

WISeNET

White paper

Fisheye Viewable Range

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The importance of security and safety based on the monitoring of workplace and public spaces is increasing daily. Though it is difficult, more and more users want to monitor a wide area with a few cameras. For this reason, Hanwha Techwin provides the fisheye camera that boasts of better performance than rival companies' products.



Figure 1. Comparison of monitoring area between fisheye and normal camera

The fisheye camera can provide 360-degree wide-angle recording, 4 times larger than the view angle of a normal camera (horizontal 110°, vertical 60°).

It means that 1 fisheye camera can cover an area requiring 4 normal cameras. Therefore, the user can minimize the cost of buying and maintaining many cameras.

2.1. Effective monitoring area

Monitoring distance differs by the performance (resolution) of camera. For example, a camera for special-purpose such as facial recognition or license plate detection requires a certain level of resolution. Such distance is called "effective monitoring distance"; in case of the fisheye camera, it is called "effective monitoring area" by converting distance into area.

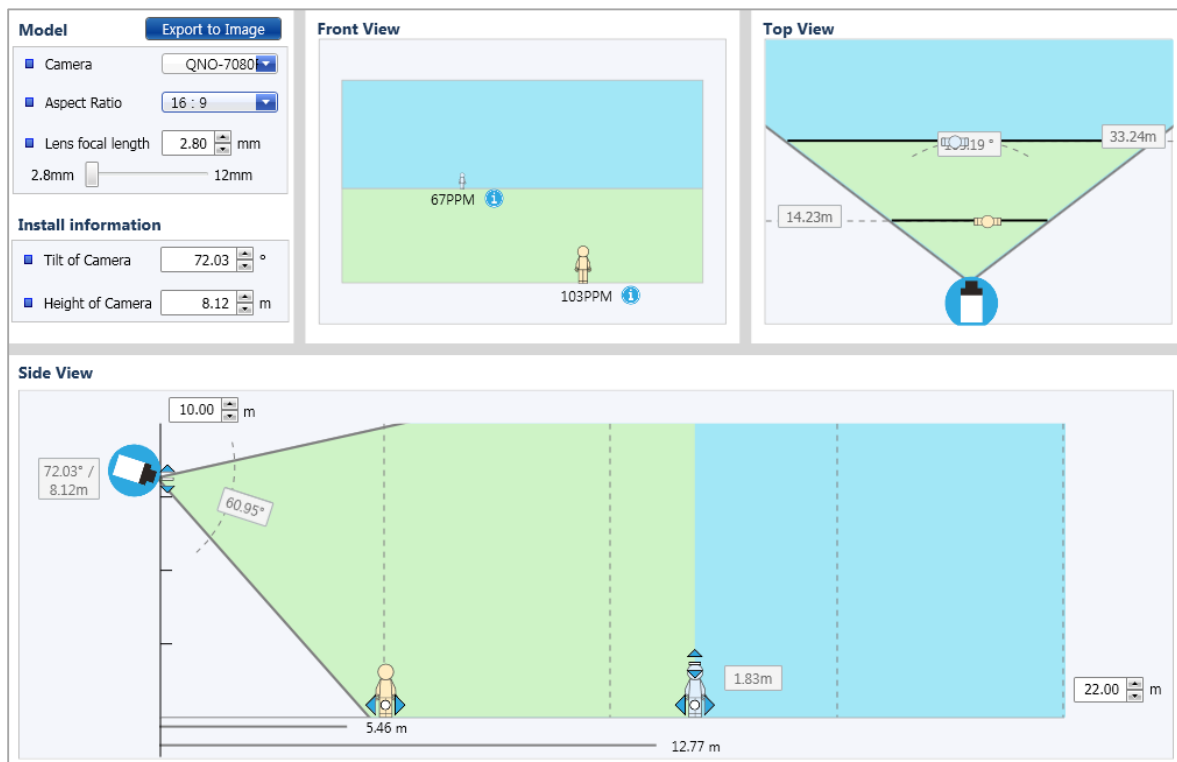


Figure 2. Example of calculation of effective monitoring distance of normal camera

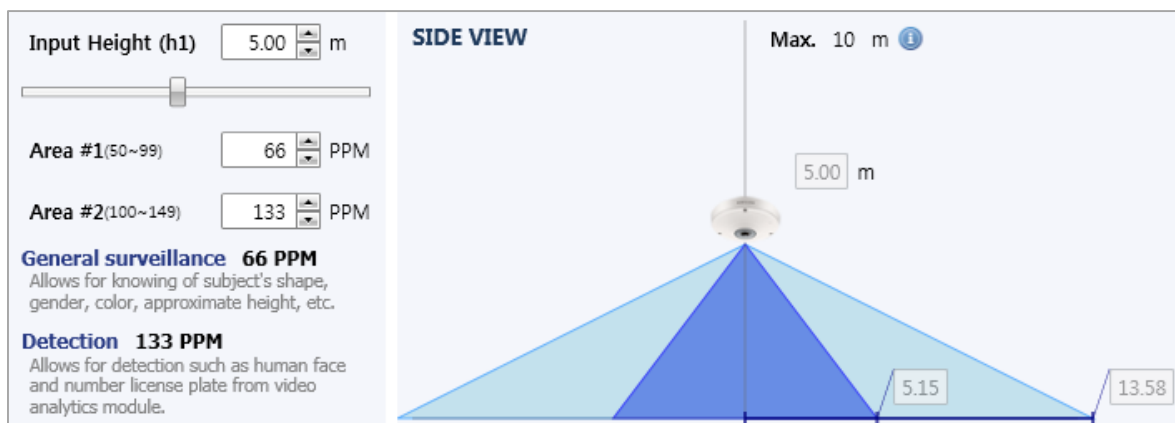


Figure 3. Example of calculation of effective monitoring area of fisheye PNF-9010

2.2. CMOS resolution

A normal video monitoring camera has an image sensor such as CMOS, and it determines the camera's resolution. A camera with higher resolution provides higher effective monitoring distance but is more expensive. For a wide choice, our product lineup supports various resolutions.

2.3. Object recognition level

Object recognition level is classified by the pixels required to express the actual 1-meter area. The unit is PPM (Pixel per meter), and it is classified as follows;

PPM	Recognition level by PPM	Monitoring area
66 PPM	Can recognize shape, color, approximate size, and gender	Basic video monitoring
133 PPM	Can detect human face and license plate by a video analysis module	Can detect an object
197 PPM	Can recognize the traits of face and letters of license plate	Can recognize an object
262 PPM	Can conduct detailed analysis with clear images	Can recognize details
533 PPM	Can recognize human face through the facial recognition algorithm	Can recognize human face

Table 1. Monitoring area by PPM level



Figure 4. Example of image by PPM level

3. Installation example

The fisheye camera has a wider monitoring area than normal cameras, so it is important to select an installation location considering the monitoring area and resolution. For better understanding, refer to the following example of installation considering the given situation or monitoring conditions.

3.1. Installation example

This is a Hanwha Techwin's office in Europe, which monitors a wide area of office effectively with excellent video quality using only one PNF-9010.



Figure 5. 360° + 3 rectangle view mode

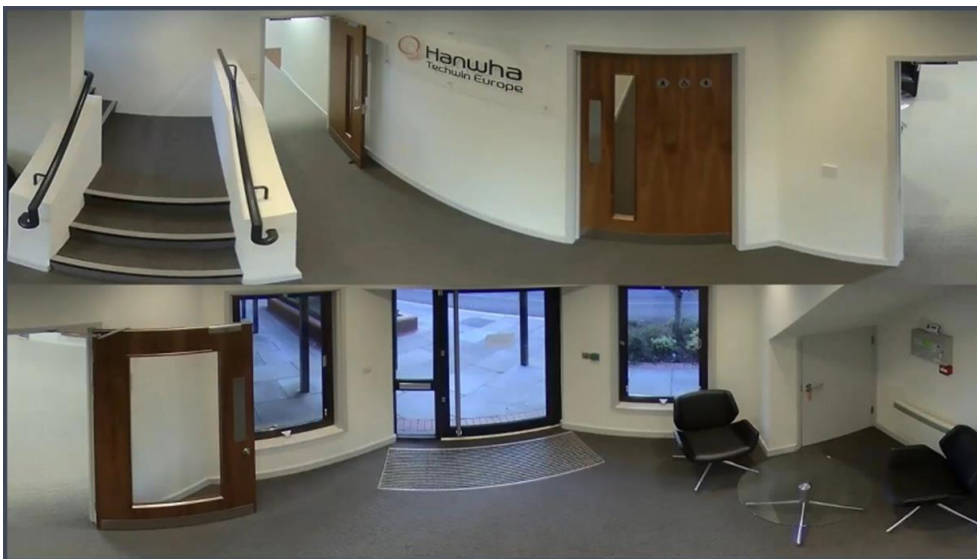


Figure 6. Double panorama view mode

When installing the fisheye camera, we provide "Fisheye Calculator," a tool for checking the monitoring area according to resolution in order to promote the utilization of our excellent product. When the product model, installation height, and PPM for 2 areas are set, the relevant monitoring area will be displayed as a picture.

- Location of Fisheye Calculator

: Homepage (<http://hanwha-security.com/>) → Customer Support → Technical Guides
→ Online Tool → Wisenet Tool Box or Lens Visible Range Calculator

4.1. How to use

Launch the fisheye Calculator and set the model, installation height, and video recognition level (PPM) to display the monitoring area as a picture. The detailed setting procedure is as follows;

Select a product → Set the installation height
→ Set the required resolution

1. Select SNF-7010(3M), SNF-8010(5M), or PNF-9010(12M).
2. Select the height for installing a fisheye camera.
3. Check the resolution for monitoring conditions (PPM) and input it.
(The basic condition is 66 PPM for Area 1 and 133 PPM for Area 2.)

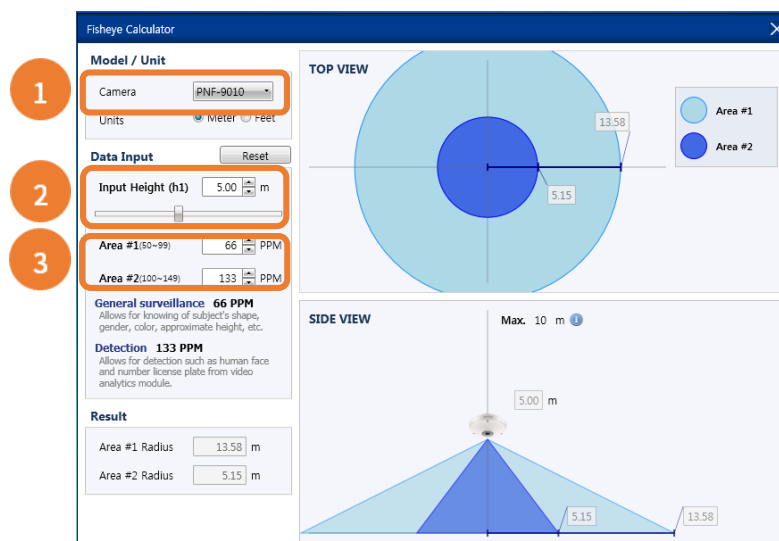


Figure 7. Fisheye Calculator menu

Components related to the environment and installation condition of video monitoring camera are critical to maximize the device performance. For this reason, we provide the Fisheye Calculator program to improve installation convenience and use the fisheye camera under optimum conditions.

Customers and companies who use a video monitoring camera may utilize our Fisheye Calculator as an installation guide to identify the optimum installation conditions and select a camera model conveniently.

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