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### Introduction

Please read these instructions carefully and keep them for future reference. You must heed all the warnings and cautions as well as follow all the safety and installation instructions.

The appearance of the products, functions and firmware or software upgrade may differ from this manual.

GRUNDIG reserves the right to perform needed changes without prior notice.

### Safety Instructions

Make sure that you only use the power adapter that is specified in the specifications sheet of the product. If you use any other adapter or connect the power supply incorrectly, this may cause explosion, fire, electric shocks or damage the product.

Do not connect several devices to one power adapter as this may cause an adapter overload and can lead to over-heating and fire. Make sure that the plug of the power adapter is firmly connected to the power socket.

Do not place containers with liquids on the product. Do not place conducting items like tools, screws, coins or other metal items on the product. These may fall from the product or can cause fire or electric shocks or other physical injuries.

Do not push or insert any sharp items or any objects into the device as this may cause damage to the product, fire, electric shocks and/or physical injuries.

Do not block any ventilation openings, if there are any. Ensure that the product is well ventilated to prevent any over-heating.

Do not subject the device to physical shock or drop the product.

If the product uses batteries, please use a battery type that is recommended by the manufacturer. Improper use or replacement of the battery may result in the hazard of explosion.

Do not use any accessories that are not recommended by GRUNDIG. Do not modify the product in any way.

If the product starts to smell or smoke comes out of the device, immediately stop using the product and disconnect it from the power supply to prevent fire or electric shocks. Then contact your dealer or the nearest service center.

If the product does not work correctly, contact your dealer or nearest service center. Never open, disassemble or alter the product yourself. GRUNDIG cannot accept any liability or responsibility for problems caused by attempted and unauthorized repair and maintenance.

## Installation Instructions

It is necessary to fix the device firmly if the product is installed on a wall or ceiling.

Do not install the product on surfaces or in places that are vibrating.

Do not install the product near radiation sources.

Do not install the product near heat sources, like radiators or other equipment that produces some heat.

If the product is not classified by any IP class, do not install the product in very cold or hot temperatures (please refer to the working temperature specified in the specification sheet of the product), dusty, dirty or damp environment.

If the product is classified by any IP class, never touch the product cover directly with your fingers, because the acidic sweat of the fingers may damage the surface coating of the product cover. To clean the inside and outside of the product cover, use a soft and dry cloth. In any case, do not use alkaline detergents.

The correct configuration of all passwords and other security settings is the sole responsibility of the installer and/or end-user (this applies especially to IP Cameras and Recorders).

### Special Installation Instructions for Cameras

Do not touch the sensor module with your fingers.

Do not aim the camera or camera lens at a strong light such as the sun or a bright lamp. Irreversible damage to the camera can be caused by a strong light.

Do not expose the sensor of the product to laser beams as this may damage the sensor.

If the product supports IR, you need to take some precautions to prevent IR reflection. Do not install the product close to reflective

surfaces of objects as this may cause reflection. If the product has a dome cover, please remove the protection film only after installation to prevent dust or grease on the camera which can cause reflection. The foam ring around the lens must be seated flush against the inner surface of the bubble to isolate the lens from the IR LEDs. Fasten the dome cover to the camera body so that the foam ring and the dome cover are attached seamlessly.

For cleaning use a clean cloth with a bit of ethanol and wipe it carefully and gently. In any case do not use alkaline detergents. If a glove is provided in the package, please use it to open the product cover. Never touch the product cover directly with fingers, because the acidic sweat of the fingers may damage the surface coating of the product cover.

## 1 Introduction

### 1.1 Product Features

The main features are as follows:

- 8 MP high performance CMOS sensor
- Low illumination, 0.008 Lux @ (F1.2, AGC ON), 0 Lux with IR
- IR cut filter with auto switch
- 120 dB WDR
- OSD menu with configurable parameters
- Auto white balance
- Internal synchronization
- Smart IR mode
- 3-axis adjustment

## 1.2 Overview

### 1.2.1 Overview of the Camera

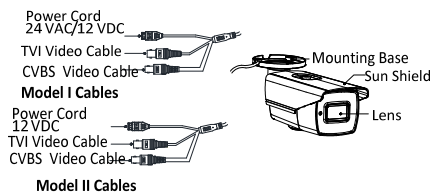


Figure 1-1 Overview of the Camera

## 2 Installation

### 2.1 Ceiling Mounting/Wall Mounting without Junction Box

#### Before you start:

Both wall mounting, and ceiling mounting are suitable for the bullet camera. Ceiling mounting will be taken as an example in this section. And you can take the steps of ceiling mounting as a reference for wall mounting.

#### Steps:

1. Paste the drill template (supplied) to the place where you want to install the camera.
2. Drill the screw holes, and the cable hole (optional) in the ceiling according to the drill template.

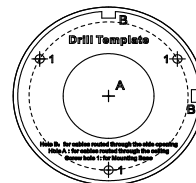


Figure 1-1 Drill Template

#### Note:

Drill the cable hole, when adopting a ceiling outlet to route the cable.

3. Route the cables through the cable hole, or the side opening.
4. Fix the camera to the ceiling with the supplied screws.

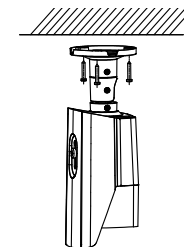


Figure 1-2 Fix the Camera to the Ceiling

#### Note:

- The supplied screw package contains self-tapping screws, and expansion bolts.
  - For a cement wall, expansion bolts are required to fix the camera. For a wooden wall, self-tapping screws are required.
5. Connect the corresponding power cord, and video cable.
  6. Power on the camera to check whether the image on the monitor is gotten from the optimum angle. If not, adjust the surveillance angle.

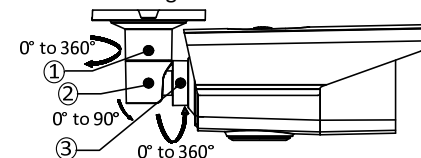


Figure 1-3 3-axis Adjustment

- 1) Loosen the No. ① adjusting screw to adjust the pan position [0° to 360°]. Tighten the No. ① adjusting screw.
- 2) Loosen the No. ② adjusting screw to adjust the tilting position [0° to 90°]. Tighten the No. ② adjusting screw.
- 3) Loosen the No. ③ adjusting screw to adjust the rotation position [0° to 360°]. Tighten the No. ③ adjusting screw.

2.2 Ceiling/Wall Mounting with Junction Box

Before you start:

You need to purchase a junction box first.

Steps:

- 1. Paste the junction box’s drill template on the ceiling/wall.
- 2. Drill screw holes, and the cable hole (optional) in the ceiling/wall according to the holes of the drill template.

Note:

Drill the cable hole, when adopting a ceiling outlet to route the cable.

- 3. Take apart the junction box, and align the screw holes of the bullet camera with those on the junction box’s cover.
- 4. Fix the camera on the junction box’s cover.

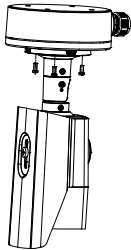


Figure 1-4 Fix the Camera with the Gang Box

- 5. Attach the junction box’s body to the ceiling/wall by aligning the screw holes of the junction box.
- 6. Secure the junction box’s body with the supplied screws on the ceiling/wall.

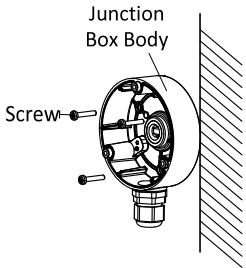


Figure 1-5 Fix the Camera to the Ceiling

- 7. Route the cables through the cable hole, or the side opening of the junction box.

- 8. Combine the junction box cover with its body.

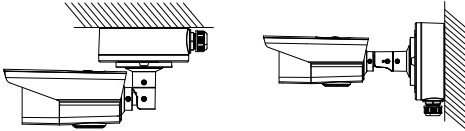


Figure 1-6 Fix the Junction Box Cover back to its Body

- 9. Refer to step 6 of Chapter 2.1 to complete the installation.

3 Menu Description

Follow the steps below to call the menu.

Note:

The actual display may vary with your camera model.

Steps:

- 1. Connect the camera with the TVI DVR, and the monitor, as shown in figure 3-1.

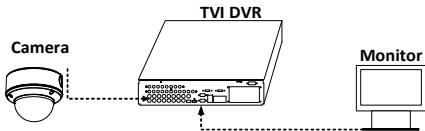


Figure 3-1 Connection

- 2. Power on the camera, TVI DVR, and the monitor to view the image on the monitor.
- 3. Click PTZ Control to enter the PTZ Control interface.
- 4. Call the camera menu by clicking the button, or call the preset No. 95.

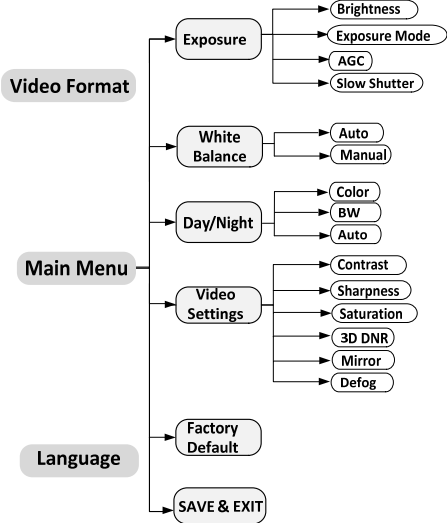


Figure 3-2 Main Menu Overview

- 5. Click the direction arrow to control the camera.
  - (1) Click the up/down direction button to select the item.
  - (2) Click Iris + to confirm the selection.
  - (3) Click the left/right direction button to adjust the value of the selected item.

3.1 VIDEO FORMAT

You can set the frame rate as 8 MP@12.5fps, 8 MP@15fps, 5 MP@20fps, 4 MP@25fps, 4 MP@30fps, 1080p@25fps, or 1080p@30fps.

3.2 LANGUAGE

Supports English.

3.3 FOCUS

Click on the up or down direction button to adjust the zoom, and on the left or right direction button to adjust the focus.

3.4 SETTINGS

3.4.1 EXPOSURE

Exposure describes the brightness-related parameters, which can be adjusted through

Brightness, Exposure Mode, AGC, and Slow Shutter.

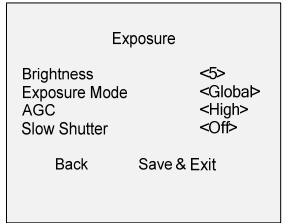


Figure 3-1 Exposure

Brightness

Brightness refers to the brightness of the image.

You can set the brightness value from 1 to 10 to darken or brighten the image. The higher the value is, the brighter the image will be.

Exposure Mode

You can set the EXPOSURE MODE as GLOBAL, BLC, HLC, and WDR.

• GLOBAL

GLOBAL refers to the normal exposure mode which adjusts lighting distribution, variations, and non-standard processing.

• BLC (Backlight Compensation)

BLC (Backlight Compensation) compensates light to the object in the front to make it clear, but this may cause over-exposure of the background where the light is strong. When BLC is selected as the exposure mode, the BLC level can be adjusted from 0 to 8.

• HLC (Highlight Compensation)

HLC (High Light Compensation) masks strong light sources that usually flare across a scene. This makes it possible to see the detail of the image that would normally be hidden..

• WDR (Wide Dynamic Range)

The wide dynamic range (WDR) function helps the camera provide clear images even under back light circumstances. WDR balances the

brightness level of the whole image and provides clear images with details.

**AGC (Auto Gain Control)**

It optimizes the clarity of the image in poor light conditions. The **AGC** level can be set to **HIGH, MEDIUM** or **LOW**.

**Note:**

The noise will be amplified when the **AGC** is on.

**SLOW SHUTTER**

**SLOW SHUTTER** increases the exposure time on a single frame, which makes a camera more sensitive to the light so it can produce images even in low lux conditions.

You can set the **SLOW SHUTTER** function as Off, x2, x4 under 8 MP@15fps or 8 MP@12.5fps mode, and as Off, x2, x4, x6, x8, or x16 under other modes according to the different light conditions.

**3.4.2 WB (White Balance)**

White balance, the white rendition function of the camera, is to adjust the color temperature according to the environment. It can remove unrealistic color casts in the image. You can set the WB mode as **Auto**, or **Manual**.

**Auto**

Under **Auto** mode, white balance is being adjusted automatically according to the color temperature of the scene illumination.

**Manual**

Click Iris+ to enter the submenu, you can set the **R Gain/B Gain** value from 1 to 255 to adjust the shades of the red/blue color of the image.

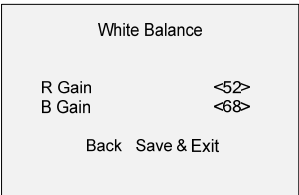


Figure 3-2 White Balance

**3.4.3 DAY/NIGHT**

**COLOR, B&W** (Black White), and **AUTO** are selectable for the DAY and NIGHT switches.

**COLOR**

The image is colorful in day mode all the time.

**B&W**

The image is black and white all the time and the IR LIGHT turns on in poor light conditions.

**AUTO**

The image switches from color to B/W, or from B/W to color automatically according to the light conditions.

Click on Iris+ to enter the submenu, you can turn on/off the IR Light and set the value of Smart IR in this menu.

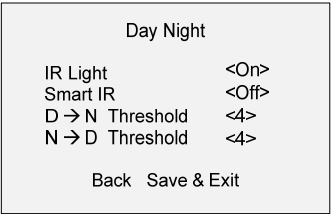


Figure 3-3 Day Night

• **IR LIGHT**

You can turn on/off the IR LIGHT to meet the requirements of different circumstances.

• **SMART IR**

The Smart IR function is used to adjust the light to its most suitable intensity, and prevent the image from over exposure. You can turn on/off this function.

• **D ► N THRESHOLD (Day to Night Threshold)**

Day to Night Threshold is used to control the sensitivity of switching the day mode to night mode. You can set the value from 1 to 9. The larger the value is, the more sensitive the camera is.

• **N ► D THRESHOLD (Night to Day Threshold)**

Night to Day Threshold is used to control the sensitivity of switching the night mode to day mode. You can set the value from 1 to 9. The

larger the value is, the more sensitive the camera is.

**3.4.4 VIDEO SETTINGS**

Move the cursor to **Video Settings** and click Iris+ to enter the submenu. **Contrast, Sharpness, Saturation, 3D DNR, Mirror, and Defog** are adjustable.

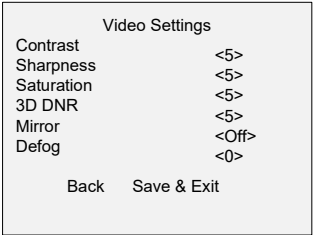


Figure 3-4 Video Settings

**Contrast**

This feature enhances the difference in color and light between parts of an image. You can set the **Contrast** value from 1 to 10.

**Sharpness**

Sharpness determines the amount of detail an imaging system can reproduce. You can set the **Sharpness** value from 1 to 10.

**Saturation**

Adjust this feature to change the saturation of the color. The value ranges from 1 to 10.

**3D DNR (Digital Noise Reduction)**

The 3D DNR function can decrease the noise effect, especially when capturing moving images in poor light conditions, and deliver more accurate and sharp image quality. You can set the **DNR** value from 1 to 10.

**Mirror**

**Off, H, V, and HV** are selectable for mirror.

**Off:** The mirror function is disabled.

**H:** The image flips 180° horizontally.

**V:** The image flips 180° vertically.

**HV:** The image flips 180° both horizontally and vertically.

**Defog**

It is used in special environments such as foggy or rainy weather or in high illumination conditions, in which the dynamic range is lower than that in the ordinary environment and the image appears hazy.

Enable the defog function can enhance the subtle details to display clear images.

**3.4.5 FACTORY DEFAULT**

Click on Iris+ to enter the submenu, and click on **OK** to reset all the settings to factory default. Click on **Cancel** to give up the reset settings.

**3.4.6 SAVE & EXIT**

Click on Iris+ to enter the submenu, and click on **OK** to reset all the settings to factory default. Click on **Cancel** to give up the reset settings.

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