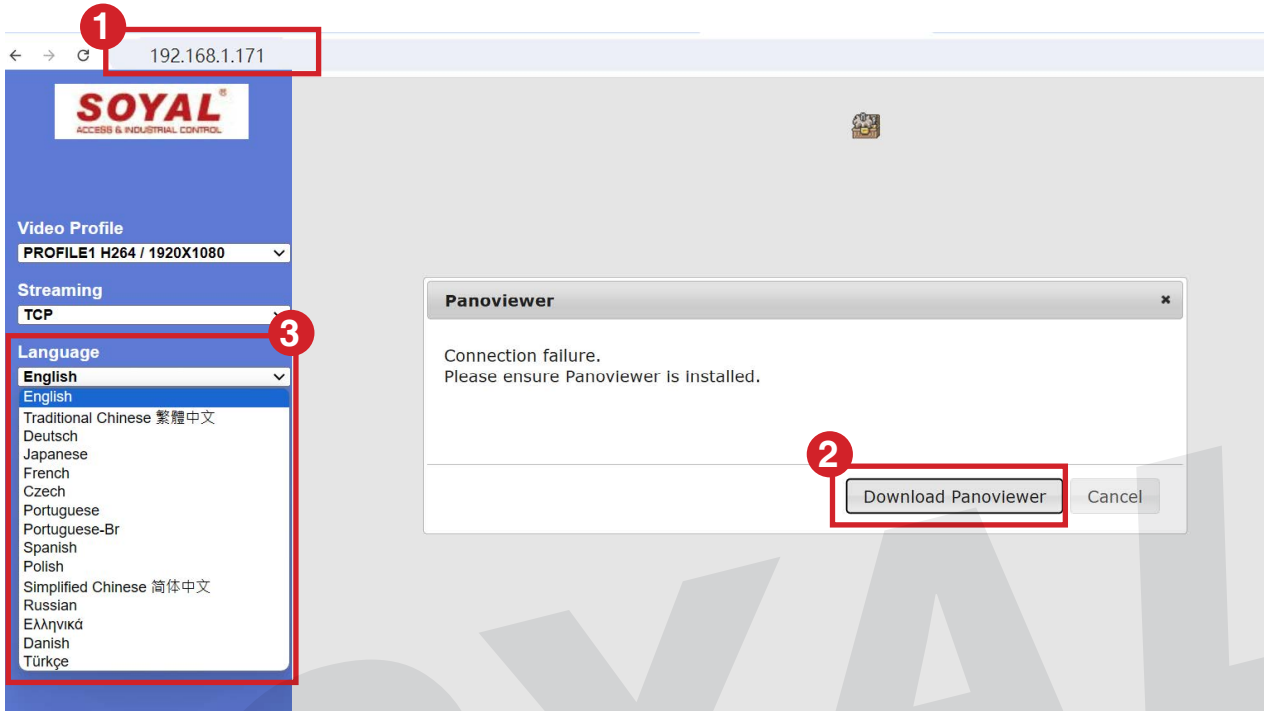
1-2 / License Plate Recognition Lane Entry/Exit Configuration



- The vertical angle of the camera relative to the road surface of the moving vehicle should not exceed 30°.
- The horizontal angle of the camera relative to the road surface of the moving vehicle should not exceed 30°.
- The optimal recognition range of the camera is 2 to 6 meters.
- The power supply for the camera must provide at least 2A at 12V.



2. License Plate Recognition Camera Login and IP Configuration



1 Use a computer, tablet, or smartphone to open any browser and enter the device's IP address in the address bar: 192.168.1.171 (default) to access the camera page.

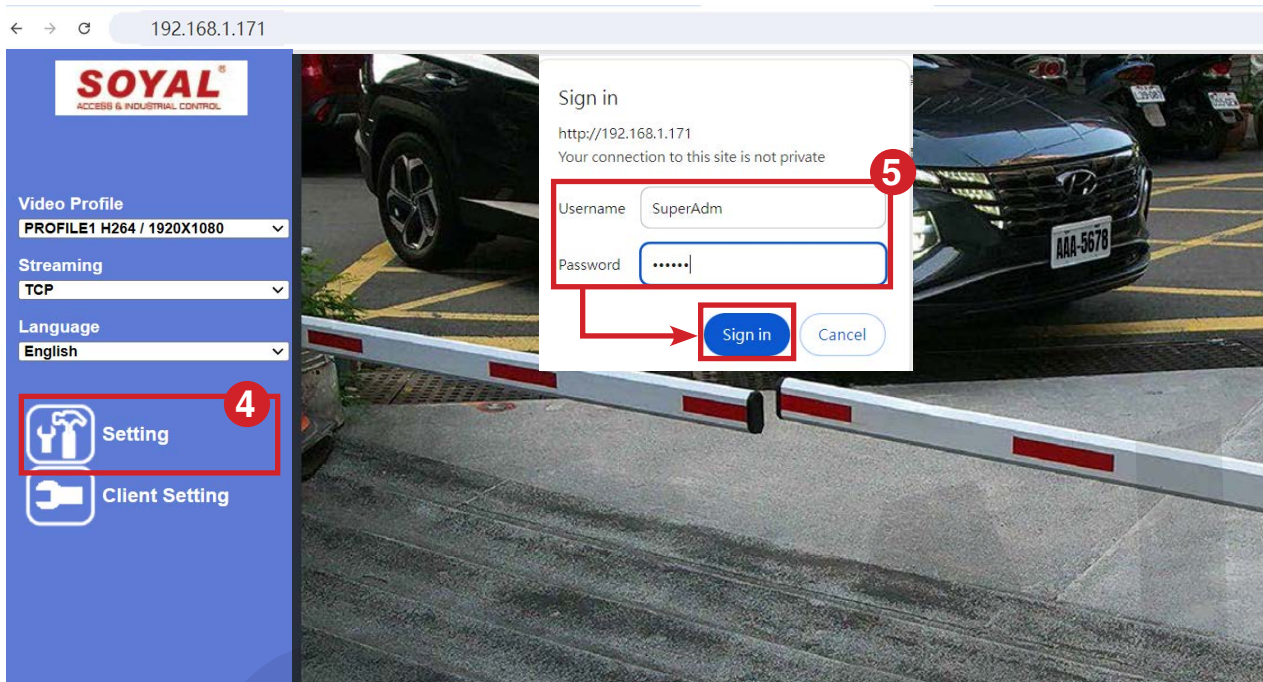
2 After entering the page, you need to click "Download Panoviewer" to download



and complete the installation to view the camera feed.

3 You can set the language as needed in the language menu on the left side.

2. License Plate Recognition Camera Login and IP Configuration



- 4 Select "**Setting**" from the options on the left to enter the camera settings page.

Enter your username and password, then click "**Sign in.**"

- 5 **Username:** SuperAdm
Password: 721568

2-1 / Camera IP Configuration



- 1 Select "**Network**" from the menu on the left.
- 2 Select "**Network**" from the menu at the top.
- 3 Uncheck "**Obtain IP address automatically (DHCP)**".
- 4 Change the IP address (default setting is 192.168.1.171).
You can click the "**Test**" button to verify if the IP is valid.
- 5 Change the Subnet Mask (default setting is 255.255.255.0).
- 6 Change the Gateway (default setting is 192.168.1.254)
- 7 Click "**OK**" to confirm the changes.

3. Setting License Plate Recognition Camera Output from TCP to WG - [TCP to WG (AR-727CM) Parameter Setting]

3-1 / 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 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)



Note :

- User Name is different from old and new version, password can be modify via [User Password] setting on the list but will not be change from updating new version. If you forgot the password, the solution is pressing Reset Button to reset it as default value.

Firmware Version	User name	Password (changeable)
After 2020/01/21	SuperAdm	Default Password : 721568 or self-definition
Before 2020/01/21	admin	Default Password : admin/ password not required or self-definition

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

3-2 / Network Setting

SOYAL™
ACCESS CONTROLLER

F/W: 5.00

[Current State](#)

1 [Network Setting](#)

[Channel 1 Setting](#)

[Channel 2 Setting](#)

[User Password](#)

[Direct Control IO 0~3](#)

[Direct Control IO 4~7](#)

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-connect** the target

Item	Setting
Device Name	S2E-Device
2 LAN IP Address	192.168.1.156
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	00-13-57-04-3A-7B
HTTP Server Port	80 (80~65530)
3 TCP I/O Control Port	1601 (502:Modbus,1601,1625~65530)
DHCP Client	<input type="checkbox"/>

4 Update

1 Click the 'Network Setting' on the left side menu

2 LAN IP Address : Enter IP address designated for the device of the intranet.
Default setting is 192.168.1.127

3 TCP I/O Control Port :
I/O control port, if used for the app, default to (1601), for Modbus application set to 502.
※ The default value is 502, change it to 1601.

4 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.

3-3 / IPCAM Converter Parameter Settings

The screenshot shows the SOYAL web interface for configuring the ALPR Reporting Server. The left sidebar has 'ALPR' selected (1). The top navigation bar has 'Reporting Server' selected (2). The main configuration area includes:

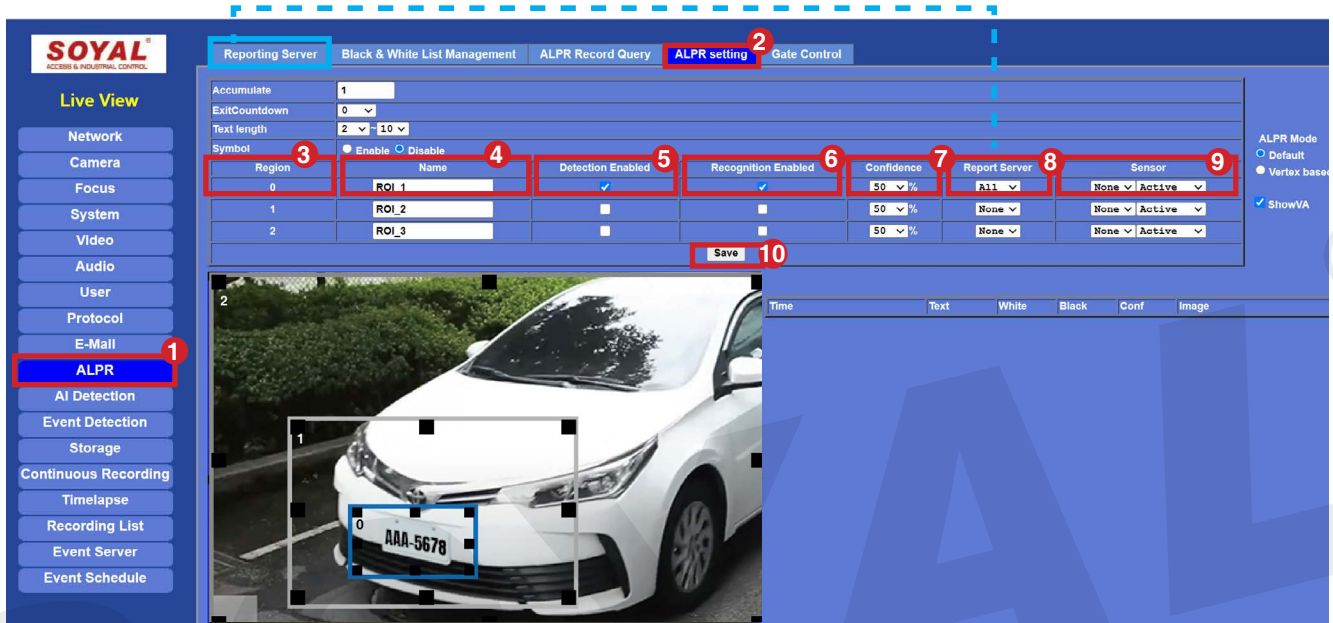
- Protocol: SOYAL
- Reporting Server 1: Enable Disable (3)
- Type: SD TCP
- TCP Server: 192.168.1.176 (4)
- TCP Port: 1601 (5)
- Reporting Server 2: Enable Disable (6)
- Type: SD TCP
- Location table with fields: Name, Store, Floor, Location, Store Category
- Buttons: OK (7), Cancel

- 1 Select "ALPR" from the menu on the left.
- 2 Select "Reporting Server" from the menu at the top.
- 3 For Server 1, choose "Enable"; Type: select "TCP".
- 4 TCP Server: Enter the IP address of the AR-727-CM-IO-0804M (Default: 192.168.1.176).
- 5 TCP Port: Enter the connection port for the AR-727-CM-IO-0804M (must be set to 1601).
- 6 Reporting Server 2:
 - If using a memory card model, select "Enable"; Type: select "SD" (choosing this option requires performing SD card formatting settings, please refer to → [2-2-2 SD Card Format Setting](#))
 - If there is no memory card model, select "Disable".
- 7 Click "OK" to confirm.

4. License Plate Recognition Parameter Settings

4. License Plate Recognition Parameter Settings

Before using license plate recognition, you need to set up the server for specified data return. The setup procedure is as follows:



- 1 From the left menu, select "ALPR"
- 2 From the top menu, select "ALPR setting"
- 3 **Region:** License plate recognition range, adjustable to meet requirements, with up to 3 ranges available
- 4 **Name:** Customizable name for the license plate recognition range License Plate Detection: Check to enable the license plate detection feature
- 5 **Detection Enabled:** Check to enable the license plate detection feature
- 6 **Recognition Enabled:** Check to enable the license plate recognition feature
- 7 **Confidence :** Select 50%
- 8 **Report Server:** Select the return server, choose "All" (this server refers to the server in the "Server Settings" menu, for details refer to → [3-3. IPCAM Converter Parameter Settings](#))
- 9 **Sensor:** Select " None/Active "

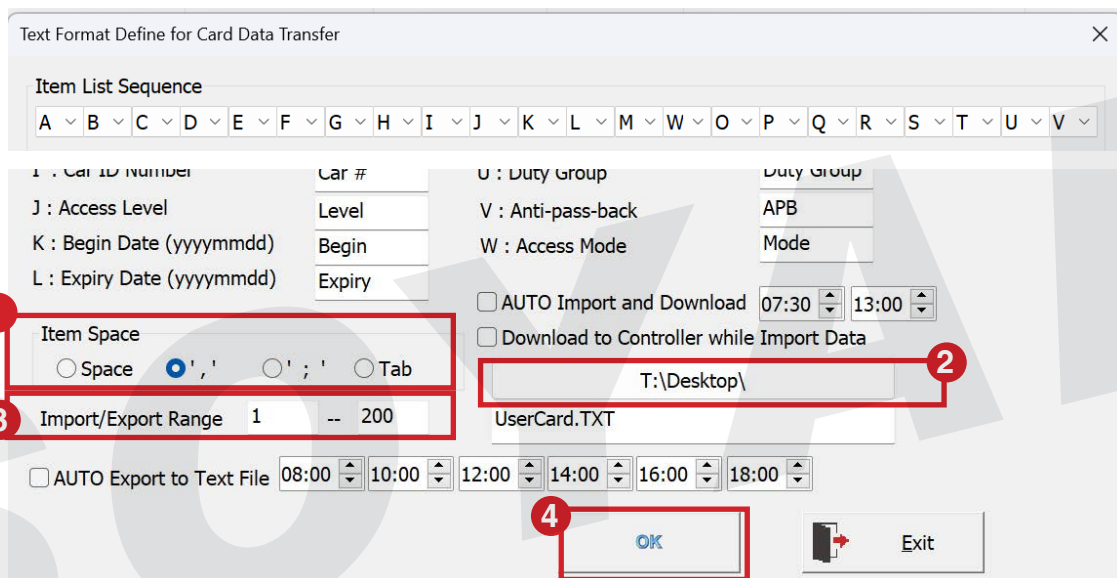
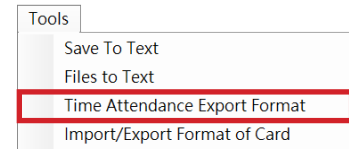
5. Generate a Correspondence Table of Allowed Entry/Exit License Plates and Simulated Card Numbers

5-1 / Card Data Output/Input Format Setting

- Open 701ClientSQL



- Open the "Text Format Define for Card Data Transfer" window by clicking



- 1 If editing with a (.txt or .csv) file, please choose "," as the delimiter.
※ Unless specified by the importing software, avoid using "space", semicolon ";", and "Tab".
- 2 Select the export path.
- 3 Select the range of cards to export.
(※ Note: When exporting, you must select the range of all card number data. When importing data into the license plate recognition camera, the original card number data will be completely cleared and replaced with the newly imported card number data. For example, if you want to import data for card number address 99, the export card range must be set to 1~99.)
- 4 Click "OK". ◦

5-2 / Card Data Editing Setting

There are two ways to open the "User Card Edit" window:



1 Card ID 25280 28294 Card only

Time Zone ALL Level 00

Door Group ALL

Name * P.I.N. 0000 Anti-passback

Alias Employ ID 00234 Guard

Date Limits 2000/ 1/ 1 - 2099/ 1/ 1 Just card

Just Face / FP

Depart. Dep_00 Dep2nd_00 Duty# Duty_00

3 Car ID SOY5858 Birthday 2000/ 1/ 1

VisalD Gender Male E-mail: 00005

TEL: 08:00-12:00


Addr.

Line Package

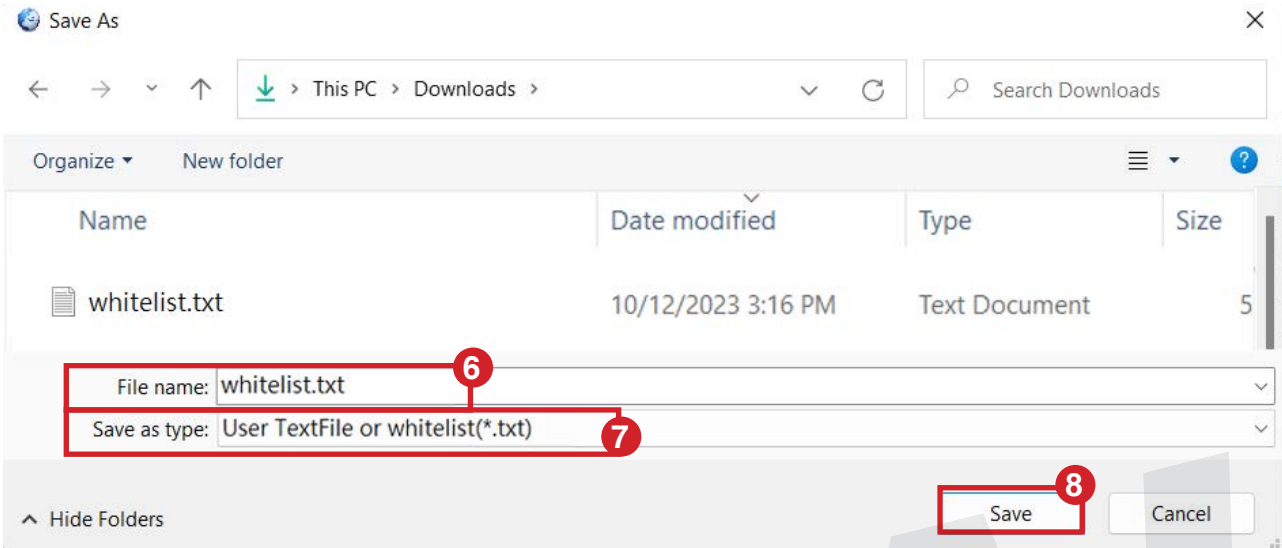
Num	Name	Access Mode	Department	UserID
0000	169-2, 23rd f...	Invalid	Dep_00	
0001		Card only	Dep_00	00234
0002	0000	Card only	Dep_00	A00002
0003	Gibran	Card only	Dep_00	
0004		Invalid	Dep_00	

4 Tools icon

5 Export to Text File

- 1** Enter the card ID data.
- 2** Select a valid access mode, such as: card only, card + password, card or password (in this example, select card only).
- 3** Enter the license plate number.
(※ Note: When entering the license plate number, uppercase letters should be used, and the " — " in the middle should be omitted. For example, for the license plate number SOY-5858, only enter SOY5858 to facilitate accurate license plate recognition.)
- 4** Click 
- 5** Select "Export to Text File", and a save window will appear. Choose the desired path and file name.

5. Generate a Correspondence Table of Allowed Entry/Exit License Plates and Simulated Card Numbers

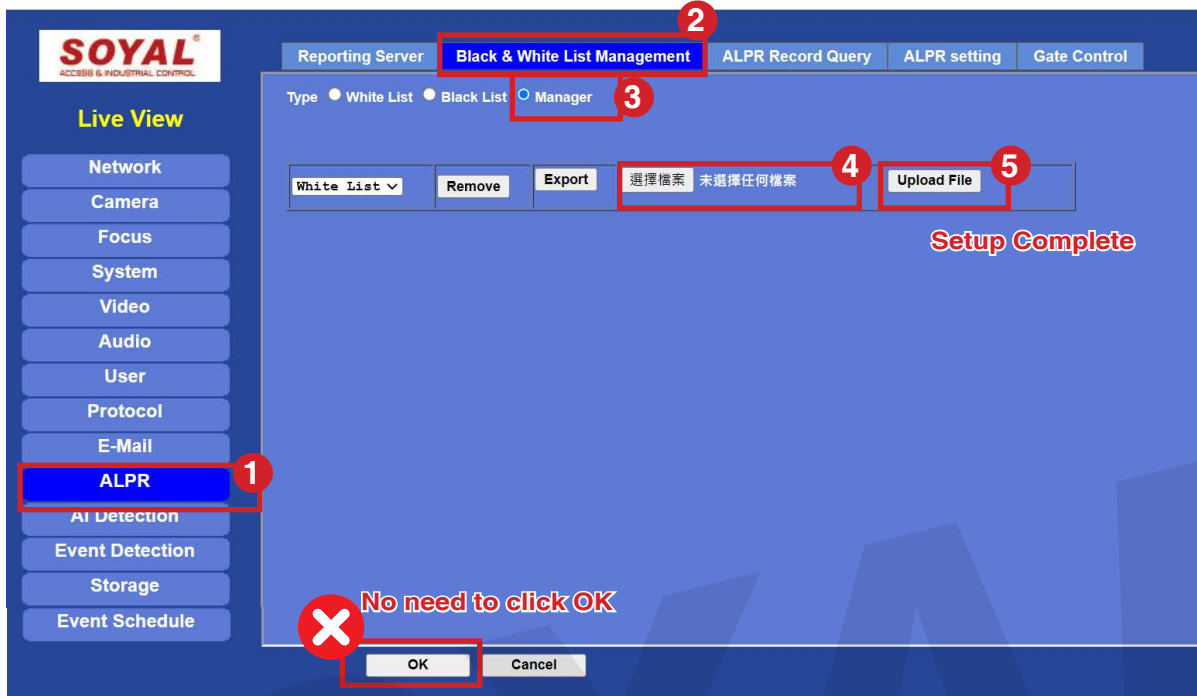


- 6 Export the data from the License Plate Recognition Camera AR-901A01, and the file name must be fixed as Whitelist.txt.
- 7 Select the file type: User Text File or whitelist (*.txt).
- 8 Click "Save"

Results of the data export from the AR-901A01 License Plate Recognition Camera :

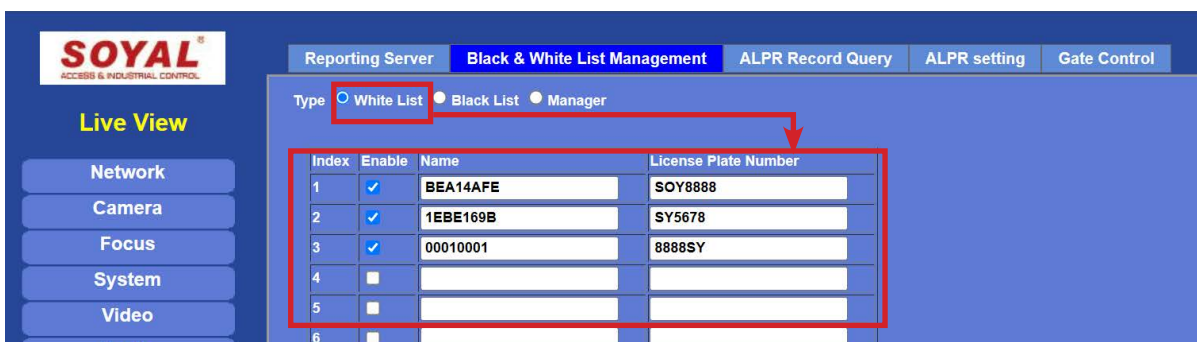
```
whitelist.txt x
1 LPR_WHITE_LIST_BEGIN
2 ITEM='1,SOY5858,8EA14AFE'
3 ITEM='1,SY1234,1EBE169B'
4 ITEM='1,8888SY,00010001'
5 LPR_WHITE_LIST_END
Ln: 9 Col: 1 Pos: 128 Windows (CR LF) UTF-8
```


6. Overall Import of Valid License Plates and Corresponding Card Numbers for IPCAM



- 1 Select "ALPR" from the menu on the left.
- 2 Select "Black & White List Management" from the menu at the top.
- 3 Choose "Manager".
- 4 Select "Choose File" and choose the .txt file exported from 701ClientSQL.
- 5 Click "Upload File".

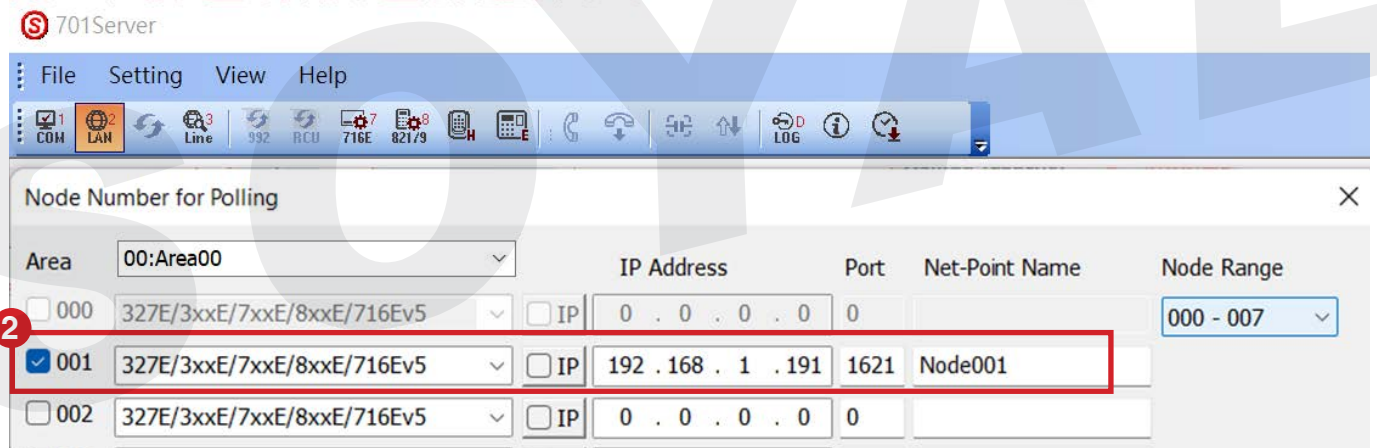
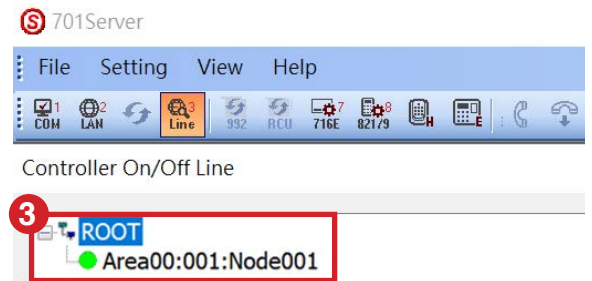
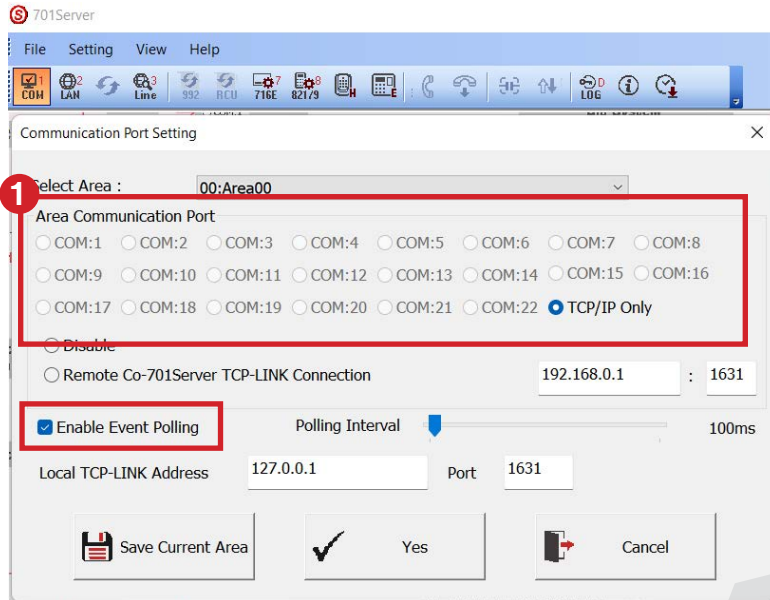
Successfully imported license plate data can be viewed under the "White List" category



Note :

To delete card number data, you need to edit the .txt file exported from 701ClientSQL. Remove the card numbers you wish to delete from the .txt file, and then execute the re-import action.

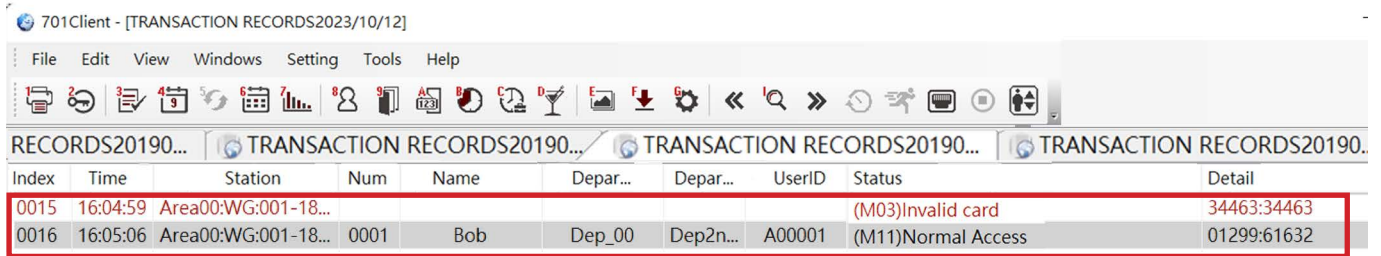
7. License Plate Recognition Information Notification



Setting up 701ServerSQL connection configuration:

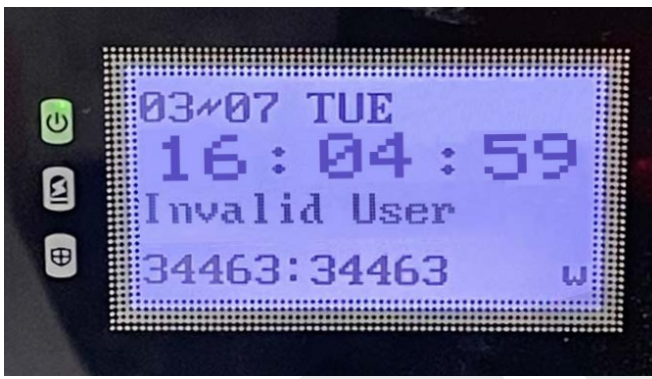
- 1 Select COM and choose the communication port. Check "Query Controller Information Actively." Save the current settings and click OK.
- 2 Choose LAN, check the controller station number, select the corresponding model type, and check IP. Enter the IP address.
- 3 Select Line to check the device's connection status.

7. License Plate Recognition Information Notification



The screenshot shows the 701Client application window with a menu bar (File, Edit, View, Windows, Setting, Tools, Help) and a toolbar. Below the toolbar is a table with the following data:

Index	Time	Station	Num	Name	Depar...	Depar...	UserID	Status	Detail
0015	16:04:59	Area00:WG:001-18...						(M03)Invalid card	34463:34463
0016	16:05:06	Area00:WG:001-18...	0001	Bob	Dep_00	Dep2n...	A00001	(M11)Normal Access	01299:61632



- When a vehicle is detected using the access recognition system, a notification will pop up in 701ClientSQL, and the controller will display information about valid and invalid users.

Explanation: This method is similar to using a WG card, and the notifications and displays in 701ClientSQL are identical to those when using a WG card.

8. Contents / Installation / Connector Table / Wiring Diagram

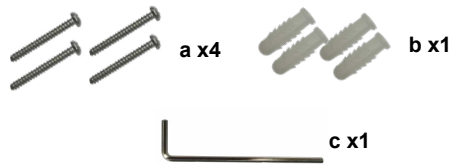
Contents

AR-901A01

1 Product



2 Tools



3 Accessories

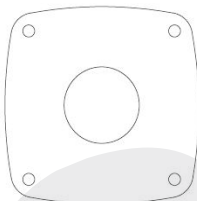


Accessories Description

- a. Round head stainless steel M4x35mm screw
- b. Screw fixing seat
- c. Security Torx Wrenches

Installation

STEP 1 : Confirm the drilling location



Before installation, use the installation hole sticker to confirm the drilling position on the wall. (Small hole: for wall anchor screws, large hole: for cable entry on the wall/ceiling).

STEP 2 : Install the SD card (optional)



When installing the SD card, use a Phillips screwdriver to open the front cover of the camera to install the SD card. (Make sure to securely close it afterward to prevent moisture from entering).

STEP 3 : Install the RJ45 waterproof connector



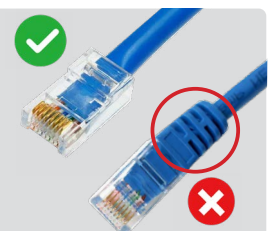
Take out the accessory package - RJ45 waterproof accessory kit. Follow the order shown in the left image to thread the cables, then install the RJ45 connector, plug it into the camera, and reassemble the waterproof kit, tightening it in sequence.

※Note: Please pay attention to the orientation of the rubber plug; the red collar should be placed over the RJ45 female socket, and ensure it is flat and not twisted after fitting.



Note :

It is recommended to use a network cable without an RJ45 connector for easier threading, and do not use a protective cover for the RJ45.



STEP 4 : Cable Management



1. Be particularly cautious when organizing cables! Below the yellow warning sticker, there is no waterproof functionality. During installation, use a waterproof cable housing or waterproof tape to prevent water ingress.

2. When the cables are fully organized, try to position the connectors facing down to avoid water seeping into the device along the cables.

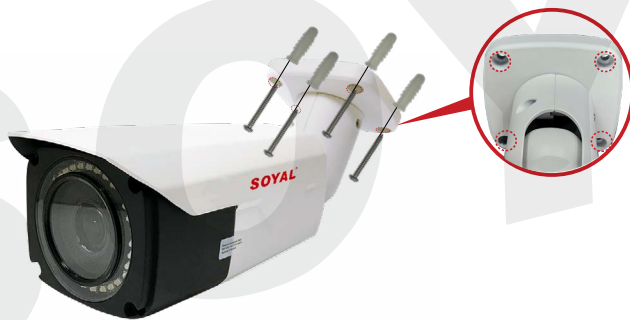
3. If the installation location is frequently exposed to rain or is in a humid environment, be sure to use a waterproof housing for storage. Additionally, use waterproof tape to reinforce the waterproofing, and wrap it in a plastic bag to effectively reduce the impact of moisture.



防水膠布纏起加強防水

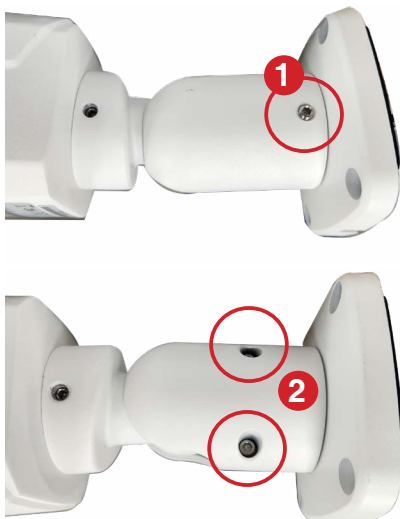
塑膠袋纏封加強防水

STEP 5 : Secure the camera with the waterproof housing or mount it to the ceiling/wall



Fix the four long screws in the circular positions, and tighten the screw mounts.

STEP 5 : Adjust the Camera Angle

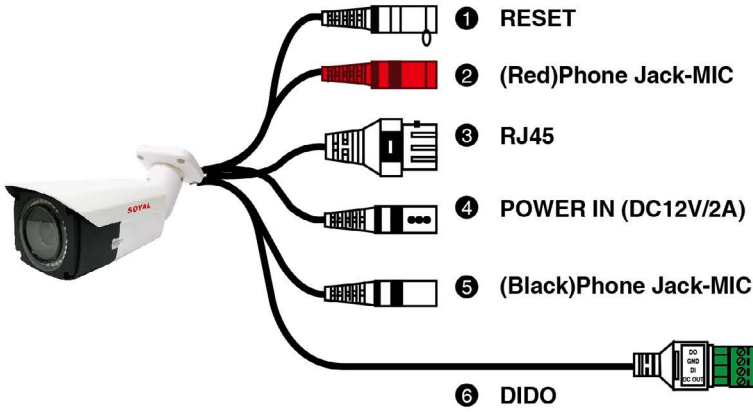


To adjust the camera angle, follow the screw tightening sequence below to avoid uneven stress that could cause stripping.

Correct Tightening Sequence:

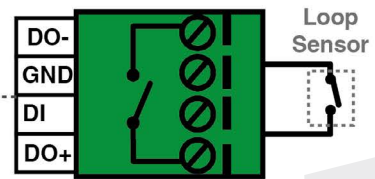
Loosen ① → Loosen ② → Adjust the pivot angle
→ Tighten ② → Tighten ①

Connector Table

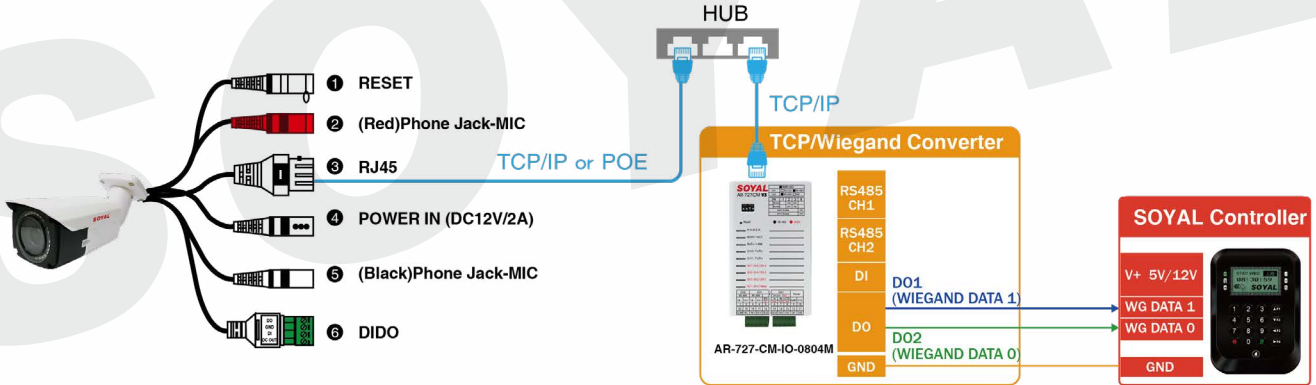


6 Cable : DIDO

	Function	Description
1	DO-	License plate recognition camera successful output signal contact COM
2	GND	Ground loop input point (negative)
3	DI	Ground loop input point (positive)
4	DO+	License plate recognition camera successful output signal contact NO



Wiring Diagram



9. Reference document

FAQ: [How to set up parking space sharing mode? How to keep specified parking space for the manager?](#)

Applications: [Car Parking Management](#)

Applications: [SMART AUTOMATED PARKING SOLUTIONS](#)

10. Applications

10-1 / 701ClientSQL Supports Dual IPCAM to Capture User Image

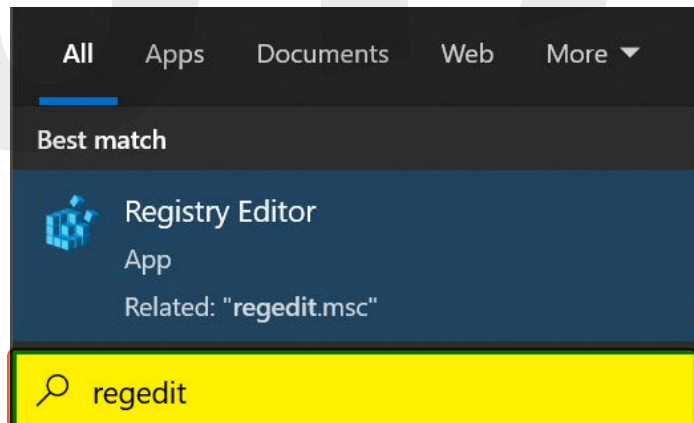
Function:

Access controller and time attendance controllers mostly use RFID technology to read card, which can cause the problem of using the card from another person to access the area. In order to solve the security problem, 701ClientSQL integrate the function of access controller, time attendance controller and IP camera. When a user swipe a card, press a password or scan a fingerprint on controller reader, the camera can be active to take a picture for the user action, the picture can be saved to the system for tracking and records, in which effectively improve the safety of product use and prevent the problem of swiping cards from another person.



Setting Description

Part A. The 701ClientSQL supports 2 units of IPCAM Setting (Enter Registry Editor on the computer to edit IP cameras parameter to connect to 701ClientSQL)



Part B. Set up ACCESS (Part 1), DOOR (Part 2), NODE(Part 3), and TITLE(Part4)

Access	REG_SZ	rtsp://admin:admin@192.168.1.200:554/live/vid...
DOOR	REG_DWORD	0x00000001 (1)
NODE	REG_DWORD	0x00000001 (1)
TITLE	REG_SZ	

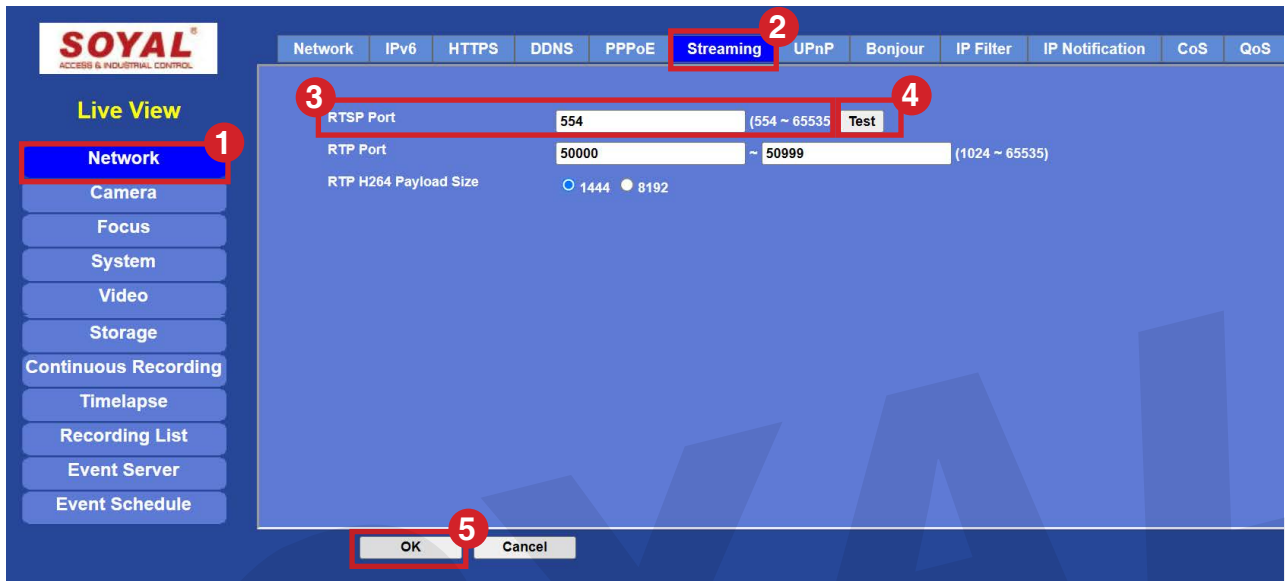
Part C. Capture user image using IP Camera (Part 5) and upload the image as the user's picture in 701Client (Part 6)

10. Applications

Setup Steps

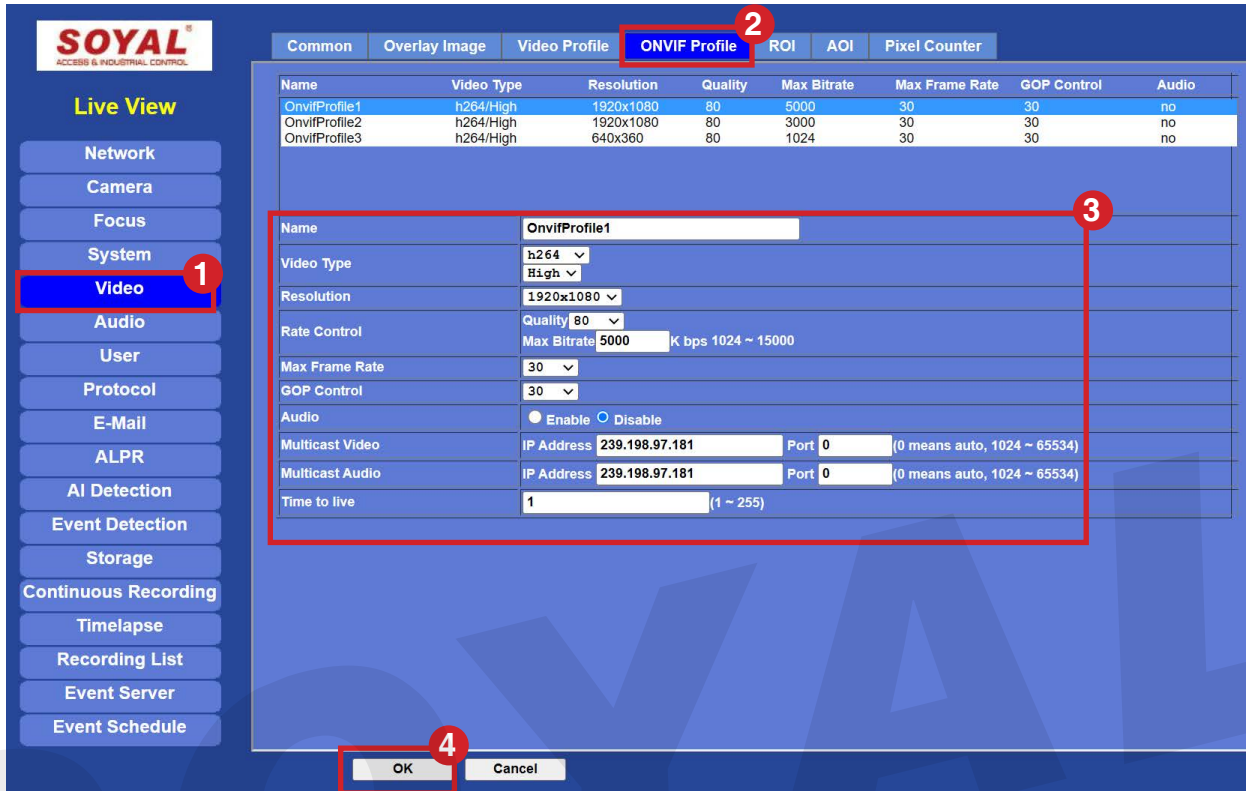
- Configure on the IP CAM

(1) Set the Streaming Port



- 1 Select "Network" from the menu on the left.
- 2 Select "Streaming" from the menu at the top.
- 3 Enter "554" for the RTSP port.
- 4 You can click "Test" to confirm if the setup is successful.
- 5 Click "OK".

(2) Set Snapshot Image Parameters

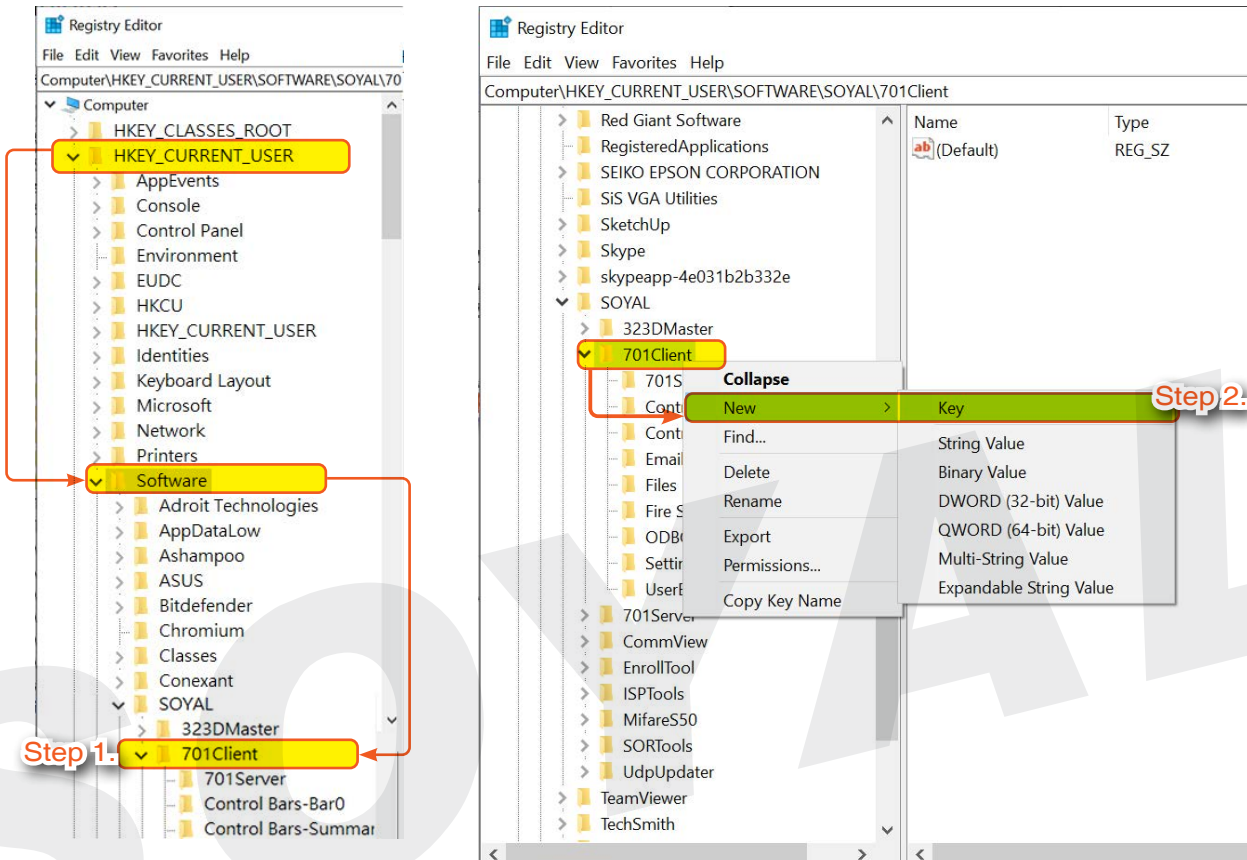


- 1 Select "Video" from the menu on the left.
- 2 Select "ONVIF Profile" from the menu at the top.
- 3 Configure the snapshot image parameters.
- 4 Click "OK".

10. Applications

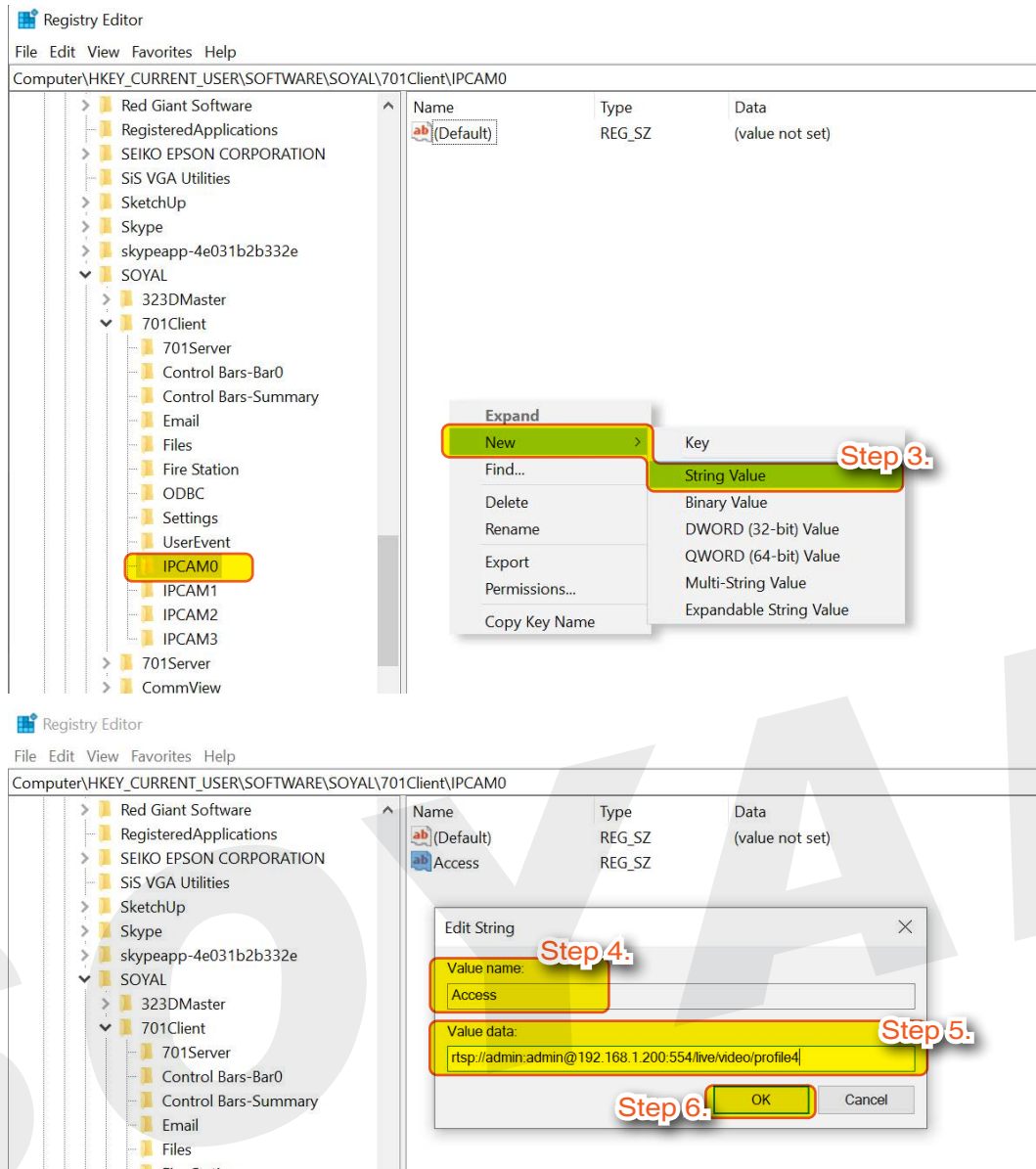
- Set up in the 701ClientSQL software

(1) Create ACCESS (String Value)



- 1 Go to HKEY-CURRENT_USER > SOFTWARE > 701 Client
- 2 Right click on 701Client and select "Add"> "Key".

10. Applications



- 3 After successfully creating the "key code", rename it into IPCAM0 and right click to select "New"> "String Value"
- 4 Rename the string value into "Access" and twice click to edit the string settings.
- 5 Insert the URL to connect it to 701ClientSQL; if each setting is different, you can change its USERNAME, PASSWORD and IP ADDRESS.

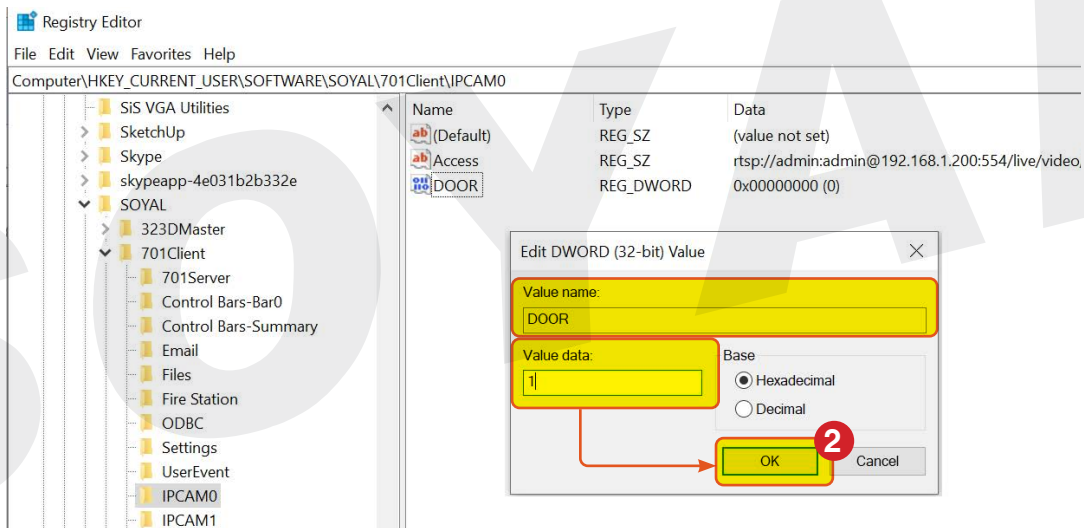
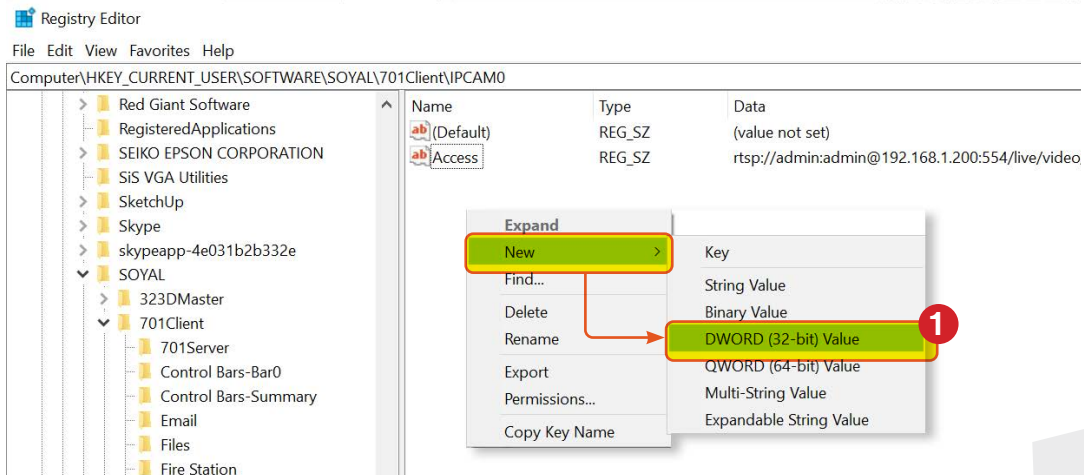
rtsp://SuperAdm:721568@192.168.1.171:554/media.amp?streamprofile=Profile4



- 6 Click "OK" after the setting is complete

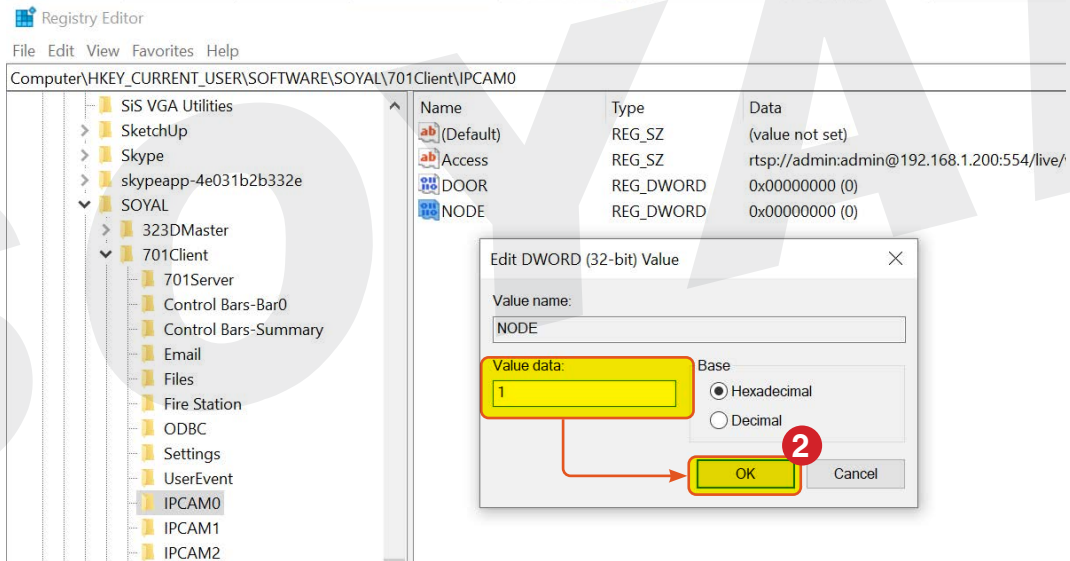
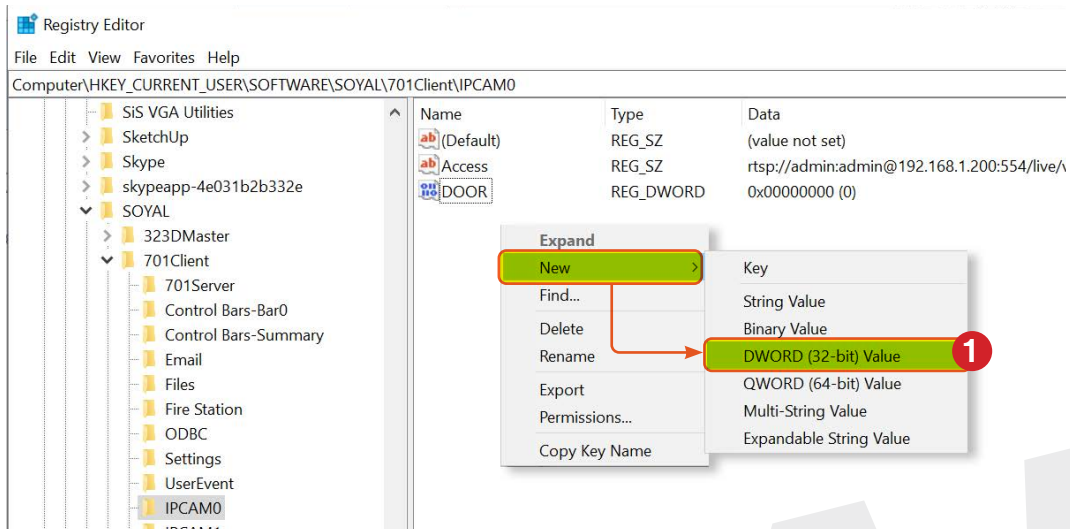
10. Applications

(2) Create DOOR (DWORD Value)



- 1 Right click and select "New"> "DWORD (32-bit) Value"
- 2 Rename the value into DOOR and edit the setting; set the value data to 1 (for DOOR NO 1) and click "OK" after the setting is complete

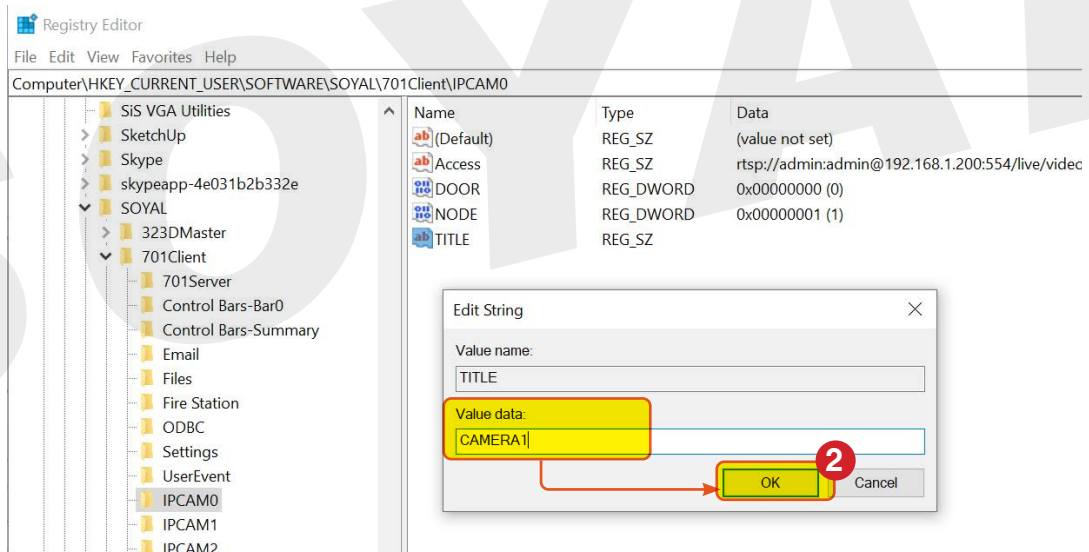
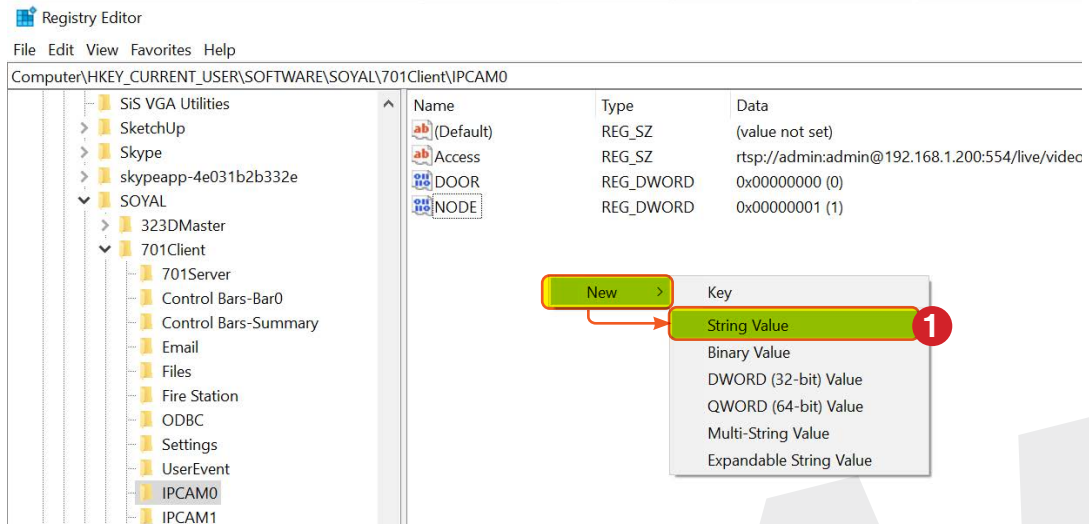
(3) Create NODE (DWORD Value)



- 1 Right click and select "New"> "DWORD (32-bit) Value"
- 2 Rename the value into NODE and edit the setting; set the value data to 1 (for Node NO 1) and click "OK"

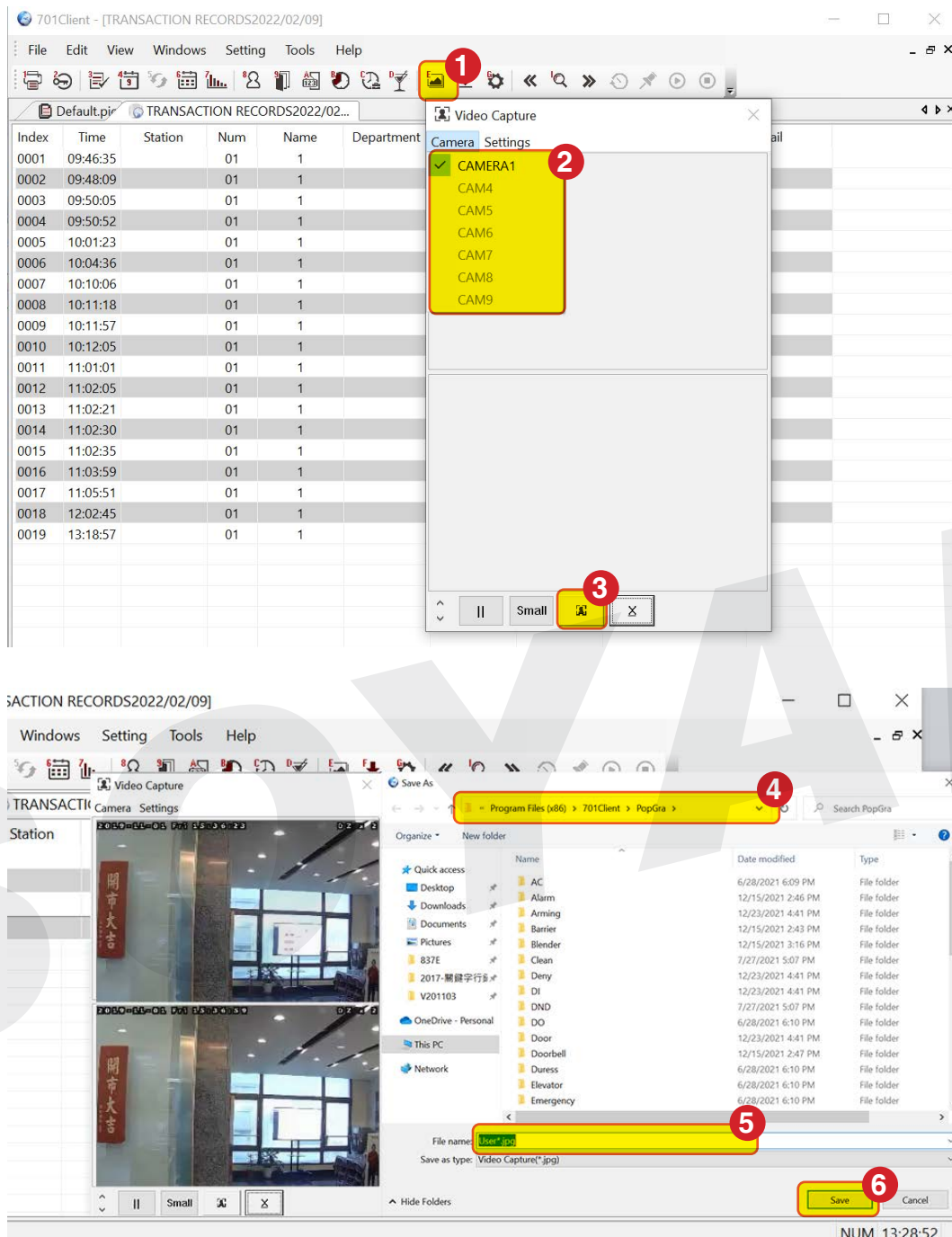
10. Applications

(4) Create TITLE (String value)



- 1 Right click and select "Add"> "String Value".
- 2 Rename the string value into TITLE and edit the setting; set the value data to [CAMARA1] and click "OK"

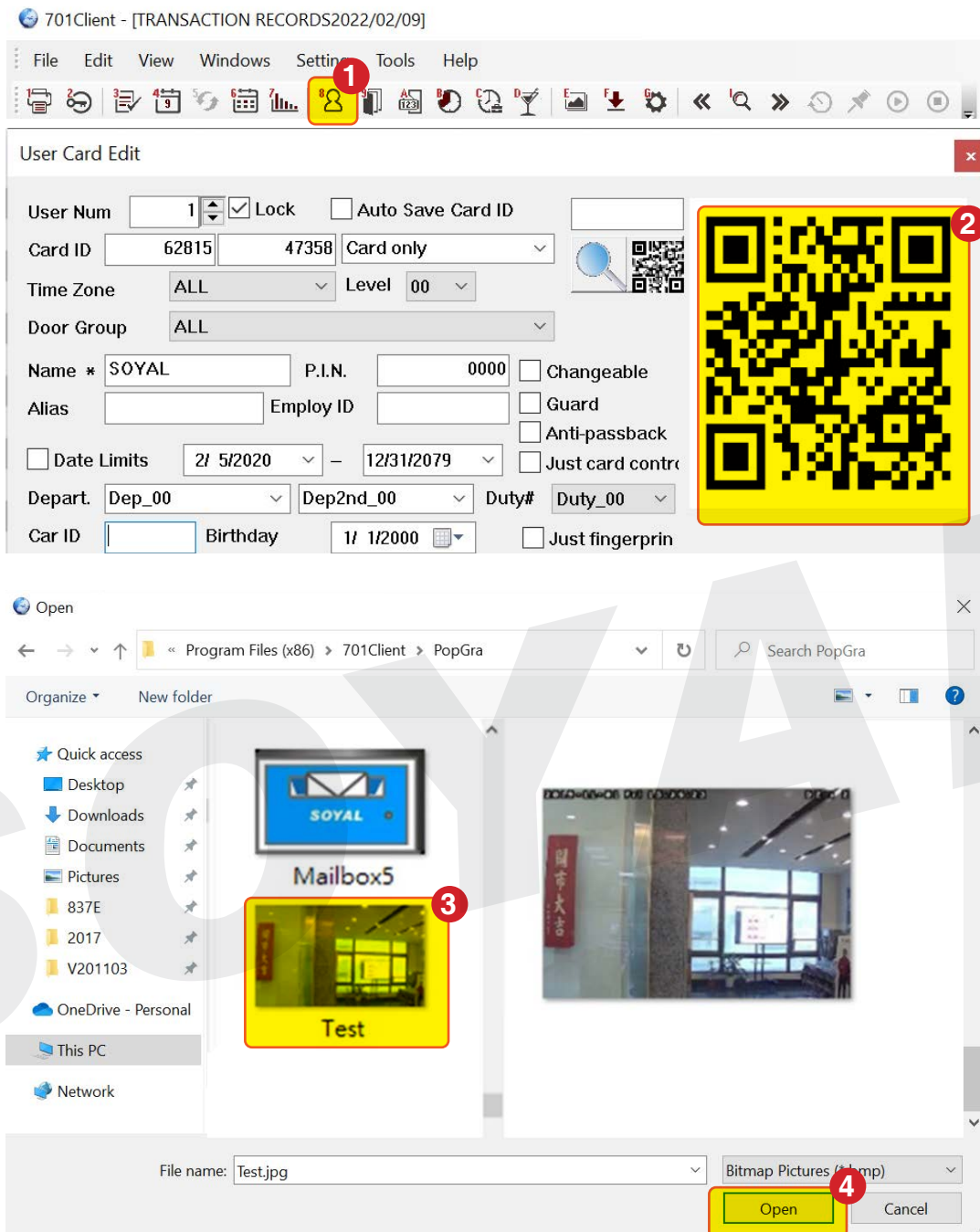
(5) Capture the picture by IP Camera and save it



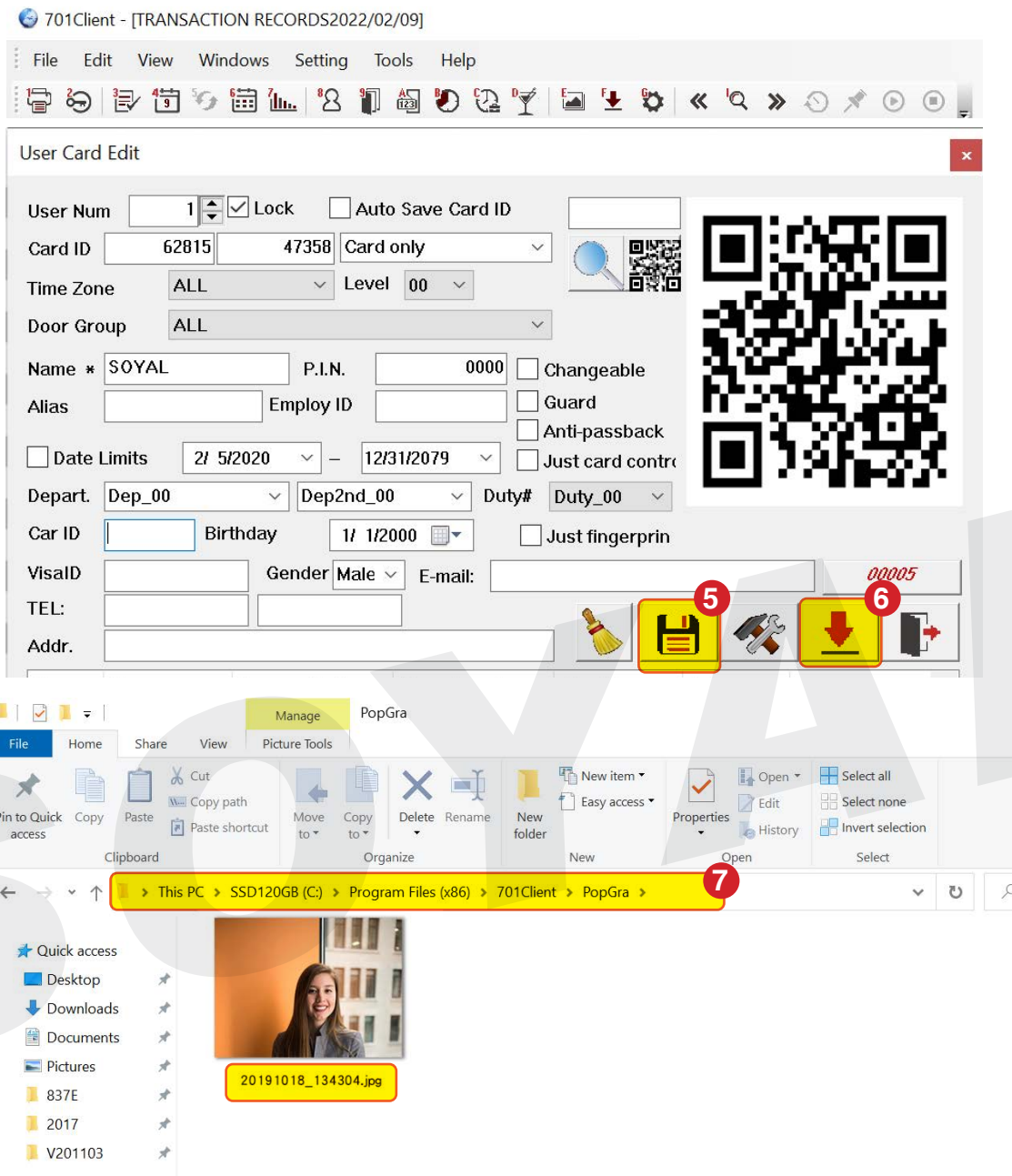
- 1 Execute 701ClientSQL and select [E Photo Display]
- 2 Select the camera you want to use to capture the image
- 3 Press "Capture "button
- 4 Select the path to save the pictures
- 5 It can be renamed as needs.
- 6 Select "Save"

10. Applications

(6) Upload the picture captured by the IP camera to [User Card Edit]



- 1 Click "8 User Card Edit" on Menu Bar
- 2 Twice click the picture area.
- 3 Select the picture you want to set it as the user image
- 4 Click "Open"



- 5 Click "Save"
- 6 Click "Download" to write the user card to the controller
- 7 The captured pictures will be automatically saved to the installation path of 701ClientSQL software C:\Program Files (x86)\701Client\PopGra with the file name defined by captured date and time for convenient tracking and review in future.

More Details :

- FAQ : [Setting and Manual for 701 Client Supports Multiple IP Cameras](#)

11. SD Card Installation Guide

11. SD Card Installation Guide

The factory default does not include a memory card; it must be purchased separately. The memory card allows for saving captured records and real-time recording.

11-1 SD Card Specifications

Memory Card Capacity	No Memory Card	64GB	128GB	256GB
Number of Captured Photos	0	approx. 8.9 million	approx. 17 million	approx. 35 million
Recording Time	0	approx. 3 hours	approx. 6 hours	approx. 12 hours

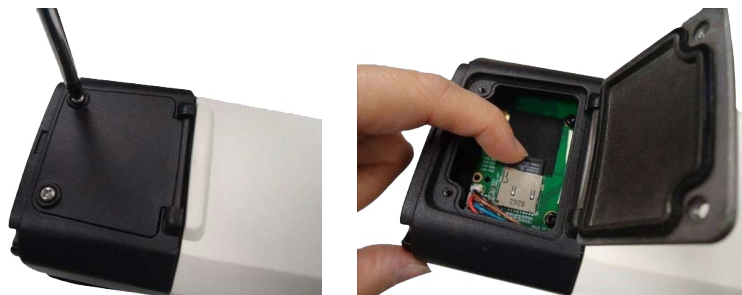


Note :

If the memory card is not installed, captured records cannot be saved

11-2 Install the SD card

When installing the memory card, use a Phillips screwdriver to open the front cover of the camera to install the mSD card. (Make sure to securely close it afterward to prevent moisture from entering).



11-3 SD Card Format Setting



If there is a memory card model, the memory card must be formatted before use.

The steps are as follows:

- 1 Select "**Storage**" from the menu on the left.
- 2 Select "**SD Card**" from the menu at the top.
- 3 Choose "**Format**".
- 4 Click "**OK**".

12. Appendix

12. Appendix

12-1 Firmware Update



- ① Select "**System**" from the menu on the left.
- ② Select "**Maintenance**" from the menu at the top.
- ③ In the firmware update section, click "**Choose File**" to upload the new firmware.
- ④ Click "**Firmware Update**".
- ⑤ Click "**Save**" (Note: The device will automatically reboot after the firmware update).

12-2 Restore Factory Default Settings



- 1 Select "**System**" from the menu on the left.
- 2 Select "**Maintenance**" from the menu at the top.
- 3 Restoring factory default settings is available in two options: Including Network Setting and Excluding Network Setting.