

- DS-2CE16H0T-AIT3ZF
- DS-2CEAH0T-IT3ZF

TurboHD H0T Series Bullet and Turret Camera User Manual

Thank you for purchasing our product. If there are any questions or requests, do not hesitate to contact the dealer.

This manual applies to the models below:

Type	Model
Type I Camera	DS-2CE16H0T-AIT3ZF
Type II Camera	DS-2CE56H0T-IT3ZF

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1 Preface

1.1 Regulatory Information

1.1.1 FCC Information

Please take attention that changes or modification not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.


FCC Compliance: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

1.1.2 FCC Conditions

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

1.1.3 EU Conformity Statement

 This product and, if applicable, the supplied accessories too are marked with "CE" and comply therefore with the applicable harmonized European standards listed under the Low Voltage Directive 2014/35/EU, the EMC Directive 2014/30/EU.



2012/19/EU (WEEE Directive): Products marked with this symbol cannot be disposed of as unsorted municipal waste in the European Union. For proper recycling, return this product to your local supplier upon the purchase of equivalent new equipment, or dispose of it at designated collection points. For more information see: www.recyclethis.info.



2006/66/EC (Battery Directive): This product contains a battery that cannot be disposed of as unsorted municipal waste in the European Union. See the product documentation for specific battery information. The battery is marked with this symbol, which may include lettering to indicate cadmium (Cd), lead (Pb), or mercury (Hg). For proper recycling, return the battery to your supplier or to a designated collection point. For more information see: www.recyclethis.info.

1.1.4 Industry Canada ICES-003 Compliance

This device meets the CAN ICES-3 (A)/NMB-3(A) standards requirements.



1.1.5 Safety Instruction

These instructions are intended to ensure that the user can use the product correctly to avoid danger or property loss.

The precaution measure is divided into “Warnings” and “Cautions.”

Warnings: Serious injury or death may occur if any of the warnings are neglected.

Cautions: Injury or equipment damage may occur if any of the cautions are neglected.

	
Warnings Follow these safeguards to prevent serious injury or death.	Cautions Follow these precautions to prevent potential injury or material damage.



1.1.6 Warnings

- In the use of the device, you must be in strict compliance with the electrical safety regulations of the nation and region.
- Input voltage should meet both the SELV (Safety Extra Low Voltage) and the Limited Power Source with 12 VDC according to the IEC60950-1 standard. Refer to technical specifications for detailed information.
- The camera is powered by an external DC power supply (12 VDC, 1 A) that complies with the LPS, and the output current of this external DC power supply must be no more than 6 A.
- Do not connect multiple devices to one power adapter to avoid over-heating or a fire hazard caused by overload.
- Make sure that the plug is firmly connected to the power socket.
- Make sure that the device is firmly fixed if wall mounting or ceiling mounting is adopted.
- If smoke, odor, or noise rise from the device, turn off the power at once and unplug the power cord, and then contact the service center.
- Never attempt to disassemble the camera by unprofessional personal.



1.1.7 Cautions

- Do not drop the camera or subject it to physical shock.
- Do not touch sensor modules with fingers.

- Do not place the camera in extremely hot, cold (the operating temperature shall be -40° to 60° C), dusty or damp locations, and do not expose it to high electromagnetic radiation.
- If cleaning is necessary, use a clean cloth with a bit of ethanol, and wipe it gently.
- Do not aim the camera at the sun or extra bright places.
- The sensor may be burned out by a laser beam, so when any laser equipment is in using, make sure that the sensor surface will not be exposed to the laser beam.
- Do not expose the device to high electromagnetic radiation or extremely hot, cold, dusty, or damp environments.
- To avoid heat accumulation, good ventilation is required for the operating environment.
- Keep the camera away from liquid while in use for non-waterproof devices.
- While in delivery, the camera shall be packed in its original packing, or packing of the same material.

1.1.8 Mark Description

Table 0-1 Mark Description

Mark	Description
---	DC Voltage
~	AC Voltage

2 Introduction

2.1 Product Features

The main features are as follows:

- High performance CMOS sensor
- IR cut filter with auto switch
- OSD menu with configurable parameters
- Auto white balance
- Internal synchronization
- SMART IR mode
- 3-axis adjustment

2.2 Overview

2.2.1 Overview of Type I Camera

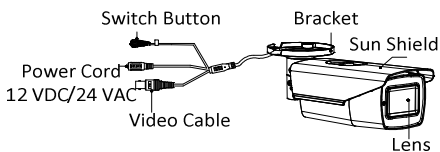


Figure 1 Overview of Type I Camera

Note:

To switch the video output, press and hold the switch button until the image turns black, then release. Cycle through available types to return to the default HD-TVI output. Four kinds of video outputs are available: TVI, AHD, CVI, and CVBS.

2.2.2 Overview of Type II Camera

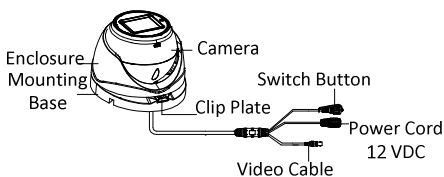


Figure 2 Overview of Type II Camera

Note:

To switch the video output, press and hold the switch button until the image turns black, then release. Cycle through available types to return to the default HD-TVI output. Four kinds of video outputs are available: TVI, AHD, CVI, and CVBS.

3 Installation

Before you start:

- Make sure that the device in the package is in good condition and all the assembly parts are included.
- Make sure that all the related equipment is power-off during the installation.
- Check the specification of the products for the installation environment.
- Check whether the power supply is matched with your power output to avoid the damage.
- Make sure the wall is strong enough to withstand three times the weight of the camera and the mount.
- If the wall is cement, insert expansion bolts before installing the camera. If the wall is wooden, use self-tapping screws to secure the camera.
- If the product does not function properly, contact your dealer or the nearest service center. Do NOT disassemble the camera for repair or maintenance by yourself.

3.1 Installation of Type I Camera

3.1.1 Ceiling 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 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.

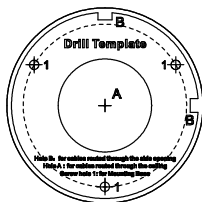


Figure 3 Drill Template

Note:

Drill the cable hole when using 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 supplied screws.

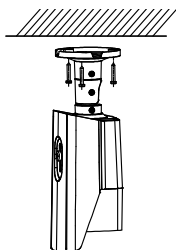


Figure 4 Fix the Camera to the Ceiling

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 at an optimum angle. If not, adjust the surveillance angle.

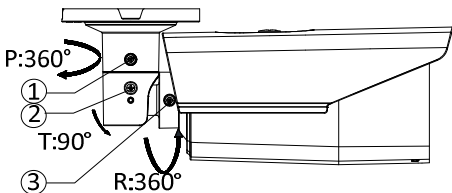


Figure 5 3-axis Adjustment

- 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.

3.1.2 Ceiling Mounting with Junction Box

Before you start:

- You need to purchase a junction box separately.
- Both wall mounting and ceiling mounting are suitable for the bullet camera. Ceiling mounting will be taken as an example in this section. Use ceiling mounting as a reference for wall mounting.

Steps:

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

Note:

Drill the cable hole when using 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.

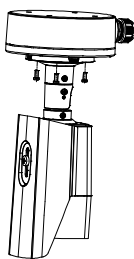


Figure 6 Fix the Camera with the Gang Box

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

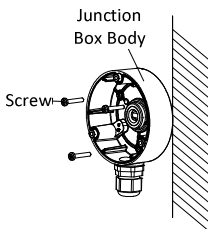


Figure 7 Fix the Camera to the Ceiling

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.

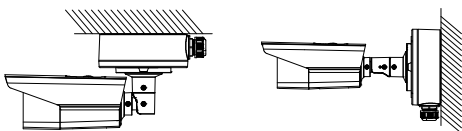


Figure 8 Fix the Junction Box Cover Back to its Body

9. Refer to step 6 of 2.1.1 *Ceiling Mounting without Junction Box* to complete the installation.

3.2 Installation of Type II Camera

3.2.1 Ceiling Mounting without Junction Box

Before you start:

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

Steps:

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

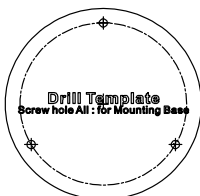


Figure 9 Drill Template

Note:

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

3. Loosen screws to remove the clip plate, and take out the main body.

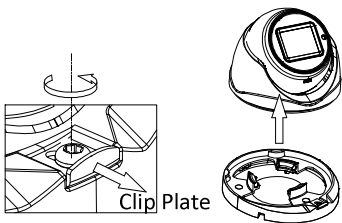


Figure 10 Remove the Clip Plate

4. Fix the mounting base to the ceiling with supplied screws.

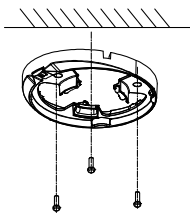


Figure 11 Fix the Mounting Base on the Ceiling

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. Route the cables through the cable hole or the side opening.
6. Install the main body to the mounting base and insert the clip plate.

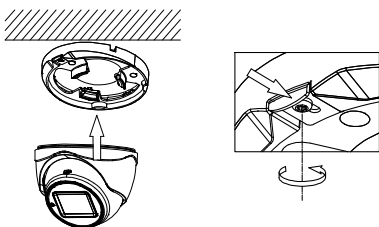


Figure 12 Install the Turret Camera

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

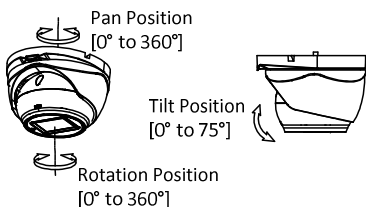


Figure 13 3-axis Adjustment

- 1). Hold camera body and rotate enclosure to adjust the pan position [0° to 360°].
- 2). Move the camera body up and down to adjust the tilt position [0° to 75°].
- 3). Rotate the camera body to adjust the rotation position [0° to 360°].

3.2.2 Ceiling Mounting with Junction Box

Before you start:

- You need to purchase a junction box separately.
- Both wall mounting and ceiling mounting are suitable for the turret camera. Ceiling mounting will be used as an example in this section. Use ceiling mounting as a reference for wall mounting.

Steps:

1. Paste junction box drill template on the ceiling.
2. Drill screw holes and the cable hole (optional) in the ceiling according to holes in the drill template.

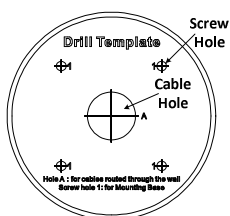


Figure 14 Drill Template of the Junction Box

Note:

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

3. Refer to step 3 of *Ceiling Mounting without Junction Box* to take out the camera's main body.
4. Take apart the junction box, and align the camera screw holes with those on the junction box cover.
5. Fix the camera's mounting base on the junction box's cover with three PM4 × 10 screws.

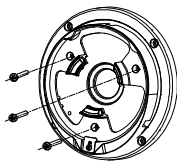


Figure 15 Secure Screws on Junction Box's Cover

- Secure the junction box's body on the ceiling with four PA4 × 25 screws.

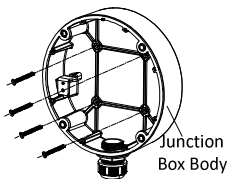


Figure 16 Secure the Junction Box's Body on Ceiling

- Combine the junction box cover with its body by tightening four screws on junction box's cover.

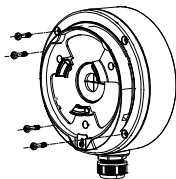



Figure 17 Fix the Junction Box

- Repeat steps 5 to 9 of *Ceiling Mounting without Junction Box* to complete the installation.

4 Menu Description

Purpose:

Call the menu by clicking the button  on the PTZ Control interface, or call preset No.95.

Steps:

- Connect the camera with the TVI DVR, and the monitor, shown as the figure below.

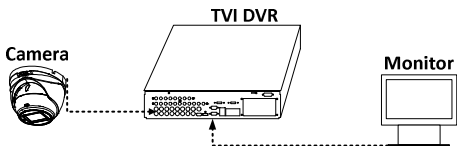



Figure 18 Connection

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

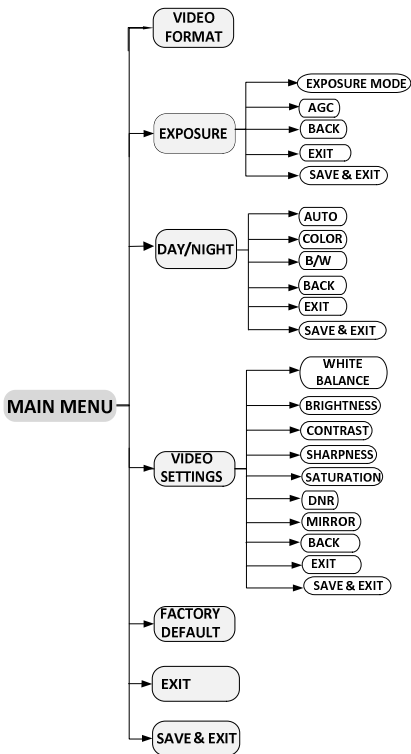


Figure 19 Main Menu Overview

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

4.1 VIDEO FORMAT

You can set the video format to 5 MP @ 20 fps, 4 MP @ 25 fps, 4 MP @ 30 fps, 2 MP @ 25 fps, or 2 MP @ 30 fps.

4.2 EXPOSURE

Exposure describes the brightness-related parameters, which can be adjusted by **EXPOSURE MODE** and **AGC**.

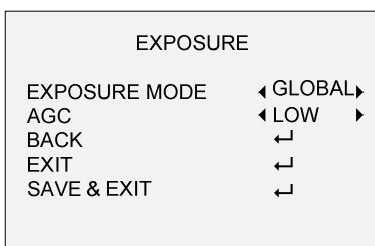


Figure 20 EXPOSURE

4.3 EXPOSURE MODE

You can set the **EXPOSURE MODE** as **GLOBAL**, **BLC**, and **DWDR**.

- **GLOBAL**

Normal exposure mode, which sets exposure according to the whole image brightness.

- **BLC (Backlight Compensation)**

BLC (Backlight Compensation) compensates light for the front object to make it clear, but may cause the overexposure of the background, where the light is strong.

- **DWDR (Digital Wide Dynamic Range)**

DWDR helps the camera provide clear images even when backlit. When both very bright and very dark areas simultaneously exist in the image, **DWDR** balances the brightness level of the whole image to provide clear images with details.

4.4 AGC (Automatic Gain Control)

Optimizes image clarity in poor light conditions. The **AGC** level can be set as **HIGH**, **MEDIUM**, or **LOW**. Select **OFF** to disable the **AGC** function.

Note:

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

4.5 DAY/NIGHT

COLOR, **BW** (Black White), and **AUTO** are selectable for DAY/NIGHT switch.

- **COLOR**

The image is color in day mode all the time.

- **B & W (Black and White)**

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

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

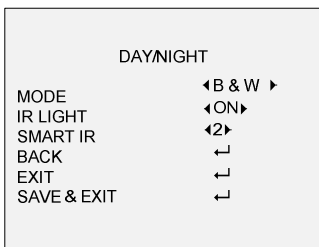


Figure 21 B&W

- **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 1 to 3. The higher the value, the more obvious the effects.

4.6 AUTO

Automatically switch Color or BW (Black and White) according to actual scene brightness.

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

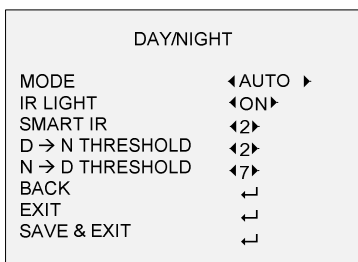


Figure 22 AUTO

- **IR LIGHT**

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

- **SMART IR**

The **Smart IR** function adjusts the light to its most suitable intensity and prevents the image from overexposure. The **SMART IR** value can be adjusted from 1 to 3. The higher the value, the more obvious the effect.

- **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, the more sensitive the camera.

- **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, the more sensitive the camera.

4.7 VIDEO SETTINGS

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

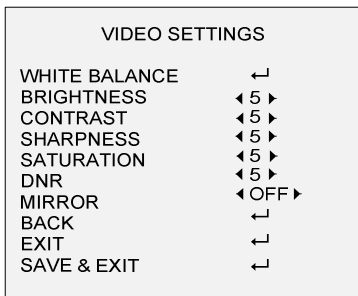


Figure 23 VIDEO SETTINGS

4.7.1 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 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 from 1 to 255 to adjust the image red/blue color shades.

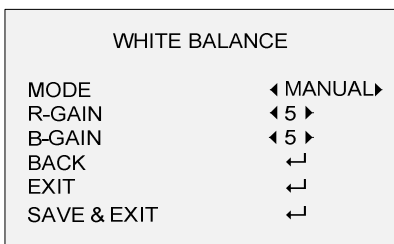


Figure 24 MANUAL MODE

4.7.2 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 higher the value, the brighter the image.

4.7.3 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.

4.7.4 SHARPNESS

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

4.7.5 SATURATION

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

4.7.6 DNR (Digital Noise Reduction)

The DNR function can decrease the noise effect, especially when capturing moving images in poor light conditions and delivering more accurate and sharp image. You can set the **DNR** value from 1 to 9.

4.7.7 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.

4.8 FACTORY DEFAULT

Move the cursor to **FACTORY DEFAULT** and click **Iris+** to reset all the settings to the factory default.

4.9 EXIT

Move the cursor to **EXIT** and click **Iris+** to exit the menu without saving.

4.10 SAVE & EXIT

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