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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:

- High performance CMOS sensor
- Supports IR cut filter with auto switch;
- OSD menu, parameters are configurable;
- Supports auto white balance;
- SMART IR mode;
- Strobe light alarm;
- PIR detection;
- Alarm Out;
- Advanced 3-axis design meets different installation requirements.

1.2 Overview

1.2.1 Overview of Camera

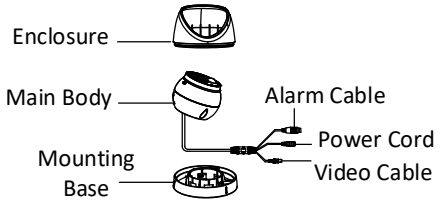

Figure 1-1 Overview of the Camera

2 Installation

2.1 Ceiling Mounting/Wall Mounting without Junction Box

Before you start:

The steps of ceiling mounting and wall mounting are similar. The following takes the ceiling mounting as an example to describe the steps.

Steps:

1. Disassemble the camera.

1.1. Rotate the camera to align the notch to one of the line showed on the camera.

1.2. Pry the mounting base by using tools, e.g. a coin.

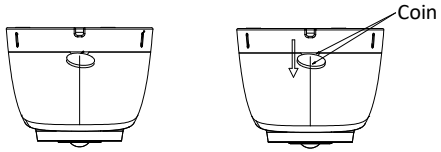

Figure 2-1 Disassemble the Camera

2. Paste the drill template (supplied) to the place where you want to install the camera.

3. Drill the screw holes, and the cable hole (optional) in the ceiling/wall according to the drill template.

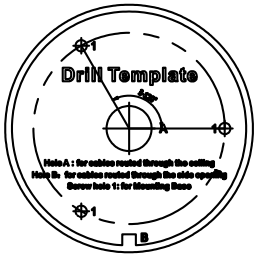

Figure 2-2 Drill Template

Note:

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

4. Attach the mounting base to the ceiling/wall, and secure them with supplied screws.

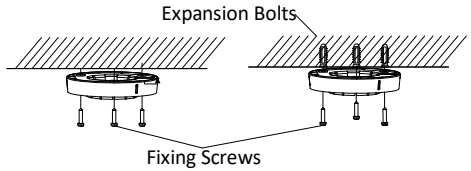

Figure 2-3 Attach the Mounting Base to the Ceiling

Note:

- The supplied screw package contains self-tapping screws, and expansion bolts.
- For a cement wall/ceiling, expansion bolts are required to fix the camera. For a wooden wall/ceiling, self-tapping screws are required.

5. Route the cables through the cable hole, or the side opening.
6. Install the camera back to the mounting base, and tighten the screws to secure it on the mounting base.

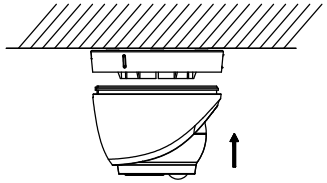

Figure 2-4 Install the Camera back to the Mounting Base

7. Connect the corresponding cables, such as power cord, and video cable.
8. Power on the camera to check whether the image on the monitor is gotten from the optimum angle. If not, adjust the camera according to the figure below to get an optimum angle.

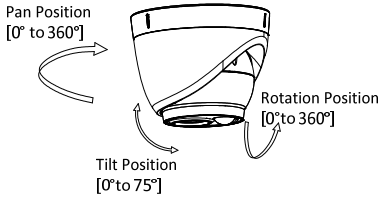

Figure 2-5 3-axis Adjustment

9.1. Adjust the pan position [0° to 360°].
9.2. Adjust the tilt position [0° to 75°].
9.3. Adjust the rotation position [0° to 360°].

2.2 Mounting with Inclined Ceiling Mount

Before you start:

You need to purchase an inclined ceiling mount separately.

Steps:

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

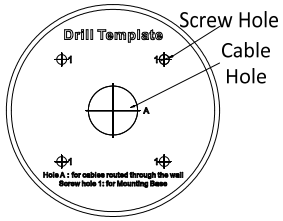

Figure 2-6 The Drill Template

3. Disassemble the inclined ceiling mount with the screw driver.
4. Install the turret camera's mounting base on the inclined ceiling mount's cover with the three PM4 screws.

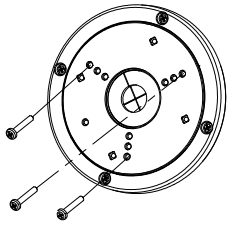

Figure 2-7 Install Turret Camera's Mounting Base

5. Install the inclined ceiling mount's body to the ceiling/wall with the four PA4 × 25 screws.

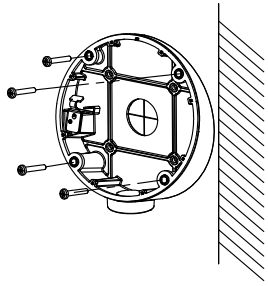

Figure 2-8 Install the Inclined Ceiling Mount's Body

6. Combine the inclined ceiling mount's cover with its body with the supplied screws.

Repeat steps 5 to 9 of Chapter **2.1 Ceiling Mounting/Wall Mounting without Junction Box** to complete the installation.

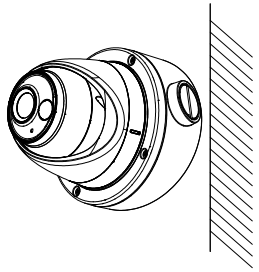

Figure 2-9 Install the Camera to the Inclined Ceiling Mount

2.3 Ceiling/Wall Mounting with Junction Box

Before you start:

You need to purchase a junction box separately.

Steps:

1. Paste the 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.

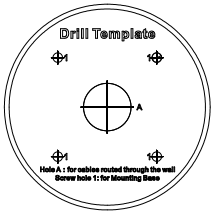

Figure 2-10 Drill Template of the Junction Box

Note:

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

3. Take apart the junction box, and align the screw holes of the turret camera's mounting base with those on the junction box's cover.
4. Install the mounting base on the junction box's cover by supplied screws.

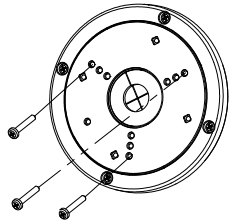

Figure 2-11 Install the Turret Camera's Mounting Base

5. Secure the junction box's body to the ceiling/wall with the supplied screws.

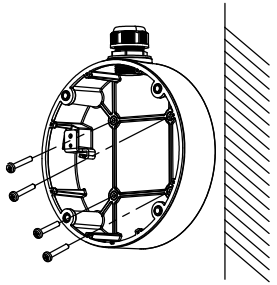

Figure 2-12 Secure the Junction Box' Camera Body to Ceiling/Wall

6. Combine the junction box's cover with its body.
7. Repeat steps 5 to 9 of Chapter **2.1 Ceiling Mounting/Wall Mounting without Junction Box** to install the camera to the junction box.

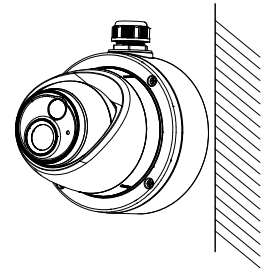

Figure 2-13 Install the Camera to the Junction Box

2.4 Wall Mounting

Before you start:

You need to purchase a wall mount separately.

Steps:

1. Drill four screw holes in the wall according to the holes of the mount.
2. Install the mount to the wall by aligning the four screw holes of the bracket with the expansion screws on the wall.
3. Secure the mount with four hex nuts and washers.

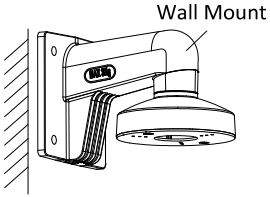

Figure 2-14 Install the Bracket

4. Install the mounting base of the turret camera to the wall mount, and secure them with the supplied screws.

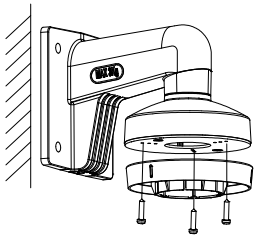

Figure 2-15 Install the Mounting Base to the Bracket

5. Route the cables through the mount.
6. Repeat steps 6 to 9 of Chapter **2.1 Ceiling Mounting/Wall Mounting without Junction Box** 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.

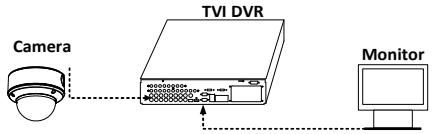

Figure 3-1 Connection

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.

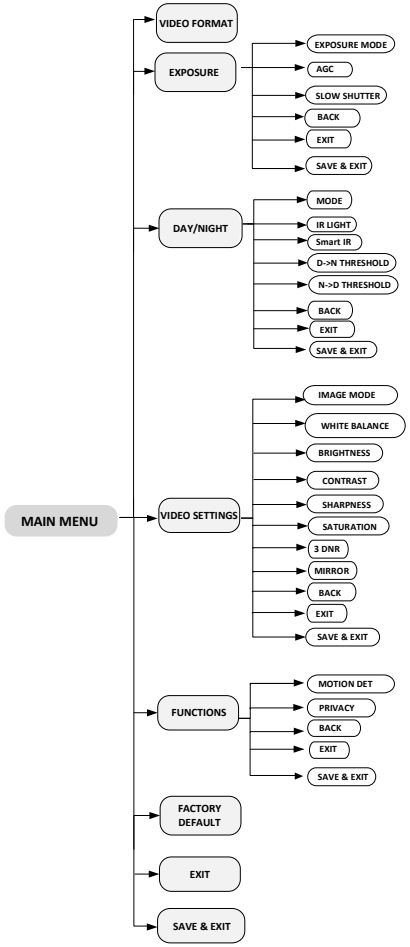

Figure 3-2 Main Menu Overview

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 FORMAT

You can set the video format to 2MP@25fps or 2MP@30fps.

3.2 EXPOSURE

EXPOSURE MODE

You can set the **EXPOSURE MODE** to **GLOBAL**, **BLC**, **HLC**, or **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.

- **HLC (Highlight Compensation)**

HLC stands for highlight compensation. The camera detects the strong spots (the over-exposure portion of image), then reduces the brightness of the strong spots to improve the overall images.

- **WDR (Wide Dynamic Range)**

The wide dynamic range (WDR) function helps the camera provide clear images even under back light circumstances. When there are both very bright and very dark areas simultaneously in the field of view, 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, x6, x8, x10, x12, x14, or x16 according to the different light conditions.

Note:

This function is not available, when adopting power over coaxial to supply power.

3.3 DAY/NIGHT

COLOR, **B&W** (Black White), and **AUTO** are selectable for 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. It is recommended turn the IR LIGHT on in poor light conditions.

- **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. The **SMART IR** value can be adjusted from 0 to 3. The greater the value is, the more obvious effects are.

AUTO

You can turn on/off the **IR LIGHT**, and set the value of **SMART IR** in this menu.

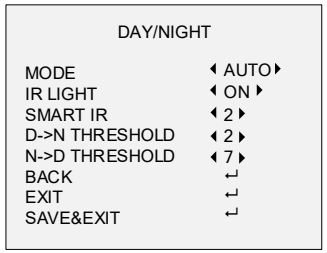

Figure 3-3 DAY/NIGHT

- **IR LIGHT**

You can turn on/off the infrared 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 choose MODE 1 or MODE 2. MODE 1 could reach the most ideal effects of the low illumination, but it might cause a delay by contrast with the actual scenario. MODE 2 represents the normal mode. The SMART IR value can be adjusted from 0 to 3. The greater the value is, the more obvious effects are.

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

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

3.4 VIDEO SETTINGS

Move the cursor to **VIDEO SETTINGS** and click Iris+ to enter the submenu. **IMAGE MODE**, **WHITE BALANCE**, **BRIGHTNESS**, **CONTRAST**, **SHARPNESS**, **SATURATION**, **3 DNR**, and **MIRROR** are adjustable.

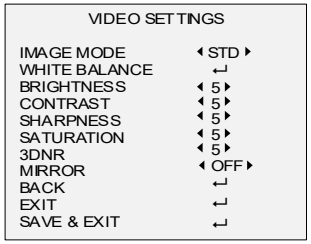

Figure 3-4 VIDEO SETTINGS

IMAGE MODE

IMAGE MODE is used to adjust the image saturation, and you can set it as **STD** (Standard), or **HIGH-SAT** (High Saturation).

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 **WHITE BALANCE** 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**

You can set the **R-GAIN/B-GAIN** value to adjust the shades of the red/blue color of the image.

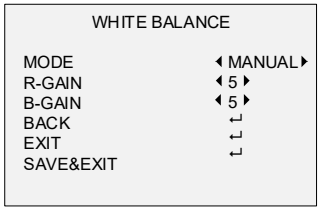

Figure 3-5 MANUAL WHITE BALANCE MODE

BRIGHTNESS

Brightness refers to the brightness of the image. You can set the brightness value from 1 to 9 to darken or brighten the image. The greater the value is, the brighter the image is.

CONTRAST

This feature enhances the difference in color and light between parts of an image. You can set the **CONTRAST** value from 1 to 9.

SHARPNESS

Sharpness determines the amount of detail an imaging system can reproduce. You can set the **SHARPNESS** value from 1 to 9.

SATURATION

Adjust this feature to change the saturation of the color. The value ranges from 1 to 9.

3 DNR (3D DNR)

3 DNR refers to 3D digital noise reduction. Comparing with the general 2D digital noise reduction, the 3D digital noise reduction function processes the noise between two frames besides processing the noise in one frame. The noise will be much less and the video will be clearer.

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.

3.5 FUNCTIONS

3.5.1. WHITE LIGHT

The embedded white light source can be worked as the visible alarm, or the lighting.

In the **WHITE LIGHT** mode, you can set the mode as **ALARM**, **LIGHTING**, or **OFF**.

Note:

The **LIGHTING** option might depend on the specific model that you have.

When you select the **WHITE LIGHT** as **ALARM**, you can set the parameters in the **TRIGGER MODE**, the **EXT ALARM OUT**, and the **ALARM MODE** to meet your needs.

TRIGGER MODE

- **DVR**

Select the **TRIGGER MODE** as **DVR**. In this way, the alarm signal is sent from the DVR, and the camera works as the alarm detector in the

process. Follow the steps below to achieve the visual and audible alarm:

Note:

You need to purchase and connect a bell in advance.

1). Select the **ALARM MODE** as **DVR**.

2). Select the **EXT ALARM OUT** as **ON**.

3). Save and exit.

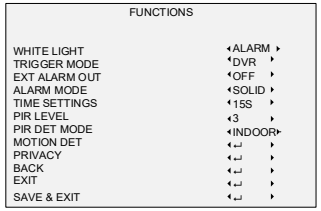

Figure 3-6 TRIGGER MODE

- **CAMERA**

Select the **TRIGGER MODE** as **CAMERA**, the embedded PIR module sends the alarm signal to trigger visual alarm, when PIR module detects the alarm source.

ALARM MODE

In the **ALARM** mode, you can select the **ALARM MODE** as **SOLID**, or **FLASHING**.

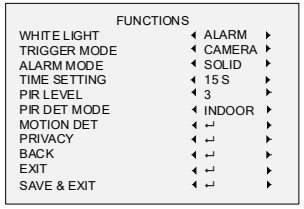

Figure 3-7 ALARM MODE

- **SOLID**

Select the **ALARM MODE** as **SOLID.** In this way, the white light source turns on, when the PIR module receives the alarm signal.

TIME SETTING means you can set the duration of the light that keeps solid when the camera receives one alarm signal.

Note:

The solid mode will be stayed for another set time when second alarm signal is received, and the rest can be done in the same way.

- **FLASHING**

Select the **ALARM MODE** as **FLASHING**. In this way, the white light source flashes when the PIR module received the alarm signal.

LIGHTING

Select the **LIGHTING** mode, the embedded white light source turns on in poor light conditions automatically.

You can set the **LIGHTING MODE** as **SOLID** or **FLASHING**.

- **SOLID**

The white light source turns on in the poor light conditions.

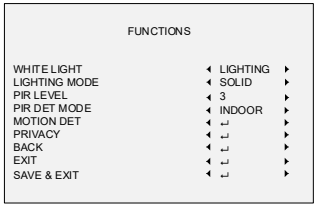

Figure 3-8 SOLID

- **FLASHING**

When you select the **LIGHTING MODE** as **FLASHING**, you can set the **TRIGGER MODE** as **CAMERA**, or **DVR**.

The white light source flashes in the poor light conditions when receiving the alarm signal.

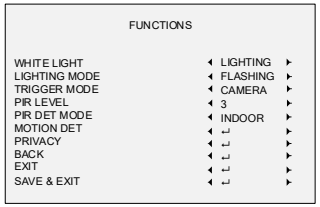

Figure 3-9 FLASHING

OFF

Select **OFF** to give up this function.

3.5.2. PIR LEVEL

Adjust the sensitivity of the PIR module, and the higher the value is, the more sensitive the PIR module is.

3.5.3. PIR DET MODE

OUTDOOR and **INDOOR** are selectable for PIR DET MODE switch.

3.5.4. MOTION DET

You can turn on/off the **MOTION DET** to meet different circumstances.

3.5.5. PRIVACY

You can turn on/off the **PRIVACY** to meet different circumstances.

3.6 FACTORY DEFAULT

Reset all the settings to factory default.

3.7 EXIT

Move the cursor to **EXIT** and click Iris+ to exit the menu.

3.8 SAVE & EXIT

Move the cursor to **SAVE & EXIT** and click Iris+ to save the settings, and exit the menu.

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