Perimeter Protection Solution Guidance for Analog System

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Content

Perimeter Protection Solution Guidance for Analog System

This guide shows you how to set up an accurate perimeter guarding system with Turbo AcuSense DVR.

All operations in the quick guide are based on GUI 4.0.

1. Basic introduction

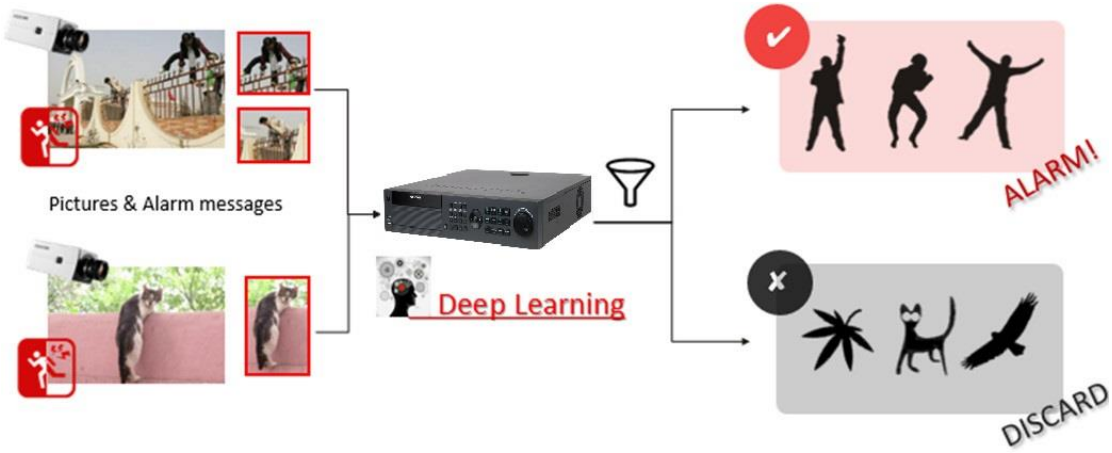
In traditional surveillance system, all moving objects could trigger the perimeter guarding alarm, in which a large amount of false alarms are included.

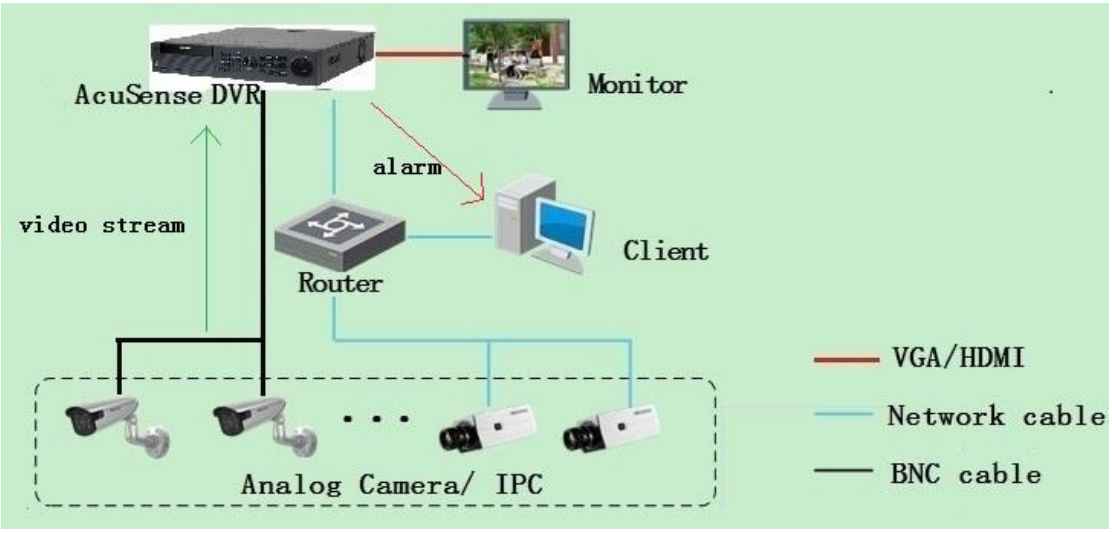
Turbo AcuSense DVR is the new AI DVR with HIKVISION deep learning algorithm which could filter false alarms triggered by irrelevant targets, such as animals and leaves, to improve detection accuracy considerably.

Turbo AcuSense DVR supports filtering false alarm for 2 events: line crossing and intrusion detection.

Note:

The aim of the system is to reduce false alarm rate, and up to 90% of the false alarm can be filtered.





Note:

- 72xx series AcuSense DVR supports false alarm filtering for only analog channels;
- 73xx/90xx supports false alarm filtering for both analog & IP channels；
- Please enable Enhanced VCA function for more than 2 channels false alarm filtering function;
- Smart stream is not supported for false alarm filtering.

2. Device Requirement

Soultion	Camera	DVR
AcuSense DVR & normal camera	Normal analog camera;	iDS-7316HUHI-K4_16S; iDS-9016HUHI-K8_16S

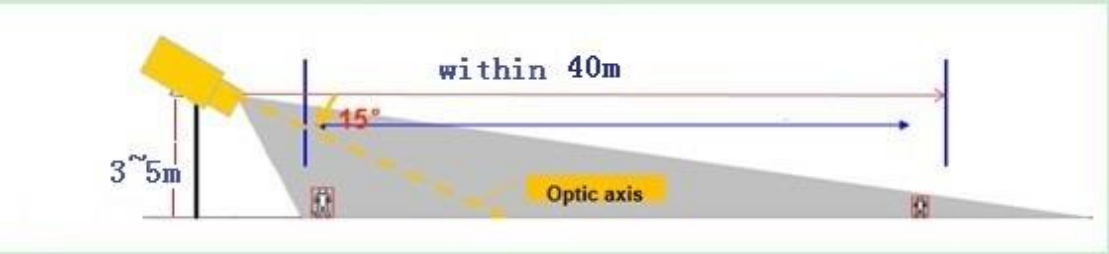
	2 series, 4 series IPC; Third-party camera	

3. Installation Specification & Rule

In order to make the whole system more accurate, there're some mounting and rule requirements for cameras.

In this chapter, we take several typical scenarios as examples to help you setup a better perimeter system.

(1) Camera installation



- Camera is recommended to be installed 3-5 meters high. If there is fence, the installation height must be higher than the fence.
- Angle between the optic axis and the horizontal line should be larger than 15°.
- The monitoring distance is recommended to be within 40 meters.

(2) Rule size

The detection area should be larger than 1/4 of the image, which means the vertical rule line should longer than 1/4 of the image vertical size while the horizontal rule line should longer than 1/4 of the image horizontal size.

(3) Target size

It's recommended to install camera at a proper distance from detected target in order to have a better performance. For example, the target in the picture below is too large to detect, the man almost covers the whole scene. It;s better to adjust the angle higher so that the camera can start detecing from a longer distance.

(4) Influence factors

1) Illumination

It's easy to deduce that once the scene is too dark, camera or DVR can't detect target precisely. Lighting supplement or low light cameras is recommended in scene below.

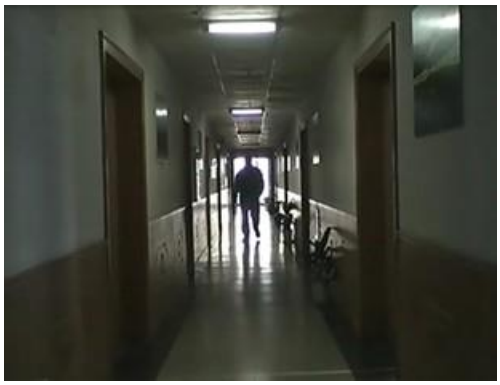
2) Obstacle

Obstacles might block the target you are really interested in. Scene in picture below is not an appropriate one for detecting.

3) Strong light

In some scenarios, strong light interference makes a target hard to be detected. Strong light generally can be divided into two kinds: **strong background light** and **strong foreground light**.

Strong background light makes foreground target totally dark, as what is shown picture below, the man in corridor looks like a shadow. WDR or BLC function is recommended in this scene.



Strong foreground light is usually generated by sudden light intensity change such as car light, flash light, sunshine reflection. We suggest customer change Camera's angle to avoid strong light or use cameras with HLC function.

4) Complex scene

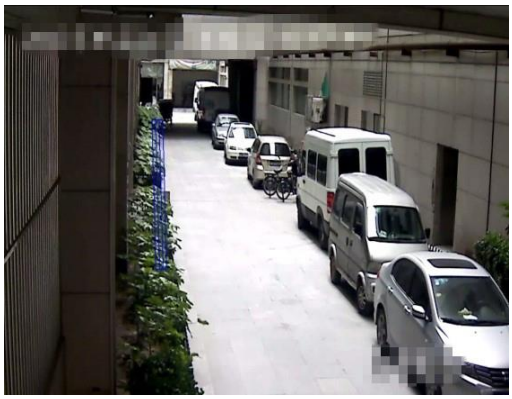
We suggest customer use perimeter guarding alarm to detect human who is not supposed to enter a region or cross a line, **so it's not applicable in a scenario such as train station with large people flow.**

The scene below has too many people and a vast number of alarms will be created, it's not a recommended scene for false alarm detection.

5) Detection rule

In addition to installation guide, appropriate rule is also a critical part in perimeter guarding system.

Here's an example, customer wants to detect man who walks across the door on the left side. However, the rule is too near to the edge. Once a man appears in the scene, there's no enough time for DVR or Camera to detect. We highly recommended customer set detection rule in the center of the scene, or not near



the scene's edge.

6) Rule position

Although AcuSense DVR is able to filter false alarms created by leaves, animals etc., it is highly recommended to set rule in a **static** field/environment. One customer sets line crossing rule on grass in a scene below, grass continuously makes false alarms which occupy DVR smart resource and storage space.

7) Focal length

If the focal length is too small, the target will be too small to detect as shown in the following figure, which may cause missed detection. So we need to select the proper focal length to avoid missed detection according to the scene.

(5) Standard scenario

(6) Camera selection

If customer wants to use smart detection in an indoor environment, **camera with WDR and wide FOV is recommended**.

In some outdoor scenarios, bullet camera is a better choice than dome camera. Some raindrops might be stuck to the surface of dome camera, with raindrops accumulated, it decreases accuracy of smart detection.

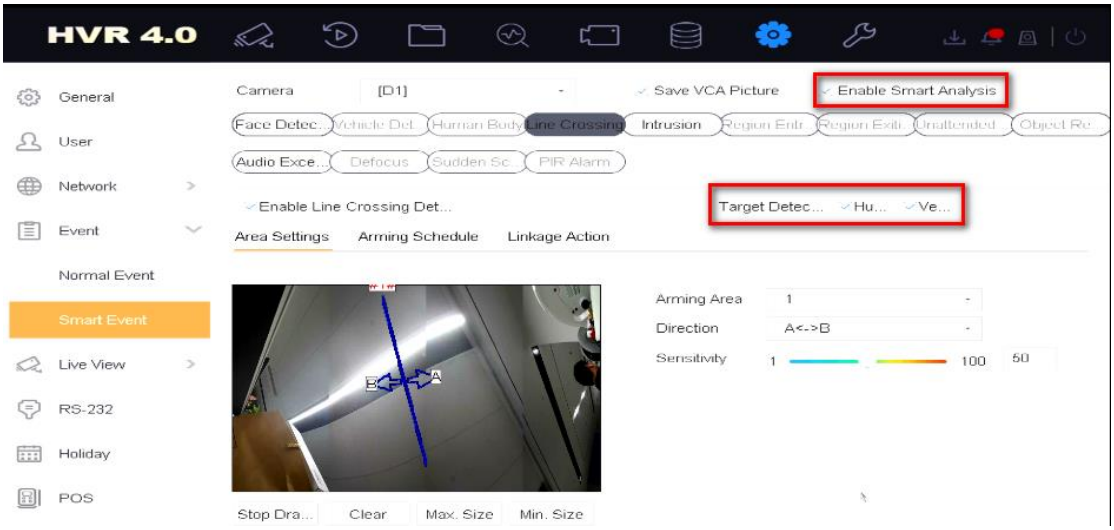
4. False Alarm Filter Configuration

1) Go to DVR local GUI –> **System—>Event—>Smart Event**;
2) Choose and enable the event you want to detect (line crossing or region intrusion);
3) Check the target of interest.
4) If you tick '**Enable Smart Analysis**', DVR will detect event with smart algorithm and no camera smart detection function will be needed. Which is to say, DVR is able to detect smart event even if the camera doesn't support these functions;

   You can choose between 3 modes: **Human**, **Vehicle** or **Human& Vehicle**.

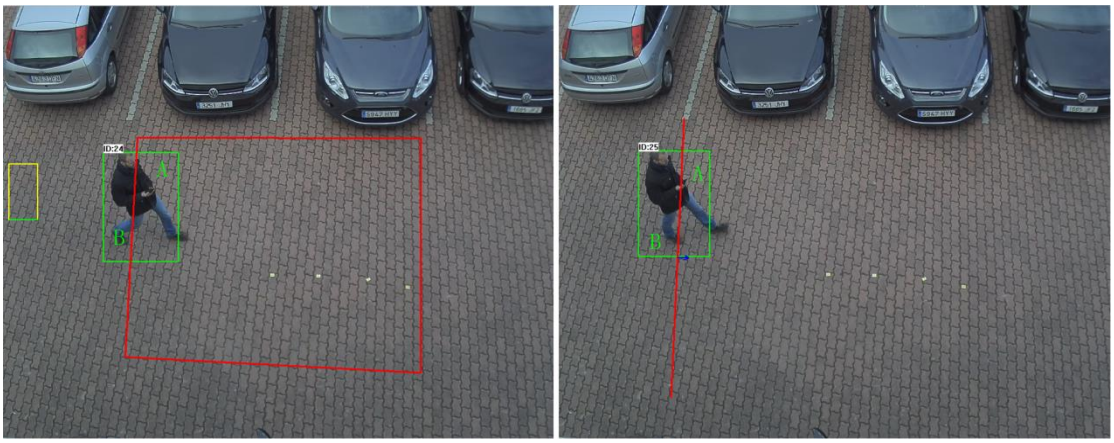
   Once the target detection is enabled, DVR will filter most of the false alarms based on the deep learning algorithm automatically.

   This detection mode has a higher accuracy and is recommended when there are massive false alarms from front cameras.



Note:

- Turbo AcuSense DVR only supports Line crossing and Region Intrusion Detection in smart analysis mode at present;
- **Sensitivity**: Related to the proportion of the target across the line and the target itself, which can trigger the alarm. The higher the sensitivity, the more easily the alarm is triggered. The interpretation figure is as follow:



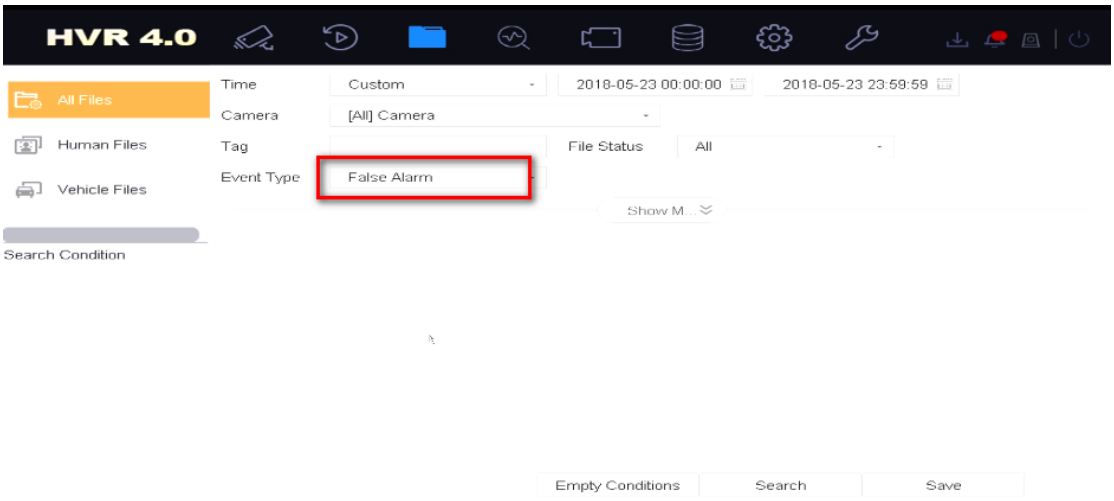
- A: the area into the detection area;
- B: the area outside the detection area;
- S: the sensitivity
- When A/(A+B)>(100-S)%, the alarm will be trigged. For example, if the sensitivity is set to 100, once the target touch the line, the alarm will be triggered. If the sensitivity is set to 80, only when 20% of the target crossing the line, the alarm will be triggered. The default sensitivity is 50.

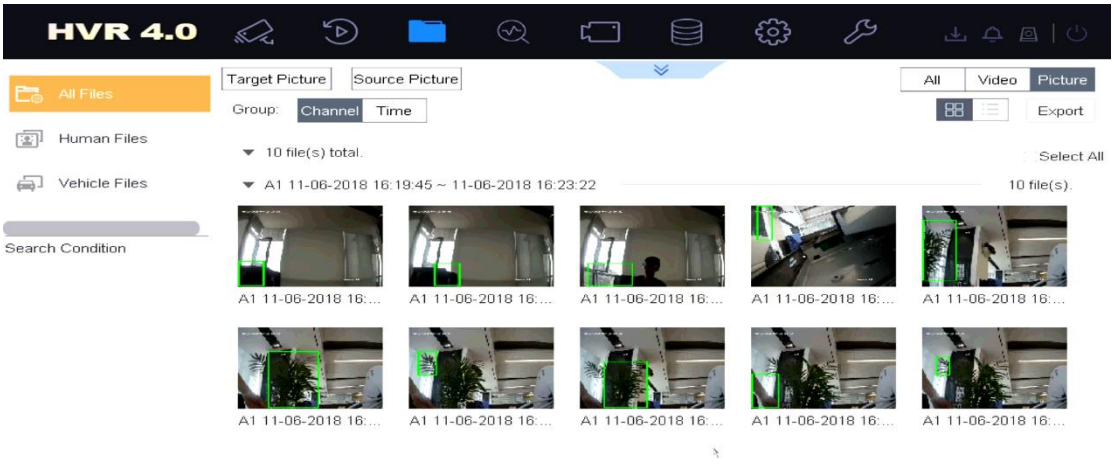
- **Time threshold**: The time during the target reaching the sensitivity. For example, if the time threshold is set to 3, only when the target reaching the sensitivity last 3 seconds, the alarm will be trigged. The default time threshold is 0. (Line crossing do not have such parameter).

5. False Alarm Filter Configuration

For the AcuSense DVR, we can check how many false alarms the DVR have filtered as shown in the following figure.

- Go to **File Management —>Event Type—>False Alarm** to search.





Appendix. Frequently-used Material Link

1. AcuSense DVR Spec：
   /00 Oversea Products/02 Analog/01 SPEC, A&E SPEC/SPEC/03 Turbo DVR/AcuSense DVR/

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