FlexWATCH®
AI Control User Manual

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www.flexwatch.com

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※ The images and contents of this manual may be subject to change without prior notice to improve product performance. In such cases, there may be some differences from the contents and images of this manual.

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1. Introduction

This manual is compatible with FlexWATCH® cameras using ru / rv firmware.

AI Control supports the detection of Person, Car, Motorcycle, Bicycle, Truck and Bus, which are data learned through AI, and displays them on a web browser. Additional, it also provides the capability to recognize and display human faces using Face Detection.

In addition, if you set the Intrusion and Line Cross functions using the Video Analytics function, This allows you to detect objects that intrude into specific area or count objects that across designated lines.

The AI settings feature is optimized for browsers based on the Chromium engine. It is available on browsers like Edge and Chrome.

※ Up to 16 objects can be detected

Note: Instructions and information described in this manual are for FlexWATCH® cameras using ru /rv firmware

2. Enter to Menu

When accessing the camera through a web browser, the main page as shown below appears. Click the ADMIN icon on the top left to enter the administrator page for the product.

※ In order to use this function, the IP settings of the camera must be set in advance. You can set camera IP by using IP Installer PLUS on the software download page at http://flexwatch.com/51

※ For more information on Web Admin, download 'FlexWATCH WEB ADMIN User Manual' from the manual download page and refer to it.

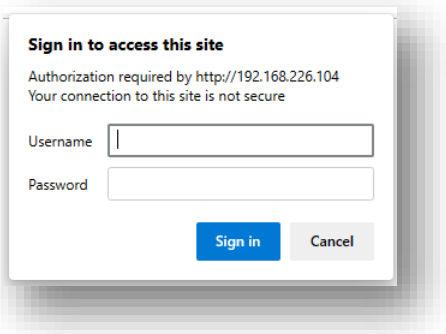
2.1 Enter to Web Admin Page

To log in to the Web Admin Page, execute the following.

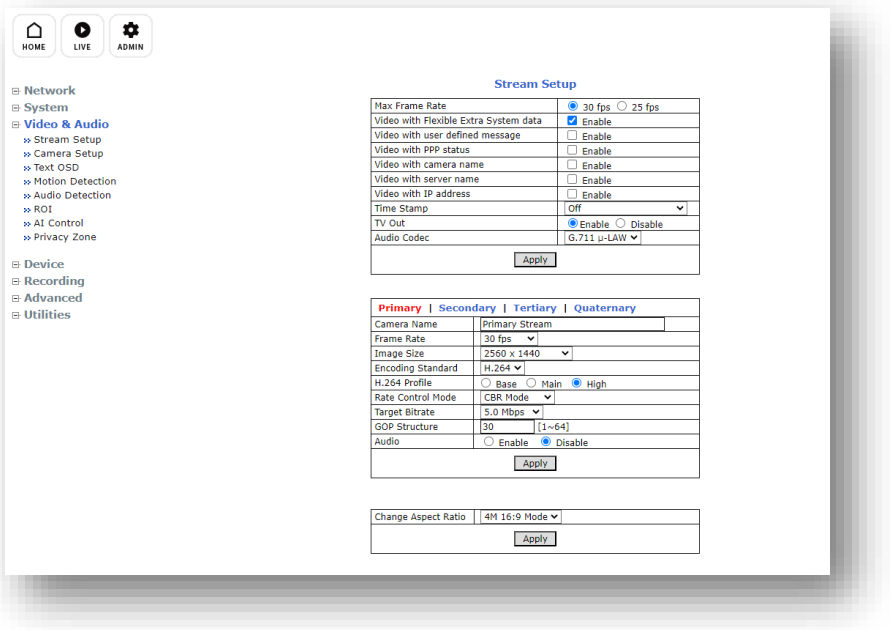
1) Connect by entering the IP address of the camera in the address bar of your web browser.
2) When connected, the following homepage screen is displayed.

3) Click on ADMIN in the upper left corner.
4) Enter username and password (Default : root / root) and click the Login button.

Note: The default User Name and Password is "root"/"root".



5) When login is successful, the Web Admin page appears as shown below.



The Web Admin menu may appear differently depending on the camera model.
You can use the AI function by clicking the AI Control menu shown in the tree menu on the left.

2.2 Structure of AI Control Menu

The AI Control Page structure is as follows.

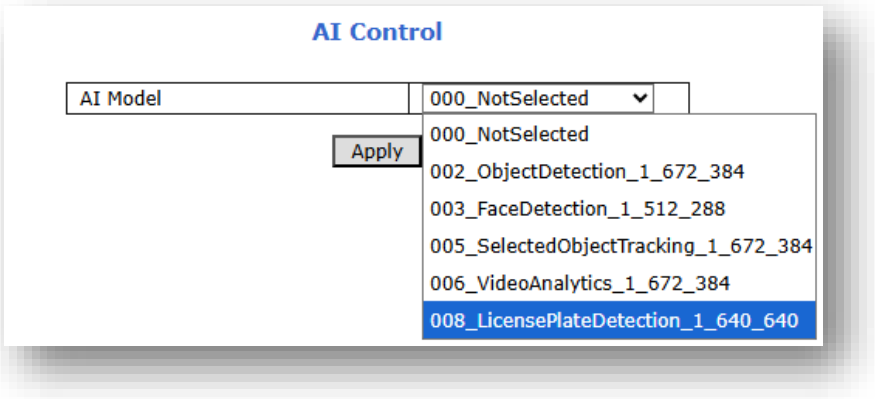
Category	Main Menu	Sub Menu	Remark
Video & Audio	AI Control	000_NotSelected	No Use
		002_ObjectDetection_1_672_384	Setup of Object Detection
		003_FaceDetection_1_512_288	Setup of Face Detection
		005_SelectedObjectTracking_1_672_384	Detect people and track objects
		006_VideoAnalysis_1_672_384	Setting up video analytics based on object detection
		008_LicensePlateDetection_1_640_640	Setting up license plate detection

※ The Object Detection, Face Detection, SelectedObjectTracking, Video Analytics, LicensePlateDetection functions in the submenu operate independently and cannot be used simultaneously.

3. AI Control

This menu handles settings related to Object Detection, Face Detection, SelectedObjectTracking, Video Analytics, and LicensePlateDetection.

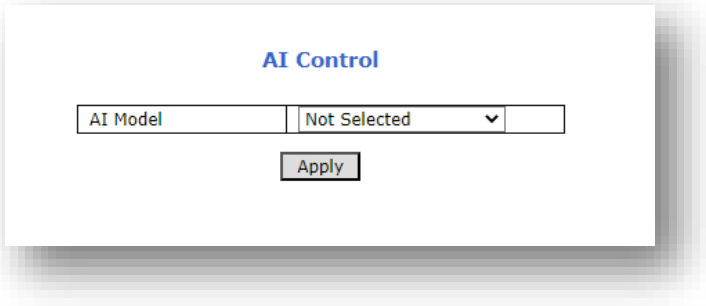
Changing the AI model takes about 3-4 minutes to apply and requires a reboot.



3.1 Not Selected

The AI function is not activated. If you select the desired items except Not Selected in the AI Model and click the Apply button, the function will be applied and activated.

If you do not use the AI function, set it to Not Selected.

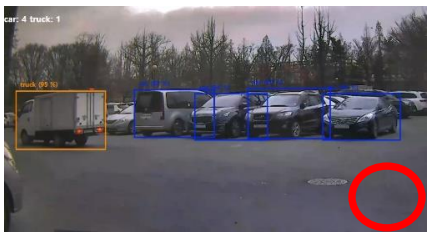


3.2 Object Detection

This function uses AI to detect pre-learned objects (people, cars, motorcycles, bicycles, trucks, buses) and displays the detected objects on the live view screen in the form of bounding boxes.

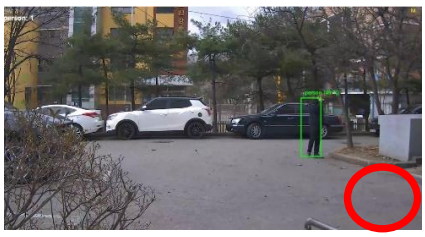
> Note: The recognition rate may change depending on the camera angle, object size, direction, screen brightness, etc. Usually, the front, side, and black sides can be recognized, but it may not be recognized when shooting from above, when the object is covered, or when a large number of objects overlap

*recognizable screen



Car & Truck

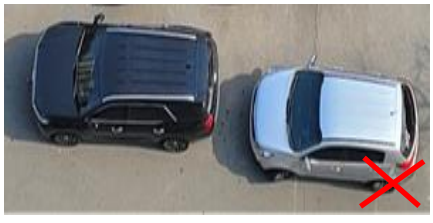
Car & Truck



People

*unrecognizable screen

Car & Truck



Car & Truck

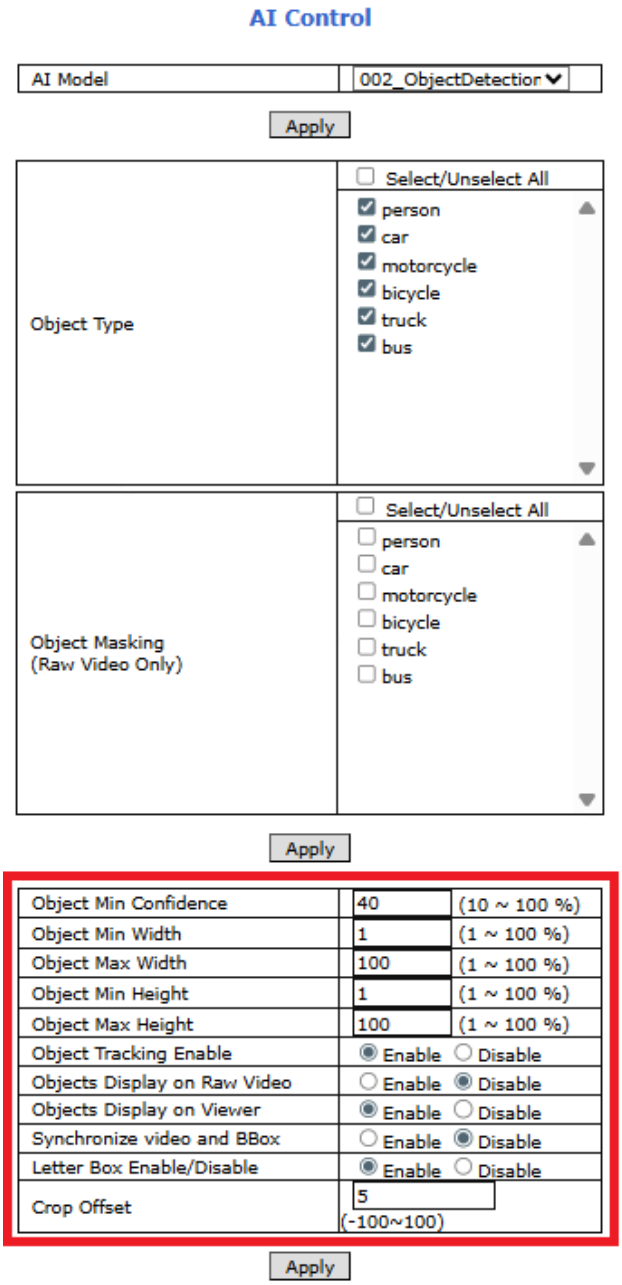
Bicycle

Up to 16 objects can be detected and displayed.

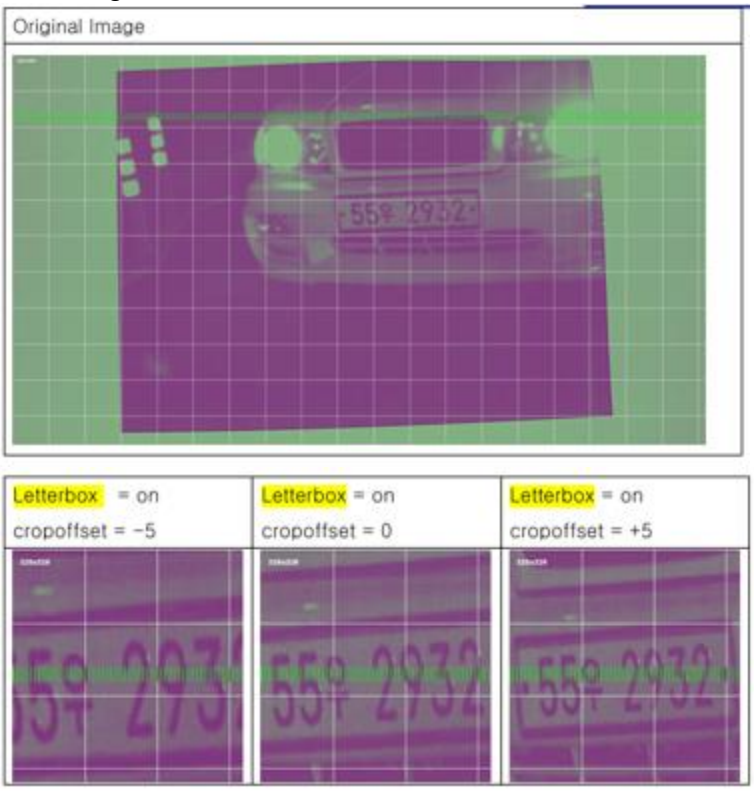
The recognition rate of each analyzed object is displayed in %, and the number of detected objects is displayed at the top left of the Viewer.

3.2.1 Setup of Object Detection (commonness)

While object types are displayed differently for each AI model, the object settings menu (the red box below) is identical to that of other AI models. Please refer to the manual below.



Menu	Description
Object Type	Select the Object Type to display. 1) Person: Recognizes and displays a person. 2) Car: Recognizes and displays a car. 3) Motorcycle: Recognizes and displays a motorcycle. 4) Bicycle: Recognizes and displays a bicycle. 5) Truck: Recognizes and displays a truck. 6) Bus: Recognizes and displays a bus. * Multiple objects can be selected.
Object Masking	The "Object Masking" feature automatically detects and masks specific objects (e.g., objects) in a video. This helps protect personal information and prevents the exposure of sensitive information. Object masking only works when the 'Object Display on Raw Video' feature is enabled. Select the object type to mask. 1) Person: Masks a person.

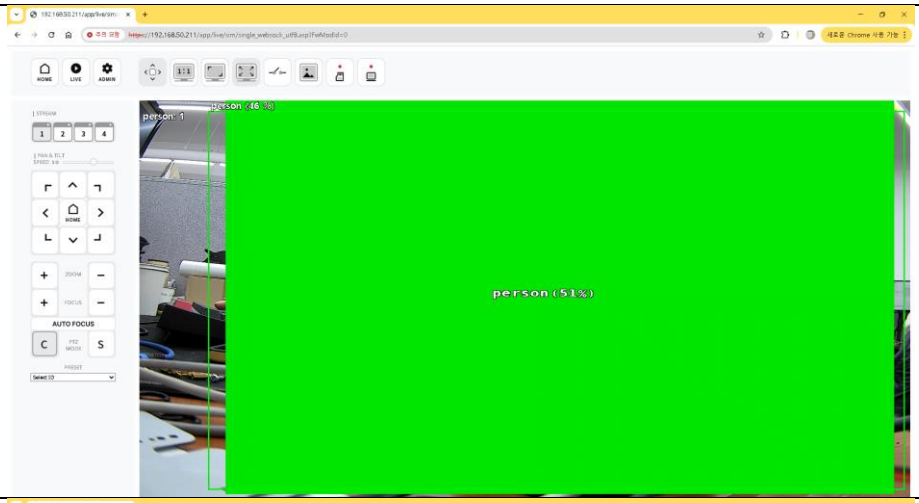
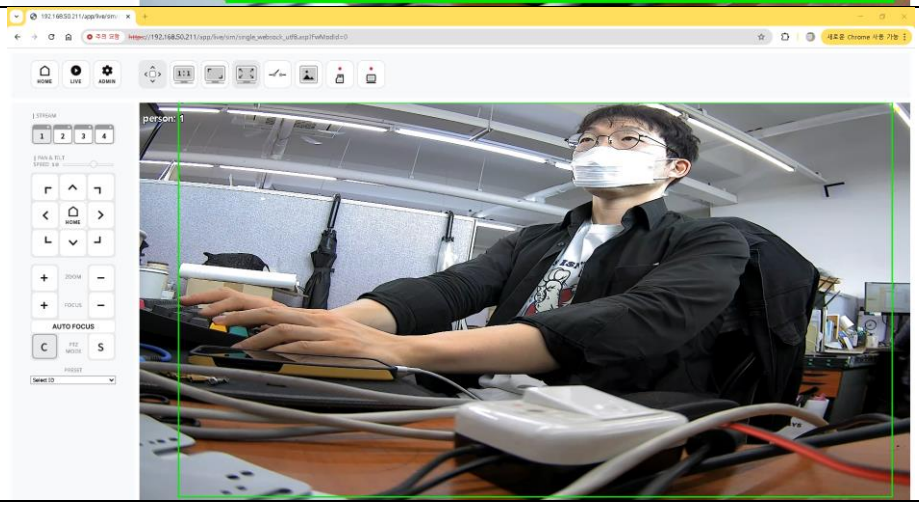
	2) Car: Masks a car. 3) Motorcycle: Masks a motorcycle. 4) Bicycle: Masks a bicycle. 5) Truck: Masks a truck. 6) Bus: Masks a bus. * Multiple objects can be selected.
Object Min Confidence (commonness)	You can set the reliability of the object. The standard is %. You can reduce errors by adjusting this value. If you set it to 70, it will be displayed when the reliability of the set object is 70% or higher. (The minimum value is 40.)
Object Min Width (commonness)	Sets the minimum width of the object. (Minimum is 1.) The size of the recognition area will be set in proportion to the original image size.
Object Max Width (commonness)	Sets the maximum width of the object. (The maximum is 100.) The size of the recognition area will be set in proportion to the original image size.
Object Min Height (commonness)	Sets the minimum height of the object. (Minimum value is 1.) The size of the recognition area will be set in proportion to the original image size.
Object Max Height (commonness)	Sets the maximum height of the object. (The maximum is 100.) The size of the recognition area is set in proportion to the original image size.
Object Tracking Enable	Enables object tracking.
Object Display on Raw Video (commonness)	This is a function that displays the recognized object as a bounding box in the original image when the camera transmits the video. This function can be used in various clients (NVR, VLC, etc.).
Object Display on Viewer (commonness)	This feature allows you to display or hide objects recognized in the camera's web Viewer/Player.
Synchronize video and BBox (commonness)	This option is only used when receiving video via fwstreamcgi of Seyeon Tech SDK.
Letter Box Enable/Disable (commonness)	This menu enables or disables the function to maintain the aspect ratio when making inferences when the customer trained the model with the Letter Box option enabled and the aspect ratio of the object is maintained.
Crop Offset (commonness)	This is a function to set the margin range of the inference result (bounding box) of the first inference model when using a multi-stage inference model. Please refer to the image below. 

- Example of Object Masking Screen

The "Object Masking (Raw Video Only)" feature automatically masks detected objects.

This protects personal information and prevents the exposure of sensitive information.

Object masking only works when the 'Object Display on Raw Video' feature is enabled.

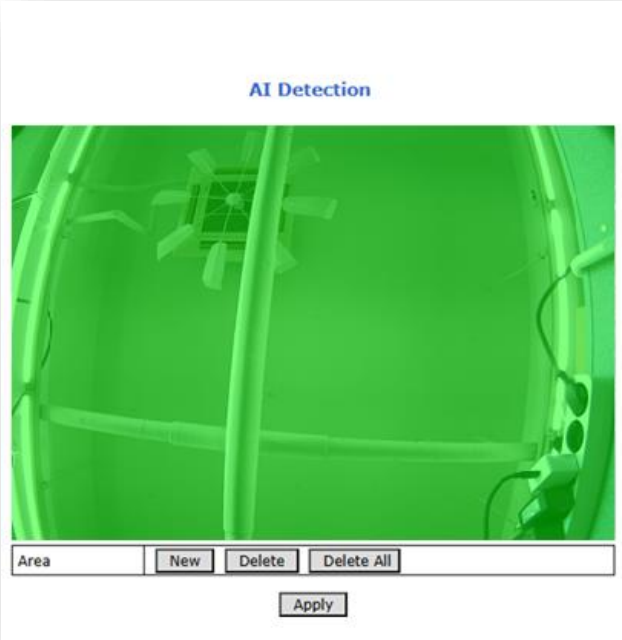
Apply object masking	
No masking applied	

3.2.2 AI Detection Area Setting (Commonness)

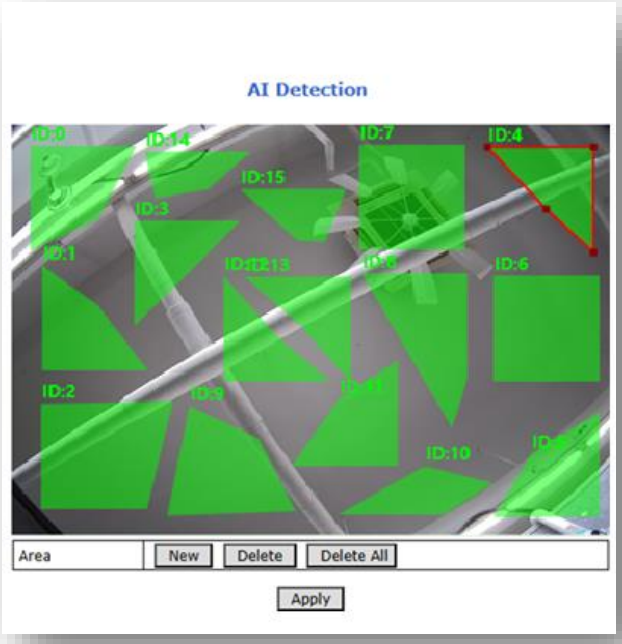
Basically, one whole area is set. The area marked in green is the detection area.

You can select the detection area and move its position or change its shape using the corners.

You can split it into up to 16 areas.



Name of Button	Description
New	Add a new area
Delete	Delete the set area.
Delete All	Delete all areas.
Apply	Apply the settings. (If the area is changed, you must click the Apply button.)



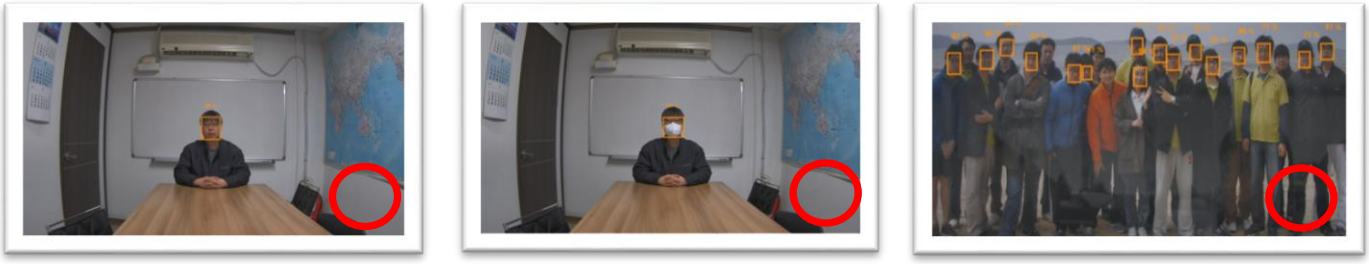
16 areas can be designated from ID:0 to ID:15.

3.3 Face Detection

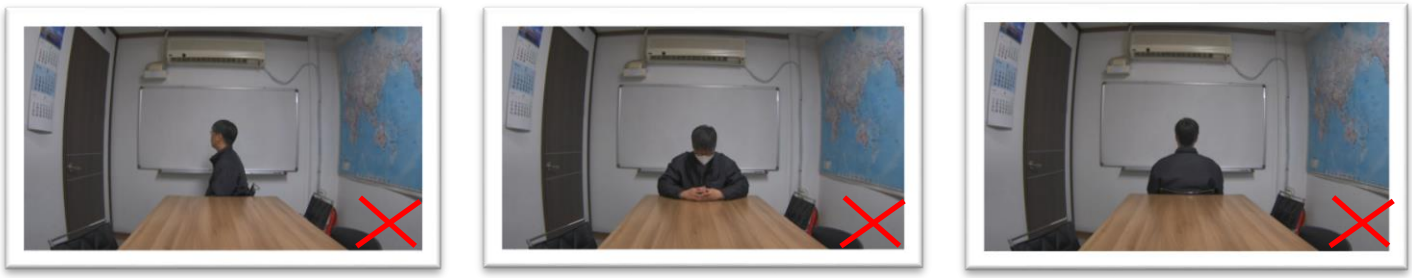
This feature detects and displays human faces. Up to 16 faces can be recognized and displayed. When a face is detected, an orange box is displayed, and the confidence level is displayed as a % symbol.

> *Note: Recognition rates may drop if the face displayed on the screen is significantly small, is viewed from the side, or is wearing a hat, mask, etc.*

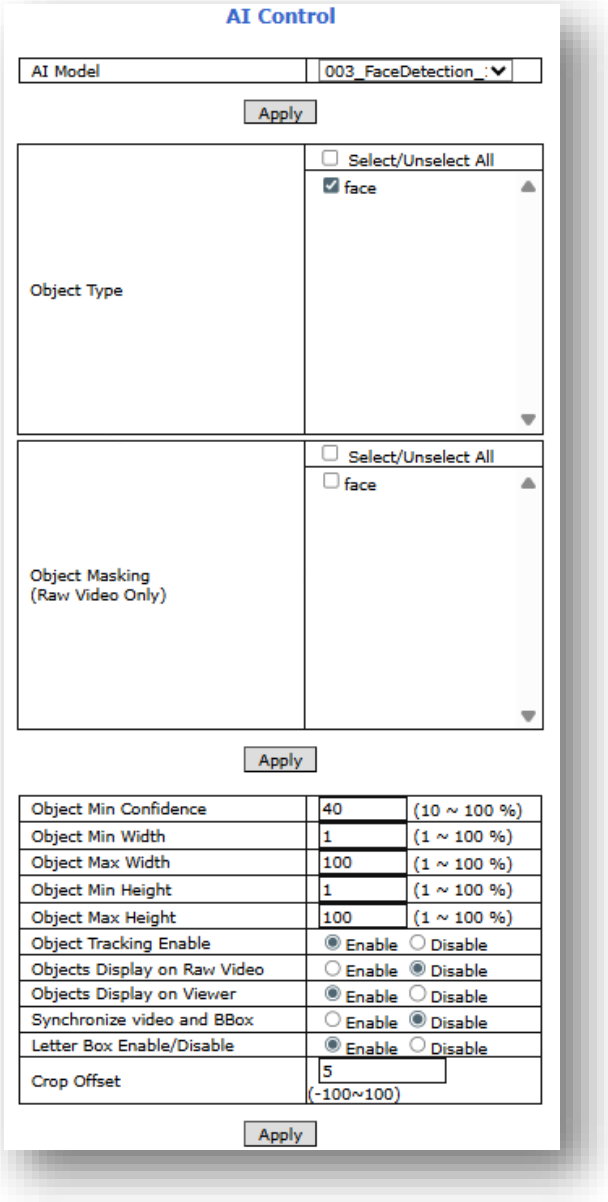
* recognizable screen



*unrecognizable screen



3.3.1 Face Detection Setting



※ The detailed functions and area setting functions are identical to the ObjectDetection function.

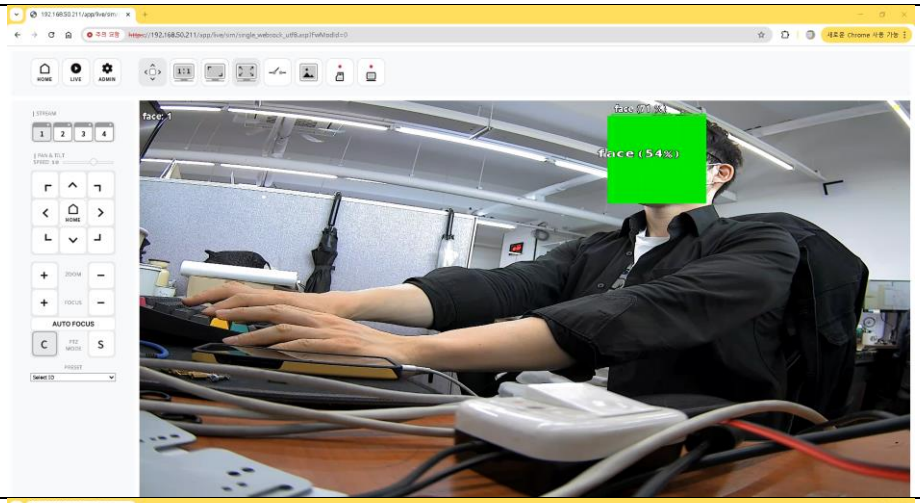
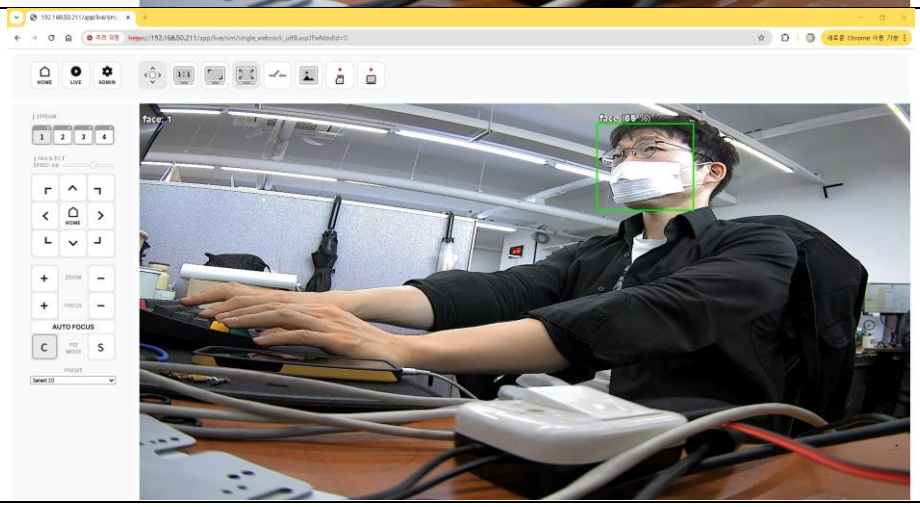
Please refer to the ObjectDetection section.

- Example of Object Masking Screen

The "Object Masking (Raw Video Only)" feature automatically masks detected objects.

This protects personal information and prevents the exposure of sensitive information.

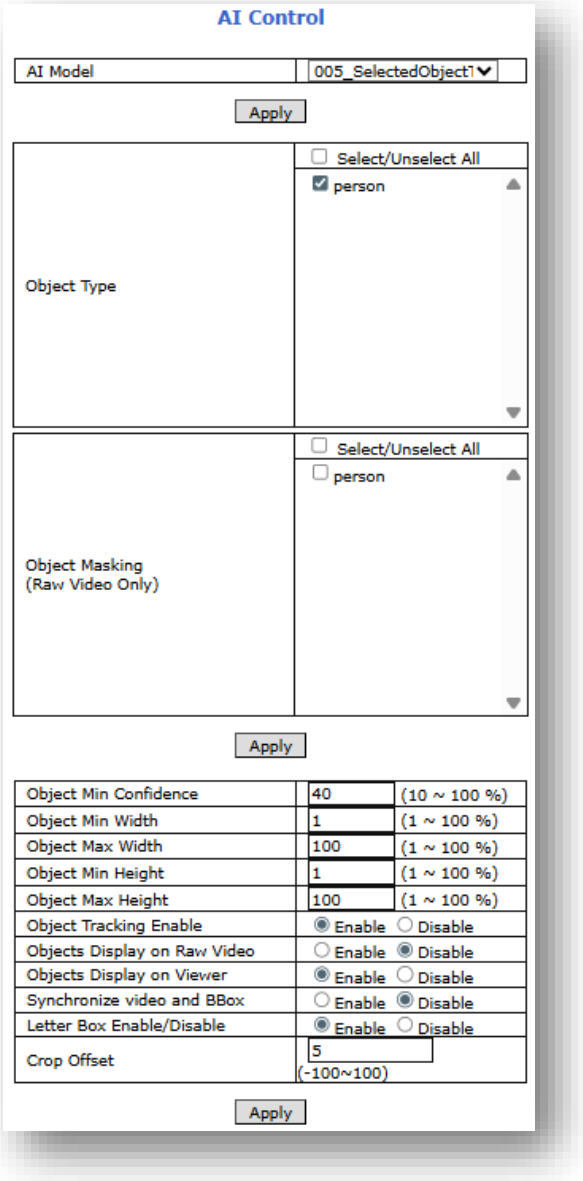
Object masking only works when the 'Object Display on Raw Video' feature is enabled.

Apply object masking	
No masking applied	

3.4 SelectedObjectTracking

SelectedObjectTracking is a feature that allows a PTZ camera to detect and track people.

3.4.1 SelectedObjectTracking settings

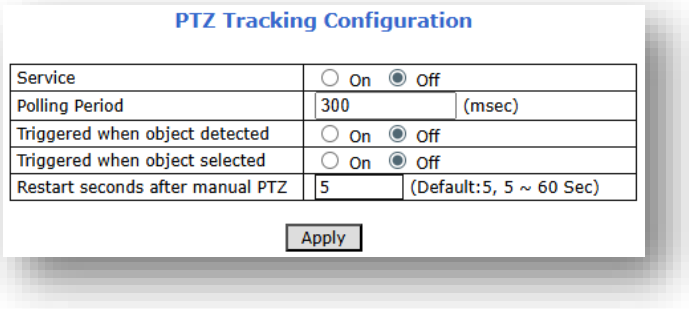


Note: This feature is only supported by PTZ cameras.

※ The detailed functions and area settings are identical to those of the ObjectDetection feature.

Please refer to the ObjectDetection section.

For PTZ cameras, you can enable the service by going to Web Admin → Device → PTZ Tracking menu and setting it to "On." For more information, please refer to the PTZ manual.



- Service: Sets whether to use the PTZ tracking function.
- Polling period: The period for detecting objects. The unit is ms.
- Object detection mode: Operates when an object is detected.
- Object selection mode: Operates when an object is selected.
  - Object selection mode uses Internet Explorer and works in conjunction with Active-X.
- PTZ control restart time: This function specifies how many seconds after the user controls the PTZ to start the tracking function.

3.5 Video Analytics

This is a menu to set Intrusion, Line Cross, and Tempering.

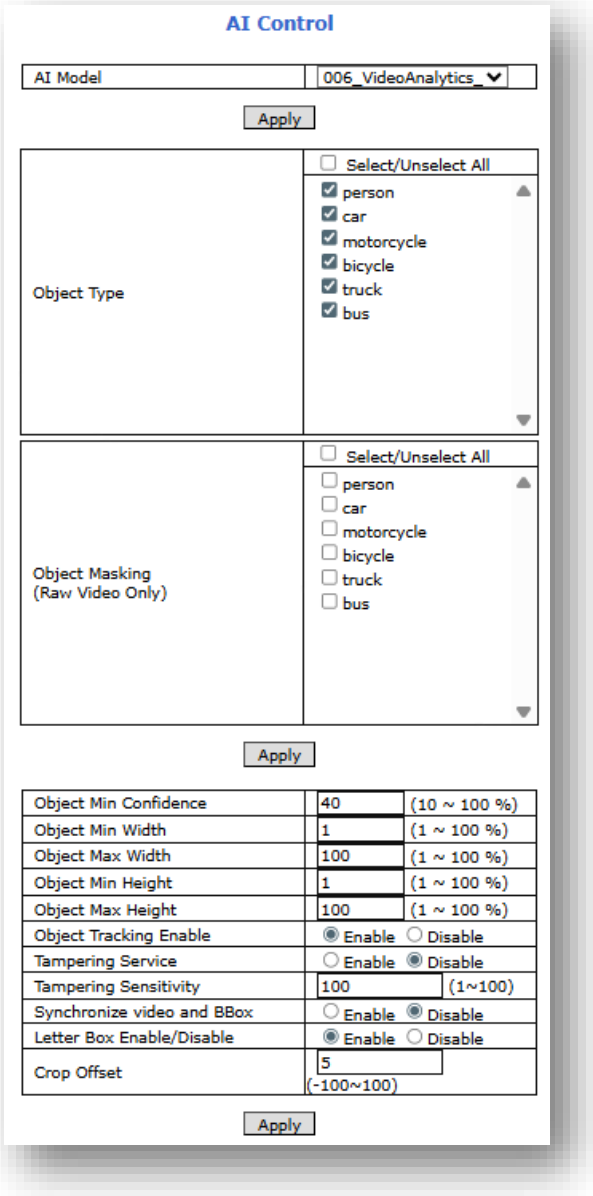
If the set object is satisfied, movement indication is supported, and if invasion or line crossing is set, numbers are displayed when the area is passed.

The above functions can be used simultaneously, and up to 4 can be set.

> *Note: Count function is not supported in setting window.*

3.5.1 Video Analytics Setting

3.5.1.1 Object Type setting

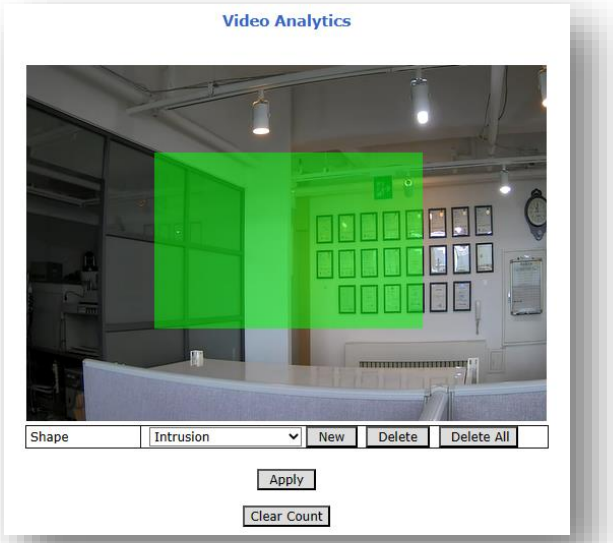


※ The detailed functions and area setting functions are identical to the ObjectDetection function.

Please refer to the ObjectDetection section.

Menu	Description
Tampering Service	This feature displays a warning on the screen when a sudden change in the video (such as a change in angle, sudden darkening, or brightening) is detected. If detected, the entire screen will be displayed in a red tint for 5 seconds. Enable: Enables the tampering feature. Disable: Disables the tampering feature.
Tampering Sensitivity	Sets the sensitivity to use for tampering. (Higher numbers mean more sensitive.)

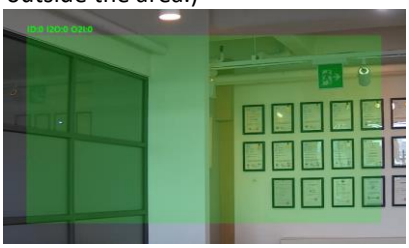
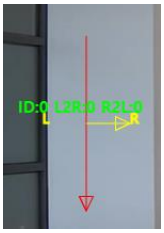
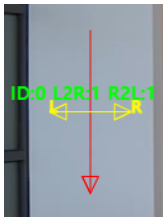
3.5.1.2 Video Analytics setting (Intrusion / Line Cross)



Menu	Description
Shape	Intrusion / Line Crossing-Left to Right / Line Cross – Right to Left / Line Crossing – Bi-direction
New	Add the function selected in Shape
Delete	Delete the selected function.
Delete All	Delete all set functions.

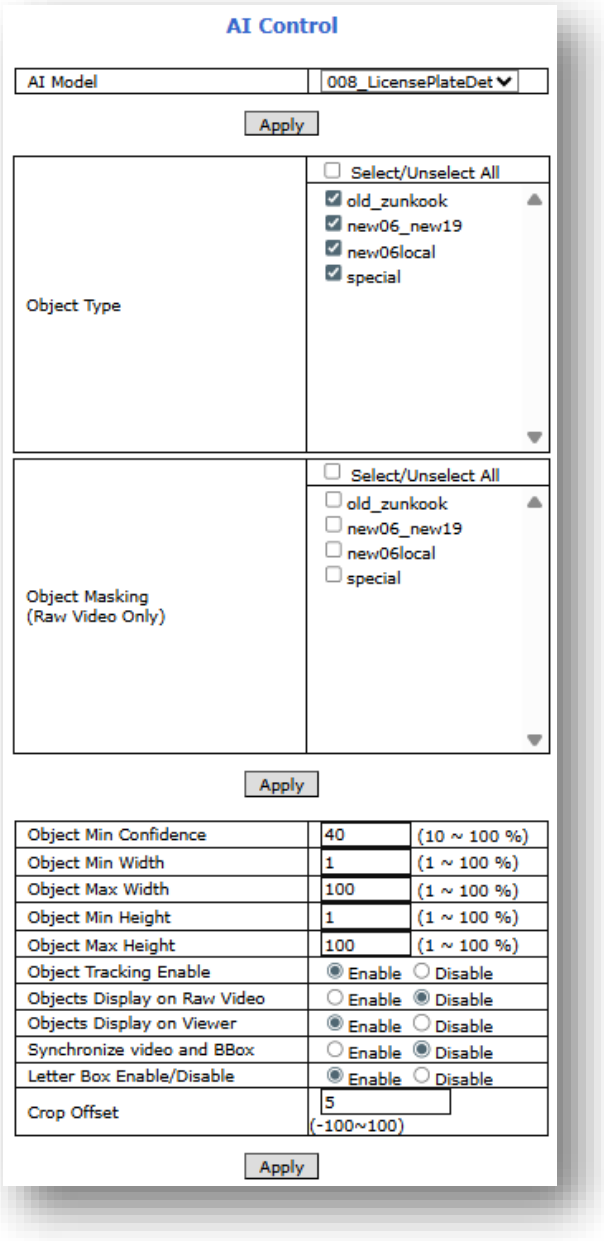
Apply	Apply the set function. (If you add a function or change a locatioin, you must apply it by clicking the Apply button.)
Clear Count	Initialize the number counted in the viewer.

3.5.1.3 Shape setting

Function	Description
Intrusion	It is an invasion function, and it is a function that counts when an object touches the marked area. Counts I2O (objects moved out of the area) and O2I (objects moved from outside the area.)  Can be repositioned or resized.
Line Crossing-Left to Right	This is the line cross function. This function counts objects moving from left to right.  It can be repositioned or resized.
Line Crossing – Right to Left	This is the line cross function. This function counts objects moving from right to left It can be repositioned or resized.
Line Crossing – Bidirection	This is the line cross function. This function counts objects moving in both directions  It can be repositioned or resized.

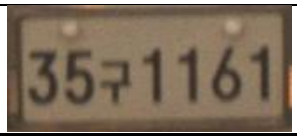
3.6 LicensePlateDetection

This model detects four types of Korean license plates.



※ The detailed functions and area setting functions are identical to the ObjectDetection function.

Please refer to the ObjectDetection section.

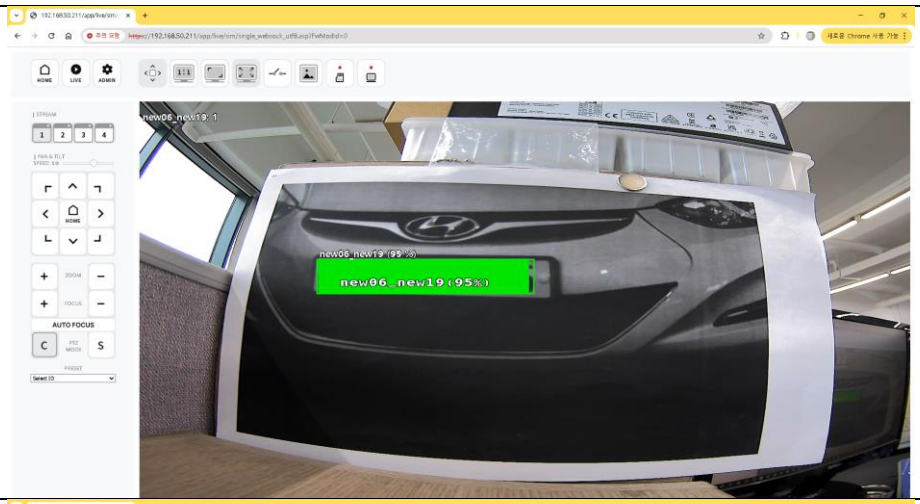
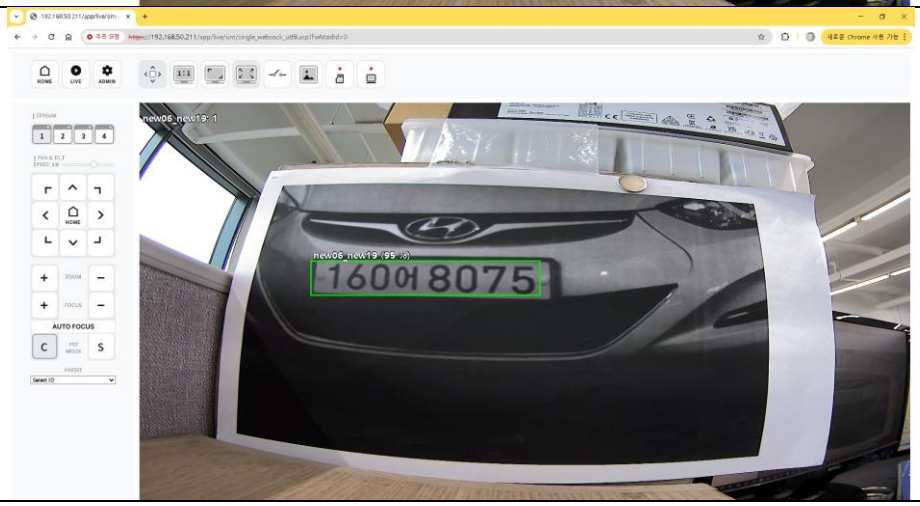
Object type	Description
old_zunkook	This is for recognition of the first generation green license plates used initially. (ex: Seoul 12 / Ga 1234) -. Personal license plates with regional symbols such as Seoul and Gyeonggi -. National license plates without regional symbols -. Commercial license plates with regional symbols. These are license plates used for taxis, trucks, etc.
new06_new19	This is for recognizing 2nd generation white license plates. (ex: 12ga 1234) - One line without regional code - Short personal license plate 
new06local	This is for 3rd generation white license plate recognition. (ex: 123ga 1234) - First three digits personal license plate - First three digits with Taegeuk pattern - Long commercial license plate
special	For recognition of buses, cargo, and special vehicles. (Yellow (commercial) license plate recognition) -. Personal, commercial special vehicles

- Example of Object Masking Screen

The "Object Masking (Raw Video Only)" feature automatically masks detected objects.

This protects personal information and prevents the exposure of sensitive information.

Object masking only works when the 'Object Display on Raw Video' feature is enabled.

Apply object masking	
No masking applied	

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