Lens Selection Software

User Manual

Legal Information

User Manual

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Symbol Conventions

The symbols that may be found in this document are defined as follows.

Symbol	Description
⚠ Danger	Indicates a hazardous situation which, if not avoided, will or could result in death or serious injury.
⚠ Caution	Indicates a potentially hazardous situation which, if not avoided, could result in equipment damage, data loss, performance degradation, or unexpected results.
📖 Note	Provides additional information to emphasize or supplement important points of the main text.

Contents

Chapter 1 Introduction

The Lens Selection software provides help for installing cameras, calculating the installation parameters,such as field of view and pixel density. Also it can calculate the maximum detected distance of fire source and line crossing object for thermal camera. The supported camera types are: box camera, speed dome, thermal camera, network camera, analog camera, 360° Panoramic +PTZ Camera, 180° Panoramic+PTZ Camera, and fisheye camera. You can also export the solution of camera deployment in pdf file.

1.1 Running Environment

The followings are the recommended running environment for installing the client software.

- Operating System: Microsoft Windows 10 / Microsoft Windows 7 / Windows 2008 32 / 64-bit Windows XP / Windows 2003 32-bit
- CPU: Intel Pentium IV @ 3.0 GHz or later
- RAM: 1G or better
- Video Card: RADEON X700 Series
- Display: 1024*768 resolution or better
- Graphics Card: OpenGL 3.3 or later

1.2 Conventions

In order to simplify the description, we define the "Lens Selection software" as "software" in the following chapters.

Chapter 2 Operate Lens Selection Software

You can add different camera models to the software and then adjust their installation parameters (such as lens model, filed of view parameters and range of view parameters). And after defining your desired installation parameters, you can simulate surveillance scenario to further adjust the parameters to meet your surveillance requirement.

After installing the software, click on the desktop (if you created desktop shortcut) or click **Lens Selection** in the menu of your PC to run the software.

The software's home page is shown below:
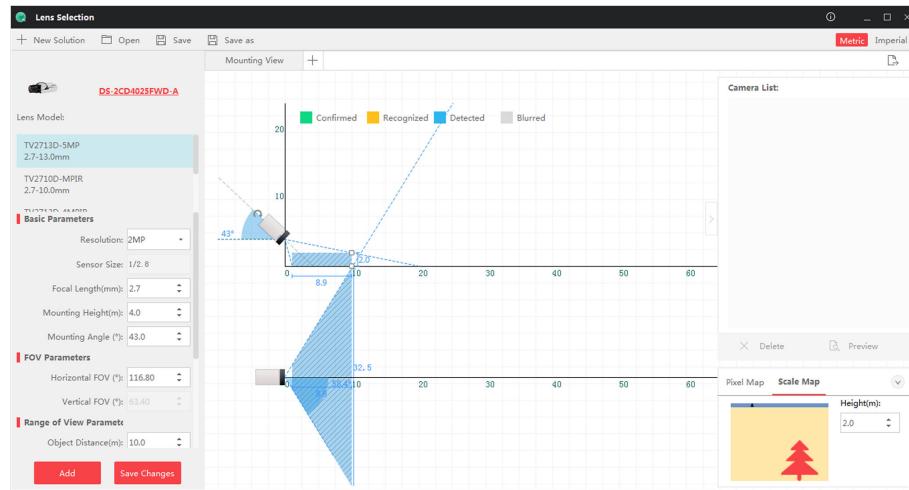
Figure 2-1 Home Page

2.1 Flow Chart

The general operating process is as follows:
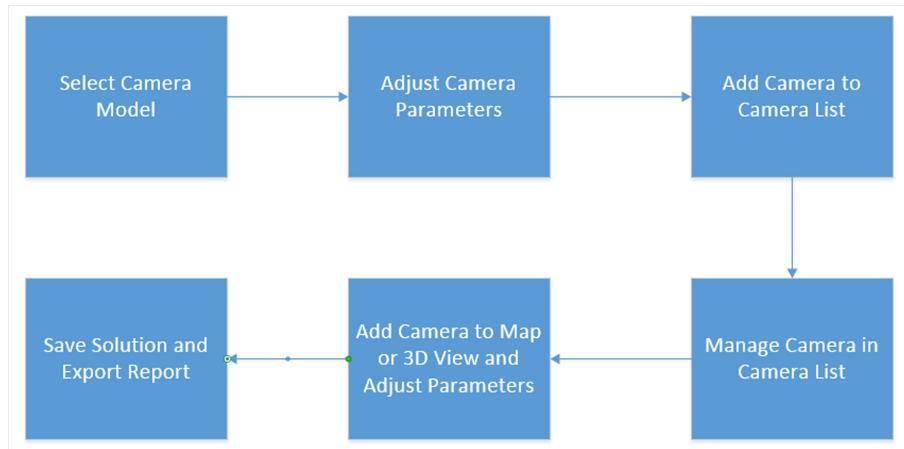
Figure 2-2 Flow Chart

$\boxed{i}$**Note**

For different camera type, some parameters and detailed steps are different.

2.2 Select Camera Model

You can select camera models of different camera types for further operations such as adjusting the Field of View parameters and Range of View parameters.

Perform this task if you need to select camera model.

Steps

1. Click the camera model on the left panel.
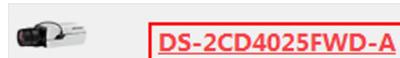
Figure 2-3 Camera Model on the Left Panel

The Select Camera window opens.

2. Select a camera type from the **Camera Type** drop-down list.

You can select **Network Camera & Analog Camera**, **Box Camera**, **Fisheye Camera**, **360° Panoramic+PTZ Camera & 180° Panoramic+PTZ Camera**, **Thermal Camera**, **Speed Dome**, or **Custom Camera**

$\boxed{i}$**Note**

You can add custom models of network camera or analog camera if needed. For details, see **Add Custom Camera** for details.

---

3. Optional: Filter the camera model according to focal length, resolution and keywords.
4. Double-click to select a camera model.

The default parameters of the camera, such as resolution, mounting height, Field of View parameters, and Range of View parameters, will be displayed on the left panel.

What to do next
Adjust the parameters to fulfill your surveillance requirements.

[i]**Note**

For details, see ***Adjust Camera's Parameters*** .

2.3 Add Custom Camera

If you can't find a required model of network camera or analog camera in the provided camera list, you can add one.

Perform this task if you need to add a custom camera.

Steps
1. Click the camera model on the left panel.

Figure 2-4 Camera Model

The Select Camera window opens.

2. Click **Add Custom Model** on the upper-right side of the window to open the Add Custom Model window.
3. Set the required parameters, including camera model, camera type (network camera or analog camera), resolution, focal length type, focal length, horizontal FOV, and vertical FOV.
4. **Optional:** Enter the camera description.
5. Tap **Confirm** to save the settings.

The custom model will be displayed on the camera model list of **Custom Camera**.

6. **Optional:** Move the cursor on the custom model and then click 🗑 to delete it.

2.4 Adjust Camera's Parameters

After selecting camera models, you need to adjust the camera's parameters for desired surveillance. For different types of cameras, the parameters needs to be adjusted and the steps are slightly different. See the following tasks for details.

2.4.1 Adjust Box Camera's Parameters

After selecting a specific camera model of the box camera, you should adjust the camera parameters to set the desired image quality, field of view, and range of view, etc.

Perform this task if you need to adjust the box camera's parameters.

Steps

1. Select a specific camera model of the box camera.

> ⓘ**Note**
>
> See *Select Camera Model* for details.

2. Select a lens model if the camera supports multiple lens models.

Lens Model:

TV2713D-5MP
2.7-13.0mm

TV2710D-MPIR
2.7-10.0mm
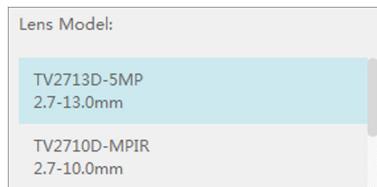
Figure 2-5 Select Lens Model

> ⓘ**Note**
>
> The camera should support changing lens model, or the lens model will not be displayed.

3. Select **Metric** or **Imperial** (on the upper-right corner of the main interface) as the system of measurement.

4. Set the basic parameters, filed of view parameters, range of view parameters, and custom pixel density as you desired.

Focal Length

Each lens model has a range of focal length.

> ⓘ**Note**
>
> When the value is out of range, the **Focal Length**field will become yellow. You should reselect the lens model.

The mounting view will change simultaneously with your adjustment of the parameters.

In the mounting view, different colors indicate different recognition capabilities.

- Confirmed: The person's face can be recognized.
- Recognized: The person's face can be recognized.
- Detected: The person's cloth color and behavior can be recognized.
- Blurred: The image is blurred.
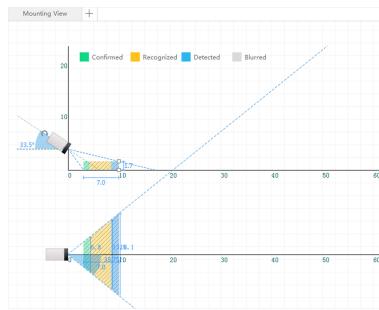
Figure 2-6 Mounting View

5. Adjust the parameters in mounting view.

Adjust Mounting Height	Drag the camera icon vertically to adjust the mounting height of camera.
Adjust Mounting Angle	Rotate the curved arrow to adjust the mounting angle in vertical plane.
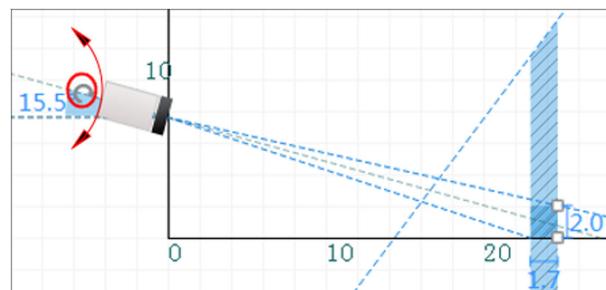
Figure 2-7 Adjust Mounting Angle

Adjust Range of View	Drag the square icon (marked in the picture below) vertically to adjust the height of view, Drag the square icon horizontally to adjust the distance of view.
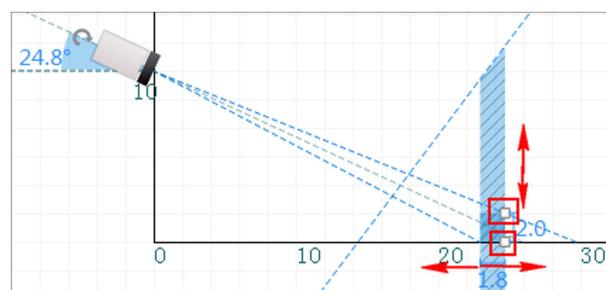
Figure 2-8 Adjust Range of View

6. Click **Pixel Map** in the lower-right corner to preview the monitoring result of long shot, including person and license plate picture.
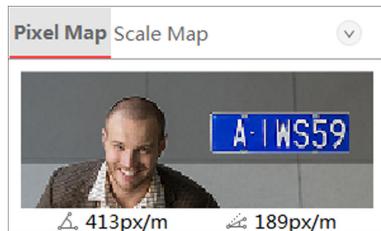
Figure 2-9 Pixel Map

7. Click **Scale Map** in the lower-right corner to preview the imaging result of close shot and long shot.

- Black Tree: Imaging result of long shot.
- Red Tree: Imaging result of close shot.

ⓘ**Note**

You can adjust the height according to actual object height.
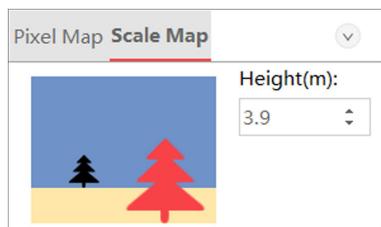
Figure 2-10 Scale Map

8. **Optional:** Click ⌄ to hide or show the pixel and scale map.
9. Click **Add** to add the camera to the camera list.

2.4.2 Adjust Fisheye Camera's Parameters

After selecting a specific camera model of the fisheye camera, you should adjust the camera parameters to set the desired image quality, field of view, and range of view, etc.

Perform this task if you need adjust the fisheye camera's parameters.

Steps

1. Select a specific camera model of the fisheye camera.

ⓘ**Note**

See *Select Camera Model* for details.

2. Select **Metric** or **Imperial** (on the upper-right corner of the main interface) as the system of measurement.
3. Set the basic parameters, range of view parameters, and custom pixel density.

   Mounting Height

The value should be larger than or equal to the object height.

The mounting view will change simulataneously with your adjustment of the parameters.

In the mounting view, different colors indicate different recognition capabilities.

- Confirmed: The person's face can be recognized.
- Recognized: The person's face can be recognized.
- Detected: The person's cloth color and behavior can be recognized.
- Blurred: The image is blurred.
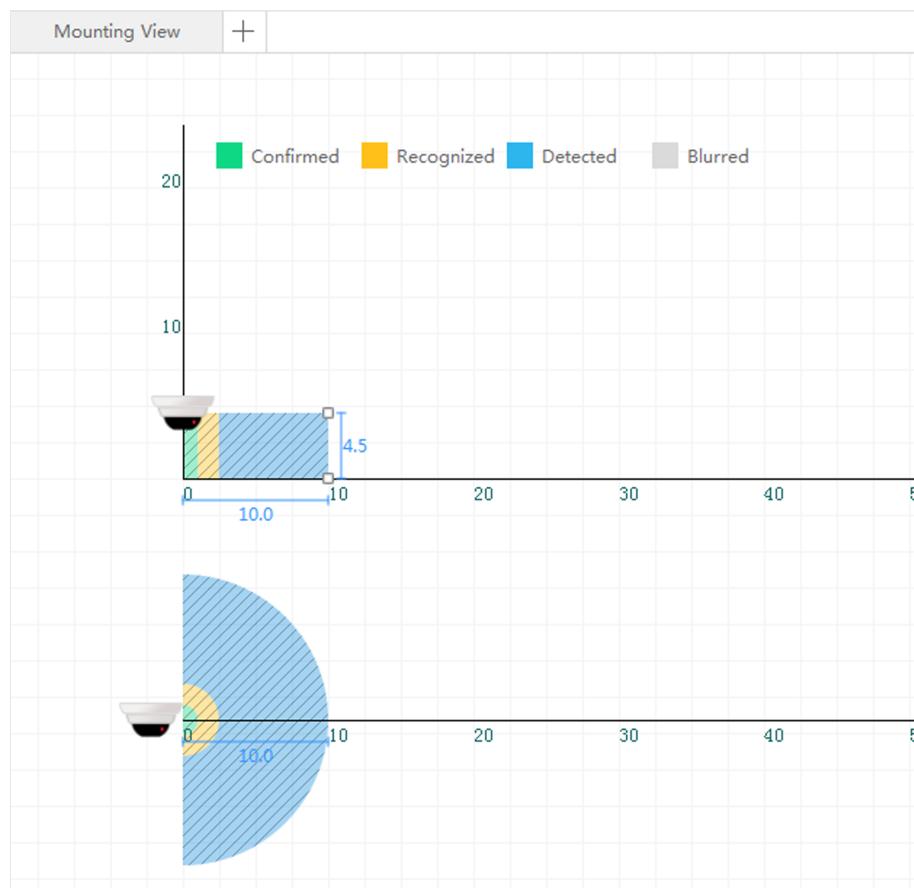
Figure 2-11 Mounting View

4. Adjust the parameters in mounting view.

Adjust Mounting Height	Drag the camera icon vertically to adjust the mounting height of camera.
Adjust Range of View	Drag the square icon (marked in the picture below) vertically to adjust the height of view.
	Drag the square icon horizontally to adjust the distance of view.
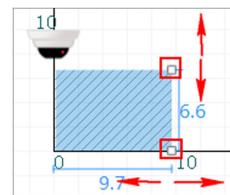
Figure 2-12 Adjust Range of View

5. Click **Pixel Map** in the lower-right corner to preview the monitoring result of long shot, including person and license plate picture.

    The pixel density of long shot will be displayed under the picture.
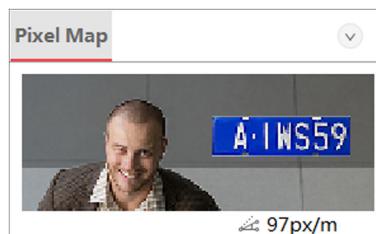
Figure 2-13 Pixel Map

6. **Optional:** Click ⌄ to hide or show the pixel and scale map.
7. Click **Add** to add the camera to the camera list.

2.4.3 Adjust Thermal Camera's Parameters

After selecting a specific camera model of the thermal camera, you should adjust the camera parameters to set the desired image quality, field of view, and range of view, etc.

Perform this task if you need to adjust the thermal camera's parameters.

Steps
1. Select a specific camera model of the thermal camera.

    ⓘ**Note**

    See **Select Camera Model** for details.

2. Select **Metric** or **Imperial** (on the upper-right corner of the main interface) as the system of measurement.
3. Set the basic parameters, filed of view parameters, and range of view parameters, the thermal smart parameters, and custom pixel density parameters.

    Focal Length

    The value should be within the range.

    Max. Distance

    The maximum detectable distance of fire source, line crossing object and hot object.

    Hot Object

Object with high temperature.

The mounting view will change simultaneously with your adjustment of the parameters.

In the mounting view, different colors indicate different recognition capabilities are different.

- Confirmed: The person's face can be recognized.
- Recognized: The person's face can be recognized.
- Detected: The person's cloth color and behavior can be recognized.
- Blurred: The image is blurred.
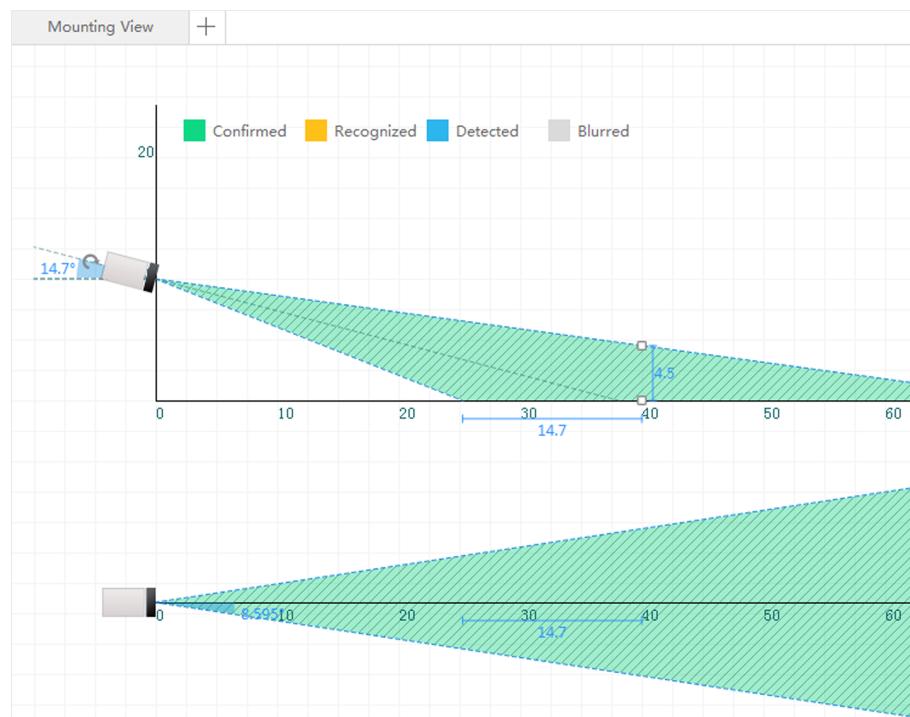
Figure 2-14 Mounting View

4. Adjust the parameters in mounting view.

Adjust Mounting Height	Drag the camera icon to adjust the mounting height of the camera.
Adjust Mounting Angle	Drag the curved arrow to adjust the mounting angle in vertical plane.
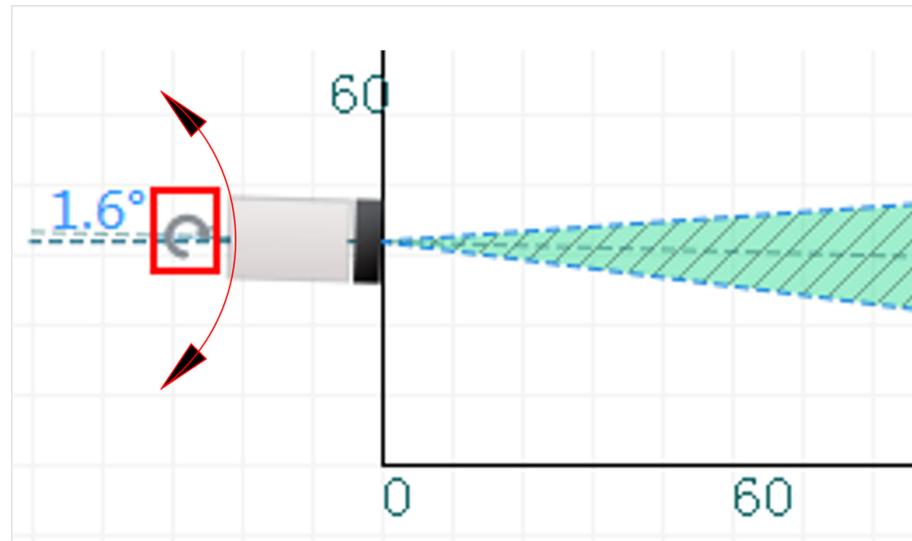
Figure 2-15 Adjust Mounting Angle

Adjust Range of View	Drag the square icon (marked on the picture below) vertically to adjust the height of view. Drag the square icon horizontally to adjust the distance of view.
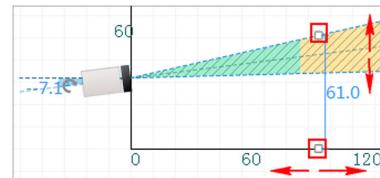
Figure 2-16 Adjust Range of View

5. Click **Pixel Map** in the lower-right corner to preview the monitoring result of long shot, including person and license plate picture.

   The pixel density of long shot will be displayed under the picture.

6. Click **Scale Map** in the lower-right corner to preview the long shot imaging result of person, vehicle and ship.

7. **Optional:** Click ⌄ to hide or show the pixel map and scale map.

8. Click **Add** to add the camera to the camera list.

2.4.4 Adjust Other Cameras' Parameters

After selecting a specific camera model of other camera types, including network camera & analog camera, 360° Panoramic+PTZ Camera & 180° Panoramic+PTZ Camera, speed dome, and custom camera, you should adjust the camera parameters to set the desired image quality, field of view, and field of range, etc.

Perform this task if you need to adjust other cameras' parameters.

Steps

1. Select a specific camera model of network camera & analog camera, 360° Panoramic+PTZ Camera & 180° Panoramic+PTZ Camera, speed dome, or custom camera.

   $\boxed{i}$**Note**

   See **Select Camera Model** for details.

2. Select **Metric** or **Imperial** (on the upper-right corner of the main interface) as the system of measurement.

3. Set the basic parameters, filed of view parameters, and range of view parameters, and custom pixel density.

   Focal Length

   The value should be within the range.

   Max. Distance

   The maximum detectable distance of fire source, line crossing object and hot object.

   Hot Object

   Object with high temperature.

   $\boxed{i}$**Note**

   For 360° Panoramic+PTZ Camera & 180° Panoramic+PTZ Camera, there is a blind zone. The zone radius will be changed with the parameters you set.

   The mounting view will change simultaneously with your adjustment of the parameters.

   In the mounting view, different colors indicate different recognition capabilities.

   - Confirmed: The person's face can be recognized.
   - Recognized: The person's face can be recognized.
   - Detected: The person's cloth color and behavior can be recognized.
   - Blurred: The image is blurred.
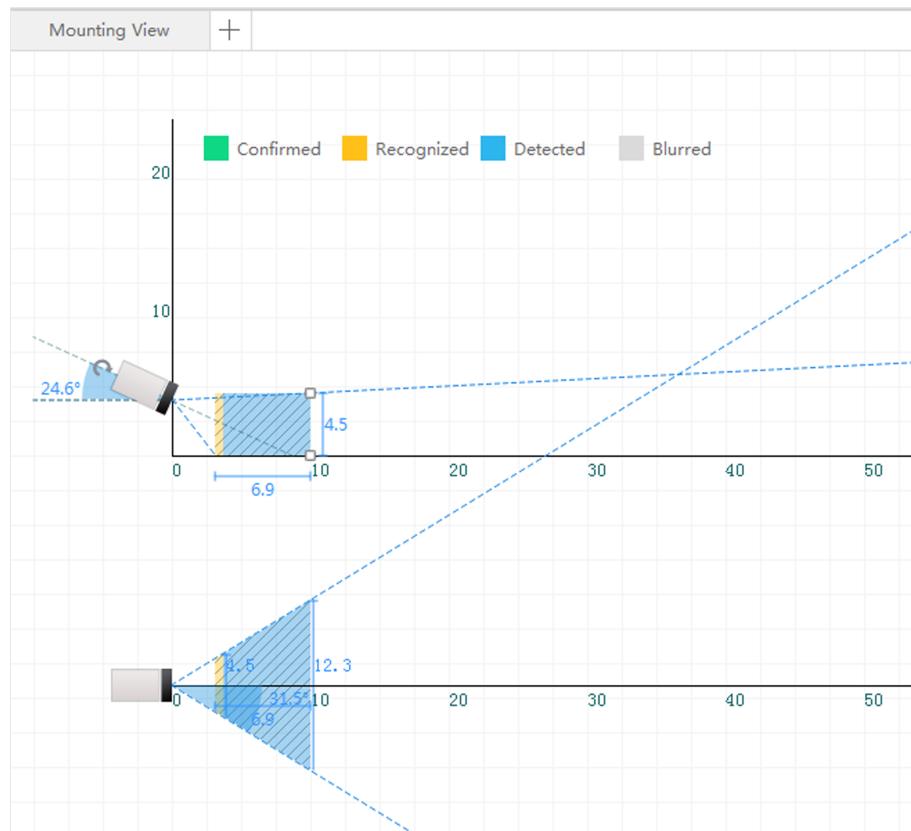
Figure 2-17 Mounting View

4. Adjust the camera parameters.

Adjust Mounting Height	Drag the camera icon vertically to adjust the mounting height of the camera.
Adjust Mounting Angle	Rotate the curved arrow to adjust the mounting angle in vertical plane.
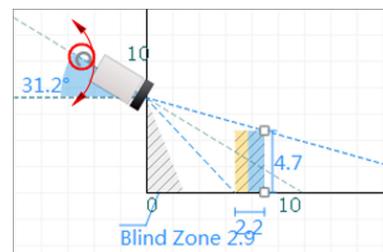
Figure 2-18 Adjust Mounting Angle

Adjust Range of View	Drag the square icon (marked in the picture blow) vertically to adjust the height of view.
	Drag the square icon horizontally to adjust the distance of view.
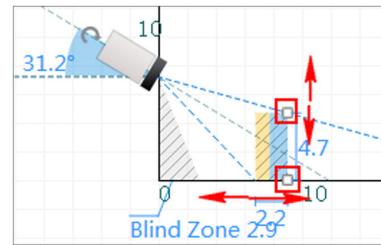
Figure 2-19 Adjust Range of View

5. Click **Pixel Map** in the lower-right corner to preview the monitoring result of long shot, including person and vehicle picture.
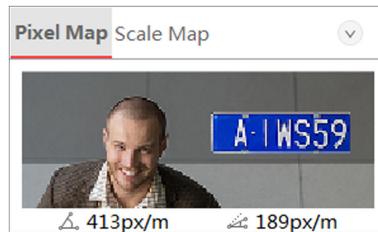
Figure 2-20 Pixel Map

6. Click **Scale Map** in the lower-right corner to preview the imaging result of close shot and long shot.

   • Black Tree: Imaging result of long shot.
   • Red Tree: Imaging result of red tree.
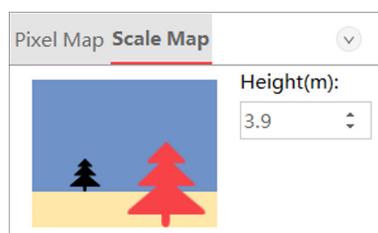
Figure 2-21 Scale Map

7. **Optional:** Adjust the height of the tree according to actual object height.
8. Click ⌄ to hide or show the pixel map and scale map.
9. Click **Add** to add the camera to the camera list.

2.5 Manage Cameras in Camera List

You can preview the selected camera information, edit the camera parameters and delete the camera from the camera list.

Perform this task if you need to manage cameras in camera list.

Steps

ⓘNote

Up to 100 cameras can be added to the camera list.

1. Adjust camera parameters and then add cameras to camera list.

   ⓘNote

   Add cameras to camera list. See **Adjust Camera's Parameters** for details.

2. **Optional:** Perform the following operations on camera list.

Preview Camera Information	Click **Preview** to view the information of the selected camera.
Edit Camera Parameters	Select the camera to edit the camera parameters, click **Save Changes** to save the configuration.
Delete Camera	Select a camera from the camera list and then click **Delete** to delete it.
Show or Hide Camera List	Click 〉 to show or hide the camera list.

2.6 Simulate Surveillance Scenario

After completing adjusting camera parameters on mounting view, you can simulate surveillance scenario to check if the configured camera parameters meet the surveillance requirement. If not, you can further adjust the parameters in the scenario. Two scenario modes are provided, namely, map and 3D view.

2.6.1 Display Camera on Map

After adding cameras to the camera list, you can display them on map to adjust the mounting parameters (e.g. lens direction and mounting angle) for desired surveillance.

Before You Start

Adjust camera's parameters. See **Adjust Camera's Parameters** for details.

Perform this task if you need to display cameras on map.

Steps

1. Click ＋ → **Map** → **OK** to enter the map.
2. Select a camera from the camera list and then drag to a required position on the map.

   The range of view with different recognition capabilities will be displayed.

Table 2-1 Recognition Capabilities

Color	Name	Description
🟩	Confirmed	For person monitoring, the person's face can be recognized.
🟧	Recognized	For person monitoring, the person's face can be recognized.
🟦	Detected	For person monitoring, person's cloth color and behavior can be recognized.
⬜	Blurred	The image is blurred.

Different type of camera has different range of view. For example, the range of view for fisheye is a circular area, while for box camera is a triangular area.
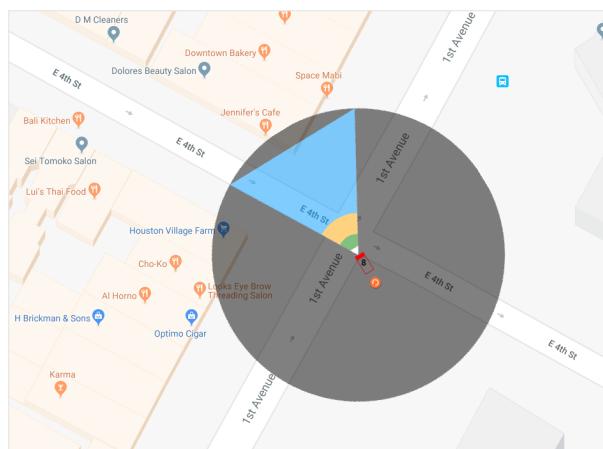
Figure 2-22 Display Camera on Map

3. **Optional:** Repeat step 2 to add more cameras to the map.
4. **Optional:** Perform the following operations on the map.

Zoom in/out	Scroll the mouse wheel to zoom in and zoom out.
Switch to Satellite View	Click **Satellite** to switch the map to satellite view.
Search for Location	Enter the name of an address or a place in the search box, and then click 🔍 or press Enter to search for the place.

5. Perform the following operations to adjust the installation angle of the camera.

Rotation	Rotate 🔄 to adjust the lens direction in horizontal plane.
Anti-Clockwise Rotation	Click ↺ to adjust the installation angle of the camera anticlockwise for 1°.

Clockwise Rotation   Click ⟳ to adjust the installation angle of the camera clockwise for 1°.

What to do next

Save solution and export report to the local PC if you finish adjusting parameters.

⊡**Note**

See *Save Solution and Export Report* for details.

2.6.2 Display Camera on 3D View

After adding cameras to the camera list, you can display them on 3D view and the linked plan view to adjust the mounting parameters (such as lens direction and mounting angle) to meet surveillance requirement.

Before You Start

Adjust camera's parameters. See *Adjust Camera's Parameters* for details.

Perform this task if you need to display camera on 3D view.

Steps

1. Click ＋ → **View** → **OK** to enter the View page.

   The plan view will be displayed on the home page, and the 3D View will be displayed on a floating window.

2. **Optional:** Click ⊠ to import a picture (such as the blueprint for camera deployment) from the local PC and use it as the background of the plan view.

3. Drag camera(s) from the camera list to a desired position on the plan view.

   The camera's range of view with different recognition capabilities will be displayed on the plan view, and its visual angle will be displayed on the 3D view.

Table 2-2 Recognition Capabilities

Color	Name	Description
🟩	Confirmed	For person monitoring, the person's face can be recognized.
🟧	Recognized	For person monitoring, the person's face can be recognized.
🟦	Detected	For person monitoring, the person's cloth color and behavior can be recognized.
⬜	Blurred	The image is blurred.

Different type of camera has different range of view. For example, the range of view for fisheye is a circular area, while for box camera is a triangular area.

4. **Optional:** Repeat step 2 to add more cameras to the plan view.

Note

Up to 100 cameras can be added to the plan view.

5. **Optional:** Perform the following operations on the plan view.

Zoom in/out	Scroll the mouse wheel to zoom in and zoom out.
Switch View Mode	Click ⇌ to display plan view or 3D view on the home page.
Adjust Size of Floating Window	Move the cursor to one corner of the floating window, then the cursor will turn into a double-end arrow. Then Drag the double-end arrow to adjust the size of the floating window.
Move Plan View	Drag the plan view to move it.
Adjust Scale Level	a. Click ▭ . b. Drag to draw a line on the plan view. c. Enter a specific number in the input box appearing at the end of the line to adjust scale level of the plan view.

6. Rotate the camera to a desired direction on the plan view.

Rotate Clockwise	Click ↻ on the toolbar to rotate clockwise.
Rotate Anticlockwise	Click ↺ on the toolbar to rotate anticlockwise.
Rotate	Drag the curved arrow beside the camera icon to rotate as you desire.

7. Add objects such as walls, cube, and person as the reference object for adjusting mounting parameters to the 3D view.

Add Wall	Click ▦ and then drag the cursor in the camera's range of view on the plan view, the wall will be displayed on the 3D view.

Note

The length of the wall will be displayed simultaneously in the **L** field on the plan view when you draw the wall.

Add Cube	Click 🝆 and then drag a cube on the plan view, the cube will be displayed on the 3D view.

Note
- You can drag the point of the rectangle to adjust the size and shape of the cube displayed on the 3D view.
- The length and width of the cube will be displayed in the **L** field and **W** field simultaneously when you adjust the size and shape of the cube.

Add Person

Click ⛄▾ → **Male** , select the height of the man (**Male (1.7m)** or **Male (2.0m)**), and then click a specific position in the camera's range of view on the plan view.

The man will be displayed on the 3D view.

Note

Draw a woman in a similar way.

Add Tree

Click ⛄▾ → **Tree** , select the height of the tree, and then click a specific position in the camera's range of view on the plan view.

The tree will be displayed on the 3D view.

Add Vehicle

Click ⛄▾ → **Vehicle** , select the type of the vehicle, and then click a specific position in the camera's range of view on the plan view.

The vehicle will be displayed on the 3D view.

Note

After adding the reference objects, you can drag to move them.
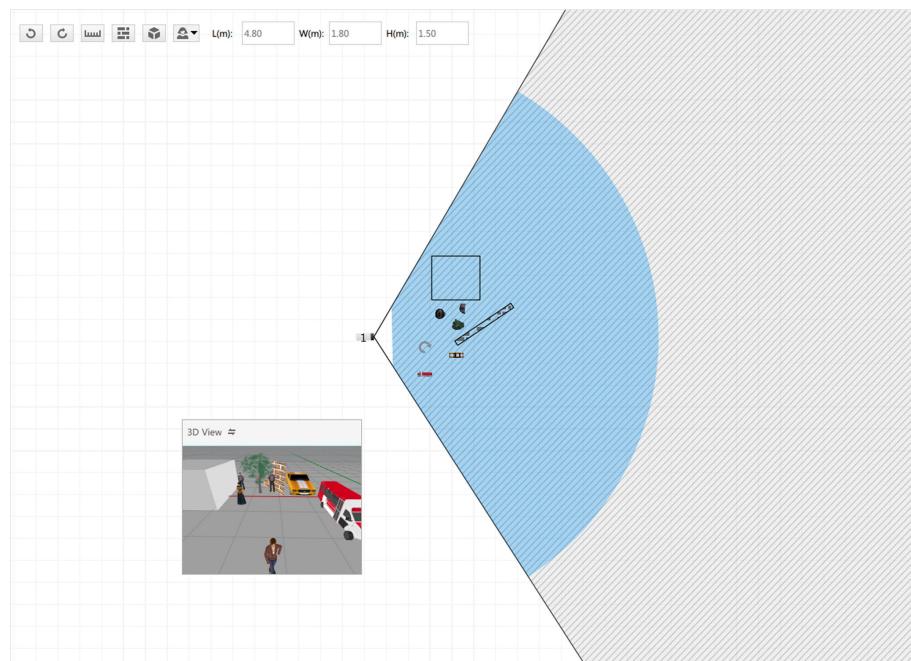
Figure 2-23 Draw Objects on the Plan View

8. Click ⇌ on the floating window or the image of the floating window to display 3D view on the home page.
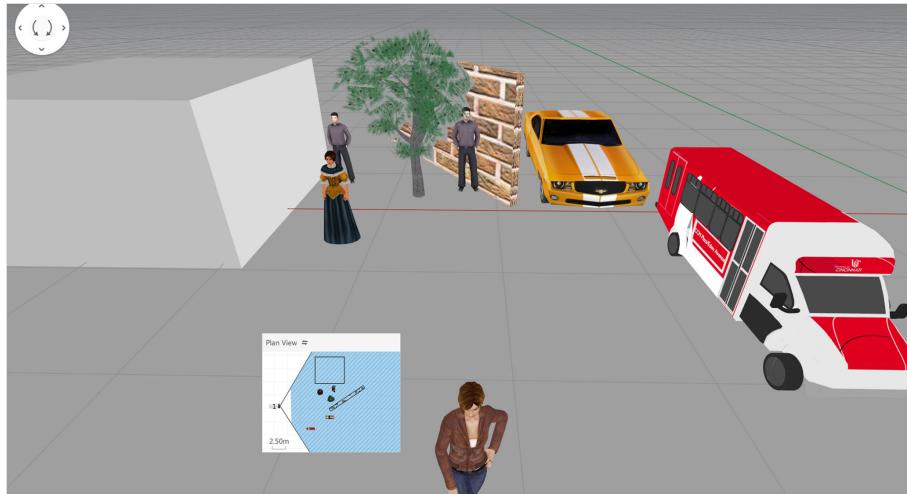
Figure 2-24 3D View

9. Adjust the camera mounting parameters.

Move the Camera	Click the four direction buttons on ⊕ or drag the camera to move it. You can also click **W**, **S**, **A**, or **D** on the keyboard to move the camera forward, backward, to the left, or to the right.
Rotate Lens Direction	Click the two curved arrows on ⊕ , or drag the 3D view horizontally to rotate the lens direction.
Adjust Mounting Angle	Drag the 3D view vertically to adjust the mounting angle and object distance. --- ⓘ**Note** **Height** of **Range of View** and mounting angle on mounting view will change simultaneously. You can click **Mounting View** to view the changes.

10. Click **Save Changes** to save the settings.

What to do next
Save solution and export report to the local PC if you finish adjusting parameters.

ⓘ**Note**

See *Save Solution and Export Report* for details.

2.7 Save Solution and Export Report

After completing adjustment of the mounting parameters, you can save the solution and export the report of the solution in PDF file or HPS file to the local PC. In the report, the camera information, as well as the mounting view,

Perform this task if you need to save solution and export report.

Steps

1. Deploy the camera on the map or 3D view and adjust mounting parameters.

> 🛈**Note**
> See *Display Camera on Map* or *Display Camera on 3D View* for details.

2. Perform the following operations to save the solution or export the solution report.

Save	Click **Save** to save the the solution in HPS format.
Save as	Click **Save as** to save the solution in HPS format as a new file.
Export Solution	Click 🗎 to export the camera information and solution of view in *.pdf file.

> 🛈**Note**
> - For Mounting View, the mounting view and the camera information will be displayed in the exported file.
> - For Planning Map, the map deployed with cameras and the camera information will be displayed in the file.
> - For 3D view, the plan view deployed with cameras and the camera information will be diplayed.

3. **Optional:** Click **Open** to open a solution file saved in local PC.

See Far, Go Further