Product Features

(1) Supports both network and serial control modes, making it adaptable to various deployment scenarios.

(2) Supports multiple control protocols, including VISCA, VISCA over IP, VISCA TCP/UDP, ONVIF, Pelco-D, and Pelco-P, with optional NDI support.

(3) Features a 5-inch touch screen (1280 × 720) with H.264/H.265 decoding support, capable of handling 4K@60fps streams.

(4) Offers full control and status feedback for specific camera brands (customizable).

(5) Includes 4 programmable function keys for user-defined shortcuts.

(6) Built-in web management system enables remote configuration and advanced control.

(7) Supports quick preset recall/setup and custom scheduling for multi-camera 'soft patrol'.

(8) Integrated compatibility system resolves protocol differences between brands.

(9) Automatically discovers ONVIF/NDI devices and supports optional IP configuration for specific brands.

(10) Professional knobs for quick exposure (iris/shutter/gain) and white balance (red /blue gain) adjustment.

(11) Pressure-sensitive, 4D variable-speed joystick enables force-based PTZ and zoom control.

(12) Dedicated speed knobs for PTZ movement, zoom, and preset recall.

(13) Fully backlit keyboard with independent brightness control.

Supported Communication Protocols:

Connection Method	Supported Protocols
LAN (Local Network)	Full Mode (Recommended), ONVIF, VISCA over IP, VISCA TCP/UDP, NDI (Optional)
Serial Port	VISCA, PELCO-D, PELCO-P

Protocol Descriptions

Full Mode (Recommended)
Integrates multiple protocols with in-depth optimization for specific camera models. Supports full parameter display, such as iris, shutter, saturation, and color temperature.

ONVIF & VISCA TCP/UDP
Port numbers may vary depending on the brand and model.
When adding manually, refer to the camera's user manual to confirm the correct port.

NDI (Optional)
Prerequisites: Both the controller and the camera must have an activated NDI license, and the camera must be correctly configured for NDI encoding output.
Trial Limitation: If either device does not have an activated license, the NDI video stream will run in trial mode for a maximum of 30 minutes.

Serial Protocols (VISCA / PELCO-D / PELCO-P)
When adding a camera, you must set the **Device Address** and **Baud Rate** accurately.

4.3 Manually Adding a Camera

(1) In the **Camera List Management** page, click **[Add Camera]**.

(2) **Select Connection Type**: Choose **LAN** or **Serial** according to the actual physical connection.

---

(3) **Select Control Protocol**: The system will display available protocols based on the selected connection type. Choose the protocol compatible with your camera.
Recommendation: If using LAN and the camera supports **Full Mode**, it is recommended to select this protocol for more comprehensive feature support.
(4) **Enter Required Information**:
For network protocols: Fill in the **IP address**, **port**, and **login credentials**.
For serial protocols: Fill in the **Device Address** and **Baud Rate**.
(5) Click **[Save]** to add the camera to the list.

4.4 Searching for Cameras

Notes:
(1) The system can typically detect cameras that are **connected to the same switch or router** as the controller.
(2) Primarily supports **ONVIF** and **NDI** auto-discovery, and is also supports discovery of certain proprietary-protocol cameras from specific brands.
(3) For some camera brands, the system supports configuring the camera's IP address directly from this interface.
(4) Complex network setups, such as cross-subnet/VLAN configurations, routing isolation, or firewall restrictions, may cause search failures.
(5) Some camera models require enabling related protocols (such as **NDI** or **ONVIF**) on the camera itself before they can be discovered.

Steps
(1) In the **Camera List Management** page, click **[Search]** to start scanning.


(2) Search results show each camera's **IP address** and **supported protocols**.
(3) **Add a single camera**: Select the target camera, click **[Add to List]**, enter a name, and save.
(4) **Add multiple cameras**: Click **[Multi-Select]**, choose multiple cameras, then click **[Batch Add]** to save all selected.
(5) **Configure camera IP**: For devices marked (**Manual IP configuration supported**), select the camera and click **[Configure IP]** to set new network parameters.

5.1 Control Interface Overview

After powering on, the controller enters the **Main Control Interface** by default. You can also return to this interface at any time by pressing the **HOME** key.
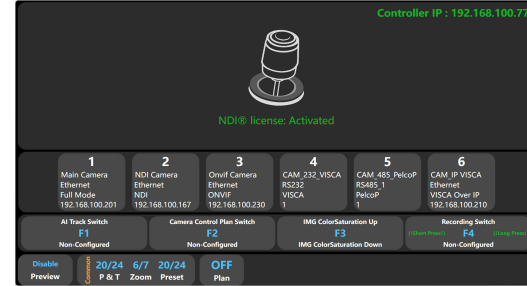
5.2 Connecting to a Camera

From the main control interface, you can connect to a camera in the following ways:
Touchscreen: Tap the camera name in the list to connect.
Physical keys: Press **CAM 1 – CAM 6** to quickly connect to cameras 1– 6.
Quick select: Use the **CAM..** key to connect to cameras with IDs above 6.

5.3 Controlling a Camera

A. Connected without Preview Enabled
Tapping any control area (e.g., White Balance) opens its detailed control page, showing related status information and available adjustments.


Control availability: Some controls are only available in specific modes. For example, **Red Gain** is usually adjustable only when White Balance is set to **Manual**.

Compatibility: Due to protocol differences between brands/models, some status data may be unavailable or some controls may be disabled. You can adjust control commands in the **[Compatibility Setting]** of the Web Management System to improve compatibility.

Full Mode protocol: In **Full Mode**, the controller is pre-optimized for compatible models and supports precise numerical displays (e.g., **Saturation 100%**, **Color Temp 6500K**). If supported, using **Full Mode** is **recommended** for the most complete control experience.

B. Connected with Preview Enabled
The operation is the same as above. The interface displays five main areas: Video Preview, Camera Selection, Exposure, White Balance, and More.

PTZ Camera Controller

Quick Start Guide
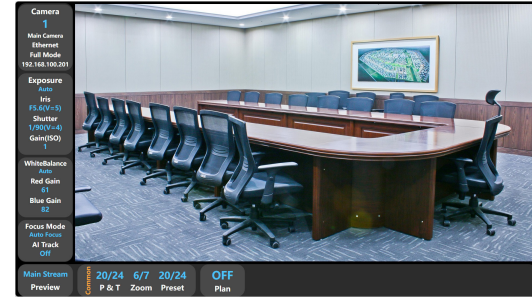
6 Web Management System

This controller includes a built-in web management system, allowing faster and more efficient configuration and maintenance via a computer browser.

Access Method
Network requirement: Ensure the access device (PC or mobile) is on the same local network as the controller.
Login address: Enter the controller's current IP address in the browser's address bar (e.g., 192.168.0.7).
Recommendation: Use a PC browser for the best functionality and user experience.
If inaccessible: Check that the controller's IP address is correct, network connectivity is intact, and the firewall settings allow access.

Function Scope
The web interface provides all settings available on the controller itself, plus the following enhanced modules:
Compatibility Setting
Control Plan Setting
NDI Configuration
Firmware Upgrade

Declaration

This manual provides a quick start guide for the product. As we continually enhance our offerings, updates to the product or documentation may occur without advance notice.
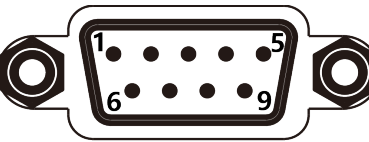
Specifications

Supported Protocols	VISCA, VISCA over IP, VISCA TCP/UDP, ONVIF, Pelco-D/P, NDI(optional)
Manageable Devices	Up to 999 cameras
Joystick	4D joystick with pressure sensing
Display	5-inch TFT LCD (1280× 720 resolution), touch-enabled
Video Decoding	Supports H.264 / H.265, up to 4K@ 60fps
Input/Output Interfaces	1 x RS232 (Camera Control)
	1 x RS485/RS422 (Camera Control)
	1 x RJ45 (Camera Control, PoE supported)
	1 x USB-A OTG
	1 x DC 12V Power Input
Input Voltage	DC 12V / PoE (802.3af)
Input Current	2A
Operating Temperature	-10°C ~ 60°C
Storage Temperature	-20°C ~ 70°C
Dimensions	305 × 205 × 110 mm
Weight	1.05Kg

1.1 Interface Overview
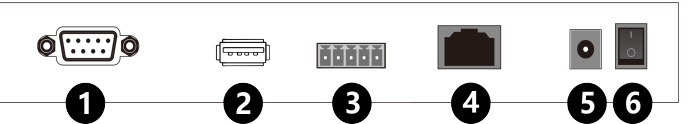
No.	Interface Type	Description
1	RS232	Supports devices using PELCO-D / PELCO-P / VISCA protocols
2	USB-A (OTG)	OTG interface
3	RS-422/485	Supports devices using PELCO-D / PELCO-P / VISCA protocols
4	NET (RJ45)	Supports PoE power supply: compatible with ONVIF / VISCA Over IP / NDI (optional) protocols
5	DC-12V	DC power input (center positive, outer negative)
6	Power Switch	Device power switch

1.2 Interface Definitions

RS-232

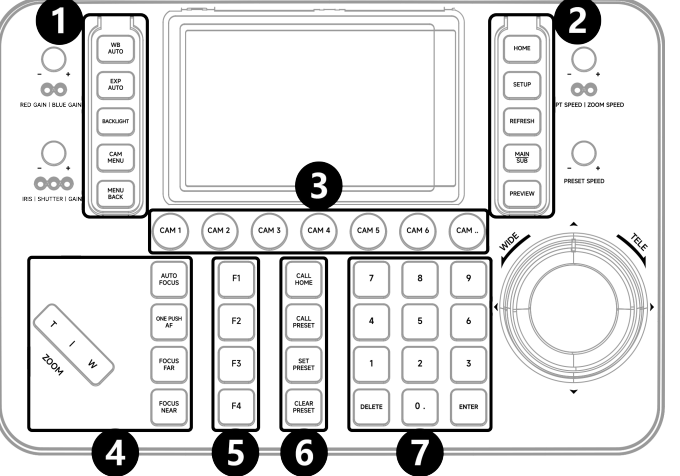| Pin No.	Function
1	N/C
2	RX
3	TX
4	N/C
5	GND
6	N/C
7	N/C
8	N/C
9	N/C

TB TA G RB RA

RS-422 & RS-485

Pin No.	RS-422 Mode Function	RS-485 Mode Function (Channel 1)	RS-485 Mode Function (Channel 2)
1	TX-	485-1 B	-
2	TX+	485-1 A	-
3	GND	GND	GND
4	RX-	-	485-2 B
5	RX+	-	485-2 A

2.1 Button Functions

Button Group 1 (White Balance / Exposure / Menu Control)	
WB AUTO	Set camera white balance mode to auto
EXP AUTO	Set camera exposure mode to auto
BACKLIGHT	Enable / Disable camera backlight compensation
CAM MENU	Open / Close the camera OSD menu
MENU BACK	Execute the back operation in the camera menu

Button Group 2 (System / Preview Control)	
HOME	Return to the main control interface of the keyboard
SETUP	Enter the system settings interface
REFRESH	Refresh the current camera status
MAIN	SUB	Switch between main and sub video streams
PREVIEW	Enable / Disable video preview

Button Group 3 (Camera Selection)	
CAM 1 - CAM 6	Quickly connect to and control cameras 1 - 6
CAM ..	Camera selection button (for accessing cameras numbered above 6)

Button Group 4 (Lens Control)	
ZOOM T (Tele)	Zoom in (hold to zoom continuously, release to stop)
ZOOM W (Wide)	Zoom out (hold to zoom continuously, release to stop)
AUTO FOCUS	Set camera focus mode to auto
ONE PUSH AF	Trigger one-push autofocus
FOCUS FAR	Manually adjust focus farther (hold to adjust, release to stop)
FOCUS NEAR	Manually adjust focus closer (hold to adjust, release to stop)

Button Group 5 (Custom Function Keys)	
F1 - F4	User-defined function keys (functions must be configured in system settings)

Button Group 6 (Preset Control)	
CALL HOME	Call the camera's HOME (initial/reset) position
CALL PRESET	Call a saved camera preset (use number keys to select preset ID)
SET PRESET	Save current camera position to a preset (use number keys to assign ID)
CLEAR PRESET	Delete a specific preset (use number keys to select preset ID)

Button Group 7 (Numeric Input)	
0 - 9	Number keys Short press: Quickly call the corresponding preset Long press: Save current status to the corresponding preset
DELETE	Delete characters or numbers in input fields
ENTER	Confirm input or execute an action

2.2 Knob Functions

This controller is equipped with 4 multifunction control knobs, 3 of which support press-to-switch control modes.
The LED indicator below each knob lights up to indicate the currently active control function.

RED GAIN	BLUE GAIN	Adjust the red and blue gain for camera white balance
IRIS	SHUTTER	GAIN	Adjust the iris, shutter speed, and gain for camera exposure
PT SPEED	ZOOM SPEED	Adjust the pan/tilt movement speed and lens zoom speed
PRESET SPEED	Adjust the pan/tilt speed when calling a preset position (only supported by some camera models)

2.3 Joystick Functions

Operating	Output Control	Operating	Output Control	Operating	Output Control
	Upward		Downward		Left
	Right		Zoom +		Zoom -

Press the joystick top button:
Short Press: Confirm in the camera menu (OK/ENTER).
Long Press: Recall the camera's PTZ HOME (initial/return) position.

3 Network Connection and IP Setup

Before operating a PTZ camera via LAN, ensure the network meets these requirements and configure the controller's IP address accordingly.
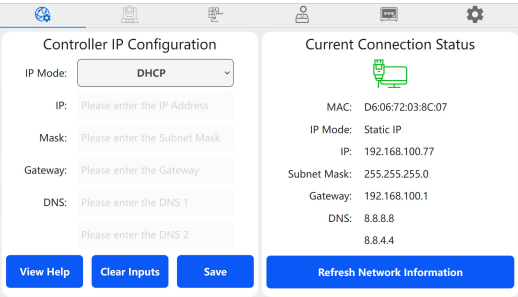
1. Network Requirements

The controller and the camera must be connected to the same LAN (e.g., through a router or switch).
The controller's IP address must be in the same subnet as the camera's IP address.
Example:

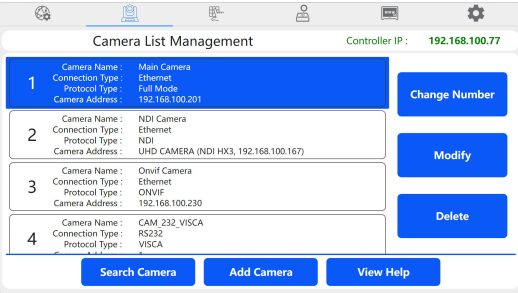| Device	IP Address	Subnet Mask	Gateway
Camera	192.168.0.200	255.255.255.0	192.168.0.1
Controller	192.168.0.7	255.255.255.0	192.168.0.1

2. Controller IP Configuration

(1) Press the SETUP key to enter the system settings page.
(2) Select the Network Configuration icon at the top to open the Controller IP Configuration page.
(3) Page Layout Overview:
Left panel: IP configuration parameters (for entering IP address, gateway, etc.)
Right panel: Real-time network connection status (e.g., current IP, connection status, etc.)
(4) According to your network setup, select an IP Mode in the left panel and enter the required information:
DHCP Mode:
The controller automatically obtains all network parameters (IP, gateway, subnet mask, DNS) from the router/switch.
Prerequisite: DHCP must be enabled on your network equipment.
Static IP Mode:
Manually set the controller's IP address, subnet mask, default gateway, and DNS.
(5) Once all fields are filled in, click [Save] to apply the new settings.
(6) Note: After saving, the system may take about 10 seconds to initialize the new IP address.

Controller IP Configuration

IP Mode: DHCP
IP: Please enter the IP Address
Mask: Please enter the Subnet Mask
Gateway: Please enter the Gateway
DNS: Please enter the DNS 1...
Please enter the DNS 2...

Current Connection Status

MAC: D6:06:72:03:8C:07
IP Mode: Static IP
IP: 192.168.100.77
Subnet Mask: 255.255.255.0
Gateway: 192.168.100.1
DNS: 8.8.8.8
8.8.4.4

View Help | Clear Inputs | Save | Refresh Network Information

4.1 Adding a Camera

Press the SETUP key to enter the system settings page.
Click the Camera icon at the top to open the Camera Search & Management page.

Camera List Management — Controller IP: 192.168.100.77

1	Camera Name: Main Camera / Connection Type: Ethernet / Protocol Type: Full Mode / Camera Address: 192.168.100.201	Change Number
2	Camera Name: NDI Camera / Connection Type: Ethernet / Protocol Type: NDI / Camera Address: UHD CAMERA (NDI HX3, 192.168.100.167)	Modify
3	Camera Name: Onvif Camera / Connection Type: Ethernet / Protocol Type: ONVIF / Camera Address: 192.168.100.230	Delete
4	Camera Name: CAM_232_VISCA / Connection Type: RS232 / Protocol Type: VISCA	

Search Camera | Add Camera | View Help

4.2 Connection Methods and Protocols

Supported Connection Methods:

Connection Method	Physical Interface
LAN (Local Network)	NET (RJ45)
Serial Port	RS-232, RS-422, RS-485 Channel 1 (TA/TB), RS-485 Channel 2 (RA/RB)