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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
- 1080p resolution
- Ultra low-light: 0.003 Lux@(F1.2, AGC ON), 0 Lux with IR
- OSD menu, white balance, auto gain, backlight compensation, electronic shutter, etc.
- 2D & 3D DNR
- IR cut filter
- Semi-auto focus
- PoC
- Remote parameters configuration and upgrade
- External alarm in/out
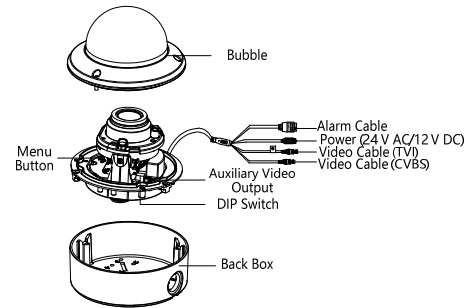
1.2 Overview

1.2.1 Overview of Camera

Figure 1 Overview of the Camera

2 Installation

2.1 Ceiling Mounting

Steps:

1. Attach the drill template to the celling.
2. Drill the screw holes and the cable hole (optional) on the ceiling according to the supplied drill template.

Note:
A cable hole is required when you adopt the ceiling outlet to route the cables.
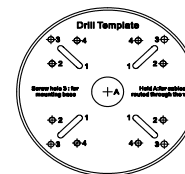

Figure 1. 1   The Drill Template

3. Loosen the screws on the bubble of the dome camera to remove the bubble and the black liner.

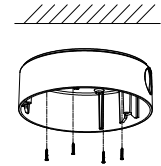4. Attach the back box of the camera to the ceiling and secure them with supplied screws.

Figure 1. 2 Attach the Back Box

Note:

- In the supplied screw package, both self-tapping screws and expansion blots are contained.
- If the wall is cement, expansion blots are required to fix the camera. If the wall is wooden, self-tapping screws are required.

5. Route the cables through the cable hole or the side opening.
6. Align the camera with the back box, and tighten the screws to secure the camera with the back box.
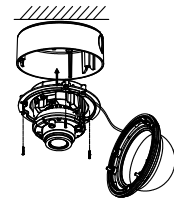

Figure 1. 3 Fix the camera to the Ceiling

7. Connect the corresponding cables, such as the power cable 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.
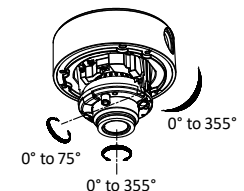

Figure 1. 4 3-Axis Adjustment

9. Fit the black liner on the camera and tighten the screws on the bubble of the dome camera to finish the installation.

2.2 Wall Mounting

Note:

You need to purchase a wall mounting bracket separately if you adopt the wall mounting.

Steps:

1. Drill 4 screw holes in the wall according to the holes of the bracket.
2. Attach the bracket to the wall by aligning the 4 screw holes of the bracket with expansion screws on the wall.
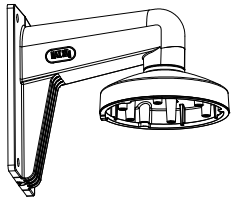3. Secure the bracket with 4 hex nuts and washers.

Figure 1. 5 Install Wall Mounting Bracket

4. Refer to step 3 of Chapter *2.1 Ceiling Mounting* to remove the dome camera's bubble and the black liner.
5. Attach the back box of the dome camera to the wall mounting bracket and secure them with the supplied screws.
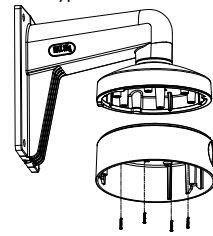

Figure 1. 6 Attach the Back Box to the Bracket

6. Route the cables through the bracket.
7. Repeat steps 6 to 9 of Chapter *2.1 Ceiling Mounting* to complete the installation.

2.3 In-Ceiling Mounting

Note:

You need to purchase an in-ceiling mounting bracket separately if you adopt the in-ceiling mounting.

Steps:

1. Attach the drill template on the ceiling.
2. Drill the screw holes and cable holes (optional) in the ceiling according to the supplied drill template.

Note:

A cable hole is required when adopting the ceiling outlet to route the cable.

3. Screw the bolts through the mounting bracket by aligning with the 2 bolt holes. Fit the toggles onto the bolts.
4. Push the two toggles through the two screw holes in the ceiling. Rotate the bolt till the toggle holds the ceiling tightly.

Figure 1. 7 Install the In-Ceiling Mounting Bracket

5. Route the cables through the cable hole.
6. Attach the back box to the in-ceiling mounting bracket with the supplied screws.

Note:

- In the supplied screw package, both self-tapping screws and expansion blots are contained.
- If the wall is cement, expansion blots are required to fix the camera. If the wall is wooden, self-tapping screws are required.
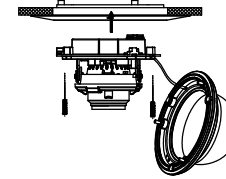

Figure 1. 8 Fix the Camera to the Mount

7. Repeat steps 6 to 9 of Chapter *2.1 Ceiling Mounting* to complete the installation.

2.4 In-Ceiling Mounting with Junction Box

Note:

You need to purchase an in-ceiling mounting bracket separately if you adopt the in-ceiling mounting with the junction box.

Steps:

1. Repeat steps 2 to 4 of Chapter *2.3 In-Ceiling Mounting* to secure the in-ceiling mounting bracket (supplied) to the junction box.
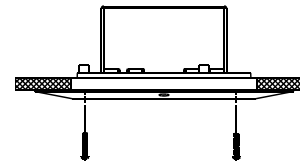

Figure 1. 9 Install the Bracket

2. Connect the corresponding cables, such as the power cable and video cable.
3. Align the camera with the junction box, and tighten the screws to secure the camera with the junction box.
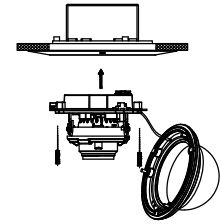

Figure 1. 10 Fix the Camera to the Junction Box

Repeat the steps 6 to 9 of Chapter *2.1 Ceiling Mounting* to complete the installation.

2.5 Mounting with Inclined Base

Note:

You need to purchase an inclined base separately if you adopt the mounting with an inclined base.

Steps:

1. Drill 4 screw holes in the ceiling according to the holes of the inclined base.
2. Install the inclined base to the ceiling with supplied screws, as shown in Figure 1. 11.
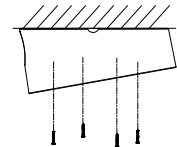

Figure 1. 11 Fix the Inclined Base

3. Route the cables through the hole of the inclined base.
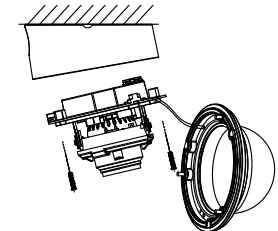4. Attach the back box of the camera to the inclined base with the supplied screws.

Figure 1. 12 Fix the Camera to the Base

5. Repeat the steps 6 to 9 of Chapter *2.1 Ceiling Mounting* 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:

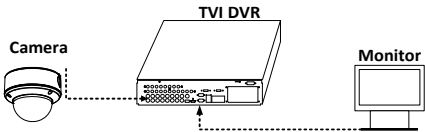1. Connect the camera with the TVI DVR, and the monitor, as shown in figure 3-1.

Figure 1. 13 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.
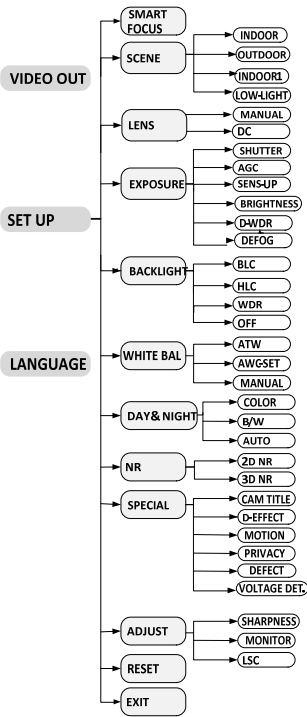4. Call the camera menu by clicking the 📖 button, or call the preset No. 95.

Figure 1. 14 Menu Tree

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 OUT

PAL: (Phase Alternating Lines) is a color encoding system for analog television used in broadcast television systems in most countries.

NTSC: (National Television System Committee) is the analog television system that is used in most of North America, parts of South America, Myanmar, South Korea, etc.

3.2 LANGUAGE

Supports multiple languages.

3.3 SET UP

3.1.1 SMART FOCUS

You are allowed to adjust the focus by clicking ZOOM+ or ZOOM-.

Note:

● You need to adjust the focus, when the image is defocused.

3.1.2 SCENE

You can select INDOOR, OUTDOOR, INDOOR 1, and LOW LIGHT as the working environment.

INDOOR: Applicable to the indoor environment of which the color temperature changes are relatively slight.

OUTDOOR: Applicable to the outdoor environment of which the color temperature changes are relatively obvious.

INDOOR1: Applicable to the indoor environment with a strong light. Under this circumstance, WDR is ON by default.

LOW LIGHT: Applicable to the environment with a low light. Under this circumstance, the slow shutter is ON by default to receive more light.

3.1.3 LENS

The camera is equipped with a manual lens and a DC lens.

Indoor mode and outdoor mode are available for the DC lens.

Click IRIS SCAN to initialize the lens.

3.1.4 EXPOSURE

Exposure describes the brightness-related parameters. You can adjust the image brightness through the SHUTTER, AGC, SENS-UP, BRIGHTNESS, and D-WDR in different light conditions.

Figure 3. 1 Exposure

SHUTTER: Shutter denotes the speed of the shutter.

PAL: AUTO, 1/25 s, 1/50 s, FLK, 1/200 s, 1/400 s, 1/1k s, 1/2k s, 1/5k s, 1/10k s, and 1/50k s are selectable.

NTSC: AUTO, 1/30s, 1/60s, FLK, 1/240s, 1/480s, 1/1k s, 1/2k s, 1/5k s, 1/10k s, and 1/50k s are selectable.

Note:

● You are not allowed to set the slow shutter when AGC is OFF, or using the PoC function.

● If you select shutter as AUTO or 1/25, the SENS-UP is adjustable (OFF/AUTO), and the SENS-UP is disabled if any other shutter speed is selected.

AGC: This is a form of amplification where the camera will automatically boost the image output signal to optimize the clarity of image in poor light conditions. You can set the AGC value from 0 to 15. The AGC is disabled if the value is set to 0.

Note:

The noise will be amplified if the AGC is on.

SENS-UP: Sense up increases the exposure on a signal frame, which makes a camera more sensitive to light so it can produce images even in low lux conditions. You can set the SENS-UP as OFF or AUTO according to the different light conditions.

OFF: The SENS-UP function is disabled.

AUTO: The SENS-UP function will automatically adjust itself to x2, x4, x6, x8, x10, x15, x20, x25, and x30 according to the different light conditions.

BRIGHTNESS: Brightness refers to the brightness of the image. You can set the brightness value from 1 to 100 to darken or brighten the image. The higher the value, the brighter the image is.

D-WDR: The digital wide dynamic range helps the camera provide clear images even under backlight circumstances. When there are both very bright and very dark areas simultaneously in the field of view, D-WDR balances the brightness level of the whole image and provides clear images with details.

Set the D-WDR as ON to improve the image quality in a backlight environment.

Set the D-WDR as OFF to disable the function.

DEFOG: DEFOG is used in a special environment such as foggy or rainy weather or in high illumination, in which the dynamic range is lower than that in the ordinary environment and the image always appear hazy. Enabling the defog function can enhance the subtle details so that the image appears clearer.

Set defog as ON to enable the function. Position, size, and the defog gradation are configurable.
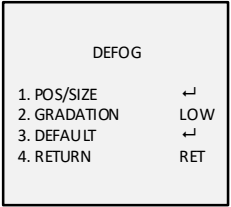
```
           DEFOG

  1. POS/SIZE          ↵
  2. GRADATION      LOW
  3. DEFAULT          ↵
  4. RETURN          RET
```

Figure 3. 2 DEFOG

3.1.5 BACKLIGHT

Backlight is applicable for the backlight or the high luminance environment. You can set the Backlight to BLC, HSBLC, and WDR.

BLC (Backlight Light Compensation): If there is a strong backlight, the object in front of the backlight will appear silhouetted or dark. Based on the back area, BLC enhances the brightness of the whole image which makes it possible to see the area in the strong backlight clearly, but the backlight area will be over-exposed.

GAIN: The gain of the BLC can be set as High, Middle, or Low. The higher the gain, and the clearer the image will be.

AREA: Click on the up/down/left/right button to define the BLC position and size. Select RET to go back to the BLC menu or to re-define the BLC area.

DEFAULT: Restore the BLC settings to default.

```
           BLC

  1. GAIN          MIDDLE
  2. AREA             ↵
  3. DEFAUT           ↵
  4. RETURN         RET
```
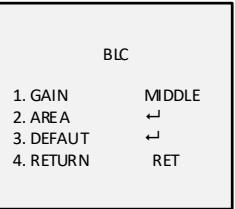
Figure 3. 3 BLC

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.

GAIN: The gain of the HLC can be set as High, Middle, or Low. The higher the gain, and the clearer the image will be.

AREA: Click on the up/down/left/right button to define the HLC position and size. Select RET to go back to the HLC menu or to re-define the BLC area.
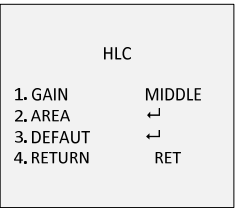
DEFAULT: Restore the HLC settings to default.

```
           HLC

  1. GAIN          MIDDLE
  2. AREA             ↵
  3. DEFAUT           ↵
  4. RETURN         RET
```

Figure 3. 4 HLC

WDR (Wide Dynamic Range): Balances the brightness level of the whole image and provides a clear image with details.
GAIN: Set the gain of WDR as high, middle, or low. The higher the gain is, and the clearer the image will be.

WDR BRIGHT: You can set the value from 0 to 60. The higher the value, the brighter the image will be.
WDR OFFSET: You can set the value from 0 to 60. The higher the value, the vaguer the image will be.
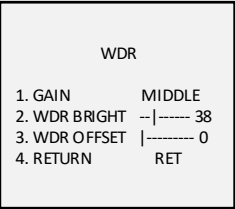
```
           WDR

  1. GAIN          MIDDLE
  2. WDR BRIGHT  --|------ 38
  3. WDR OFFSET  |--------- 0
  4. RETURN         RET
```

Figure 3. 5 WDR

3.1.6 WHITE BALANCE

White balance is the white rendition function of the camera to adjust the color temperature according to the environment. It can remove unrealistic color casts in the image.

MANUAL, ATW (Auto-Tracking White Balance), AWC→SET are selectable.

Manual: Allows you to adjust the white balance by customizing the BLUE and RED value, which range from 1 to 100.

ATW: Refers to the white balance which is continuously being adjusted in real-time according to the color temperature of the scene illumination.

AWC→SET: Similar with ATW, the white balance is continuously being adjusted in real-time according to the scene if AWC→SET is selected. However, if the scene changed, you have to go to AWC→SET to get another proper white balance for the new scene.

3.1.7 DAY & NIGHT

Color, B/W, and AUTO are selectable for DAY & NIGHT switch.

COLOR: The image is colored in day mode all the time.

B/W: The image is black and white all the time, and the IR LED turns on in low-light conditions.

AUTO: The image switches from color to B/W or from B/W to color automatically according to the light condition. And you can select to turn on or turn off the IR LED according to the different illuminations.

3.1.8 SPECIAL

In the SPECIAL sub-menu, you can set the camera title, the digital effect of the image, the

motion detection, privacy mask, dead pixel correction of the camera.

CAMERA TITLE: Edit the camera title on this section.

D-EFFECT : OFF, MIRROR, V-FLIP, and ROTATE are selectable for the mirror.

OFF: The mirror function is disabled.

MIRROR: The image flips 180 degrees horizontally.

V-FLIP: The image flips 180 degrees vertically.

ROTATE: The image flips 180 degrees both horizontally and vertically.

```
            SPECIAL

1. CAM TITLE        ON↵
2. D-EFFECT            ↵
3. MOTION           OFF
4. PRIVACY          OFF
5. DEFECT             ↵
6. VOLTAGE DETECION ON
7. RETURN           RET
```

Figure 3. 6 Special

MOTION: In the user-defined motion detection surveillance area, the moving object can be detected and the alarm will be triggered.

Select a MOTION area. Set the DISPLAY status as ON or OFF. Click the up/down/left/right button to define the position and size of the area. Set the SENSITIVITY from 0 to 100. Set the MOTION VIEW as ON or OFF.

```
            MOTION

1. SELECT       AREA 1
2. DISPLAY        ON↵
3. SENSITIVITY  ––|–– 30
4. MOTION VIEW  ON
5. DEFAULT        ↵
6. RETURN       RET
```

Figure 3. 7 Motion

PRIVACY: The privacy mask allows you to cover certain areas which you do not want to be viewed or recorded. Up to 8 privacy areas are configurable.

```
            PRIVACY

1. SELECT       AREA 1
2. DISPLAY      MOSAIC ↵
3. COLOR        10
4. TRANS.       1
5. DEFAULT        ↵
6. RETURN       RET
```

Figure 3. 8 Privacy

Select a PRIVACY area. Set the DISPLAY status as INV, MOSAIC, COLOR, or OFF. Click the up/down/left/down button to define the position and size of the area.

VOLTAGE DETECTION: Detect whether the voltage is overvoltage or undervoltage.

When the input voltage is 30 % lower than the calibrated voltage, the **UNDERVOLTAGE** flashes on the screen.

When the input voltage is 30 % higher than the calibrated voltage, the **OVERVOLTAGE** flashes on the screen.

DEFECT: Defective pixels are pixels in a CCD or CMOS image sensor in digital cameras, in which the defective pixels fail to sense the light levels correctly. This camera supports the defective pixel correction. Move the cursor to DEFECT and click Iris+ to enter the defective pixel correction interface. LIVE DPC and STATIC DPC are adjustable in this section.

```
            DEFECT

1. LIVE DPC       ON↵
2. STATIC DPC     ON↵
3. RETURN         RET
```

Figure 3. 9 Defect

LIVE DPC: Detects and corrects the dynamic or the real-time defective pixels occurring during use. ON, OFF and AUTO are selectable. The correction level from 0 to 255 is configurable if the LIVE DPC is set as ON. Set it as OFF to disable the live defective pixel correction, and set it as AUTO to detect and repair the defective pixels automatically.

STATIC DPC: Detects and corrects the static or the fixed defective pixels occurring during use. ON and OFF are selectable.

Set the STATIC DPC as ON, and click on Iris+ to enter the STATIC DPC edit interface. Move the cursor to START, and click on Iris+ to start correcting the defective pixels. Click on Iris + when you see the message of **CLOSE THE IRIS THEN PRESS SETKEY** showing up on the screen.

3.1.9 ADJUST

In the Adjust sub-menu, you can configure the settings, including the sharpness, the image quality on monitor, and the LSC (lens shading compensation). Move the cursor to ADJUST and click on Iris + to enter the adjust configuration interface.

```
            ADJUST

1. SHARPNESS  ––––|15
2. MONITOR    LCD↵
3. LSC        OFF•
4. RETURN     RET
```

Figure 3. 10 Adjust

SHARPNESS: Sharpness determines the amount of detail an imaging system can reproduce. And you can adjust the sharpness from 0 to 15. The higher the value, the clearer and sharper the image will appear.

MONITOR: Monitor CRT, and Monitor LCD are selectable.

CRT: The cathode ray tube is a fluorescent screen used to view images. You can define the black level from -30 to 30, the blue gain from 0 to 100, and the red gain from 0 to 100.

LCD: If liquid-crystal display (LCD) is selected, you can define the gamma, blue gain from 0 to 100, and the red gain from 0 to 100.

Note:

Gamma is the name of a nonlinear operation used to code and decode luminance or tristimulus values in a video or still image system.

LSC: Lens shading correction corrects the phenomenon that the image gets darkened or blurred on the periphery.

Set it as ON, move the cursor to **SCAN** and click on Iris+ to correct the lens shading. Set it as OFF to disable the LSC.

3.1.10 RESET

Reset all the settings to factory default.

3.1.11 EXIT

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

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