

Installation and Configuration Guide for Dual-Lens Face Recognition Camera

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Chapter 1 Installation Specifications

1.1 Installation

The accuracy rate of face recognition can be superb, depending on the installation location. The ambient light should not be too bright or too dark. The following steps will guarantee better results:

- 1) The camera should be installed at entrances/exits to typical passageways, so as to ensure that the people that are walking by are facing the desired direction, and their faces can be captured as they enter/leave the passageway.
- 2) Select lighting conditions that provide adequate illumination. Light compensation is necessary to ensure that facial features are visible under conditions with insufficient light or backlight.



Suitable scenario:

Unsuitable scenario:



Backlight



Lack of light

1.2 Camera Installation Requirements



Installation diagram

For optimal face capture, the camera installation position should be selected as follows:

- 1) The camera should be installed in front of the desired passageway. The horizontal angle of deflection should be less than 25°.
- 2) The camera should be installed at an elevated angle, which prevents partially obscured faces from being undetected when people walk through a passageway behind one another. The vertical elevation angle should meet the following requirement: $\alpha = 15 \pm 5^{\circ}$.
- 3) The covered PD (Pupil Distance) pixels need to be larger than 40 pixels in order to distinguish the face details from the captured image. The practical face detection width should be less than or equal to 3 meters, when combined with a 2 MP camera.
- 4) Make sure that there is no obstruction between the camera lens and the passageway.



Suitable scenario:



Dip Angle too large

Unsuitable scenarios:



Elevated capture



Scenario too wide



Inclined installation with obstacle



Scenario is too large, resulting in a low face recognition rate

1.3 Camera Lens Selection

- 1) Cameras, focal lengths, and monitoring widths are key points that affect distance and installation location. They can be converted amongst each other, as follows:
- 2) Focallength: f = 1.8 x D

- 3) The height of the camera: $H = tan (a^{\circ}) \times D + 1.5$
- 4) D = monitoring distance
- 5) The camera should not be more than 1.5 m above the typical subject's head height.
- 6) α = elevation angle
- 7) An elevation angle of 10° is recommended, i.e. $\tan (10^\circ) \approx 0.18$, $\tan (15^\circ) \approx 0.27$, $\tan (20^\circ) \approx 0.36$

1.4 Installation Position and Lens Query Table

Camera Model	Monitoring Width W	Lens Focal Length	Monitoring Distance	Installation Height of Camera	Elevation angle α°
200W	3.0m	4mm	2.2m	1.9m-2.3m	15°±5°
200W	3.0m	8mm	4.4m	2.3m-3.1m	15°±5°
200W	3.0m	16mm	8.9m	3.1m-4.7m	15°±5°

Chapter 2 Camera Configuration

2.1 Configuration in Internet Explorer

1) Enter **Configuration** and click on **Local**. Set **Play Performance** to fluent. Enable **Rules**. Click **Save** when finished with configuration, as shown below:

HIKVISION	Live View Playback	Picture	Application	Configuration		👤 admin 🛭 🚯 Help	E+ Logout
							^
Local	Live View Parameters						
System	Protocol	TCP		O MULTICAST	O HTTP		
Network	Play Performance	O Shortest Delay	O Balanced	 Fluent 			
Video/Audio	Rules	Enable	 Disable 				
Image	Feature Information Overlay	 Enable 	 Disable 				
Event	Image Format	JPEG	⊖ BMP				
🖺 Storage	Record File Settings						
CA VCA	Record File Size	○ 256M		○ 1G			
	Save record files to	C:\Users\wuhui5	@hikvision.com\W	Veb\RecordFiles	Browse Ope	:n	
	Save downloaded files to	C:\Users\wuhui5	@hikvision.com\W	/eb\DownloadFiles	Browse Ope	n	
	Picture and Clip Settings						
	Save snapshots in live view to	C:\Users\wuhui5	@hikvision.com\W	/eb\CaptureFiles	Browse Ope	n	_
	Save snapshots when playback t	C:\Users\wuhui5	@hikvision.com\W	/eb\PlaybackPics	Browse Ope	Note	×
	Save clips to	C:\Users\wuhui5	@hikvision.com\W	/eb\PlaybackFiles	Browse Ope	n	
	🖹 Save		©Hikvisior	n Digital Technology Co., Ltd.	All Rights Reserved.	Save s	ucceeded.

- 2) Proceed as follows: Configuration -> VCA -> Rule. Click Rule. Configure the Minimum Pupil Distance and Detection Area. Click Save when finished with the configuration.
 - a) Minimum Pupil Distance: Minimum size filter box, which is used to control the size of the captured face. A maximum size box will be generated by default. A rectangular box is generated as a function of the distance between the eyes and mouth. The Minimum Pupil Distance should be set up by drawing the box instead of entering the number directly. A Minimum Pupil Distance is required for face pictures to be captured successfully. Different image resolutions require different box sizes. With 1080p resolution as an example, the Minimum Pupil Distance should not be less than 40. A value of 60 is recommended.
 - b) Rules: Draw a rectangle or polygonal (up to 10 sides) face detection area. The minimum value should be 28 x 28 pixels. The maximum size covers the entire screen. The detection area should be drawn as half of the screen area size, with no more than two-thirds of the picture.



- 3) Advanced Configuration: Advanced Configuration parameters are generally set to default. To perform manual comparison, or to compare captured images with those stored in the "Face Recognition NVR", change "Capture Times" to 5, which increases the number of uploaded face pictures. Click "Save" once finished.
 - **Generation Speed** controls the target generation speed in the detection region. The higher the value, the faster the target will be generated.
 - **Capture Time** is used to set up the number of capture times in the detection area from when the face enters to when it leaves the area.
 - **Sensitivity** is used to control face detection sensitivity. The higher the sensitivity, the easier it is to detect a face.
 - **Capture Interval** captures face images every few frames during the process from entering to leaving the detection area. The quality of the captured image is highest among these few frames.
 - **Capture Sensitivity** is used to set the score threshold of a captured picture. The face image can be captured only when the score is greater than or equal to the threshold.

2.2 Configuration via iVMS-4200

- 1) A storage server must be installed if the camera does not support SD cards.
- 2) Configure the storage server. Proceed as follows: Remote Configuration -> Storage -> General.

a) Format the hard drive.

Control Panel Device	Management								
Organization	Device for Management (1)							
Encoding Device/Door Station	🕂 Add Device 🛛 M	odify 🗙 Delete	Remot	e Confi 🌼 🤇	CVR Configura	🏶 SAN C	Configura	Filter	5 48
📑 Storage Server	Nickname IP	Device	Serial No.			Net Status			
🕂 Add New Device Type	face 10.5.3.1	.02 DS-NV	R-V120B201607	713-68F728C1949C		8			
🖃 🌚 System		Configuring	the HDD P	arameters					
🕒 🐨 System	information	Configuring	the HDD P	arameters					
Seperal		HDD No.	Capacity(GB)	Free Space(GB)	Status	Type	HDD Group	Property	
S Time		J D	122.01	0.74	Normal	Local	Group00	Read/Write	
ime inte		E	122.01	92.19	Unformatted	Local	Group00	Read/Write	
System	Maintenance	🗆 F	121.72	78.48	Unformatted	Local	Group00	Read/Write	
👑 Log		P	50.00	32049.85	Unformatted	Local	Group00	Read/Write	
🛞 User		Z	3071.87	76.31	Unformatted	Local	Group00	Read/Write	
🖈 🚳 Network									
🖃 🚳 Storage		Format	Up	odate					
🔅 General									

b) Configure the Quota Ratio for record and picture.

	Storage Mode:	Quota	~	
_	Total Capacity:	3487.62		GB
	Quota Ratio For Record:	30	*	%
	Quota Ratio For Picture:	70	*	%
G	Quota Ratio For Addtiona	0	*	%

3) Enter the **Control Panel** and click on **Storage Schedule**. Configure the **Capture Schedule** and check **Picture Storage**.

E Control Panel 👼 Sto	rage Schedule 🚪 🚔	Device Management		
Camera	Storage Schedule			Copy to 🛛 🖬 Save
Search) General_face	Storage of Encoding Se Recording Schedule: Capture Schedule:	All-day Template	Edit Advanced Settings Edit Advanced Settings	
	Storage Server Storage Server: Storage Content:	 ☐ face ✓ ✓ Recording Schedule ✓ Picture Storage △ Additional Information Storage 	Storage Server Management Template 01 V Edit Storing the alarm pictures of the camer	Advanced Settings
	Storage Quota:	Record Quota:30% Picture Quota Ratio:70% Additional Information Quota:0%	Set Quota	

 Enter Device Management and click on Remote Configuration. Face detection function can be configured by expanding the VCA Config menu. Web configuration proceeds in the same way.



2.3 Configure Face Picture Library via Internet Explorer

 Enter Application and proceed to Face Picture Library Configuration. Click "+" to create face library. NOTES: Only 3 face libraries can be created.

HIKVISION	Live View	Playback	Picture	Application	Configuration		
Face Picture Comparison Sta	tistics Face Picture Lil	orary Configuration					
Face Picture Library	+						
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234	City	Not specified	✓ IC	O Type Not s	pecified	~	ID No.
hello	Date of Birth: Fr	2017-09-29	2	Sea	Reset		

2) After clicking add, configure the Face Picture Library Name and Threshold.

NOTES: The threshold value is used to define the comparison similarity. When the similarity is equal to,

or higher than the threshold, the camera will push the compared alarm picture to the NVR or IVMS-4200.

For example, if the threshold is set to 70, the comparison alarm picture will only be uploaded if the similarity percentage is 70% or higher. The suggested threshold is 60, and it is necessary to reboot the device after the threshold is modified.

Face Picture Library Name Test Threshold 60 Remarks Import OK Cancel 3) Import the face picture. Click Add to add pictures one at a time. Import Import Add Modify Delete Batch Modeling Modeling : Unknown Succe Click Import to batch import images. Date of Birth: Fr 1970-01-01 Import Add Modify Delete Batch Modeling Modeling Import Add Modify Delete Batch Modeling Modeling	Add		
Threshold 60 Remarks OK OK Cancel 3) Import the face picture. Click Add to add pictures one at a time. Import Add Modify Delete Batch Modeling Modeling ID Type ID No. Modeling Succe Click Import to batch import images. Date of Birth: Fr Import Add Modify Delete Batch Modeling Modeling Import Add Modify Delete Batch Modeling Modeling ID Type ID No. Modeling Modeling ID Type ID No.	Face Picture Library Name	Test	
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OK Cancel a) Import the face picture. Click Add to add pictures one at a time. Import Add Modify Delete Batch Modeling Modeling ID Type ID No. Modeling Status Click Import to batch import images. Import Add Modify Delete Batch Modeling Modeling Modify Delete Batch Modeling Modeling Import Add Modify Delete Batch Modeling Modeling ID Type ID No.	Remarks		\bigcirc
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ID Type ID No. Modeling Status	Import	Modify Delete Batch Me	odeling Modeling
	ID Type	ID No.	Modeling Status
Unknown Succeed	Unknown		Succeed

2.4 Configure Face Picture Library via IVMS-4200

1) Proceed as follows: Device Management -> Remote Configuration -> Face Picture Library -> Face Picture Library Configuration.

Control Panel 🗾 Storage	Schedule	📥 Devi	ce Manageme	nt				
Server 🗃 Group								
Organization	Device for Manag	gement (1)						
Encoding Device/Door Station	+ Add Device	🗹 Modify	🗙 Delete	🌣 Remote 🏼 🇱 QR Code	Activate	💄 Online U	🕂 Refresh All Fil	ter
🖪 Storage Server	Nickname	IP	Devic	e Serial No.		Security	Net Status	HDD
+ Add New Device Type	face	10.5.3.64	iDS-20	CD8426G0/F-I20170722AAWR801	311905	Weak	0	٥

2) Add a new Face Picture Library.

	Remote Configuration	×
System Device Information General	Configure Face Picture Library Face Picture Library 123 Add Modify Delete Import File Export File Batch M	
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 	S Add × Modeling + Face Picture Library Name test No. Modeling Status	
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 Metwork 	OK Cancel	
 ♥		*
 Face Picture Library Configuration VCA Config 		-

3) Add or import the picture to the face to the picture library.

Add one image at a time:

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ID Type	Not speci 👻 ID No.		Date of Birth	: 1970-01-01 🛅 То	2017-09-30
Modeling Status	Not speci 🛩				Restore Co
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		Province		~	
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		ID No.			

Batch Import:

Name	Gender Not speci	✓ Province Not speci ✓ City	Not speci.
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	📕 RunInWin32	2017/9/30 10:23	File
ز Libraries	📃 🔋 qss	2017/9/30 10:21	File
Documents	plugins	2017/9/30 10:21	File
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J Music	-		File
J Music	platforms	2017/9/30 10:21	
J Music ■ Pictures Subversion	platforms pic	2017/9/30 10:21 2017/9/30 10:21	File
Music Pictures Subversion	platforms pic	2017/9/30 10:21 2017/9/30 10:21	File

2.5 Results

1) In IVMS-4200, proceed as follows: Tool -> System Configuration -> Image. Set Play Performance to Balanced.



2) Enter the Alarm Event. Click the " O " button to check face comparison results.



A 28 4• A 10/231988							
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			a Biotometrican				

Face comparison results are shown below. They show Age and Similarity information in iVMS-4200.

NOTES: In order to be displayed, Name and Gender information need to be edited when they are being added or imported to the face picture library.



3) Captured face pictures can be exported in iVMS-4200 or in the web client.

a) In IVMS-4200, click Control Panel and proceed to Log Search.

le System View Tool Help		💩 iVMS-4200) (cherry 🚯 🗰 🛗 17:13:55 🔒 🗕 🗖
Control Panel	Log Search 🛛 🚮 Face P	Picture Comparison Alarm	🚨 Alarm Event 🥽	Storage Schedule
og Search	Client Log Lists		🗃 Export Picture	🔁 Log Filter 🔀 Backup Log
 Client Logs Server Logs 	Filter by Keyword:Filter by Condition:	Filter		Clear Filter More
tart Time: 2017-09-11 00:00:00	Log Type: Description Information:	All	 ✓ ✓ 	Filter
nd Time:	Operation Time User N	Name Log Type	Description Info Device Name	Device Type Details Group
2017-09-11 23:59:59 📩	✓ 2017-09-11 16:55:40 cherry	Operation Log	Modify Storage face	Storage Server
O Search	2017-09-11 16:21:55 cherry	Operation Log	Add Storage Ser face	Storage Server
	2017-09-11 16:21:33 cherry	Operation Log	Delete Storage Face Recognition	Storage Server

4) In the Web client, click on **Application** and proceed to **Face Picture Comparison Statistics**. Input the Start and End time, and click search.

