



Web Guide

Extension software
(AI On-site Learning Application)

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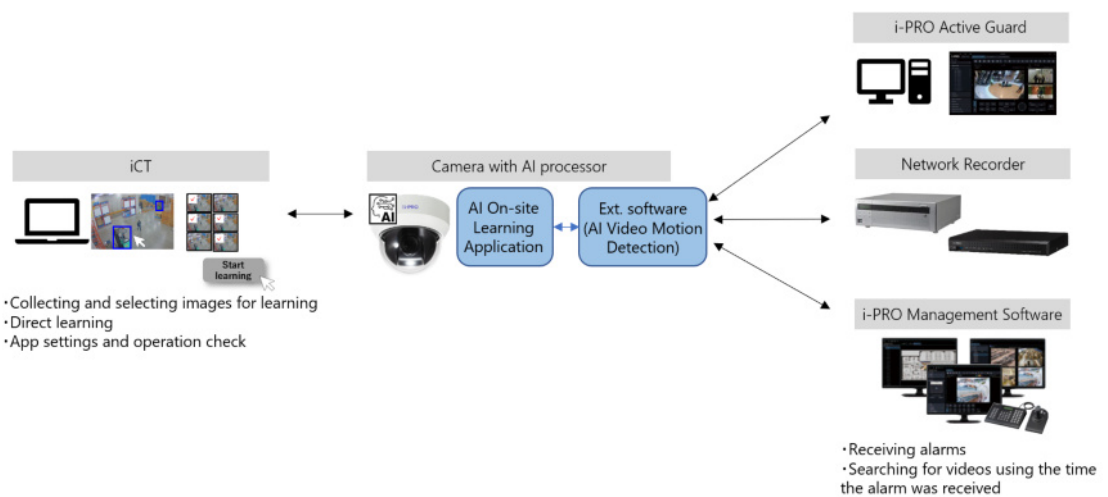
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1. Introduction

This manual explains how to register the AI On-site Learning application (hereinafter referred to as "the product") to cameras, how to make settings before starting operation, and how to perform operations. The camera must be registered before use. Be sure to read the camera's instruction manual when using the camera. The settings shown in this manual may differ depending on the camera model used and the i-PRO Setting Tool version (hereinafter referred to as iCT).

1.1 Product Overview



This software allows you to easily operate AI network cameras (sold separately, hereinafter referred to as "cameras"). It allows you to add objects that can be detected by AI Video Motion Detection installed on the cameras. In addition, if you cannot obtain the expected detection accuracy, the camera can learn scenes that suffer from problems in accuracy and improve the detection accuracy of AI Video Motion Detection.



For more information on AI Video Motion Detection, see the following URL.

→ [AI Video Motion Detection](#)

Use the iCT to set up this product.



•For more information on the iCT, see the following URL. Use iCT V3.10 or later to set up this product.

→[iCT](#)

•See the following URL for more information on compatible models and software versions of this product.

→[Technical information](#)

<C0103>

* This is the control number. Enter this number to search for information on our support website.



This product is required for each camera.

1.2 Features

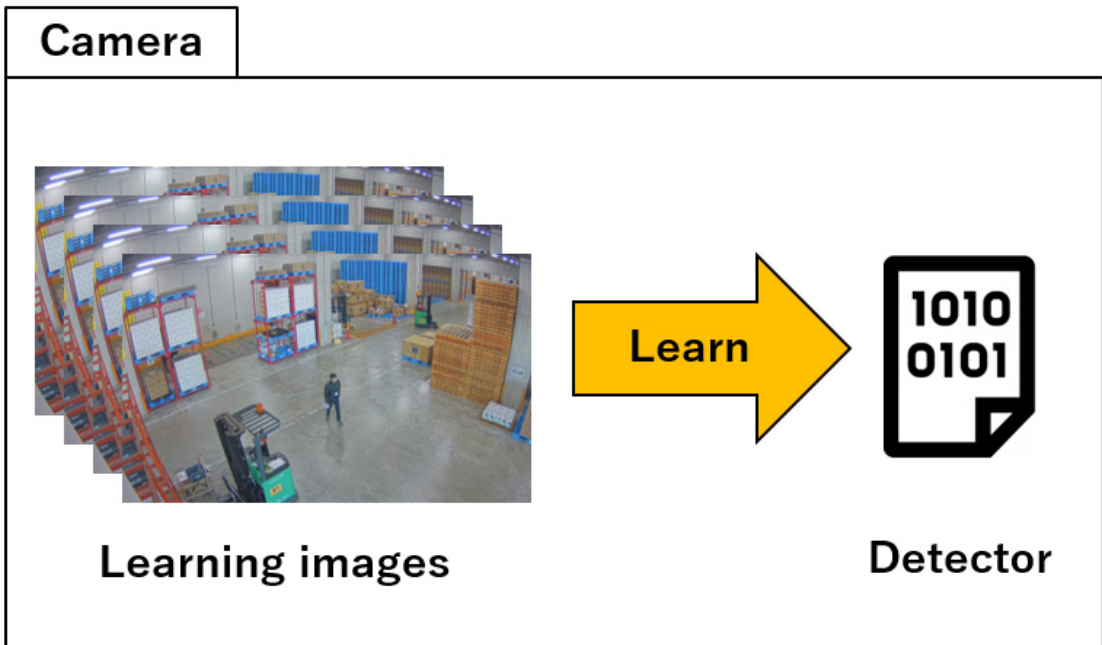
Terms appearing in this product description are described below.

Learning images

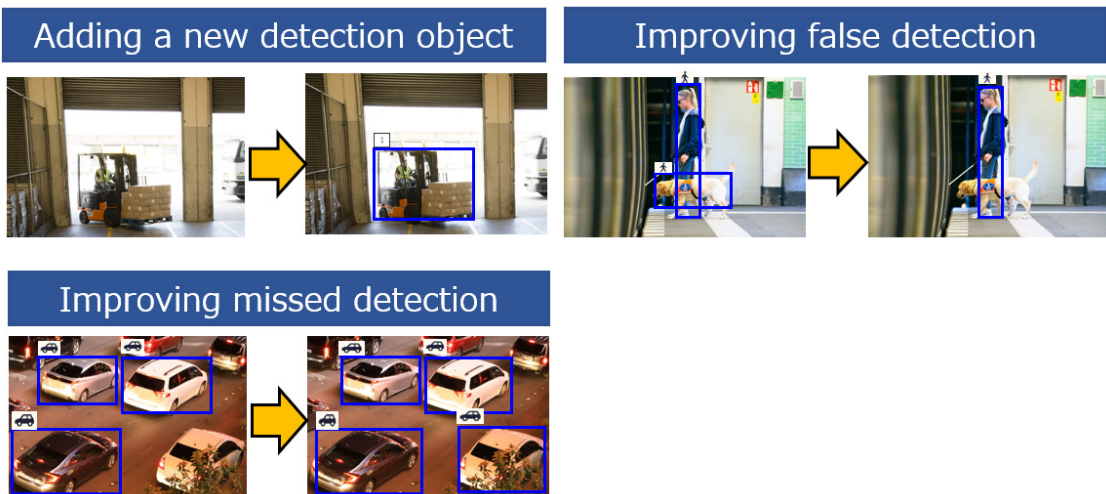
Shows the still image to be used for learning. Use the images directly shot from the camera or JPEG/PNG images saved on your PC. These are saved in the camera.

Detector

This is the learning result created by AI from multiple learning images. These are saved in the camera.



- The following functions improve the accuracy of AI Video Motion Detection.
 - Adding a new detection object: Learn and monitor objects such as forklifts other than human, vehicle, and bicycle that are detect by AI Video Motion Detection.
 - Improving false detection: Learn about scenes that falsely detect objects other than human, vehicle and bicycle as human, vehicle and bicycle in AI Video Motion Detection and improve false detection.
 - Improving missed detection: Learn scenes where moving objects (human, vehicle, and bicycle) are difficult to detect by AI Video Motion Detection and improves missed detection.
- You can define and learn up to five detection objects for each detector.



The forklift was not detected prior to learning, but [Adding a new detection object] function

enables the forklift to be detected after learning, and the alarm is activated when the forklift enters the detection area.

<https://www.youtube.com/embed/FITvh0JpJnU?si=8eiM0nk8VRpegpAw>

1.3 Camera Installation Conditions

- The following shows the minimum and maximum detection sizes for the product.

Network Camera Resolution	Minimum Detection Size (Pixels)	Maximum Detection Size (Pixels)
2 MP	100 x 50 or 50 x 100	(W)960 x (H)540
5 MP	133 x 66 or 66 x 133	(W)1280 x (H)960
6 MP	173 x 87 or 87 x 173	(W)1664 x (H)936
8 MP	200 x 100 or 100 x 200	(W)1920 x (H)1080

- Make sure other environmental recommendations align with the recommended environment for expansion software used with this product.



For more information on AI motion detection applications, see the following URL.

→ [AI Video Motion Detection](#)

1.4 Precautions

The following events may cause missed or false detections.

- When there is only a small difference in brightness between the background and the subject.
- When the image brightness is low, such as at night.
- When the subject is out of focus.
- When the subject is blurred.
- When the subject is too small or too large.
- When the subject is overexposed or too deep in shadow.
- When lighting conditions change easily, such as outdoors or near windows.
- When there is interference from external light, such as sunlight or car headlights, or reflected light, such as reflections from puddles of water.

- When strong external light shines in, casting shadows on the subject or other objects.
- When the camera lens is wet or dirty.
- When the camera shakes.

Other precautions are described below.

- If you change the camera image settings before or after learning, it may cause a failure or false detections. Perform the following procedures again when you change the camera's [Image capture mode] or [Image rotation] settings.
 - [3.2 Saving the Learning Image](#)
 - [3.3 Set bounding boxes and learn](#)
- [Image rotation] settings supported by this product are [0° (off)] and [180° (Upside/down)].
- You need to collect and train with images that show the expected brightness levels during operation.
- When using under IR-LED, you need to learn with images under IR-LED.
- The detection performance of on-site learning function depends on the learning results and the environments you use. Not suitable for use in use cases where perfect detection performance is required. Be sure to check the operation at the installation site. We do not guarantee any detection performance.
- This product cannot be set or perform learning from multiple PCs at the same time.
- When the camera's [Configuration data initialization] is executed, the camera settings, learning images, and detectors are not initialized. Note, however, that this may be affected by the image quality settings on the camera, so be sure to check the operation again.
- If this product is uninstalled, the learning images and detectors will be deleted.

2. Preparation

2.1 Checking the product and AI Video Motion Detection are installed.

2. Preparation

The following outlines the work flow up to operation. This chapter describes ① and ②. (If you cannot select [AI On-site Learning] from [Extension Software] on the Settings screen, use your browser.)

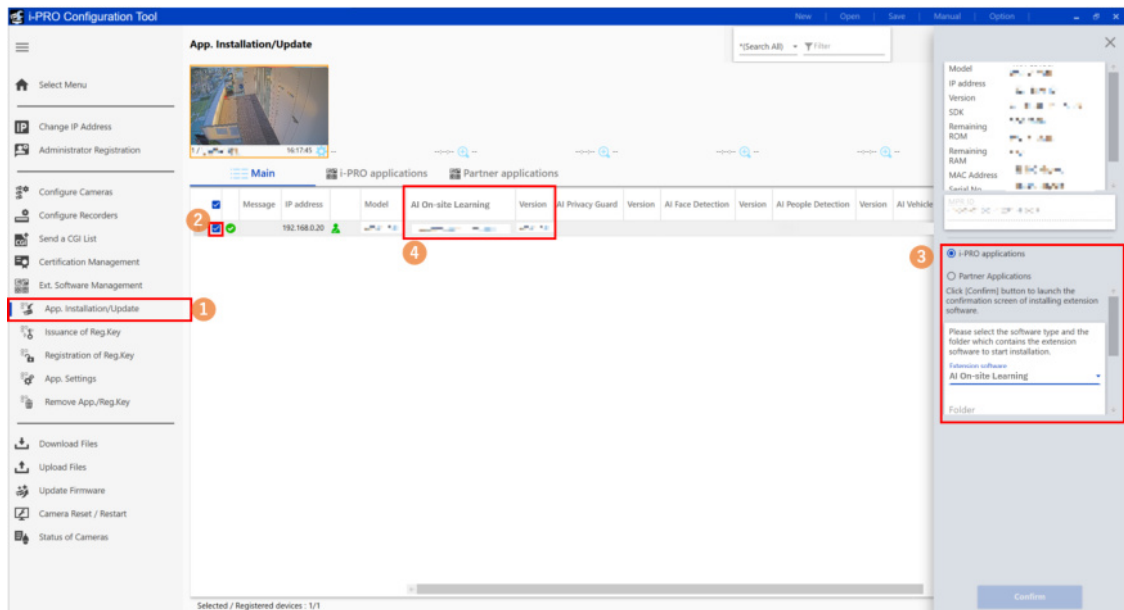
- ① Check that the product and AI Video Motion Detection are installed.
→[2.1 Checking the product and AI Video Motion Detection are installed.](#)
- ② Install the product and AI Video Motion Detection
→[2.2 Installing the product](#)
 [2.3 Installing AI Video Motion Detection](#)
- ③ Configure the required settings.
→[3. Basic Settings](#)
→[4. Advanced Settings](#)
- ④ Start of operations.

2.1 Checking the product and AI Video Motion Detection are installed.

Follow the procedure below to make sure that this product and AI Video Motion Detection are installed on the camera.

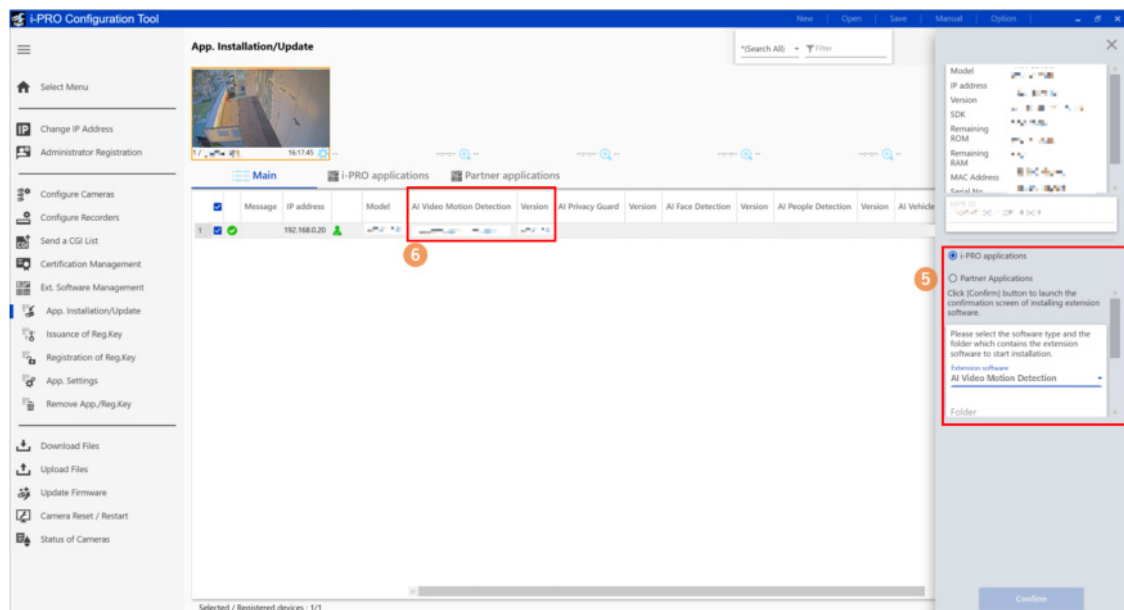
2. Preparation

2.1 Checking the product and AI Video Motion Detection are installed.



1. Click the iCT submenu [App. Installation/Update].
2. Select the camera you want to check.
3. Enter the following items on the settings screen.
 - [Extension software]: [AI On-site Learning]
4. Check that the [AI On-site Learning] version is displayed.
 - If the version is not displayed, the product is not installed. See the following to install the product.

→2.2 Installing the product



5. Enter the following items on the settings screen.
 - [Extension software]: Select [AI Video Motion Detection].

2. Preparation
2.2 Installing the product

6. Check that the version information of AI Video Motion Detection is displayed.
 - If the version is displayed, see the following to set up the product.
 - 3. [Basic Settings](#)
 - If the version is not displayed, AI Video Motion Detection is not installed. See the following to install AI Video Motion Detection.
 - 2.3 [Installing AI Video Motion Detection](#)

2.2 Installing the product

Follow the steps below to download the product and install it on your camera.

1. Access the download site for our products and download the AI On-site Learning application.

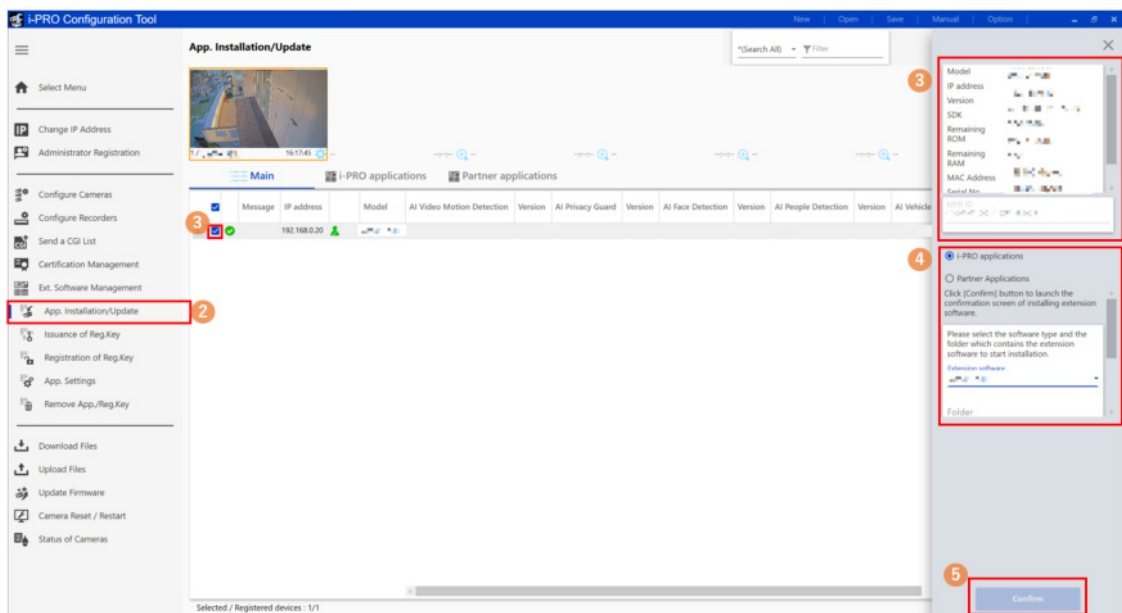


See the following for the download site of this product.

→[Downloads](#)



Do not enter any spaces or double-byte characters in the name of the destination directory.



2. Click the iCT submenu [App. Installation/Update].

2. Preparation

2.3 Installing AI Video Motion Detection

3. Select the camera on which the application is installed and check that the product number, other information, and device ID number are displayed.
4. Enter the following items on the settings screen.
 - [Extension software]: Select [AI On-site Learning]
 - [Folder] : Specify the location of the extension software you downloaded in (1).
5. Click [Confirm]
A confirmation screen is displayed.
6. Check the following on the confirmation screen.
 - The camera you want to use is selected.
 - The version of the application you want to register/update.
7. Click [Start]
The progress screen is displayed.
8. Check that the installation is completed successfully.



- Do not turn off the camera during installation.
- Do not perform any operations during installation..
- If the installation fails, check the error in the message field.
- If you cannot open the settings screen normally immediately after installation, restart the camera.

2.3 Installing AI Video Motion Detection

1. Access the download site for our products and download AI Video Motion Detection.



For more information on AI Video Motion Detection, see the following URL.

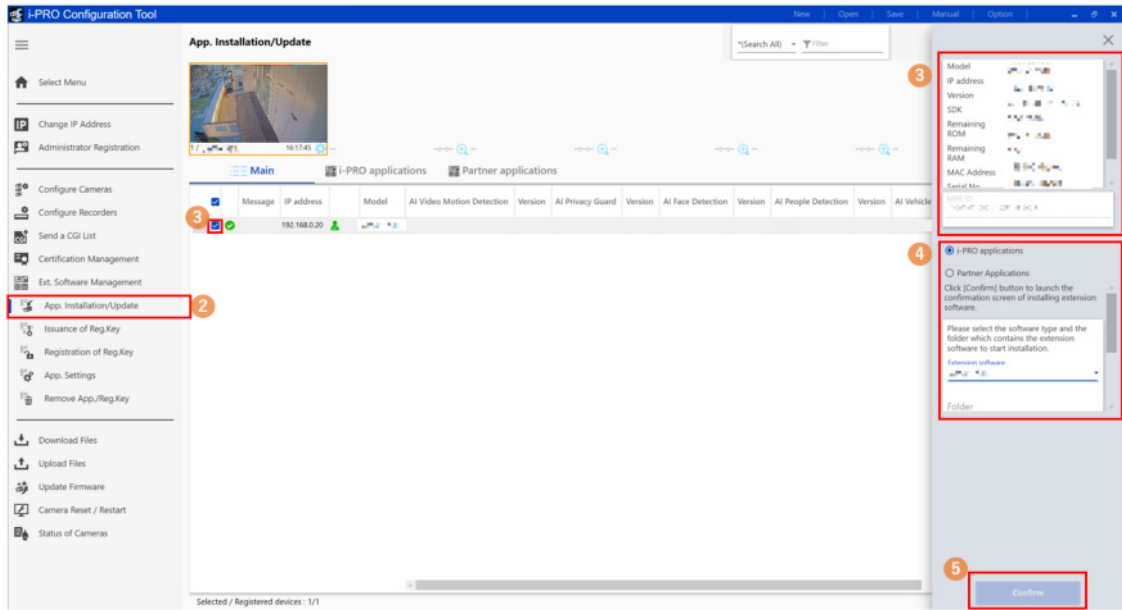
→ [AI Video Motion Detection](#)



Do not enter any spaces or double-byte characters in the name of the destination directory.

2. Preparation

2.3 Installing AI Video Motion Detection



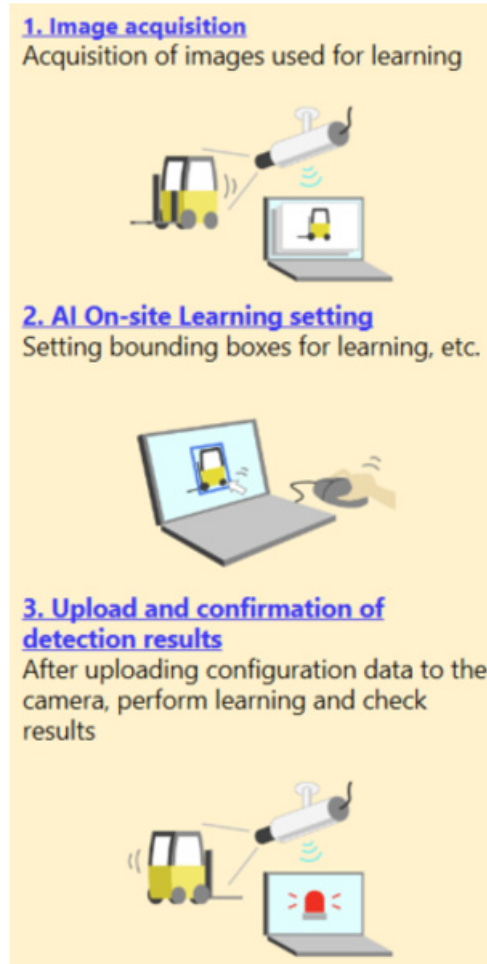
2. Click the iCT submenu [App. Installation/Update]
3. Select the camera on which the application is installed and check that the product number, other information, and device ID number are displayed.
4. Enter the following items on the settings screen.
 - [Extension software]: Select [AI Video Motion Detection]
 - [Folder] : Specify the location of downloaded AI Video Motion Detection you downloaded in (1).
5. Click [Confirm]
A confirmation screen is displayed.
6. Check the following on the confirmation screen.
 - The camera you want to use is selected.
 - The version of the application you want to register/update.
7. Click [Start]
The progress screen is displayed.
8. Check that the installation is completed successfully.



- Do not turn off the camera during installation.
- Do not perform any operations during installation.
- If the installation fails, check the error in the message field.
- If you cannot open the settings screen normally immediately after installation, restart the camera.

2.4 Select how to configure this product

The following process is involved in the setup of this product.



You can choose from the following configuration methods. Please refer to the appropriate chapter.

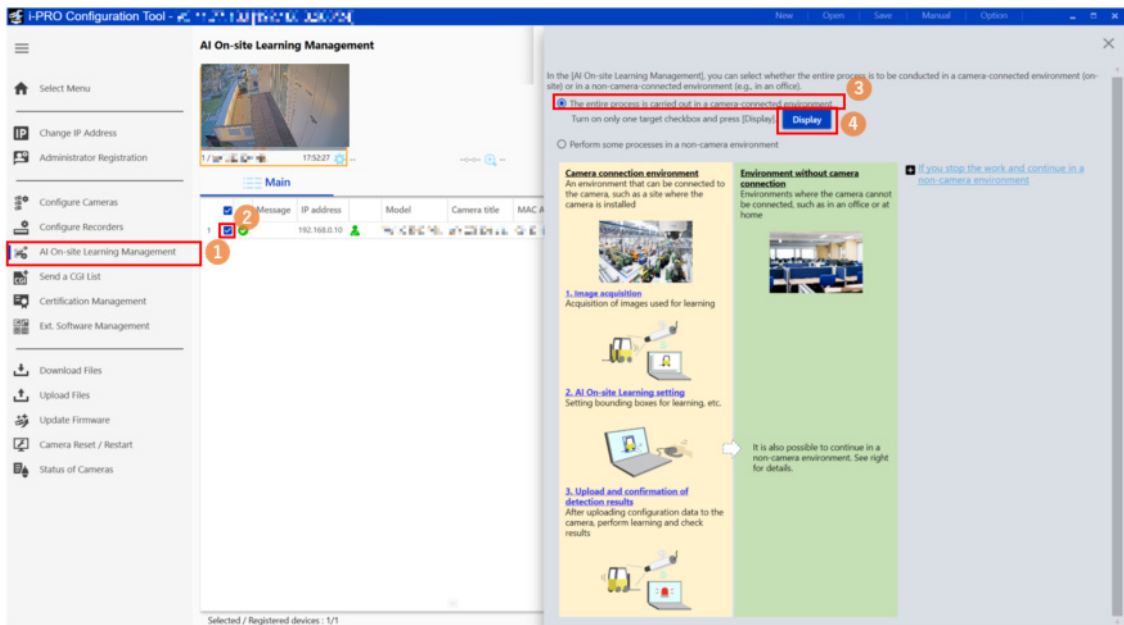
Setup method	Usage scene	Reference
All processes are carried out in a camera connection environment (e.g., where the camera is installed)	All processes are to be carried out on site to allow sufficient time for on-site work	3. Basic Settings 4. Advanced Settings

2. Preparation

2.4 Select how to configure this product

[Image acquisition] and [Upload and confirmation of detection results] should be implemented in the camera connection environment and [AI On-site Learning setting] should be implemented in the camera unconnected environment (office, home, etc.)	The time required to work on-site is limited and time-consuming processes should be carried out in the office or at home, etc.	7.1 Perform some processes in non-camera environment
--	--	--

3. Basic Settings



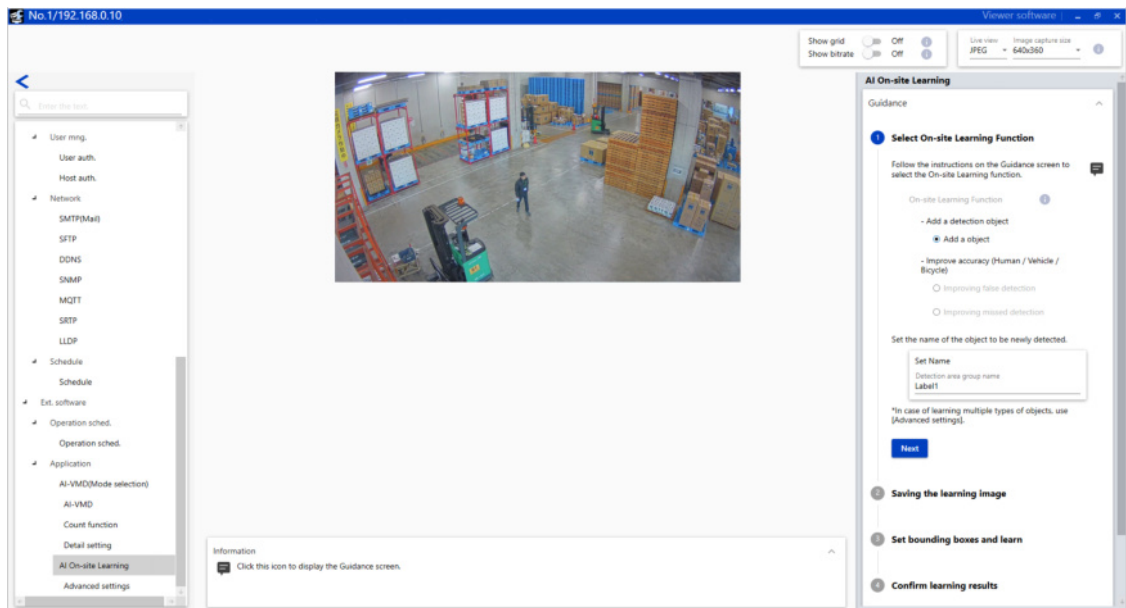
- (1) Select [AI On-site Learning Management] from the submenu.
- (2) Check the checkbox for the camera for which you want to configure this product.




This product is set by one camera. Check only one check box on the camera.

- (3) Select [The entire process is carried out in a camera-connected environment].
- (4) Click [Display].
 - [AI On-site Learning Settings] is displayed on a separate screen.


3. Basic Settings




- (5) Follow the guidance to make basic settings for the product
- Each item has a  symbol. Click this symbol to display the procedure in the lower left corner of the screen.

3.1 Select the Detection Function

1 Select On-site Learning Function

Follow the instructions on the Guidance screen to select the On-site Learning function. 

On-site Learning Function 

- Add a detection object
 - Add a object
- Improve accuracy (Human / Vehicle / Bicycle)
 - Improving false detection
 - Improving missed detection

Set the name of the object to be newly detected.

Set Name

Detection area group name

Label1

*In case of learning multiple types of objects, use [Advanced settings].

Next

Detector 1 is set on the Guidance screen.

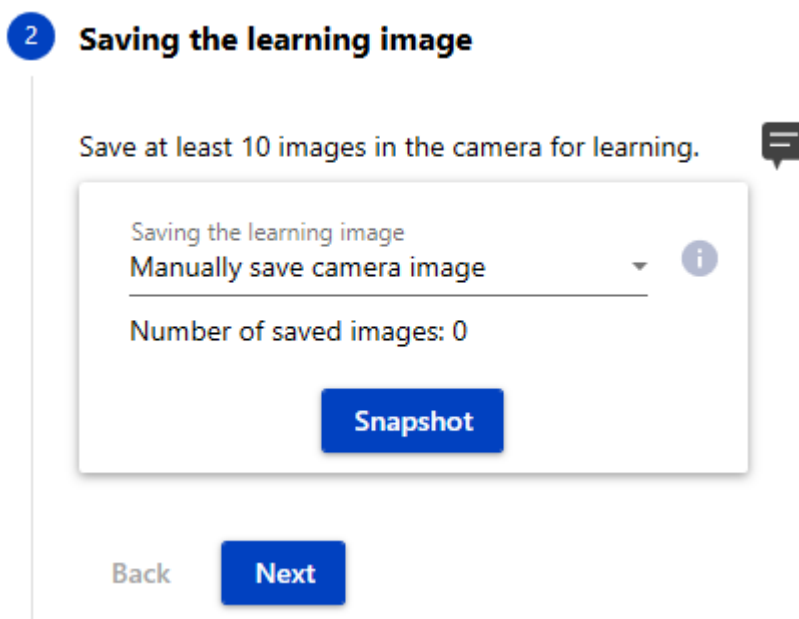
First, select the [On-site Learning] function you want to use..

This product provides the following three types of [On-site Learning] function.

- [Adding a new detection object]
 - Adds a new Detection Object.
 - The object name can be set in [Set Name].
- [Improving false detection]

- Prevents false detection of humans, vehicles, or two-wheeled vehicles.
- The target for improvements can be selected from [human], [vehicle] and [bicycle].
- [Improving missed detection]
- Reduces missed detection of humans, vehicles, or two-wheeled vehicles.
- The target for improvements can be selected from [human], [vehicle] and [bicycle].

3.2 Saving the Learning Image



Save the image to be used for learning.

You can save images directly from a pre-installed camera or from a JPEG/PNG file on your PC as learning images.

To take pictures directly from a pre-installed camera, select [Manually save camera image] or [Auto save camera image].

[Manually save camera image] allows you to manually save still images each time.

In [Auto save camera image], when you specify [Save interval] and [Number of save images], the camera automatically saves one still image for [Number of save images] at the specified [Save interval].

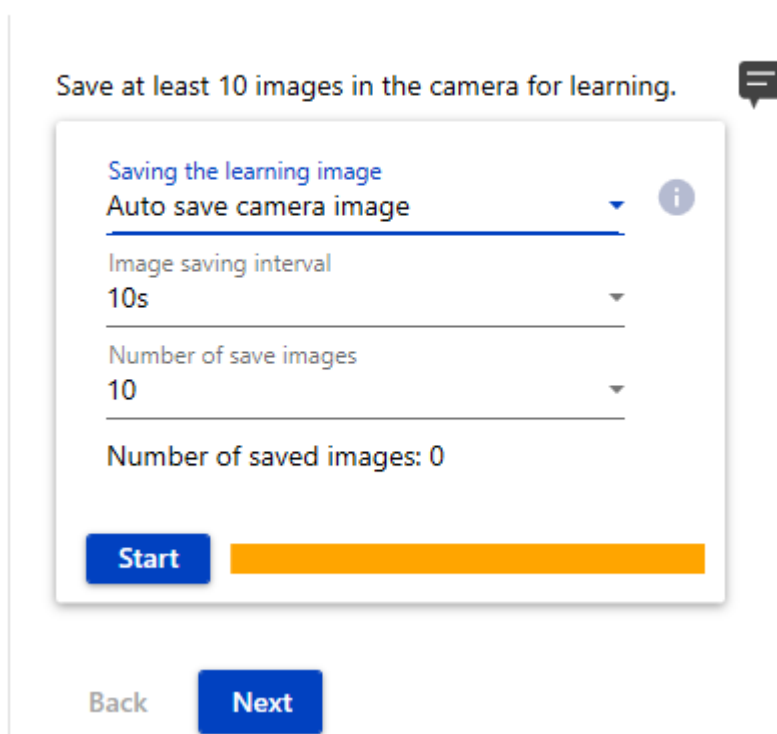
Select [Upload images from PC] to save jpg/png files on your computer as learning images.

3.2.1 Saving camera images manually

1. Select [Saving learning images].
 - Select [Manually save camera image].
2. Click the save button.
 - One still image is shot.

3.2.2 Saving camera images automatically

2 Saving the learning image



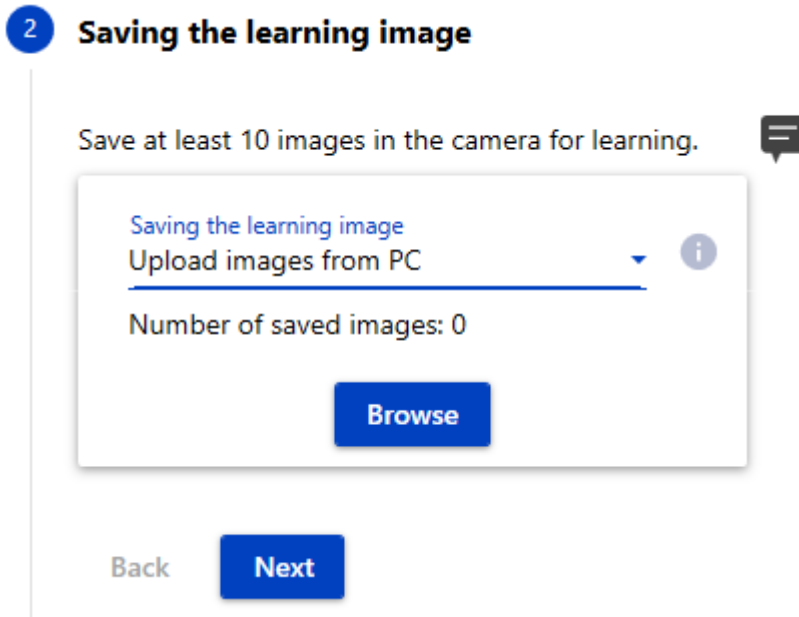
1. Select [Saving learning images].
 - Select [Auto save camera image].
2. Set the [Image saving interval].
 - Select from [10 s], [20 s], [30 s], [40 s], [50 s], [1min], [5min], [10min], [15min], [30min], [60min], and [When nothing detected].
 - When [When nothing detected] is selected, only images that could not be detected are efficiently saved.
3. Select [Number of save images]
 - Select from [10], [20],..., [90], [100], [150], and [200].
4. Click [Start]

3. Basic Settings

3.2 Saving the Learning Image

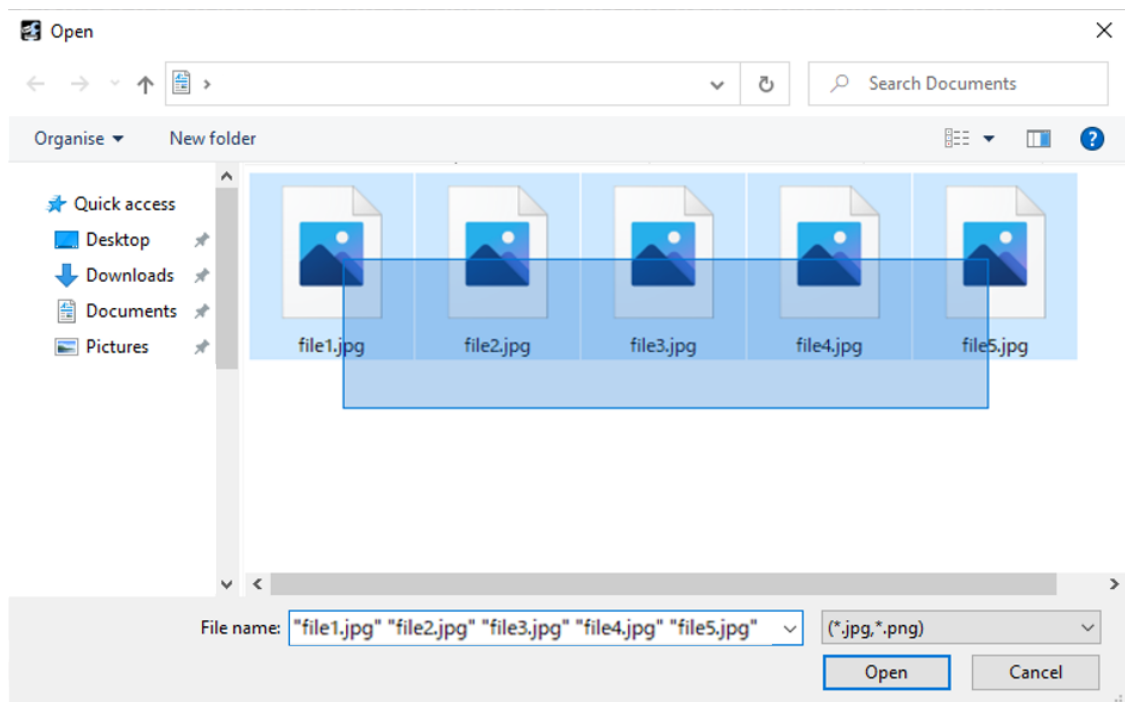
- To stop auto saving, click [Stop].
- During auto save, the progress is displayed beside the [Stop].

3.2.3 Upload images from PC



1. Select [Saving the learning image].
 - Select [Upload images from PC].
2. Click [Browse].
 - The Add File screen is displayed.

3. Basic Settings
3.2 Saving the Learning Image



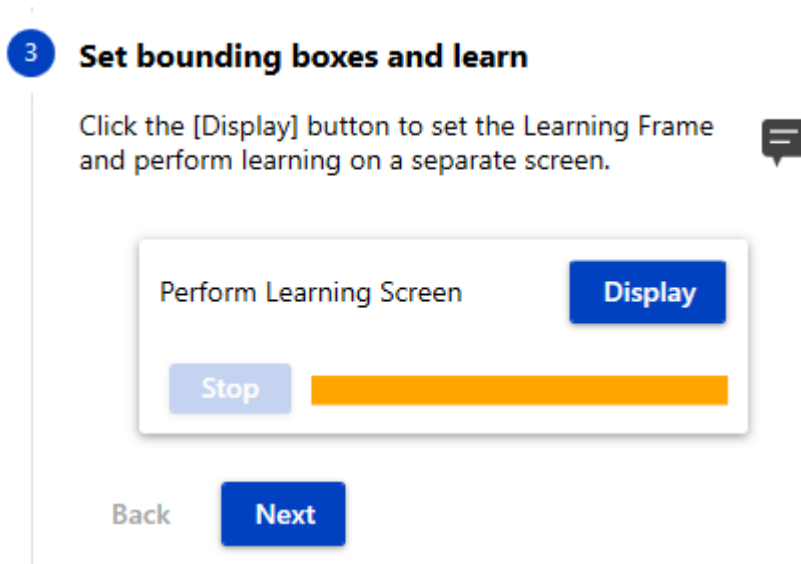
3. Select the files you want to save as learning images, and then click [Open].
 - Saving starts.
 - The progress is displayed while the file is being saved.



- The learning image formats are compatible with .jpg and .png.
- The resolution of the image that can be saved as a learning image is between 640pixels and 3840pixels.
- Up to 1000 learning images can be saved. However, depending on the resolution of the learning image, you may not be able to save up to 1,000 images.
- The percentage usage of the storage area for learned images can be checked on [Maintenance] window.

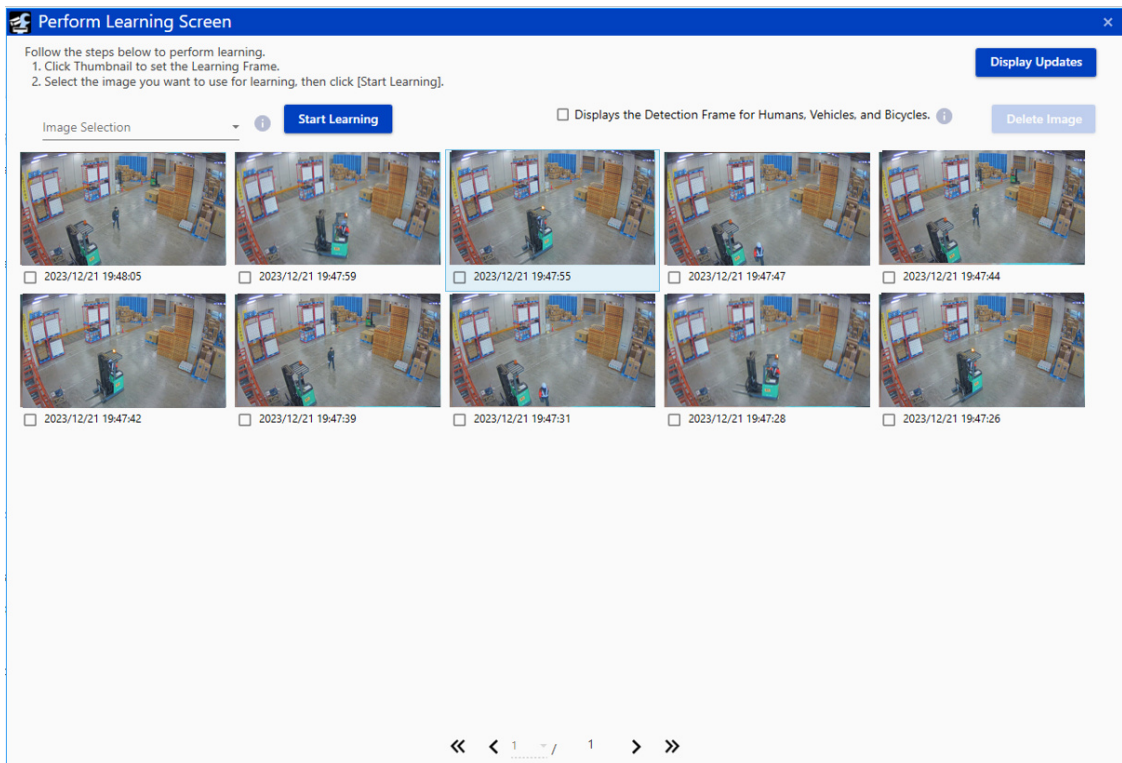
→4.4 [Maintenance](#)

3.3 Set bounding boxes and learn



You can draw the bounding box you want the AI to learn in the learning image.

1. Click [Display]
 - [Perform Learning Screen] is displayed.



2. Click the thumbnail of image you want to use to set the bounding box.

3. Basic Settings

3.3 Set bounding boxes and learn

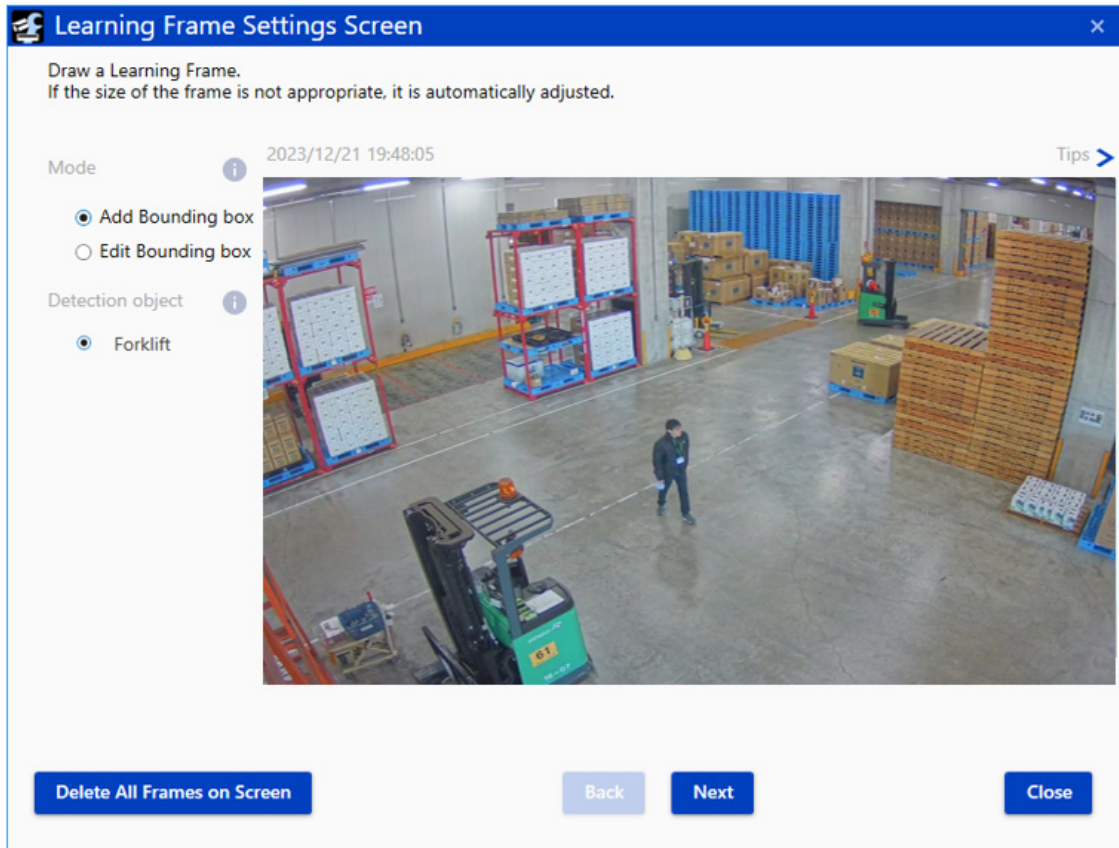
- [Learning Frame Settings Screen] is displayed.



When [Displays the Detection frame for Humans, Vehicles, and Bicycles] is selected, the detection results for human/vehicle/bicycle are displayed in gray.

The detection result of human, vehicle, or bicycle exceeds the detection threshold for human, vehicle, or bicycle. See below for detection thresholds.

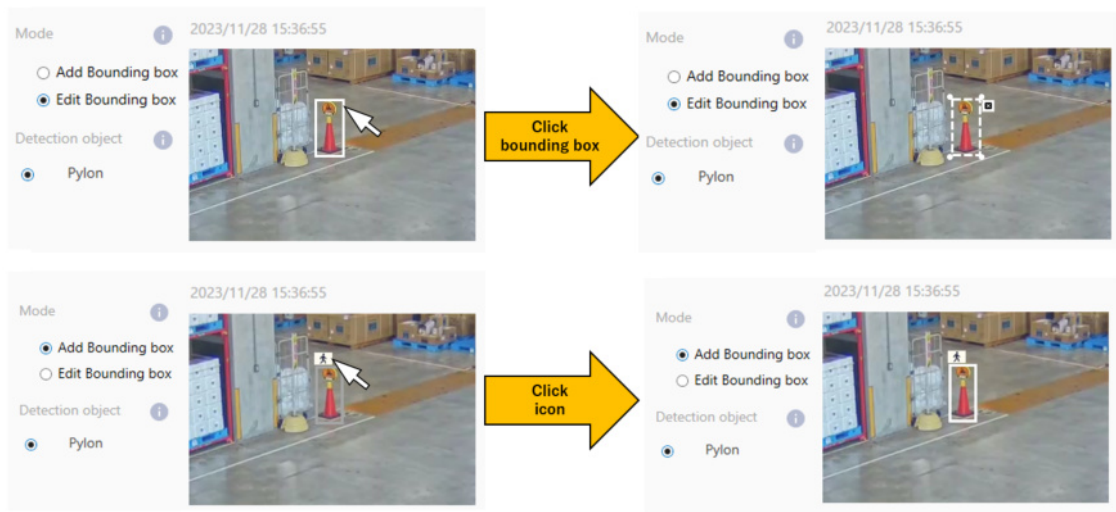
→5. [Demo Screen](#)



3. Select [Add Bounding box] in [Mode] to draw a bounding box on the image.
 - You can set the learning frame as a rectangle by dragging it on the image.
 - Select [Edit Bounding box] in [Mode] and click the drawn bounding box to change the size and position of the bounding box or to delete it by clicking the × icon.
 - Clicking the Icons for the detection results (gray frames) of human/vehicle/bicycle will set the selected detection object to the bounding box.

3. Basic Settings

3.3 Set bounding boxes and learn



•If the size of the learning frame you draw is too small or too large, the size is automatically adjusted. See the following for the minimum and maximum sizes.

→[1.3 Camera Installation Conditions](#)

•The detection result of human/vehicle/bicycle is displayed by checking [Displays the Detection Frame for Humans, Vehicles, and Bicycles.] in the [Perform Learning Screen].

•You can set up to 100 bounding box per image.

4. Press [Next] to set the bounding box for the remaining images.
 - The setting screen for the next image is displayed.
5. When you have set all the learning images, click [Set].
 - [Learning Frame Setting Screen] closes, and you are returned to the [Perform Learning Screen].



The [Set bounding boxes and learn] process can be interrupted halfway and continued in the camera unconnected environment. See the chapter below.

→[7.2 Stop the work in a camera-connected environment and continue in a non-camera environment](#)

6. Select the image you want to use for learning
 - Select the check box at the bottom left of the thumbnails of the target images as shown.
 - Learning requires at least 10 images. You can learn up to 200 images.
 - The maximum number of bounding boxes that can be included in learning images are 1000.

3. Basic Settings
3.3 Set bounding boxes and learn



When bounding boxes are set, the check boxes at the bottom left of the thumbnails are automatically checked.

Perform Learning Screen

Follow the steps below to perform learning.
1. Click Thumbnail to set the Learning Frame.
2. Select the image you want to use for learning, then click [Start Learning].

Image Selection: Select All Start Learning Displays the Detection Frame for Humans, Vehicles, and Bicycles. Delete Image


<input checked="" type="checkbox"/> 2023/12/21 19:48:05	<input checked="" type="checkbox"/> 2023/12/21 19:47:59	<input checked="" type="checkbox"/> 2023/12/21 19:47:55	<input checked="" type="checkbox"/> 2023/12/21 19:47:47	<input checked="" type="checkbox"/> 2023/12/21 19:47:44
<input checked="" type="checkbox"/> 2023/12/21 19:47:42	<input checked="" type="checkbox"/> 2023/12/21 19:47:39	<input checked="" type="checkbox"/> 2023/12/21 19:47:31	<input checked="" type="checkbox"/> 2023/12/21 19:47:28	<input checked="" type="checkbox"/> 2023/12/21 19:47:26

Navigation: << < 1 / 1 > >>

7. Click the [Start Learning] to execute learning.
 - When learning is completed, the confirmation screen is displayed.

3.4 Checking the Learning Results

4 Confirm learning results

Confirm the learning results. 

If you can check it on the spot, check it on the demo screen.
If you cannot check the image on site and want to check the recorded image, check it with the simulator screen.

Check using live video

Demo screen

Check using captured images

Simulation Screen

- Check the learning accuracy.
 - To check the image with live video, click [Display] on [Demo screen] to open the demonstration screen. See the following for information on the demonstration screen.
→5. [Demo Screen](#)
 - To check images already shot, click [Display] on [Simulation screen] to open the simulation screen. See the following for more information on the simulation screen.
→6. [Simulation screen](#)

4. Advanced Settings

In [Advanced settings], configure and learn multiple learning models and detection objects. Also, back up learning data.

See the following chapter for more information on saving learning images, the bounding box settings screen, and the learning image selection screen.

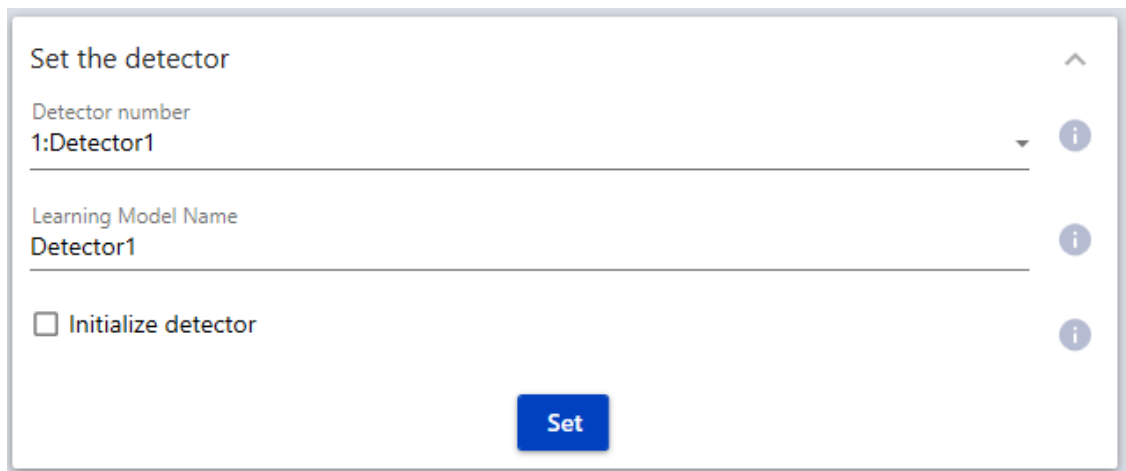
→3. [Basic Settings](#)

See the following chapters for more information on the Demo screen and the Simulation screen.

→5. [Demo Screen](#)

6. [Simulation screen](#)

4.1 Set the detector



1. You can make the following settings in [Set the detector].
 - [Detector number]: Select the detector you want to use. You can select from detectors 1 to 3. (Detector number): (Detector name) will be displayed.
Default: 1:Detector1
 - [Learning Model Name]: You can enter up to 20 half-width characters.
Default: Detector1 to 3
 - [Initialize detector]: Check this when clearing the learning information of the detector selected in [Detector number] and executing new learning.
 - [Set]: Click to reflect the settings.

4.2 Set Detection Object

No.	Function	Name	Target	
1	New object	Forklift		
2	False detection	Pylon	Human	
3	Missed detection	Workers	Human	
4		Label4		
5		Label5		

Set

In [Set Detection Object], configure the following settings for up to five detection objects.

1. [Function]

You can set the Detection Function for each of the five [Detection Objects].

[New object]: You can add a new object you want to detect.

[False detection]: Improving false detection of human, vehicle and bicycle.

[Missed detection]: Improve missed detection of human, vehicle and bicycle.

2. [Name]

Set the name of detection object. You can set up to 20 half-pitch characters.

3. [Target]

If [False detection] or [Missed detection] is selected for [Function], select detection object to be improved.

Select from [Human], [Vehicle], and [Bicycle].

4. Trash box icon

If you press the [Set] after clicking, the settings for the selected detection object will be deleted.

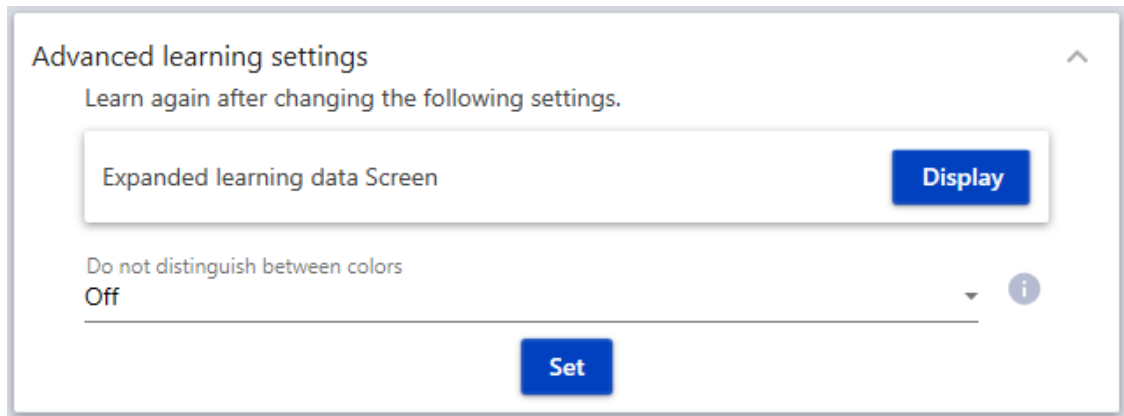
Settings to be removed: [Function], [Name], [Target], Settings of bounding box, Settings of [Training data expansion]

5. [Set]

Click to reflect the settings.

4.3 Advanced learning settings

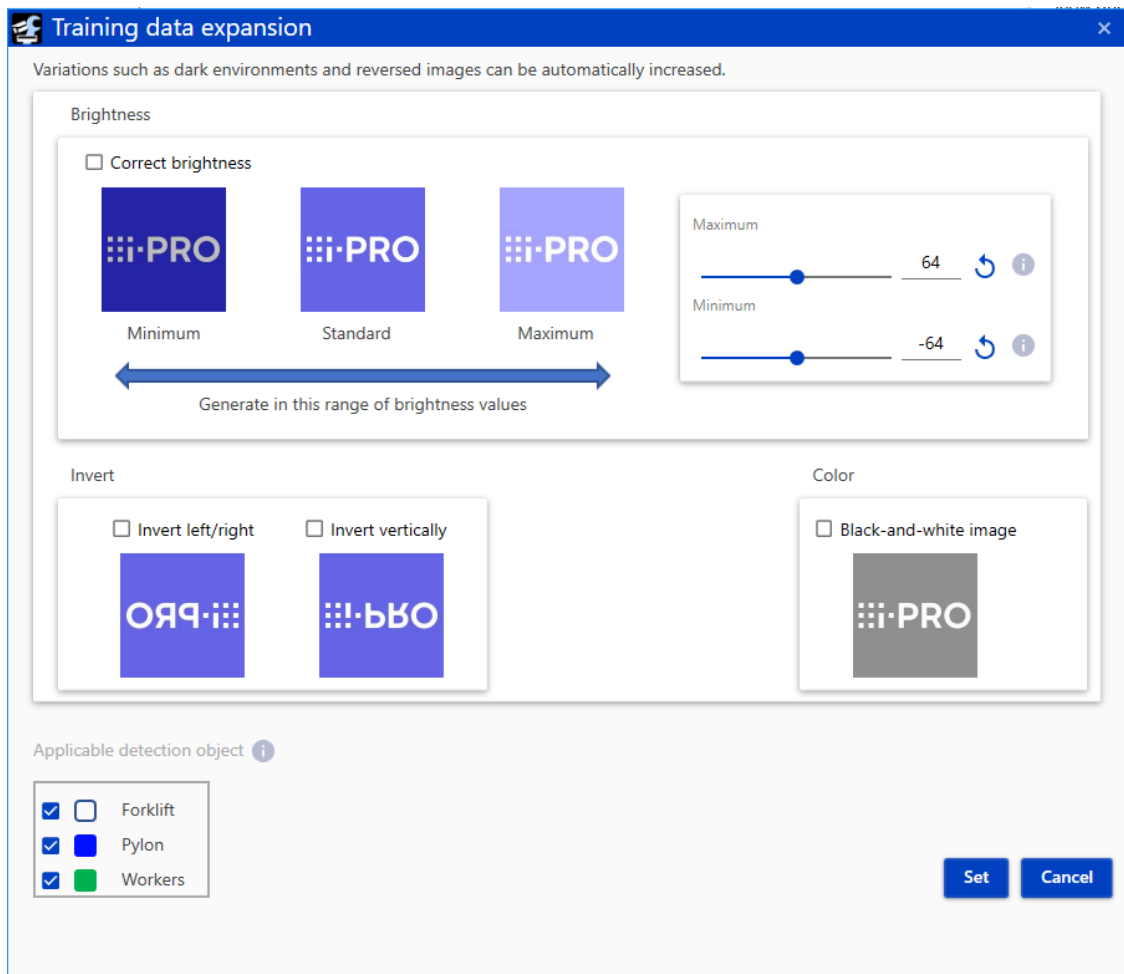
[Advanced learning settings] expands the learning data and selects the learning method.



1. [Expanded learning data Screen]
You can automatically increase the variations in learning images when it is impossible to collect dark or reversed images in the actual environment. Click [Display] to open the settings screen.

4. Advanced Settings

4.3 Advanced learning settings



- [Brightness]
 - To correct the brightness, select [Correct brightness]. When this is selected, set the [Maximum] and [Minimum].
 - [Maximum]: Sets the highest value in the brightness range.
0 to 128
 - [Minimum]: Sets the smallest value in the brightness range.
-128 to 0
- [Invert]
 - Select from [Invert left/right] or [Invert vertically].
- [Color]
 - Select whether to add the black-and-white images for the learning image. To add a black-and-white converted image to a learned image. Select [Black-and-white image] to add a converted image.
- [Applicable detection object]
 - Select the Detection object to which [Training data expansion] applies. Check the detection

object to which [Training data expansion] applies.

- [Set]
 - Reflect the settings and return to [Advanced learning settings].
- 2. [Do not distinguish between colors]

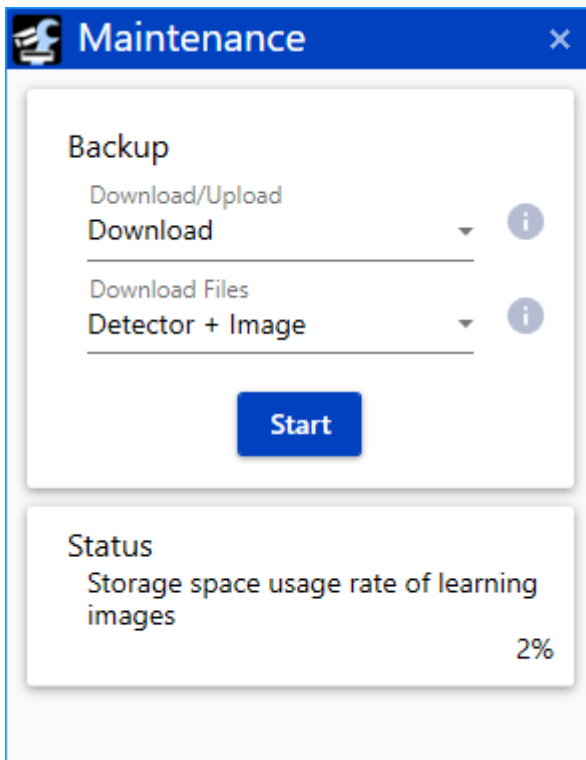
To perform learning by converting all learning images to black-and-white images, select [On]. Learning by setting it to [On] also makes it easier to detect color-coded detection object.

Default: [Off]

4.4 Maintenance



In [Maintenance], back up the learning data. Click [Display] to open the Maintenance screen.



1. [Download/Upload]

Select the operation to be performed on camera.

 - [Download]: Downloads detector and learning images from camera to the PC as zip files.

The files to be downloaded are selected in [Download Files].

- [Upload]: Uploads zipped files generated by [Download] from PC to camera. The files to be uploaded are specified by [Upload files].

2. [Download Files]

Select the data to download from camera. Set when [Download] is selected in [Download/Upload].

[Detector + Image]: Download the detector and learning images.

3. [Upload files]

Select the file to be uploaded to camera. The file specified here is the zip file generated by [Download]. Set this when [Upload] is selected in [Download/Upload].



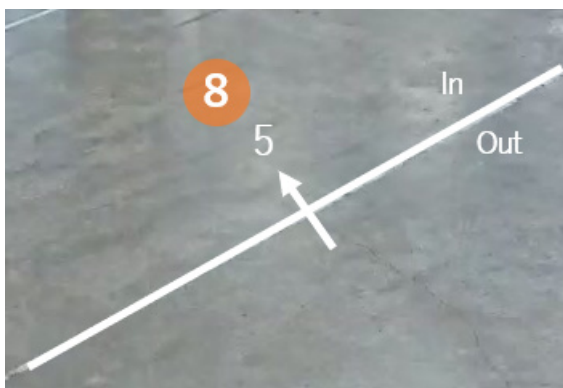
- In [Download], a zip file is generated in the following folder specified on the [Save in] screen of [Option] in iCT.

[Option]-[Save in]¥AISceneDetection¥yyyyMMdd_hhmmss

- Note that learning images and detector stored on camera will be deleted when [Upload] is executed.
- [Status] displays the usage rate of the storage space for the learning images.

selected in the [On-site Learning function]. This is displayed when [Display frame for improving false detection] is On.

- Red: indicates objects in the area where the alarm occurred and objects that cross the line in the set direction.
3. Detection scores for detection object
 - When [Display score] is set to On, the detection score is displayed in the detection frame. “**” may be displayed when the detection score is below the threshold.
 4. White dot on the detection frame
 - Displays the base position of the detection frame.
 5. Detection area
 - Displays a colored frame for the detection area set in AI Video Motion Detection.
 - Area 1: white, Area 2: blue, Area 3: green, Area 4: red, Area 5: yellow, Area 6: light blue, Area 7: purple, Area 8: pink
 - Solid line: Area set to “Enabled”
 - Dashed line: Area set to “Disabled”
 6. Detection line
 - Displays a colored line for the detection line set in AI Video Motion Detection.
 - Line 1: white, Line 2: blue, Line 3: green, Line 4: red, Line 5: yellow, Line 6: light blue, Line 7: purple, Line 8: pink
 - Solid line: Line set to “Enabled”
 - Dashed line: Line set to “Disabled”
 7. Direction label
 - Displays labels ([Cross line detection]: A, B, [Count function]: In, Out) for the direction in which Cross line counting is performed in [AI motion detection] ([Cross line detection]) and [Count function].



8. Number of counts (Display only when [Detection frame and set area/line display] is selected for [Count function])

- Displays a colored line for the number of objects counted in the direction set in [Cross line counting] from the [Count function].

You can make the following settings on the [Demo screen].

Detection frame and set area / line display [!]

AI motion detection(Detection) ▾

Detection score [!]

Display score On

Measure score Off

	MAX	MIN
HUMAN	96	30
VEHICLE	**	**
BICYCLE	**	**

Threshold setting [!]

Human identification threshold

20 [↻]

[-] [+]

Vehicle identification threshold

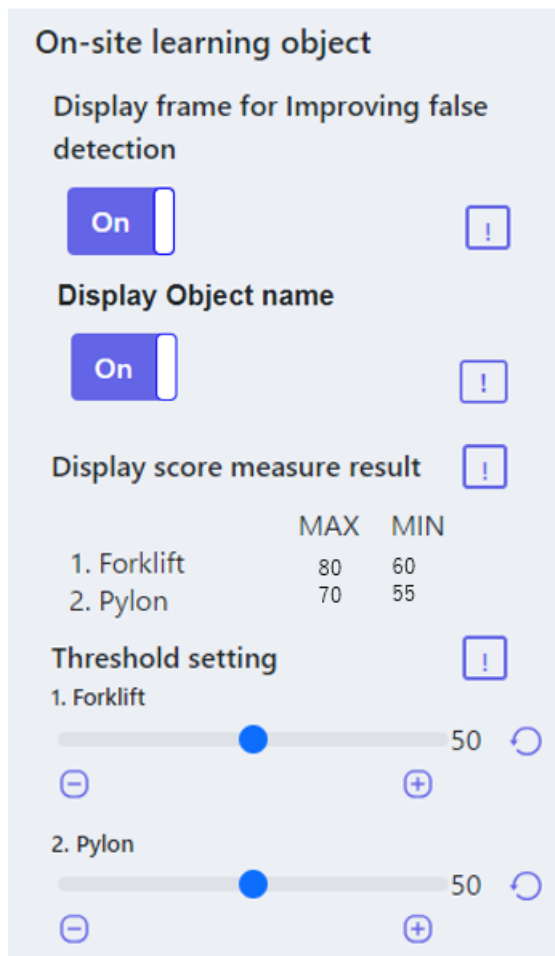
70 [↻]

[-] [+]

Bicycle identification threshold

55 [↻]

[-] [+]



1. [Detection frame and set area/line display]
 - Select the content of the [Demo screen] live image.
 Select from [AI motion detection (Detection setting 1)], [AI motion detection (Detection setting 2)], and [Count function].
 - This is not displayed if AI Video Motion Detection Application is not installed.
2. [Display score]
 - Set to On to display Detection Object icons and detection scores.
3. [Measure score]
 - Set to On to measure the maximum and minimum detection scores and display the measurement results (MAX/MIN) on the demonstration screen. Set to Off to stop measuring.
4. [Human identification threshold]
 - Set the detection threshold for people. The smaller the value, the easier it is to detect human, but it is also likely to return more false detections.
 1 to 99
 Default: 20

5. [Vehicle identification threshold]
 - Set the detection threshold for vehicles. The smaller the value, the easier it is to detect vehicles, but it is also likely to return more false detections.
1 to 99
Default: 70
6. [Bicycle identification threshold]
 - Set the detection threshold for bicycles. The smaller the value, the easier it is to detect bicycles, but it is also likely to return more false detections.
1 to 99
Default: 55
7. [Display frame for Improving false detection]
 - Set to On to display the detection frame (light blue frame), detection score, and [Threshold setting] of the Detection Object for which [Improving false detection] is selected in [On-site Learning Function].
8. [Display Object name]
 - Set to On to display the name of the configured On-site learning object in the detection frame.
9. [Threshold setting] of on-site learning object
 - Set the detection threshold for objects 1 to 5. The smaller the value, the easier it is to detect objects 1 to 5, but it is also likely to return more false detections.
1 to 99
Default: 50



- Use Mozilla Firefox, Google™ Chrome™, and Microsoft Edge to view the [Demo screen]. Internet Explorer is not supported.
 - The [Demo screen] can only be displayed in one browser at a time. Simultaneous access across multiple browsers is not supported.
 - If [Data Encryption] is set to [On], no [Demo screen] images are displayed.
 - The [Demo screen] does not support HTTPS connections.
- Also, when used at the same time as other function extension software, the positions of people on the [Demo screen] and the detection frame may become misaligned.
- Since the [Demo screen] is only used for demonstrations, we do not recommend using it for actual operations.

5.1 About threshold settings for [Improving false detection]

This section describes the threshold settings for detection objects for which [Improving false detection] is selected for the On-site Learning Function.

The figure below shows an image of improving false detection when a chair is misdetected as a person. (1) is the detection result when a chair is mistakenly detected as a person, and (2) is the detection result when a chair is learned by selecting [Improving false detection] for [On-site learning function] in this product.

In improving false detection, detection frames where the detection results of (1) and (2) overlap are considered to be subject to improving false detection and are eliminated from the detection results ((3) in the figure below). The detection result of (3) is displayed on the demo and simulation screens.

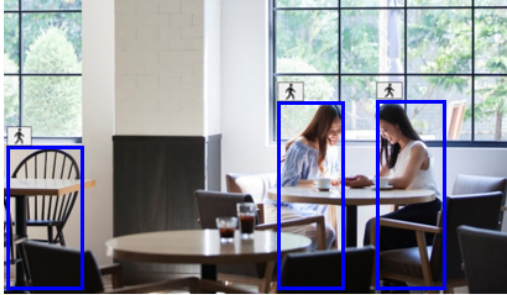
The threshold setting of the detection object affects the detection result of (2). Detection frames that are not adopted in the detection result of (2) are not subject to improving false detection, so please turn [Display frame for Improving false detection] On and adjust the threshold so that a frame for improving false detection (light blue frame) is displayed on the detection object you want to improve false detection.

5. Demo Screen

5.1 About threshold settings for [Improving false detection]

(1) Detection results before learning

Chair is falsely detected as "human"



(2) Detection results after learning

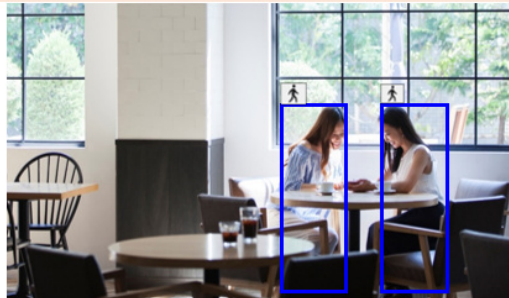
Chair is detected as "chair"



Integrate (1) and (2)

(3) Combined integration result

False detection of chair have been improved



6. Simulation screen

On-site Learning Simulation Screen

Operation procedure
1. When you enter the image you want to simulate, the detection frame for the score above the threshold value is displayed.
2. Change the threshold so that the detection frame is displayed correctly.
3. Execute [Reflect the displayed threshold settings on the camera] and writes thresholds to the camera.

Threshold setting (existing object)

Human identification threshold (10-99) 20

Vehicle identification threshold (10-99) 70

Bicycle identification threshold (10-99) 55

Threshold setting (new object)

1.Forklift(10-99) 50

2.Pylon(10-99) 50

3.Workers(10-99) 50

Reload the camera threshold setting. **Execute**

Reflect the displayed threshold settings on the camera **Execute**

Display frame for Improving false detection

Hide icons

Information
- The simulation results are output to the Out folder.
- When multiple images are entered, no image is displayed.

Drag and drop images onto the [Simulation screen].

- When you drag & drop only one image, the detection result is displayed on the [Simulation screen].
- When you drag & drop multiple images, the images with the simulation results drawn on them are saved to your PC. These images are stored in the "out" folder in the same location as the folder in which dragged & dropped images are stored.



The following formats are supported for input images: .jpg and .png.

The detection frame (blue or light blue), [Detection Object] icons, and detection scores are displayed on the [Simulation screen]. See the following chapter for more information.

→5. [Demo Screen](#)

You can make the following settings on the [Simulation screen].

1. [Human identification threshold]
 - Set the detection threshold for people. The smaller the value, the easier it is to detect people, but it is also likely to return more false detections.
10 to 99
Default: 20
2. [Vehicle identification threshold]
 - Set the detection threshold for vehicles. The smaller the value, the easier it is to detect vehicles, but it is also likely to return more false detections.
10 to 99
Default: 70
3. [Bicycle identification threshold]
 - Set the detection threshold for bicycles. The smaller the value, the easier it is to detect bicycles, but it is also likely to return more false detections.
10~99
Default: 55
4. [Threshold setting] for new objects
 - Set the detection threshold for objects 1 to 5. The smaller the value, the easier it is to detect objects 1 to 5, but it is also likely to return more false detections.
10 to 99
Default: 50
5. [Reload the camera threshold setting]
 - When you click the [Execute], the threshold settings of the AI Video Motion Detection will be read and reflected in the [Threshold setting] on the screen.
6. [Reflect the displayed threshold settings on the camera]
 - When you click the [Execute], the [Threshold setting] of this product are read and reflected to the threshold settings of the AI Video Motion Detection.
7. [Display frame for Improving false detection]
 - Set to On to display the detection frame (light blue frame), detection score, and [Threshold setting] for the Detection Object for which [Improving false detection] is selected in [On-site Learning Function].
8. [Hide icons]

6. Simulation screen

- Select to hide the [Detection Object] icons.

- 7. Settings in environment without camera connection
- 7.1 Perform some processes in non-camera environment

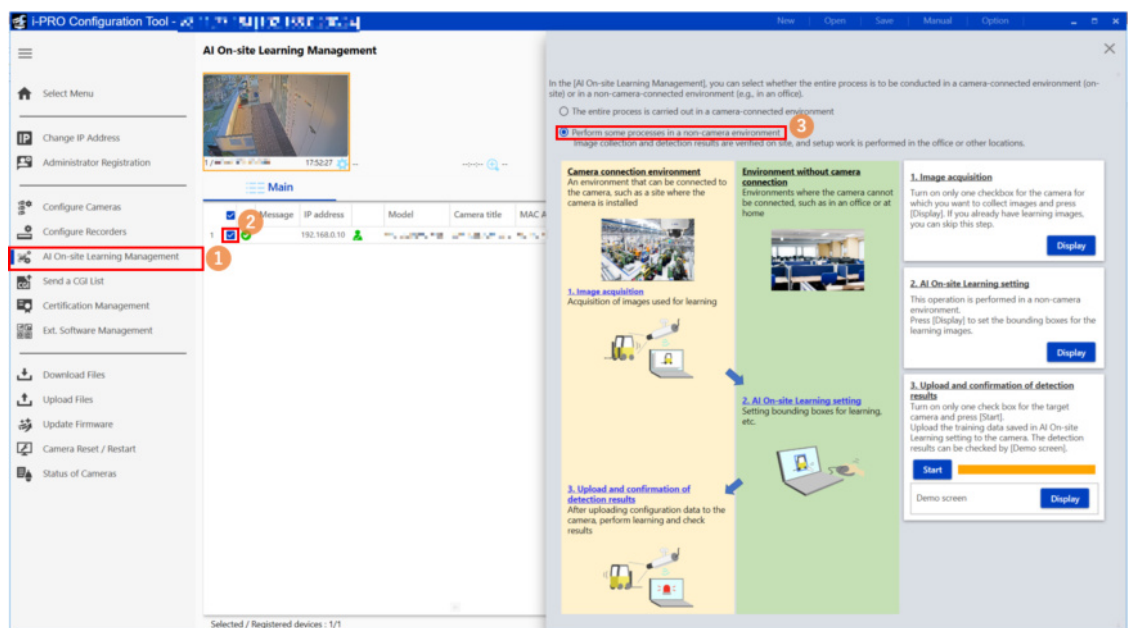
7. Settings in environment without camera connection

This chapter describes the procedure for setting the product in the camera disconnection environment.

Check the settings from the table below and refer to the appropriate chapter.

Setup method	Reference
[Image acquisition] is performed in the camera connection environment, and [AI On-site Learning setting] is performed in the camera unconnected environment (office, home, etc.)	7.1 Perform some processes in non-camera environment
[Image acquisition] and [Bounding box setting] are done in the camera-connected environment, and the rest of the process is done in the non-camera-connected environment.	7.2 Stop the work in a camera-connected environment and continue in a non-camera environment

7.1 Perform some processes in non-camera environment



7. Settings in environment without camera connection
7.1 Perform some processes in non-camera environment

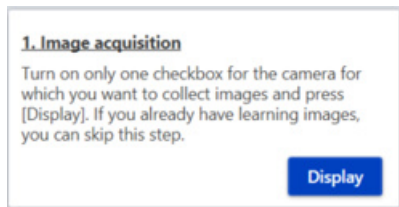
- (1) Select [AI On-site Learning Management] from the submenu
- (2) Check the check box of the camera to set the product.



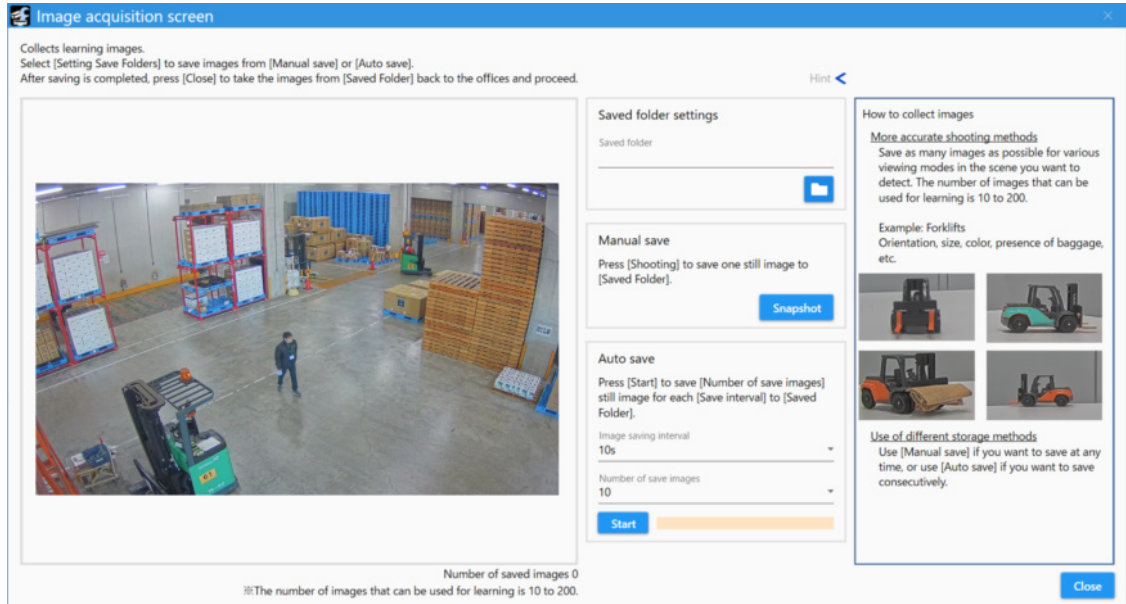
This product is set by one camera. Check only one check box on the camera.

- (3) Select [Perform some processes in non-camera environment]

7.1.1 Image acquisition



- (1) Check the checkbox for the cameras you want to collect and press [Display].
 - [Image acquisition screen] is displayed on a separate screen.



- (1) Set the saved folder
 - When the Folder button is pressed, the Browse Folder screen is displayed on the separate screen.
- (2) Select the destination folder for saving images and press [OK].
- (3) Save the image used for learning

7. Settings in environment without camera connection

7.1 Perform some processes in non-camera environment

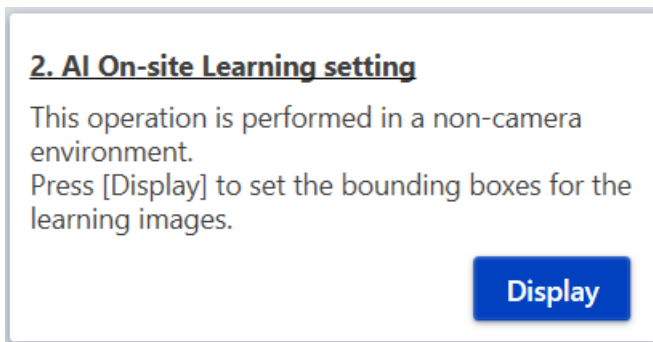
- [Manual save] allows you to manually save still images each time.
- In [Auto save camera image], when you specify [Save interval] and [Number of save images], the camera automatically saves one still image for [Number of save images] at the specified [Save interval].
- [Manual save]
 - When [Snapshot] is pressed, one still image is saved in the save folder.
- [Auto save]
 - [Image saving interval]: Select from [10 s], [20 s], [30 s], [40 s], [50 s], [1min], [5min], [10min], [15min], [30min], and [60min].
 - [Number of save images]: Select from [10], [20],..., [90], [100], [150], and [200].
 - [Start]: Start auto saving.
 - To stop auto saving, click [Stop].
 - During auto save, the progress is displayed beside the [Stop].



The number of saved images is displayed at the bottom of the screen as "Number of saved images: x".

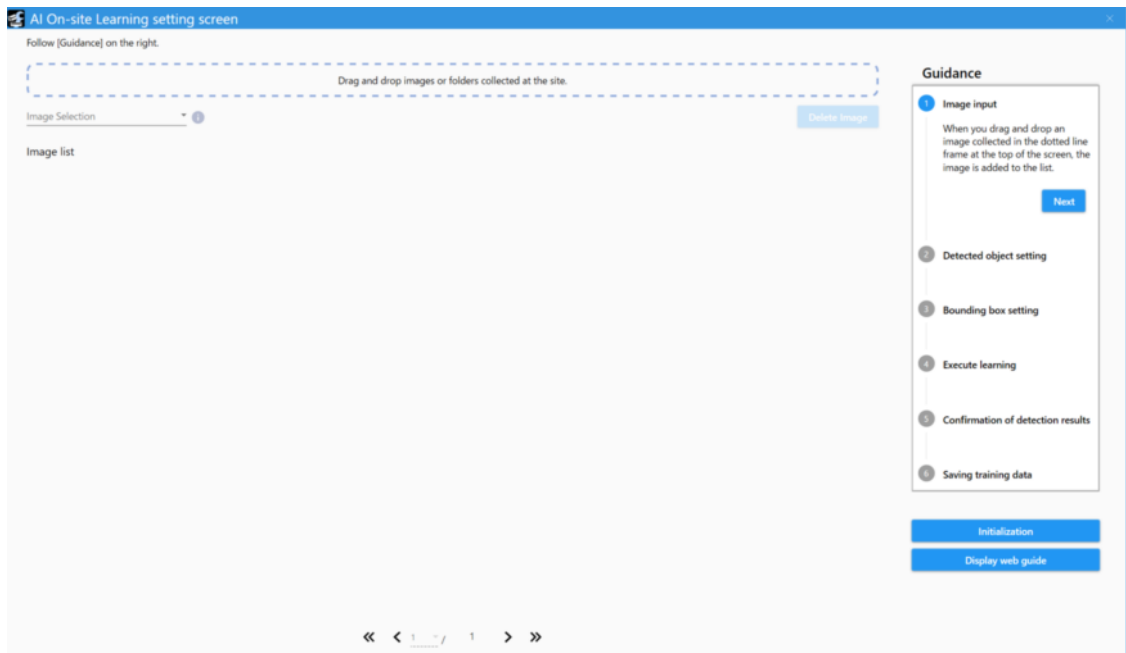
- (5) Press [Close] to exit [Image acquisition].

7.1.2 AI On-side Learning setting

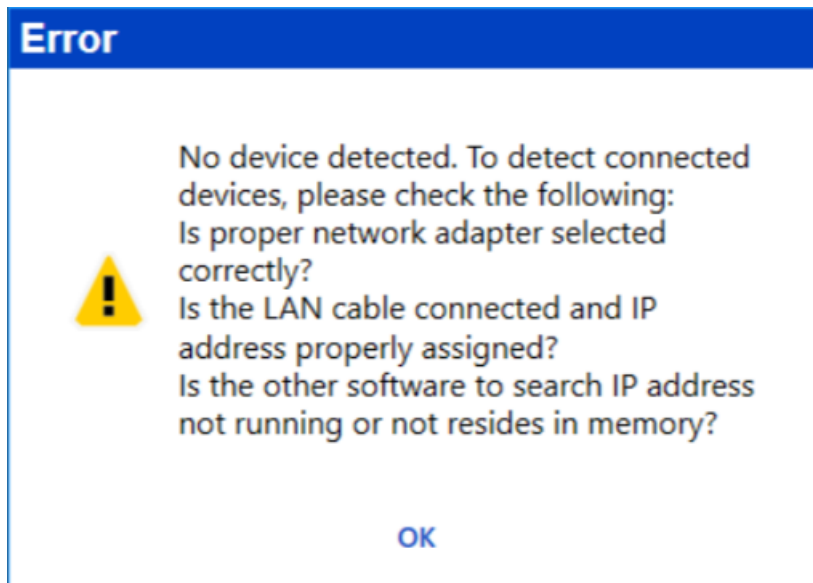


Set AI On-site Learning in the camera unconnected environment. When [Display] is pressed, [AI On-site Learning Setup screen] is displayed in a separate screen. Detector 1 is set in the [AI On-site Learning Settings] window.

7. Settings in environment without camera connection
7.1 Perform some processes in non-camera environment



When [Display] is pressed in the camera disconnection, the following window is displayed. Touch [OK] to open the [AI On-site Learning Settings] window.



7.1.2.1 Image input

1 Image input

When you drag and drop an image collected in the dotted line frame at the top of the screen, the image is added to the list.

A blue rectangular button with the word "Next" in white text.

Drag and drop images or folders acquired in the field as described in 7.1.1 into the dotted line frame at the top of the screen. The entered images are added to the list.

To delete an added image from the list, select the check box at the bottom left of the thumbnail of the target image and click [Delete image].

7.1.2.2 Detected object setting

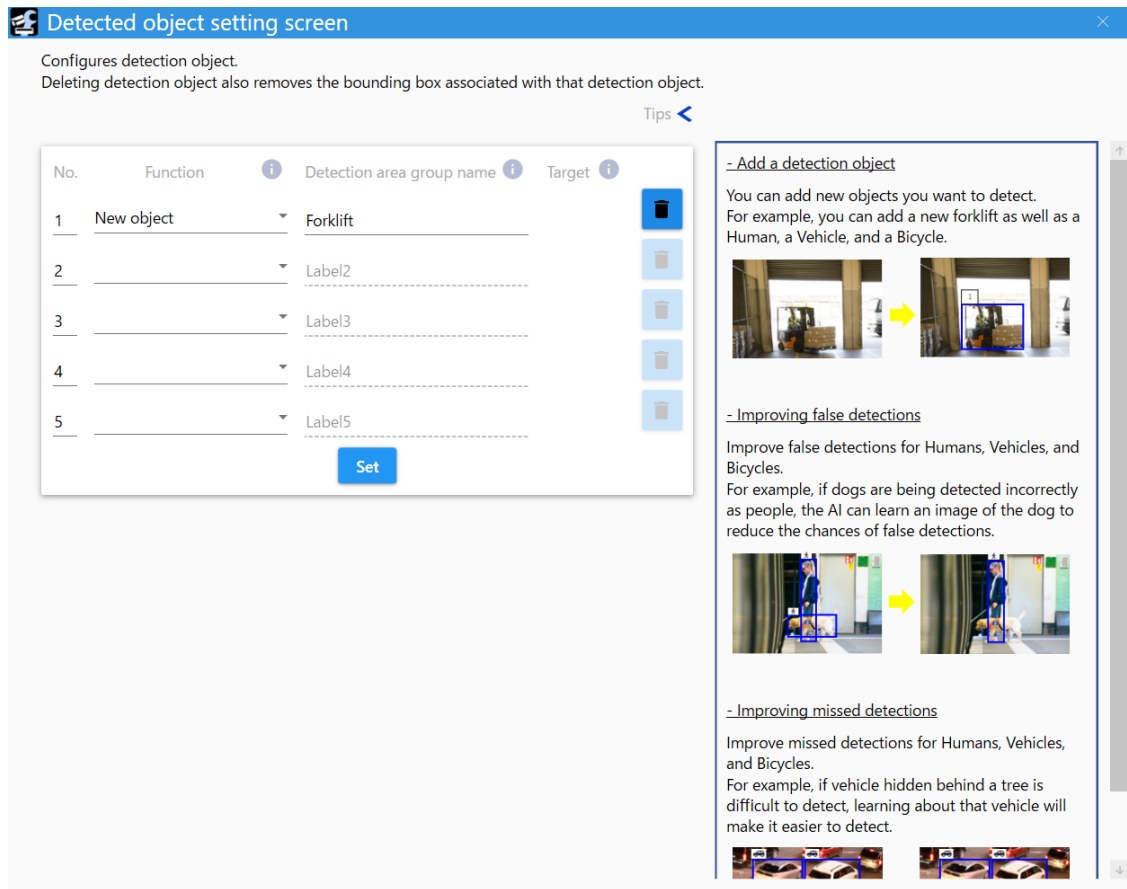
2 Detected object setting

Press [Display] to set the name and function of the study frame.

A blue rectangular button with the word "Display" in white text.A blue rectangular button with the word "Back" in white text.A blue rectangular button with the word "Next" in white text.

When [Display] is pressed, [Detection object setting screen] is displayed in a separate screen.

7. Settings in environment without camera connection
 7.1 Perform some processes in non-camera environment



In [Set Detection Object], configure the following settings for up to five detection objects.

1. [Function]

You can set the Detection Function for each of the five [Detection Objects].

[New object]: You can add a new object you want to detect.

[False detection]: Improving false detection of human, vehicle and bicycle.

[Missed detection]: Improve missed detection of human, vehicle and bicycle.

2. [Name]

Set the name of detection object. You can set up to 20 half-pitch characters.

3. [Target]

If [False detection] or [Missed detection] is selected for [Function], select detection object to be improved.

Select from [Human], [Vehicle], and [Bicycle].

4. Trash box icon

If you press the [Set] after clicking, the settings for the selected detection object will be deleted.

Settings to be removed: [Function], [Name], [Target], Settings of bounding box, Settings

- 7. Settings in environment without camera connection
 - 7.1 Perform some processes in non-camera environment
-

of [Training data expansion]

- 5. [Set]

Click to reflect the settings.

7.1.2.3 Bounding box setting

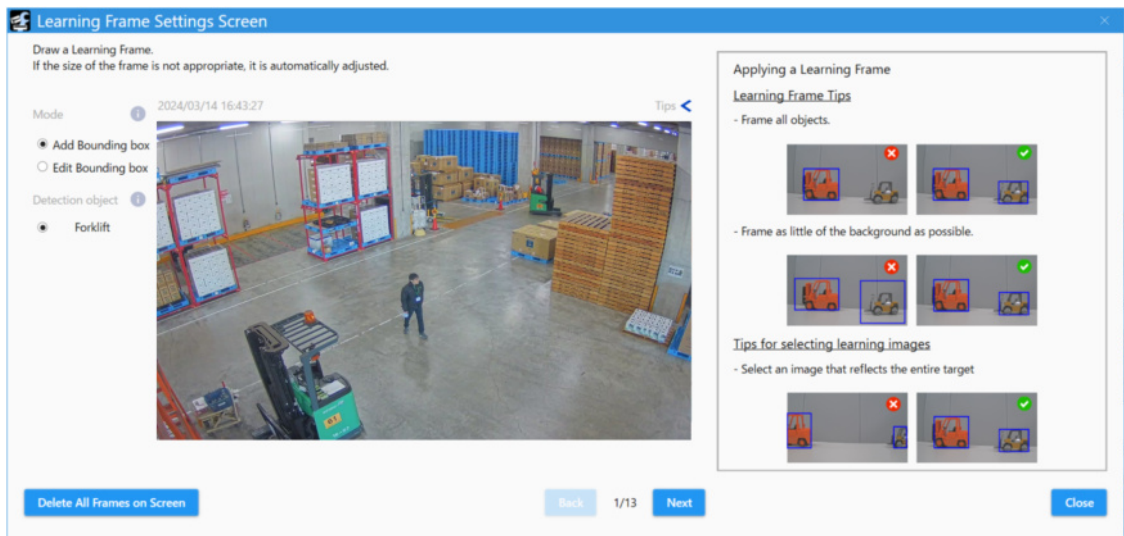
3 Bounding box setting

Click on the image to set the bounding box.

Back

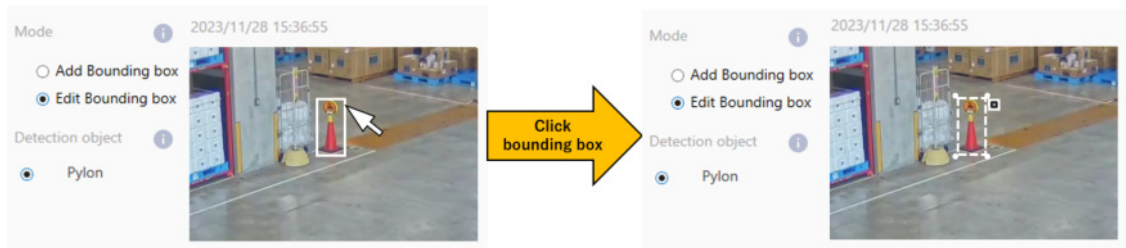
Next

Click the image displayed in the image list to display [Learning Frame Setting Screen] on the separate screen.



- (1) Select [Add Bounding box] in [Mode] to draw a bounding box on the image.
 - You can set the learning frame as a rectangle by dragging it on the image.
 - Select [Edit Bounding box] in [Mode] and click the drawn bounding box to change the size and position of the bounding box or to delete it by clicking the × icon.

7. Settings in environment without camera connection
7.1 Perform some processes in non-camera environment



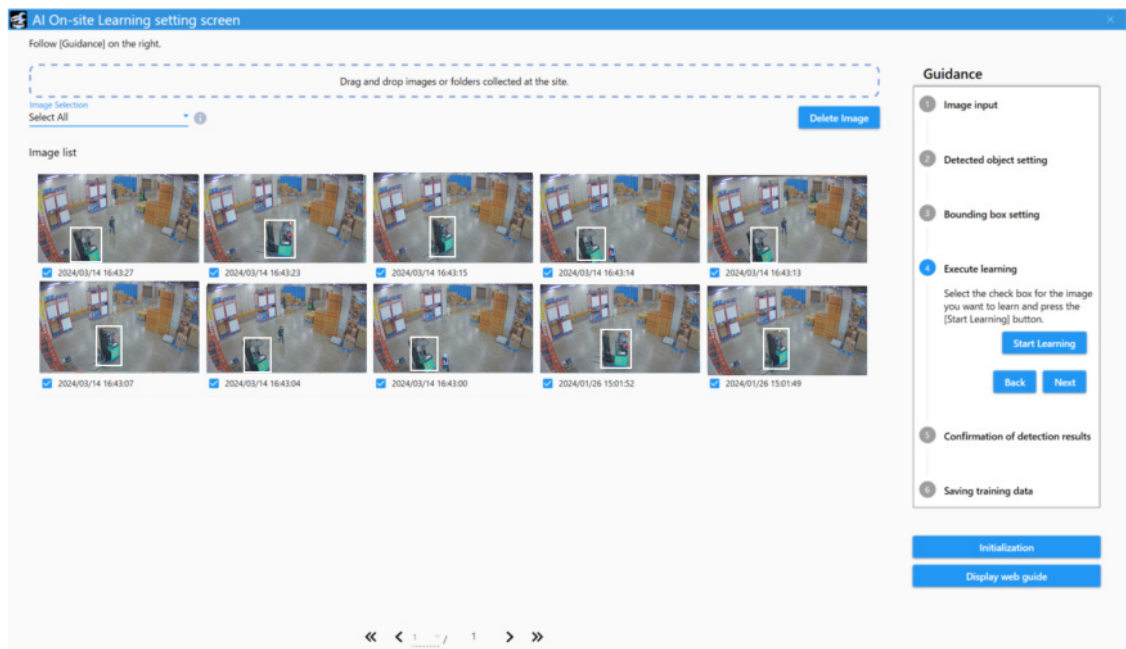
•If the size of the learning frame you draw is too small or too large, the size is automatically adjusted. See the following for the minimum and maximum sizes.

→1.3 [Camera Installation Conditions](#)

•You can set up to 100 bounding box per image.

- (2) Press [Next] to set the bounding box for the remaining images.
 - The setting screen for the next image is displayed.
- (3) When you have set all the learning images, click [Set].
 - [Learning Frame Setting Screen] closes, and you are returned to the [AI On-site Learning setting screen].

7.1.2.4 Execute learning



- (1) Select the image you want to use for learning.
 - Select the check box at the bottom left of the thumbnails of the target images as shown.
 - Learning requires at least 10 images. You can learn up to 200 images.

7. Settings in environment without camera connection
7.1 Perform some processes in non-camera environment

- The maximum number of bounding boxes that can be included in learning images are 1000.



When bounding boxes are set, the check boxes at the bottom left of the thumbnails are automatically checked.

(2) Press [Start Learning] to execute learning.

- When learning is completed, the confirmation screen is displayed.

7.1.2.5 Confirmation of detection results

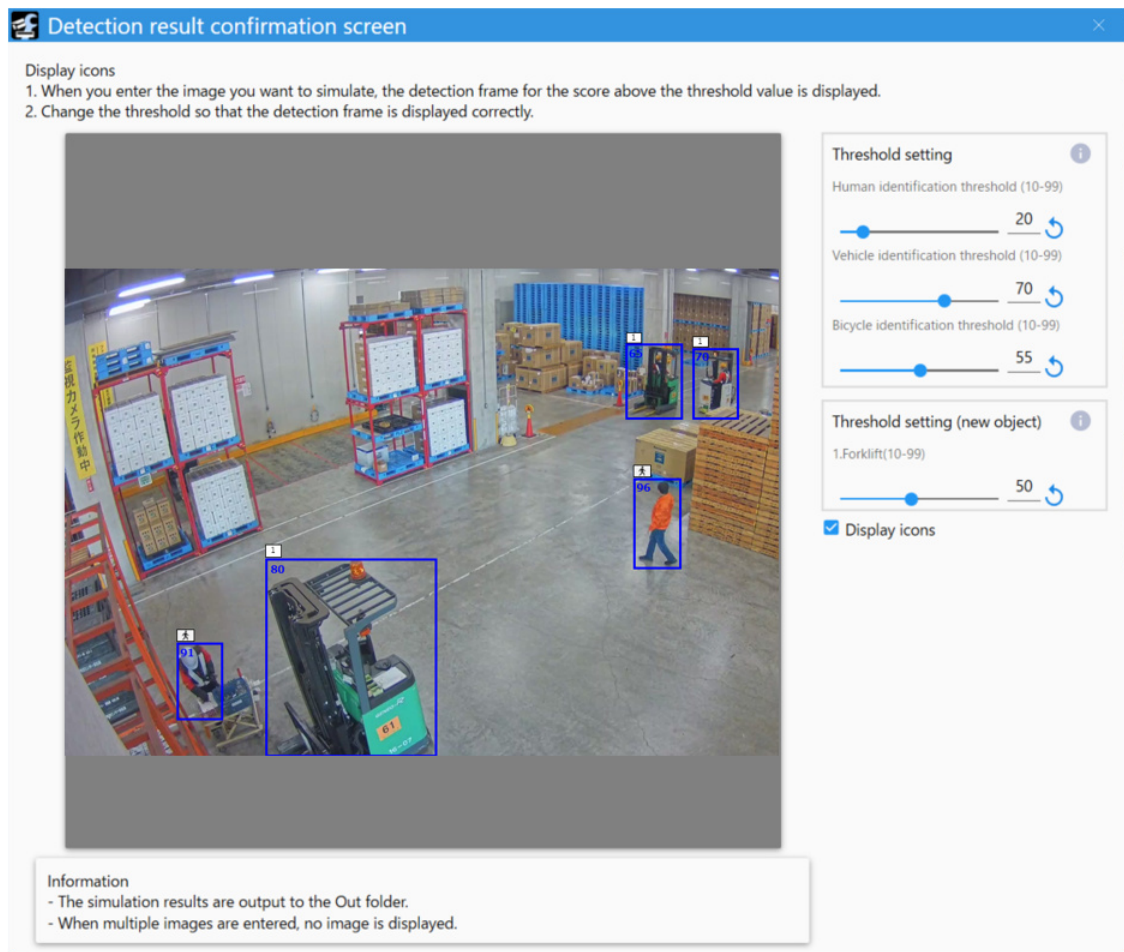
5 Confirmation of detection results

Press [Display] to confirm the results.
Check that the collected images are correctly detected.



Confirm the learning results. Press [Display] to open the [Detection Result Confirmation window] on the separate window.

7. Settings in environment without camera connection
7.1 Perform some processes in non-camera environment



In the [Detection result confirmation screen], enter the image for which you wish to simulate detection accuracy, and the detection results will be displayed. While viewing the displayed detection results, change the threshold value and adjust it so that the detection frame is displayed correctly.

1. [Human identification threshold]

- Set the detection threshold for people. The smaller the value, the easier it is to detect people, but it is also likely to return more false detections.

10 to 99

Default: 20

2. [Vehicle identification threshold]

- Set the detection threshold for vehicles. The smaller the value, the easier it is to detect vehicles, but it is also likely to return more false detections.

10 to 99

Default: 70

3. [Bicycle identification threshold]

7. Settings in environment without camera connection
7.1 Perform some processes in non-camera environment

- Set the detection threshold for bicycles. The smaller the value, the easier it is to detect bicycles, but it is also likely to return more false detections.

10~99

Default: 55

4. [Threshold setting] for new objects

- Set the detection threshold for objects 1 to 5. The smaller the value, the easier it is to detect objects 1 to 5, but it is also likely to return more false detections.

10 to 99

Default: 50

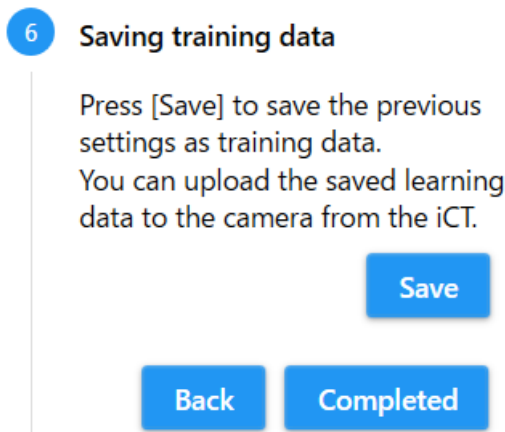
5. [Display icons]

- Select to display the [Detection Object] icons.



The following formats are supported for input images: .jpg and .png.

7.1.2.6 Saving training data



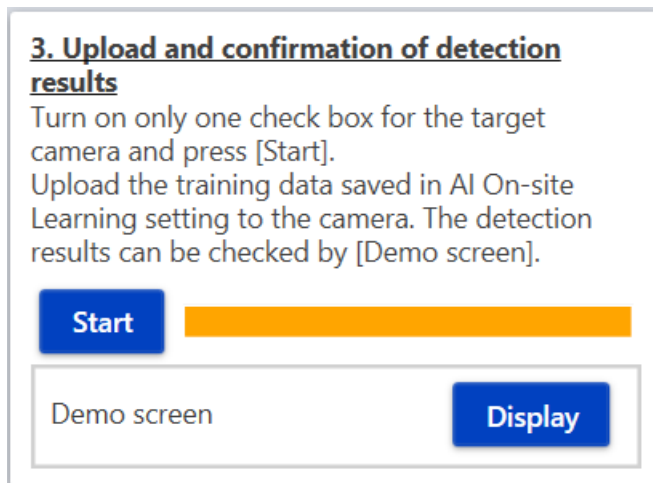
Saves the AI On-site Learning settings as training data.

- (1) Press [Save].
 - The folder browsing screen will appear in a separate window.
- (2) Select a folder to save the training data, and press [OK].
 - Saving of the training data will start.
 - The saved training data will be saved as a zip file.
- (3) Press [Completed] to exit AI On-site Learning setting.



To clear the training information of detector 1 and execute a new training, press the [Initialize] button. Note that pressing the [Initialize] button will delete all values and images that have already been set in the AI On-site Learning settings. However, the training information except for detector 1 will not be cleared.

7.1.3 Upload and configuration of detection results



Upload the training data saved in [AI On-Site Learning setting] to the camera.

- (1) Press [Start].
 - The file selection screen will appear in a separate window.
- (2) Select the training data (zip file) saved in 7.1.2.6 and press [Open].
 - A confirmation screen will appear on a separate screen. Press [OK] to start uploading.
- (3) When the upload is complete, press [Display].
 - The demo screen will appear in a separate window. See below for details on the demo screen.
 - 5. [Demo Screen](#)

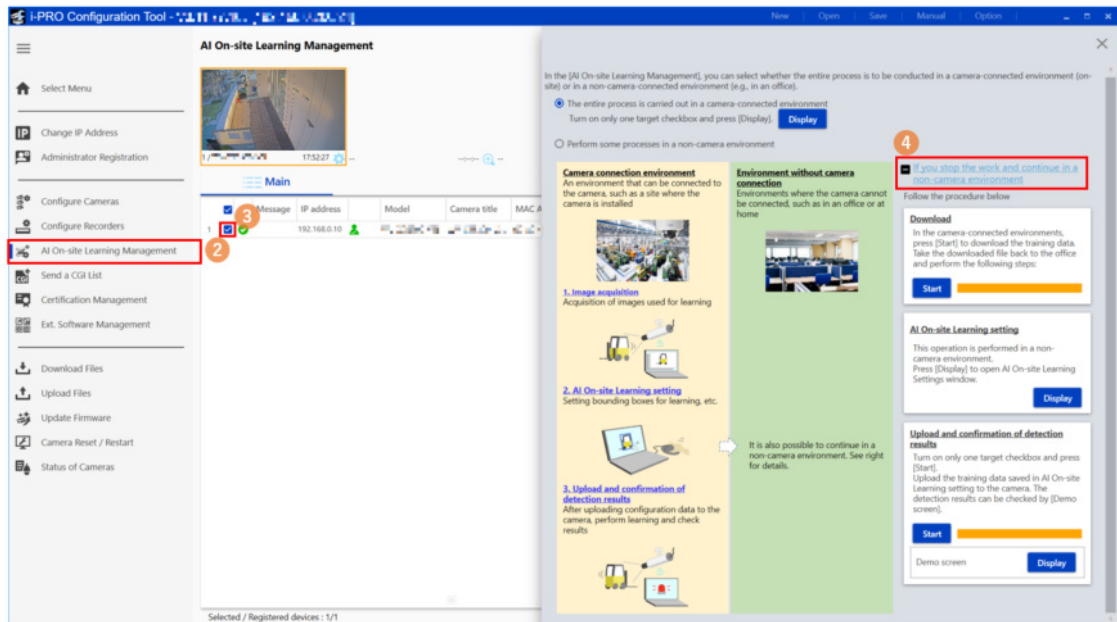


If the check box for the target camera for which you want to upload data is not checked, you will not be able to press [Start]. Please check only one check box for the target camera and press [Start].

7. Settings in environment without camera connection

7.2 Stop the work in a camera-connected environment and continue in a non-camera environment

7.2 Stop the work in a camera-connected environment and continue in a non-camera environment



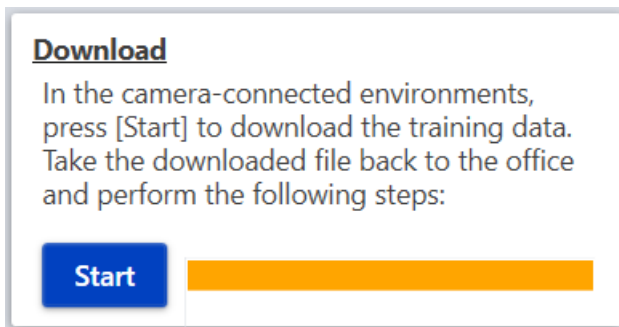
- (1) Close [AI On-site Learning setting screen].
 - Return to the [AI On-site Learning Management] screen.
- (2) Select [AI On-site Learning Management] from the sub-menu.
- (3) Check the checkbox of the cameras for which you want to configure for this product.



Configure this product one camera at a time. Please check only one check box for each camera.

- (4) Click [If you stop the work and continue in a non-camera environment].
 - The item will expand and the settings will be displayed.

7.2.1 Download



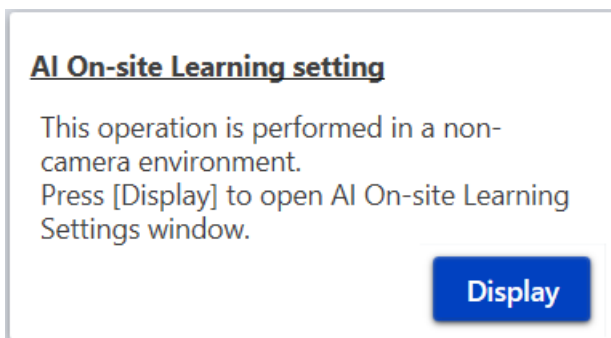
Download the data (learning images, setting of bounding boxes) from the camera in order to bring the data in the process of work back to the non-camera environment.

- (1) Press [Start].
 - The folder browse screen will appear on a separate screen.
- (2) Select the folder where the data will be saved, and press [OK].
 - Data downloading starts.
 - The downloaded data will be saved as a zip file.



If the check box for the target camera for which you want to download data is not checked, you will not be able to press [Start]. Please check only one checkbox for the target camera before pressing [Start].

7.2.2 AI On-site Learning setting

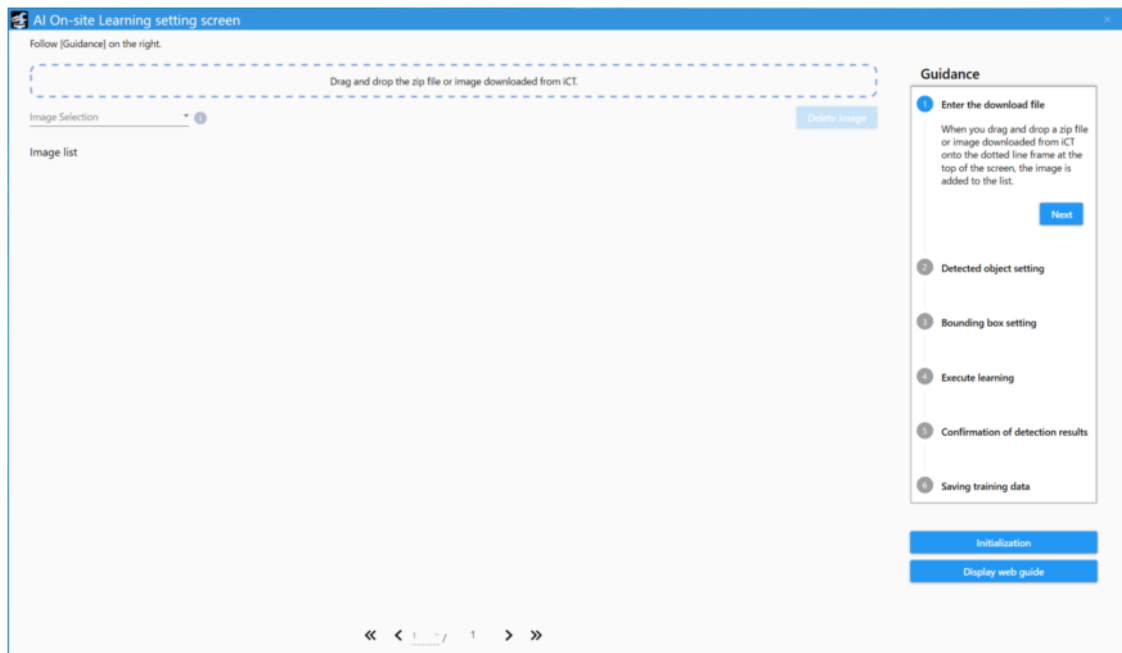


In [AI On-site Learning setting], you can set up AI On-site Learning in an environment where the camera is not connected. Click [Display] to display the [AI On-site Learning setting screen] in a separate window.

In the [AI On-site Learning settings screen], you can configure the settings for detector 1.

7. Settings in environment without camera connection

7.2 Stop the work in a camera-connected environment and continue in a non-camera environment



7.2.2.1 Enter the downloaded file

1 Enter the download file

When you drag and drop a zip file or image downloaded from iCT onto the dotted line frame at the top of the screen, the image is added to the list.

Next

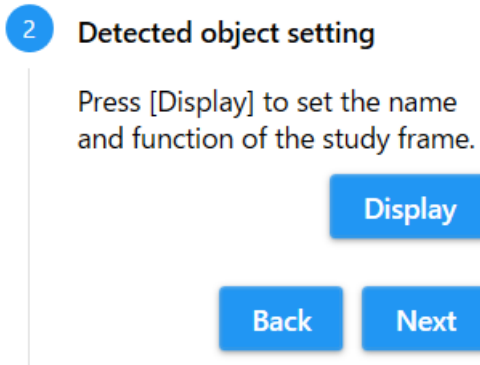
Drag and drop the zip file or image downloaded from the camera in 7.2.1 into the dotted frame at the top of the screen. The entered image will be added to the list.

If you want to remove the added image from the list, check the checkbox at the bottom left of the thumbnail of the target image and press the [Delete Image].

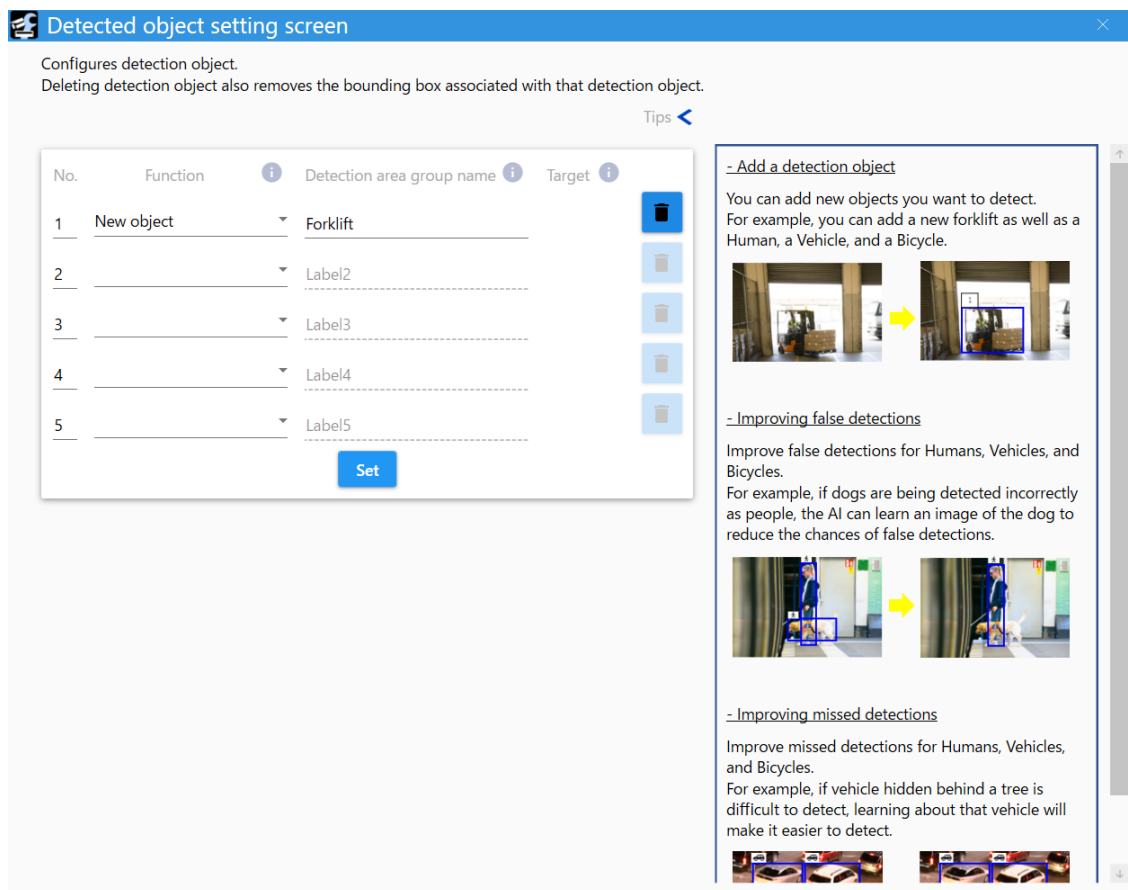
7. Settings in environment without camera connection

7.2 Stop the work in a camera-connected environment and continue in a non-camera environment

7.2.2.2 Detected object setting



Press [Display] to display the [Detected object setting screen] in a separate window.



In [Detected object setting screen], configure the following settings for up to five detection objects.

1. [Function]

You can set the Detection Function for each of the five [Detection Objects].

[New object]: You can add a new object you want to detect.

7. Settings in environment without camera connection

7.2 Stop the work in a camera-connected environment and continue in a non-camera environment

[False detection]: Improving false detection of human, vehicle and bicycle.

[Missed detection]: Improve missed detection of human, vehicle and bicycle.

2. [Name]

Set the name of detection object. You can set up to 20 half-pitch characters.

3. [Target]

If [False detection] or [Missed detection] is selected for [Function], select detection object to be improved.

Select from [Human], [Vehicle], and [Bicycle].

4. Trash box icon

If you press the [Set] after clicking, the settings for the selected detection object will be deleted.

Settings to be removed: [Function], [Name], [Target], Settings of bounding box, Settings of [Training data expansion]

5. [Set]

Click to reflect the settings.

7.2.2.3 Bounding box setting

3

Bounding box setting

Click on the image to set the bounding box.

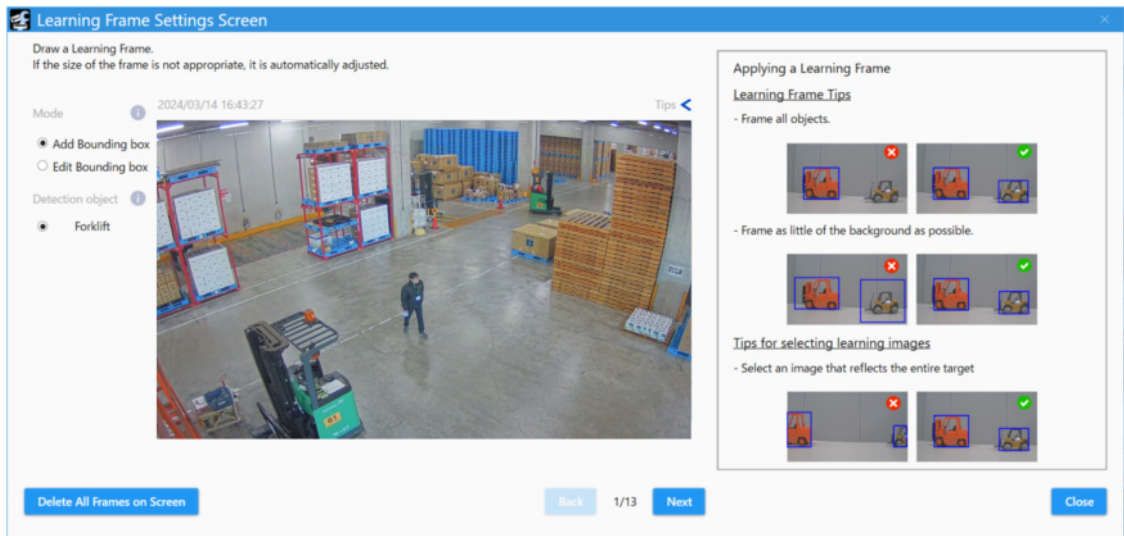
Back

Next

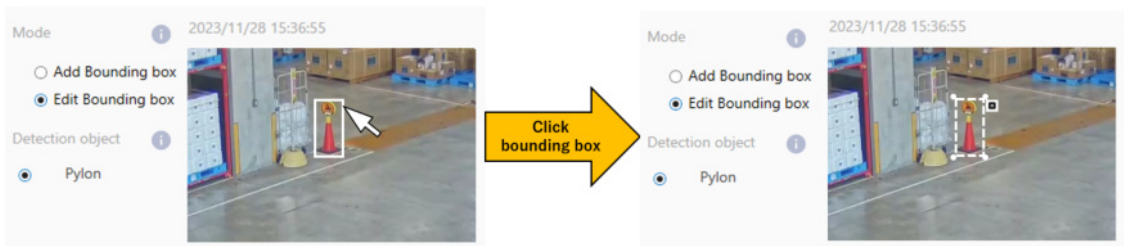
Click the image displayed in the image list to display [Learning Frame Setting Screen] on the separate screen.

7. Settings in environment without camera connection

7.2 Stop the work in a camera-connected environment and continue in a non-camera environment



- (1) Select [Add Bounding box] in [Mode] to draw a bounding box on the image.
 - You can set the learning frame as a rectangle by dragging it on the image.
 - Select [Edit Bounding box] in [Mode] and click the drawn bounding box to change the size and position of the bounding box or to delete it by clicking the × icon.



• If the size of the learning frame you draw is too small or too large, the size is automatically adjusted. See the following for the minimum and maximum sizes.

→ [1.3 Camera Installation Conditions](#)

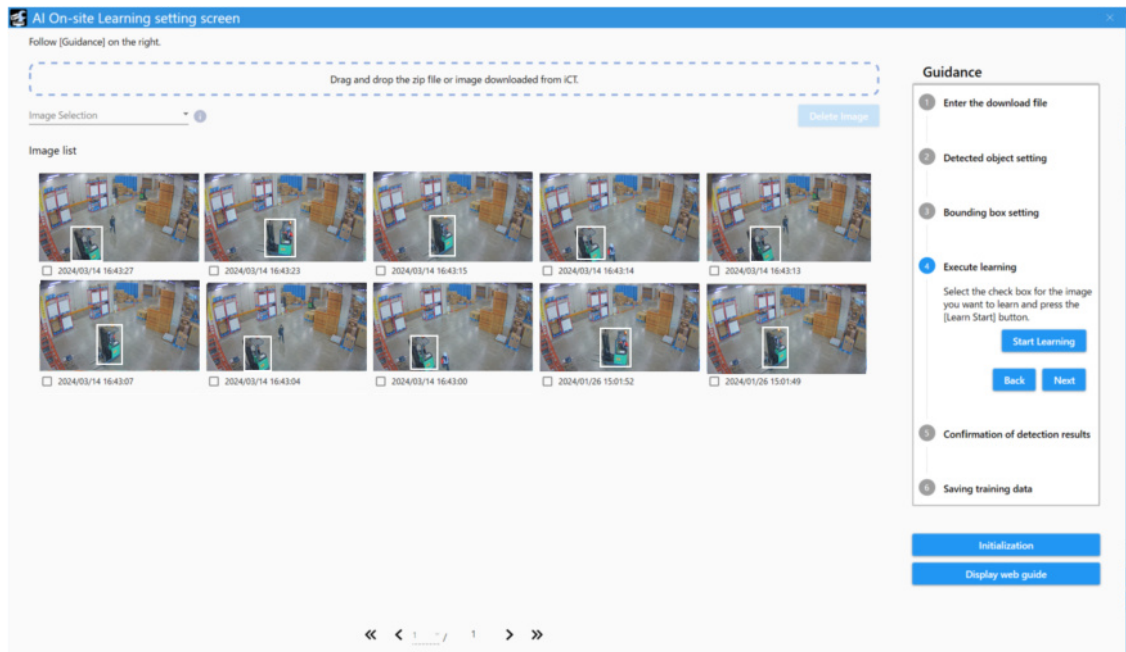
• You can set up to 100 bounding box per image. A total of up to 1000 learning images can be set.

- (2) Press [Next] to set the bounding box for the remaining images.
 - The setting screen for the next image is displayed.
- (3) When you have set all the learning images, click [Set].
 - [Learning Frame Setting Screen] closes, and you are returned to the [AI On-site Learning setting screen].

7. Settings in environment without camera connection

7.2 Stop the work in a camera-connected environment and continue in a non-camera environment

7.2.2.4 Execute learning



(1) Select the image you want to use for learning.

- Select the check box at the bottom left of the thumbnails of the target images as shown.
- Learning requires at least 10 images. You can learn up to 200 images.
- The maximum number of bounding boxes that can be included in learning images are 1000.



When bounding boxes are set, the check boxes at the bottom left of the thumbnails are automatically checked.

(2) Press [Start Learning] to execute learning.

- When learning is completed, the confirmation screen is displayed.

- 7. Settings in environment without camera connection
- 7.2 Stop the work in a camera-connected environment and continue in a non-camera environment

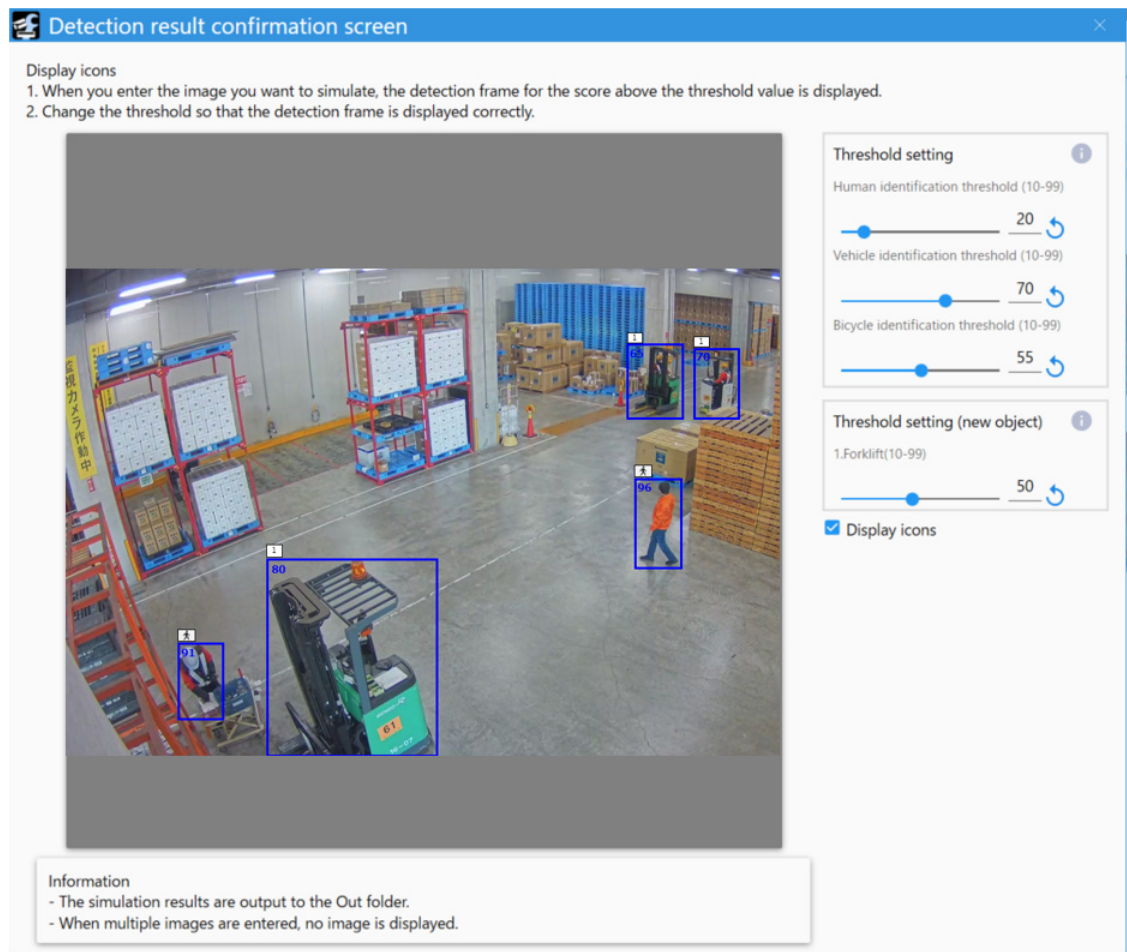
7.2.2.5 Confirmation of detection results

5 Confirmation of detection results

Press [Display] to confirm the results.
Check that the collected images are correctly detected.



Confirm the learning results. Press [Display] to open the [Detection Result Confirmation window] on the separate window.



In the [Detection result confirmation screen], enter the image for which you wish to simulate detection accuracy, and the detection results will be displayed. While viewing the displayed

7. Settings in environment without camera connection

7.2 Stop the work in a camera-connected environment and continue in a non-camera environment

detection results, change the threshold value and adjust it so that the detection frame is displayed correctly.

1. [Human identification threshold]

- Set the detection threshold for people. The smaller the value, the easier it is to detect people, but it is also likely to return more false detections.

10 to 99

Default: 20

2. [Vehicle identification threshold]

- Set the detection threshold for vehicles. The smaller the value, the easier it is to detect vehicles, but it is also likely to return more false detections.

10 to 99

Default: 70

3. [Bicycle identification threshold]

- Set the detection threshold for bicycles. The smaller the value, the easier it is to detect bicycles, but it is also likely to return more false detections.

10~99

Default: 55

4. [Threshold setting] for new objects

- Set the detection threshold for objects 1 to 5. The smaller the value, the easier it is to detect objects 1 to 5, but it is also likely to return more false detections.

10 to 99

Default: 50

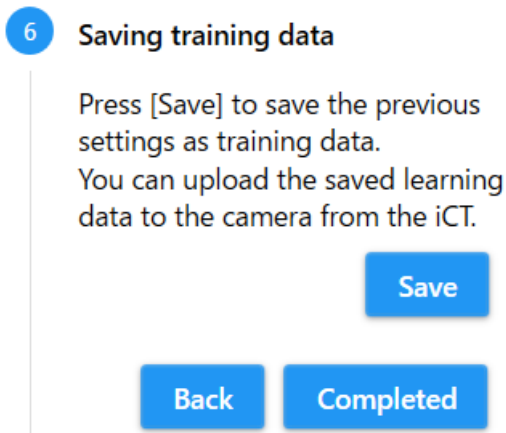
5. [Display icons]

- Select to display the [Detection Object] icons.



The following formats are supported for input images: .jpg and .png.

7.2.2.6 Saving training data



Saves the AI On-site Learning settings as training data.

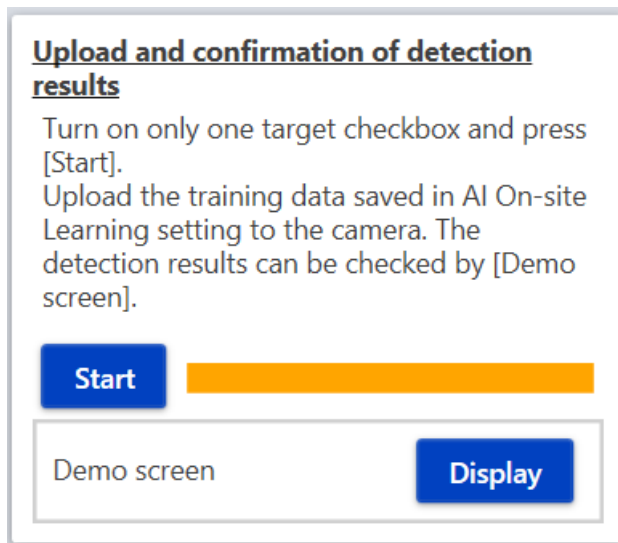
- (1) Press [Save].
 - The folder browsing screen will appear in a separate window.
- (2) Select a folder to save the training data, and press [OK].
 - Saving of the training data will start.
 - The saved training data will be saved as a zip file.
- (3) Press [Completed] to exit AI On-site Learning setting.



To clear the training information of detector 1 and execute a new training, press the [Initialize] button. Note that pressing the [Initialize] button will delete all values and images that have already been set in the AI On-site Learning settings. However, the training information except for detector 1 will not be cleared.

- 7. Settings in environment without camera connection
 - 7.2 Stop the work in a camera-connected environment and continue in a non-camera environment
-

7.2.3 Upload and configuration of detection results



Please see below.

→[7.1.3 Upload and configuration of detection results](#)

8. Others

8.1 Specifications

8.1.1 PC environment

See the camera's instruction manual for more information on the necessary PC operating environment.

8.1.2 Supported cameras



See the following for more information on the supported combinations of this product and cameras, as well as any restrictions that may apply.

→[Compatibility](#)

<C0103>

8.1.3 Combinations with other AI applications



See the following for more information on the supported combinations of this product and other AI applications, as well as any restrictions that may apply.

→[Technical information](#)

<C0103>

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8.6 Troubleshooting



See the following for more information on troubleshooting.

→ [Technical information](#)

<C0326>

9. Frequently Asked Questions

We would like to inform you about the information in the FAQ for the AI On-site Learning Application.

When using this application, the installation conditions and the method of collecting images for learning will greatly affect the accuracy of detection, so we recommend that you check the site before installation.

For details, please contact your installer or distributor.

9.1 About this application in general

No.	Question	Answer
1	Which cameras can use the AI On-site Learning Application?	Please refer to the following URL for the target cameras. → Technical Information <C0103>
2	Can I learn to detect anything if I learn?	The detection performance of the on-site learning function depends on the learning results and the environment in which it is used. It is not suitable for use in use cases where perfect detection performance is required. Please check the operation at the installation site thoroughly before use. We do not guarantee any detection performance.
3	What is suitable or unsuitable for on-site learning?	Objects with clear contours (e.g., special vehicles such as forklifts, certain types of animals, etc.) are suitable for field study. Conversely, objects with indefinite shapes (flames, smoke, rain, etc.) are not suitable.

4	Can you provide a learning model from the beginning that detects various things without learning?	Creating a model that can detect any background and any angle of view requires a large number of images. The advantage of on-site learning is that high detection accuracy can be achieved with a small amount of learning images, since the training can be performed on actual images of the scene to be detected.
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9.2 About learning

No.	Question	Answer
1	How many images do I need to learn?	Between 10 and 200 images can be used for learning. For objects with little change in reflection, 10 images may be sufficient. If the change in reflection (change in size, change in visibility due to orientation, percentage of background in the frame for learning, color with brightness change) is large, increasing the number of images for learning will make it easier to detect the object.
2	Can I also learn on-site from recorded video?	Yes, you can use them as learning images by pre-converting them to still images in JPEG or PNG format. Please see below for details. → 3.2.3 Upload images from PC
3	Can the system learn from images other than those from installed cameras?	Images from other cameras can be used for learning, but it is better to use images from cameras in the field for accuracy.
4	It takes time to set up the bounding box. Is there an easy way to do this?	In case of improving false detection or improving missed detection, there is a function to automatically set detection frames for human, vehicle, and bicycle. For details, please see below. → 3.3 Set bounding boxes and learn

5	Do you have any tips for setting up a bounding box?	<ul style="list-style-type: none"> – Please frame all objects. – Please frame the object so that it contains as little background as possible. <p>Hints are also provided on the frame setting screen for learning.</p>
6	Do I need an SD card to learn?	It is stored in the camera’s internal memory, so there is no need for an SD card.
7	When do you use the training data extension?	<p>In real-world environments, when it is not possible to collect images of dark environments or images with opposite orientations, etc., the system can automatically increase the number of variations of learning images. For details, please see below.</p> <p>→4.3 Advanced learning settings</p>
8	When replacing a camera, do I need to relearn it?	<p>By downloading the detector and uploading it to the new camera, you can use the detector as it was before the camera was replaced.</p> <p>For details, please see below.</p> <p>→4.4 Maintenance</p>

9.3 About detection

No.	Question	Answer
1	What it has learned is not detected.	Adjust the score threshold. If you have difficulty detecting a particular reflection, add an learning images of that reflection.
2	It will falsely detect things other than what it has learned.	Adjust the score threshold. Adding learning images that show objects prone to false detection may also improve it. The Guidance window also provides tips for learning.
3	What size can be detected?	<p>See below.</p> <p>→1.3 Camera Installation Conditions</p>

4	It is only trained on color images, but can it detect black-and-white images as well?	Although black-and-white images may be detected in some cases, if detection is difficult, adding black-and-white images to the learning or selecting [black-and-white image] in the [Training data extension] may improve the detection.
5	Is it possible to detect objects of different colors than the learned object? Conversely, can only the learned colors be detected?	Although different colors may still be detected, learning with [Do not distinguish between colors] enabled will make it easier to detect different colors. If you want to detect only learned colors, disable the [Do not distinguish between colors] option. For details, please refer to the following. →4.3 Advanced learning settings
6	Can I use the detector with other cameras?	Yes. However, the accuracy of detection in the destination camera depends on how the image is viewed. If the images are similar in reflection to the learned images, detection may be possible; however, to improve detection performance, it is recommended that images taken by each camera be added to the learning.

9.4 About On-site learning of forklifts

As a concrete example, this section provides an FAQ on learning a forklift as a new detection object.

No.	Question	Answer
1	Does the entire forklift need to be in the image?	Collect images showing the entire forklift.

9. Frequently Asked Questions
 9.4 About On-site learning of forklifts

2	How do I learn if my forklift is hidden by luggage?	If the area hidden by the cargo is small, attach the bounding box to the area other than the cargo (only the body of the forklift), so that it is less affected by the cargo. If the area hidden by the cargo is large, attach the bounding box to the entire forklift truck, including the cargo.
3	Do they need to learn to forklift forward and backward as well as sideways?	It is necessary to learn the image for the orientation you want to detect.
4	Do I need to learn both forklifts from different manufacturers?	If the shapes are similar, they are likely to be recognizable, but those with different shapes must be learned individually.
5	Is it possible to detect objects of different colors than the learned object? Conversely, can only the learned colors be detected?	Each should be learned as a separate object.
6	Should I have them learn each counter and reach type?	Yes. However, the accuracy of detection in the destination camera depends on how the image is viewed. If the images are similar to the learned images, accurate detection may be possible, but additional learning may be required for each camera to achieve accuracy.