

HIKVISION



IR Dome Camera

User Manual

www.hikvision.com

UD.6L0201D0065A01

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

This manual applies to following cameras:

Models	Models
DS-2CC502P(N)-IR1(IR3)	DS-2CC512P(N)-IR1(IR3)
DS-2CC592P(N)-IR1(IR3)	DS-2CC5182P(N)-IR1(IR3)
DS-2CC5192P(N)-IR1(IR3)	DS-2CC51A2P(N)-IR1(IR3)
DS-2CC5172P(N)-IR1T (IR3T)	DS-2CC5182P(N)-IR1T (IR3T)
DS-2CC502P(N)-IR	DS-2CC512P(N)-IR
DS-2CC592P(N)-IR	DS-2CC5132P(N)-IR

This manual may contain several technical incorrect places or printing errors, and the content is subject to change without notice. The updates will be added to the new version of this manual. We will readily improve or update the products or procedures described in the manual.

DISCLAIMER STATEMENT

“Underwriters Laboratories Inc. (“UL”) has not tested the performance or reliability of the security or signaling aspects of this product. UL has only tested for fire, shock or casualty hazards as outlined in UL’s Standard(s) for Safety, UL60950-1. UL Certification does not cover the performance or reliability of the

security or signaling aspects of this product. UL MAKES NO REPRESENTATIONS, WARRANTIES OR CERTIFICATIONS WHATSOEVER REGARDING THE PERFORMANCE OR RELIABILITY OF ANY SECURITY OR SIGNALING RELATED FUNCTIONS OF THIS PRODUCT.”

Regulatory Information

FCC Information

FCC compliance: This equipment has been tested and found to comply with the limits for 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.

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

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 2006/95/EC, the EMC Directive 2004/108/EC.



2002/96/EC (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.



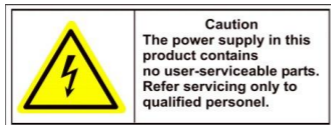
2006/66/EC (battery directive): This product contains a battery that cannot be disposed of as unsorted municipal waste in the European Union. See the product documentation for specific battery information. The battery is marked with this symbol, which may include lettering to indicate cadmium (Cd), lead (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.

Safety Warnings and Cautions

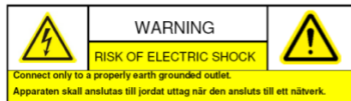
Please pay attention to the following warnings and cautions:



Hazardous Voltage may be present: Special measures and precautions must be taken when using this device. Some potentials (voltages) on the device may present a hazard to the user. This device should only be used by Employees from our company with knowledge and training in working with these types of devices that contain live circuits.



Power Supply Hazardous Voltage: AC mains voltages are present within the power supply assembly. This device must be connected to a UL approved, completely enclosed power supply, of the proper rated voltage and current. No user serviceable parts inside the power supply.



System Grounding (Earthing): To avoid shock, ensure that all AC wiring is not exposed and that the earth grounding is maintained. Ensure that any equipment to which this device will be

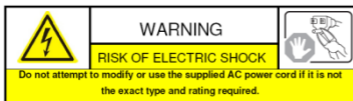
attached is also connected to properly wired grounded receptacles and are approved medical devices.



Power Connect and Disconnect: The AC power supply cord is the main disconnect device to mains (AC power). The socket outlet shall be installed near the equipment and shall be readily

accessible.

Installation and Maintenance: Do not connect/disconnect any cables to or perform installation/maintenance on this device during an electrical storm.



Power Cord Requirements: The connector that plugs into the wall outlet must be a grounding-type male plug designed for use in your

region. It must have certification marks showing certification by an agency in your region. The connector that plugs into the AC receptacle on the power supply must be an IEC 320, sheet C13, female connector. See the following website for more information <http://kropla.com/electric2.htm>.

Lithium Battery: This device contains a Lithium Battery. There is a risk of explosion if the battery is replaced by an incorrect type. Dispose of used batteries according to the vendor's instructions and in accordance with local environmental regulations.

Perchlorate Material: Special handling may apply. See www.dtsc.ca.gov/hazardouswaste/perchlorate. This notice is required by California Code of Regulations, Title 22, Division 4.5, Chapter 33: Best Management Practices for Perchlorate Materials. This device includes a battery which contains perchlorate material. Taiwan battery recycling:



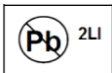
Please recycle batteries.



Thermal and Mechanical Injury: Some components such as heat sinks, power regulators, and processors may be hot; care should be taken to avoid contact with these components.

Electro Magnetic Interference: This equipment has not been tested for compliance with emissions limits of FCC and similar international regulations. This device is not, and may not be, offered for sale or lease, or sold, or leased until authorization from the United States FCC or its equivalent in other countries has been obtained. Use of this equipment in a residential location is prohibited. This equipment generates, uses and can radiate radio frequency energy which may result in harmful interference to radio communications. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment on and off, the user is required to take measures to eliminate the interference or discontinue the use of this equipment.

Lead Content:



Please recycle this device in a responsible manner. Refer to local environmental regulations for proper recycling; do not dispose of device in unsorted municipal waste.



Safety Instruction

These instructions are intended to ensure that 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.

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



Warnings

- Please adopt the power adapter which can meet the safety extra low voltage (SELV) request. And source with DC 12V or AC 24V (depending on models) according to the IEC60950-1 and Limited Power Source standard.
- If the product does not work properly, please contact your dealer or the nearest service center. Never attempt to disassemble the camera yourself. (We shall not assume any

responsibility for problems caused by unauthorized repair or maintenance.)

- To reduce the risk of fire or electrical shock, do not expose this product to rain or moisture.
- This installation should be made by a qualified service person and should conform to all local codes.
- Please install blackouts equipment into the power supply circuit for convenient supply interruption.
- Please make sure that the ceiling can support more than 50(N) Newton gravities if the camera is fixed to the ceiling.



Cautions

- Make sure the power supply voltage is correct before using the camera.
- Do not drop the camera or subject it to physical shock.
- Do not touch sensor modules with fingers. If cleaning is necessary, use a clean cloth with a bit of ethanol and wipe it gently. If the camera will not be used for an extended period of time, put on the lens cap to protect the sensor from dirt.
- Do not aim the camera at the sun or extra bright places. A blooming or smear may occur otherwise (which is not a malfunction however), and affecting the endurance of sensor at the same time.

- The sensor may be burned out by a laser beam, so when any laser equipment is being used, make sure that the surface of the sensor will not be exposed to the laser beam.
- Do not place the camera in extremely hot or cold temperatures (the operating temperature should be between $-10^{\circ}\text{C} \sim 60^{\circ}\text{C}$, dusty or damp locations, and do not expose it to high electromagnetic radiation.
- To avoid heat accumulation, good ventilation is required for a proper operating environment.
- Do not let water and any liquid flow into the camera.
- While shipping, the camera should be packed in its original packing, or packing of the same texture.
- Improper use or replacement of the battery may result in hazard of explosion. Replace with the same or equivalent type only. Dispose of used batteries according to the instructions provided by the battery manufacturer.

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1 Introduction

1.1 Product Features

This camera adopts high performance sensor and advanced print circuit board design technology. It possesses of high resolution, low distortion, and low noise features, etc. It is extremely suitable for surveillance system and image process system.

The product features are as follows:

- Supply high definition and clear image
- Integrate infrared lights to allow the camera to be used both in the day and the night
- Day-Night Auto-Switch
- Support Auto White Balance with high color rendition
- Back Light Compensation
- Support 3D digital noise reduction
- Support SMART IR function

Note: Only the DS-2CC5172P(N)-IR1T(IR3T) and DS-2CC5182P(N)-IR1T(IR3T) models support the 3D digital noise reduction and SMART IR functions.

- Support Auto Electronic Shutter control to adapt to different environments
- Support Auto Gain control, adaptive brightness
- High SNR leads to a clear and pleased image

- Advanced engineering design, High Reliability
- Ingress Protection: IP66

1.2 Overview

The appearances of the cameras are shown in Figure 1-1 and Figure 1-2.

Camera A:

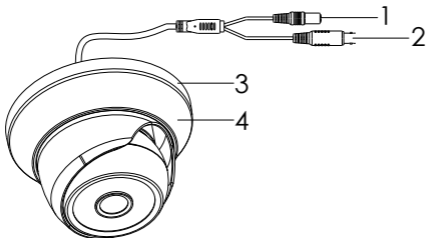


Figure 1-1 Overview of
DS-2CC502/512/592/5182/5192/51A2P(N)-IR1(IR3) and
5172/5182P(N)-IR1T(IR3T)

1 Power Supply Interface	2 Video Interface
3 Mounting Base	4 Liner

Camera B:

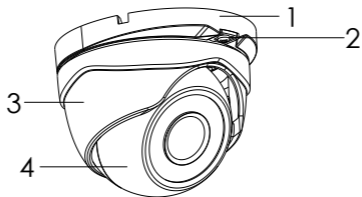


Figure 1-2 Overview of DS-2CC502/512/592/5132P(N)-IR

1 Mounting Base	2 Screw
3 Enclosure	4 Sphere

2 Installation

Before you start:

Please make sure that the device in the package is in good condition and all the assembly parts are included.

- IR dome camera is usually used for outdoor or indoor applications with low illumination. It is usually installed on the ceiling, so please refer to the following steps of ceiling mounting to install the camera.
- Please ensure that the ceiling is strong enough to withstand more than 3 times the weight of the camera and the bracket. If the ceiling is not strong enough, the camera may fall and cause serious damage.
- For the cement ceiling, you need to mount the camera with expansion screws. For the woodiness wall, you can mount the camera with self-tapping screws.

2.1 Installation of Camera A

Note: The models of camera A are DS-2CC502/512/592/5182/5192/51A2P(N)-IR1(IR3) and 5172/5182P(N)-IR1T(IR3T).

Steps:

1. Disassemble the camera as shown in Figure 2-1.
 - 1) Rotate the trim ring to remove it from the dome

- 2) Loosen the set screw to separate the enclosure and the dome.

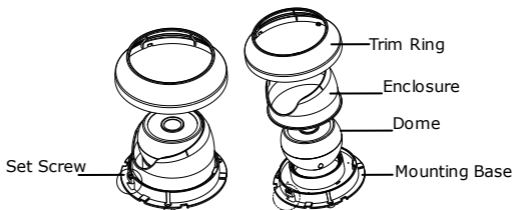


Figure 2-1 Disassemble the Dome

2. Attach the drill template to the ceiling and drill the mounting holes in the ceiling according to the template. Please also drill a cable hole if it is necessary to route the cables through the ceiling.

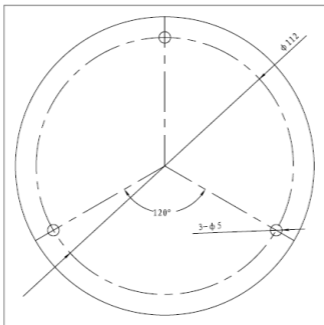


Figure 2-2 Drill Template

3. Attach the mounting base to the ceiling and align the holes with the mounting holes. Fix it to the ceiling with the set screws.

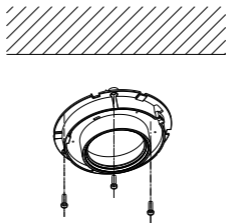


Figure 2-3 Fix the Mounting Base

4. Route the cables and connect the power supply and output the video on a monitor.
5. Install the dome to the mounting base and then install the enclosure with the set screw as shown in Figure 2-4.

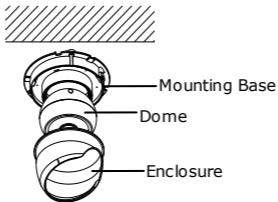


Figure 2-4 Assemble the Camera

6. Adjust the view angle.
 - 1) Loosen the screw on the dome.
 - 2) According to the image on the monitor, adjust the dome to get the desired view angle.
 - 3) Tighten the screw.

Note: The adjustable tilt angle range is from 0° to 75°.

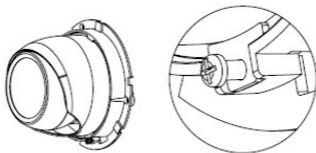


Figure 2-5 Adjust the View Angle

7. Attach and rotate the trim ring to the mounting base until it's tightened.

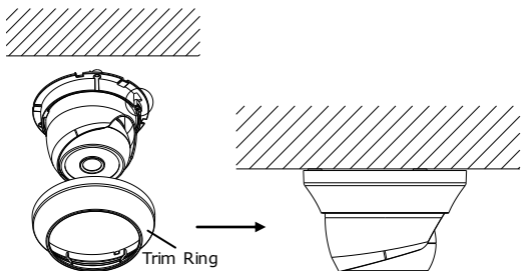


Figure 2-6 Finish Installation

2.2 Installation of Camera B

Note: The models of camera B are DS-2CC502/512/592/5132P(N)-IR.

Steps:

1. Loosen the set screw to separate the enclosure and the dome.
2. Attach the drill template to the ceiling and drill the mounting holes in the ceiling according to the template. Please also drill a cable hole if it is necessary to route the cables through the ceiling.

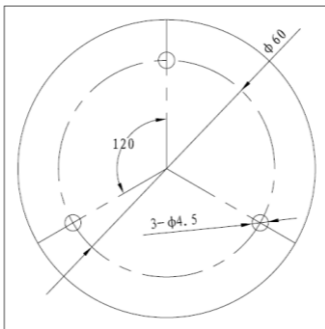


Figure 2-7 Drill Template

3. Attach the mounting base to the ceiling and align the holes with the mounting holes. Fix it to the ceiling with the set screws.

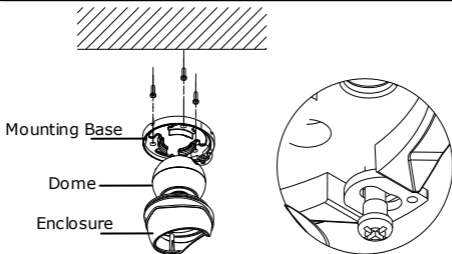


Figure 2-8 Fix the Mounting Base

4. Route the cables and connect the power supply and output the video on a monitor.
5. Install the dome to the mounting base and then install the enclosure Figure 2-8.
6. According to the image on the monitor, adjust the dome to get the desired view angle.
7. Tighten the set screw as shown in Figure 2-9.

Note: The adjustable tilt angle range is from 0° to 75°.

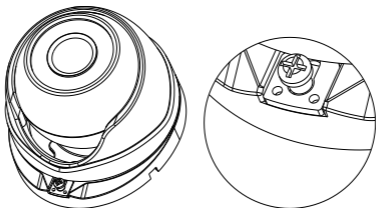


Figure 2-9 Tighten the Screw

2.3 Wiring

- Please make sure that the power adapter can match with that of the camera.
- The standard power supply of the camera is 12V DC (Please refer to technical specifications for more details).
- Please plug the power adapter not too far away because the transmission distance of DC power is limited.

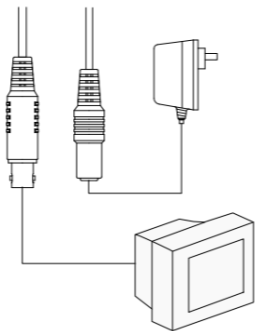


Figure 2-10 Connections

Appendix

1 Glossary

Note:

The glossary gives brief explanations to the basic operation principle or the basic function of the camera. However, it doesn't mean the listed functions are all supported by these series of cameras. Please take the function in the corresponding specification as the standard.

Definition:

Definition is the degree to distinguish the edge between two parts.

Contrast:

Contrast is the color difference between the brightest and darkest parts.

Saturation:

Saturation is the degree of color purity. The color is purer, the image is brighter.

DAY/NIGHT Auto Switch:

The cameras deliver color images during the day. And as light diminishes at night, the cameras switch to night mode and deliver black and white images with high quality.

AGC:

AGC is a control circuit that automatically changes the gain of a receiver or other pieces of equipment, so that the desired output

signal remains essentially. When under low illumination, AGC will regulate the gain and amplification of the video signal.

S/N ratio:

It is the ratio of Signal voltage to noise voltage. The ratio is larger, the effect of noise is less, and the image is clearer.

White Balance:

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

BLC:

If you focus on an object against strong backlight, the object will be too dark to be seen clearly. The BLC (Backlight Compensation) function can compensate light to the object in the front to make it clear, but this causes the over-exposure of the background where the light is strong.

SMART IR:

The SMART IR adopts the smart image processing technique to automatically adjust the brightness curve by detecting multi-zone brightness, and so as to prevent the over exposure of central point existed in short IR distance conditions.

Motion Detection:

In the user-defined motion detection surveillance area, the moving object can be detected and trigger alarm. The sensitive level can be customized according to the environment.

Privacy Mask:

This function allows you to block or mask certain area of a scene, thus prevent the personal privacy from recording or live viewing.

OSD (On Screen Display):

OSD is the texts superimposed on a screen. It can show the menu on the screen.

Synchronous System:

There are two modes for the camera synchronization. Internal synchronization is realized by the synchronous signal which is generated by the inside crystal oscillator.

ICR Auto Switch:

The filter will filter infrared light during the daytime and change to normal filter at night to ensure a high sensitivity and clear image.

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 provide clear images with details.

EIS (Electronic Image Stabilization):

Electronic image stabilization function can reduce certain ranges of vibration which is caused by the external environment.

3D Digital Noise Reduction:

Comparing with the general 2D digital noise reduction, the 3D digital noise reduction function processes the noise initiated by CCD besides processing the noise in the separated Y video signal and C video signal.

HLC (High Light Compensation):

The HLC is capable of detecting and reversing the bright spots in the picture (such as headlights) to black so as to achieve optimum picture quality.

Digital Zoom:

Digital zoom helps to crop the entire image, and then digitally enlarge the size of a portion of image that is needed to zoom in on.

2 Troubleshooting

Problem 1:

Why does the camera restart intermittently? And the problem is much more serious when infrared lights of IR camera are turned on at night.

Possible Reasons:

The main and common reason is power supply shortage. This problem may happen to the IR camera especially at night, because the infrared lights are turned on at night and increase the power consumption.

To Solve the Problem:

You need to ensure that the power supply matches with $\pm 10\%$ of the nominal voltage. And the power consumption of power adapter should meet the demand of the camera.

Problem 2:

The camera can never be focused by adjusting the focus-stick on the lens. And there is also no use adjusting the back focus.

Possible Reasons:

The camera needs the lens with CS lens mount. When you install a lens with C lens mount, the camera will never focus.

To Solve the Problem:

You can change a lens with CS lens mount to the camera.

Or you can use a C/CS adapter ring between the camera and the lens with C lens mount.

Problem 3:

The camera is installed with an auto-iris lens. You adjust the focus to get a clear image in the daytime. But the image is defocused at night.

Possible Reasons:

In the daytime, the illumination is high, so the iris is adjusted to a small size automatically. The DOF (depth of field) is long. But at night, the iris is adjusted to a large size automatically, so the DOF is shortened. The focus you adjusted in the daytime now locates out of the DOF, so the image is defocused at night.

To Solve the Problem:

When you adjust the focus for a camera with an auto-iris lens, you need to set the lens type to AES (auto electronic shutter) mode. Under AES mode, the iris is adjusted to the largest size automatically. Then you can adjust the focus to get a clear image. At last, you need to set the lens type back to AI (auto iris) mode. Or you can adjust the focus in low illumination condition, such as at night.

Problem 4:

A camera with OSD menu and an auto-iris lens displays black video. But the OSD menu can be called and displayed.

Possible Reasons:

Auto-iris lens connector is loose contact.

Or the iris driven mode of the camera does not match with the mode of auto-iris lens.

To Solve the Problem:

Check the auto-iris lens connector to ensure good contact.

Set the iris driven mode of the camera the same as that of lens.

The modes can be VD (video drive) or DD (direct drive). DD mode is commonly used.

3 Technical Maintenances

Lens Maintenance

The lens surface is plated an anti-reflection coating. The dust, oil and finger print, etc. will cause scratch, mildewed and performance degraded. Please refer to the following method to clean the lens.

- Handling dust

Use oil free soft brush or blowing dust ball to clean the dust.

- Handling oil

Steps:

1. Wipe off the water-drop or oil by soft cloth and dry the lens.
2. Use oil free cotton cloth or lens clean paper to wipe the lens from center to outside with alcohol or detergent.
3. Change the cloth to wipe the lens until the lens is clean.

Bubble Maintenance of Domes

The bubble is of transparent plastic. The dust, oil and finger print, etc. will cause scratch or image blur. Please refer to the following method to clean the bubble.

- Handling dust

Use oil free soft brush or blowing dust ball to clean the dust.

- Handling oil

Steps:

1. Wipe off the water-drop or oil by soft cloth and dry the bubble.
2. Use oil free cotton cloth or bubble clean paper to wipe the bubble from center to outside with alcohol or detergent.
3. Change the cloth to wipe the bubble until the bubble is clean.

Glass Maintenance of IR Camera

Steps:

1. Wipe off the dust, water-drop or oil by soft cloth and dry the glass.
2. Use oil free cotton cloth or glass clean paper to wipe the glass from center to outside with alcohol or detergent.
3. Change the cloth to wipe the glass until the glass is clean.

First Choice for Security Professionals