FoMaKo

PTZ Camera Controller
User Manual
(V1.0)

FoMaKo

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Contents

1. Product Introduction

1.1 Overview

The FoMaKo KC600 is a multi-function control console designed for centralized PTZ camera control and live production. It provides a 5.5-inch display, 4D precision joystick, dedicated camera shortcut keys, preset control, network management, web management and multiple PTZ controlprotocols. It is suitable for live streaming, conferences, education, studios and multi-camera production.

- Supports seven physical CAM shortcut keys, and supports managing more cameras and presets through camera ID and MODE(255).
- Supports VISCA Over IP(UDP), ONVIF, serial VISCA, Pelco-D, Pelco-P and NDI PTZ control protocols.
- Supports NDI, ONVIF and RTSP stream access for preview and camera switching on the controller.
- Supports camera controls such as white balance, exposure, focus, zoom, low-light enhancement, backlight compensation and digital zoom. Available functions depend on the selected protocol and camera model.
- Built-in web management platform for device discovery, camera management, shortcut keys, patrol routes, commands, network, users and upgrade configuration.

Figure 1-1 Control Panel

1.2 Interfaces

KC600 can control PTZ cameras through network port, or through RS-232 and RS-422/485 serial ports. When using IP control, make sure the controller and cameras are on the same segment, and have been configured correctly.

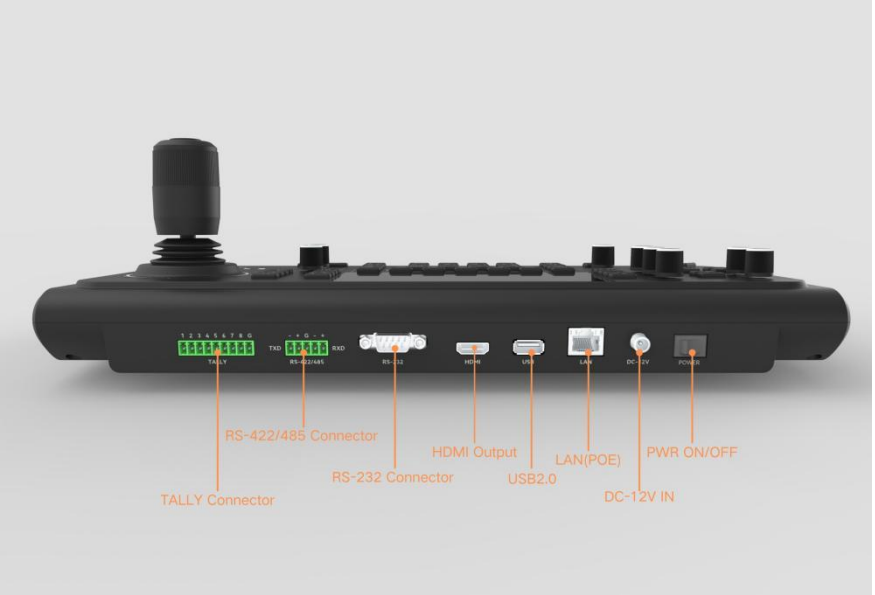


Figure 1-2 Rear Interface

1.3 Front Panel Button Diagram

The KC600 front panel integrates image parameter adjustment, lens control, camera selection,numeric input, menu entry, speed adjustment, joystick control and shortcut function keys. Button backlights indicate the current function status. Selected or enabled functions are normally shown in red. See Chapter 2 for detailed operation.

Figure 1-3 Front Panel Buttons

1.4 Main Screen UI Layout

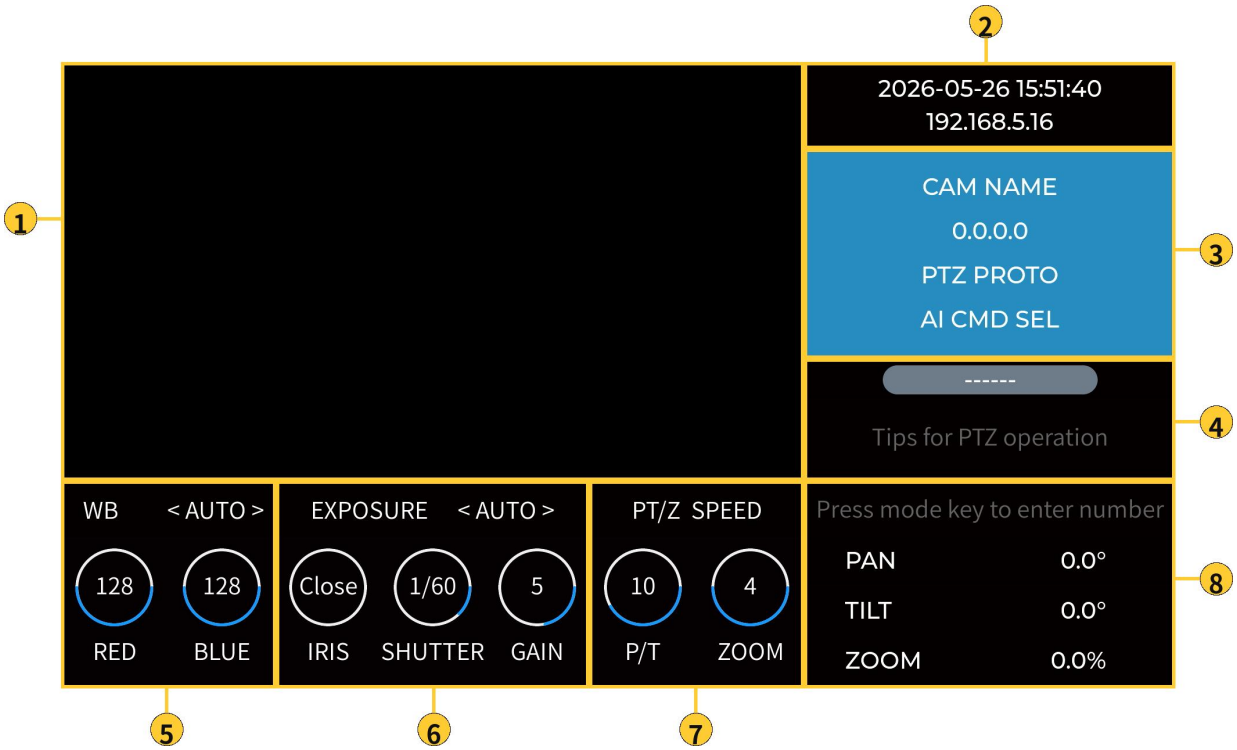


Figure 1-4 Main Screen Function Areas

The main screen is divided into video preview, system status, current camera information, operation prompts, image parameters, speed settings and position feedback areas. The numbers in the figure correspond to the descriptions below.

No.	Area	Description
1	Video Preview	Shows the current preview image. This area is black when there is no signal or preview is not enabled.
2	System Status	Shows system time and the controller IP address.
3	Current Camera	Shows camera name, camera address, control protocol and AI command preset.
4	Operation Prompt	Shows PTZ operation prompts, numeric input prompts or the current operation status.
5	White Balance	Shows WB mode and RED/BLUE gain.
6	Exposure	Shows exposure mode, IRIS, SHUTTER and GAIN parameters.
7	Speed Setting	Shows P/T and ZOOM speed. This area updates when the knobs are adjusted.
8	Position Feedback	Shows current PAN, TILT and ZOOM feedback values.

2. Button Details and Operation

This chapter summarizes the basic functions of the front-panel buttons, knobs and joystick. For buttons that open dedicated pages or trigger specific workflows, this chapter only explains their entry points and purpose.Device search, camera list, patrol configuration, system menu and web command configuration are described in later chapters. Supported functions vary by camera model and control protocol.

The device displays a prompt when a function is not supported.

Camera Selection and Page Access

Figure 2-1 Camera Selection and Page Access Buttons

Button / Control	Function
CAM1-CAM7	Short press to switch to the bound camera. The selected CAM key lights red. Long press to open the camera information page.
CAM ID	Enter camera ID selection status. Use numeric keys to select a camera. Use MODE(255) when entering a multi-digit ID.
CAM LIST	Open or close the local camera list page for viewing, adding, editing and binding cameras. See Chapter 4 for details.
SEARCH	Open or close the device search page for searching NDI, ONVIF and VISCA devices on the LAN. See Chapter 3 for details.
SETTING	Open or close the system menu. Network, system settings and device information are described in Chapter 6.
BACK	Return to the previous level or close the current pop-up page.

Input Editing and Presets

Figure 2-2 Input Editing and Preset Buttons

Button / Control	Function
0-9 (Numeric Input)	Enter numbers in camera selection, preset, menu numeric edit and pop-up numeric input states. When MODE(255) is off, 1-9 quickly select cameras, and 0-9 quickly select presets.
0-9 (Text Editing)	In English text fields such as name, account, password and address, press a number key to cycle through its assigned characters. Repeatedly pressing the same key within 500 ms switches that key's character. Long press 1 while an English edit box is open to toggle lowercase/uppercase input. The screen prompts Caps Lock on or off.
MODE(255)	Open or close the 0-255 numeric input box. It is used for multi-digit camera IDs, preset numbers and similar entries. When active, MODE(255), 0, ENTER and DELETE light red.
ENTER	Confirm the current numeric input. In a text edit box, press ENTER to save and close the edit box. In the system menu, use the PT knob or joystick to page menu, enter editing and confirm items.
DELETE	Delete the last character from the current numeric or text input.
CALL PRESET	Call a preset: for 0-9, press the number key directly; for 10-255, enable MODE(255), enter the number and press ENTER.
SET PRESET	Save a preset: for 0-9, press the number key directly; for 10-255, enable MODE(255), enter the number and press ENTER.
CLEAR	Clear a preset: for 0-9, press the number key directly; for 10-255, enable MODE(255), enter the number and press ENTER.

Joystick, Zoom and Knobs

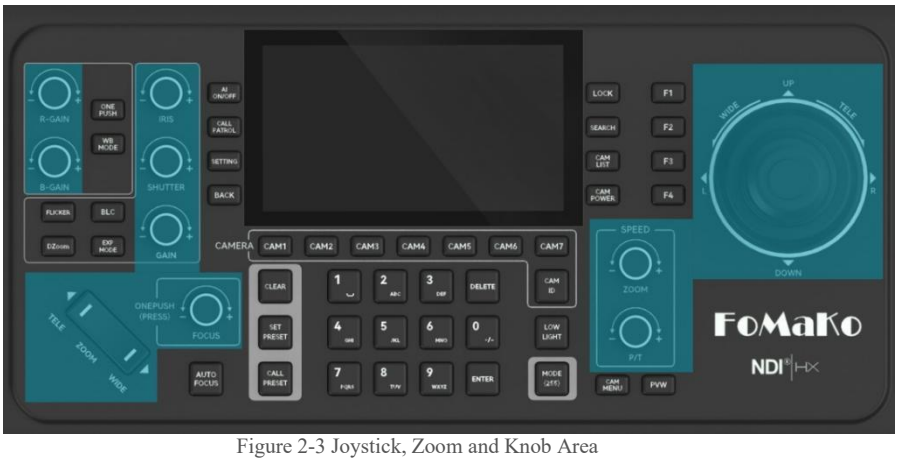


Figure 2-3 Joystick, Zoom and Knob Area

Button / Control	Function
4D Joystick	In normal status, controls camera movement up, down, left, right and diagonally. Press the joystick to send the home-position command. In menus or list pages, it page menu and confirms operations.
Joystick Rotation / TELE / WIDE	Controls lens zoom. TELE zooms in and WIDE zooms out. Release to stop zooming.

Button / Control	Function
P/T SPEED	Adjusts pan and tilt movement speed. In menus or list pages, rotate to move page menu and press to confirm or enter.
ZOOM SPEED	Adjusts zoom speed. Rotate to increase or decrease the speed.
FOCUS	Manually adjusts near/far focus. After this knob is used, the auto focus light turns off and the current camera enters manual focus.
R GAIN / B GAIN	Adjusts red gain and blue gain when manual white balance model is available.
IRIS / SHUTTER / GAIN	Adjusts iris, shutter and gain/brightness when the exposure mode allows manual or priority adjustment.

Image Parameters and Camera Functions

Figure 2-4 Image Parameter and Camera Function Buttons

Button / Control	Function
WB MODE	Cycles through white balance modes supported by the current camera. The button lights red in auto white balance status.
ONE PUSH	Executes one-push white balance. The button lights red when the camera supports and enters this mode.
EXP MODE	Cycles through exposure modes supported by the current camera. The button lights red in auto exposure status.
AUTO FOCUS	Restores auto focus. The button lights red when auto focus is active.
BLC	Enables or disables backlight compensation. The button lights red when enabled.
FLICKER	Cycles among off, 50 Hz and 60 Hz anti-flicker modes. The button lights red in 50 Hz or 60 Hz status.
DZOOM	Enables or disables digital zoom. The button lights red when enabled.
LOW LIGHT	Enables or disables low-light enhancement. The button lights red when enabled.

Button / Control	Function
CAM MENU	Opens or closes the camera's own menu when supported by the protocol. The button lights red when the menu is open.
CAMPOWER	Camera power key. Press to toggle power on/off. The button lights red when on and turns off when off. This indicator only reflects the power command status sent by the controller; it does not indicate whether the camera is online.

Shortcut Functions and Status Control

Figure 2-5 Shortcut Function and Status Control Buttons

Button / Control	Function
PVW	Toggles preview display status. The button lights red in full-screen preview and turns off when returning to the normal screen.
LOCK	Enables or disables key lock. When locked, all panel keys except LOCK are disabled.
AI ON/OFF	Enables or disables the AI tracking for the current camera. The command preset is configured on the web Camera Command page.
CALL PATROL	Opens or closes the patrol configuration page for the current camera. See Chapter 5 for details.
F1-F4	Executes custom commands configured on the web Camera Command page.

Common camera selection: press CAM1-CAM7 directly, or press CAM ID, enter a camera number and confirm.
Preset operation: press CALL PRESET, SET PRESET or CLEAR first. For numbers 0-9, press the corresponding number key directly.
For numbers 10-255, enable MODE(255), enter the number and press ENTER to confirm.

Control Protocols

KC600 supports VISCA Over IP(UDP), ONVIF, serial VISCA, Pelco-D, Pelco-P and NDI control protocols. Available key functions vary by protocol. Actual availability depends on the capabilities reported by the camera.

- Network control: VISCA Over IP(UDP), ONVIF and NDI.

- Serial control: VISCA, Pelco-D and Pelco-P. The hardware interface can be RS-232, RS-422 or RS-485.

3. Device Search

Press SEARCH to open the device search page. This page scans discoverable cameras on the LAN and supports combined NDI, ONVIF and VISCA search. After a device is found, it can be added to the camera list and optionally bound to a physical CAM shortcut key.

3.1 Start Search

- After entering the device search page, select the protocol types to scan: NDI, ONVIF and VISCA.
- At least one protocol must be selected. If no protocol is selected, the device prompts the user to select a search protocol first.
- Move the cursor to Start Search and confirm. The device starts scanning discoverable cameras on the LAN.

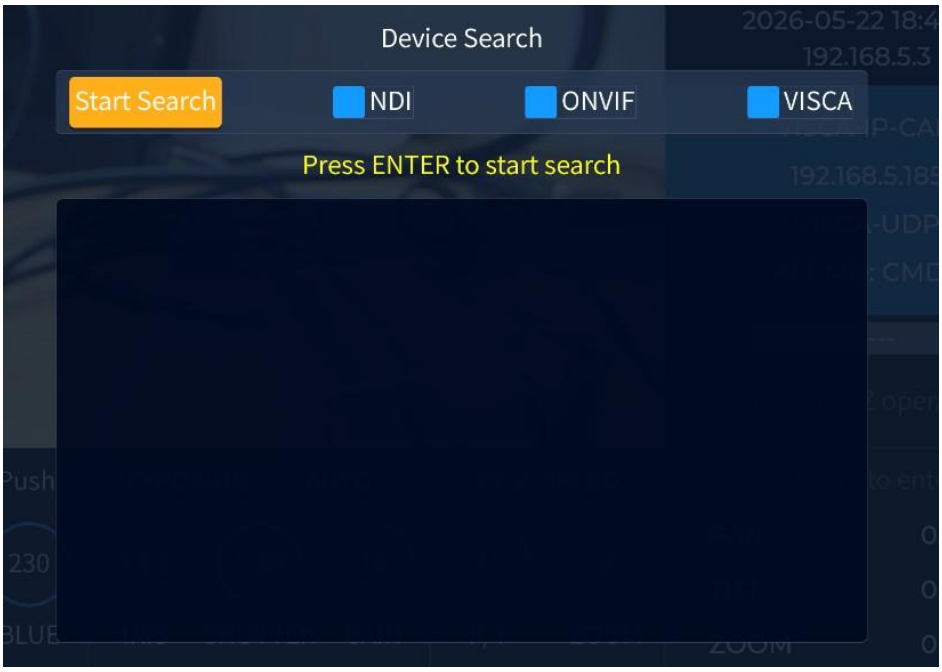


Figure 3-1 Initial Device Search Screen

3.2 Search Results

After search is complete, the result list shows device names and addresses. The selected item is highlighted in orange. Use the joystick to move the list item up or down. The Exit Search
button at the bottom clears the current result list and returns to protocol selection.

Operation	Description
Add Device	Select a target device, then press the speed knob or joystick confirm key to add it.
Exit Search	Select the Exit Search button at the end of the list and confirm. The system clears the current search list and returns to protocol selection.

Figure 3-2 Search Result List

3.3 Add Device and Shortcut Binding

After a search result is selected and added, the device is saved to the camera list and the shortcut binding window appears. In the window, select a physical camera shortcut key or choose not to bind.

Selection	Result
CAM1-CAM7	Bind the new device to the corresponding shortcut key. It can then be called directly from the panel CAM key.
Unbound	Only add the device to the camera list without changing the current CAM1-CAM7 binding relationship.

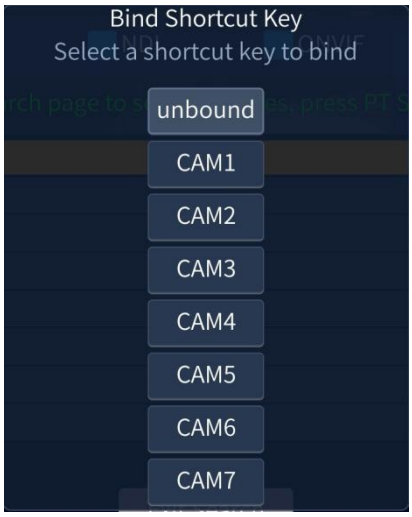


Figure 3-3 Shortcut Binding Window After Adding a Device

To adjust the binding later, select the device in the camera list and press ENTER. The shortcut key edit window opens, where the physical CAM key binding can be changed or removed.

4. Camera List

4.1 Camera List Page

Press CAM LIST to open the camera list page. The list shows shortcut key ID, CALL ID, name and address information. It is used to view saved cameras and quickly enter the target camera. Devices bound to shortcut keys are listed first from CAM1 to CAM7. Unbound devices are sorted by CALL ID. Each page displays up to 10 devices. Use joystick left/right to change pages when more than 10 devices exist. Move page selection with the P/T SPEED knob or 4D joystick. Press the knob or joystick to enter the selected camera information page. Press ENTER on a selected camera to edit its CAM shortcut binding directly.

Figure 4-1 Camera List Page

4.2 Shortcut Key Edit

- Entry: select the target device in the camera list and press ENTER to open the shortcut key edit window.
- Status: the top area shows CALL ID. Options include Unbound and CAM1-CAM7, with labels showing current binding, occupied by ID, or available.
- Selection: use the P/T SPEED knob or 4D joystick to move up or down. Press the knob or joystick to confirm the current option.
- Save: selecting a CAM item binds the device to that CAM key and clears the device's previous shortcut binding. Selecting Unbound removes the current shortcut binding.
- Return: after saving, the device returns to the camera list and refreshes the shortcut key display. To exit without changes, press BACK.

Figure 4-2 Shortcut Key Edit Page

4.3 Camera Information Page

After entering a camera from the camera list, users can view and edit basic information, control protocol parameters and video stream parameters. The bottom buttons are described below:

Button	Function
CANCEL	Return to the camera list without saving unsubmitted changes.
DELETE	Delete the current camera.
UPDATE	Save changes on the current page.
CALL	Call and switch to the current camera.
AI	Open the AI command selection window and select CMD1-CMD4 for the current camera.

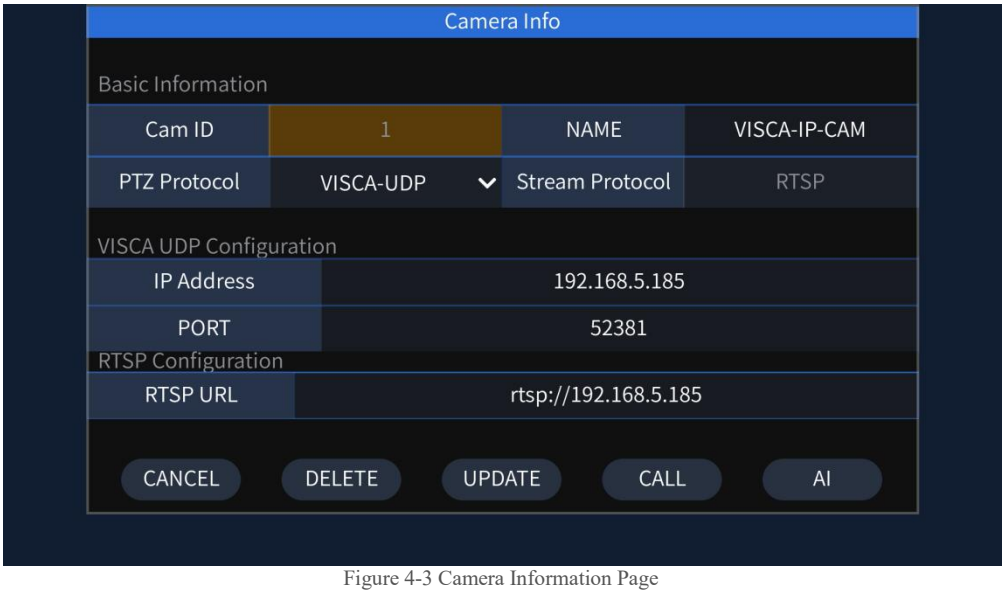


Figure 4-3 Camera Information Page

AI Command Selection

AI commands are used to select CMD1-CMD4 for the current camera. The panel AI key calls the selected command group. This function is supported only by VISCA Over IP(UDP) and serialVISCA.

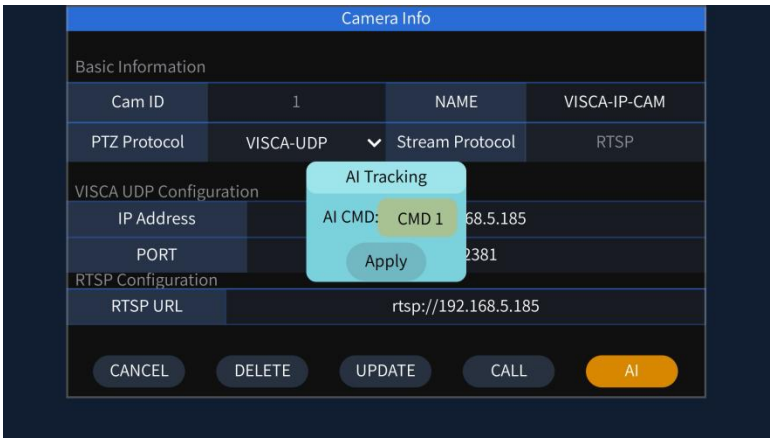
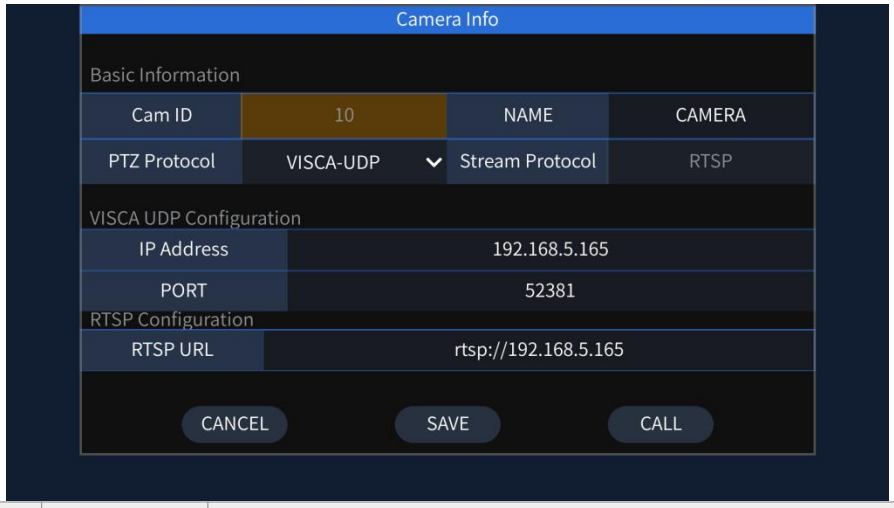


Figure 4-4 AI Command Selection Window

4.4 Add New Camera

Select Add New Camera at the bottom of the camera list to enter the new camera page. In the basic information area, Camera ID is assigned by the system. The user enters the name and selects the control protocol. The video stream protocol is not entered separately; it is automatically matched according to the control protocol.

Figure 4-5 New Camera Configuration Page



Control Protocol	Auto Stream	Required Parameters
VISCA-UDP	RTSP	Control IP, port and RTSP address. Default control port: 52381. RTSP format: rtsp://IP:PORT.
ONVIF	ONVIF	IP, port, username and password. Service address: http://IP:PORT/onvif/device_service.
Serial VISCA	RTSP	Serial address, interface, baud rate and RTSP address. Interface options: RS485/RS232/RS422. Baud rates: 4800/9600/115200.

Control Protocol	Auto Stream	Required Parameters
Pelco-D/P	RTSP	Serial address, interface, baud rate and RTSP address. Common serial address: 0x01. RTSP format: rtsp://IP:PORT.
NDI	NDI	NDI address and port. Saved as IP:PORT. Default port: 5961.

After completing the fields, select SAVE to save only to the camera list. Select CALL to save the new camera and call it immediately. If a device is added from search results, the system automatically fills identifiable protocol parameters and shows the shortcut binding window after adding.

5. Patrol Configuration

Press CALL PATROL to open or close the patrol configuration page. This page configures patrol routes and patrol points for the current camera. Settings are saved automatically when exiting.

- Entry condition: a saved camera must be called or activated first. The top of the page shows the patrol master switch and the current camera ID.
- Navigation: use the P/T SPEED knob or 4D joystick to move the selection up or down. Press the knob or joystick to confirm.
- Route settings: each camera supports up to 3 routes and must keep at least 1 route. Name, enable status, interval and priority can be set.
- Patrol point settings: each route contains 8 points. Preset ID, interval and enable status can be set for each point.
- Point editing: when the selection is on a patrol point row, press the knob or joystick to enter field selection within the row. The No. field exits row selection. Preset ID and interval can open input boxes for editing. Enable status can be toggled directly.
- Parameter ranges: time 0.1-9999 seconds, priority 1-99, preset ID 0-255.

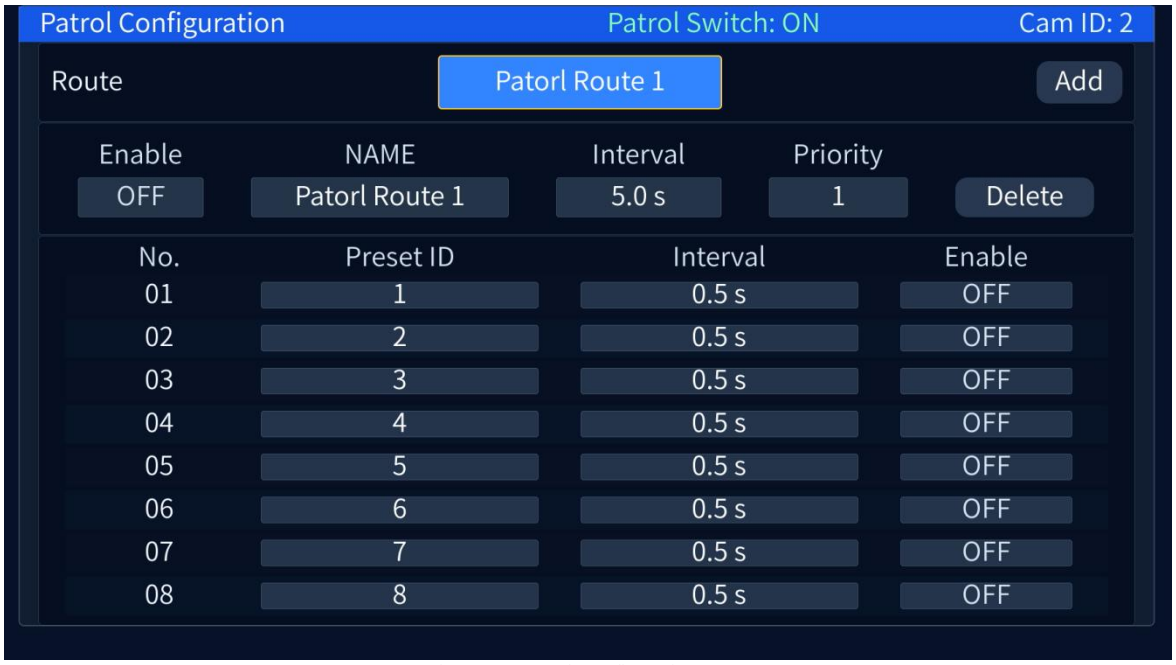


Figure 5-1 Patrol Configuration Page

6. System Menu

Press SETTING to open or close the system menu. The system menu contains Net, Setting and Info pages. In menu input status, use the PT knob or joystick to move the selection up or down. Press the PT knob or joystick to enter a submenu, enter editing or confirm the current item. Press BACK to exit editing, return to the previous level or close the menu. Network apply, joystick calibration and factory reset affect device operation. Use these functions carefully according to on-site requirements.

6.1 Network Settings

- DHCP: when enabled, the device obtains an IP address automatically. When disabled, IP address, subnet mask and gateway can be edited manually.
- DNS Setting: enter the submenu to set DNS mode, DNS1 and DNS2. Auto mode uses network DNS. Manual mode uses the entered DNS addresses.
- Apply: save and apply the current network configuration. After changing network parameters, rebooting the device is recommended to make the new configuration take effect stably.

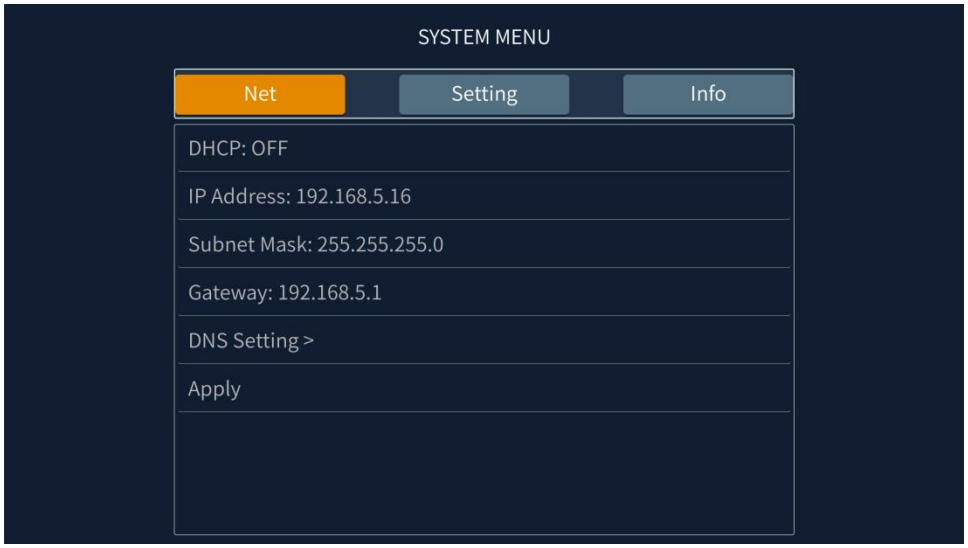


Figure 6-1 Network Menu

6.2 Settings

- Buzzer: enable or disable key beep.
- Patrol Switch: master patrol switch. When enabled, patrol can run. When disabled, patrol stops.
- LCD Brightness: adjust screen brightness from 10% to 100%.
- Time Setting: set 12/24-hour time mode, system time, countdown and countdown switch.
- Joystick Calibration: calibrate the joystick center position. Before calibration, keep the joystick stationary and follow the on-screen confirmation steps.
- Factory Reset: restore factory default parameters. Existing configuration will be cleared.

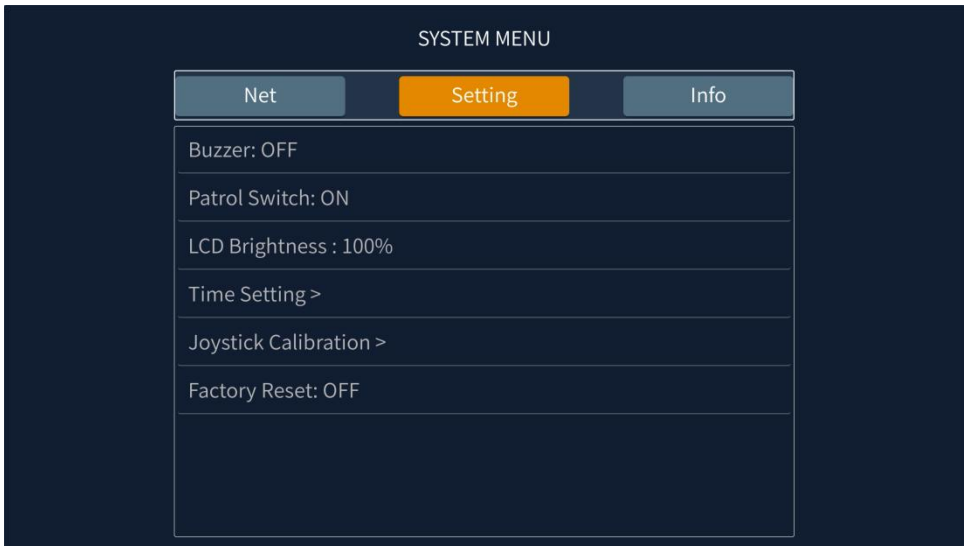


Figure 6-2 Setting Menu

6.3 Info

The Info page shows language, SOC software version, MAC address, serial number and technical support information. After switching language, interface text updates in real time.

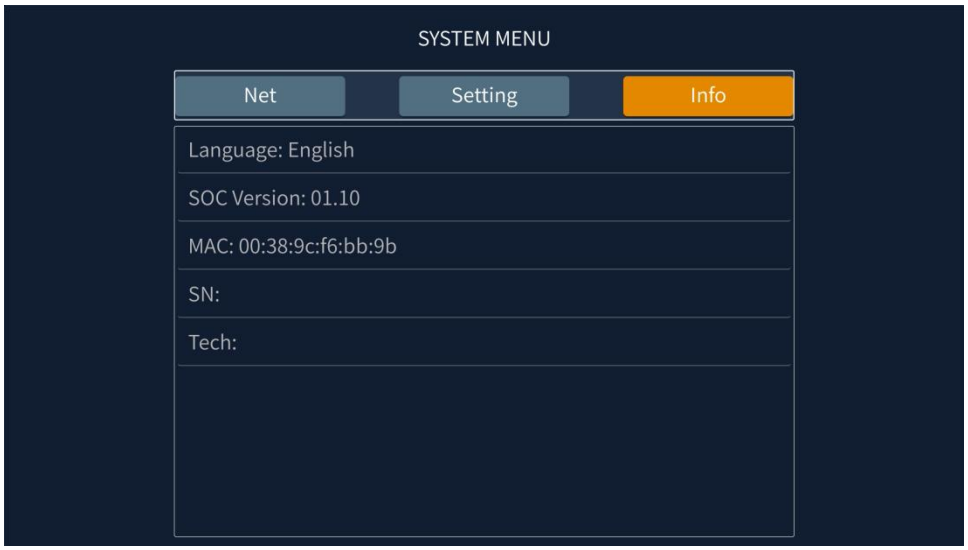


Figure 6-3 Info Menu

6.4 Patrol Linkage

Patrol Switch is the master patrol switch. CALL PATROL opens or closes the independent patrol configuration page. When exiting the patrol configuration page, the system automatically saves the current patrol configuration. See Chapter 5 for detailed editing.

7. Web Operation

Enter the KC600 IP address in a browser to access the web management interface. Default username: admin. Default password: admin. After entering username and password, click Login to enter the control panel. The left navigation includes Camera List, Camera Search, Shortcut Keys, Camera Command, Protocol Settings, Network Settings, User Management and System Settings. The session logs out automatically after 30 minutes without operation. Log in again to continue.

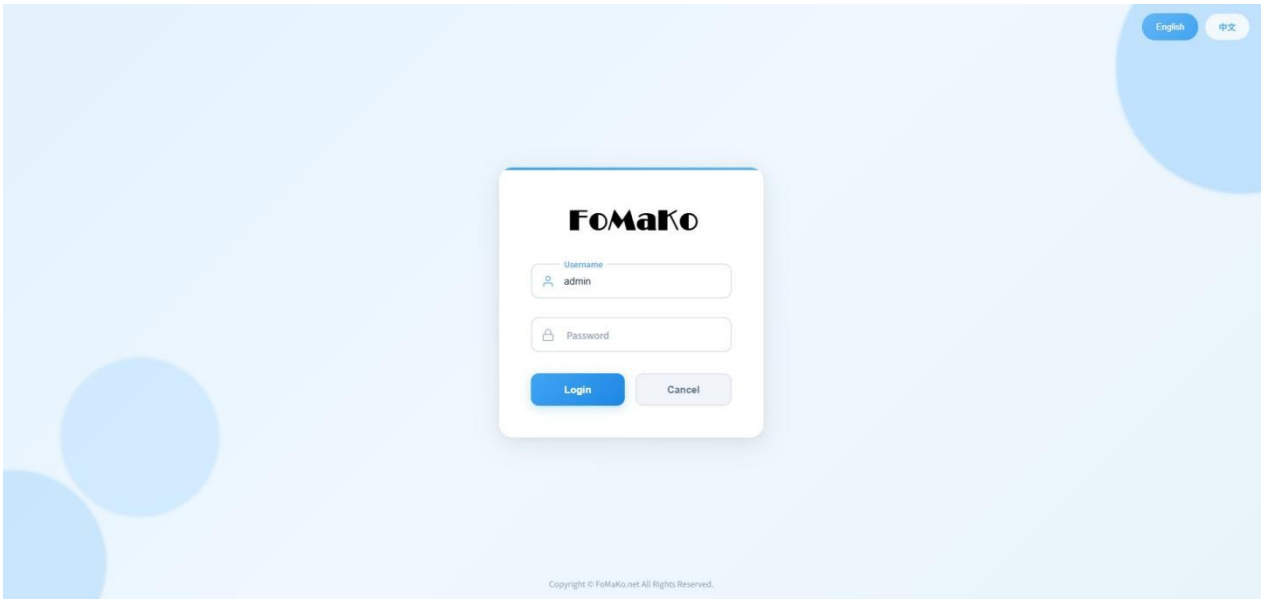


Figure 7-1 Login Page

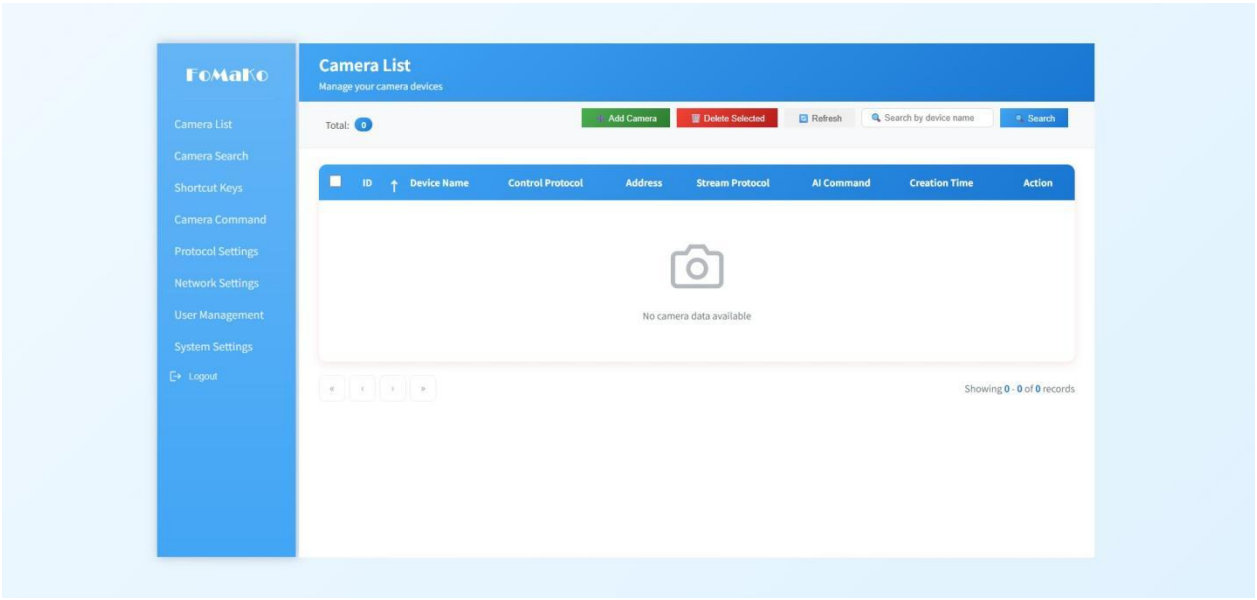


Figure 7-2 Control Panel Main Page

7.1 Camera Search

The Camera Search page searches and adds NDI, ONVIF and VISCA cameras on the LAN. Users can select protocols to search and choose whether to filter already-added devices. Click Search to start.
Search results display up to 256 cameras. When multiple protocols are searched at the same time, they share this limit. Click Clear to remove current results and search again.

- Search result fields include protocol, device name, IP address, shortcut key and operation.

- The device name can be edited before adding and supports up to 63 characters. After Add succeeds, the row is removed from search results.
- Shortcut key can be set to Unbound or directly bound to CAM1-CAM7.

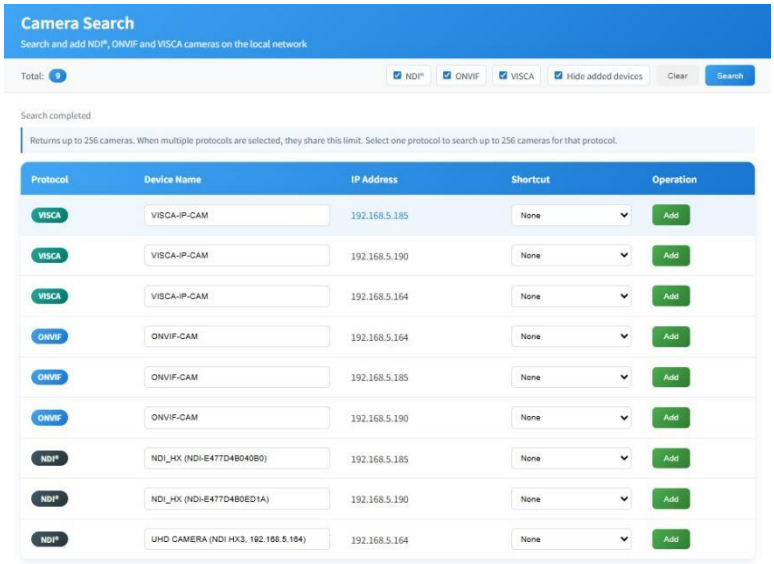


Figure 7-3 Camera Search Page

7.2 Camera List

The Camera List page manages added devices. It supports adding, batch deleting, refreshing, filtering by device name, and sorting by ID or creation time. Each page displays 6 cameras. Use pagination to switch pages. The device name can be edited directly in the list and saved by pressing Enter or leaving the field.

- List fields include checkbox, ID, device name, control protocol, address, stream protocol, AI command, creation time and action.
- AI command can select CMD1-CMD4. It is supported only by VISCA Over IP(UDP) and serial VISCA. AI command selection is unavailable for other protocol devices.
- The Action column provides Patrol, Edit and Delete for configuring patrol routes, editing device parameters or deleting the current camera.

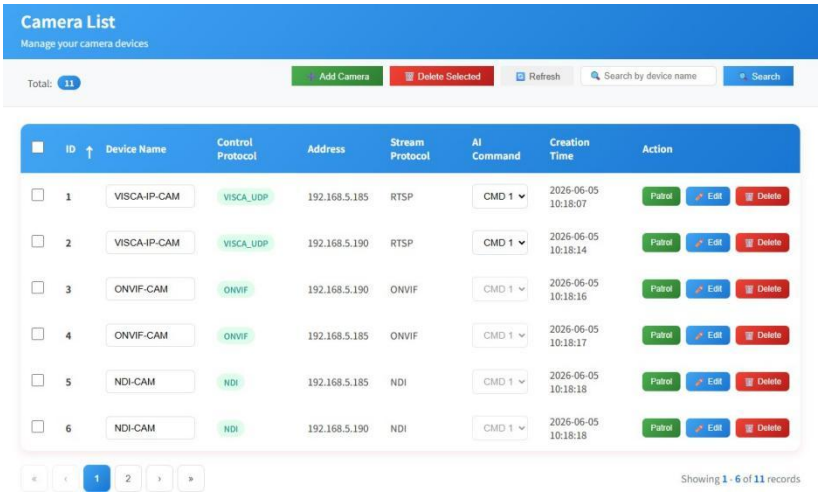


Figure 7-4 Camera List Page

Add or Edit Camera

Click Add or Edit to open the device information window. In Basic Information, enter the device name and select the PTZ protocol. The stream protocol is automatically matched according to the PTZ protocol and does not need to be selected manually. IP, port, serial address, ONVIF address and RTSP address fields are validated before saving.

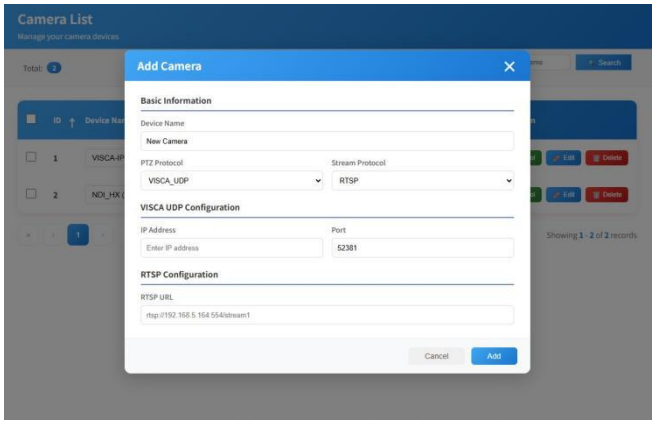


Figure 7-5 Add Camera Configuration Window

Control Protocol	Stream Protocol	Required Parameters
VISCA-UDP	RTSP	Control IP and control port. RTSP address format: rtsp://IP:PORT/stream.
ONVIF	ONVIF	ONVIF service address, username and password. Addressformat: http://IP:PORT/onvif/device_service. https:// is supported.
Serial VISCA	RTSP	Hardware protocol RS485/RS232/RS422, hardware address 0-254, baud rate 4800/9600/115200, and RTSP address.
Pelco-D/Pelco- P	RTSP	Hardware protocol RS485/RS232/RS422, hardware address 0-254, baud rate 4800/9600/115200, and RTSP address.
NDI	NDI	NDI control IP and port. Port range: 1-65535. It is saved as IP:PORT.

Patrol Configuration

Click Patrol in the Camera List action column to configure patrol routes for the current camera. Each camera supports up to 3 routes. Each route can set name, interval, priority and enable status, and can configure preset ID, stay time and enable status for 8 patrol points. Route changes are saved automatically.

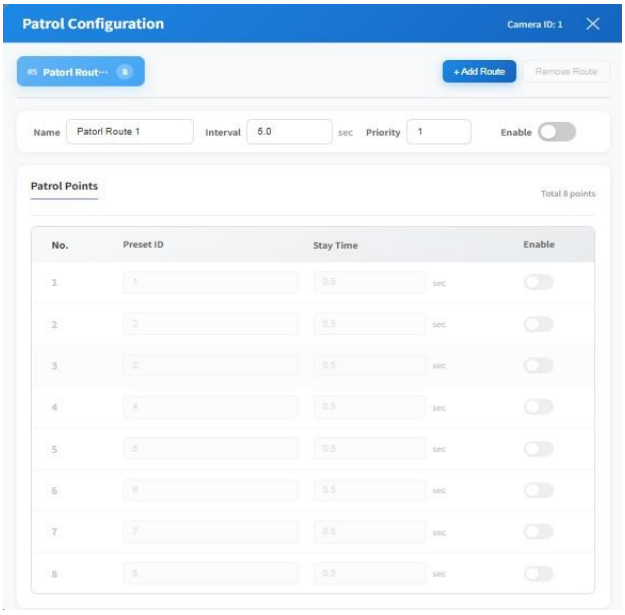


Figure 7-6 Patrol Configuration Window

7.3 Shortcut Key Settings

- Binding status: CAM1-CAM7 are shown as cards. A bound card shows device name, control protocol and address. An unbound card can directly select a camera.
- Select camera: after opening the selection window, search by device name, sort by ID or protocol, and browse with 10 cameras per page.
- Shortcut actions: bound cards provide Select, Edit, Locate in List and Unbind. Edit modifies camera parameters. Locate in List opens the camera list and highlights the related device.
- Save and refresh: clicking a target camera saves the binding immediately. If saving fails, the previous binding is restored. Refresh reloads CAM1-CAM7 binding status.

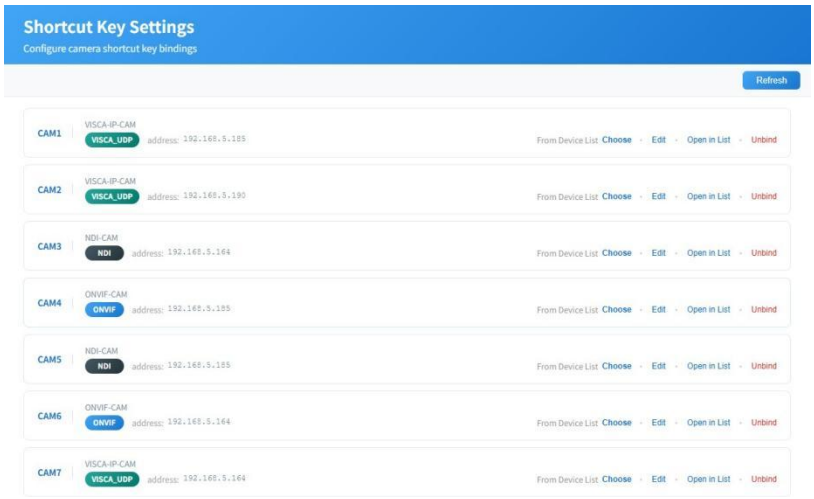


Figure 7-7 Shortcut Key Settings Page

7.4 Camera Command

The Camera Command page configures AI commands and F1-F4 custom commands. AI commands include CMD1-CMD4. Each group contains two hexadecimal commands: AI tracking off and AI tracking on. F1-F4 can each set a command name and custom command. Command input allows only 0-9 and A-F. Spaces are ignored automatically. Command length must be even when submitting.

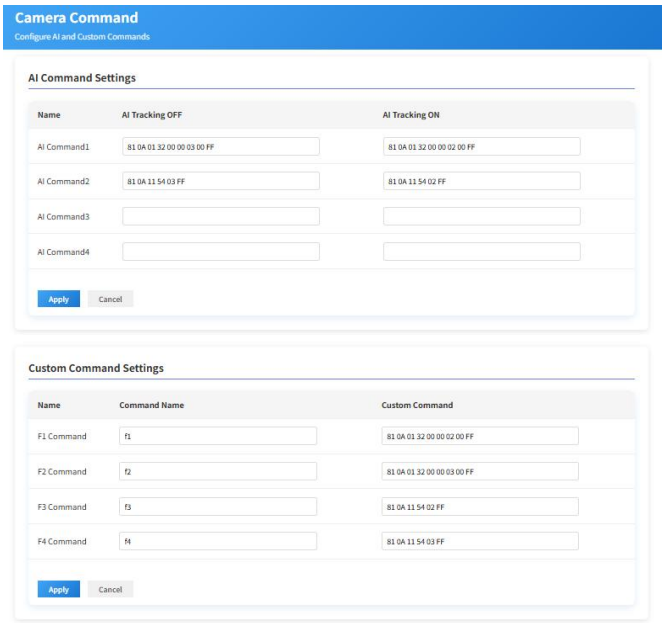


Figure 7-8 Camera Command Configuration Page

7.5 Protocol Settings

The Protocol Settings page currently provides NDI parameter configuration. NDI authorization is a status display item. NDI group sets the NDI group name, with public as the default value. Click Confirm to save after modification.

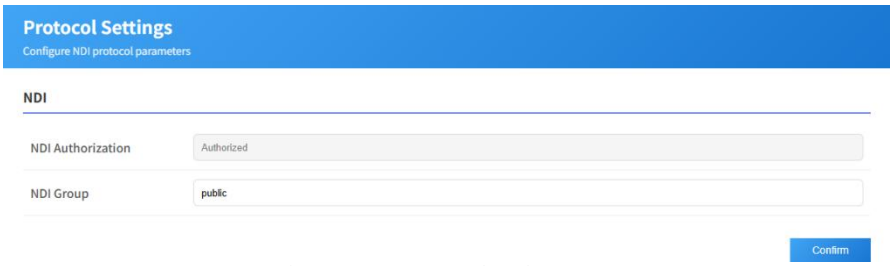


Figure 7-9 NDI Protocol Settings Page

7.6 Network Settings

The Network Settings page configures DHCP, IP, subnet mask, gateway, MAC address, DNS mode, DNS1 and DNS2. It also supports Ping test and system reboot. After saving network parameters, reboot the device as prompted to ensure the configuration takes effect stably.

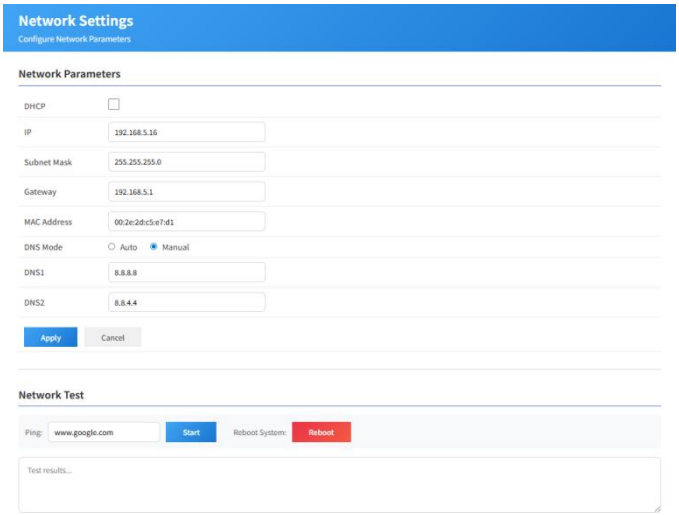


Figure 7-10 Network Settings Page

7.7 User Management

The User Management page views system users and edits user information. After clicking Edit, the name and password can be changed. Login name is read-only. Password cannot be empty when saving user information. After modification, the page reloads the user list.

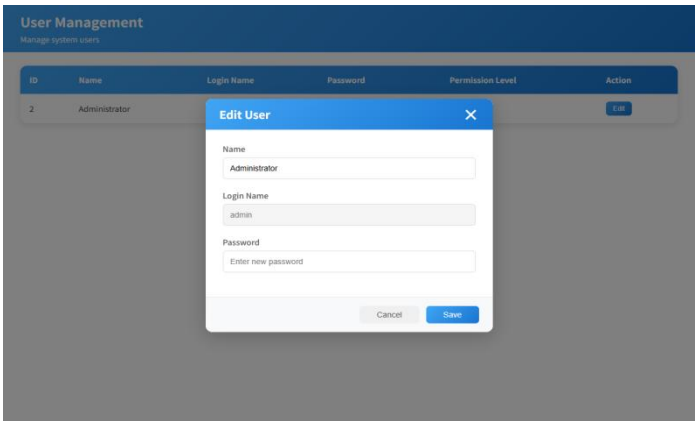


Figure 7-11 User Management Page

7.8 System Settings

- Time zone settings: select time zone and view current system time.
- NTP settings: select a preset NTP server or enter a custom server, set detection count and synchronization interval, and enable or disable time synchronization.
- System upgrade: show SOC version, select a .bin upgrade file, view upload progress and start upgrade. Do not power off during upgrade.

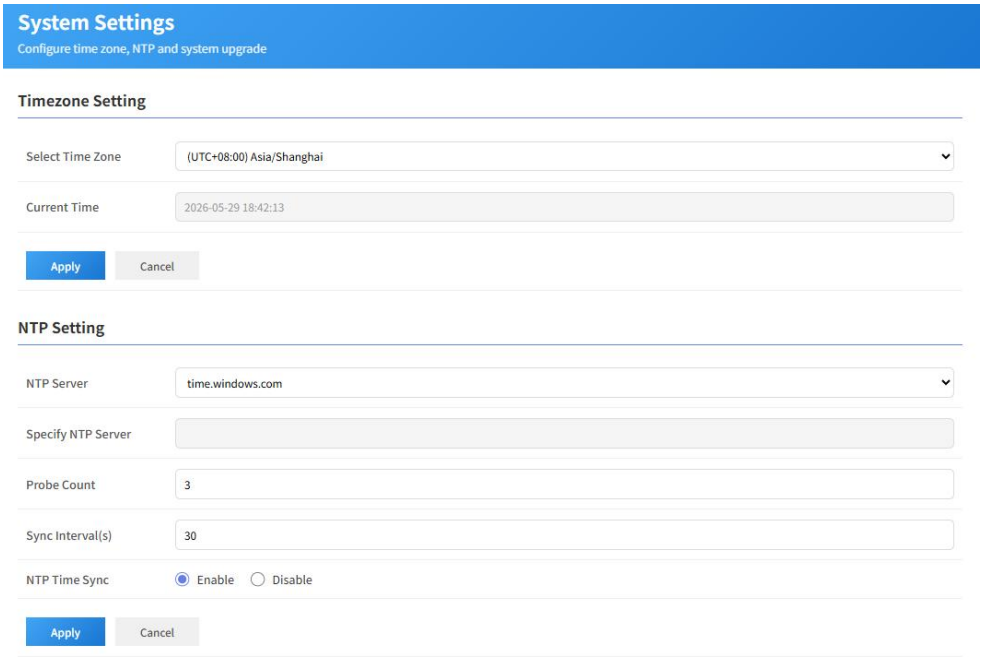


Figure 7-12 Time and NTP Settings Page

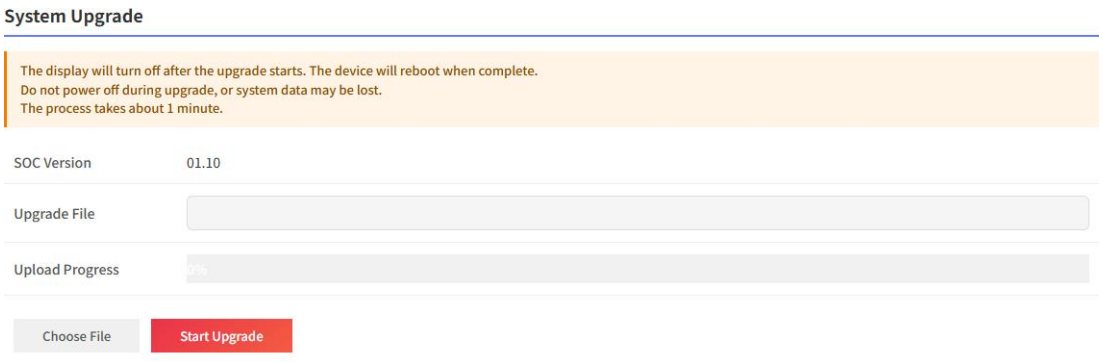


Figure 7-13 System Upgrade Page

8. Specifications

Item	Description
Keyboard Parameters	
Joystick	4D precision Joystick
Knobs	3D knobs,support scale rotation to adjust parameters, PT speed knob also supports menu operation.
Buttons	High quality sillicone buttons,support red backlight
Screen	5.5" LCD color display
Shortcut Button	Support 7 camera shortcut button settings, and additional camera custom ID settings.
Button Prompt Tone	Button sound prompt on/off
AI Button	Support opening and closing of AI tracking quickly
PATROL Button	Support one-key patrol function
Lock Button	Support one-key lock function
Mode (255) Button	Specify 10-255 camera or preset point quickly
Max Control Quantity	255
Max Preset Position	255
Control	
Control Interface	RJ45(support POE and NDI HX), RS-232, RS-422/485
IP Control Protocol	ONVIF, VISCA Over IP(UDP), NDI
Serial Port Protocol	VISCA, Pelco D, Pelco P
Power Supply	
Input Voltage	12V
Input Current	0.35A
POE	802.3af
Rated Power	4.2W
Other	
HDMI Output	HDMI Type A x 1, up to 1920 x 1080p60
Tally	Support up to eight channels
Operating Environment	Indoor
Operating Temperature	-10 deg C~40 deg C
Storage Temperature	-20 deg C~60 deg C
Dimensions	380mm x 196mm x 42mm (Joystick height is not included) 380mm x 196mm x 110.5mm (Joystick height is included)
Weight	About 1.34kg

Specifications are correct at time of printing and subject to change or alteration without notice.