# HIKCGI Image Display Function

HIKCGI Image Display Functions include: Text Overlay, Channel Name, Date /Time Display, Privacy Mask and Image Parameters Setting.



| Functions | Description |
|---|---|
| Text Overlay | Text overlay is user-defined characters. The content and position of text are adjustable. |
| Channel Name | Each camera can be designated for a channel name so as to distinguish it from other cameras. |
| Date/Time Display | You can adjust the display format of Date/Time; in addition, Date/Time display can be hided. |
| Privacy Mask | The function is used to set a private area in which the image can't be displayed on the screen so as to protect personal privacy from recording or live view. |
| Image Parameters | Image parameters include Brightness, Hue, Contrast, Saturation, Sharpness, WDR (Wide Dynamic Range), Day/Night auto switch, Image Flip and so on. |

The effect of image will be changed when you adjust front-end image parameters. Please refer to the following pictures:
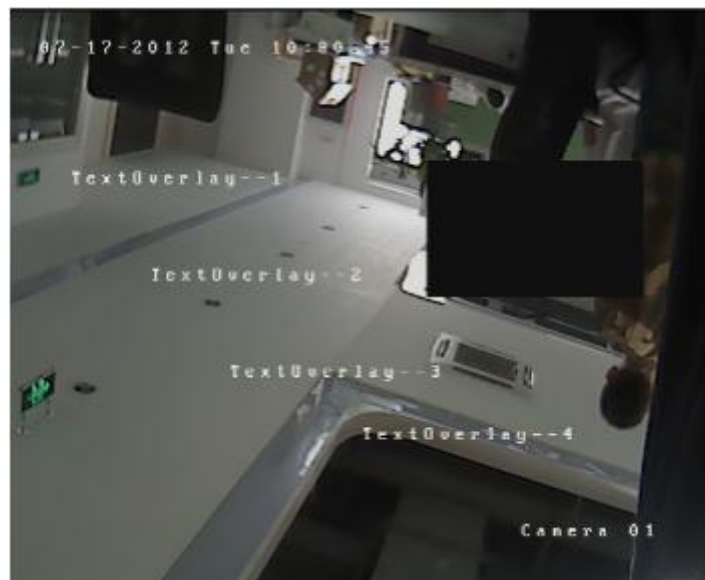
Day/Night Mode>Day Mode            Day/Night Mode>Night Mode

# 1 Text Overlay

In general, camera supports to overlay multiple texts and the position of each text is adjustable.



As shown above, there are four texts on the screen: TextOverlay--1, TextOverlay--2, TextOverlay--3, TextOverlay--4. You can get the number of text overlays by GET /Video/inputs/channels/ID/overlays/text.

## 1.1 Getting information of text overlay of the device

You can get a list of text overlays by GET /Video/inputs/channels/ID/overlays/text, and all the information related with text overlays will be listed.

"ID" in the command means Channel Number. In general, a camera just has a channel, NVR supports to access to multiple IP Cameras, so NVR has multiple channels.

(*Section 2.2.4* of *HIKCGI Integration Document* for reference)

*Example:*

```
GET /Video/inputs/channels/1/overlays/text HTTP/1.1
Host: 172.8.6.228
Authorization: Basic YWRtaW46MTIzNDU=
```

This command is used to request all the information of text overlaps of Channel 1. IP camera responses as follows:

```
HTTP/1.1 200 OK
Connection: close
Content-Length: 949
Content-Type: application/xml


<?xml version="1.0" encoding="UTF-8"?>
<TextOverlayList version="1.0"
xmlns="http://www.hikvision.com/ver10/XMLSchema">
    <TextOverlay version="1.0"
xmlns="http://www.hikvision.com/ver10/XMLSchema">
    <id>1</id>
    <enabled>true</enabled>
    <posX>64</posX>
    <posY>160</posY>
    <message>TextOverlay--1</message>
    </TextOverlay>
    <TextOverlay version="1.0"
xmlns="http://www.hikvision.com/ver10/XMLSchema">
    <id>2</id>
    <enabled>true</enabled>
    <posX>144</posX>
    <posY>256</posY>
    <message>TextOverlay--2</message>
```

```xml
    </TextOverlay>
    <TextOverlay version="1.0"
xmlns="http://www.hikvision.com/ver10/XMLSchema">
    <id>3</id>
    <enabled>true</enabled>
    <posX>224</posX>
    <posY>352</posY>
    <message>TextOverlay--3</message>
    </TextOverlay>
    <TextOverlay version="1.0"
xmlns="http://www.hikvision.com/ver10/XMLSchema">
    <id>4</id>
    <enabled>true</enabled>
    <posX>352</posX>
    <posY>416</posY>
    <message>TextOverlay--4</message>
    </TextOverlay>
    </TextOverlayList>
```

<TextOverlayLists> is a list in which all the information of text overlays is included. Each piece of information of text overlap is contained in a <TextOverlay>.

The information of text overlay can be displayed on the screen or not. If <enabled> is true, the information will be displayed on the screen, otherwise the information won't be displayed on the screen.

The position of each text overlay is adjustable.

    <posX> : Horizontal coordinate
    <posY> : Vertical coordinate

<posX> and <posY> use computer coordinate system. The origin of the coordinate system is on the upper left. The direction of Y axis is vertically downward and the direction of X axis is from left to right horizontally. The area of the coordinate is a normalization area. The resolution is 704*576 under PAL system and the resolution is 704*480 under NTSC system.
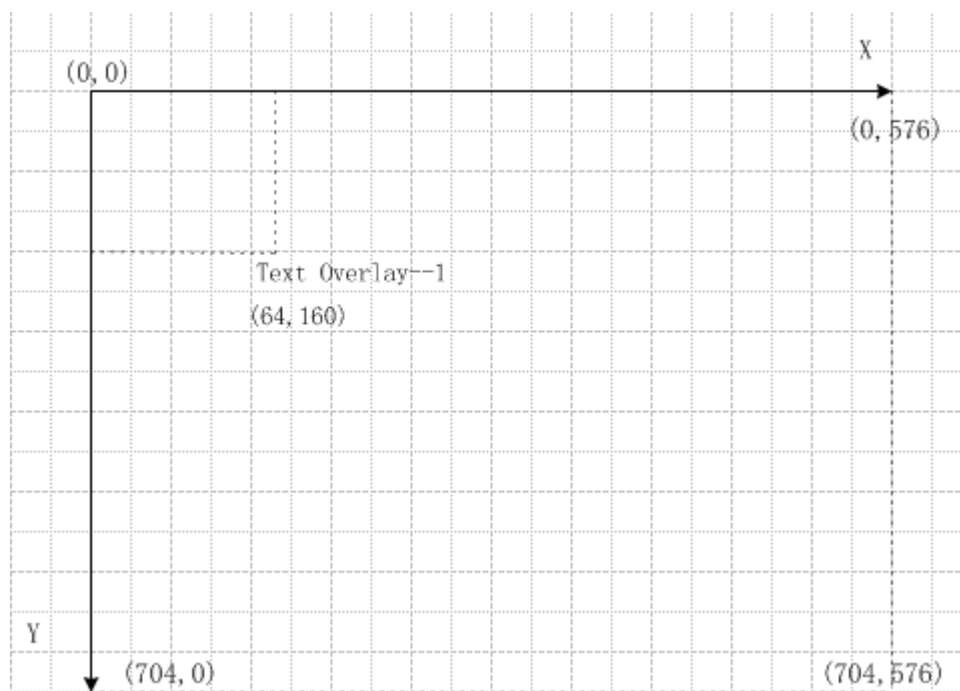
As shown above, the picture is a diagram of normalization area under the PAL system. The origin of coordinate system is on the upper left corner (0, 0). The coordinate value of lower right corner is (704,576). The direction of Y axis is from top to bottom vertically; and the direction of X axis is from left to right horizontally.

## 1.2 Setting the information of text overlay

You can set all the information of text overlays for a channel by PUT/Video/inputs/channels/ID/overlays/text, and modify the information by PUT/Video/inputs/channels/ID/overlays/text/ID.

*Example***:** you can change the first text into "TextOverlay--1 –Changed" and move the text towards the bottom of screen.

```
PUT /Video/inputs/channels/1/overlays/text/1 HTTP/1.1
Authorization: Basic YWRtaW46MTIzNDU=
Content-Type:text/xml
Content-Length:246


<?xml version="1.0" encoding="UTF-8"?>
<TextOverlay version="1.0"
xmlns="http://www.hikvision.com/ver10/XMLSchema">
<id>1</id>
<enabled>true</enabled>
<posX>64</posX>
```

```
<posY>200</posY>
<message>TextOverlay--1Changed</message>
</TextOverlay>
```

The above request is used to move the position of the first text from (64,160) to (64,200) and change the content of text into "TextOverlay--1Changed". After we send this request to IP camera successfully, the first text overlay is as follows:
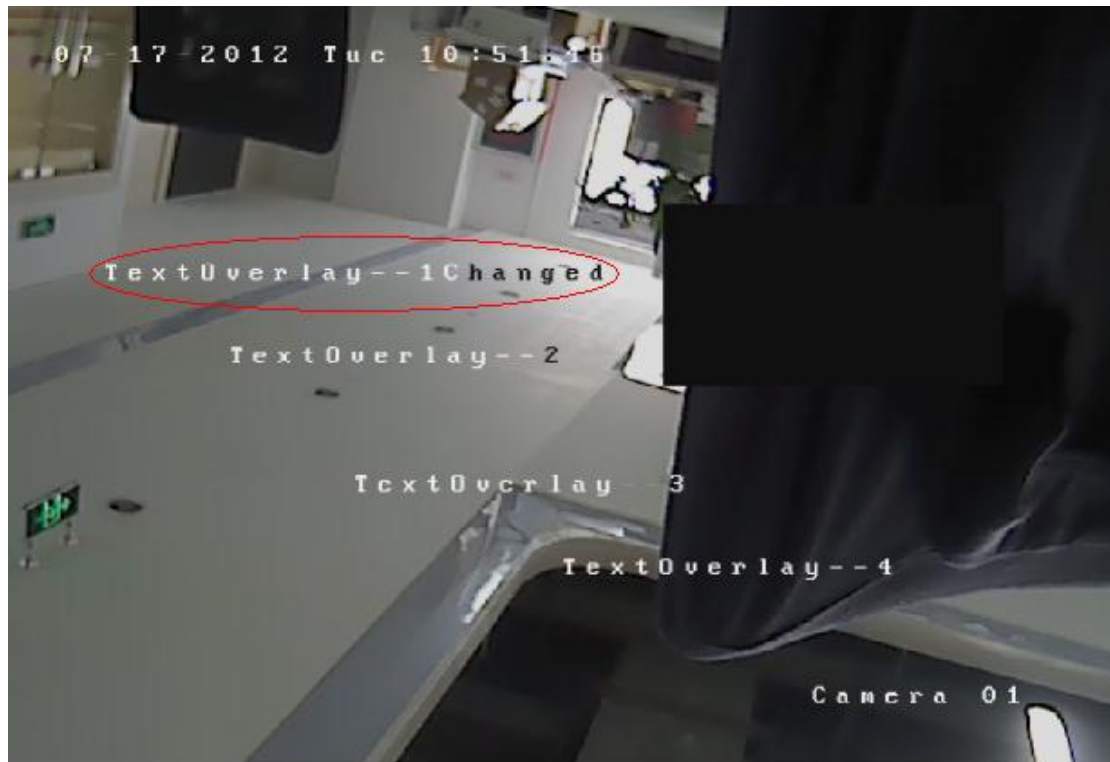


*Note:*

The coordinate value (64,200) is associated with resolution 704*576. Under NTSC system, the normalized resolution is 704*480.

# 2 Channel Name

In general, channel name is used to identify the camera when you preview a camera. The channel name can be modified via /Streaming/channels/ID.

*Example*: set the channel name of IP camera as IPC-Gate.

```
PUT /Streaming/channels/1 HTTP/1.1
Authorization: Basic YWRtaW46MTIzNDU=
Content-Type:text/xml
Content-Length: 597
```

```xml
<?xml version="1.0" encoding="UTF-8"?>
<StreamingChannel version="1.0"
xmlns="http://www.std-cgi.com/ver10/XMLSchema">
<id>1</id>
<channelName>IPC-Gate</channelName>
<enabled>true</enabled>
<Transport>
<rtspPortNo>554</rtspPortNo>
</Transport>
<Video>
<enabled>true</enabled>
<videoInputChannelID>1</videoInputChannelID>
<videoResolutionWidth>1280</videoResolutionWidth>
<videoResolutionHeight>960</videoResolutionHeight>
<videoQualityControlType>CBR</videoQualityControlType>
<constantBitRate>4096</constantBitRate>
<maxFrameRate>600</maxFrameRate>
</Video>
</StreamingChannel>
```

After we send this request to IP camera successfully, the channel name turns into IPC-Gate:

# 3 Date/Time Display

Date/Time display can be configured by some corresponding commands. For example, we can set whether the date/time is displayed or not, and meanwhile we can set the format and the position of date/time, too.

Date/Time display also adopts the same computer coordinate system as Text Overlap. The area of the coordinate is normalization area. The resolution is 704*576 under PAL system and 704*480 under NTSC system. (*Section 1.1* for reference)

## 3.1 Getting the information of the time

*Example*:

GET /Video/inputs/channels/1/osdDatetime HTTP/1.1

Host: 172.8.6.178

Authorization: Basic YWRtaW46MTIzNDU=

The camera responses as follows:

HTTP/1.1 200 OK

Date: Tue, 17 Jul 2012 12:52:23 GMT

Server: App-webs/

Connection: close

Content-Length: 299

Content-Type: application/xml

<?xml version="1.0" encoding="UTF-8"?>

<OsdDatetime version="1.0"
xmlns="http://www.std-cgi.com/ver10/XMLSchema">

<enabled>true</enabled>

<posX>0</posX>

<posY>32</posY>

<type>1</type>

<displayWeek>true</displayWeek>

<attribute>4</attribute>

<timeFormat>24hours</timeFormat>

</OsdDatetime>

The value of <enabled> is "true", and it means that the time needs to be displayed on the screen. The coordinate of the time (0, 32) is on the upper left.

The value of <displayWeek> is "true", and it means the week needs to be displayed on the screen.

<Type> is used to set the format of Date/Time; the format is as follows.

　　　0: yyyy-mm-dd
　　　1: mm-dd-yyyy
　　　4: dd-mm-yyyy
　　　(y—year; m—month; d—day)

<Attribute> is used to set the display mode, and the modes include: Transparent & Flashing, Transparent & Not Flashing and so on. No Transparent & Not Flashing is by default.

## 3.2  Setting time display

You can hide Date/Time information via the HIKCGI protocol interface.

*Example:*

```
PUT /Video/inputs/channels/1/osdDatetime HTTP/1.1
Authorization: Basic YWRtaW46MTIzNDU=
Content-Type:text/xml
Content-Length:302


<?xml version="1.0" encoding="UTF-8"?>
<OsdDatetime version="1.0"
xmlns="http://www.std-cgi.com/ver10/XMLSchema">
<enabled>false</enabled>
<posX>0</posX>
<posY>32</posY>
<type>1</type>
<displayWeek>true</displayWeek>
<attribute>4</attribute>
<timeFormat>24hours</timeFormat>
</OsdDatetime>
```

As shown above, the value of <enables> is "false", and the time will be hidden. Please refer to the following picture:
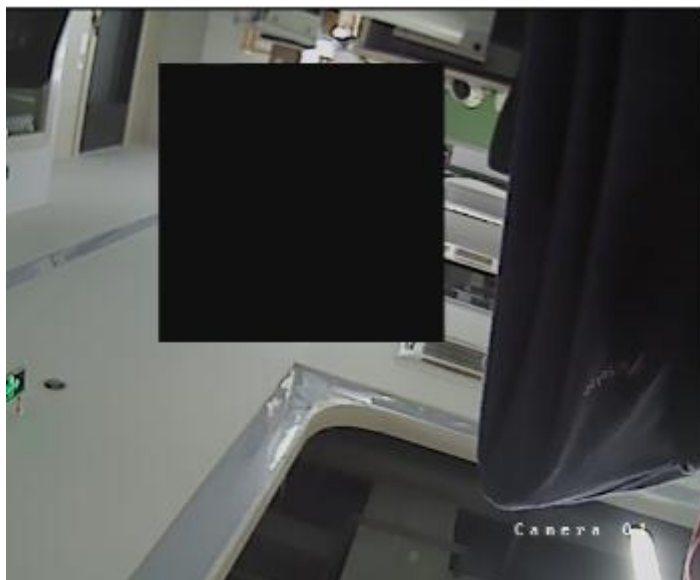
# 4 Privacy Mask

HIKCGI protocol provides corresponding command interface to set privacy mask area. The purpose is to make the image not displayed on the screen so as to protect personal privacy from recording or live view.

The coordinate system of the privacy mask area is computer coordinate system (*Section 1.1* for reference). There is a little distinction between IP camera and Dome. IP camera adopts the normalized coordinate area. The resolution is 4CIF (NTSC: 704*576, PAL: 704*480), but the normalized coordinate area of Dome is 255*255.

## 4.1 Getting area information of Privacy Mask

We suppose that the device has a privacy mask area on the screen, as follows:

You can get the information of all the privacy mask areas by GET/Video/inputs /channels/ID/privacyMask.

*Example*:

```
GET /Video/inputs/channels/1/privacyMask/regions HTTP/1.1
Host: 172.8.6.228
Connection: Keep-Alive
Authorization: Basic YWRtaW46MTIzNDU=

IP camera responses as follows:
HTTP/1.1 200 OK
Date: Tue, 17 Jul 2012 14:20:07 GMT
Server: App-webs/
Connection: close

Content-Length: 735
Content-Type: application/xml
X-Appweb-Seq: 281

<?xml version="1.0" encoding="UTF-8"?>
<PrivacyMask version="1.0"
xmlns="http://www.hikvision.com/ver10/XMLSchema">
    <enabled>true</enabled>
    <PrivacyMaskRegionList>
    <PrivacyMaskRegion>
    <id>1</id>
    <enabled>true</enabled>
    <RegionCoordinatesList>
    <RegionCoordinates>
    <positionX>154</positionX>
    <positionY>54</positionY>
    </RegionCoordinates>
    <RegionCoordinates>
    <positionX>154</positionX>
    <positionY>332</positionY>
    </RegionCoordinates>
    <RegionCoordinates>
```

```
        <positionX>440</positionX>
        <positionY>332</positionY>
        </RegionCoordinates>
        <RegionCoordinates>
        <positionX>440</positionX>
        <positionY>54</positionY>
        </RegionCoordinates>
        </RegionCoordinatesList>
        </PrivacyMaskRegion>
        </PrivacyMaskRegionList>
        </PrivacyMask>
```

<PrivacyMaskRegionList> is a list. The information of all the privacy mask areas is in this list. Each privacy mask area is contained in a <PrivacyMaskRegion>. Each privacy mask area is a rectangle which is defined by four coordinate points, and each coordinate point is defined in a <RegionCoordinates>. In general, the sequence of these coordinate points is in clockwise order.

## 4.2  Setting Privacy Mask Area

Multiple privacy mask areas can be configured. You can add a privacy mask area, or disable a privacy mask area.

*Example*:

```
PUT /Video/inputs/channels/ID/privacyMask HTTP/1.1
Authorization: Basic YWRtaW46MTIzNDU=
Content-Type:text/xml
Content-Length:1262

<?xml version="1.0" encoding="UTF-8"?>
<PrivacyMask version="1.0"
xmlns="http://www.hikvision.com/ver10/XMLSchema">
<enabled>true</enabled>
<PrivacyMaskRegionList>
<PrivacyMaskRegion>
<id>1</id>
<enabled>true</enabled>
<RegionCoordinatesList>
```
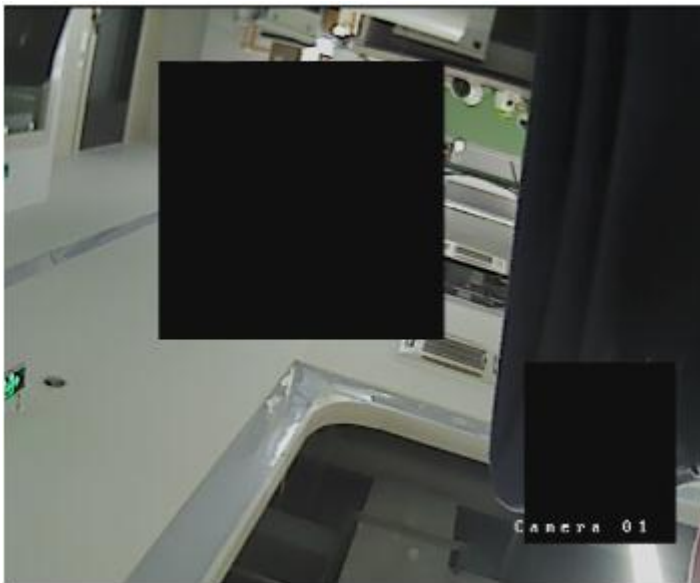
```xml
<RegionCoordinates>
<positionX>154</positionX>
<positionY>54</positionY>
</RegionCoordinates>
<RegionCoordinates>
<positionX>154</positionX>
<positionY>332</positionY>
</RegionCoordinates>
<RegionCoordinates>
<positionX>440</positionX>
<positionY>332</positionY>
</RegionCoordinates>
<RegionCoordinates>
<positionX>440</positionX>
<positionY>54</positionY>
</RegionCoordinates>
</RegionCoordinatesList>
</PrivacyMaskRegion>
<PrivacyMaskRegion>
<id>2</id>
<enabled>true</enabled>
<RegionCoordinatesList>
<RegionCoordinates>
<positionX>520</positionX>
<positionY>354</positionY>
</RegionCoordinates>
<RegionCoordinates>
<positionX>520</positionX>
<positionY>534</positionY>
</RegionCoordinates>
<RegionCoordinates>
<positionX>672</positionX>
<positionY>534</positionY>
</RegionCoordinates>
<RegionCoordinates>
<positionX>672</positionX>
```

```
        <positionY>354</positionY>
    </RegionCoordinates>
    </RegionCoordinatesList>
</PrivacyMaskRegion>
</PrivacyMaskRegionList>
</PrivacyMask>
```

In the above example, we set two privacy mask areas, as follows:



## 4.3  Canceling Privacy Mask Area

There are two methods to cancel the privacy mask area. One is to disable the privacy mask, but the information of privacy mask area still exists. The other one is to delete the information of privacy mask area thoroughly.

### 4.3.1  Disable Privacy Mask Area

You can set < enabled> as "false" by PUT/Video/inputs/channels/ID/privacyMask to cancel all the information of privacy mask area.

*Example*:

```
PUT /Video/inputs/channels/1/privacyMask HTTP/1.1
Authorization: Basic YWRtaW46MTIzNDU=
Content-Type:text/xml
```

```
Content-Length:209


<?xml version="1.0" encoding="UTF-8"?>
<PrivacyMask version="1.0"
xmlns="http://www.hikvision.com/ver10/XMLSchema">
    <enabled>false</enabled>
</PrivacyMask>
```

After disabling the privacy mask, the information of privacy mask area still exists in the device, we just can't see the privacy mask area on the screen. If we set <enabled> as "true", and the privacy mask area will be displayed again.

## 4.3.2 Deleting Privacy Mask Area

You can delete all the privacy mask areas or just one privacy mask area.
 (1) Delete all the privacy mask areas.
 You can delete all the privacy mask areas by DELTE /Video/inputs/channels/ID/ privacyMask/regions. After that, all the information of privacy mask area will be deleted thoroughly. The area won't be displayed even if you enable the settings again.
 *Example*: Delete all the privacy mask areas.

```
DELETE /Video/inputs/channels/1/privacyMask/regions HTTP/1.1

Host:172.8.6.228s

Authorization: Basic YWRtaW46MTIzNDU=
```

 (2) You can delete one privacy mask area by DELTE/Video/inputs/channels /ID/privacyMask/regions/ID. You need to set the region ID to specify the privacy mask area that needs to be deleted.
 *Example*: Delete a specified privacy mask area. Based on the example in *Section 4.2*, delete the second area.

```
DELETE /Video/inputs/channels/1/privacyMask/regions/2 HTTP/1.1

Host:172.8.6.228

Authorization: Basic YWRtaW46MTIzNDU=
```

 Here presents two images before and after the operation.

| (Before deleting) | (After Deleting) |

# 5  Image Parameters

Front-end image parameters include many functions, such as brightness, hue, contrast, saturation, sharpness and WDR and so on.

Adjusting these parameters will change the effect of the image. In general, different models of devices have different parameters capabilities, for example, some devices support sharpness, but some devices don't support. So the first step is to get the capability of a device before configuring front-end parameters.

## 5.1  Getting the capabilities of the device

The purpose of getting the capability of a device is to confirm which parameters the device supports.

*Example*:

GET /Image/channels/1/capabilities HTTP/1.1

Host: 172.8.6.228

Authorization: Basic YWRtaW46MTIzNDU=

The response message shows the parameters of function and the valid value range.

HTTP/1.1 200 OK

Server: App-webs/

Connection: close

Content-Length: 1360

Content-Type: application/xml

```xml
<?xml version="1.0" encoding="UTF-8"?>
<ImageChannel version="1.0"
xmlns="http://www.std-cgi.com/ver10/XMLSchema">
<id>1</id>
<enabled>true</enabled>
<videoInputID>1</videoInputID>
<ImageFlip>
<enabled opt="true,false">false</enabled>
<ImageFlipStyle opt="LEFTRIGHT,UPDOWN,CENTER"></ImageFlipStyle>
</ImageFlip>
<IrcutFilter>
<IrcutFilterType opt="day,night,auto">day</IrcutFilterType>
<IrcutFilterLevel opt="high,normal,low">normal</IrcutFilterLevel>
<IrcutFilterTime min="10" max="120">10</IrcutFilterTime>
</IrcutFilter>
<WhiteBlance>
<WhiteBlanceStyle opt="indoor,auto">indoor</WhiteBlanceStyle>
<WhiteBlanceRed min="0" max="100">0</WhiteBlanceRed>

<WhiteBlanceBlue min="0" max="100">0</WhiteBlanceBlue>
</WhiteBlance>
<Exposure>
<ExposureType opt="manual">manual</ExposureType>
</Exposure>
<Sharpness>
<SharpnessLevel min="0" max="100">50</SharpnessLevel>
</Sharpness>
<Shutter>
<ShutterLevel opt="1/6,1/12,1/25">1/25</ShutterLevel>
</Shutter>
<powerLineFrequency>
<powerLineFrequencyMode
opt="50hz,60hz">50hz</powerLineFrequencyMode>
</powerLineFrequency>
<Gain>
<GainLevel min="0" max="100">100</GainLevel>
```

```
    </Gain>
    <Color>
    <brightnessLevel min="0" max="100">50</brightnessLevel>
    <contrastLevel min="0" max="100">50</contrastLevel>
    <saturationLevel min="0" max="100">100</saturationLevel>
    </Color>
    </ImageChannel>
```

According to the above example, we find that the camera supports Image Flip, Day/Night Auto Switch, White Balance, Exposure, Sharpness, Video standard Change, AGC, Brightness, Contrast and Saturation.
<hueLevel> isn't included in the capability list, it means that the device doesn't support to configure Hue.
In the return message of the capabilities command, the valid value of the parameter is also shown. For example, the valid value range of the brightness is 1-100.

## 5.2  Setting the Color Value

HIKCGI V1.5.9 defines four parameters related to color: Brightness, Contrast, Saturation and Hue.
*Example*: Set the color value and change the contrast of the image.

```
PUT /Image/channels/1/Color HTTP/1.1
Authorization: Basic YWRtaW46MTIzNDU=
Host:172.8.6.228
Content-Type:text/xml
Content-Length:234

<?xml version="1.0" encoding="UTF-8"?>
<Color version="1.0" xmlns="http://www.std-cgi.com/ver10/XMLSchema">
<brightnessLevel>30</brightnessLevel>
<contrastLevel>50</contrastLevel>
<saturationLevel>100</saturationLevel>
</Color>
```

In the above example, the brightness changes from 50 to 30, and the image turns dark.

## 5.3  Setting Image Flip

To apply to different installation method, you use Image Flip function to adjust the image. The image flip function includes: UP/Down, Left/Right and Center. For example, in the below picture, the object is upside down:



You can use UP/Down function to adjust the image:

*Example:*

```
PUT /Image/channels/1/ImageFlip HTTP/1.1
Authorization: Basic YWRtaW46MTIzNDU=
Host:172.8.6.228
Content-Type:text/xml
Content-Length:192


<?xml version="1.0" encoding="UTF-8"?>
<ImageFlip version="1.0"
xmlns="http://www.std-cgi.com/ver10/XMLSchema">
```

```
<enabled>true</enabled>
<ImageFlipStyle>CENTER</ImageFlipStyle>
</ImageFlip>
```



*Note:*
Not all the devices support Image Flip function, and you need get capabilities of the device to see whether the function is supported. (*Section 5.1* for reference)


## 5.4  Day/Night Switch

Day/Night auto switch includes three modes: Day, Night and Auto mode.
If Day/Night switch mode is day mode, the image keeps colorful; if Day/Night switch mode is night mode, the image keeps B/W; if Day/Night switch mode is auto, the image will switch automatically between Night mode and Day mode according to external light intensity.

*Example*:

```
PUT /Image/channels/1/IrcutFilter HTTP/1.1
Authorization: Basic YWRtaW46MTIzNDU=
Host:172.8.6.228
Content-Type:text/xml
Content-Length:174


<?xml version="1.0" encoding="UTF-8"?>
<IrcutFilter version="1.0"
xmlns="http://www.std-cgi.com/ver10/XMLSchema">
<IrcutFilterType>night</IrcutFilterType>
```

```
    </IrcutFilter>
```



*Example:* Set Day/Night switch mode as Auto mode and the sensitivity level is normal and switch time is 10 seconds.

```
    PUT /Image/channels/1/Color HTTP/1.1
    Authorization: Basic YWRtaW46MTIzNDU=
    Host:172.8.6.228
    Content-Type:text/xml
    Content-Length:257

    <?xml version="1.0" encoding="UTF-8"?>
    <IrcutFilter version="1.0"
xmlns="http://www.std-cgi.com/ver10/XMLSchema">
    <IrcutFilterType>auto</IrcutFilterType>
    <IrcutFilterLevel>normal</IrcutFilterLevel>
    <IrcutFilterTime>10</IrcutFilterTime>
    </IrcutFilter>
```

After the setting, we cover the tested camera, brightness of the environment is low, and after 10 seconds the image turns into B/W mode.

## 5.5  Sharpness

The value of sharpness can affect the definition of the object edge. When the value is low, the outline or the edge of the object will be dim, but if the value is high, the outline or the edge of the object will be clear, but the image isn't gentle.

*Example*: Configure the sharpness of the image from 30 to 87.

```
PUT /Image/channels/1/Sharpness HTTP/1.1
Authorization: Basic YWRtaW46MTIzNDU=
Host:172.8.6.228
Content-Type:text/xml
Content-Length:165

<?xml version="1.0" encoding="UTF-8"?>
<Sharpness version="1.0"
xmlns="http://www.std-cgi.com/ver10/XMLSchema">
<SharpnessLevel>87</SharpnessLevel>
</Sharpness>
```

Please refer to the following figures for the different effects between different sharpness values.

(Sharpness=30)


(Sharpness=87)