

# Face Detection

## Introduction

Face Detection DVR includes one or more channel with face detection algorithm. It can analyze video signal and identify faces in images but ignore other information.

Device can detect and keep track of three faces in the image, and also save the face image of the best quality of the whole tracking process.

Device can simultaneously capture and store images, and keep record of the activity duration of the face. In the meantime, the device enables alarm triggering, mail, push alarm etc.

*Note: Face detection is to detect faces in arbitrary image but not to recognize. Face detection relies on position of the camera and quality of images, so it's not absolutely accurate.*

## Choice of Camera

There is no special requirement over the cameras used for face detection.

Any analog camera suitable in CCTV system can be used.

High **resolution**, good **WDR performance** and good **low illumination** characteristics are helpful for face detection.

Generally, cameras need to meet the following key parameters:

- **SNR:** > 50dB
- **Low Illumination:** < 0.05Lux
- **TVL:** >480 lines

## Mounting Angle of Camera

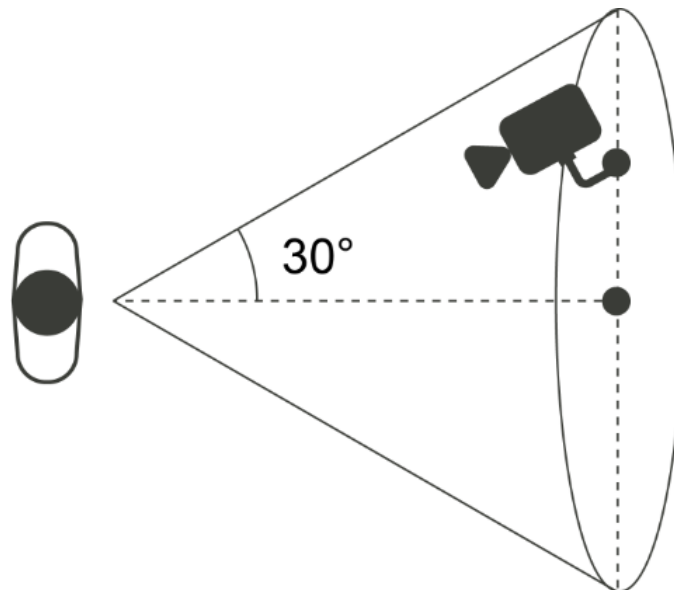
Face detection algorithm can tolerate up to 45 degrees angle error.

Certainly, clear face images will reduce omissions.

## Horizontal Angle

The horizontal angle means the angle between camera and horizontal direction of positive direction face. **The limit should below 45 degrees.**

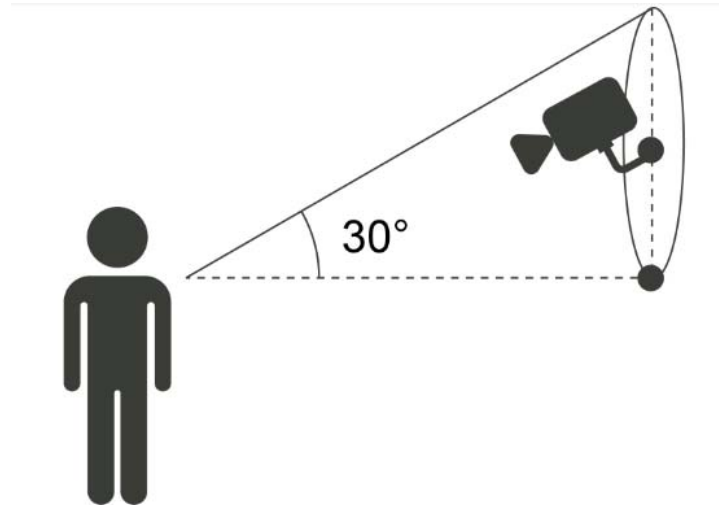
**It is recommended not to exceed 30 degrees.**



## Vertical angle

Vertical angle means the angle between camera and vertical direction of positive direction face. **The limit should below 45 degrees. It is**

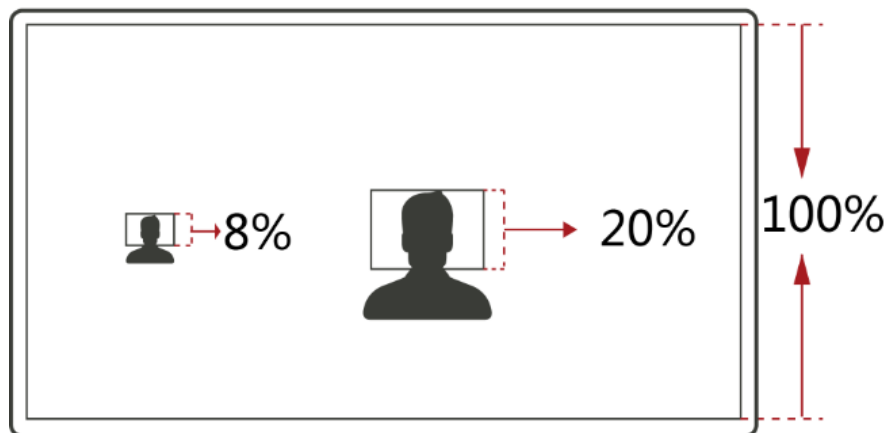
**recommended not to exceed 30 degrees.**



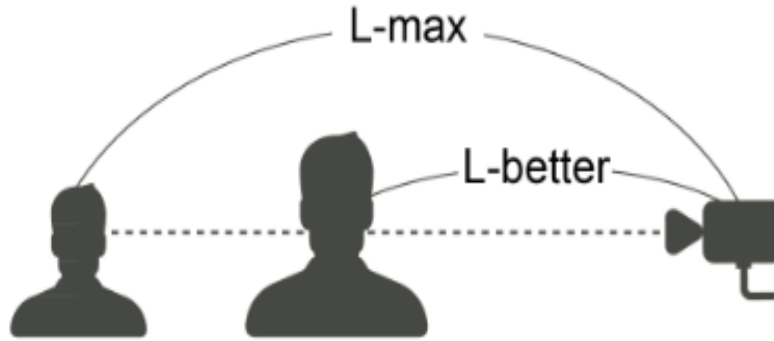
## Cameras Distance and Lens Focal Length

The proportion of face in the screen is a critical factor for face detection.

The minimum height of face should be more than **8% of the screen** and **recommended height is 20% of the screen**.



Through above requirements, you can figure out how to choose the lens according to the size of cameras' sensor.



### 1/4 Inch Camera

Camera lens	2.8mm	6mm	8mm	12mm	16mm
Farthest distance	2.5m	5.3m	7.1m	10.7m	14.2m
Recommended distance	1m	2.1m	2.8m	4.3m	5.7m

### 1/3 Inch Camera

Camera lens	2.8mm	6mm	8mm	12mm	16mm
Farthest distance	1.9m	4m	5.3m	8m	10.7m
Recommended distance	0.7m	1.6m	2.1m	3.2m	4.3m

There are several cases in which camera and face distance should be appropriately reduced:

- **There is tilt angle in camera and face.**
- **Camera resolution is poor.**
- **Light is poor in face.**

- **Image is black and white.**

## Several Harmful Scenes

- **Strong Backlight**

In strong backlight scenes, it's better to choose good wide dynamic cameras.



- **Strong Point Light Source**

When there is strong point light source in scene, you can turn off automatic electronic shutter in camera to ensure the brightness of face normally.



- **Image Blur**

Blurred image will lead to a decline in success rate of detection.



- **Low Brightness**

When the image brightness is too low, it is recommended to use a camera with infrared supplemental lighting function.



- **Image Noise**

Image noise is harmful factor which should be avoided.



- **Camera Lens Deformation**

When the obvious image deformation caused by the lens will cause a decline in the successful rate.



- **Black and White Image**

When color information of the image is lost, the success rate of face detection will fall.



# Setting Guide

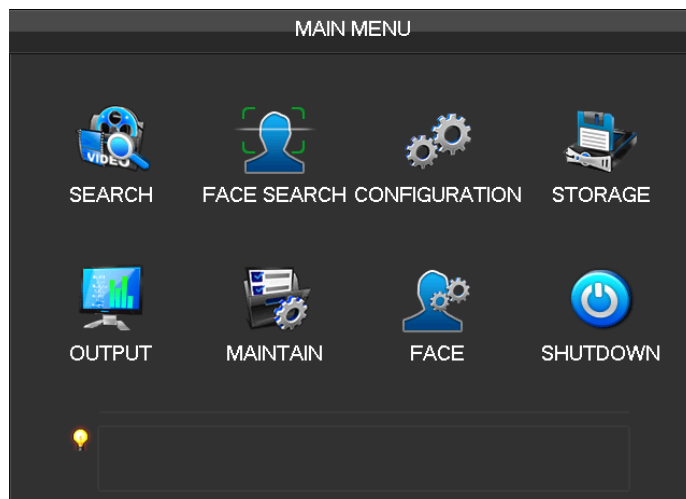
## Step 1 Main Menu

Enter main menu

**Face Search:** search face images and video data

**Face:** set face detection parameters

**Storage:** set cloud storage function



## Step 2 Set face detection area

Enter main menu and set face detection parameters.

**Red:** detection area

Once set, the device only detects the face detection area. False positives and underreporting can be effectively reduced by setting the detection area.

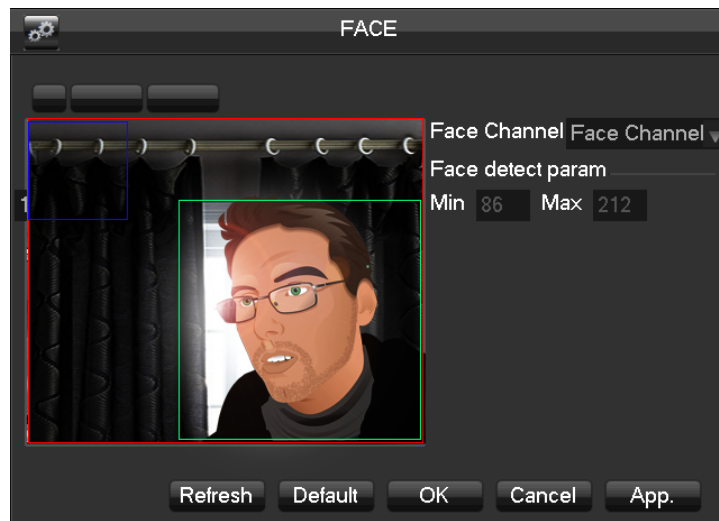
**Blue:** Minimum face



Minimum face means face minimum detection area. When the face is smaller than minimum detection area, it can't be detected.

**Yellow: Maximum face**

Maximum face means face maximum detection area. When the face is less than maximum detection area, it can't be detected.



### Step 3 Start work

Return to real-time monitoring page. Face images will be presented in the right of real-time monitoring screen. The face picture will be saved in HDD.



## Step 4 Face Search

Enter face search page, you can search recorded face information. Double click face pictures, then videos can be playback.



## Step 5 Extended Function

The device can upload face pictures automatically to cloud storage account by binding Baidu or Dropbox.

