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Protecting Your World

AI Perimeter Protection Solution

Based on Video Surveillance

Catch what you lose,
Forget what you hate!

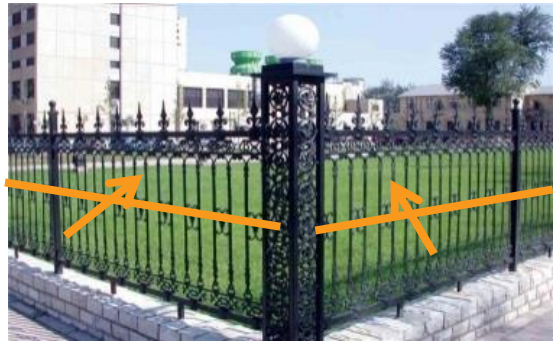


Perimeter Protection Solution

Perimeter protection system refers to the fortifications built to either keep intruders out or to keep captives contained within the area the boundary surrounds.

Monitoring Area

Plant perimeter, fence...





Limited Access Area

No parking area, military base





Danger Area

Construction site, river bank





Optional Technology for Perimeter Protection System

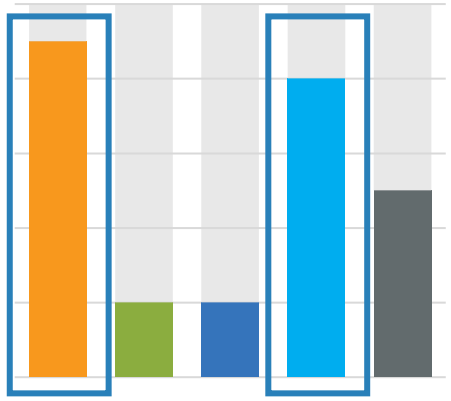
Light



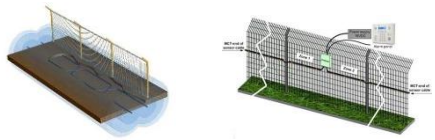
Infrared Laser PIR

> High false alarm rate
> Affected by the weather
> Invisible

Infrared



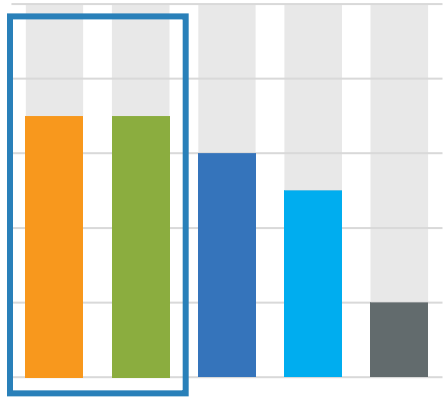
Cable



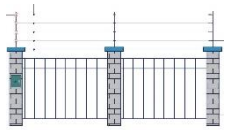
Concealed Sensor Cable Vibration Sensor Cable

> High false alarm rate
> Difficult installation
> Invisible

Vibration Sensor Cable



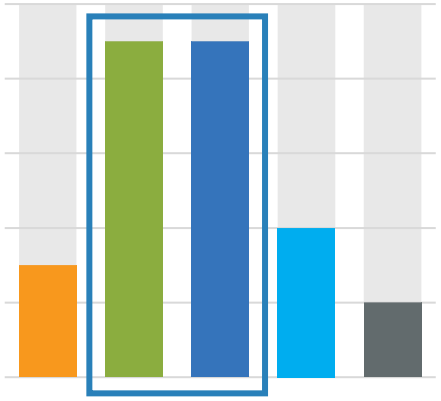
Fence



Fence Sensor

> Security risks
> High application cost
> Invisible

Fence Sensor



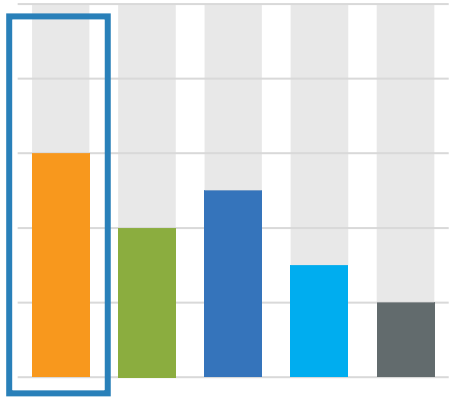
CCTV



Traditional IVS

> High false alarm rate (traditional IVS)

Traditional IVS



False alarm, False Negatives Installation complexity Application cost Influenced by environment Maintenance Cost

AI creates value for Perimeter Protection System

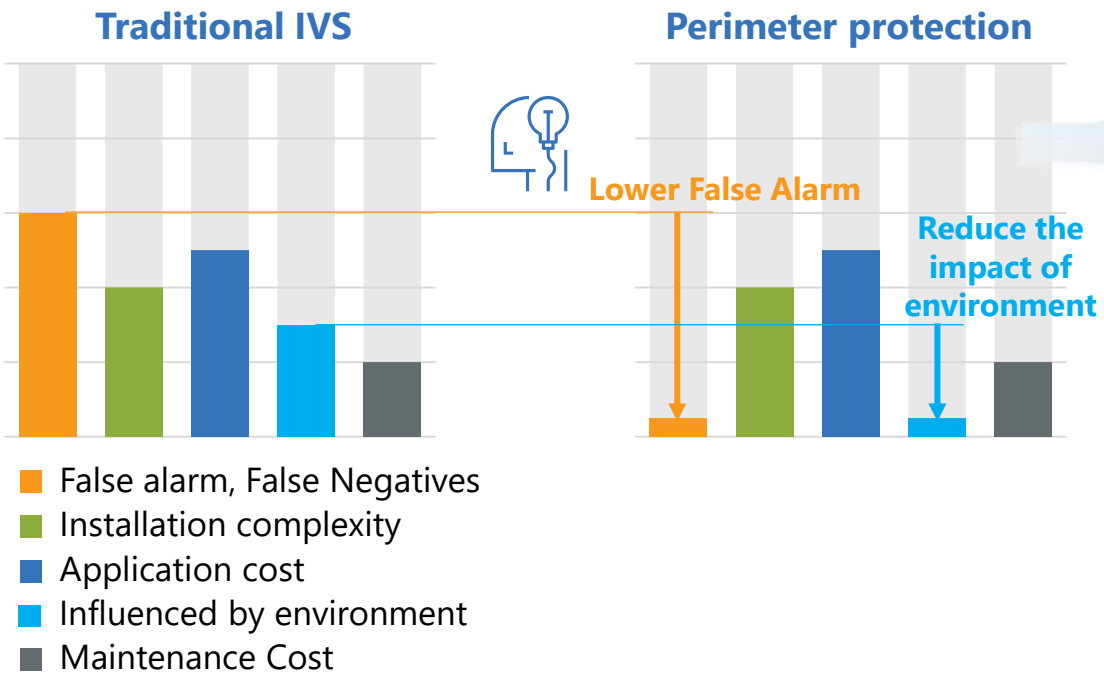
High Accuracy, Low Cost, Fast Positioning, Visible



Traditional IVS

Upgrade

AI



- Accurate Alarm
- Classification
- Smart Search
- Remote Monitor
- Active Deterrence

Lower False Alarm & Negatives Rate

Accurate Alarm

<2% False Alarm Rate

Thanks to its advanced AI algorithms, the rate of false alarms triggered by small animals, tree movement, shadows, and bright lights to <2%. Significantly lower than traditional IVS solutions.

False Alarm Rate in Testing Environment

Testing Environment	Test Results
Daytime, Night Testing distance: 40M~80M Installation height: 5.8M 	False alarm rate: **<2%**

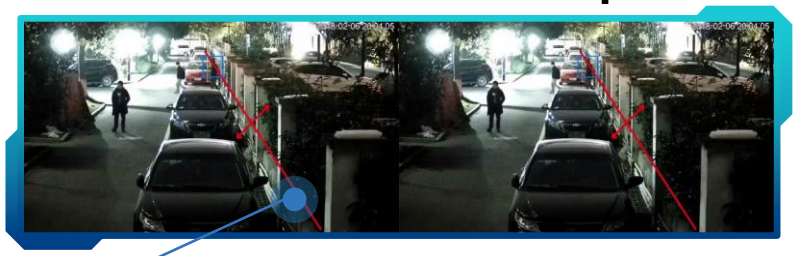
Detection Accuracy Rate in Testing Environment

Testing Environment	Test Results
Daytime, Testing Distance: 25M~70M Installation Height: 4M 	Detection accuracy rate of human and vehicle: **95%~99%**

Lower False Alarm Rate

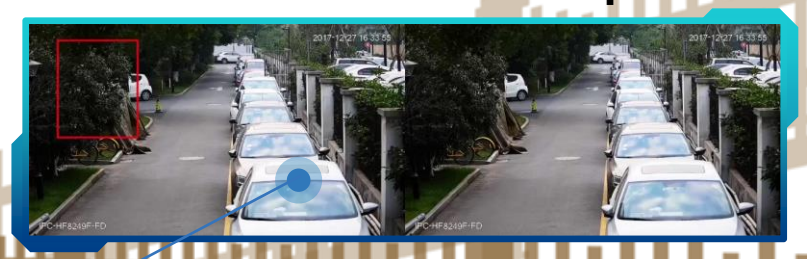
Accurate Alarm

Traditional IVS **Perimeter protection**



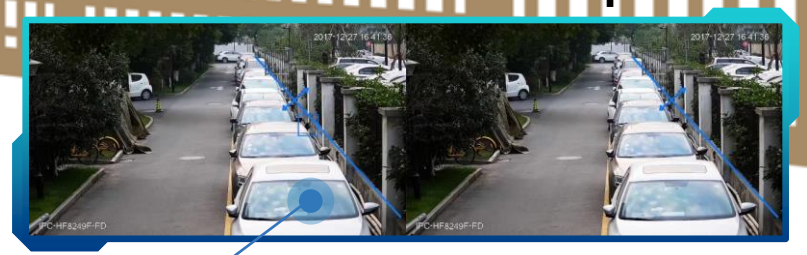
Bright light

Traditional IVS **Perimeter protection**



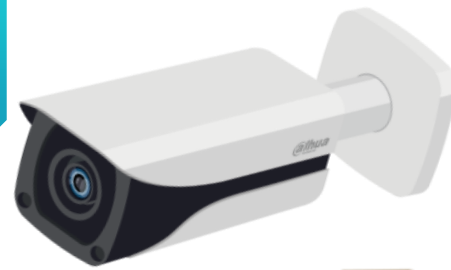
Leaf movement

Traditional IVS **Perimeter protection**



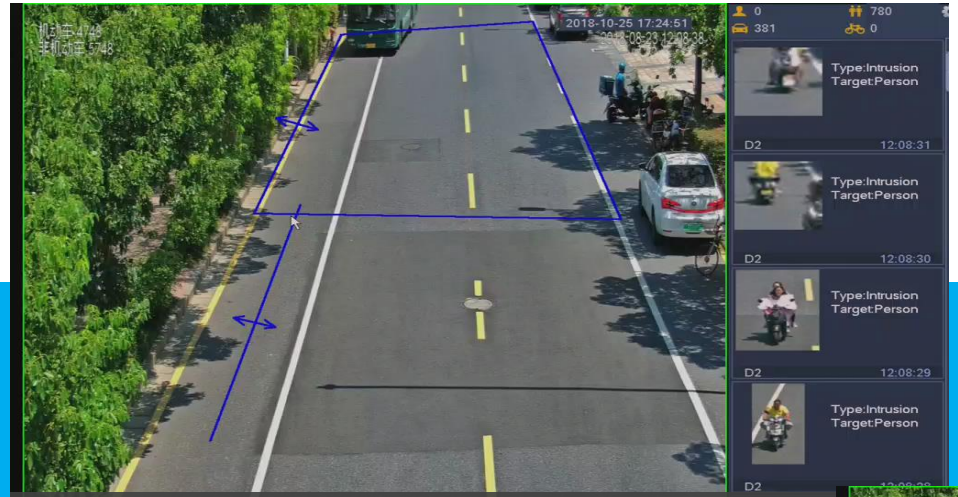
Animals





Custom Perimeters based on Object Type

Classification



Human intrusion: triggered only by human



Vehicle intrusion: triggered only by vehicle

Demo

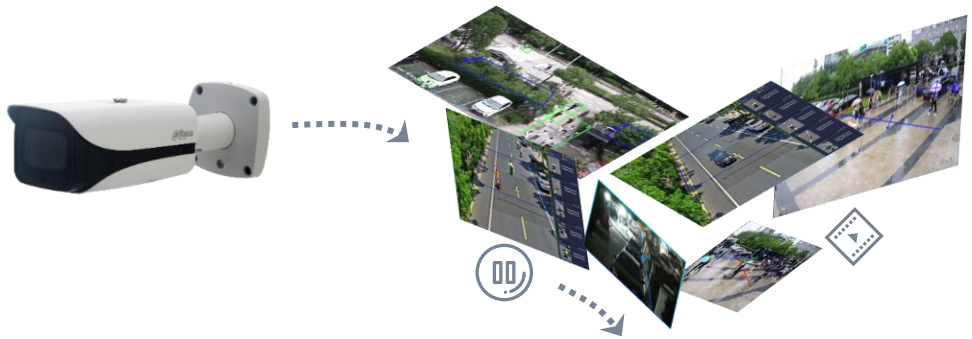
Perimeter protection

Application Scenario:

Intrusion

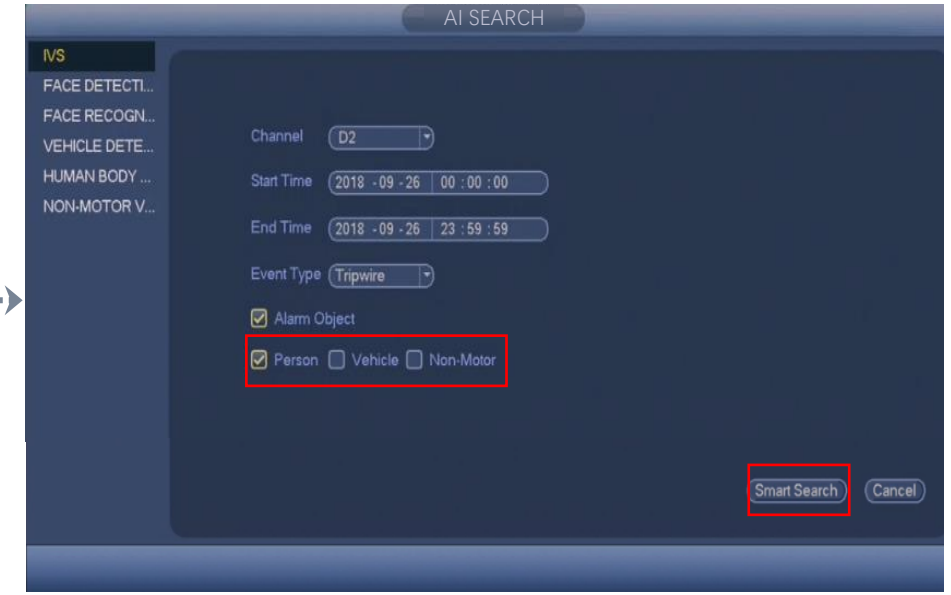
Search the video by Object Type

Smart Search



Smart Search

Configuration



Human

Vehicle

Triggered by **Human**



Triggered by **Vehicle**



Alarm Via VMS & Mobile App

Remote Monitor

DMSS

- Real-time alarm push with target type
- Remote call to drive the intruders away



DSS Express

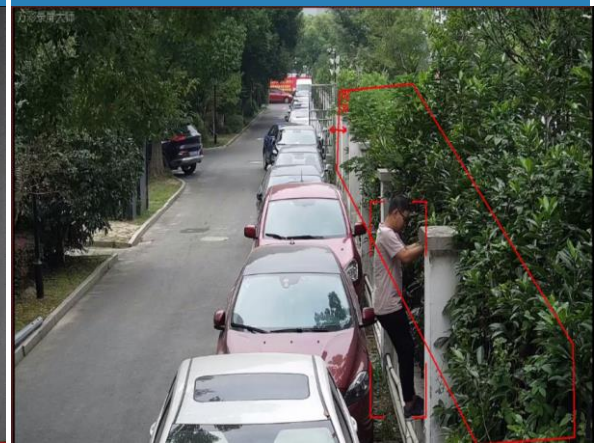
- Real-time alarm push with target type
- Search alarm information by alarm type
- Alarm footages recording



Active Deterrence

Active Deterrence



Lakes	Lawn	Entrance	Perimeter
			
Remind pedestrians to leave the danger area as soon as possible	Remind people not to trample the lawn	Remind the thief that there is camera monitoring, let him leave	Remind the intruder that there is camera monitoring, let him leave

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Products & Solutions

AI by Camera

- Flexible and scalable
- Active Deterrence
- Full-color, Starlight+ products



IPC Pro AI 5 series

AI by Recorder

- The most convenient way for upgrading old system
- Supports face recognition, can be compatible to access control system
- Compatible for third-party cameras



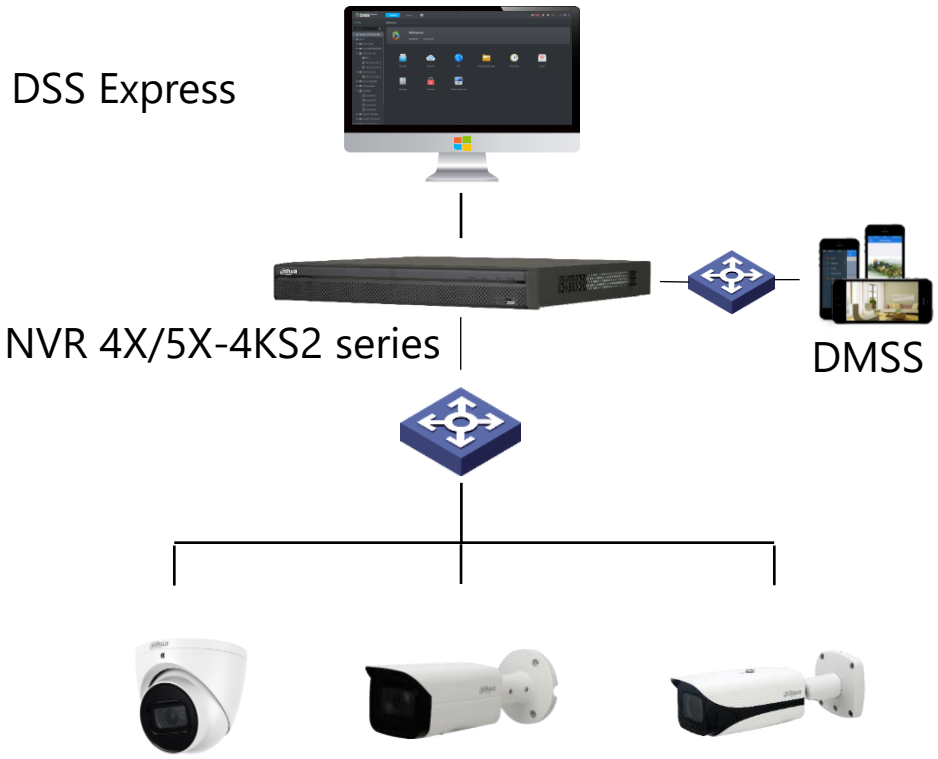
NVR 5000-I Series

NVR 4000-I Series

XVR 8000-4KL/4K-I Series

AI by Camera Solution

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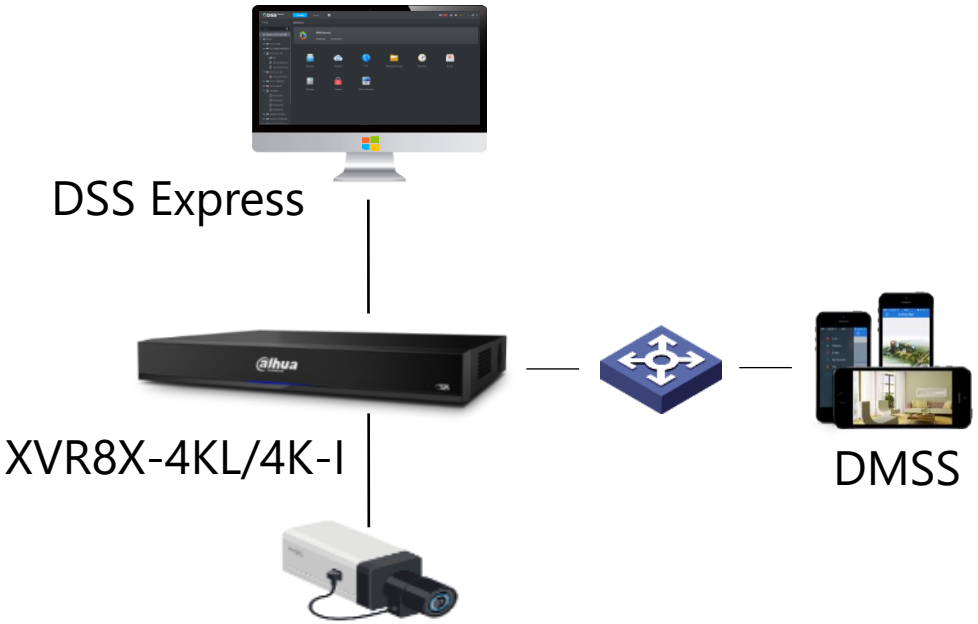
Application Scenes

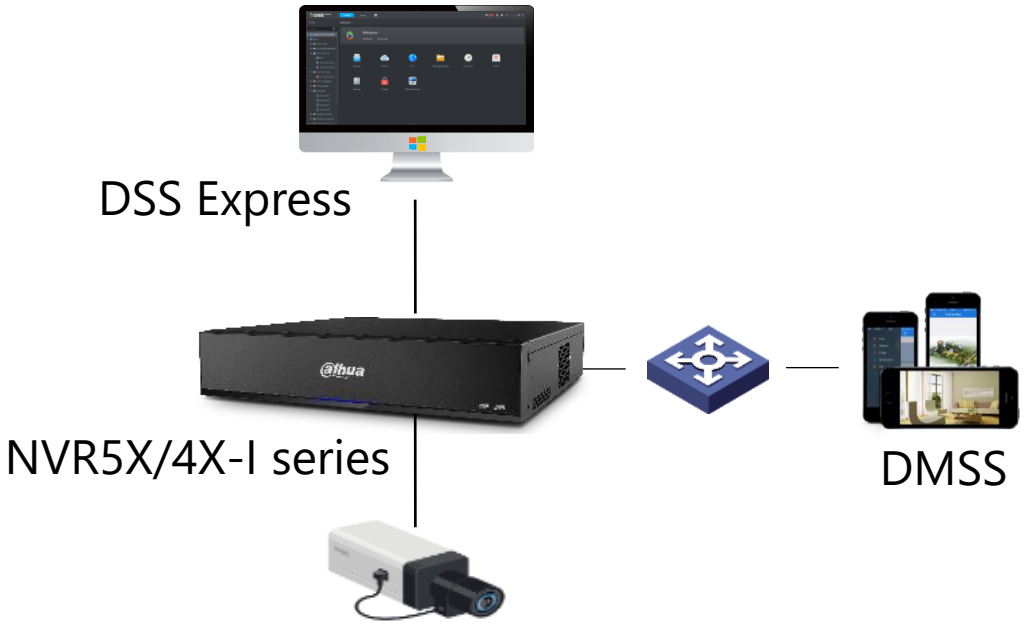
House/Villa | Warehouse | Construction Site | Retail Store | Carport | Farm | ...

Product Selection

Cameras	 **2MP Starlight+ AI IPC** IPC-HFW5241E-Z5E/Z12	 **4MP Starlight+ AI IPC** IPC-HFW5442E-ZE	 **Active Deterrence AI IPC** IPC-HFW5241T-AS-PV IPC-HDW5241H-AS-PV	 **Full-color AI IPC** IPC-HFW5241T-AS-LED IPC-HDW5241T-AS-LED
Storage	**NVR5X-4KS2 Series**	**NVR4X-4KS2 Series**		
VMS	**DSS Express**			
Mobile App	ios: **iDMSS Plus**	Android: **gDMSS Plus**		

AI by Recorder Solution





Product Selection

XVR	**XVR8X-4KL/4K-I**	XVR8216A-4KL-I XVR8208A-4K-I XVR8816S-4KL-I

Product Selection

NVR	**NVR 5X-I Series**	NVR5216-8P-I NVR5216/5432-16P-I NVR5864/32-I ...
	NVR 4X-I Series	NVR4208-8P-I NVR4216/4416-16P-I NVR4216/4432/4832-I ...

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Application Scenes

Warehouse/Dump Perimeter

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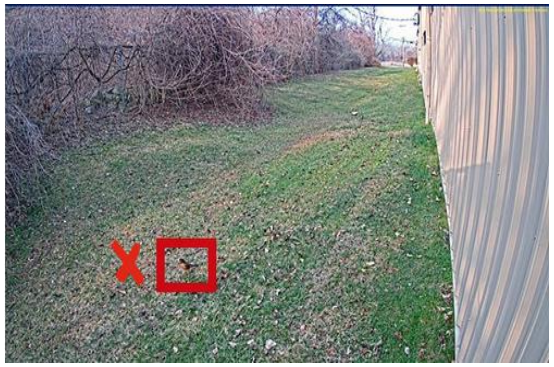
Requirements & Challenges

Perimeter Intrusion Detection



The cameras are deployed on the periphery of the fence with a spacing of about 80M, to detect the intruders and vehicles

High Accuracy Rate



Avoid false alarm caused by animals, leaves and surrounding lights (traditional cameras and infrared sensors)

Performance at Night



Ensure the accuracy at night with low light

Entrance Monitoring



The entrance is only allowed for vehicles to enter or exit, and if there is pedestrian access, the system will generate alarm

Advantages

Accurate alarm: focus on the target of human and vehicle

Starlight+ night vision: improving accuracy rate of night

Target classification: distinguish the alarm type by human and vehicle

Alarm messages push: push alarm info to the back-end and mobile app

Recommended Product



2MP Starlight+ AI Camera
IPC-HFW5241E-Z5E/Z12

4MP Starlight+ AI Camera
IPC-HFW5442E-ZE



NVR 4X/5X-4KS2 series

DMSS

DSS Express

Construction Site Perimeter

Requirements & Challenges

Building Material Protection



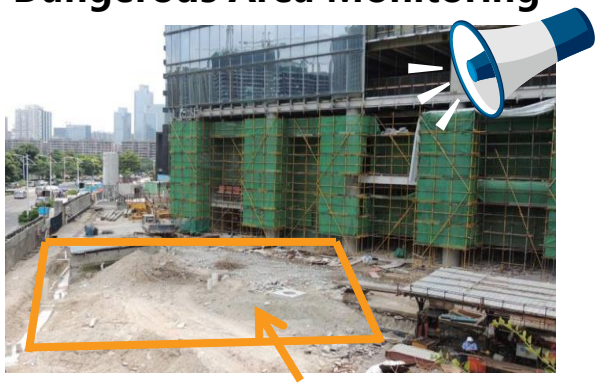
If someone enters the protection area, system will alarm to prevent the building materials from being stolen. (camera spacing between 6M to 7M)

Movable Placement



The equipment should be easily deployed and configured, because the construction site is usually a temporary place

Dangerous Area Monitoring



Active deterrence, alarm with voice and light to drive pedestrian away

Face Recognition for Strangers



Identify strangers appearing in the construction site and alarm in time

Advantages

Active deterrence: alarm with voice and light to drive intruders away

Easy deployment and configuration

Multipurpose: achieve face recognition during the day, perimeter protection at night

Alarm messages push

Recommended Product



2MP Active Deterrence AI Camera
IPC-HFW5241T-AS-PV



4MP Starlight+ AI Camera
IPC-HFW5442E-ZE



NVR 4X/5X-4KS2 series

DMSS

DSS Express

Villa/House Perimeter

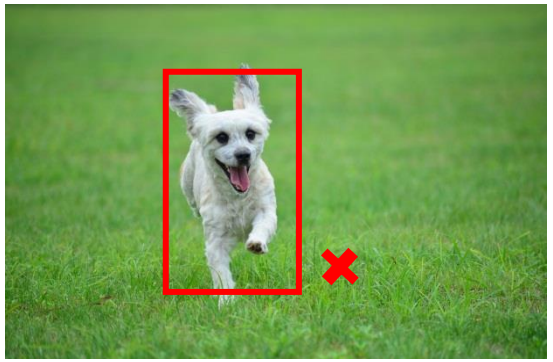
Requirements & Challenges

Vegetable plot and garden protection



Prevent theft of personal assets such as vegetables

Filter animals' false alarms



Prevent frequent alarms caused by animals such as pets, birds, etc.

Remote call



Active deterrence, alarm with voice and light to drive pedestrian away

Private Parking Space Protection



When an alien vehicle stops in the private parking

Advantages

Active deterrence: alarm with voice and light to drive intruders away

Lower False Alarm Rate: filter alarms triggered by animals

Alarm messages push

Recommended Product





2MP Active Deterrence AI Camera

IPC-HFW5241T-AS-PV

IPC-HDW5241H-AS-PV



NVR 4X/5X-4KS2 series

DMSS

Community/Park Perimeter

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Requirements & Challenges

Crossing Fence Detection



The cameras are deployed on the periphery of the fence with a spacing of about 50M, to detect the crossing fence behavior

Lower False Alarm



Filter the false alarm caused by moving leaves, pedestrians, light changes, etc.

Advantages

Accurate alarm: report the intrusion and theft events timely

Lower False Alarm Rate: filter alarms triggered by animals

Alarm messages push

Recommended Product

New Project:



2MP Starlight+ AI Camera
IPC-HFW5241E-Z5E/Z12



NVR 4X/5X-4KS2 series

DMSS
DSS Express

Old Project Upgrade:



XVR8X-4KL/4K-I

DMSS
DSS Express



NVR 5X/4X-I Series

Nature Reserve Perimeter

Requirements & Challenges

Active Defense to avoid casualties



Real-time warning to drive the intruder away from dangerous area

No Light at Night



Monitor and alarm normally in no light environment

Advantages

Active defense: avoid casualties in time

Full-color camera: bring light at night

Alarm messages push

Recommended Product



2MP Full-color AI Camera

IPC-HFW5241T-AS-LED



NVR 5X/4X-I Series

DMSS

DSS Express

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Installation Guide

Please refer to the perimeter camera construction guide for detailed installation instructions

Installation Requirements

Applicable Scenes



Monitor the targeted person to intrude the obvious perimeters



Monitor people falling into water and entering rooftop and lawn

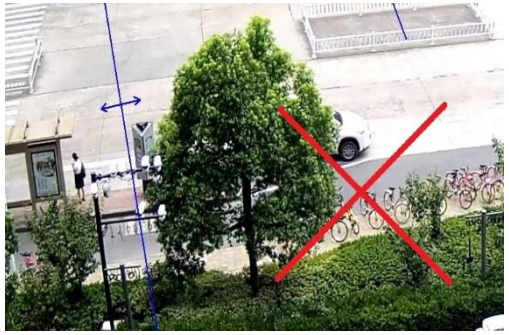


Monitor the completely split flow of people and vehicles



Monitor the intruder of small retail store in night

Not Applicable Scenes



Trees around the tripwire interrupt the moving trail of targets

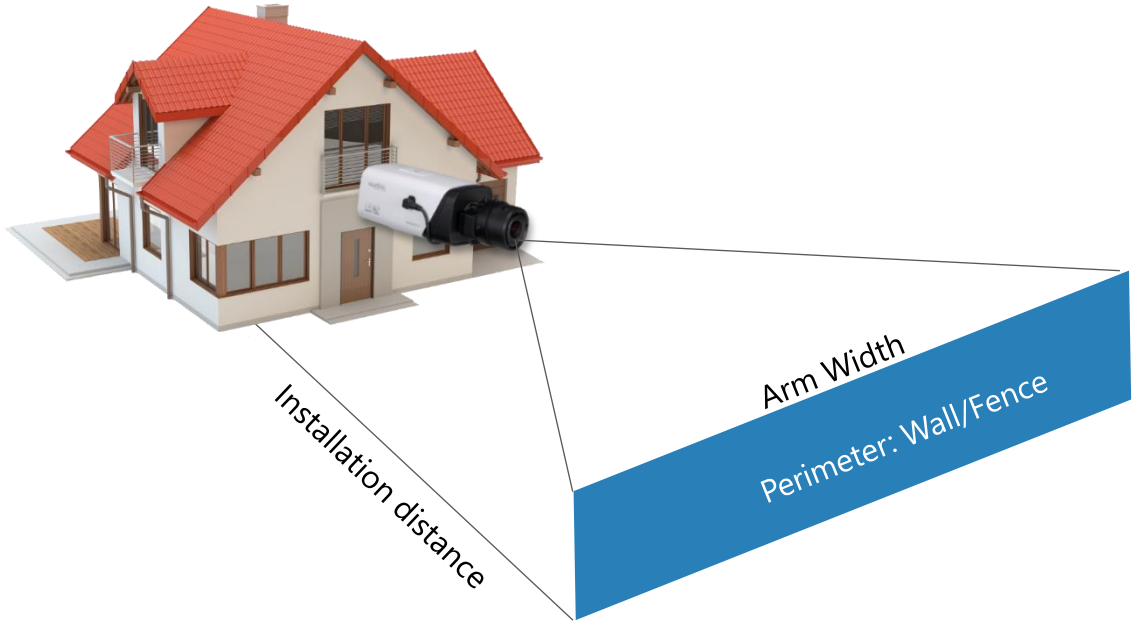


The brightness flickering influences the detecting results



In the dark, the detecting rate of color mode is low. You need to switch it to black-and-white mode

Installing Camera at the Position Vertical to Perimeter



Recommended arm width for people: Around 16 m (max)

- If the installation distance is 5~22M: recommend 2.7~13.5mm lens
- If the installation distance is 28~90M: recommend 7~35mm lens

Recommended installation height: h > 3 m, and the upper limit depends on the lens

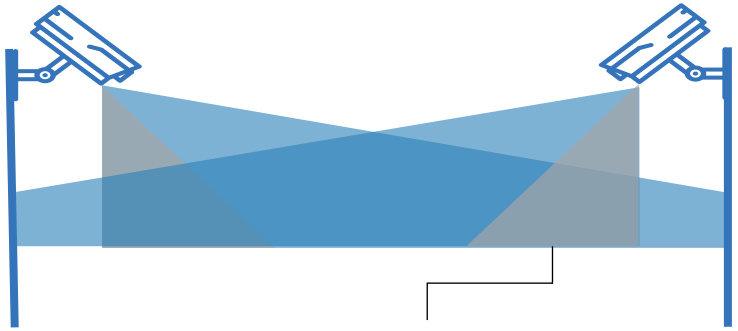
Suitable for Scenarios with short perimeter:

> House/Villa
> Warehouse
> Retail store
> Restaurant
> Parking lot
...



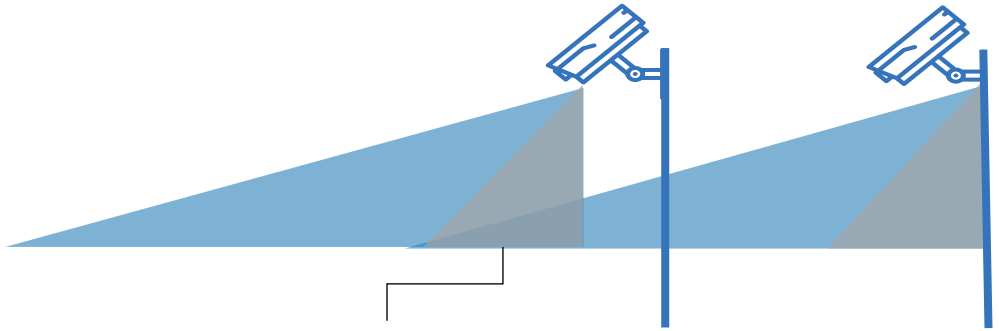
Installing Camera above Perimeter

Camera Placement - Correlation



The blind area is covered by the opposite camera.

Camera Placement - Loop



The blind area is covered by the camera behind it.

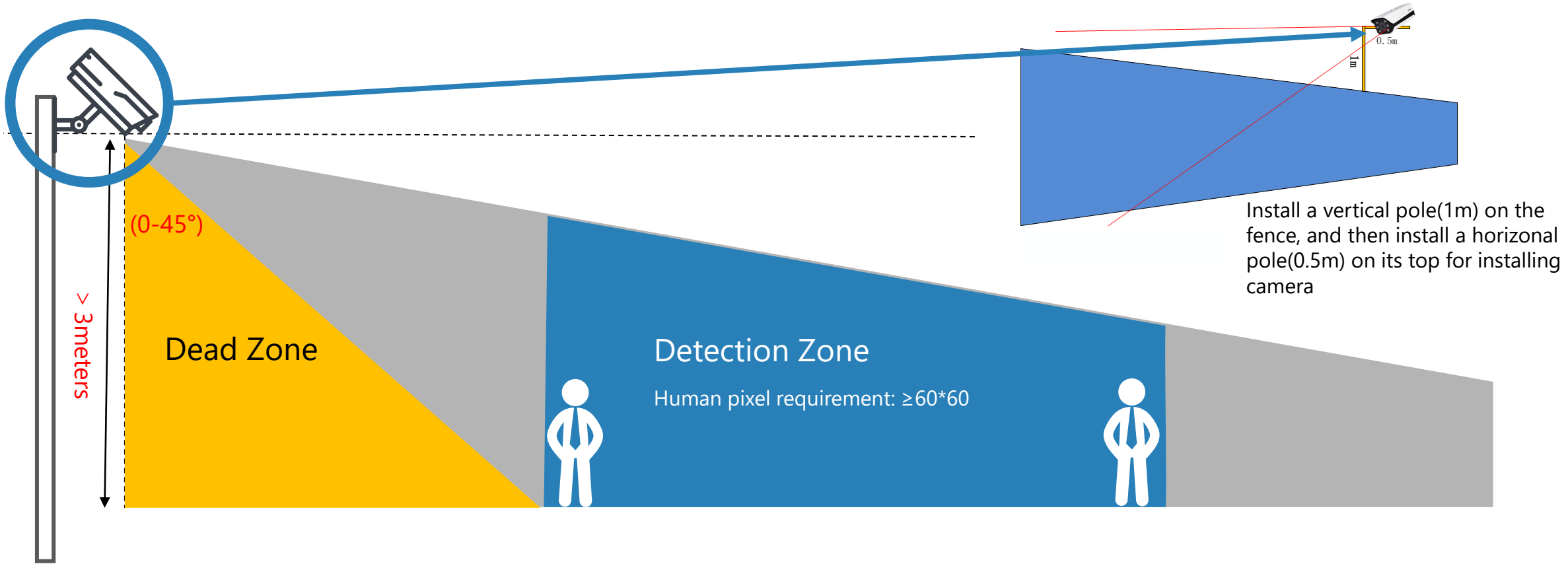
Suitable for Scenarios with long perimeter:

> Substation
> Factory
> School
> Border
> Prison

...



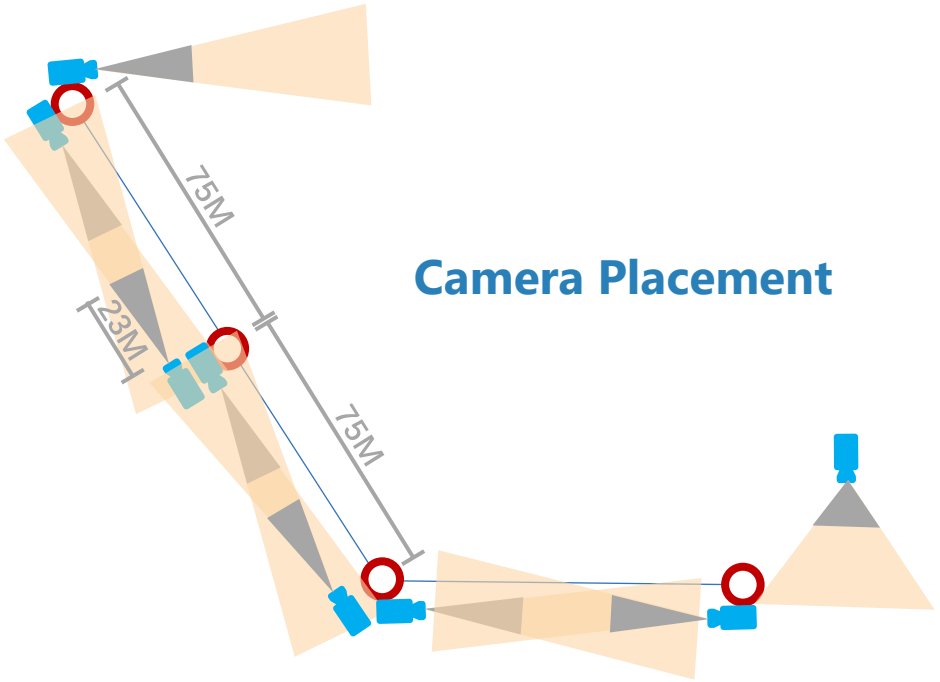
Installing Camera above Perimeter



Recommended				
Focal Length	2.8mm	12mm	8mm	30mm
Arm Distance	1-6M	4-25M	3-17M	12-60M

Camera Placement – case of ware house perimeter





Product Selection



IPC-HFW5241E-Z5E x 8



DHI-NVR5232-4KS2 x 1

Project Information

Perimeter Length: about 225M

Pole Number: 4 ;

Network Camera Number: 8

Camera Distance: 75M; Camera Height: 6M

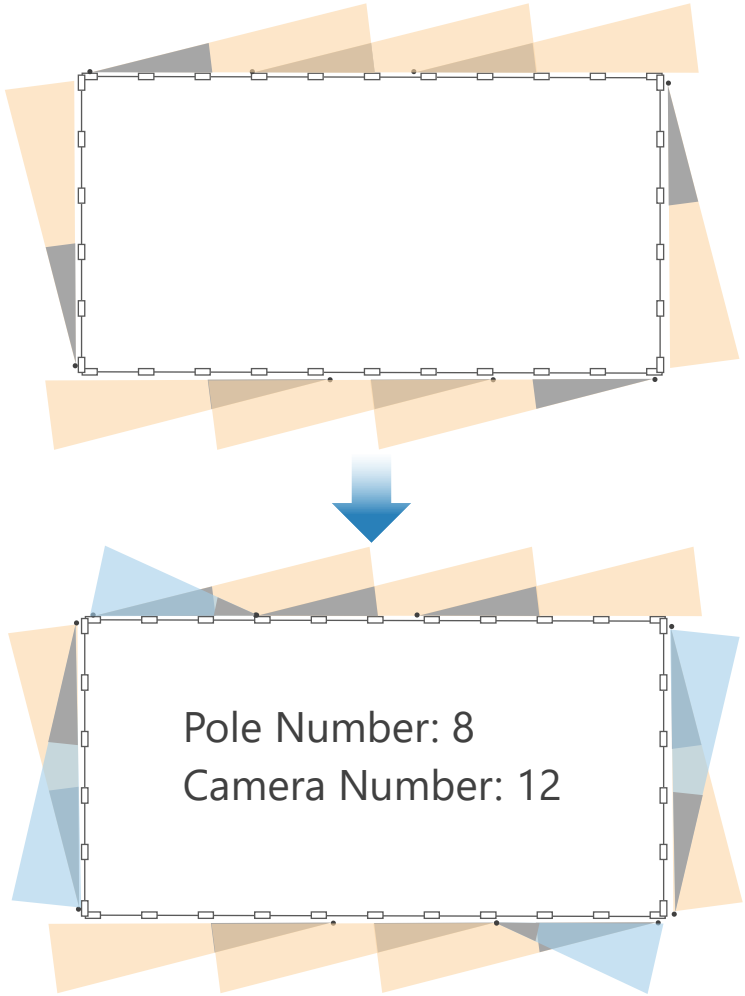
IVS Monitoring Range: 30~80M

Camera Placement– Typical Scenarios

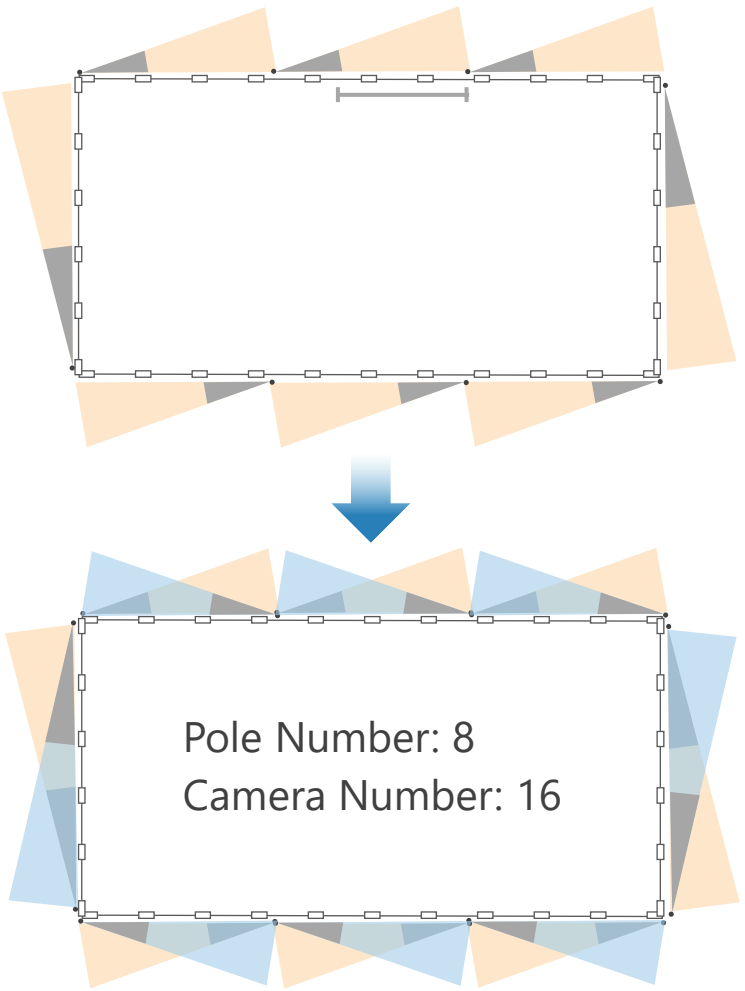
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Loop Placement



Correlation Placement



Camera Placement– Typical Scenarios

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Perimeter protection camera
IPC 5 Series

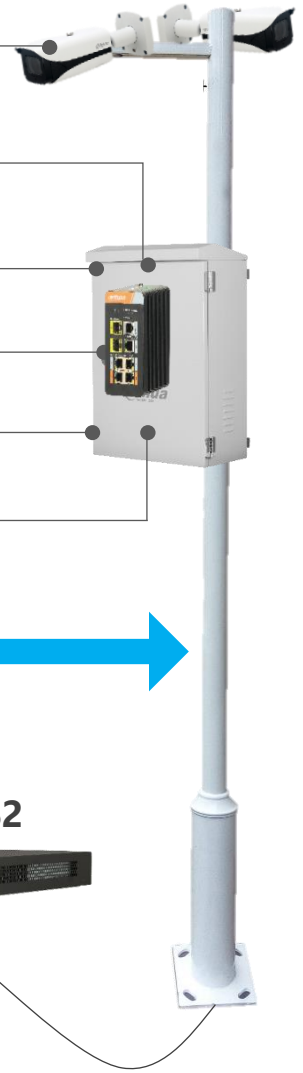
Outdoor distribution box
PFM377

Lightning arrester of the primary circuit
ZZM3-20

PoE Swicth
PFS4207-4GT-DP

Switching power supply
DRL-48V120W1AAD

Air circuit breaker
B1N2C16



Loop Distribution

Pole Number: 8

Camera Number: 12

IVS Range/Cam: 20~50M

Correlation Distribution

Pole Number: 8

Camera Number: 16

IVS Range/Cam: 13~33M

NVR 5X-4KS2



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THANK YOU

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E-mail: info@emi-systemsltd.com