



HIKVISION[®] TRAINING ACADEMY

Hikvision Certified Security Associate



Network Design Basics

Hikvision Certified Security Associate

Contents

- Network Basics
- Network Device
- Network Planning
- Bandwidth Planning
- Network Security

New Password Strategy

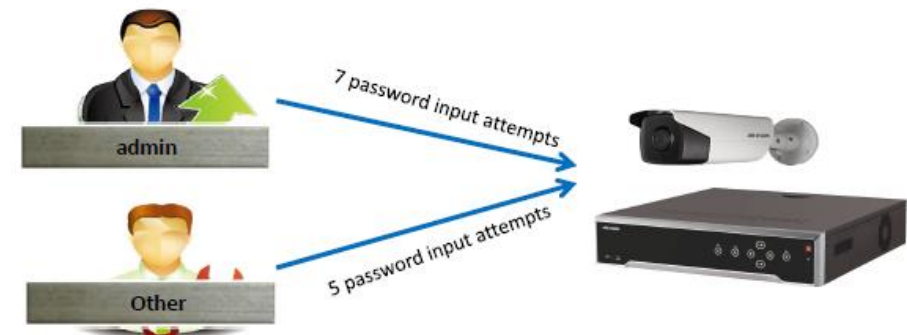
Why the Password strategy has changed?

- In the past we didn't force on installers and users changing the default passwords, there is a chance that an installer finishes an installation without setting up a strong enough password.
- Default usernames and passwords are widely know.



Password Strategy

- No more default Passwords -> device activation
- Complex Passwords that include upper- and lower-case letters, numbers and special characters are recommended.
- Lockout rules



Activation

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- Activation of the device can be carried out locally or via the browser.

Local activation interface showing fields for Username, Password, and Confirm Password. It also includes a strength indicator for the password and a checkbox for 'Export GUID'.

DVR/NVR Local Activation Interface

IE Activation Interface showing fields for User Name, Password, and Confirm. It includes a note about password requirements.

IE Activation Interface

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Activation

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- SADP Activation

SADP Activation Interface showing a list of devices with columns for IP Address, MAC Address, and Device Name. It includes a 'Report' button and a 'Select the device' section on the right.

SADP Activation Interface

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What if a Password is forgotten?

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- For devices with a reset button the Password can be reset by pressing the reset button.
- For devices without a reset button the Password can be reset by the following secure method:
 - Send the device information/Devicekey.xml /QR Code exported from the device within the LAN to Hikvision.
 - Hikvision will provide users with security code/Encrypt.xml / key to reset the password.



Reset
Password

SADP
Set New
Password

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Technical Support



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Forgot Password

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Forgot Password interface (left) showing fields for Username, Password, and Confirm Password. It includes a 'Forgot Password' button.

Forgot Password interface (right) showing a 'Reset Password' dialog box with instructions and fields for New Password and Confirm Password.

SADP Interface

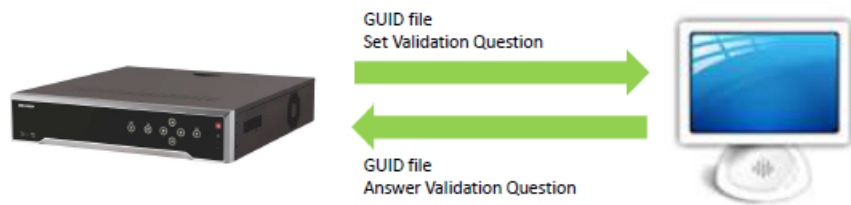
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New Password Resetting Strategy

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- With this strategy, customers will be able to reset device passwords by themselves.
 - The user can export the GUID file in advance and reset the password by importing the GUID file when needed.
 - The user can set validation questions and reset the password by answering the pre-set questions when needed.
- Local GUI, SADP, iVMS-4200, and Web client support new password resetting strategy.
- New password resetting strategy is available for –E/-K/-I series NVR from V3.4.90, and Turbo 3.0 DVR (DS-HG/HQ/HUHI-F series) from V3.4.80



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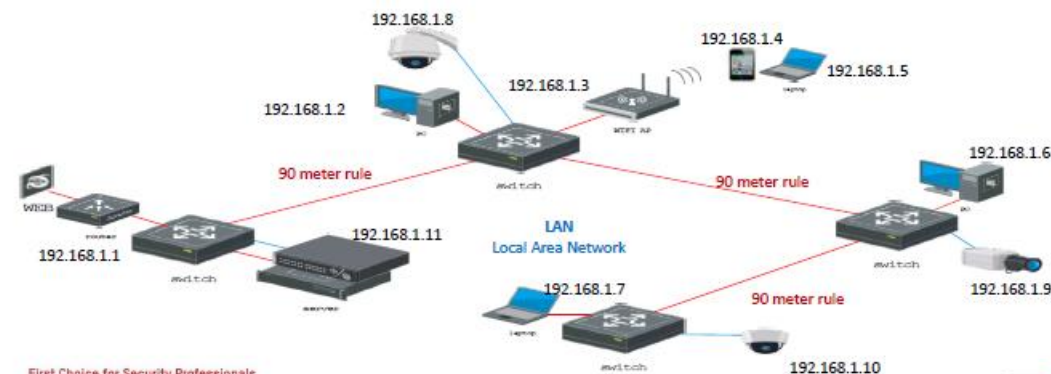
HCSA 9

Network Introduction

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Network is a collection of computers, servers, mainframes, network devices, peripherals, or other devices connected to one another to allow the sharing of data.

In video surveillance area, the network includes core switch, Ethernet cable, fiber, IP cameras, servers, etc.



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Private IPv4 Address

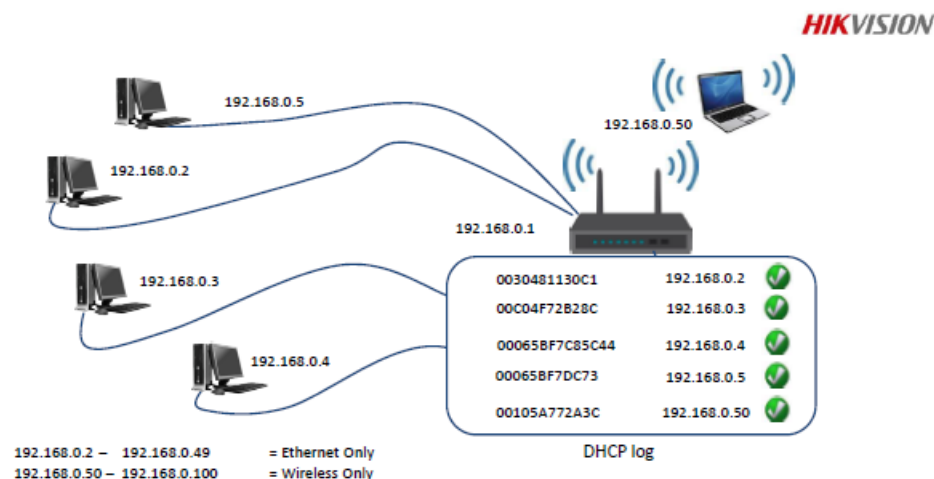
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- Private IP address cannot be used on public network.
- On the public network, IP address is unique. While in different private networks, the private IP address can be the same. It is an effective way to save IP address.

10.0.0.0/8— 10.255.255.255/8
172.16.0.0/12— 172.31.255.255/12
192.168.0.0/16— 192.168.255.255/16

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Each address is 'leased' for a set time to avoid IP exhaustion, what does that mean?

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Subnet Mask

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- Subnet mask is used to distinguish the network address and host address.
- Subnet mask consists of a succession of “1” and a succession of “0” .
 - “1” corresponds to network address and subnet address.
 - “0” corresponds to host address.
 - “1” and “0” cannot show up cross.

Example:

- 128.1.1.1/255.255.0.0
- 128.1.1.1/16
- 192.168.3.2/255.255.224.0
- 192.168.3.2/19

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Why IPv6?

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- Explosive growth of Internet users, devices, apps creates demand for more IP addresses.
- IPv4 uses 32-bit addresses and can support 4.3 billion devices connected directly to the Internet.
- The replacement protocol IPv6 uses 128-bit addresses and provides such a vast number of addresses that it can only be expressed mathematically: 3.4×10 to the 38th power.



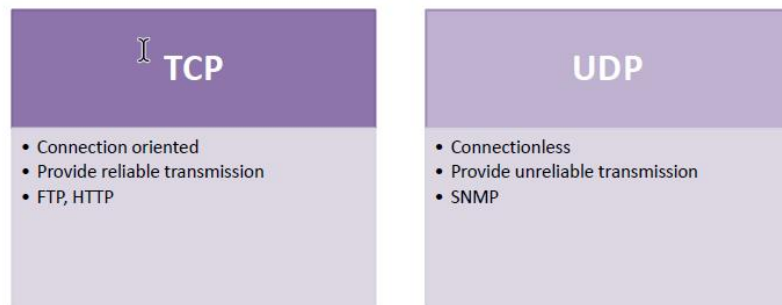
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TCP vs UDP

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- **TCP(Transmission Control Protocol):** Ensures complete delivery of streaming data and better video quality, yet the real-time transmission will be affected.
- **UDP(User Datagram Protocol):** Provides real-time audio and video streams.



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Common Port Number

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- 20 File Transfer Protocol [Default Data]
- 21 File Transfer Protocol [Control]
- 25 Simple Mail Transfer Protocol
- 80 World Wide Web HTTP
- 443 HTTPS
- 8000 Server(for software access)
- 554 RTSP

Port number range: 0—65535
0—254 Public
255—1023 For company
1024 and above Random

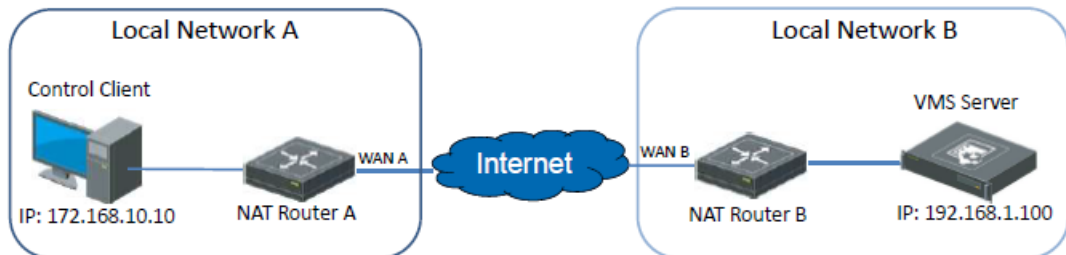
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Port Forwarding

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The control client and VMS server are belong to different local network which was connected by Internet. Now, the control client wants to access the VMS server, let us check the communication process and find out the problem.



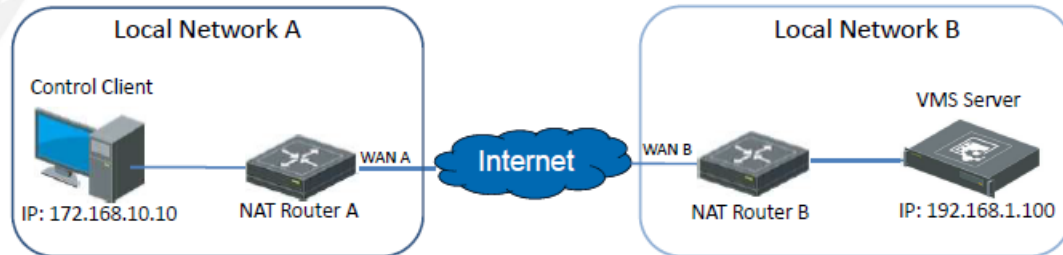
The local IP of VMS server is 192.168.1.100, as we know, this IP address is private IP which can't be used for communicating on internal Network. So the control client needs to access the VMS Server by it's public IP. In this network, the public IP of the VMS server is NAT router's WAN IP.

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Port Forwarding

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Control client

The control client will send a request to NAT router's WAN directly

NAT Router

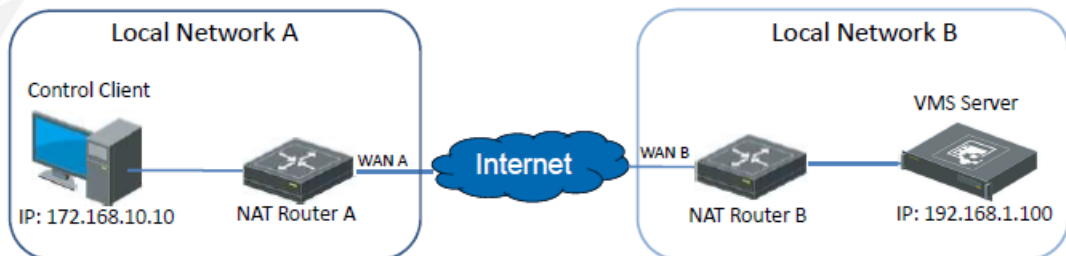
The request will be blocked Because the NAT will refuse any external initiative access

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Port Forwarding

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To pass through the NAT, normally we need to do port forwarding on the router, router has many port forwarding functions, such as Virtual server, UPNP, DMZ.

The port forwarding is adding a static NAT rule on the router, Once the external access data matched the NAT rule, the data will be transferred to the specific host.

For example, We can use virtual server function to add this NAT rule on NAT router B.

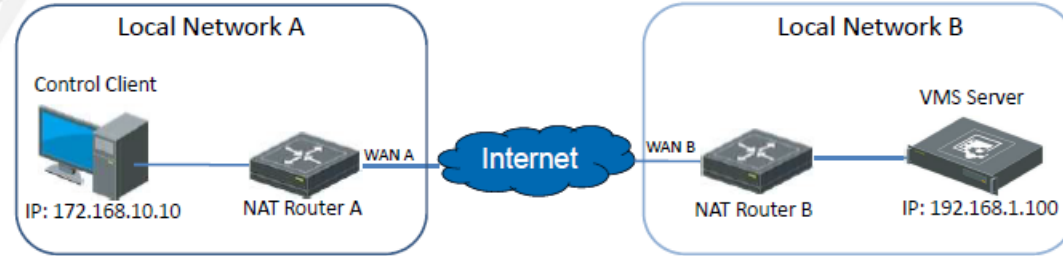
External Port	Internal Port	Internal host
80	80	192.168.1.100

This rule means all data that send to WAN IP(B):port(81) will be forwarded to 192.168.1.100:80

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Port Forwarding

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Control client

The control client will send a request to WAN IP B & port 80

NAT Router

External Port	Internal Port	Internal host
80	80	192.168.1.100

Router B received the request and check the NAT rule, there is a rule matched, the data will be forwarded to VMS server

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Port Forwarding

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UPNP

UPNP can open the specific ports automatically by UPNP protocol, but it can only support monolayer NAT. You can see this function on hardware device, such as NVR and IPC.

Enable UPnP™				
Port Mapping Mode	Automatic			
Port Type	External Port	External IP Address	Internal Port	Status
HTTP	80	0.0.0.0	80	Not Valid
RTSP	554	0.0.0.0	554	Not Valid
Server Port	8000	0.0.0.0	8000	Not Valid
HTTPS	443	0.0.0.0	443	Not Valid

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Common Transmission Media

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Twisted pair cable



Fiber cable



Coaxial Cable



Wireless

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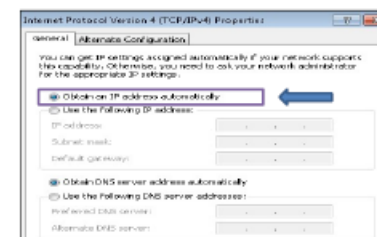
How does the PC obtain an IP address

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Dynamic Host Configuration Protocol (DHCP)

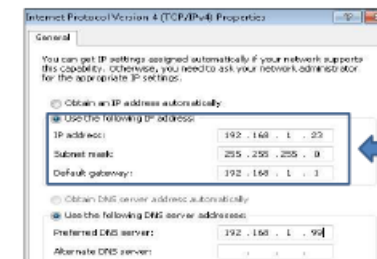
NIC can access available IP address from DHCP server, and DHCP server is usually the router or switch with IP allocation function.

Select *obtain an IP address automatically* in NIC properties.



Configure IP address manually

You can configure IP address manually, and please make sure that the IP address is available, and the subnet mask and gateway is correct.



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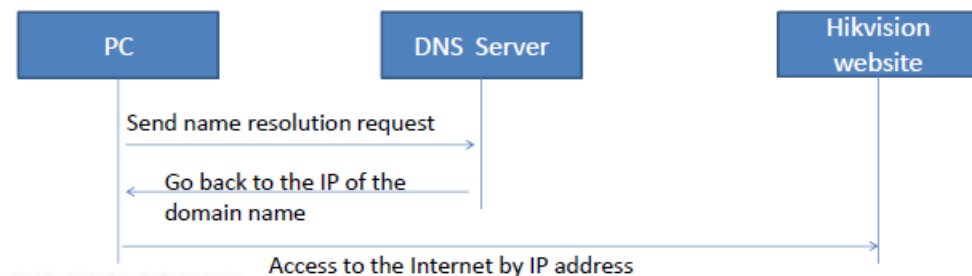
HCSA 24

Domain Name & Domain Name System

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A domain name is an identification string that defines a realm of administrative autonomy within the Internet (such as hikvision.com). Domain names are used in various networking contexts and for addressing purposes. In general, a domain name represents an IP address on Internet.

When you access to www.hikvision.com, the domain will be transformed into an IP address by the DNS server first, then your computer will access to the website via the IP address.

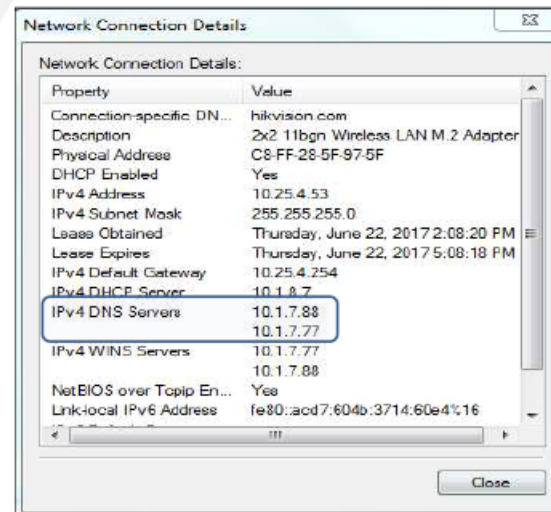


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DNS Configuration

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DNS can be obtained by DHCP from the router automatically or it can be set manually as static IP address configuration

Commonly used DNS server 8.8.8.8 (overseas)

Obtain from ISP(Internet Service Provider)

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Contents

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- Network Basics
- Network Device
- **Network Planning**
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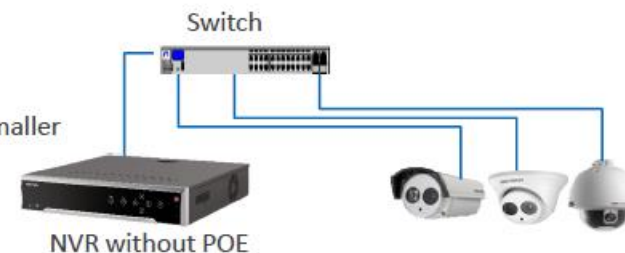
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Network Design-Small System

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- Single Switch
 - POE could be used.
 - Transmission distance smaller than 100M
 - Easy to install
 - No redundancy



NVR without POE



NVR with POE

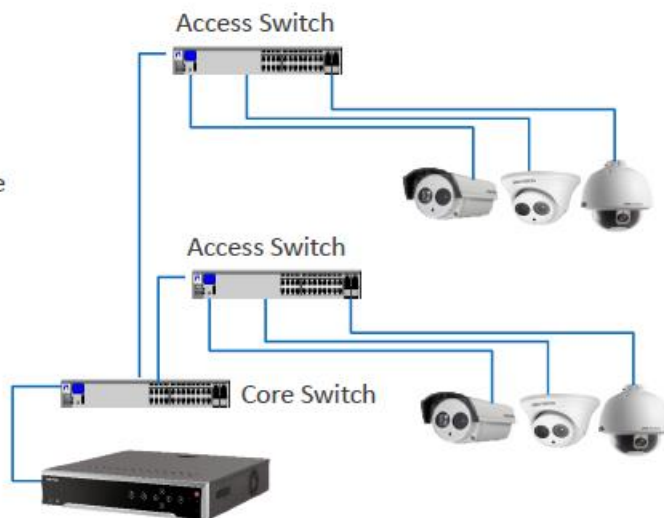
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Network Design-Flexible System Scale

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- Two layer structure
 - POE could be used.
 - System upgraded
 - Easy to install
 - redundancy is available



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Contents

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- Network Basics
- Network Device
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- Network Security

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Stream URL Calculation

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- Common video parameters of IPC

1. Resolution ratio

Common resolution ratio: 3840*2160(4K/8MP), 1920*1080(1080P/2MP), 1280*720(720P), 704*576(4CIF/D1), 352*288(CIF)

2. Frame rate (fps): the frequency at which consecutive images called frames appear on a display. The higher the frame rate is, the smoother the image is; when the rate is below 15, human eyes can feel that the image is not constant. Bit stream will be decreased by lower frame rate, but the video quality will be influenced if the frame rate is too low.

3. Encoding mode : MPEG4< H.264< H.264+ < H.265< H.265+ (encoding efficiency)

Video Encoding	Resolution	Frame Rate	30 fps	25 fps	20 fps	15 fps	12.5 fps	10 fps	1 fps
H.264 Recommended Bit Rate	3840*2160		16384	16384	12288	8192	8192	6144	6144
	1080P(1920*1080)		4096	4096	3072	2048	2048	1536	1536
	720P(1280*720)		2048	2048	1536	1024	1024	768	768
	4CIF(704*576)		1024	1024	768	512	512	384	384
	352*288		320	320	192	192	192	128	128
H.265 Recommended Bit Rate	3840*2160		8192	8192	6144	4096	4096	3072	3072
	1080P(1920*1080)		2048	2048	1536	1024	1024	768	768
	720P(1280*720)		1024	1024	768	512	512	384	384
	4CIF(704*576)		704	704	512	384	384	256	256
	352*288		320	320	192	192	192	128	128

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How To Calculate Bandwidth and Storage

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- Hikvision design tool

The screenshot shows the 'Storage and Network Calculator' interface. On the left, there are input fields for 'Add Channel' (Channel Name, Channel Number), 'Encoding' (H.264), 'Resolution' (1280x720), 'Frame Rate' (30), and 'Scene Complexity' (Medium). On the right, the 'Storage and Network Calculator' section displays the 'Channel Name(1)', 'Channel Number(1)', and 'Resolution(1280x720)'. The 'Total channel number' is 1, and the 'Bandwidth' is 20.0. A red 'Add' button is at the bottom left.

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Contents

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- Network Basics
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- **Network Security**

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HTTPS

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- Hyper Text Transfer Protocol over Secure Socket Layer
 - communications protocol for secure communication over a computer network, with especially wide deployment on the Internet. It adds the security capabilities of SSL/TLS to standard HTTP communications.
 - The main motivation for HTTPS is to prevent wiretapping and man-in-the-middle attacks.
 - Default port number: 443
 - The HTTPS port can be changed if desired (port numbers range from 1-65535)



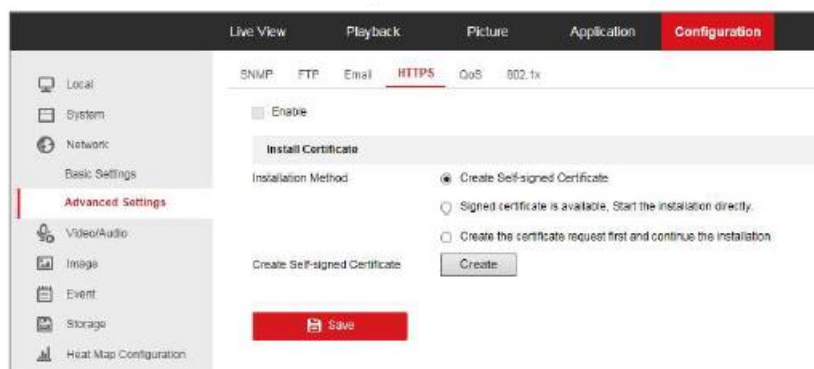
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HTTPS – Create Self-signed Certificate

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1. In the web UI, enter HTTPS configuration menu by going to *Configuration -> Network -> Advanced Configuration -> HTTPS*.
2. Click on Create button "Create self-signed certificate"



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HTTPS – Create Self-signed Certificate

HIKVISION

3. Type in parameters such as country, hostname/IP, and validity as shown below, then Click on OK (there is no need to provide any other information, just the first three fields, as specified).

The 'Create' dialog box contains the following fields and values: Country (CN), Hostname/IP (10.5.3.3), Validity (5000), Password (empty), State or province (Zj), Locality (hz), Organization (Hikvision), Organizational Unit (empty), and Email (empty). Green checkmarks are visible next to the Country, Hostname/IP, Validity, State or province, Locality, and Organization fields. 'OK' and 'Cancel' buttons are at the bottom right.

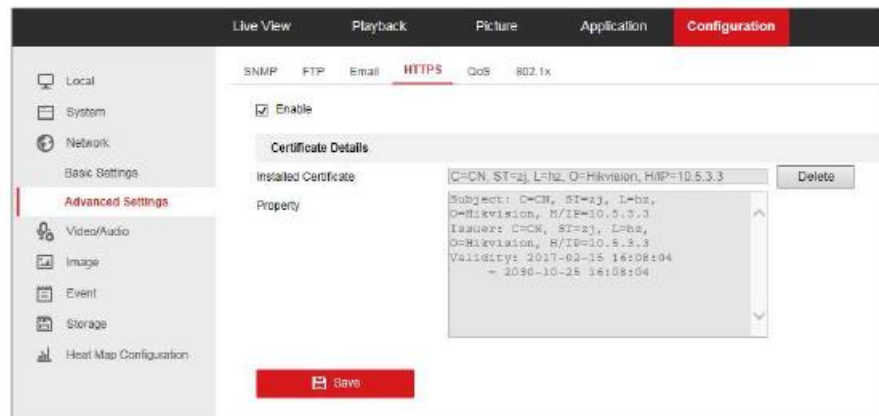
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HCSA 36

HTTPS – Create Self-signed Certificate

HIKVISION

- 4. Check Enable HTTPS checkbox, and then click on Save button



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HTTPS – Create Self-signed Certificate

HIKVISION

- When using HTTPS to access the device, type **https://IP address:port number** into the web browser address bar (e.g. **https://192.0.0.64:443**).
- If self-signed certificate is used, web browser may pop up warning notification like shown below.



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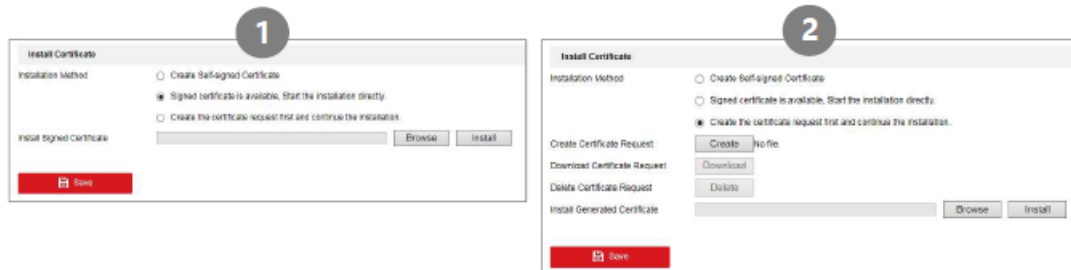
HCSA 38

HTTPS – Create Self-signed Certificate

HIKVISION

- Users can install the certificate signed by CA (Certificate Authority) to enhance the safety level. (reputable CA organizations always need charging)

- Signed certificate is available, Start the installation directly:** For the customer who already has the certificate.
- Create the certificate request first and continue the installation:** For the customer who wants to create certificate request by himself. After creation, one can download the file and send it to CA to sign. After getting the certificate, simply install the certificate to enable HTTPS.



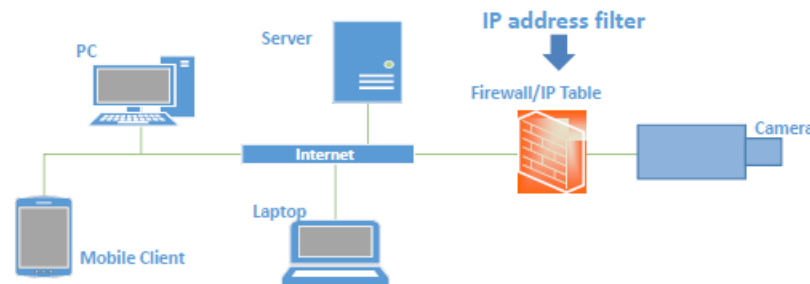
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IP Address Filter

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- Hikvision network products provide IP address filtering, which allows or forbids access rights to defined IP address(es).
- A typical configuration is to configure the device to allow only the IP address of the server that is hosting the VMS to access.



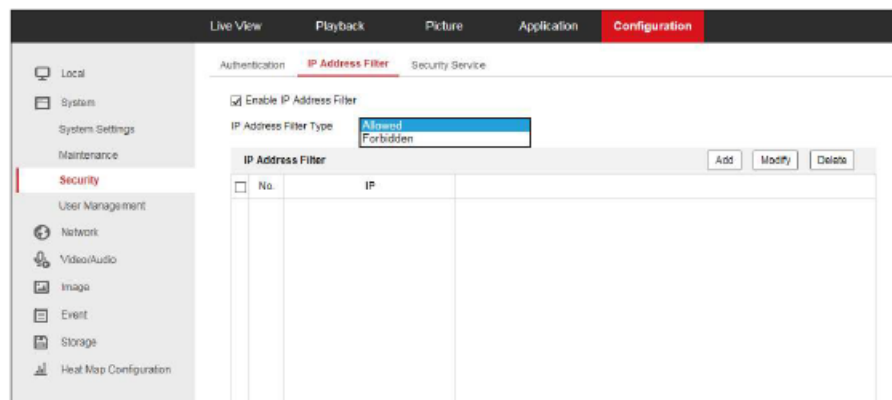
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IP Address Filter

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- Configuration -> System->Security-> IP Address Filter



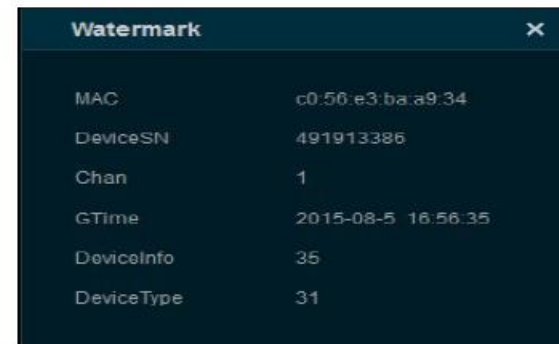
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Digital Watermark

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- Digital watermark technology embeds the device information onto the recorded video.
- Digital watermarks may be used to verify the authenticity or integrity of the video or to show the identity of its owners.



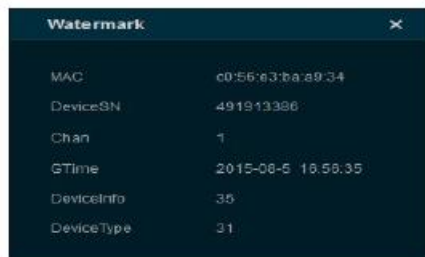
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Watermark

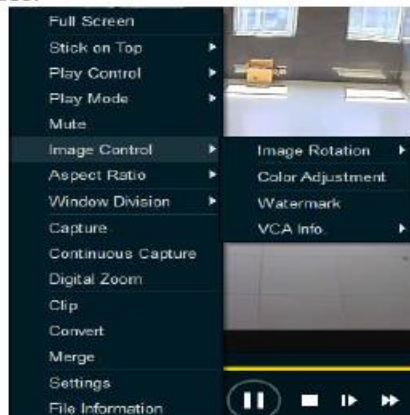
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- Open VSPlayer and play one video clip from Hikvision camera.
- Right click on the video: Image Control -> Watermark
- The watermark information will be displayed on the video.



NOTE

- Only Hikvision VSPlayer can check and display the watermark of video stream.



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Thank You

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HCSA 44

Hikvision Turbo HD Analog Solution

Hikvision Certified Security Associate

Training Objectives

- Understand basic theory and advantages of HD TVI technology
- Familiar with Hikvision Turbo HD solutions.
- Know about Hikvision Turbo HD Products family

Contents

- ◆ Turbo HD Analog Principle and key features
- ◆ Turbo HD Analog Solutions
- ◆ Turbo HD 5.0 System
 - ColorVu Camera
 - AcuSense DVR
- ◆ Turbo HD X System
- ◆ Turbo HD Products

HD Analog Standard



Easy HD

- Plug and Play
- Up the Coax
- Easy System Upgrade

Real-time HD

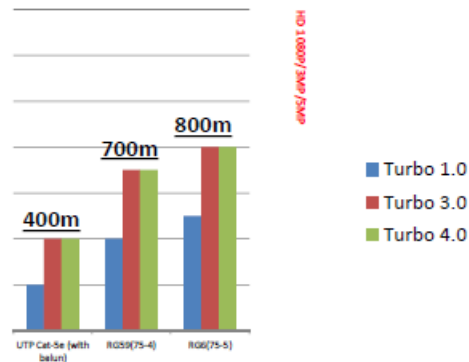
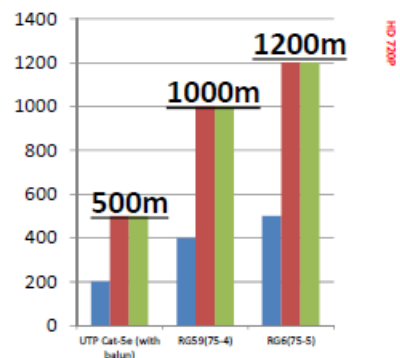
- Without encode & decode
- Real-time output (vs IP Camera)

Further HD

- Long transmission distance
- Anti-interference

Long Transmission Distance

HIKVISION

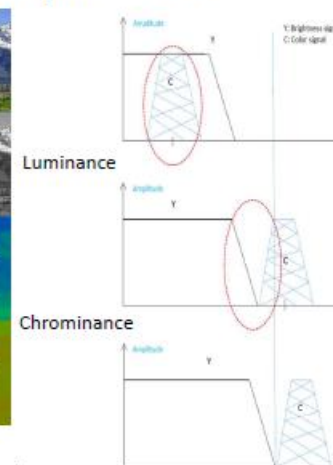


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HDTVI Principle -- YUV

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AHD

Brightness/color not separated.
Narrow bandwidth

CVI

Brightness/color separated.
Narrow bandwidth

TVI

Brightness/color separated.
wider bandwidth
better definition

An image along with its Y, U, and V components respectively

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HCSA 50

1080P/4M Lite Technology

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1080P Lite



1080P

	Resolution	Visual Effect	Bitrates
720P	1280*720	700 TVL	2Mb
1080P Lite	960*1080	900 TVL	2Mb
1080P	1920*1080	1000 TVL	4Mb

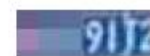
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HCSA 51

Ultra HD 4K

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Offering more details and better visual experience for users.



1080p



5 MP



4K

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HCSA 52

Ultra-low Light

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Guaranteeing colorful images even in dim light environment.



Conventional camera



Camera with ultra-low light technology
(0.003 lux)

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HCSA 53

130 dB True WDR

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Benefits from true WDR, environments with strong backlight won't be troubles.



Sensor Data	10 bit
Gamma Adjustment	8 bit
Sampling Rate	4:1 or 8:1

Algorithm
upgrading



12 bit	✓ Higher greyscale
16 bit	✓ Less data loss
1:1	✓ Minute contrast

Available in Pro series cameras.

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Better imaging performance

HCSA 54

PoC Technology

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- ★ Transmits both HD video and power over the same coaxial cable
- ★ Unique built-in design
- ★ Patented Hikvision technology



Power
Coaxial cable
Video



PoC Built-in DVR

☆ One cable solution
Saving wiring costs



☆ Simple installation
Saving labor costs



☆ Simple maintenance
Saving maintenance
time and costs



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HCSA 55

Multi-signal Output

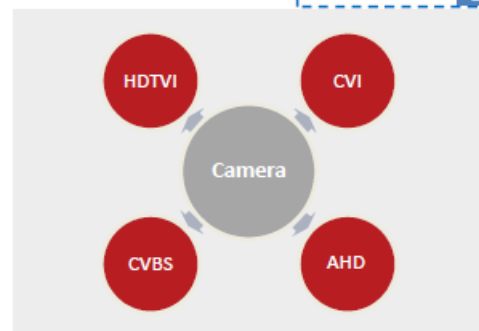
HIKVISION

4 in 1

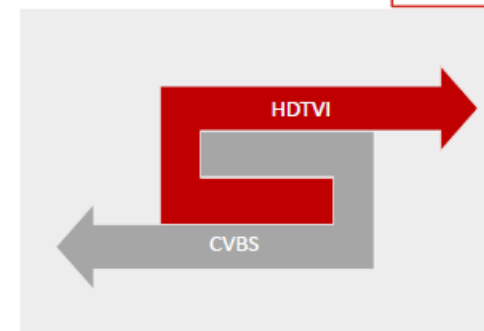
4 in 1 cameras

Dual-output

D9T / U8T



Signal output switchable



HD/SD output simultaneously

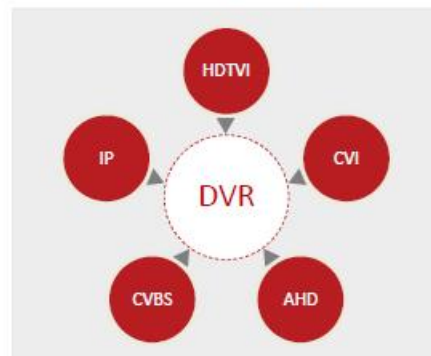
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Hybrid Ability

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5 in 1 Self-adaptive signal input



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IP camera access capability

- ☆ Enhanced default IP camera access capability
- ☆ Increase IP camera channels by disabling analog channels

IP cameras input resolution

HQHI-K up to 6 MP
HUHI-K up to 8/12 MP
HTHI-K up to 8/12 MP



HCSA 57

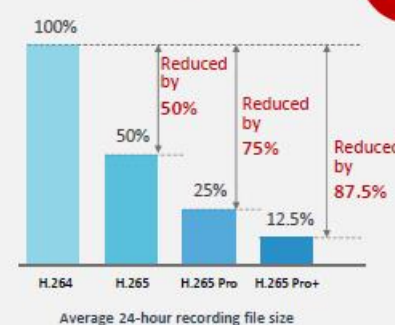
Super compression

H.265 Pro+/H.265 Pro/H.265

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Under the same storage capacity, time of video recording is much longer.

Video file size comparison



First Choice for Security Professionals

Storage Saving

Storage needed for ten 1080p cameras for 1 month:

H.264	13 TB
H.265	6.5 TB
H.265 Pro	3.25 TB
H.265 Pro+	1.6 TB

Extremely light bandwidth

Number of 1080p cameras connected at 20 Mb bandwidth:

H.264	...	5-ch
H.265	...	10-ch
H.265 Pro	...	20-ch
H.265 Pro+	...	40-ch

HCSA 58

Hik-Connect Access

HIKVISION

Available models: K Series V3.5.37 / HGHI-F V3.4.89



By scanning the DVR QR code with Hik-Connect, you can access and operate the DVR.

First Choice for Security Professionals

HCSA 59

Contents

HIKVISION

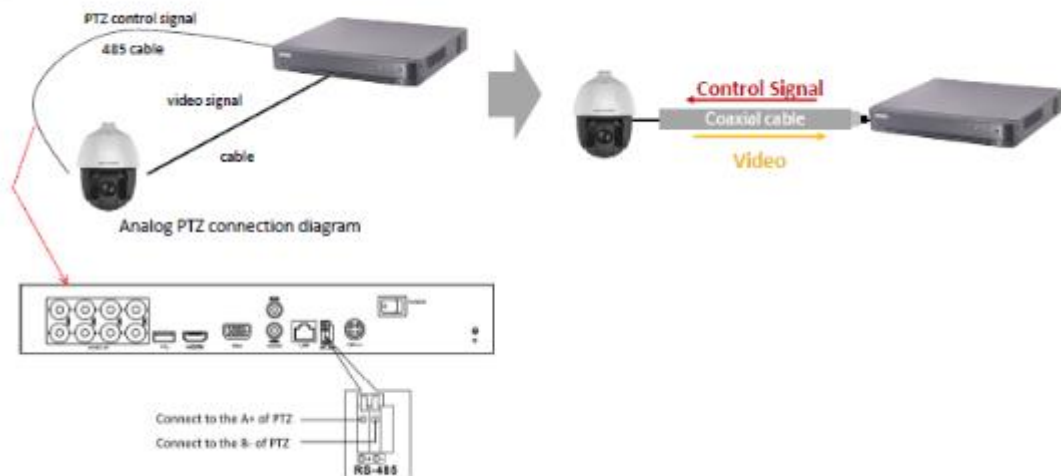
- ◆ Turbo HD Analog Principle and key features
- ◆ Turbo HD Analog Solutions
- ◆ Turbo HD 5.0 System
 - ColorVu Camera
 - AcuSense DVR
- ◆ Turbo HD X System
- ◆ Turbo HD Products

First Choice for Security Professionals

HCSA 60

PTZ Control Solution

HIKVISION

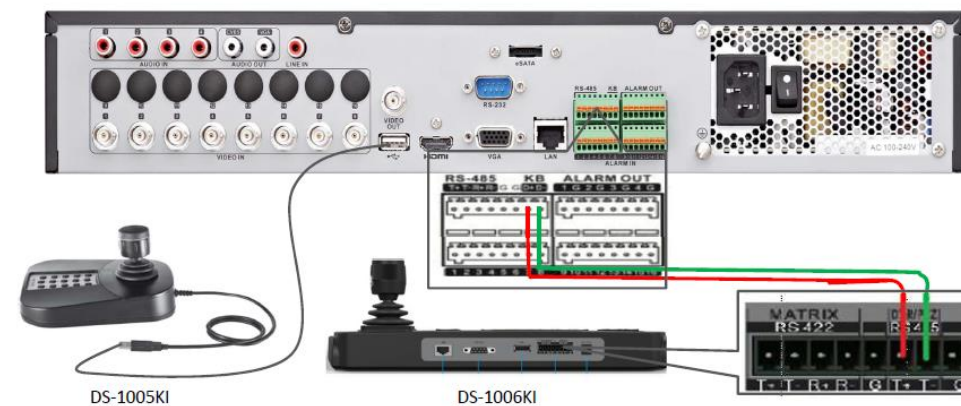


First Choice for Security Professionals

HCSA 61

Add Keyboard to Turbo DVR to Control PTZ

HIKVISION



First Choice for Security Professionals

HCSA 62

Smart Event - VCA

HIKVISION

Analog Channel



Line crossing detection



Intrusion detection

IP Channel



Line crossing detection



Intrusion detection



Unattended Baggage/Object Removal



Region Exiting/Entrance

First Choice for Security Professionals

HCSA 63

POS Solution

HIKVISION



First Choice for Security Professionals

HCSA 64

4K Solution

HIKVISION



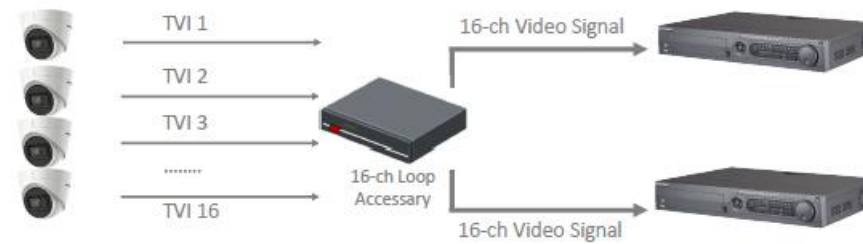
Images in brilliant HD

First Choice for Security Professionals

HCSA 65

Loop Solution

HIKVISION



16-ch Loop Accessory
DS-1LP16I

16-ch loop accessory, video signal distribution

First Choice for Security Professionals

HCSA 66

PIR Solution

HIKVISION



First Choice for Security Professionals

HCSA 67

PIR Solution - Demonstration

HIKVISION



White Light Warning



Intrusion Stop



Crime Prevention

First Choice for Security Professionals

HCSA 68

PIR Solutions - Demonstration

HIKVISION



White Light Warning



Unconscious Glance



First Choice for Security Professionals

HCSA 69

PIR Solution - Demonstration

HIKVISION



Object Moving:
No alarm triggered

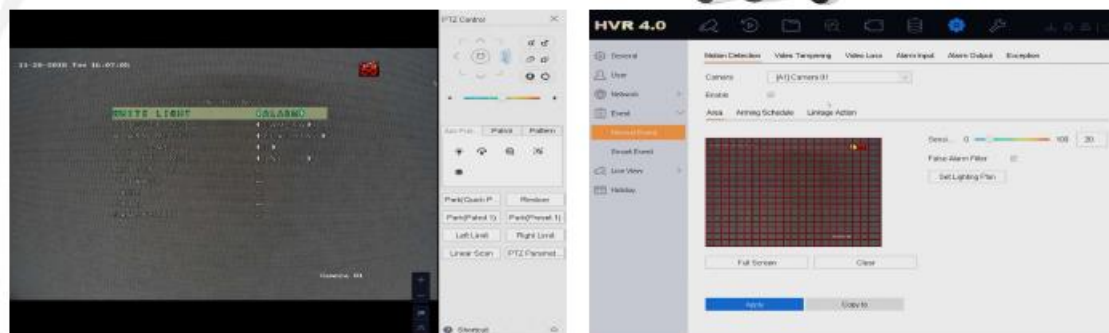
Human body moving:
Motion alarm triggered

First Choice for Security Professionals

HCSA 70

PIR Solution - Configuration

HIKVISION



- > IRIS Button> OSD MENU
- > WHITE LIGHT> ALARM
- > TRIGGER MODE> DVR

- Enable Motion Detection

First Choice for Security Professionals

HCSA 71

Contents

HIKVISION

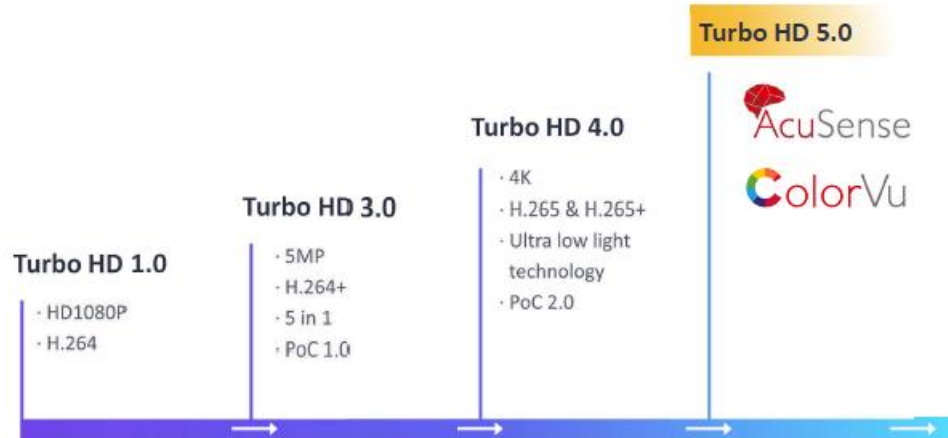
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- ◆ Turbo HD X System
- ◆ Turbo HD Products

First Choice for Security Professionals

HCSA 72

Turbo HD Development

HIKVISION



First Choice for Security Professionals

HCSA 73

This slide introduces the Turbo HD 5.0 technology, featuring a central circular graphic with the text "Turbo HD 5.0". To the left, the "AcuSense" logo is accompanied by the text "Accurate Sense, the intelligent analyze technology based on deep learning algorithm improves VCA accuracy." Below this is the "AcuSense Turbo DVR" logo. To the right, the "ColorVu" logo is accompanied by the text "Colorful view, the 24/7 chromatic imaging technology improves video surveillance quality." Below this is the "ColorVu Turbo Camera" logo. The HIKVISION logo is in the top right corner.

First Choice for Security Professionals

HCSA 74

ColorVu Camera

HIKVISION

Advanced lens

More light, brighter images, and balanced exposure.



High-sensitivity

Excellent performance and clear imaging in ultra low-light environment.

Friendly lighting

With no light environment, the camera has supplemental light to guarantee colorful image.

First Choice for Security Professionals

HCSA 75

ColorVu Camera

HIKVISION

The 24/7 chromatic imaging technology improves video surveillance quality.



Conventional camera



Hikvision ColorVu camera

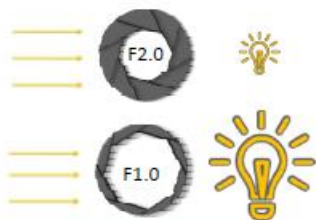
First Choice for Security Professionals

HCSA 76

Advanced lens

F1.0 super aperture

lets more light into the lens so that image can be more brighter.



The amount of light entering aperture increased **4X**

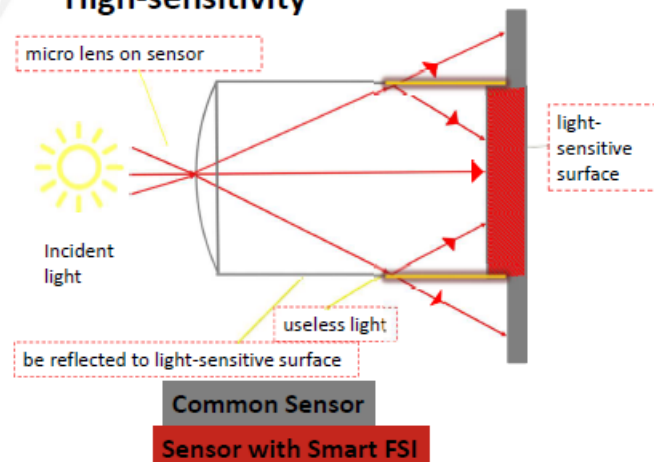
First Choice for Security Professionals

BBAR coating & ED Optical glass

- The Broad-Band Anti-Reflection coating helps to reduce ghost image.
- The Extra-Low Dispersion optical glass can efficiently keep image's sharpness and color saturation.



High-sensitivity



Sensor has extraordinary photovoltaic conversion efficiency. It adopts **Smart FSI technique**-new light collection structure that can greatly improve the utilization of light.

Further more, **self-adaptive 3D DNR algorithm** on ISP guarantees imaging quality.

First Choice for Security Professionals

Friendly Lighting

Common supplemental lighting



Warm supplement light with anti-glare diffusion lens

Environmental-friendly, **soft** and warm supplemental lighting

First Choice for Security Professionals

Comparison test in a darkroom (0 lux) , with supplement light opening



Conventional HD1080p Camera



Ultra low light HD1080p Camera



ColorVu Turbo Camera

✓ soft and warm supplemental lighting

First Choice for Security Professionals

1080p / 5 MP

24/7 colorful imaging

Ultra-low light

Warm light

True WDR

3D DNR

IP67, 4 in 1

0.0005 lux

130 dB

Fixed Lens

DS-2CE72DFT-F
DS-2CE72HFT-F
Turret: WL 20 m

DS-2CE10DFT-(P)F
DS-2CE10HFT-F
Mini Bullet: WL 20 m

DS-2CE12DFT-F
DS-2CE12HFT-F
Bullet: WL 40 m

First Choice for Security Professionals

HCSA 81

Configuration DFT ColorVu camera

MAIN MENU

VIDEO FORMAT 12M25

EXPOSURE

VIDEO SETTINGS

SMART LIGHT 1

FUNCTIONS

FACTORY DEFAULT

EXIT

SAVE&EXIT

SMART LIGHT

LIGHT OFF

THRESHOLD 2

LEVEL 3

MODE MODE1

BACK

EXIT

SAVE&EXIT

SMART LIGHT

LIGHT AUTO

THRESHOLD 2

LEVEL 3

MODE MODE1

BACK

EXIT

SAVE&EXIT

PART 1: Smart Light Configuration

Go to Main Menu- Smart Light to turn on/off the supplement light.

The supplement light is set to OFF as default. You can set it to AUTO

First Choice for Security Professionals

HCSA 82

Configuration DFT ColorVu camera

Trigger Alarm Output

CAM1->1(Light)

Enable Intrusion Detection

Target Detect: Human Body Vehicle

Local->1

Area Settings

Arming Schedule

Linkage Action

Normal Linkage

Full Screen Monitor

Audible Warning

Notify Surveillance

Send Email

Upload Captured P...

Trigger Alarm Output

CAM1->1(Light)

Local->1

Trigger Channel

A1

A2

A3

A4

PTZ Linkage

A1) Can

Preset No.

Patrol No.

Pattern No.

Alarm Name

CAM1->1(Light)

Check Time

5s

Alarm Status

Enable

Arming Time

Local->1

Continuous

None

0 2 4 6 8 10 12 14 16 18 20 22 24

1

2

3

4

5

6

7

PART 2: Linkage Action Configuration

In DVR local configuration interface configuration-Event-Smart Event, you will find there is a new option in the linkage action of all the events, which is the flashing light alarm.

First Choice for Security Professionals

HCSA 83

Accurate smart analysis based on deep learning technology.

Human

Vehicle

False Alarm Reduction

Quick Target Search

First Choice for Security Professionals

HCSA 84

AcuSense False Alarm Filter

HIKVISION

Images & alarm messages

Conventional DVR
AcuSense Turbo DVR

Alarm Triggered

False alarms

First Choice for Security Professionals

HCSA 85

AcuSense False Alarm Filter

HIKVISION

Human Target Detects **Triggered!**

Vehicle Target Detects **Triggered!**

Shaking Leaves Detects **Filtered!**

Non-human(Vehicle) Target **Filtered!**

First Choice for Security Professionals

HCSA 86

AcuSense False Alarm Filter Configuration

HIKVISION

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

Go to DVR local GUI → System → Event → Smart Event
→ Enable Smart Analysis

Search the filtered false alarms:
Go to File Management → Event Type → False Alarm

First Choice for Security Professionals

HCSA 87

AcuSense Quick Target Search

HIKVISION

Smart

Human/Vehicle recognition
Efficient and valuable data searching

AcuSense Turbo DVRs, which are integrated with deep-learning technology, fast extract interested Human/Vehicles from massive video data in a certain time.

First Choice for Security Professionals

HCSA 88

AcuSense Quick Target Search

HIKVISION



First Choice for Security Professionals

HCSA 89

AcuSense Face Detection (available for 2nd generation AcuSense DVR)

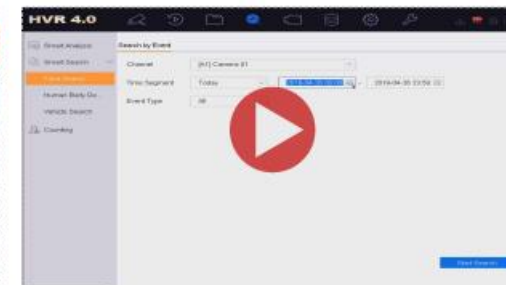
HIKVISION

— Accurate smart analysis based on deep learning technology.

Face Detection



Face Search



First Choice for Security Professionals

HCSA 90

Contents

HIKVISION

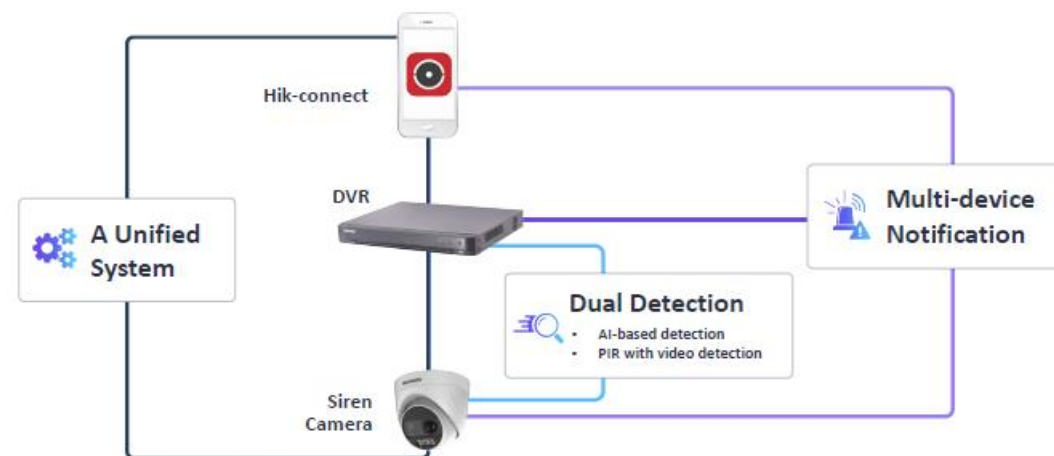
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- ◆ Turbo HD Products

First Choice for Security Professionals

HCSA 91

What is Turbo HD X ?

HIKVISION



First Choice for Security Professionals

HCSA 92

Intrusion Scene

HIKVISION



When an intrusion occurs...

Camera Alarm



Built-in Siren



Red and Blue Flashlight

First Choice for Security Professionals

HCSA 93

Monitoring Center

HIKVISION



When an intrusion occurs...

DVR Alarm



DVR triggers the alarm lamp to notify the security



DVR captures the event evidence

First Choice for Security Professionals

HCSA 94

End-user

HIKVISION



When an intrusion occurs...

Hik-Connect Alarm



Remote surveillance



Informing the end-user in real-time

First Choice for Security Professionals

HCSA 95

Active & Real-time

HIKVISION



Active Prevention



Strong light & sound warnings drive offender away.



Deterring criminals from continuing the crime

First Choice for Security Professionals

HCSA 96

Active & Real-time

HIKVISION



Real-time Alert

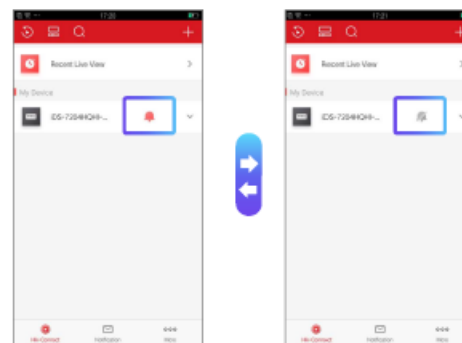
DVR & Hik-Connect **notify security, end-users, or other** related roles in real-time, helping them act in a timely manner.



HCSA 97

Active & Real-time

HIKVISION



Real-time and Easy Control



Hik-Connect is able to **turn on and turn off alarms** whenever you want.



No more sound/light/message/... after turning off alarm.

First Choice for Security Professionals

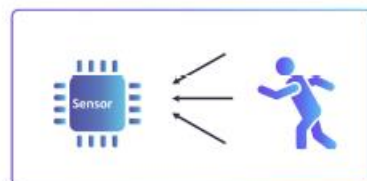
HCSA 98

Active & Real-time

HIKVISION

Accurate

With **AI-based analysis** and **video and non-video** integrated analysis, this system gives accurate alarms, helps security focus on real threats and improves the work efficiency.



First Choice for Security Professionals

HCSA 99

Turbo HD X System

HIKVISION



Premium Solution
AI-based



Basic Solution
PIR & video integrated

First Choice for Security Professionals

HCSA 100

Premium Solution



Siren Camera AI DVR Hik-Connect

First Choice for Security Professionals



Deep Learning Technology



Human & Vehicle Detection



Up to 30 m Long-distance Detection



Light & Sound Alarm



Remote Control

Basic Solution



PIR Camera DVR Hik-Connect

First Choice for Security Professionals



PIR Detection (sensitive to human body)



11 m PIR Detection



Higher accuracy when PIR signal is linked with video analysis



Light & Sound Alarm



Remote Control

Turbo X Product - DVR

Accurate alarm

Detection and search: human body and vehicle
Detection and search: human face



First Choice for Security Professionals

iDS-7204/08/16HQHI-M1/S
iDS-7208/16HQHI-M2/S

iDS-7204/08HUHI-M1/S
iDS-7204/08HUHI-M2/S

Turbo X Product - APP



Hik-Connect (From V3.7.8)



Remote view & playback



Timely alarm notifies the end-user



Alarm/Silent mode optional
(silent mode: turn off perceptible alarm)

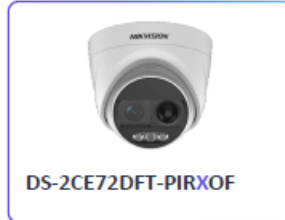
First Choice for Security Professionals

Turbo X Product - Camera

HIKVISION



DS-2CE12DFT-PIRXOF



DS-2CE72DFT-PIRXOF

Detering criminals from continuing the crime



24-hour colorful video



PIR detects human body (11 m)



Siren alarm (sound & light)



Alarm output

Turbo X Product - Camera

Configuration DFT-PIRXO ColorVu camera

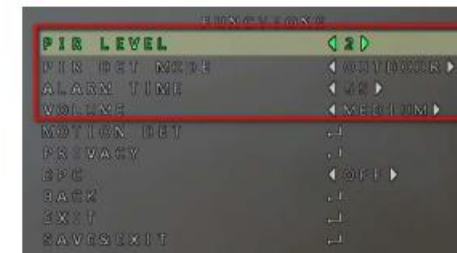
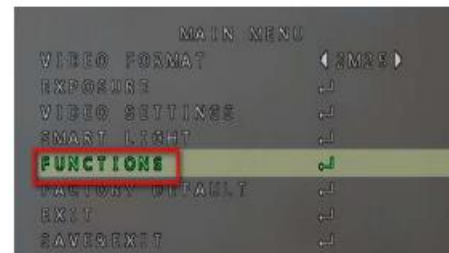


DS-2CE12DFT-PIRXOF



DS-2CE72DFT-PIRXOF

HIKVISION



PART 1: PIR Function Configuration

First Choice for Security Professionals

HCSA 106

Turbo X Product - Camera

HIKVISION

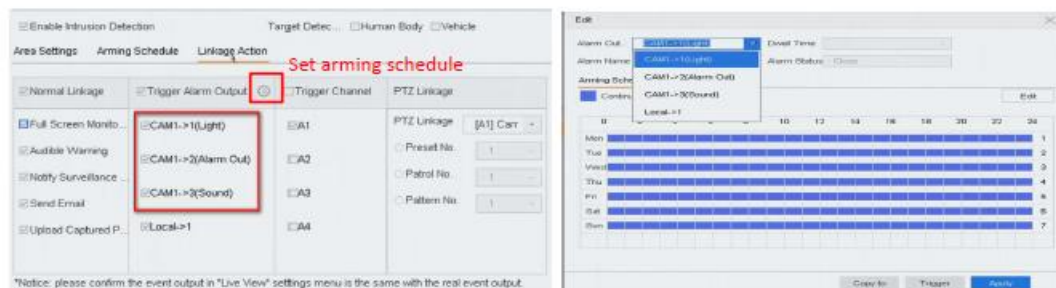
Configuration DFT-PIRXO ColorVu camera



DS-2CE12DFT-PIRXOF



DS-2CE72DFT-PIRXOF



PART 2: Linkage Action Configuration

First Choice for Security Professionals

HCSA 107

Contents

HIKVISION

- ◆ Turbo HD Analog Principle and key features
- ◆ Turbo HD Analog Solutions
- ◆ Turbo HD 5.0 System
 - ColorVu Camera
 - AcuSense DVR
- ◆ Turbo HD X System
- ◆ Turbo HD Products





First Choice for Security Professionals

HCSA 108

HIKVISION

	Value	Pro	Ultra	IoT
4K	U1T Auto focus	U7T 0.0005 lux	U8T	
5 MP	H0T 0.005 lux 120 dB Auto focus 3D DNR	H8T HFT		H0T-PIR
1080p	D0T D3T	D8T DFT	D9T	D8T-PIR D0T-PIR
720p	C0T C2T	C5T 0.001 lux HD video output / CVBS output (switchable)		
	0.01 lux DWDR 2D DNR 4 in 1 (C2T excluded)	0.003 lux 130 dB WDR 3D DNR Auto-focus 4 in 1 (C5T excluded)	0.003 lux 120 dB WDR 3D DNR Auto-focus Dual output	

HIKVISION

	5 MP	5 MP	5 MP	5 MP
				
	HOT-PIRL	HOT-PIRLO		DFT-PIRXOF
	DBT-PIRL	DBT-PIRLO		
	DOT-PIRL	DOT-PIRLO	DOT-PIRX	
1080p	PIR detection Strobe light alarm	PIR detection Strobe light alarm Alarm output	PIR detection Siren alarm (red and blue flashlight alarm / audio alarm)	PIR detection ColorVu Siren alarm (red and blue flashlight alarm / audio alarm) Alarm output

First Choice for Security Professionals

HCSA 11

HIKVISION

	Value	Pro	Ultra	AcuSense
4K		73HT-K 72HT-K	90HT-K 81HT-K	<ul style="list-style-type: none"> H.265 Pro+ 8 MP @ 12 fps / 5 MP @ 20 fps IP video input: $n + n$, $2 + n + n$ (90HT) Up to 10 TB capacity for each disk
5 MP	71HU-K	73HU-K 72HU-K	90HU-K 81HU-K	<ul style="list-style-type: none"> iDS-90HU iDS-73HU iDS-72HU H.265 Pro+ 8 MP @ 8 fps (1st channel for 4-ch) / 5 MP @ 12 fps IP video input: $n + n$, $16 + n$ (72/73/81HU 24/32-ch) $2 + n + n$ (90HU 08/16-ch:) Up to 10 TB capacity for each disk
1080p	71HQ-K	73HQ-K 72HQ-K	81HQ-K	<ul style="list-style-type: none"> iDS-72HQ H.265 Pro+ 4 MP lite @ 15 fps / 3 MP / 1080p @ 15 fps IP video input: $n/2 + n$, $8 + n$ (72HQ 24/32-ch), $16 + n$ (73/81HQ 24/32-ch) Up to 10 TB capacity for each disk
1080p lite 720p	71HG-F	72HG-K 72HG-F	<p>H.265 Pro+ 1080p lite @ 15 fps (-F/N) IP video input: $2 + n$ Up to 10 TB capacity for each disk</p>	<ul style="list-style-type: none"> H.264+ / H.264 1080p lite @ 25/30 fps (-F), 1080p lite @ 12 fps (-F/N) IP video input: $1 + n$ (4-ch), $2 + n$ (8/16-ch) Up to 6 TB capacity for each disk

THANKS!

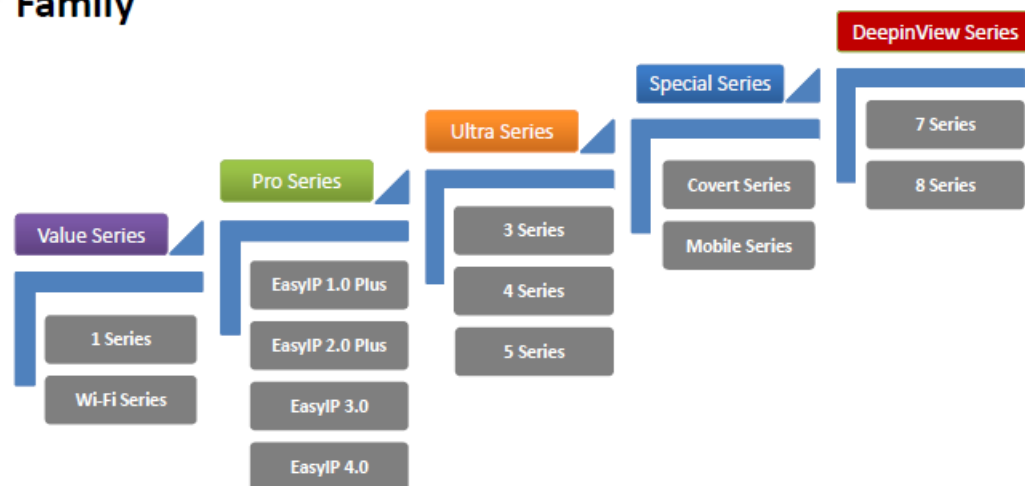
Hikvision IP Camera

Hikvision Certified Security Associate

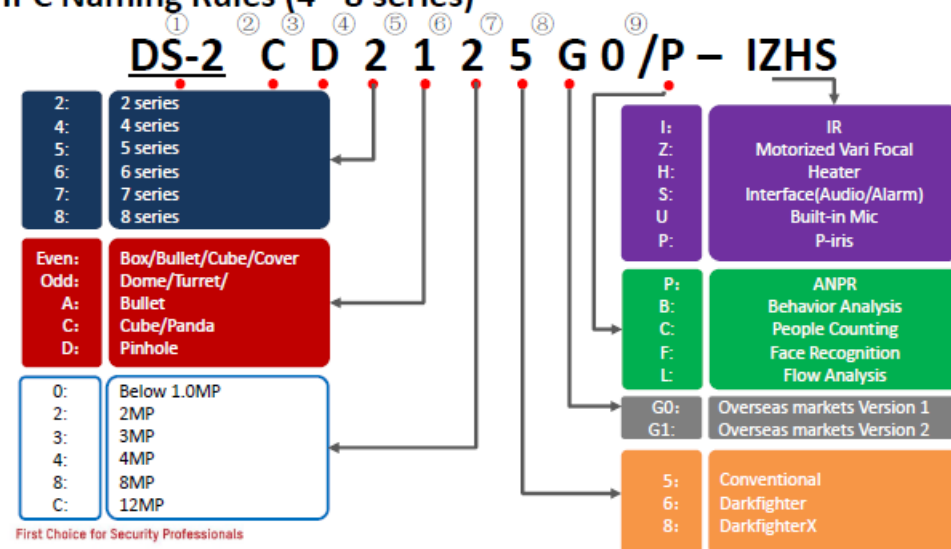
Contents

- Product Family
 - Product Family
 - Naming Rules
 - Working Principle
- Functions & Applications
- Troubleshooting

IPC Products Family



IPC Naming Rules (4 - 8 series)



Contents

HIKVISION

- Product Family
- Functions & Applications
 - Image Adjustment
 - Night
 - Strong light
 - Fast moving objects
 - Advanced features
 - Bandwidth Control
 - Advanced Features
 - Audio & Alarm
- Troubleshooting

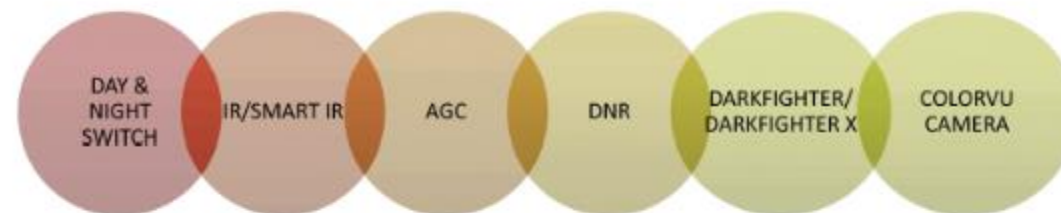
First Choice for Security Professionals

HCSA 117

Low Light Features

HIKVISION

How to achieve a good and clear image at night?



First Choice for Security Professionals

HCSA 118

Day & Night Switch

HIKVISION

At night or under low illumination scenes, the camera switch from **color mode** to **B/W** mode automatically, which can improve low-light performance effectively.



Day (color) mode



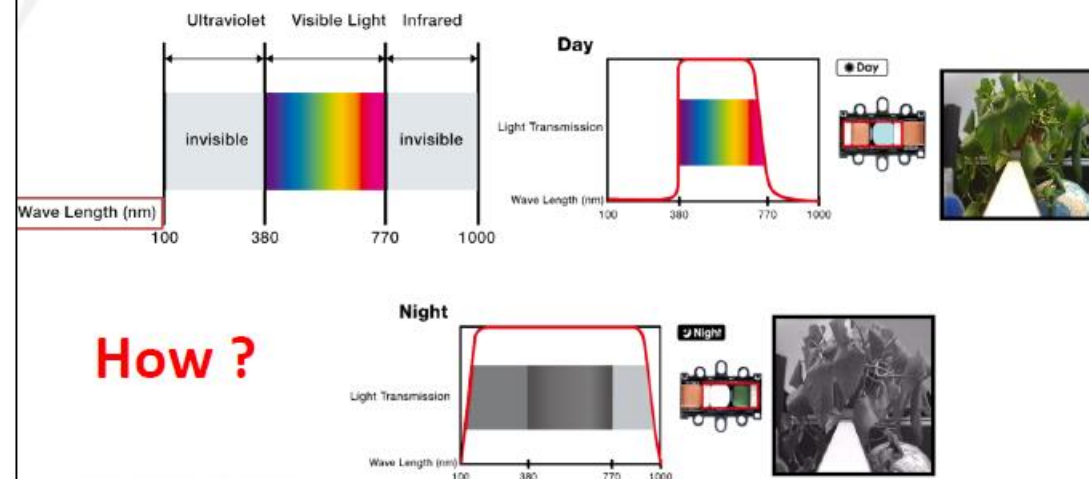
Night (black and white) mode

First Choice for Security Professionals

HCSA 119

ICR (IR-Cut Filter Removable)

HIKVISION



First Choice for Security Professionals

HCSA 120

ICR (IR-Cut Filter Removable)

HIKVISION



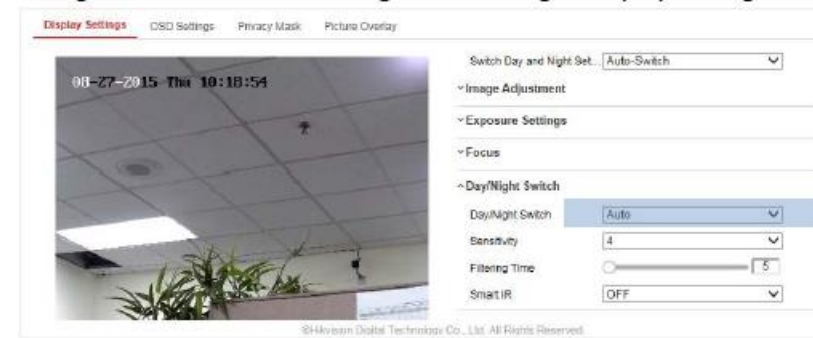
First Choice for Security Professionals

HCSA 121

Day & Night Switch Configuration

HIKVISION

Configuration > Advanced Configuration > Image > Display Settings



NOTE

Day, night, auto, schedule, and triggered by alarm input are selectable for day/night switch.

First Choice for Security Professionals

HCSA 122

Day & Night Switch

HIKVISION

Color & B/W Switch	Day, Night, Auto, Scheduled, Alarm Triggered	Multiple mode
Sensitivity	0~7	Judged by image brightness & gain
Filtering Time (s)	5~120	After this period of time, the color & B/W mode switch
Smart IR	ON/OFF	Prevent overexposure

Day: the camera stays at day mode.

Night: the camera stays at night mode.

Auto: the camera switches between the day mode and the night mode according to the illumination automatically. The sensitivity ranges from 0~7, the higher the value is, the easier the mode switches. The filtering time refers to the interval time between the day/night switch. You can set it from 5s to 120s.

Schedule: Set the start time and the end time to define the duration for day/night mode.

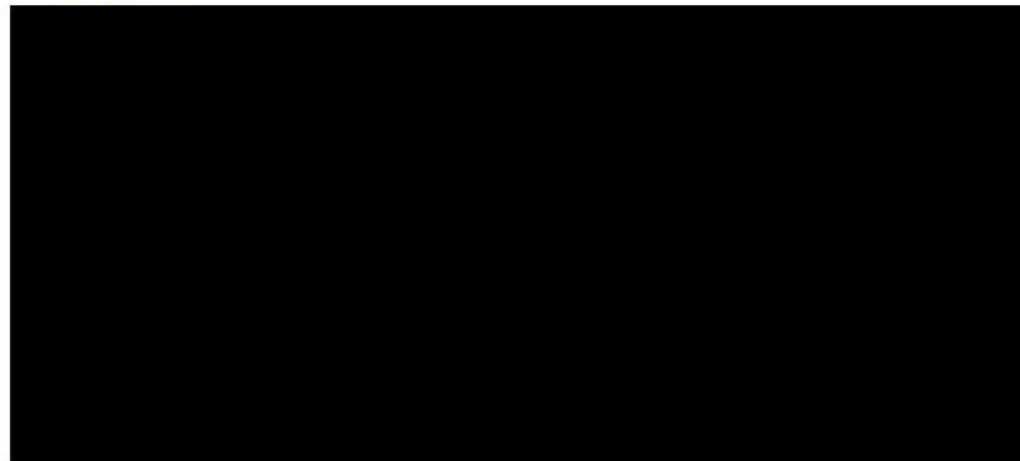
Triggered by alarm input: The switch is triggered by alarm input, and you can set the triggered mode to day or night.

First Choice for Security Professionals

HCSA 123

Low light or completely dark situation

HIKVISION



First Choice for Security Professionals

HCSA 124

Low light or completely dark situation

HIKVISION

What should we do ?



First Choice for Security Professionals

HCSA 125

Smart IR

HIKVISION

Smart IR function gives user an option to adjust the power of the IR LED, thus providing a clear image that is not overexposed or too dark.

Anti Over Exposure



Smart IR off

Smart IR on

~ Day/Night Switch

Day/Night Switch	Auto
Sensitivity	4
Filtering Time	5
Smart IR	ON
Mode	Manual
Distance	20

Manual mode: Configure the distance by control the current intensity of the led
Auto mode: Auto-adjust the current intensity of the IR led

First Choice for Security Professionals

HCSA 126

AGC

HIKVISION

- AGC(Auto Gain Control) amplify the signal from CCD to make it brighter during night time. This amplification is called gain. The camera can auto adjust the gain control according to signal level.
- Advance: increase dynamic range;
- Disadvantage: amplify noise as well.



First Choice for Security Professionals AGC Off

AGC On

HCSA 127

DN R

HIKVISION

- Through DNR function we can reduce the noise to get a better quality image during night.
- Hikvision cameras adopt 3D digital noise reduction to provide images with less noise in low-light surveillance scenes compared to conventional cameras. 3D DNR can be used to enhance image quality and save bandwidth.



DNR Disabled

DNR Enabled

First Choice for Security Professionals

HCSA 128

DNR

HIKVISION

Image Enhancement

Digital Noise Reduction Normal

Noise Reduction Level 50

Image Enhancement

Digital Noise Reduction Expert

Space DNR Level 50

Time DNR Level 50

3D DNR (EXPERT MODE)

- Space domain -> static noise, vague
- Time domain -> inter-frame noise reduction - dynamic noise, moving image trail

First Choice for Security Professionals

HCSA 129

ColorVu

HIKVISION

1. Large Aperture

F1.0 super aperture
More light and brighter images



Conventional Camera



ColorVu Camera

4X amount of light of conventional camera

Bright and Colorful Image



2. Advanced Sensor

Higher utilization of light, more light enter sensor (4 MP 1/1.8" Sensor)

3. Warm-light, not dazzling



Traffic camera light

Warm-light ColorVu Camera2

First Choice for Security Professionals

HCSA 130

ColorVu

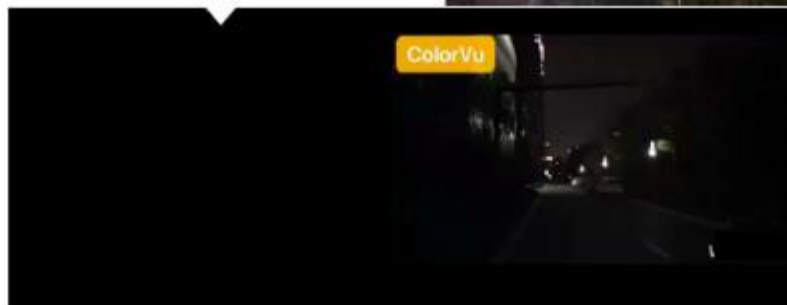
Recommended



DS-2CD2347G1-L(U)
DS-2CD2327G1-L(U)



DS-2CD2T47G1-L
DS-2CD2T27G1-L



HIKVISION

HCSA 131

Darkfighter

HIKVISION

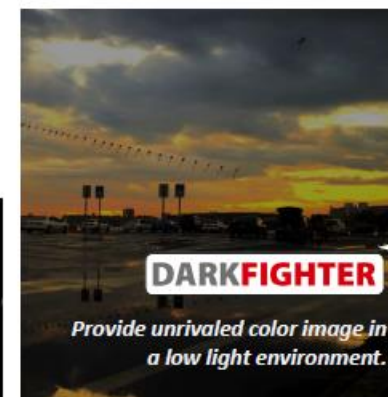
- Darkfighter adopts the most advanced CMOS sensor, with the optimized 3D DNR algorithm. The minimum illumination in colour mode is 0.002Lux.
- This is achieved through the optimal selection of the image sensor and lens, and advanced imaging processing technology.



Darkfighter

Normal camera

First Choice for Security Professionals



DARKFIGHTER

Provide unrivaled color image in a low light environment.

HCSA 132



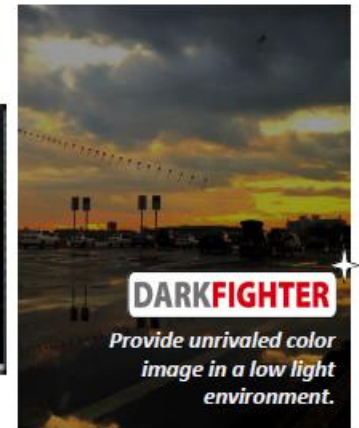
Darkfighter

- Darkfighter adopts the **most advanced CMOS sensor**, with the optimized **3D DNR algorithm**.
- The minimum illumination in color mode is 0.002Lux.



Darkfighter

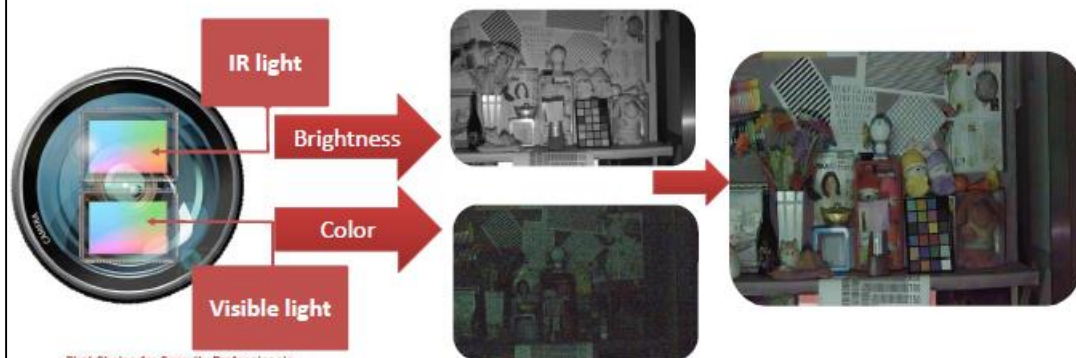
Conventional Camera



DarkFighter X – Dual Sensors

DarkFighterX⁺ HIKVISION

- DarkFighterX has innovative dual sensors design, one sensor for IR that guarantees the image brightness, the other one for visible light that guarantees chroma.
- Two images will be combined to form different spectra into **One Full Color** image.



First Choice for Security Professionals

HCSA 137

DarkFighter X – Image Comparison

DarkFighterX⁺ HIKVISION



First Choice for Security Professionals

HCSA 138

Successful Case Tower surveillance

HIKVISION

Real performance at 10:25 pm midnight

Background: xx city wants to achieve panoramic surveillance by taking advantage of the communication tower.

Installment: 40 meters above ground on the tower

Customer Value:

- Cover 3-4 kilometers area with 35x optical zoom to check details
- Provide clearly colorful image on dimly-lit condition
- High altitude patrol for incidents, such as fire, flooding, etc.



First Choice for Security Professionals

HCSA 139

Contents

HIKVISION

- Product Family
- Functions & Applications
 - Image Adjustment
 - Night
 - Strong light
 - Fast moving objects
 - Advanced features
 - Bandwidth Control
 - Advanced Features
 - Audio & Alarm
- Troubleshooting

First Choice for Security Professionals

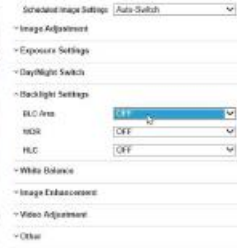
HCSA 140

BLC (Back Light Compensation)

HIKVISION

- BLC:** When you monitor objects against strong backlight, the objects are usually too dark. BLC compensates light to the object in the front to make it clear.
- It enables objects in the foreground to be seen clearly, although the background areas will be changed.

Device Settings OSD Settings Privacy Mask



NOTE

OFF, Up, Down, Left, Right, Center and customize are selectable.

First Choice for Security Professionals

HCSA 141

WDR (Wide Dynamic Range)

HIKVISION

- WDR:** WDR cameras often incorporate an image sensor that takes different exposures of a scene (e.g., a short exposure for very bright areas and long exposure for dark areas) and combine them into one image, **enabling objects in both bright and dark areas of a scene to be visible.**

120dB WDR



Enable WDR may reduce the image quality (image looks grey) in normal situation.

140dB WDR

Triple-exposure WDR



Ultra IP Camera
5 Series

HCSA 142

LightFighter

HIKVISION

LIGHTFIGHTER



▲ 4 MP Normal WDR Off



▲ 4 MP Normal WDR On



▲ 4 MP LightFighter WDR On

First Choice for Security Professionals

HCSA 143

HLC (High Light Compensation)

HIKVISION

- Compensate the strong light in the picture, so that the surrounding area wouldn't be over-exposed and still could be seen.
- Widely used in traffic monitoring, where license plates must be recognized.

Display Settings OSD Settings Privacy Mask



Scheduled Image Settings Auto-Switch

Image Adjustment

Exposure Settings

Day/Night Switch

Backlight Settings

BLC Area OFF

WDR OFF

HLC OFF

White Balance

Image Enhancement

Video Adjustment

Other

First Choice for Security Professionals

HCSA 144

WDR vs. BLC vs. HLC

HIKVISION

	WDR	BLC	HLC
Core technology	Circuit module & algorithm	Algorithm	Algorithm
Advantage	Twice or triple exposures	Areas are selectable	/
Disadvantage	Consume CPU	Background may be overexposed	/



Origin



BLC



WDR

NOTE

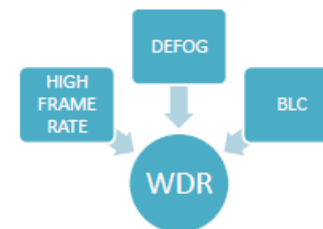
✓ Users should choose the mode appropriately according to the real scene to form the optimal image.

First Choice for Security Professionals

HCSA 145

WDR vs. BLC vs. HLC

HIKVISION



For Hikvision cameras, WDR are conflicted with high frame rate, defog and BLC function. They cannot be enabled at the same time.

First Choice for Security Professionals



For Hikvision cameras, BLC is conflict with WDR and defog function. They cannot be enabled at the same time.

HCSA 146

Contents

HIKVISION

- Product Family
- Functions & Applications
 - Image Adjustment
 - Night
 - Strong light
 - Fast moving objects
 - Advanced features
 - Bandwidth Control
 - Advanced Features
 - Audio & Alarm
- Troubleshooting

First Choice for Security Professionals

HCSA 147

Fast Moving Objects

HIKVISION

- Use **high frame rate** camera in the condition that the bitrate is enough, such as 4XXXFW camera.
- **Decrease the exposure time** to reduce the tailing.
 - For less than or equal to 70km/h vehicle speed, we recommend 1/200s or 1/250s exposure time.
- To see the vehicle clearly **at night**, **lower the contrast** and set the 3D DNR to 20~30 or even lower.
- **Disable WDR** to reduce tailing.



Camera 01

First Choice for Security Professionals

HCSA 148

Frame Rate Comparison

HIKVISION



First Choice for Security Professionals

HCSA 148

Exposure time

HIKVISION

- Exposure time usually be set between 1/50 – 1/100,000 second.
- Long exposure time is suitable for dark scene, but moving objects may have trailing problem.
- Short exposure time is suitable for dynamic scene, while the image may be dark.



1/50s



1/500s

First Choice for Security Professionals

HCSA 150

Contents

HIKVISION

- Product Family
- Functions & Applications
 - Image Adjustment
 - Night
 - Strong light
 - Fast moving objects
 - Advanced features
 - Bandwidth Control
 - Advanced Features
 - Audio & Alarm
- Troubleshooting

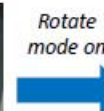
First Choice for Security Professionals

HCSA 151

Rotate mode

HIKVISION

- Rotate
 - To make a complete use of the 16:9 aspect ratio, you can enable the rotate function when you use the camera in a narrow view scene.
 - When installing, turn the camera to the 90 degrees or rotate the 3-axis lens to 90 degrees, and set the rotate mode as on, you will get a normal view of the scene with 9:16 aspect ratio.



Video Adjustment

Mirror	OFF
Rotate	ON
Scene Mode	Indoor
Video Standard	NTSC(60HZ)
Capture Mode	OFF
Lens Distortion Correction	OFF

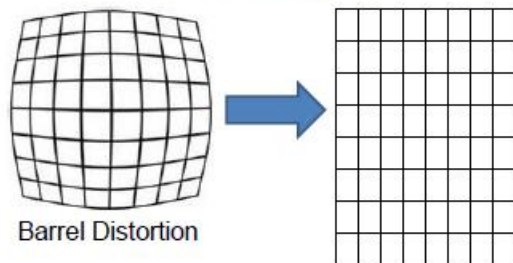
First Choice for Security Professionals

HCSA 152

Lens Distortion Correction

HIKVISION

- Some of Hikvision cameras support lens distortion function.



Barrel Distortion

NOTE

- ✓ All lenses have distortion
- ✓ If the original image is OK, do not enable distortion correction



First Choice for Security Professionals

HCSA 153

Hikvision 2nd Generation lens

HIKVISION

Rapid auto focus



First Choice for Security Professionals

HCSA 154

Hikvision 2nd Generation lens

HIKVISION

Blue Glass



When camera is facing strong light source, halo would appear. Blue glass reduces the halo thus making image more clear.

First Choice for Security Professionals

HCSA 155

Hikvision 2nd Generation lens

HIKVISION



When the bubble is adhered with dust and water, the reflected IR will make image blurred.

The new generation bubble guarantees the image quality while supporting IK10.



First Choice for Security Professionals



HCSA 156

Foggy Climate

HIKVISION

- By modeling the imaging features of smoke, dust, fog, etc., defog technology effectively restores details and color to obtain accurate and natural video. Defog technology helps maintain clarity in images captured in poor weather conditions such as smog, or fog.

Defog OFF



Defog ON



First Choice for Security Professionals

HCSA 157

Contents

HIKVISION

- Product Family
- Functions & Applications
 - Image Adjustment
 - Bandwidth Control
 - Key Factors
 - Bandwidth control on Camera
 - Advanced Features
 - Audio & Alarm
- Troubleshooting

First Choice for Security Professionals

HCSA 158

Bandwidth and Storage Calculations

HIKVISION

What factors will affect the bandwidth and storage space?

It depends on the following factors:

- Video compression type: H.264, MPEG-4, Motion JPEG, H.264+, H.265
- Scene: Image complexity (e.g., gray wall or a forest), lighting conditions and amount of motion (e.g., office environment or crowded train stations)
- Image resolution
- Frame rate (Frames per second)
- I-frame interval
- Number of cameras will be recorded
-

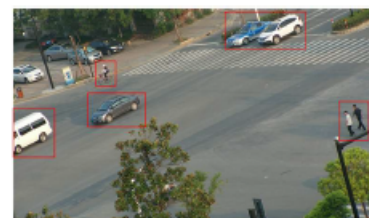
First Choice for Security Professionals

HCSA 159

H.265+

HIKVISION

Based on the current H.265 standard, Hikvision analyzed and optimized the encoding, and developed H.265+ that reduces the bandwidth and storage requirements.



General Surveillance Scenario Features

1. Fixed camera with few background changes
2. No frequent moving objects
3. Moving objects are the interesting monitor targets
4. 24/7 surveillance video, easily affected by image noise

Different surveillance scenarios	Bandwidth/storage space comparison between H.265+ and H.265
Fixed Scene with few moving objects	H.265+ saves 75%
Fixed scene with many moving objects in a certain time period(not very frequently)	H.265+ saves 50%
Changing scenes with moving objects all the time	Nearly the same

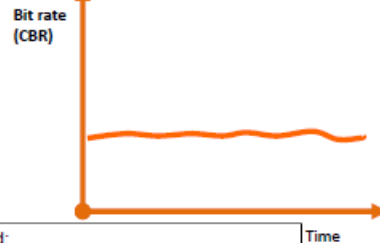
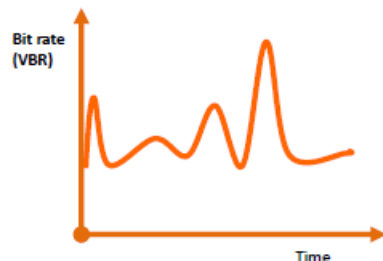
First Choice for Security Professionals

HCSA 160

VBR vs. CBR

HIKVISION

- In **Variable bit rate (VBR)**, the **image quality is constant but as a result, the bit rate is variable**.
 - It is suitable for the scene with different movements in different time.
 - Can't estimate an accurate bandwidth/storage consumption.
- In **Constant bit rate (CBR)**, the **bit rate is constant but as a result, the image quality is variable**.
 - It is suitable for the scene with constant movement.
 - Can estimate an "average" bandwidth/storage consumption.



Calculation method:
 $\text{storage space (MB/hour)} = \text{bitrate (kbps)} * 60 * 60 * 8 / 1024$
 (8:bit->byte, 1024: k->M)

First Choice for Security Professionals

HCSA 161

Image Complexity

HIKVISION

Complex images and more movements generate higher bit rates.



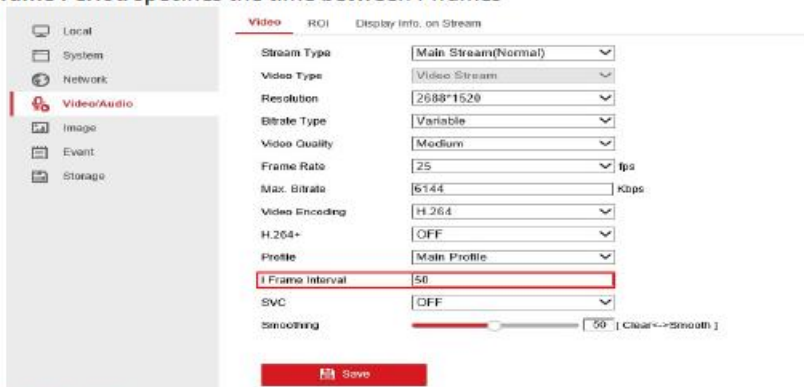
First Choice for Security Professionals

HCSA 162

Frame Type

HIKVISION

- I-frame**: independently compressed; larger amount of data.
- P-Frame**: difference from previous I or P frame
- Intra-Frame Period** specifies the time between I-frames



First Choice for Security Professionals

HCSA 163

Contents

HIKVISION

- Product Family
- Functions & Applications
 - Image Adjustment
 - Bandwidth Control
 - Key Factors
 - Bandwidth control on Camera
 - Advanced Features
 - Audio & Alarm
- Troubleshooting

First Choice for Security Professionals

HCSA 164

Bandwidth Control

HIKVISION

- Network video products utilize network bandwidth and storage space based on their configuration. Under **insufficient bandwidth**, we need to lower the bitrate in order to see the video.
 - Choose the right stream type
 - Main stream
 - Sub stream
 - Third stream
 - Set the lower resolution and frame rate if there is not enough bandwidth.

First Choice for Security Professionals

HCSA 165

H.265+

Configuration

When H.265+ is enabled:

- Only variable bitrate type. The bitrate will be controlled by the algorithm to maintain the **long-term average bitrate**.
- I frame interval is auto-adjusted by algorithm.
- Third Stream, Stream Smoothing, ROI, Target Cropping, High Frame Rate are not available.

Stream Type	Main Stream(Normal)
Video Type	Video Stream
Resolution	1920*1080P
Bitrate Type	Variable
Video Quality	Medium
Frame Rate	25
Max. Bitrate	2048 Kbps
Max. Average Bitrate	1024 Kbps
Video Encoding	H.265
H.265+	ON
Profile	Main Profile
I Frame Interval	50
SVC	OFF

NOTE

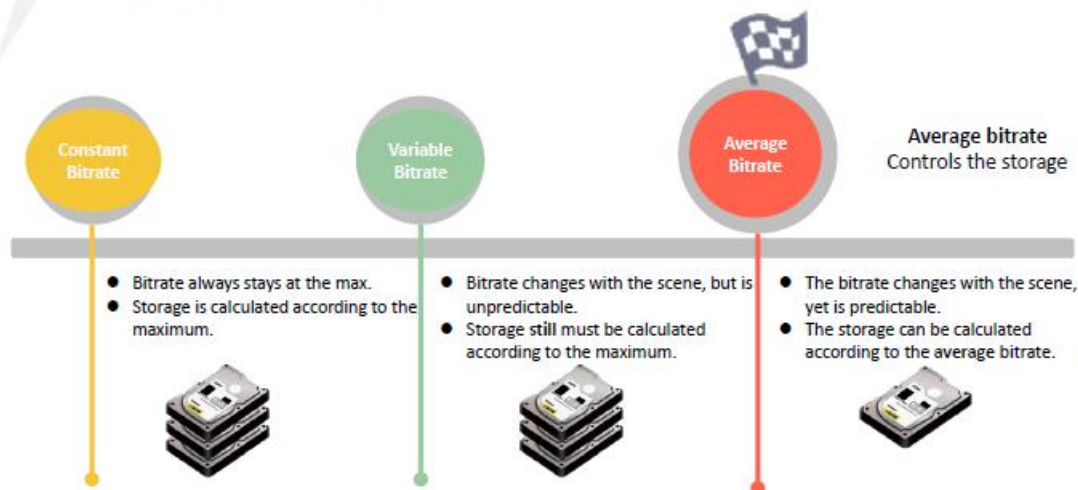
Max. Average Bitrate is used to calculate the HDD space.

First Choice for Security Professionals

HCSA 166

The Bitrate Revolution

HIKVISION



First Choice for Security Professionals

HCSA 167

ROI

HIKVISION

- ROI (Region of Interest) encoding helps to differentiate the ROI and background information in video compression, which assigns more encoding resource to the region of interest, thus to increase the quality of the ROI whereas the background quality goes down.



First Choice for Security Professionals

HCSA 168

ROI Example

HIKVISION



First Choice for Security Professionals

HCSA 169

ROI Levels at Reduced Bandwidth

HIKVISION



First Choice for Security Professionals

HCSA 170

Target Cropping

HIKVISION

- You can specify a target area on the live video, and then it can be displayed via the **third stream** in some certain resolution, thus providing more details of the target area if needed.



First Choice for Security Professionals

HCSA 171

Contents

HIKVISION

- Product Family
- Image Adjustment
- Bandwidth Control
- Advanced Features**
 - Stability Protections
 - Acusense Features
- Featured Cameras
- Audio & Alarm
- Troubleshooting

First Choice for Security Professionals

HCSA 172

Contents

HIKVISION

- Product Family
- Functions & Applications
 - Image Adjustment
 - Bandwidth Control
 - Advanced Features
 - Stability Protections
 - Acusense Features
 - Audio & Alarm
- Troubleshooting

First Choice for Security Professionals

HCSA 173

Dual-File System Backup

HIKVISION

Backup File System helps camera to carry on working normally when main file system suffers from an unexpected failure.



Main file system will copy from backup file system to recover from the failure.

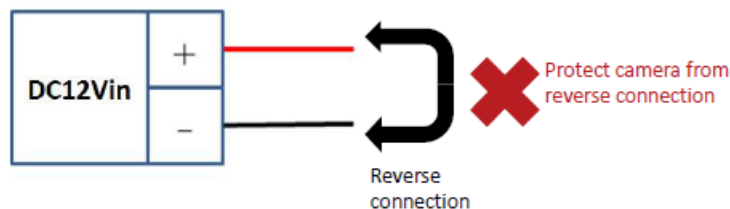
First Choice for Security Professionals

HCSA 174

Reverse Power Protection

HIKVISION

Reverse Power Protection prevents damage to the camera when the power cords are accidentally reversed.



DS-2CD50xxG0
DS-2CD51xxG0
DS-2CD55xxG0

First Choice for Security Professionals

HCSA 175

Anti-corrosion

HIKVISION

Suitable for normal atmospheric environment where cameras without protection may be corroded like **temperate coastal** or **acid rain environment**.



DS-2CD5Ax6G0-IZS(H)Y
DS-2CD55x6G0-IZS(H)Y

Anti-corrosion painting
NEMA 4X Standard

First Choice for Security Professionals

Temperate coastal environment



Acid rain environment



HCSA 176

Inner Anti-fog Coating

HIKVISION

- The inner anti-fog coating inside bubble or lens cover can prevent vapor condensing when vapor ingress into camera and saves maintenance cost.

- ✗ Improper installation procedure may lead to vapor coming into camera and desiccant losing efficiency.
- ✗ Improper storage may lead to vapor coming into camera and desiccant losing efficiency.



DS-2CD5AxxG0
DS-2CD55xxG0

First Choice for Security Professionals

HCSA 177

Special Waterproof Design for Cable

HIKVISION

The special waterproof design for cable can protect the camera from water ingress when improper installation occurs.

- ✗ Improper installation of network cable waterproof jacket may lead to leaking through cable.
- ✗ Improper installation of junction box may lead to leaking in junction box.



DS-2CD5AxxG0
DS-2CD55xxG0

First Choice for Security Professionals

HCSA 178

Contents

HIKVISION

- Product Family
- Functions & Applications
 - Image Adjustment
 - Bandwidth Control
 - Advanced Features
 - Stability Protections
 - Acusense Features
 - Audio & Alarm
- Troubleshooting

First Choice for Security Professionals

HCSA 179

AcuSense Features

HIKVISION

Strobe light and audio alarm

AcuSense Technology



One Stand-alone Chip



Hikvision
Deep Learning Algorithm

False Alarm Filter

Strobe Light & Audio Alarm

Powered By Darkfighter



DS-2CD2346G1-I/SL
DS-2CD2326G1-I/SL
DS-2CD2T46G1-4I/SL
DS-2CD2T26G1-4I/SL

First Choice for Security Professionals

HCSA 180

Contents

HIKVISION

- Product Family
- Functions & Applications
- **Audio & Alarm**
- Troubleshooting

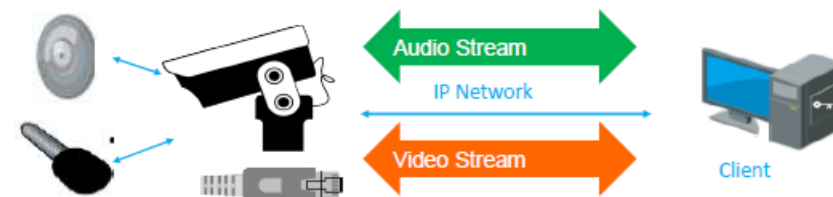
First Choice for Security Professionals

HCSA 181

Audio Support and Equipment

HIKVISION

- A network video system with integrated audio support. Audio and video streams are sent over the same network cable.



- With mic-in/line-in support, users have the option of using another type or quality of microphone than the one that is built into the camera or video encoder.



MicIn and LineIn are selectable for the connected microphone and pickup respectively.

First Choice for Security Professionals

HCSA 182

Contents

HIKVISION

- Product Family
- Image Adjustment
- Bandwidth Control
- Ultra Series Features
- Featured Cameras
- Audio & Alarm
- **Troubleshooting**

First Choice for Security Professionals

HCSA 183

Image clear in the day but blurry at night

HIKVISION



Depth of field is long during the day but short during the night, when you adjust the focusing point out of the DOF at night, image turns blurry.

First Choice for Security Professionals

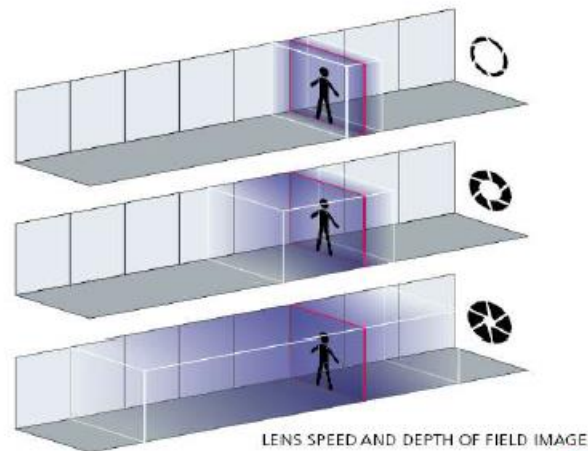
HCSA 184

Image clear in the day but blurry at night

HIKVISION

Solution:

Adjust the focus during the night



First Choice for Security Professionals

HCSA 185

Blurry Image

HIKVISION



When the video contains many moving objects, exposure time would be a key point to be considered.

Solution:

Adjust the exposure time from the default 1/25 to 1/100 or faster.

First Choice for Security Professionals

HCSA 186

Scrolling line issue

HIKVISION

- Issue:** In AC powered artificial lighting condition, the image will appear scrolling lines as shown below.



First Choice for Security Professionals

HCSA 187

Scrolling line issue

HIKVISION

- Principle:**

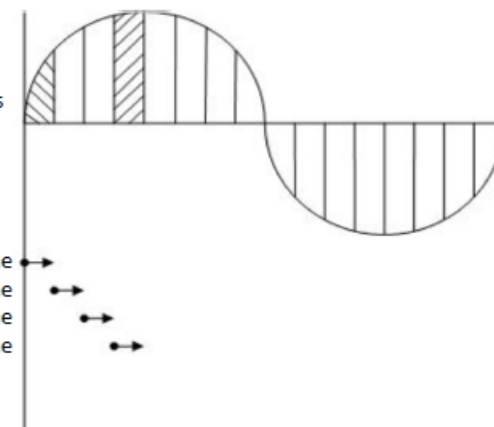
Light frequency

MISMATCH

Exposure time

Artificial lighting AC voltage & brightness

Line 1 Exposure time
Line 2 Exposure time
Line 3 Exposure time
Line 4 Exposure time
.....



First Choice for Security Professionals

HCSA 188

Solution:

HIKVISION

- 1. Switch off WDR function, the image get a little bit better, but still has yellow lines on image.
- 3. Change exposure time to 1/25, 1/50, 1/100, 1/250, until 1/2000. No more help, some even worse.
- 4. Check the installation and the environment.

Comparison

HIKVISION



Thanks!

HIKVISION



HIKVISION

Training on PTZ Camera
Hikvision Certified Security Associate

Training Objectives

HIKVISION

- Master the working principle of PTZ camera
- Master the special functions of PTZ camera
- Know about the special models of Hikvision PTZ camera
- Know about the installation tips of PTZ camera
- Know about troubleshooting of PTZ camera

First Choice for Security Professionals

HCSA 193

Contents

HIKVISION

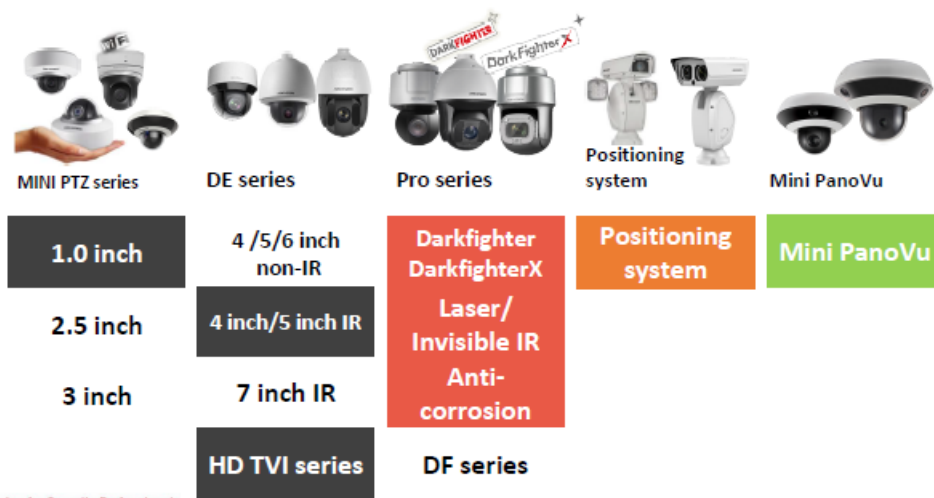
- **Fundamental**
- Functions and Applications
- Installation Guidance
- Troubleshooting

First Choice for Security Professionals

HCSA 194

Hikvision PTZ Camera Family

HIKVISION



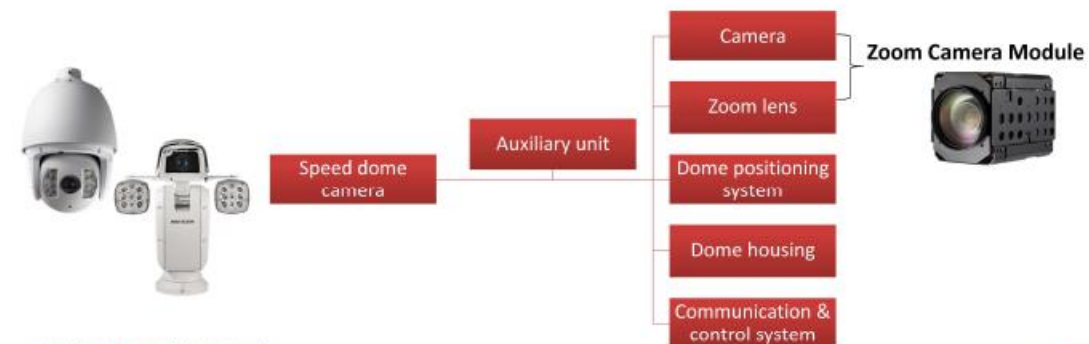
First Choice for Security Professionals

HCSA 195

PTZ Camera - PTZ (Pan & Tilt & Zoom)

HIKVISION

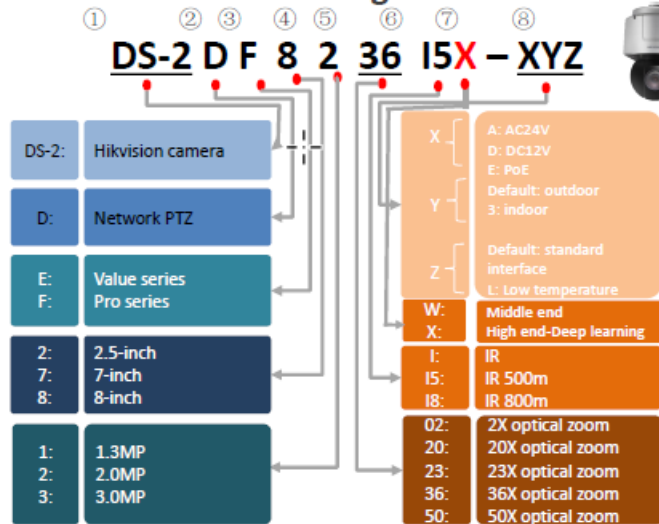
- A PTZ camera provides pan, tilt and zoom functions (using manual or automatic control), enabling wide area coverage and great details when zooming in. Hikvision PTZ camera usually has the ability to pan, tilt and is often equipped with a zoom lens.



First Choice for Security Professionals

HCSA 196

IP Speed Dome Camera Naming Rule

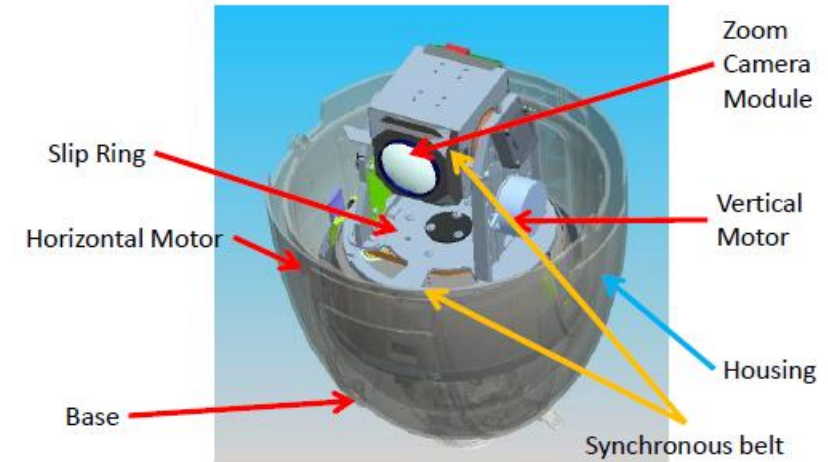


HIKVISION

First Choice for Security Professionals

HCSA 197

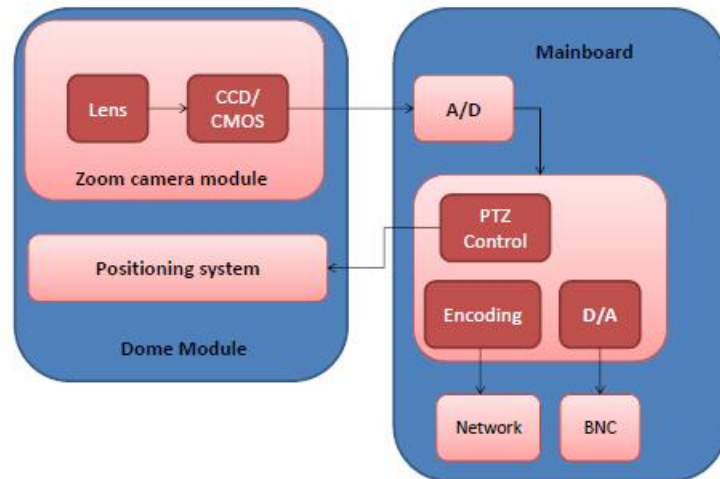
Structure of PTZ Dome Camera



First Choice for Security Professionals

HCSA 198

Working Principle



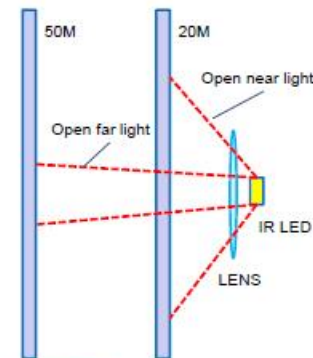
HIKVISION

First Choice for Security Professionals

HCSA 199

IR LED Control Strategy

- IR LED smart control
 - Near light: Wide angle, short IR distance, won't be over-exposure
 - Far light: Narrow angle and high energy, long IR distance, bright image.



First Choice for Security Professionals

HCSA 200

Contents

HIKVISION

- Fundamental
- **Functions and Applications**
 - Basic functions
 - Smart tracking
 - Rapid focus
 - Optical defog technology
 - OIS
 - Face Capture
- Installation Guidance
- Troubleshooting

First Choice for Security Professionals

HCSA 201

Basic Concepts

HIKVISION

- Initial position
 - Initial position is the origin of PTZ coordinates. It can be the factory default initial position. By default, its pan and tilt degree is 0° . You can also customize the initial position according to your own demand.
- Pan & tilt range:
 - For different PTZ camera models, their pan & tilt range are different. Take one pro PTZ camera for example, it can pan 360° and tilt -20° -90° .
- Limit stop
 - The dome can be programmed to move within the configurable limit stops (left/right, up/down).

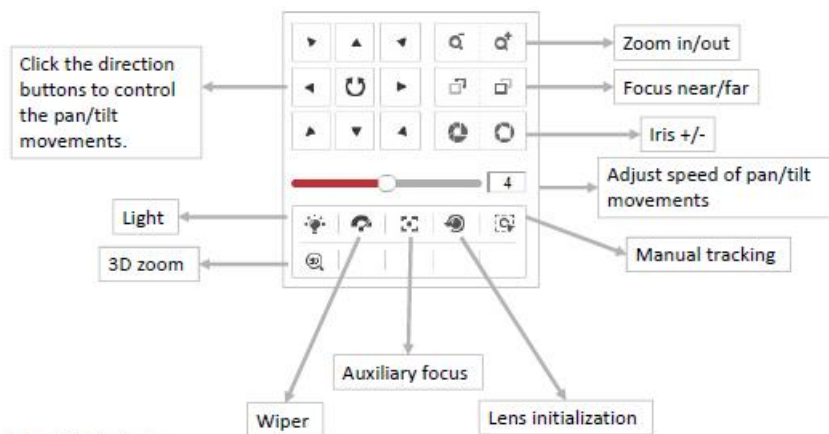
First Choice for Security Professionals

HCSA 202

PTZ Control

HIKVISION

- On the live view page, find the PTZ control panel.



First Choice for Security Professionals

HCSA 203

Preset vs. Patrol vs. Pattern

HIKVISION

Preset

- A preset is a predefined image position. For the defined preset, you can click the calling button to quickly view the desired image position. There are **300** presets available (28 presets are pre-defined which can not be changed).

Patrol

- A patrol is a memorized series of preset function. There are up to **8** patrols for customizing. A patrol can be configured with **32** presets.

Pattern

- A pattern is a memorized series of pan, tilt, zoom, and preset functions. It can be called on the pattern settings interface. There are up to **4** patterns for customizing.

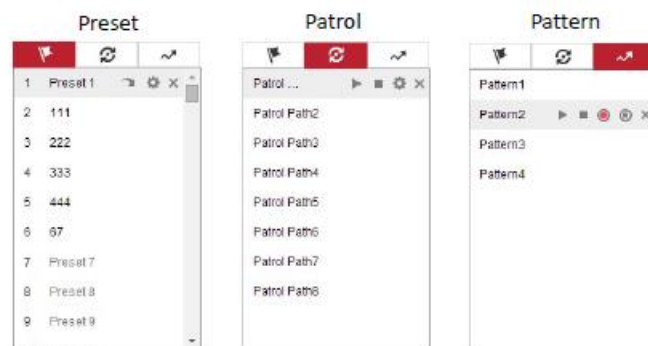
First Choice for Security Professionals

HCSA 204

Preset vs. Patrol vs. Pattern

HIKVISION

- On the live view page, please find the PTZ control panel. Choose one method and set the position or path.



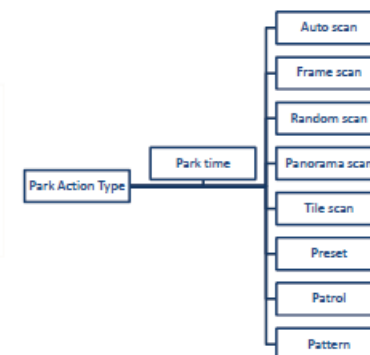
First Choice for Security Professionals

HCSA 205

Park Action

HIKVISION

- Park action allows the dome to start a predefined park action (scan, preset, pattern and etc.) automatically after a period of inactivity (park time).
- Configuration path: Configuration – PTZ – Park Action
- Enable the park action and choose the action type.
- Park time is the inactivity time of the dome before it starts the park actions. Time range is 5-720s.



First Choice for Security Professionals

HCSA 206

Scheduled Task

HIKVISION

- Scheduled task is to perform a certain action automatically in a user-defined time period.
- Configuration path: Configuration – PTZ – Scheduled Task
- Enable scheduled Task and set task in designed time.
- Park time: You can set the park time (a period of inactivity) before the dome starts the scheduled tasks. You can set between 5~720 seconds.
- The time of each task cannot be overlapped. Up to 10 tasks can be configured for each day. When you manually control the PTZ, the schedule task will be paused. After the park time, it will perform the schedule task again.



NOTE

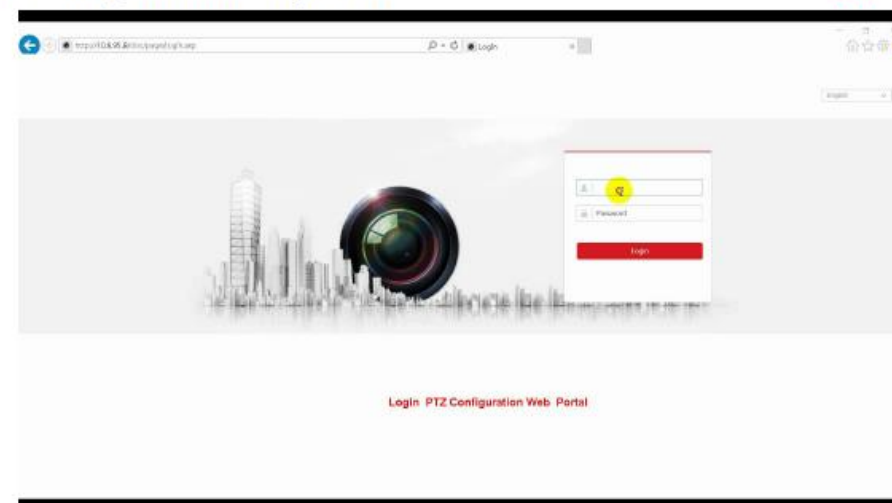
Scheduled Task function is prior to Park Action function. When these two functions are set at the same time, only the Scheduled Tasks function takes effect.

First Choice for Security Professionals

HCSA 207

PTZ Configuration– By Web

HIKVISION



Login PTZ Configuration Web Portal

First Choice for Security Professionals

HCSA 208

PTZ Configuration– By NVR

HIKVISION

How to Control PTZ on NVR

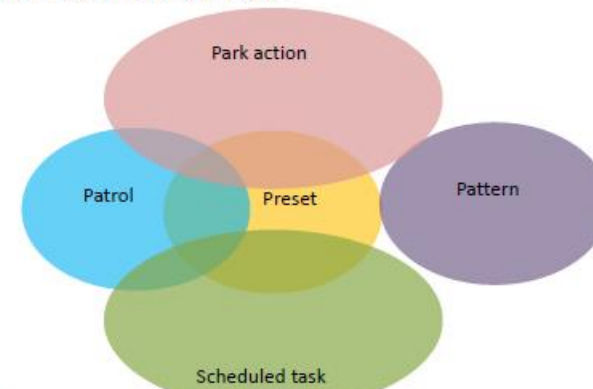
First Choice for Security Professionals

HCSA 209

PTZ Function Comparison

HIKVISION

- Preset, patrol and pattern can be called manually. They are the basic units of park action and scheduled task.
- **Priority:** manual control > schedule task > park action



First Choice for Security Professionals

HCSA 210

PTZ Control Priority

HIKVISION

- Configuration path: Configuration – PTZ – Prioritize PTZ.

Prioritize PTZ	Network	▼
Delay	10	second

- The speed dome can be controlled by network and RS-485 signals. You can set the control priority of these two signals.
- The operation of Operator is prior to that of User. When the Operator is controlling the speed dome, the User cannot control it. When the Operator finishes, the User can control the speed dome after the Delay time. The Delay time can be set in Priority PTZ interface as shown follows.



First Choice for Security Professionals

HCSA 211

Power Off Memory

HIKVISION

- Power off memory capability allows the PTZ dome camera to resume its previous position after power is restored.
- Configuration path: Configuration – PTZ – Basic Settings



In case of outage or reboot, the PTZ dome camera will resume its previous position after power is restored.

Power Off Memory		
Set Resume Time Point	30s	▼

NOTE

You can set the time point of which the dome resumes its PTZ status. You can set it to resume the status of 30 seconds, 60 seconds, 300 seconds or 600 seconds before power-off.

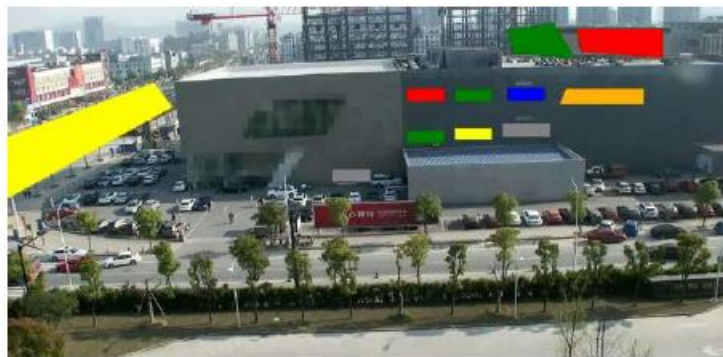
First Choice for Security Professionals

HCSA 212

Privacy Mask

HIKVISION

- Privacy mask enables you to cover certain areas on the live video to prevent certain spots in the surveillance area from being live viewed and recorded.
- You are allowed to draw up to **24** areas in the same image.
- It allows masking to be maintained even as the camera's field of view changes through panning, tilting and zooming since the masking moves with the camera's coordinate system.



First Choice for Security Professionals

HCSA 213

Optical Zoom

HIKVISION

A zoom lens provides an optical zoom that maintains image resolution, as opposed to a digital zoom, which enlarges an image with loss in image quality.



First Choice for Security Professionals

Recorded by 50X DF camera

HCSA 214

Contents

HIKVISION

- Fundamental
- **Functions and Applications**
 - Basic functions
 - Smart tracking
 - Rapid focus
 - Optical defog technology
 - OIS
 - Face Capture
- Installation Guidance
- Troubleshooting

First Choice for Security Professionals

HCSA 215

PTZ – Smart Tracking

HIKVISION

- When a moving object (a person, vehicle, etc.) enters a monitored area, Hikvision PTZ dome cameras can automatically detect it and adjust their focal length to track the object; when this object moves out of view, the camera will automatically return to its designated position.



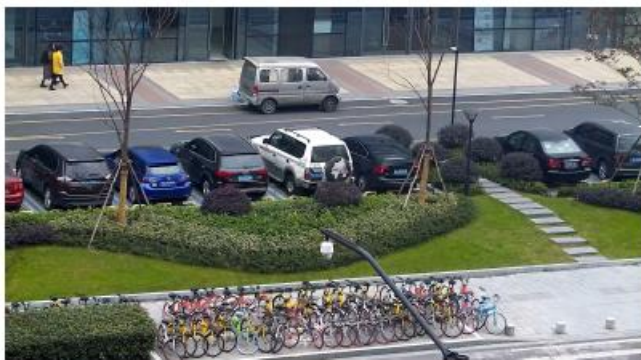
First Choice for Security Professionals

HCSA 216

PTZ – Smart Tracking

HIKVISION

Hikvision **auto-tracking** camera can track the target automatically with stability.



First Choice for Security Professionals

HCSA 217

PTZ – Smart Tracking

HIKVISION

- Configuration path: Configuration > PTZ > Smart Tracking



- Duration: The speed dome stops tracking when the duration time is up. The duration ranges from 0 to 300 seconds.

First Choice for Security Professionals

HCSA 218

PTZ – Smart Tracking

HIKVISION

- This function is not suitable for highway/crossroad/complex scene(lots of moving objects) like the following:
- It is especially applicable for single object tracking. Besides, you can manually select the object and start tracking.



First Choice for Security Professionals

HCSA 219

PTZ – Smart Tracking

HIKVISION

- As one of linkage modes, smart tracking can be used with smart detection like line crossing detection, intrusion detection, region entrance detection and region exiting detection.



Region entrance



Region exiting



Line crossing



Intrusion detection

First Choice for Security Professionals

HCSA 220

Smart Tracking

HIKVISION

What if PTZ needs to start smart tracking (e.g., in one preset position, a moving person comes into view) during patrol? Will it interrupt patrol?

- During patrol/pattern, by default PTZ camera stays at one preset **more than 15 seconds**, then PTZ camera will start smart tracking after stay for 5 seconds.
- After smart tracking it will continue to patrol.

First Choice for Security Professionals

HCSA 221

PTZ – Smart Tracking 2.0

HIKVISION



Higher alarm accuracy. Higher auto-tracking accuracy.

All series DF--X PTZ support deep-learning technology

First Choice for Security Professionals

HCSA 222

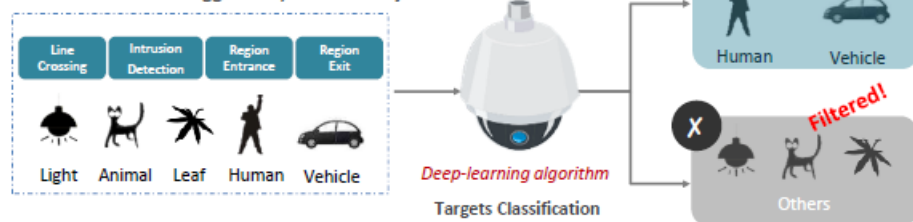
- False Alarm Filter**
Human & Vehicle classification, false alarm filter.
- Smart tracking 2.0**
Classified targets(Human & Vehicle) for tracking, very stable and do not be interrupted.

PTZ – Smart Tracking 2.0

HIKVISION

False Alarm Filter

All kinds of alarm are triggered by different objects



Deep learning algorithm reduces false alarm possibility caused by non-target object such as animal, leaf or light, it greatly improve the accuracy of perimeter VCA functions.

First Choice for Security Professionals

HCSA 223

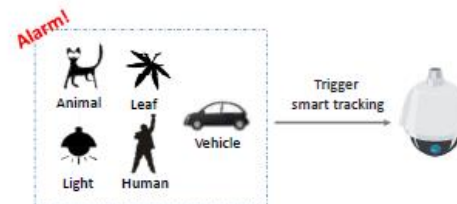
PTZ – Smart Tracking 2.0

HIKVISION

Smart tracking 2.0

Smart tracking 1.0

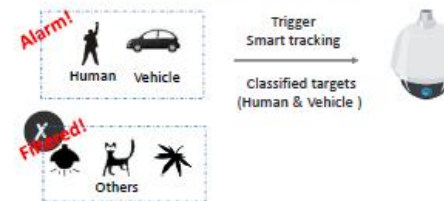
Triggered by **different objects**.



First Choice for Security Professionals

Smart tracking 2.0

With VCA rules ,only triggered by **Human & Vehicle**. very **stable** and do not be interrupted easily.



HCSA 224

PTZ – Smart Tracking 2.0

HIKVISION



The video recorded by **conventional camera**
False alarm triggered by light easily

The video recorded by **DF camera**

First Choice for Security Professionals

HCSA 225

PTZ – Smart Tracking 2.0

HIKVISION

Smart tracking 2.0-Configure target as 'Human'



The video recorded by **conventional camera**
Triggered by the first target.

The video recorded by **DF camera**
PTZ can classify target
Only triggered by the configured
"Human"

First Choice for Security Professionals

HCSA 226

PTZ – Smart Tracking 2.0

HIKVISION

Smart tracking 2.0-Configure target as 'Vehicle'



The video recorded by **conventional camera**
Triggered by the first target.

The video recorded by **DF camera**
PTZ can classify target
Only triggered by the configured
"Vehicle"

First Choice for Security Professionals

HCSA 227

Contents

HIKVISION

- Fundamental
- **Functions and Applications**
 - Basic functions
 - Smart tracking
 - **Rapid focus**
 - Optical defog technology
 - OIS
 - **Face Capture**
- Installation Guidance
- Troubleshooting

First Choice for Security Professionals

HCSA 228

PTZ – Rapid Focus

HIKVISION

With Hikvision **Rapid Focus** technology, camera focus accurately and fast when zoom ratio changed .



The video recorded by **conventional camera**
Need time to focus when zoom in and out!



The video recorded by **DF camera**
Focus Accurately and Fast !

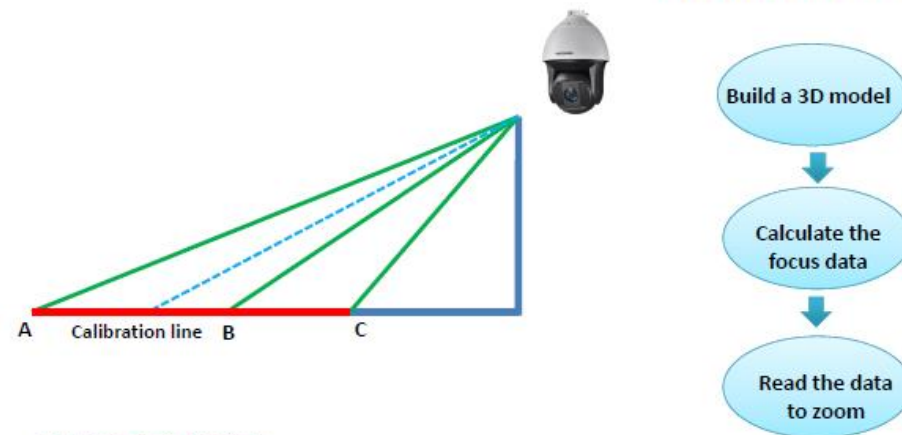
First Choice for Security Professionals

HCSA 229

Rapid Focus – Principle

HIKVISION

How Rapid Focus works?



First Choice for Security Professionals

HCSA 230

Rapid Focus – Configuration

Zero delay when focus

HIKVISION

Configuration

Basic Settings | Live View | Playback | Picture | **Configuration** | Privacy Mask | Scheduled Tasks | Clear Config | Privilege PTZ | Preset Settings | **Rapid Focus**

Rapid Focus

1. Enable

2. Add

3. Start Calibration

4. Stop Calibration

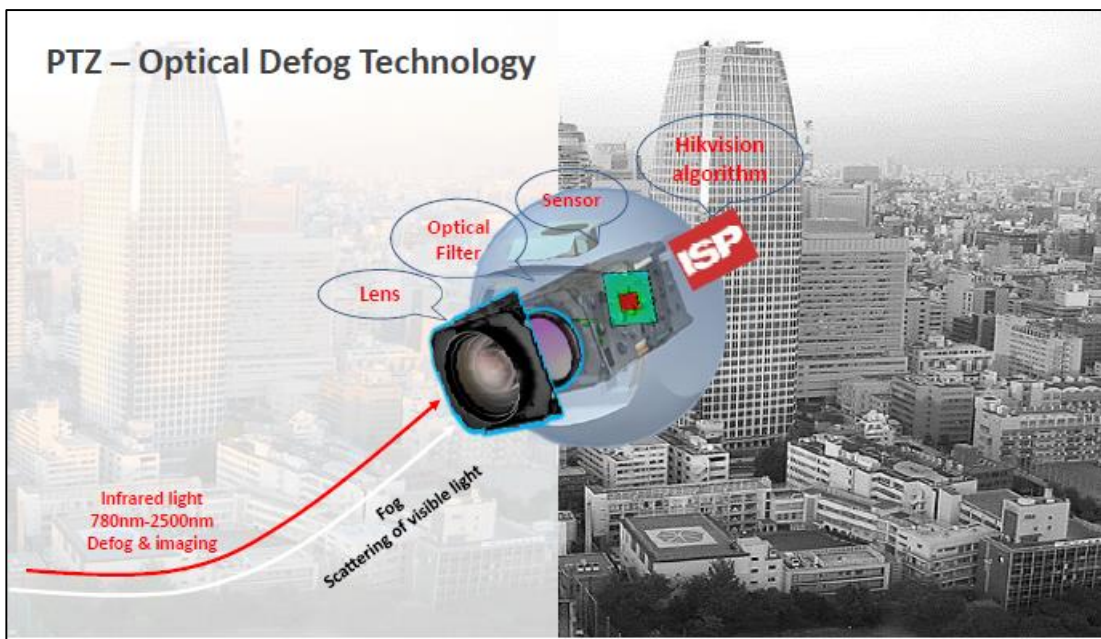
5. OK

No.	Scene Name	Ratio	Calibration Point Amount
1	Scene1	25	3
2	Scene2	25	3
3	Scene3	25	3
4	Scene4	25	3

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HCSA 231

PTZ – Optical Defog Technology



PTZ – Optical Defog Technology

HIKVISION

Conventional Defog



The video recorded by conventional camera.

Optical Defog



The video recorded by DF camera.

First Choice for Security Professionals

HCSA 233

PTZ – EIS/OIS

Electronical Image Stabilization / Optical Image Stabilization

HIKVISION



EIS OFF



EIS ON



OIS OFF



OIS ON

First Choice for Security Professionals

HCSA 234

Optical Image Stabilization

HIKVISION

Operating Principle



First Choice for Security Professionals

HCSA 235

Face Capture PTZ -- DF6A/8A

HIKVISION



Manual Capture Mode

Capturing face image on one click



Application Scenarios

Location: Checkpoint
Installation: 20-100 m away, 10-20 m height
Value: Police Officer needs to identify the suspected person with database at a certain time but PTZ can still monitor large scene most of time.

Illustration of manual capture mode and real-time display

First Choice for Security Professionals

HCSA 236

Face Capture PTZ -- DF6A/8A

HIKVISION



Checkpoint Mode

Capturing in a fixed zone with an up-to-150-meters radius



Real-time Capture

Application Scenarios

Location: College entrance
Installation: 20-50 m away, 5-8 m height
Value: The college needs to block strangers getting inside the campus and improve accuracy as much as possible, but can't find perfect angle to install cameras. PTZ face capture cameras can be installed far away and zoom in to provide the best angle for face capture.

▲ Illustration of check-point mode and real-time display
First Choice for Security Professionals

HCSA 237

Face Capture PTZ -- DF6A/8A

HIKVISION



Auto-switch Mode

Monitoring up to 8 areas with one camera



▲ Illustration of auto-switch mode and real-time display

First Choice for Security Professionals

Application Scenarios

Location: Factory entrance
Installation: The middle point between factory entrance and building entrance.
Value: In the morning, the PTZ camera captures people entering the factory. In the late afternoon, the camera captures people leaving at the buildings entrance. After working hours, the camera is scheduled to capture other important areas.

HCSA 238

Contents

HIKVISION

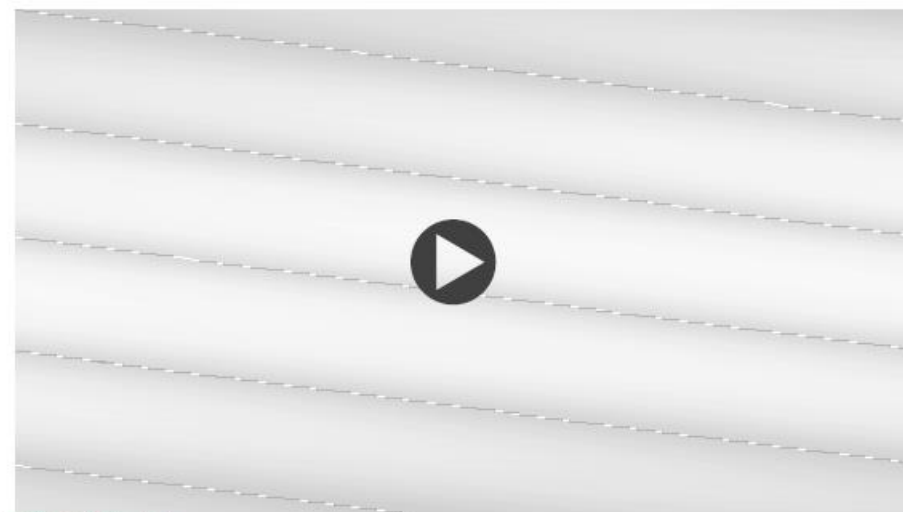
- Fundamental
- Functions and Applications
- **Installation Guidance**
- Troubleshooting

First Choice for Security Professionals

HCSA 239

Installation Guidance

HIKVISION



First Choice for Security Professionals

HCSA 240

Contents

HIKVISION

- Fundamental
- Functions and Applications
- Installation Guidance
- **Troubleshooting**

First Choice for Security Professionals

HCSA 241

Purple Image Problem

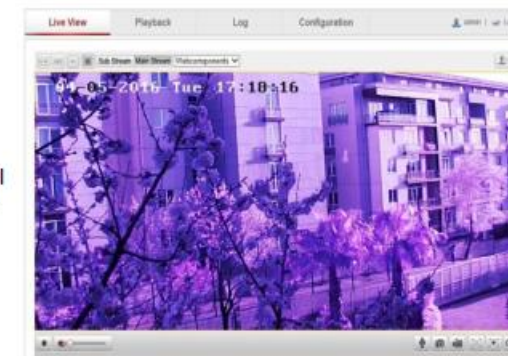
HIKVISION

Phenomenon:

Purple image in day time

Troubleshooting:

- In day time ICR should be ON, if not, IR will get through the lens and cause red image.
- Manually switch ICR ON in web



First Choice for Security Professionals

HCSA 242

Focus Problem

HIKVISION

Phenomenon:

When we take an outdoor PTZ camera for testing in the indoor, the camera cannot focus after zooming in.

Troubleshooting:

- Check whether the **monitoring distance** is too short. If so, you can login the web client to see its minimum focus distance and modify it to a proper distance. For example, if the minimum focus distance is 6 meters, the camera cannot focus clearly within 6 meters.



First Choice for Security Professionals

HCSA 243

Focus Problem

HIKVISION

^ Focus

Focus Mode	Semi-auto
Min. Focus Distance	6.0m

Focus mode : Auto, Manual, Semi-auto

- Auto: The speed dome focuses automatically at any time according to objects in the scene.
- Semi-auto: The speed dome focuses automatically only once after panning, tilting and zooming.
- Manual: You need to focus manually.

Minimum focus distance: the minimum distance that the lens can focus, the lens will not focus if the monitoring distance is within the minimum focus distance.

First Choice for Security Professionals

HCSA 244

THANKS!

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www.hikvision.com



Hikvision NVR

Hikvision Certified Security Associate

First Choice for Security Professionals

Contents

- Product Family
- Functions & Applications
- Troubleshooting



First Choice for Security Professionals

Contents

- Product Family
 - Product Family
 - Naming Rules
 - Working Principle
- Functions & Applications
- Troubleshooting

First Choice for Security Professionals

NVR Family

Value series

WIFI series NVR
DS-71/7600NI-K1

Value 7 series NVR

Pro series

Easy IP 3.0 Series
DS-7600/7700-I/K/Q

Ultra series

96 series NVR
Super NVR I16/I24
DS-96000

86(K)/96(I) series NVR
DS-8600-K/9600-I

DeepinMind series

DeepinMind
96000 series NVR

DeepinMind
77/9600 series NVR

First Choice for Security Professionals

HCSA 249

NVR Family

Special

DS-WSEXX-T2 DS-WSEXX-T4 DS-WSPXX-T8 DS-9000AI-S16-D

DeepinMind

iDS-7700NXI-I4 iDS-9600NXI-I8 iDS-96000NXI-I16

Ultra

DS-9600NI-I8 DS-96000NI-I16 DS-96000NI-I24

DS-8600NI-K8 DS-9600NI-I16

Pro

DS-7600NI-I2 DS-7700NI-I4

DS-7600NI-K2 DS-7700NI-K4

DS-7600NI-K1(B) DS-7600NI-Q2 DS-7700NI-Q4

Value

DS-7600NI-K1/W DS-7100NI-K1/W DS-7100NI-Q1

1 HDD 2 HDD 4 HDD 8 HDD 16 HDD 24 HDD

First Choice for Security Professionals

HCSA 250

Naming Rules (NVR)

DS: Hikvision products
iDS: Hikvision intelligent products

71: Value Series
76/77: Pro Series
86/88/87: Ultra / DeepinMind Series

16: Number of IP channels

N: NVR
NX: NVR with deep learning technology

I: Stands for international

(B): The second hardware revision

4/8/16S: Number of channels for false alarm filter
4/8F: Number of channels for facial recognition

16P: Number of PoE interfaces
H: With decode board
M: Metal case
W: With Wi-Fi module
4G: With 4G module

1/2/4/8/16/24: Number of HDD slots

I/K/Q/E: Hardware platform

First Choice for Security Professionals

HCSA 251

Working Process

Image Collect → **Transmit** → **Decoding, Storage, Playback** → **Display**

First Choice for Security Professionals

HCSA 252

Contents

HIKVISION

- Product Family
- Functions & Applications
 - IPC deployment
 - Secure Data Management
 - Bandwidth Control
 - Acusense Technology
 - Nonvideo Management
 - Alarm and Event
- Troubleshooting

First Choice for Security Professionals

HCSA 253

NVR/DVR Local Menu Operation

HIKVISION

3. Start

Activate the Device

- Create a new **strong** password in the local menu to activate the DVR/NVR.

admin

.....

.....

Strong

☒ Export GUID

IP Camera Activation Password

Note: Valid password range [8-16]. You can use a combination of numbers, lowercase, uppercase and special character for your password with at least two kinds of them contained.

OK

First Choice for Security Professionals

HCSA 254

Add IP Camera- Plug and Play

HIKVISION

- PoE NVR has built-in PoE ports, compatible to 802.3af/at standard.
- PoE Cameras can be plugged into NVR PoE port for direct connect and display



Note: Before plug and play, the camera shall be inactive, or active with the same password as NVR.

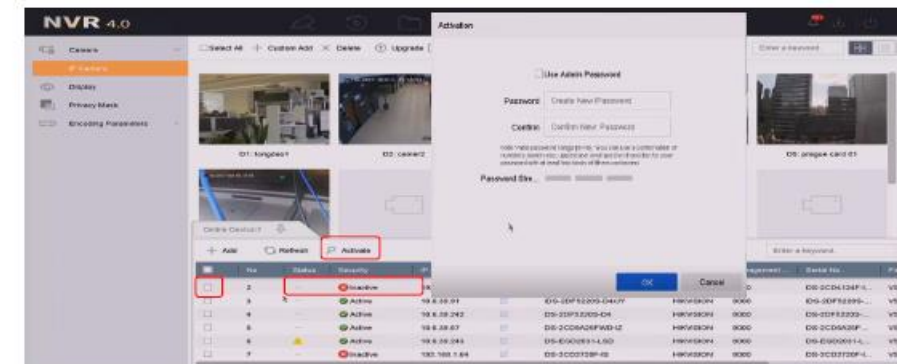
First Choice for Security Professionals

HCSA 255

Add IP Camera – Activate/Quick Add

HIKVISION


- Online detection for IP cameras of the same subnet
 - Enter Menu->Camera Management->Camera
 - Click **Activate** to activate the camera then camera will add to NVR automatically.
 - Click **Add** to quickly add cameras that have same password with NVR

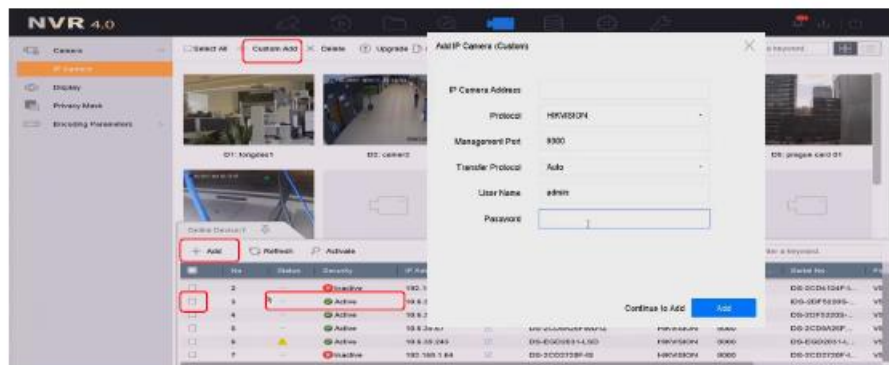


HCSA 256

Add IP Camera – Custom Add

HIKVISION

- Online detection for IP cameras of the same subnet
 - Enter Menu->Camera Management->Camera
 - Click the Custom Add tab on the title bar or click  enter the Add IP Camera interface.
 - Enter IP address, protocol, management port, login user name, password camera to add.



HCSA 257

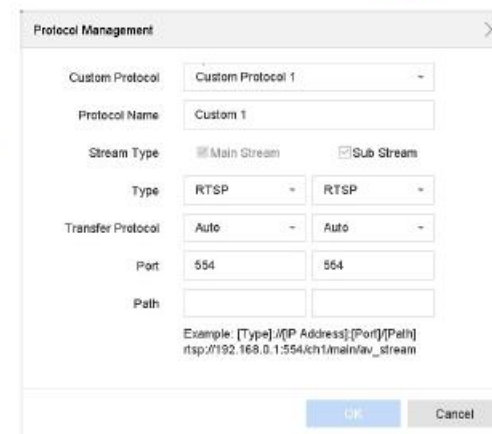
NVR/DVR Local Menu Operation

HIKVISION

4. Camera Management

Configure the Customized Protocols

Go to **More Settings > Protocol** at the top taskbar to enter the protocol management interface.



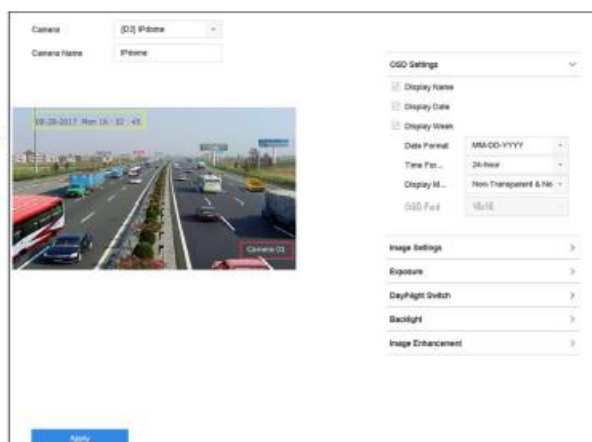
First Choice for Security Professionals

HCSA 258

Camera OSD Settings

HIKVISION

- Go to Camera > Display.
- Select the camera from the drop-down list.
- Edit the name in Camera Name.
- Check Display Name, Display Date and Display Week to show the information on the image.
- Set the date format, time format, and display mode.



First Choice for Security Professionals

HCSA 259

Enhanced POE

HIKVISION

Enable or disable long network cable mode by selecting **Long Distance** or **Short Distance** radio.

☒ **Long Distance**: Long-distance (100 to 300 meters) network transmissions via PoE interface.

☐ **Short Distance**: Short-distance (< 100 meters) network transmission via PoE interface.

Actual power: 0.0W. Remaining power: 200.0W. 0%

Channel	<input type="radio"/> Long Distance	<input type="radio"/> Short Distance	Channel Status	Actual Power
D1	<input checked="" type="radio"/>	<input type="radio"/>	Disconnected	0.0W
D2	<input type="radio"/>	<input checked="" type="radio"/>	Disconnected	0.0W
D5	<input type="radio"/>	<input checked="" type="radio"/>	Disconnected	0.0W
D6	<input type="radio"/>	<input checked="" type="radio"/>	Disconnected	0.0W
D7	<input type="radio"/>	<input checked="" type="radio"/>	Disconnected	0.0W
D8	<input type="radio"/>	<input checked="" type="radio"/>	Disconnected	0.0W
D9	<input type="radio"/>	<input checked="" type="radio"/>	Disconnected	0.0W
D10	<input type="radio"/>	<input checked="" type="radio"/>	Disconnected	0.0W
D11	<input type="radio"/>	<input checked="" type="radio"/>	Disconnected	0.0W
D12	<input type="radio"/>	<input checked="" type="radio"/>	Disconnected	0.0W
D13	<input type="radio"/>	<input checked="" type="radio"/>	Disconnected	0.0W
D14	<input type="radio"/>	<input checked="" type="radio"/>	Disconnected	0.0W
D15	<input type="radio"/>	<input checked="" type="radio"/>	Disconnected	0.0W
D16	<input type="radio"/>	<input checked="" type="radio"/>	Disconnected	0.0W

Apply

HCSA 260

IP Channel Import/Export

HIKVISION

- Hikvision NVR can import/export IP channel as an editable excel file. This makes it fast and convenient to deploy IP cameras over NVR.
 - Menu – Camera – IP Camera import/Export



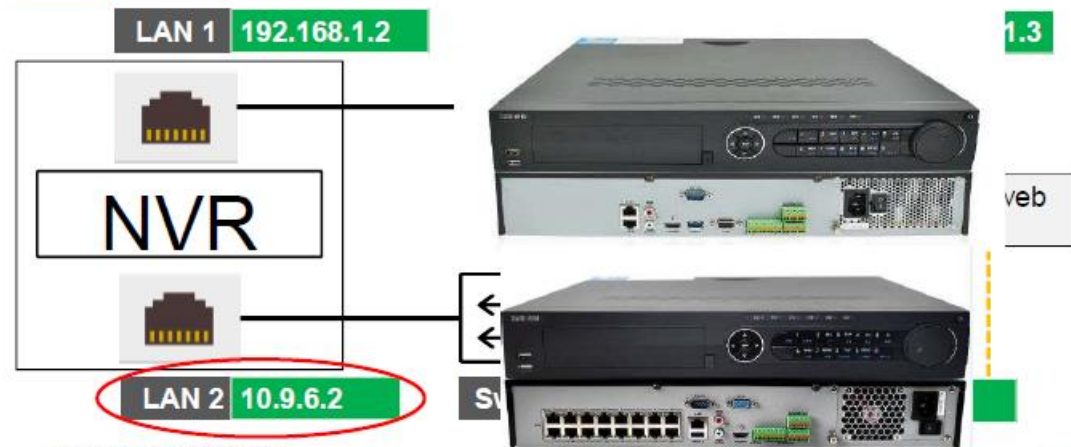
First Choice for Security Professionals

HCSA 261

Virtual Host

HIKVISION

Scene NVR has two LAN ports of different IP address, isolated from each other.



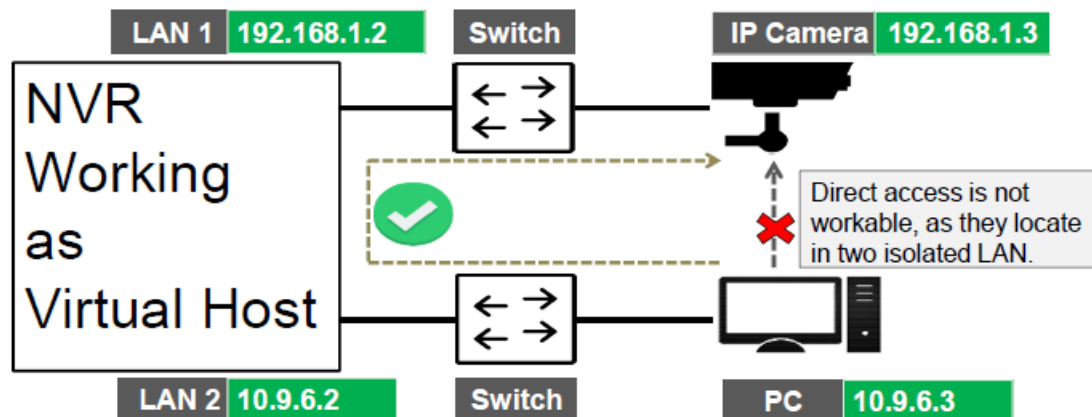
First Choice for Security Professionals

HCSA 262

Virtual Host

HIKVISION

Scene NVR has two LAN ports of different IP address, isolated from each other.



First Choice for Security Professionals

HCSA 263

Virtual Host Configuration

HIKVISION

- Enable the virtual host on the web page of NVR (Configuration->Network->Advanced Settings->Other)

☒ Enable Virtual Host

Local

System

System Settings

Maintenance

Security

Camera Management

User Management

IP Camera

Channel No.	IP Address	Channel No.	Management Port	Security	Status	Protocol	Connect
<input type="checkbox"/> D01	192.168.254.3	1	8000	Weak	Offline(Network A...	HIKVISION	http://192...
<input type="checkbox"/> D02	192.168.254.4	1	8000	N/A	Offline(IP camera...	HIKVISION	http://192...
<input type="checkbox"/> D03	192.168.254.5	1	8000	Weak	Offline(Network A...	HIKVISION	http://192...
<input checked="" type="checkbox"/> D04	192.168.254.10	1	8000	N/A	Online	HIKVISION	http://192...



First Choice for Security Professionals

HCSA 264

Contents

HIKVISION

- Product Family
- Functions & Applications
 - IPC deployment
 - **Secure Data Management**
 - HDD Quota/Group
 - RAID
 - eSATA
 - Recording/File Management
 - ANR/N+1
 - Bandwidth Control
 - Acusense Technology
 - Nonvideo Management
 - Alarm and Event
- Troubleshooting

First Choice for Security Professionals

HCSA 265

Data Security

HIKVISION



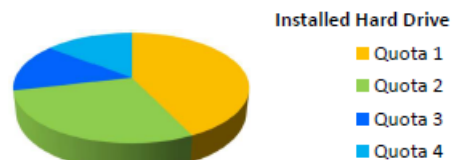
First Choice for Security Professionals

HCSA 266

HDD Quota

HIKVISION

- In HDD quota mode, each camera can be allocated with quota for the storage of record file and capture picture.
- It helps manage the storage space in a more organized way.



Example: 5TB hard drive is installed in the NVR, different HDD capacity can be assigned to each camera according to required recording time.

Quota No.	Surveillance Zone	Camera Resolution/Bitrates	Recording Cycle
Quota 1, 1.85TB	Key Zone A	3MP/6144Kbps	1 Month
Quota 2, 1.23TB	Key Zone B	2MP/4096Kbps	1 Month
Quota 3, 0.62TB	General Zone C	2MP/4096Kbps	2 Weeks
Quota 4, 0.62TB	General Zone D	720P/2048Kbps	1 Month

First Choice for Security Professionals

HCSA 267

HDD Quota Configuration

HIKVISION

In HDD quota mode, each camera can be allocated with quota for the storage of record file and capture picture.

- Enter the Storage Mode interface: Menu > HDD > Advanced
- Set the Mode to Quota (The NVR must reboot to effect the changes of HDD mode)
- Select a camera for which you want to configure quota, and configure the quota capacity

Note: ☒ Quota ☐ Group

Camera: [D1] IPCamera 01

Used Record Capacity: 18.00GB

Used Picture Capacity: 2048.00MB

HDD Capacity (GB): 1863

Max. Record Capacity (GB): 1000

Max. Picture Capacity (GB): 50

▲ Free Quota Space 312 GB

Copy to Apply

First Choice for Security Professionals

HCSA 268

HDD Group

Configure HDD Group

Mode: ☐ Quota ☒ Group

Record on HDD Group: 2

Local HDD Settings

HDD No. 5

HDD Property: ☒ RW ☐ Read-only ☐ Redundant...

Group: ☐ 1 ☒ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11 ☐ 12 ☐ 13 ☐ 14 ☐ 15 ☐ 16

HDD Capacity: 931.52GB

In HDD group mode, different HDDs can be configured to different groups; different cameras can be assigned to record in different groups.

OK Cancel

Apply

First Choice for Security Professionals

HCSA 269

Contents

- Product Family
- Functions & Applications
 - IPC deployment
 - Secure Data Management
 - HDD Quota/Group
 - RAID
 - eSATA
 - Recording/File Management
 - ANR/N+1
 - Bandwidth Control
 - Acusense Technology
 - Nonvideo Management
 - Alarm and Event
- Troubleshooting

First Choice for Security Professionals

HCSA 270

RAID

- RAID(Redundant Array of Independent Disk), is a storage technology that combines multiple Hard Disk Drives into a logical unit; single storage space.
- Each level of RAID provides a different balance between the key goals:

First Choice for Security Professionals

HCSA 271

RAID Levels

- Hikvision Raid DVR/NVR support Raid 0/1/5/6/10.

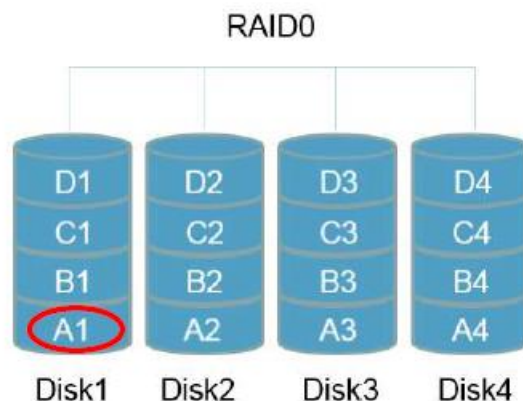
First Choice for Security Professionals

HCSA 272

Raid 0 - Stripped

HIKVISION

- Minimum of 2 disks
- Excellent performance
- NO redundancy
- This should not be used for mission critical type applications.
- One HDD failure and the whole array is damaged



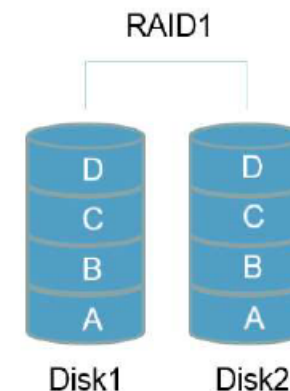
First Choice for Security Professionals

HCSA 273

RAID 1 - Mirrored

HIKVISION

- Minimum of 2 Disks
- Good performance with no parity and no striping
- Excellent redundancy
- Still functional with one drive



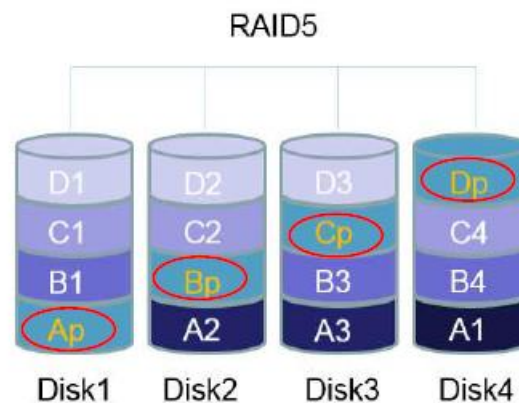
First Choice for Security Professionals

HCSA 274

RAID 5 –Striped with Distributed Parity

HIKVISION

- Minimum of 3 disks
- Good Performance
- Good Redundancy
- Best cost effective option providing both performance and redundancy



First Choice for Security Professionals

HCSA 275

Contents

HIKVISION

- Product Family
- Functions & Applications
 - IPC deployment
 - **Secure Data Management**
 - HDD Quota/Group
 - RAID
 - eSATA
 - **Recording/File Management**
 - ANR/N+1
 - Bandwidth Control
 - Alarm and Event
- Troubleshooting

First Choice for Security Professionals

HCSA 276

Redundant Recording

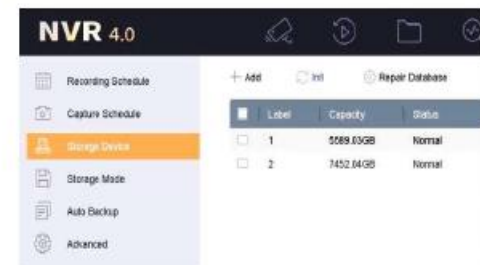
HIKVISION

Enabling redundant recording and capture, which means saving the record files and captured pictures not only in the R/W HDD but also in the redundant HDD.

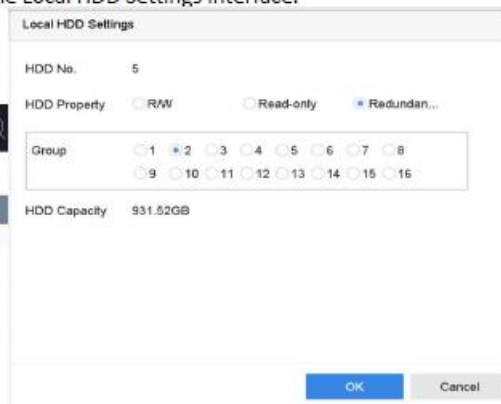
Go to **Storage > Storage Device**.

Select a **HDD** from the list and Click to enter the Local HDD Settings interface.

Step 3 Set the HDD property to **Redundancy**.



First Choice for Security Professionals



HCSA 277

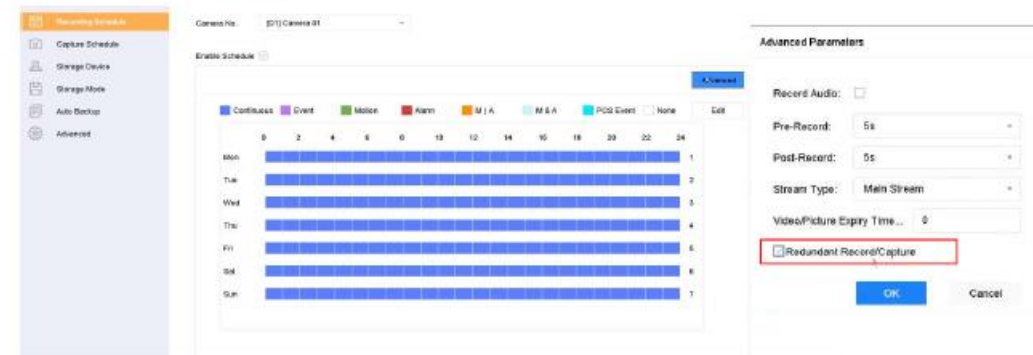
Redundant Recording

HIKVISION

Go to **Storage > Schedule Settings > Record Schedule/Capture Schedule**.

Click **Advanced** to set the camera recording parameters.

Click **Redundant Record/Capture**



First Choice for Security Professionals

HCSA 278

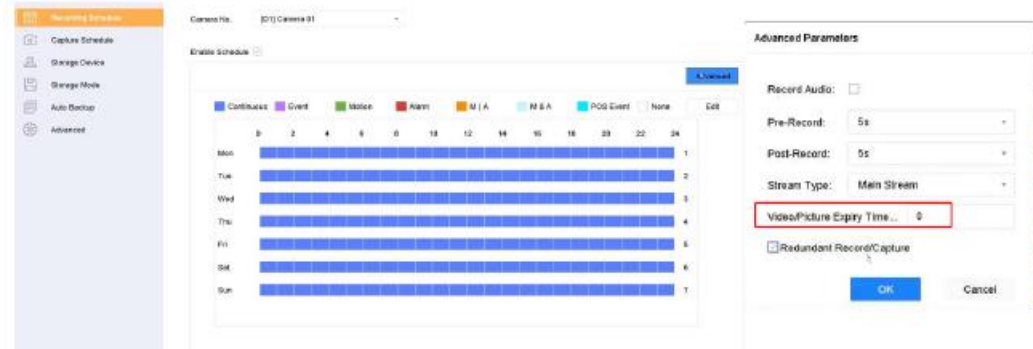
Expired Recording

HIKVISION

The record file expires after it reaches the configured expired time.

Go to **Storage > Schedule Settings > Record Schedule/Capture Schedule**.

Click **Advanced** to set the camera recording parameters.



First Choice for Security Professionals

HCSA 279

File Lock

HIKVISION

- Click on the lock icon to lock and unlock the record file; locked file won't be overwritten in cycle recording.



First Choice for Security Professionals

HCSA 280

Contents

HIKVISION

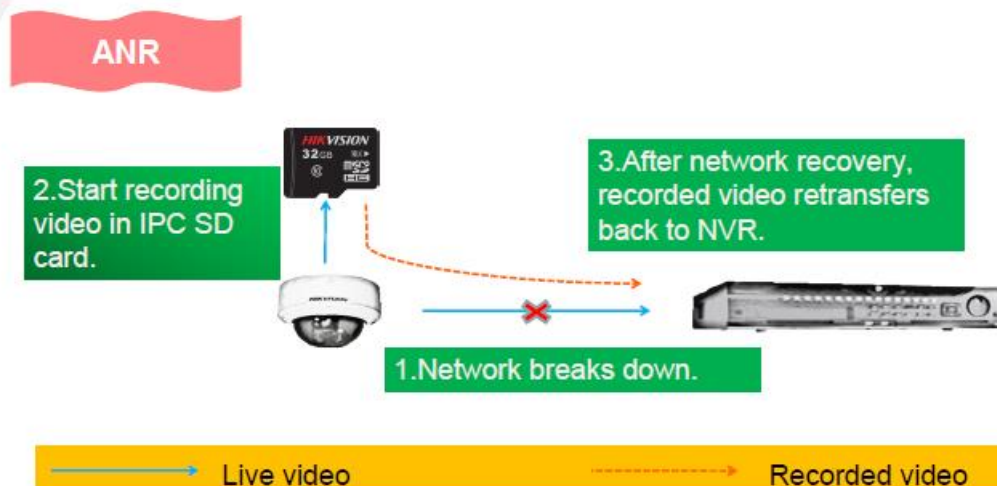
- Product Family
- Functions & Applications
 - IPC deployment
 - **Secure Data Management**
 - HDD Quota/Group
 - RAID
 - eSATA
 - Recording/File Management
 - **ANR/N+1**
 - Bandwidth Control
 - Alarm and Event
- Troubleshooting

First Choice for Security Professionals

HCSA 281

ANR

HIKVISION



First Choice for Security Professionals

HCSA 282

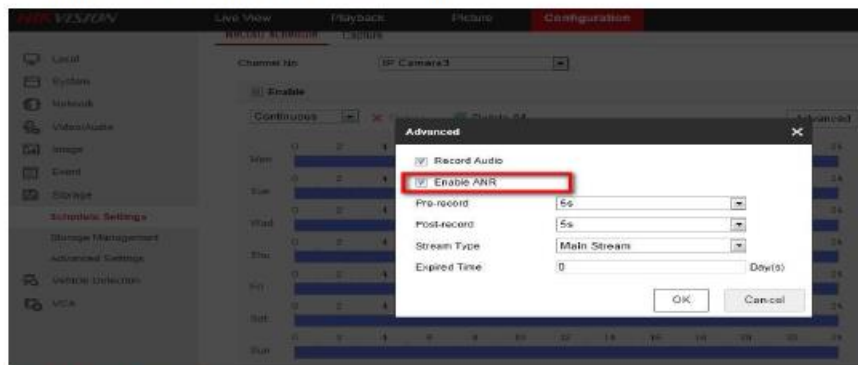
ANR---How to Configure

HIKVISION

Make sure IPC is installed with SD card(pre-allocated).

Enable the ANR on the web page of NVR

Web Configuration -> Storage -> Schedule Settings -> Advanced

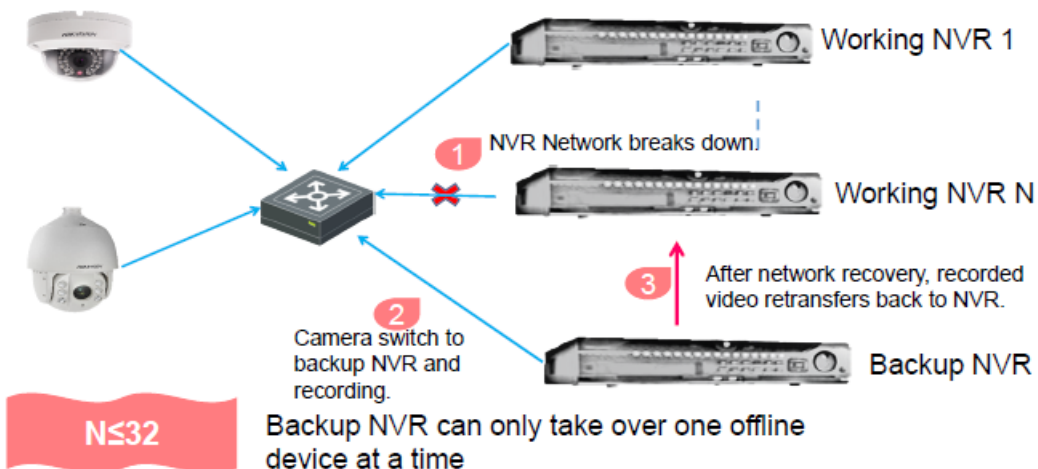


First Choice for Security Professionals

HCSA 283

N+1

HIKVISION



First Choice for Security Professionals

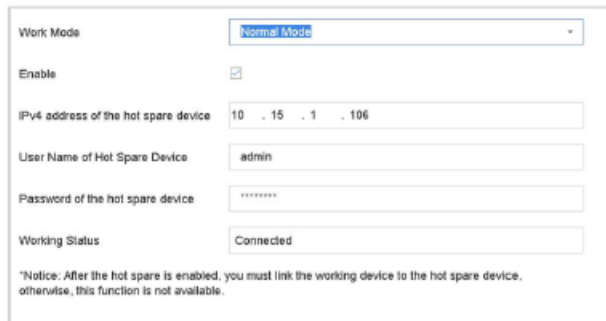
HCSA 284

N+1---How to Configure (Set working NVR)

HIKVISION

Set working units and add them to the hot spare unit

- Go to System > Hot Spare.
- Set the Work Mode to Normal Mode.
- Check Enable.
- Enter the IP address, user name, and admin password of the hot spare device.
- Click Apply.



First Choice for Security Professionals

HCSA 285

N+1---How to Configure (Set Hot Spare NVR)

HIKVISION

Set working units and add them to the hot spare unit

- Step 1 Go to System > Hot Spare.
- Step 2 Set the Work Mode to Hot Spare Mode.
- Step 3 Click Apply.
- Step 4 Click Yes in the popup attention box to reboot the device.



First Choice for Security Professionals

HCSA 286

N+1---How to Configure (Working status)

HIKVISION

After Reboot, Go to System > Hot Spare in the hot spare device.

Add working NVR's IP address to the Hot Spare NVR

Working Status	Description
No record	The working device works properly.
Backing up	If the working device goes offline, the hot spare device will record the video of the IP camera connected to the working device for backup. The record back up functions for 1 working device at a time.
Synchronizing	When the working device comes back online, the lost video files will be restored by the record synchronization function. The record synchronization function can be enabled for 1 working device at a time.



First Choice for Security Professionals

HCSA 287

Contents

HIKVISION

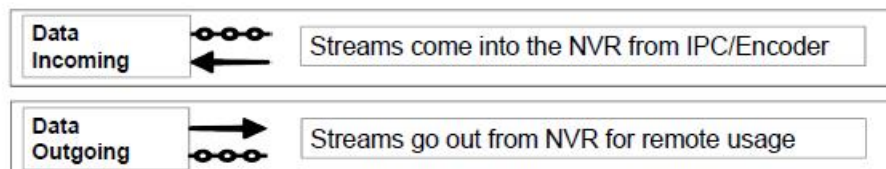
- Product Family
 - Functions & Applications
 - IPC deployment
 - Secure Data Management
 - Bandwidth Control
 - Alarm and Event
 - Troubleshooting
- Incoming/Outgoing Bandwidth
 - Transcoded Stream
 - Channel Zero
 - Playbacks

First Choice for Security Professionals

HCSA 288

Data Incoming/Outgoing

HIKVISION

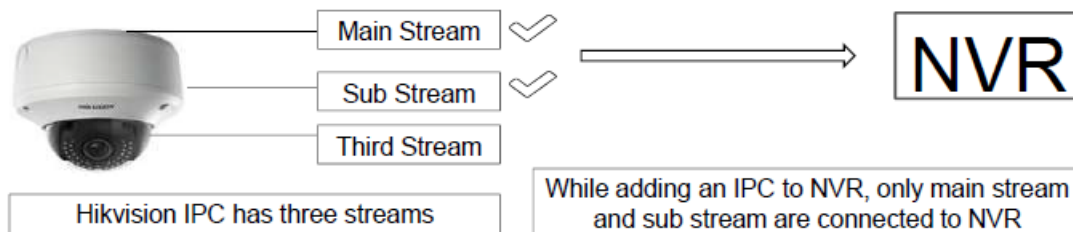


First Choice for Security Professionals

HCSA 289

Incoming Bandwidth Calculation

HIKVISION



Example

IPC DS-2CD4332FWD-I
Main Stream: 25fps@1080P, 4Mbps
Sub Stream: 25fps@4CIF, 1Mbps

NVR DS-7716NI-E4
Incoming Bandwidth: 160Mbps

Up to 16 pcs of DS-2CD4332FWD-I can be added to NVR DS-7716NI-E4

NOTE

While adding a third-party IP camera to NVR, it may have main stream only; In this case, only main stream bitrates are taken into calculation.

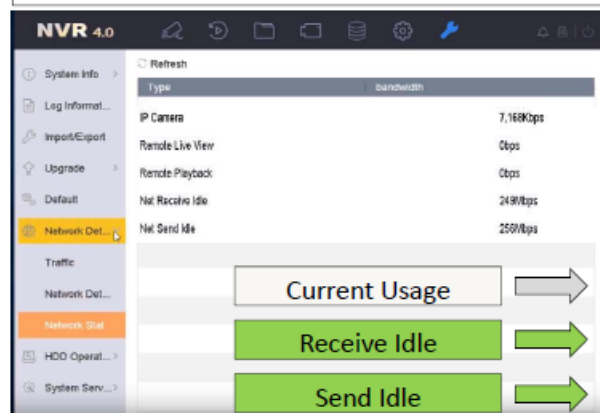
First Choice for Security Professionals

HCSA 290

Bandwidth Usage Monitor

HIKVISION

NVR offers an user interface to monitor real-time incoming/outgoing bandwidth usage, net receive idle, net send idle, etc.



First Choice for Security Professionals

HCSA 291

Contents

HIKVISION

- Product Family
- Functions & Applications
 - IPC deployment
 - Secure Data Management
 - **Bandwidth Control**
 - Incoming/Outgoing Bandwidth
 - Transcoded Stream
 - Channel Zero
 - Playbacks
 - Alarm and Event
- Troubleshooting

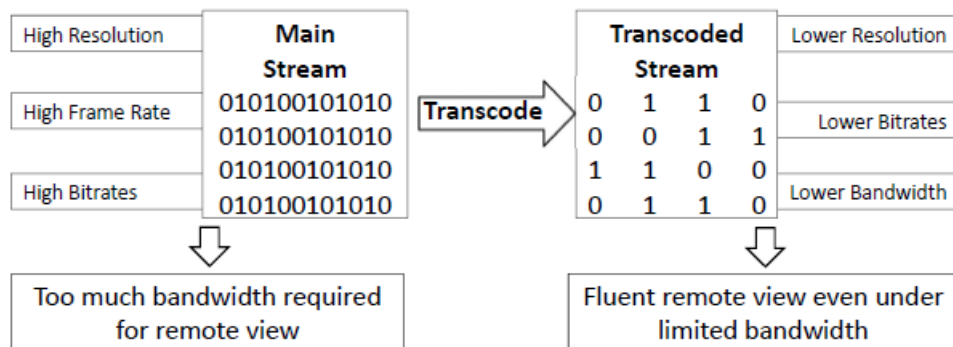
First Choice for Security Professionals

HCSA 292

Transcoded Stream

HIKVISION

- NVR can transcode the original streams into new streams of lower resolution, frame rate, bitrates for remote use of live view and playback.



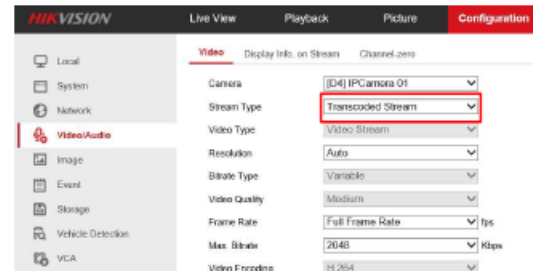
First Choice for Security Professionals

HCSA 293

Transcoded Stream-Live View

HIKVISION

- Configure the parameter of transcoded stream for live view
 - Go to NVR web page->remote configuration->Video/Audio
 - Select the IP camera and configure the transcoded stream resolution, frame rate, and bitrates



- Select transcoded stream and start live view
 - Go to NVR web page->live view
 - Select the transcoded stream and start live view



First Choice for Security Professionals

HCSA 294

Transcoded Stream-Playback

HIKVISION

- Go to NVR web page->playback
- Select the IP camera and configure the playback resolution, frame rate, and bitrates of transcoded stream
- Select the transcoded playback option (the icon turns red after selected), then start playback.



First Choice for Security Professionals

Transcoded playback parameter

HCSA 295

Contents

HIKVISION

- Product Family
- Functions & Applications
 - IPC deployment
 - Secure Data Management
 - Bandwidth Control**
 - Incoming/Outgoing Bandwidth
 - Transcoded Stream
 - Channel Zero**
 - Playbacks
 - Acusense Technology
 - Nonvideo Management
 - Alarm and Event
- Troubleshooting

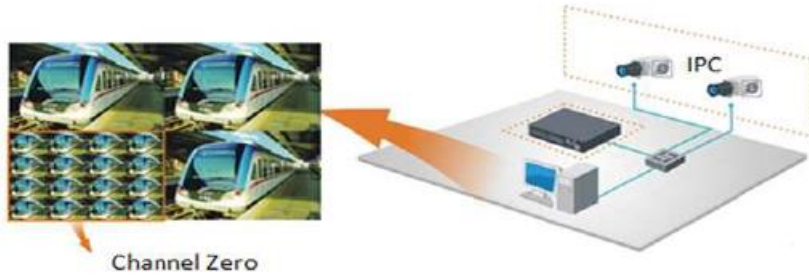
First Choice for Security Professionals

HCSA 296

Channel Zero Live View

HIKVISION

- Channel zero is a single channel combining more than one channel related cameras' images.



User can edit the camera order of channel zero by configuring the live view sequence of NVR's CVBS or VGA output.

First Choice for Security Professionals

HCSA 297

Channel Zero Configuration

HIKVISION

- Enter the web interface of NVR



- Configure the split screen setting and save the changes



First Choice for Security Professionals

HCSA 298

Contents

HIKVISION

- Product Family
- Functions & Applications
 - IPC deployment
 - Secure Data Management
 - Bandwidth Control**
 - Acusense Technology
 - Nonvideo Management
 - Alarm and Event
- Troubleshooting

- Incoming/Outgoing Bandwidth
- Transcoded Stream
- Channel Zero
- Playbacks

First Choice for Security Professionals

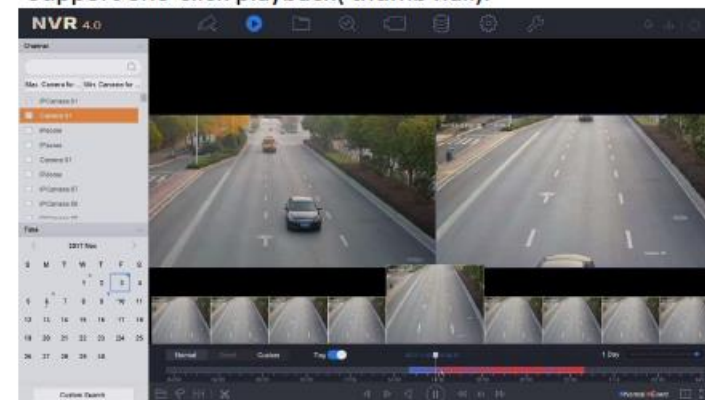
HCSA 299

Playback of NVR 4.0

HIKVISION

The search result of replay is displayed in a list view.

Support one-click playback(thumb nail).



First Choice for Security Professionals

HCSA 300

Playback of NVR

4.0

Support dual-progress bars in Playback interface.

The following one shows the progress of the selected screen and the other one is to show the progress of all the selected channels.



First Choice for Security Professionals

HIKVISION

HCSA 301

VCA Search

- NVR supports VCA search for picture and record results of behavior analysis, face capture, people counting and heat map results.
- Search results can be easily exported from NVR.



First Choice for Security Professionals

HIKVISION

HCSA 302

Smart Search and Playback

- During normal playback mode, user can draw a line or an area for smart search of line crossing, motion/intrusion detection.
- Non-related video footage is filtered and skipped during smart playback.
- Related video is marked with red color and can be filtered again by face characteristics.



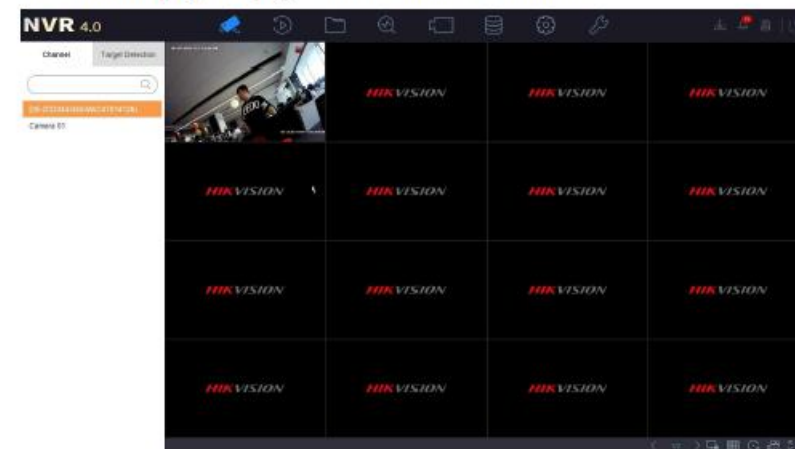
First Choice for Security Professionals

HIKVISION

HCSA 303

Smart Search/Playback Operation

Enter normal playback page>>select a camera and date



First Choice for Security Professionals

HIKVISION

HCSA 304

Contents

HIKVISION

- Product Family
- Functions & Applications
 - IPC deployment
 - Secure Data Management
 - Bandwidth Control
 - Acusense Technology
 - Nonvideo Management
 - Alarm and Event
- Troubleshooting

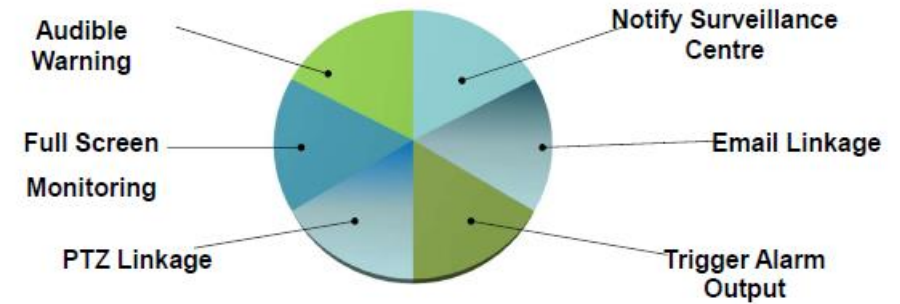
First Choice for Security Professionals

HCSA 305

Alarm I/O Detection

HIKVISION

- Various notification ways can be configured to notify user once alarm event occurs.



First Choice for Security Professionals

HCSA 306

Thanks!



First Choice for Security Professionals

HCSA 307

Training on Smart Functions and Applications

Hikvision Certified Security Associate

First Choice for Security Professionals

HCSA 308

Contents

HIKVISION

- Behavior Analysis
- People Counting
- Heat Mapping

First Choice for Security Professionals

HCSA 309

Contents

HIKVISION

- Behavior Analysis
 - Fundamentals
 - Installation
 - Configuration
 - Case study
- People Counting
- Heat Mapping

First Choice for Security Professionals

HCSA 310

Background Modeling Technology

HIKVISION

- Background modeling technology creates static background model in the monitoring area and at the same time detects and records the moving objects. It will trigger the alarm if the moving objects reach the alarm threshold.



First Choice for Security Professionals

HCSA 311

Background Modeling Technology

HIKVISION

- Background modeling technology is one of the most mature and widely applied technology used in intelligent video analysis.

Advantages

High sensitivity
Various rules
Low installation requirement

Challenges

Affected by the environment:
occasional light changes (car light, light reflection, backlight, etc.), leaves, moving shadows, insects, rapid change of weather, etc.

First Choice for Security Professionals

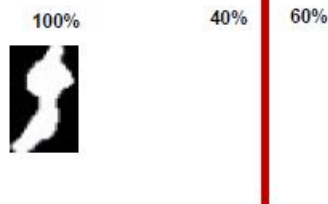
HCSA 312

Line Crossing Rule

HIKVISION

- Line crossing detection is detected by **the area that the object crosses the line**. By default, if the object crosses the line by 50%, it will trigger the alarm. The higher sensitivity, the less area of the object it requires to cross the line.

Line crossing detection



First Choice for Security Professionals

HCSA 313

Region Detections

HIKVISION

All the region detections will detect whether the center of the target has triggered the rule.



Region entrance
detection



Region exiting
detection

4 3 2 1



Intrusion
detection

First Choice for Security Professionals

HCSA 314

Contents

HIKVISION

- Behavior Analysis
- People Counting
- Heat Mapping
- Fundamentals
- Installation**
- Configuration
- Case study

First Choice for Security Professionals

HCSA 315

Installation Recommendation

HIKVISION

- Avoid to deploy cameras in scenes with excessive and fast changing light.
- Avoid scenes with glass, tiles, and other reflective objects.
- Avoid scenes with many winged insects.



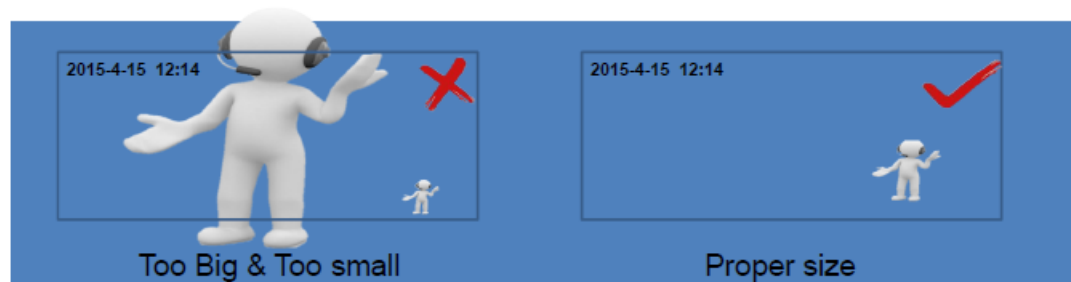
First Choice for Security Professionals

HCSA 316

Outdoor Installation

HIKVISION

- The height of the target should be less than 1/3 of the image and bigger than 1/15 of the image.



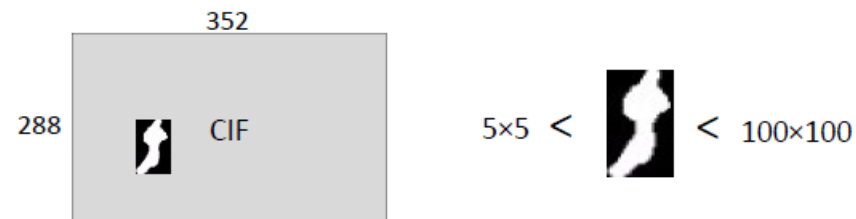
First Choice for Security Professionals

HCSA 317

Object Pixel Requirement

HIKVISION

- With the video resolution as CIF, the object pixel has to be between 5×5 and 100×100.



Video resolution	min. object pixel	max. object pixel
CIF (352×288)	5×5	100×100
4CIF (704×576)	10×10	200×200

First Choice for Security Professionals

HCSA 318

Light Condition

HIKVISION

- The camera is recommended in scenarios without strong backlight to ensure the accuracy.
- Darkfighter is recommended in low light environment.
- Lightfighter is recommended in scenarios with strong backlight.



First Choice for Security Professionals

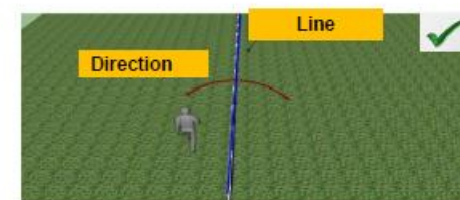
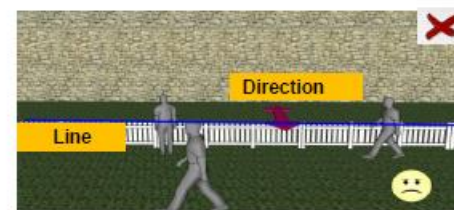
HCSA 319

Installation Recommendation

HIKVISION

Line crossing detection

- Line crossing detection is recommended for outdoor scenarios, not indoor ones.
- You should draw a suitable line to make sure that the target can be easily detected.



First Choice for Security Professionals

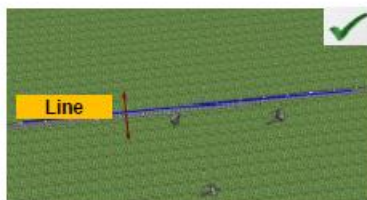
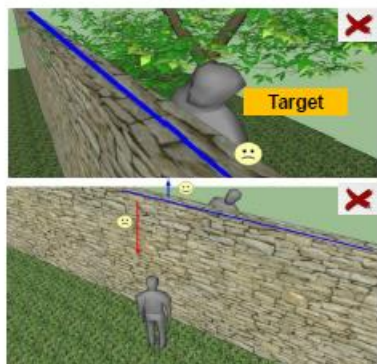
HCSA 320

Installation Recommendation

HIKVISION

Line crossing detection

- The camera should be mounted in a comparatively high position.
- The target cannot be too big.



First Choice for Security Professionals

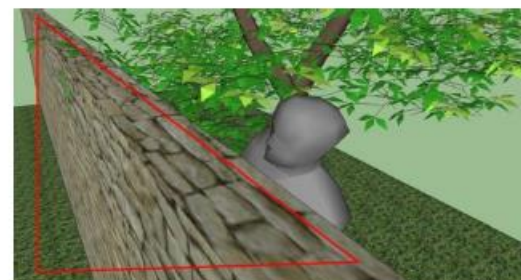
HCSA 321

Installation Recommendation

HIKVISION

Intrusion detection

Due to the camera mounting position and direction, the target is too big in the image. Although line crossing can be used in this scenario, but in order to avoid wrong detection, intrusion detection is more preferred in this situation.



First Choice for Security Professionals

HCSA 322

Contents

HIKVISION

- Behavior Analysis
 - People Counting
 - Heat Mapping
- Fundamentals
 - Installation
 - Configuration
 - Case study
1. Line crossing detection
 2. Intrusion detection
 3. Region entrance detection
 4. Region exiting detection
 5. Unattended baggage detection
 6. Object removal detection

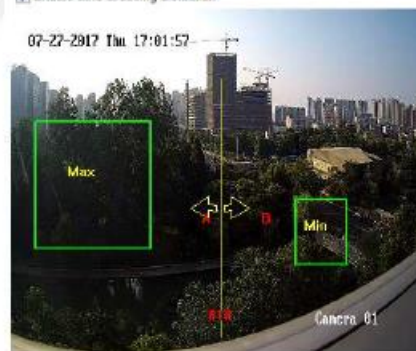
First Choice for Security Professionals

HCSA 323

Line Crossing Detection

HIKVISION

☒ Enable Line Crossing Detection



First Choice for Security Professionals

Demo Video



NOTE

Direction:

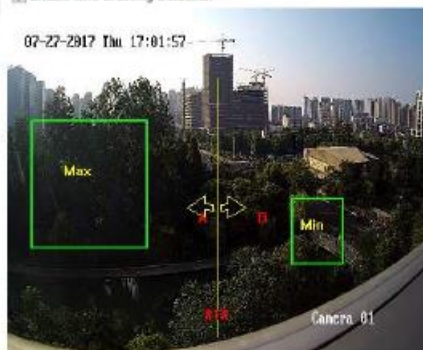
A->B: Targets that moving from A to B will trigger alarm.
B->A: Targets that moving from B to A will trigger alarm.
A<->B: Targets that moving between A and B will trigger alarm.

HCSA 324

Line Crossing Detection

HIKVISION

☒ Enable Line Crossing Detection



Max Size Min Size Draw Area Clear

Direction A↔B

Sensitivity

First Choice for Security Professionals

Demo Video



NOTE

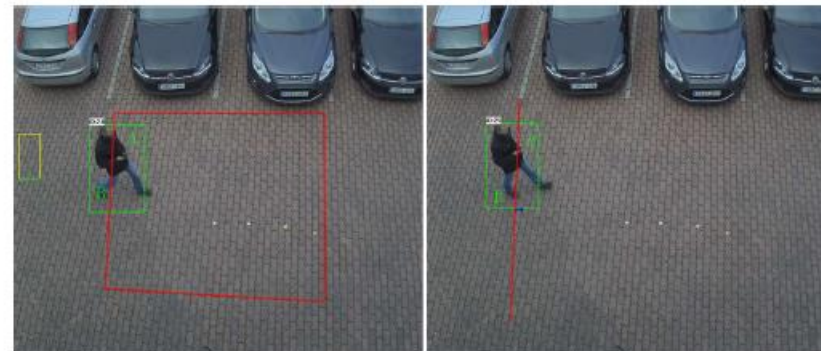
Sensitivity:

It stands for the percentage of the body part of an acceptable target that goes across the pre-defined line.

HCSA 325

Line Crossing Detection

HIKVISION



- A – target area that has already crossed the line or entered the region.
- B – target area that has not crossed the line or has not entered the region
- A+B: the complete target area
- **Sensitivity:** $B/(A+B)$, meaning how much the target has crossed the line or entered the region.

First Choice for Security Professionals

HCSA 326

Intrusion Detection

HIKVISION



Max Size Min Size Draw Area Clear

Threshold(s)

Sensitivity

First Choice for Security Professionals

Demo Video



Threshold:

The threshold for the time of the object loitering in the region. Alarm will be triggered immediately after the object entering the region if the time exceeds the threshold. The unit time is 1 second.

Sensitivity:

Range [1-100]. Sensitivity stands for the percentage of the body part of an acceptable target that enters the pre-defined region.

HCSA 327

Region Entrance Detection

HIKVISION

☒ Enable Region Entrance Detection



Draw Area Clear

Sensitivity

First Choice for Security Professionals

Demo Video



NOTE

Sensitivity:

Range [1-100]. Sensitivity stands for the percentage of the body part of an acceptable target that enters the pre-defined region.

HCSA 328

Region Exiting Detection

HIKVISION

☐ Enable Region Exiting Detection

Region 1

Demo Video



Draw Area Clear

Sensitivity 50

NOTE

Sensitivity:

Range [1-100]. Sensitivity stands for the percentage of the body part of an acceptable target that exits the pre-defined region.

First Choice for Security Professionals

HCSA 329

Unattended Baggage Detection

HIKVISION

Region 1

Demo Video



Draw Area Clear

Threshold 5 s

Sensitivity 60

NOTE

Threshold:

Alarm will be triggered immediately after the object being left if length of time exceeds the threshold.

Sensitivity:

Range [1-100]. Sensitivity stands for the percentage of the body part of an acceptable target that enters the pre-defined region.

First Choice for Security Professionals

HCSA 330

Object Removal Detection

HIKVISION

Region 1

Demo Video



Draw Area Clear

Threshold 5 s

Sensitivity 50

NOTE

Threshold:

Range [5s-20s], the threshold for the time of the objects removed from the region.

Sensitivity:

Range [1-100]. Sensitivity stands for the percentage of the body part of an acceptable target that leaves the pre-defined region.

First Choice for Security Professionals

HCSA 331

Arming Schedule & Linkage Actions

HIKVISION

Arming Schedule



Linkage Method

Normal Linkage	Other Linkage
<input type="checkbox"/> Notify Surveillance Center	Trigger Alarm Output <input type="checkbox"/> Select All
<input type="checkbox"/> Send Email	<input type="checkbox"/> A>1
<input type="checkbox"/> Upload to FTP	
<input type="checkbox"/> Trigger Channel	

In order to make the smart functions work, don't forget to set the arming schedule. By default, it is armed 24/7.

Linkage methods can be set accordingly.

- Notify Surveillance Center: push notifications to VMS
- Upload to FTP: capture image and upload to FTP
- Trigger Channel: trigger to record

First Choice for Security Professionals

HCSA 332

Contents

HIKVISION

- Behavior Analysis
 - Fundamentals
 - Installation
 - Configuration
 - Case study
- People Counting
- Heat Mapping

First Choice for Security Professionals

HCSA 333

Line Crossing or Intrusion Detection ?

HIKVISION

Case Study: If someone go cross the fence and get into the yard, alarms should be triggered. But there are always some people in the yard entering and leaving the protected area which the alarm shouldn't be triggered in this case.

Solution 1: If you draw a protected area as the following picture shows, setting the rule as intrusion detection, the people who are already in the yard will trigger the false alarm.



First Choice for Security Professionals

HCSA 334

Line Crossing or Intrusion Detection ?

HIKVISION

Solution 2: As the picture shows below, draw lines over the fence and set line crossing rules. In this way, people inside or outside of the yard will not trigger the alarm, but only people who get over the fence will trigger the alarm. In this case, Line Crossing rather than Intrusion Detection can improve the accuracy of the detection.



First Choice for Security Professionals

HCSA 335

Line Crossing or Intrusion Detection ?

HIKVISION

Case Study: People who get into the garage at night is prohibited. Anyone entering will trigger the alarm.

Solution 1: As is shown below, draw Line Crossing Rules all around the garage. As the lines are too close to the image edge, camera would not be able to detect fast moving target when it enters the garage, which will cause missing alarms.



First Choice for Security Professionals

HCSA 336

Line Crossing or Intrusion Detection ?

HIKVISION

Solution 2: Draw the area with intrusion detection rules. As long as moving targets show in the protected area and stay for more than the preset time, an alarm will be triggered.

Tip: Intrusion Detection rather than Line Crossing Detection is recommended here, because Intrusion Detection can reduce missing alarms more effectively.



First Choice for Security Professionals

HCSA 337

Contents

HIKVISION

- Behavior Analysis
 - Overview
 - Installation
 - Configuration
- People Counting
- Heat Mapping

First Choice for Security Professionals

HCSA 338

Introduction

HIKVISION

The People Counting is used to calculate the number of people entered or left a certain configured area and form in daily/weekly/monthly/annual reports for analysis.



First Choice for Security Professionals

HCSA 339

Application Scenarios

HIKVISION



Shopping Mall



Chain Stores

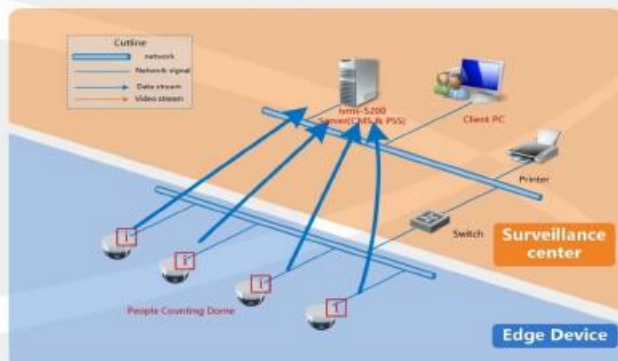


Supermarket

First Choice for Security Professionals

HCSA 340

People Counting Dome Topological Graph



First Choice for Security Professionals

HCSA 341



iDS-2CD6810F/C

Key features:

- ✓ Embedded intelligent algorithm to calculate the number of the people entering or leaving.
- ✓ Daily, weekly, monthly, annual report
- ✓ Built-in Flash for people counting statistics storage **without SD card.**

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HCSA 342



iDS-2CD6810F/C

Features:

- Dual lens
- Support stereo views
- 2.0/2.8mm optional
- DC12V/PoE
- Specialized people counting function, support separate counting of people entering, exiting



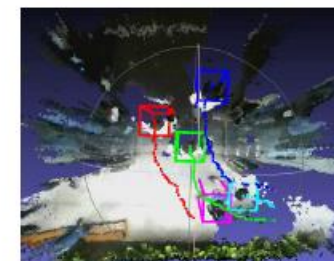
First Choice for Security Professionals

HCSA 343

Every object in the image has X, Y and Z axes coordinates. The Z-axis coordinate represents height, which prevents the interference from other objects.

Advantages:

- More accurate, exceeds **97%**
- Easier configuration
- Better anti-interference ability
- Small & compact



First Choice for Security Professionals

HCSA 344

Dual lens — advantages

HIKVISION



- Shadow or other objects will not cause miscounting.
- Camera can identify two person as long as there is space between two heads.



- Based on the height information in the 3D axis, the target height should be in the range of the human height, thus filtering the interference of the cart, baby carriage, etc.

First Choice for Security Professionals

HCSA 345

Dual lens — advantages

HIKVISION



- The camera can focus on a target and track it until it disappears in the image, thus effectively filtering the repeated count of the loitering target.



- Provide the counting data of people passing by to help analyze entering rate.

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HCSA 346

Demo Video

HIKVISION



First Choice for Security Professionals

HCSA 347

Contents

HIKVISION

- Behavior Analysis
 - People Counting
 - Heat Mapping
- Overview
 - Installation
 - Configuration

First Choice for Security Professionals

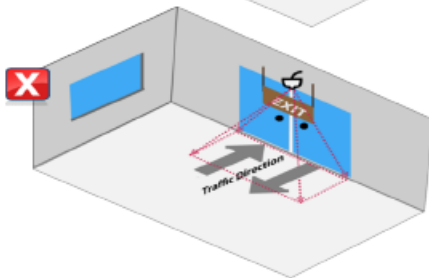
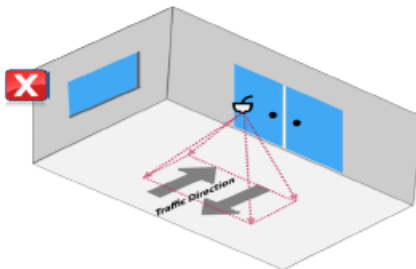
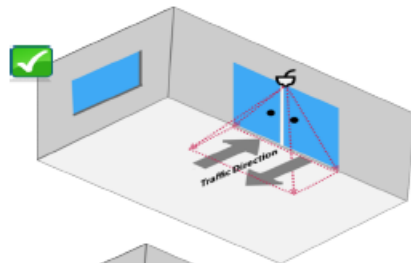
HCSA 348

Installation recommendation

HIKVISION

How to choose a right position?

The camera should be installed in the middle of entrance door. Also it is recommended that the camera's position should be as closed as possible to target entrance door without any obstacles.

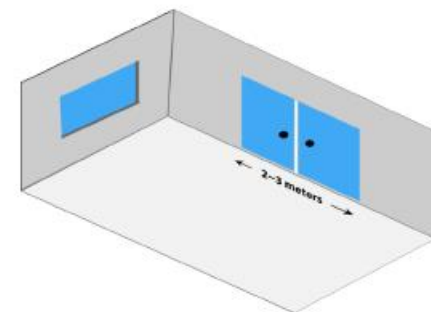


First Choice for Security Professionals

HCSA 349

Installation recommendation

HIKVISION



How to define the camera number?

It requires one camera for a standard entrance door of width between 2 ~ 3m and height between 2.5~5m.
* The real camera's effective coverage varies based on camera's focal length as the table shows.

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HCSA 350

Installation Recommendation

IDS-2CD6810P/C



HIKVISION

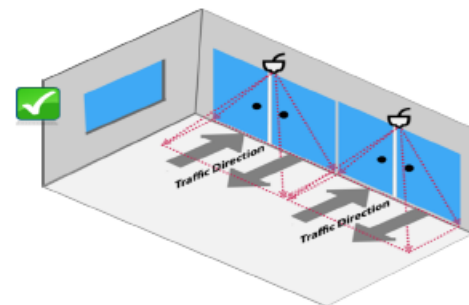
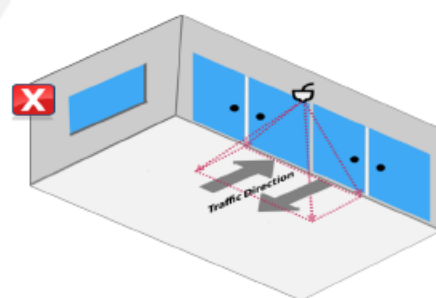
Height (m)	Recommended Focal Length (mm)	Width of Door (m)
2.5	2.0	1.8
3.0	2.0	2.9
3.5	2.0	4.0
4.0	2.0	5.2
3.0	2.8	2.2
3.5	2.8	3.1
4.0	2.8	4.0
4.5	2.8	4.8
4.7	2.8	5.2
4.0	4.0	2.8
4.5	4.0	3.4
5.0	4.0	4.0
5.5	4.0	4.6
6.0	4.0	5.2

First Choice for Security Professionals

HCSA 351

Installation Recommendation

HIKVISION



How to define the camera number?

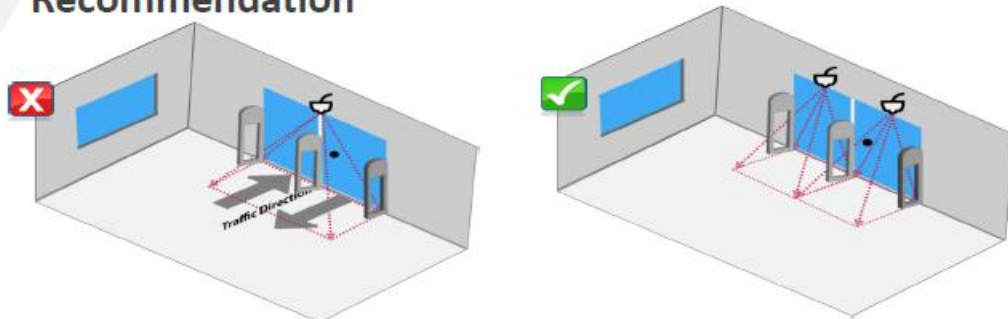
The number of cameras should be increase if:
- The target door is wider than camera's effective coverage.
* camera's effective coverage is defined by the detection line via IE client or IVMS software instead of camera's physical FoV.

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HCSA 352

Installation Recommendation

HIKVISION



How to define the camera number?

- The number of cameras should increase if:
- There are obstacles in camera's FoV, such as anti-theft detector, turnstile etc. which cover the most part of target people.

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HCSA 353

Installation Requirements

HIKVISION



First Choice for Security Professionals

HCSA 354

Contents

HIKVISION

- Behavior Analysis
 - Overview
- People Counting
 - Installation
 - Configuration
- Heat Mapping

First Choice for Security Professionals

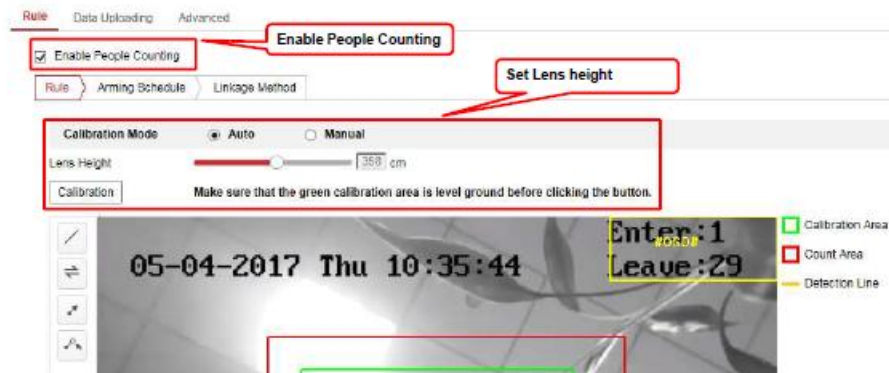
HCSA 355

People Counting on web browser

IDS-2CD6810F/C

HIKVISION

- Configuration > People Counting



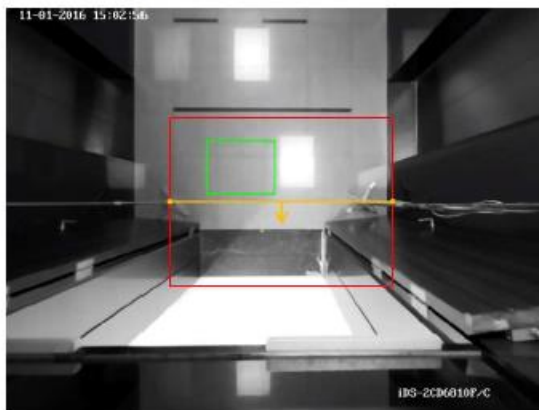
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HCSA 356

People Counting on web browser

iDS-2CD6810F/C

- Configuration > People Counting



- Draw a Detection Line to define a valid range;
- Arrow points to the direction of entering;
- In manual calibration, we need set the height of camera
- In auto calibration, we need draw a green square aimed at any area of the flat floor for calibration

1 Detection line (yellow)

2 Detection Area (red)

3 Calibration Area (green)

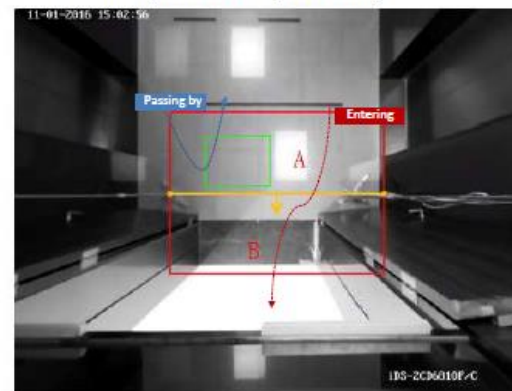
First Choice for Security Professionals

HCSA 357

People Counting on web browser

iDS-2CD6810F/C

- Configuration > People Counting



First Choice for Security Professionals

- "Enter quantity" adds 1 if one target appears in "A" region, crosses the yellow line, and then disappears from "B" region. On the contrast, "Exit quantity" adds 1. If targets just pass through A region, then "pass by quantity" will increase.

HCSA 358

People Counting on web browser

iDS-2CD6810F/C

- Configuration > People Counting

Rule: Data Uploading Advanced

☒ Real-Time Upload Data

Real-time Upload Data

Data Statistics Cycle: 60min

Send Report: ☒ Daily Report ☐ Weekly Report ☐ Monthly Report ☐ Annual Report

HTTP Data Transmission

IP	URL	Port
10.16.135.102	/	80
0.0.0.0	/	80
0.0.0.0	/	80

Save

First Choice for Security Professionals

HCSA 359

People Counting on web browser

iDS-2CD6810F/C

- Configuration > People Counting

Rule: Data Uploading Advanced

Flow Overlay: Enter/Leave

☐ Display Info. on Stream

☐ Display Height

☒ Enable Height Filter

Height: 120 cm

Counting Status: Counting(2017-05-04 10:38:17) Refresh

Daily Reset Time: 00:00:00 Manual Reset

Clear Storage Data: Clear Clicking the Clear button will clear all the saved people counting data, please select it with caution.

Save

First Choice for Security Professionals

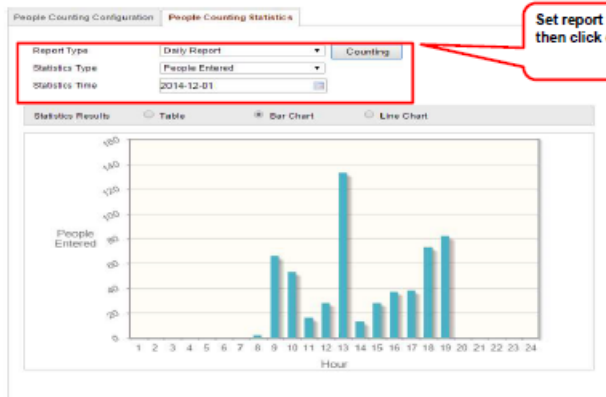
HCSA 360

People Counting on web browser

IDS-2CD6412FWD/C & IDS-2CD6124FWD-I(Z)C

HIKVISION

- Click Counting to export the data.
- Select to export the Statistics Result as Table, Bar Chart, or Line Chart.



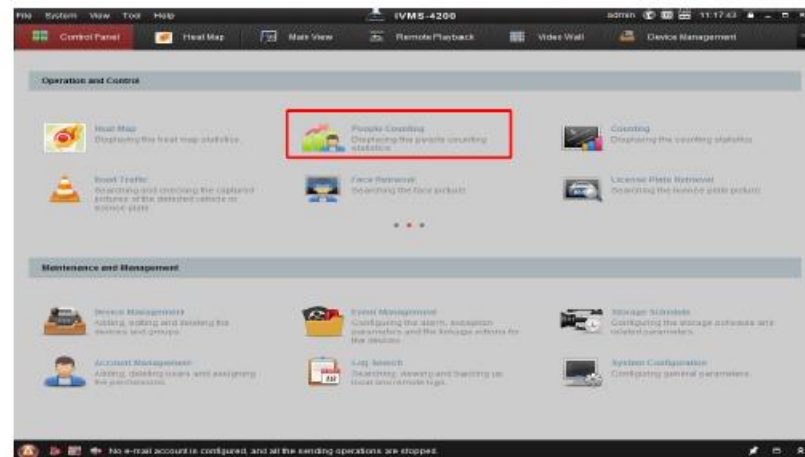
First Choice for Security Professionals

HCSA 361

People Counting on iVMS-4200

HIKVISION

- Click the people counting icon on the control panel to open the people counting page.



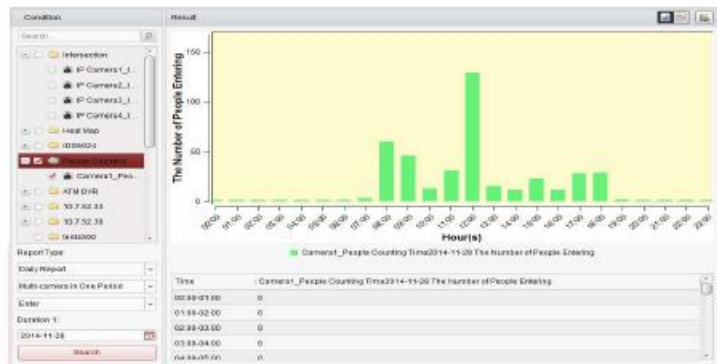
First Choice for Security Professionals

HCSA 362

People Counting on iVMS-4200

HIKVISION

- Select the report type as needed and set the time.
- Select Enter, Exit, or Enter and Exit as the data type.
- Select the camera(s) for generating the report.
- Click Search and the statistics display on the right panel. The detailed data for each hour, day or month will be also displayed.



First Choice for Security Professionals

HCSA 363

People Counting on Local NVR

HIKVISION

- Enter the People Counting interface: Menu>VCA Search> People Counting
- Select the camera, report type and time.
- Click the Counting button.



First Choice for Security Professionals

HCSA 364

Contents

HIKVISION

- Behavior Analysis
 - People Counting
 - **Heat Mapping**
- Overview
 - Product & Installation
 - Configuration
 - Statistics Report

First Choice for Security Professionals

HCSA 369

Heat Mapping Camera

HIKVISION



DS-2CD63X5G0-I(V)(S)

- 6MP/12MP
- 360° view angle
- Up to 15m IR range
- Built-in microphone & speaker
- Deep Learning Algorithm

First Choice for Security Professionals

HCSA 370

Installation

HIKVISION

Objective: cover the biggest view in the area.



First Choice for Security Professionals

HCSA 371

Contents

HIKVISION

- Behavior Analysis
 - People Counting
 - **Heat Mapping**
- Overview
 - Product & Installation
 - Configuration
 - Statistics Report

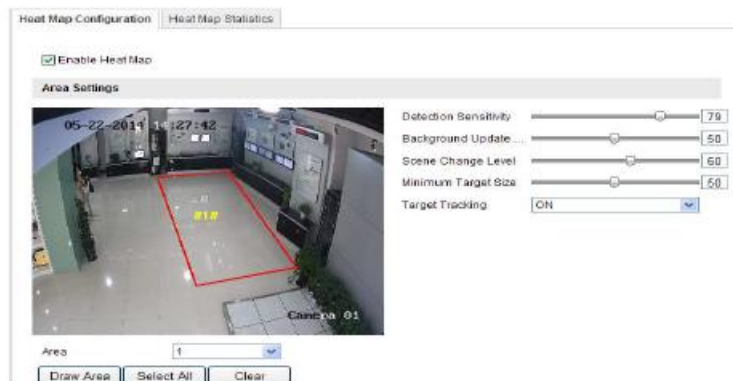
First Choice for Security Professionals

HCSA 372

Heat Mapping Operation

HIKVISION

- Configuration > Advanced Configuration > Heat Map
 - Enable heat mapping function and draw the detected area.



First Choice for Security Professionals

HCSA 373

Contents

HIKVISION

- Behavior Analysis
 - Overview
 - Product & Installation
 - Configuration
 - Statistics Report
- People Counting
- Heat Mapping

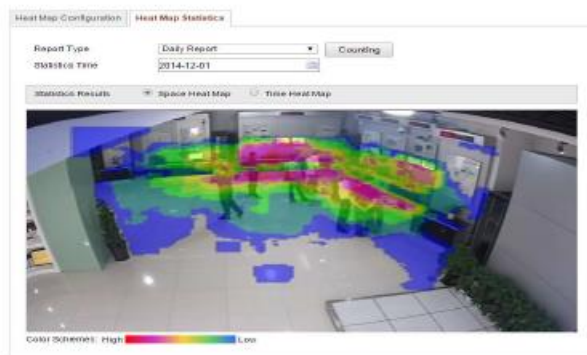
First Choice for Security Professionals

HCSA 374

Heat Mapping Operation

HIKVISION

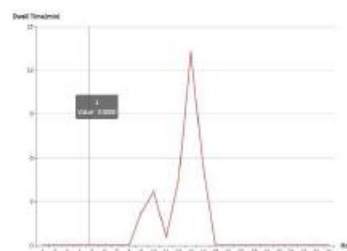
- Click Counting to export the data.
- Select Statistics Result as Space Heat Map or Time Heat Map, and the corresponding heat map will be displayed.
- As shown in the figure above, red color block indicates the most welcome area, and blue color block indicates the less-popular area.



First Choice for Security Professionals

HCSA 375

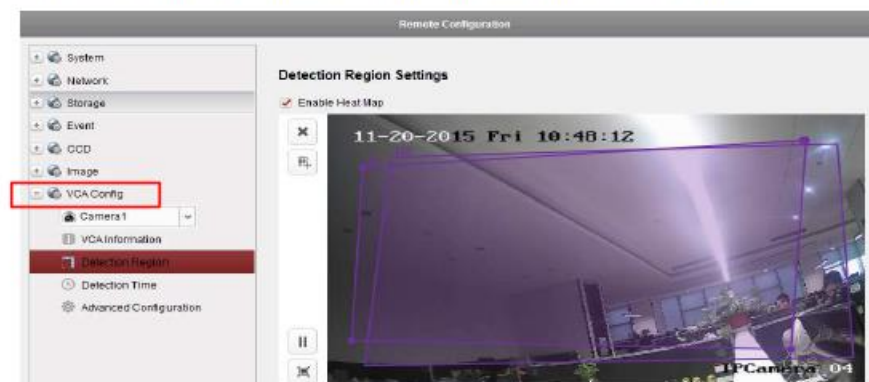
- You can get people flow and know when is the rush hour.



Heat Mapping on iVMS-4200

HIKVISION

- Add a heat mapping network camera.
- Configured heat mapping rule: Device management-remote configuration-VCA configuration



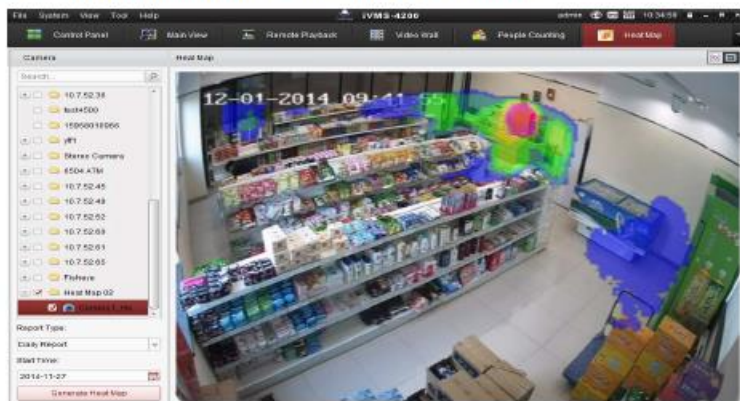
First Choice for Security Professionals

HCSA 376

Heat Mapping on iVMS-4200

HIKVISION

- Click to select a heat mapping camera in the area panel.
- Select the report type as needed and set the start time.
- Click **Generate Heat Map** and the heat map of the camera displays.



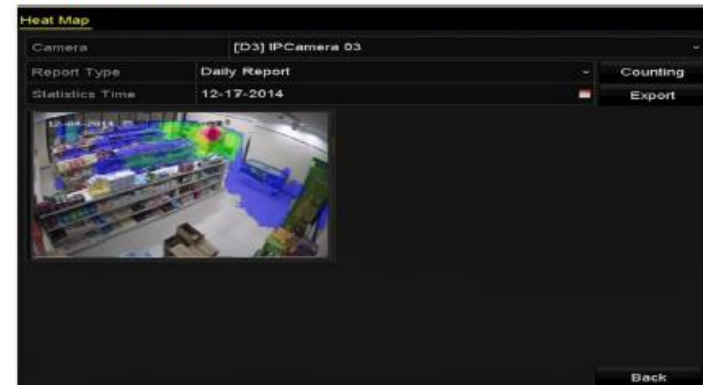
First Choice for Security Professionals

HCSA 377

Heat Mapping on Local NVR

HIKVISION

- Enter the Heat Map interface: Menu>VCA Search> Heat Map
- Select the camera, report type and time.
- Click the **Counting** button to export the report data and start heat map statistics, and the results are displayed in graphics marked in different colors.



First Choice for Security Professionals

HCSA 378

Thanks!

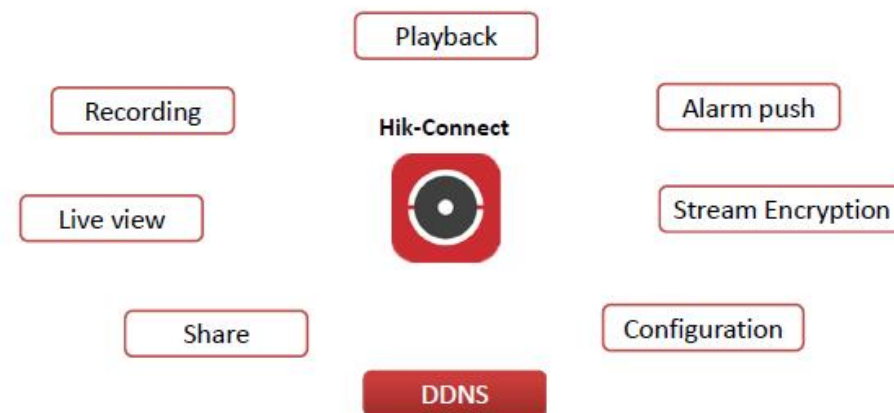
HIKVISION

First Choice for Security Professionals

HCSA 379

Functions of Hik-Connect

HIKVISION

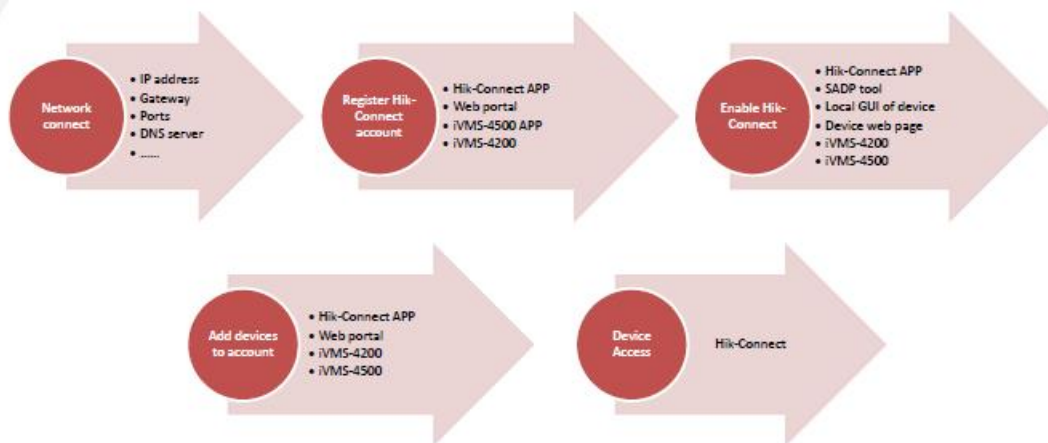


First Choice for Security Professionals

HCSA 380

How to Use Hik-Connect?

HIKVISION



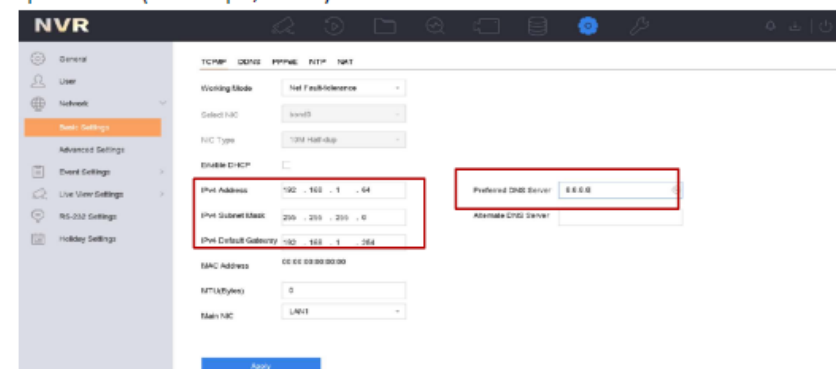
First Choice for Security Professionals

HCSA 381

How to Use Hik-Connect? *Network Connect*

HIKVISION

Setup IP address, gateway, ports, etc. on device network configuration to open internet access.
Setup DNS server(for example, 8.8.8.8).



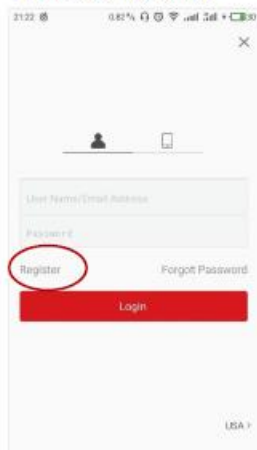
First Choice for Security Professionals

HCSA 382

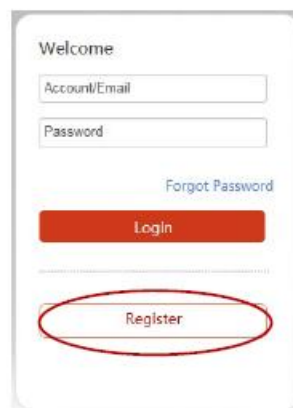
How to Use Hik-Connect? *Register Account*

HIKVISION

1. Hik-Connect APP



2. Web Portal



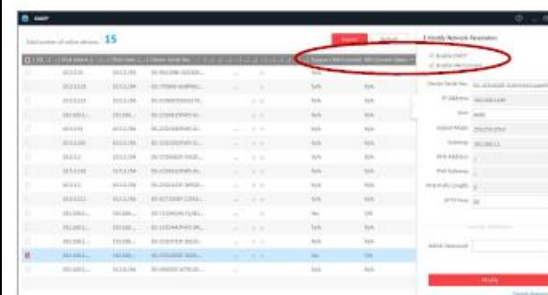
First Choice for Security Professionals

HCSA 383

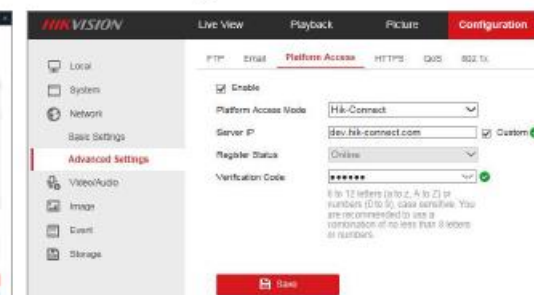
How to Use Hik-Connect? *Enable Hik-Connect*

HIKVISION

1. SADP tool



2. Device Web Page



Hik-Connect function is disabled by default, you need to enable it manually if needed.

First Choice for Security Professionals

HCSA 384

How to Use Hik-Connect? *Enable Hik-Connect*

HIKVISION

3. Local GUI



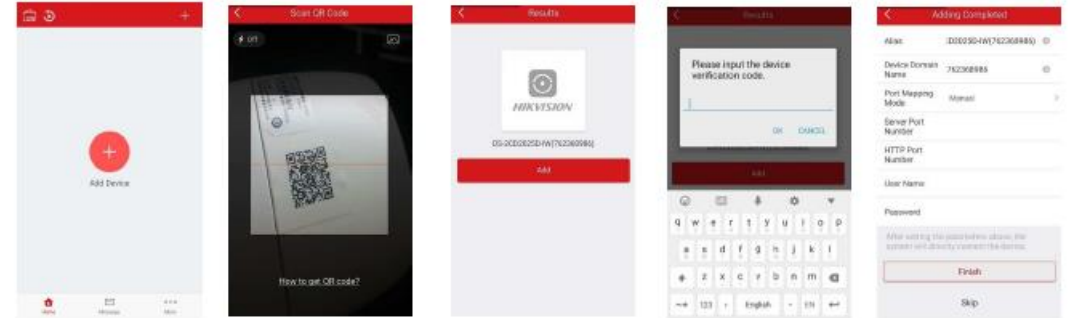
First Choice for Security Professionals

HCSA 385

How to use Hik-Connect? *Add Devices*

HIKVISION

This is the whole procedure of adding device in Hik-Connect

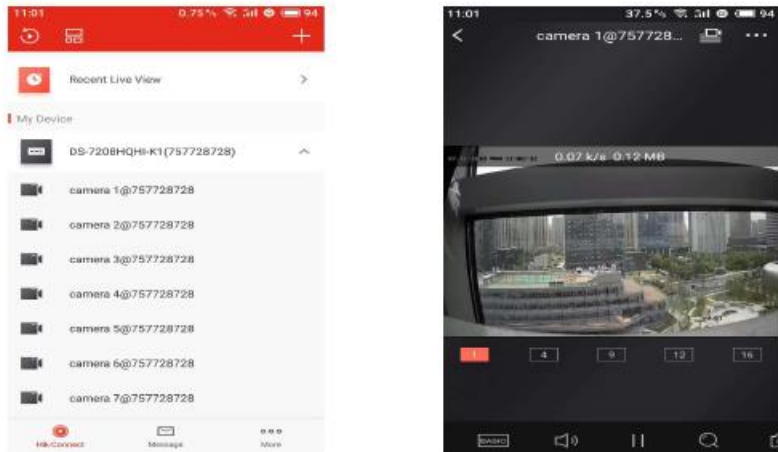


First Choice for Security Professionals

HCSA 386

How to Use Hik-Connect? *Device access*

HIKVISION



First Choice for Security Professionals

HCSA 387

How to Use Hik-Connect? *Device access*

HIKVISION

Login www.hik-connect.com and click "Copy" button to copy the device domain name URL, and paste it to a new web page to access the device.
You can also click the IP/Port No. link to access your device via web automatically.



First Choice for Security Professionals

HCSA 388

How to Configure Port Forwarding?

HIKVISION

Step 2: input external server port and http port on Hik-Connect web portal or HC APP

Edit Device Information

*Device Domain: 762368986 ?

Device Serial No.: 762368986

UPnP Mode: ☒ Auto ☐ Manual

Select manual mode, and you should input the port No. from the device. To get the port number, automatically, select auto mode.

*Server Port Number: 8000

*HTTP Port Number: 80

Cancel OK

Device Information

Device Information: 762368986

Port Mapping Mode: Manual

Server Port Number: 8000

HTTP Port Number: 80

Share Device: >

Manage Sharing Settings: >

Save

First Choice for Security Professionals

HCSA 389

How to Configure Port Forwarding?

HIKVISION

Method 2: enable NAT on device

NVR

General User Network **Network Settings** Advanced Settings Event Settings Live View Settings RS-232 Settings Holiday Settings

Enable ☒ NAT

Apply: Manual

Port Type	Edit	Source Port	External IP Address	Port	UPnP Status
HTTP Port	<input checked="" type="checkbox"/>	0		0	Inactive
RTSP Port	<input checked="" type="checkbox"/>	0		0	Inactive
Server Port	<input checked="" type="checkbox"/>	0		0	Inactive
HTTPS Port	<input checked="" type="checkbox"/>	0		0	Inactive

Refresh

Apply

First Choice for Security Professionals

HCSA 390

How to Configure Port Forwarding?

HIKVISION

Hik-Connect APP also support edit device information after adding. Go to Device Information and input Ports, User Name and Password

Settings

Date Format: MM-DD-YYYY

Alarm Notification: Disable >

Storage Status: >

Device Version: V5.4.7 build 171128
No new version available.

Image and Video Encryption: ☒ ON

Change Verification Code: >

Device Information: Inactive >

Delete Device

Edit Device

Device Domain Name: 762368986

Port Mapping Mode: Manual >

Server Port Number: 8000

HTTP Port Number: 80

User Name: admin

Password:

First Choice for Security Professionals

HCSA 391

Thanks!

First Choice for Security Professionals

HCSA 392