



HDC-SDOME051MIR-B

USER MANUAL



HD Portable Rugged PTZ Cameras

Safety Notes

Thank You for Choosing Our HD table Rugged PTZ Camera!

When you open the box:

1. Check that the packing and the contents are not visibly damaged. Contact the retailer immediately if any parts are either missing or damaged.
2. Make sure if the contents are all included as per the packing list.
3. Do not attempt to use the device with missing or damaged parts. Send the product back in its original packing if it is damaged.

[Note] The information contained in the document is subject to change without notice.

Table of Contents

Safety Notes --- Important!!!	1
About The Product	2
Features	2
Functions	3
Technical Data	5
Preparation	7
Dip Switch.....	7
Initial Power On Test	9
Installation Place	9
Installation	10
Magnetic Mount.....	11
Installation	11
Camera Cable Package	14
Operation	16
Special Control Panel Commands	16
Operation.....	17

Safety Notes --- Important!!!

The following important notes must be followed carefully to run the camera and respective accessories in total safety. The camera and relative accessories are called video system in this section.

- Before installing the camera, please read this manual carefully; when installing, please follow instructions of installation indicated in this manual. Please keep this manual for future use.
- The following installation should be performed by qualified service personnel or system installers in accordance with all local rules.
- Before powering on the camera, please check the power voltage carefully. Make sure that you are using the right power source.
- Please put the power cable, video cable and control cable in safe place.
- Do not operate the camera beyond the specified temperature and humidity. The camera's working temperature range is between -35°C ~ $+65^{\circ}\text{C}$. The ambient humidity range is less than 95%.
- When transporting, avoid violent shake or force to the camera.
- To prevent electric shock, do not remove screws or covers of the camera. There are no self-serviceable parts inside. Refer to qualified service personnel for servicing.
- Video cable and RS485 cable should be far away from other cables. Shielded and independent wiring is necessary for video and control cables.
- Never aim the lens of the camera at the sun or other extremely bright objects. Otherwise, it may cause damage.
- When cleaning the camera, please use soft cloth. If the camera is very dirty, wipe it off gently with a soft cloth moistened with a weak solution of water and a neutral kitchen detergent. Wring all liquid from the cloth before wiping the camera, then wipe off all remaining dirt with a soft, dry cloth. Use lens cleaning paper to clean the lens.
- Do not move the camera module manually. In doing so would result in malfunction of the camera.
- Do not hold the camera module when carrying the video camera.
- Make sure the camera is far away from area where radiation, X-rays, strong electric waves, or magnetism is generated.
- With its stability, easy-to-use and excellent performance, it is widely used in electronic classroom, technical training and video conferencing room, etc.

About The Product

The portable rugged PTZ camera is designed for practical and extreme applications, such as military field surveillance, security outdoor evidencing etc. It is featured as weather-proof, anti-vibration and anti-corrosion.

It can be deployed into a mobile surveillance system, consisting of ptz camera, vehicle video recorder, monitor, control system and 3G wireless video transmitter. Meanwhile a remote controller is available for the user inside the vehicle to control the camera outside.

Features

- 2.2MP, 1/3" HD CMOS sensor;
- Support 1080P, 1080i, 720P and standard definition video outputs;
- Simultaneous video outputs via HD-SDI and CVBS interfaces;
- Efficient 60M IR / White Light lighting, excellent night vision performance;
- Magnesium Alloy front cover;
- Portable with compact design & high reliability;
- Advanced mechanical system with high speed and free-maintenance motor design;
- Optional damping system;
- Digital Image Stabilization (DIS) supported;
- WDR supported;
- Built in defogger;
- Soft address supported;
- Self-adaption of Protocol (Pelco D/P) & Baud rate;
- Support VISCA protocol;
- Wide range of voltage input (10.8-28V);
- Auto power-off with low power supply;
- Random Scan, Auto Scan, Frame Scan supported.

Functions

Soft Address

The camera address can be programmed with a preset command, and the user does not need to dismount the camera from field or do any screw work.

Self-Adaption of Protocol and Baud Rate

The camera can automatically identify the protocol (Pelco D/P) and baud rate of the controller and adapt the camera setting accordingly, with no manual DIP Switch involved.

Day/Night Function

The IR cut filter of camera module inside the camera can be removed by sending special command, so that the camera can change from color to mono. The picture is clear even if the illumination is as low as 0.1Lux.

Save/Call Preset

Preset function is that dome saves current horizontal angle and title angle of pan/tilt, zoom and position parameters into memory. When necessary dome calls these parameters and adjusts Pan/Tilt and camera to that position. User can save and call presets easily and promptly by using keyboard controller or infrared controller. The camera supports up to 256 presets.

Zoom control

User can adjust zoom wide or tele by controller and get desired image.

Focus control

System defaults Auto Focus mode, that is, the lens and camera will automatically adjust the focus to get the best image.

Focus can also be controlled manually from the controller if required. Press Focus Near or Focus Far key to manually focus. Focus can be manual via keyboard or other controller, please refer to control keyboard or other controller operation manual for detailed operation.

The camera will NOT auto focus in the following status.

- Target is not in the center of image.
- Targets are in near and far at the same time.
- Target is of strong light object. Such as spotlight etc.
- Target is behind the glass with water drop or dust.
- Target moves too fast.
- Large area target such as wall.
- Target is too dark or vague.

IRIS control

System defaults Auto IRIS. Camera can adjust immediately according to the alteration of background illumination so that a lightness steady image can be achieved.

You may adjust IRIS by controller to get required image brightness, and call back Auto IRIS by controlling the joystick.

Auto White Balance

Camera can automatically adjust white balance (WB) according to the alteration of background lightness to give a true color image.

Back Light Compensation (BLC)

If a bright backlight presents, the subjects in the picture may appear dark or as a silhouette. Backlight compensation enhances objects in the center of the picture. The camera uses the center of the picture to adjust the IRIS. If there is a bright light source outside this area, it will wash out to white. The camera will adjust the IRIS so that the object in the sensitive area is properly exposed.

Auto Cruise

The preset position is programmed to be recalled in sequence. This feature is called auto cruise.

Auto, Random and Frame Scan

Auto Scan: Make the camera scan 360° ranging from the current position.

Random Scan: Make the camera scan 360° ranging from the current position, pause at every 108°.

About The Product

Frame Scan: Make the camera scan between two set positions.

[Note] For Frame Scan: The zoom at two limits shall be programmed the same.

Image Flip

Enable you to view image easily when PTZ is either installed on roof of a car or is mounted on the ceiling.

Technical Data

Camera	
Image Sensor	1/3" progressive scan CMOS
Effective Pixel	2.2mega pixel
Video Format	HD: 1080p30/1080p25/1080i60/1080i50/720p60/720p50 SD: PAL/NTSC
Video System	PAL/NTSC
Optical Zoom	20X
Digital Zoom	8X
Min Illumination	Color: 1.5Lux @ F1.6(50IRE) B/W: 0.1Lux @ F1.6(50IRE)
White Balance	Auto/ATW
Focus	Auto/Manual
Exposure	Auto/Manual
S/N Ratio	Not less than 50DB
BLC	On/Off
Image Stabilization	On/Off
Day/Night	Yes
Lens	f=4.45mm-89mm, F1.6 to F2.9
View Angle	Horizontal: 56.56°~3.10°, Vertical: 43.32°~2.34°
PTZ	
Pan Range	360° Continuous
Pan Speed	Control speed: 0.05°~120°/s, adjustable; Preset speed: 150°/s
Tilt Range	-15°~90° (Auto Flip)
Tilt Speed	Control speed: 0.03°~90° /s, adjustable; Preset speed:120°/s
Preset	256

Preset Precision	±0.05°	
Light (for IR Version)		
IR Wave Length	850nm	940nm
IR Range	60m	30m
IR Switch	Auto/Manual	
Light (for White Light Version)		
Color Temperature	6500K	
Range	60m	
Switch	Manual	
General		
Comm. Interface	RS-485	
Protocol	PELCO-P / PELCO-D, VISCA	
Baud Rate	2400bps, 4800bps, 9600bps, 19200bps (self-adaptive)	
Address	0-255	
Voltage	DC10.8-28V	
Power	10W (Standby) 25W (Aux lights ON, defogger ON, and P/T running continuously)	
Working Temperature	-35°C ~65°C	
IP Code	IP66, TVS, Anti-surge	
Dimensions	Φ130(mm)×173(mm) w/o damper Φ140(mm)×199(mm) with damper	
Weight	Standard: 1.6kg With damper 2kg	

Table 1: Technical Data

[Note] The specifications are subject to change without notice.

Preparation

This section contains detailed instructions for installing the camera. These instructions assume that the installer has a good knowledge of installation techniques and is capable of adopting safe installation methods.

Dip Switch

The factory default is:

Camera Address	Protocol	Baud Rate
1	Pelco D	9600bps

The camera can detect and auto program its protocol (Pelco D, Pelco P) as well as baud rate (2400bps, 4800bps, 9600bps, 19200bps) as per the whole video system. In case of VISCA, it needs to be manually set.

Only the camera address setting is necessary. There are two ways to program camera address:

- Soft address: via special preset functions (see Special Control Panel Commands)
- DIP Switch: The switches to configure these settings are located on the main board inside the camera. See Fig.1: DIP Switch.

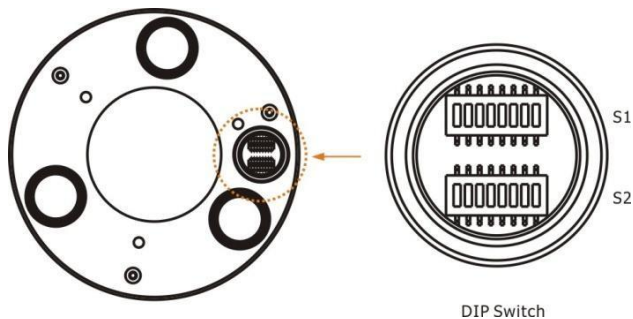


Fig.1: DIP Switch

SW1							
SW Position	1	2	3	4			
Camera Address	OFF	OFF	OFF	OFF	0		
	ON	OFF	OFF	OFF	1		
	OFF	ON	OFF	OFF	2		
	ON	ON	OFF	OFF	3		
	OFF	OFF	ON	OFF	4		
	ON	OFF	ON	OFF	5		
	OFF	ON	ON	OFF	6		
	ON	ON	ON	OFF	7		
	OFF	OFF	OFF	ON	8		
	ON	OFF	OFF	ON	9		
	OFF	ON	OFF	ON	10		
	ON	ON	OFF	ON	11		
	OFF	OFF	ON	ON	12		
	ON	OFF	ON	ON	13		
	OFF	ON	ON	ON	14		
ON	ON	ON	ON	15			
SW Position				5	6		
Protocol	PELCO_D			OFF	OFF		
	PELCO_P			ON	OFF		
	VISCA			OFF	ON		
	Reserved			ON	ON		
SW Position						7	8
Baud Rate	2400bps					OFF	OFF
	4800bps					ON	OFF
	9600bps					OFF	ON
	19200bps					ON	ON

[Note] The camera shall be rebooted after the switches are programmed.

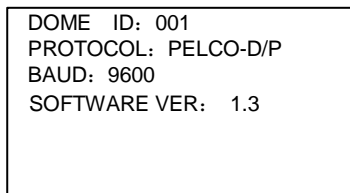
[Note] When protocol is programmed as Pelco_D or Pelco_P, the baud rate can be self-adaptive. With Visca protocol, the baud rate can be programmed via SW Position 7 and 8.

Initial Power On Test

To ensure the camera works well after installation, please power on it for an initial test with the following steps:

1. Connect the camera with correct power supply;
2. Connect control cable, video cable;
3. Power on the camera;

The camera will run a calibration procedure on power up and show the following messages on screen.



```
DOME ID: 001
PROTOCOL: PELCO-D/P
BAUD: 9600
SOFTWARE VER: 1.3
```

Fig.2: On Screen Messages at Power Up

On the control device, set the protocol Pelco and the camera ID as per the above messages. The PTZ camera can auto detect the protocols and baud rate of the controller and change its own setting accordingly.

Installation Place

Make sure the installation place has enough space, support strength to install the whole PTZ camera and its accessories.

There are two types of mounts: the fixed mount and magnetic mount.

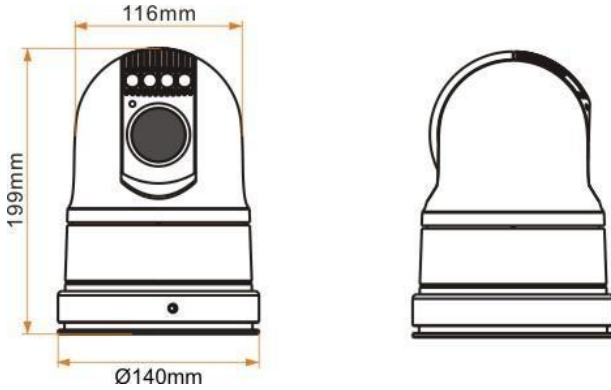


Fig.3: Fixed Mounts (with damping system)

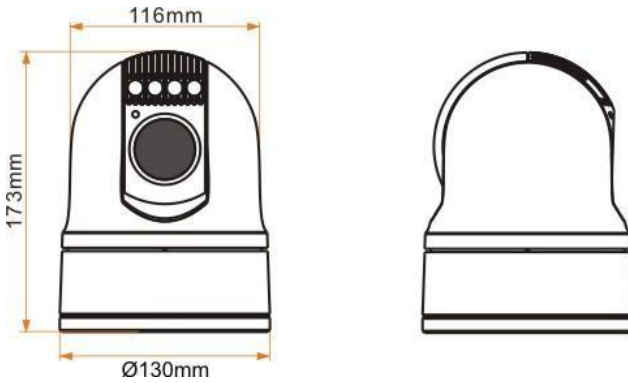


Fig.4: Fixed Mounts (with no damping system)

Magnetic Mount

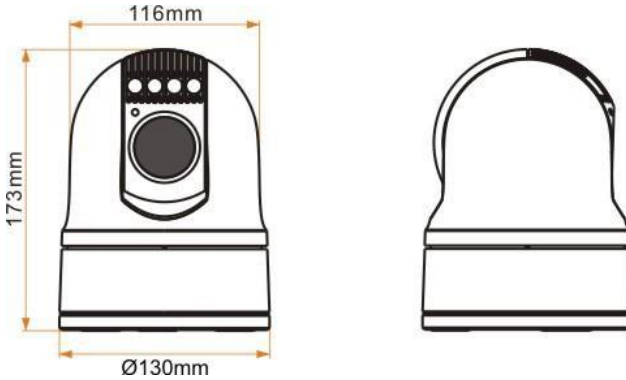


Fig.5: Magnet Mounts (with no damping system)

Installation

To set the camera hard address:

1. Remove the DIP Switch cover at the bottom;
2. Set DIP Switch for camera address;
3. Fix the cover. Make sure the cover is well sealed with the gasket.

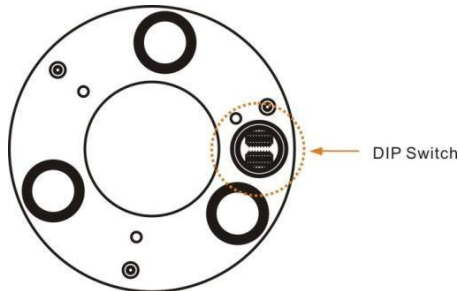


Fig.6: Bottom Plate

Fixed Mounts:

With Damper

1. Take the damper out of packing and fix it to the target place as per the installation dimensions with correct screws.

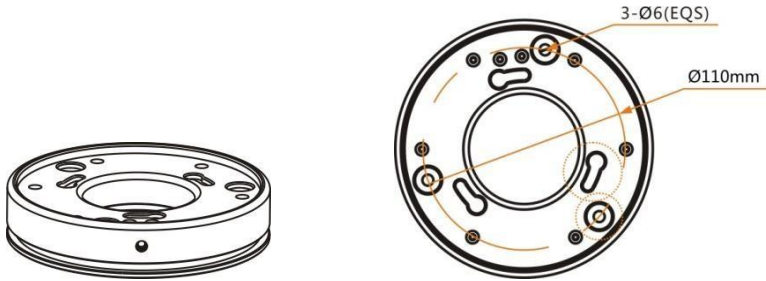


Fig.7: Installation Plate

2. Put the camera onto the damper. Make sure three installation bolts are in position with the fixing holes on the plate. Rotate the camera clockwise.

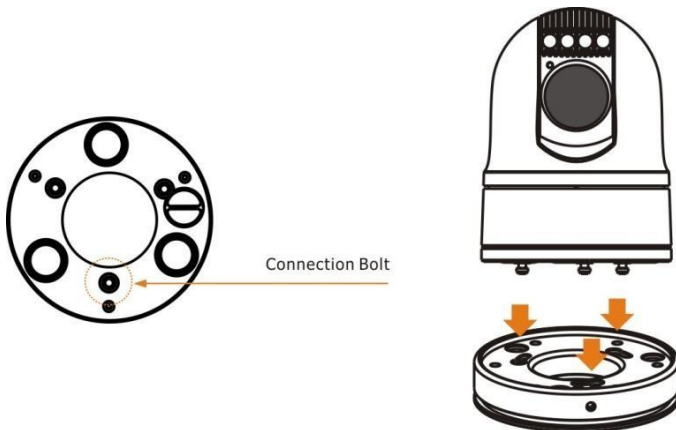


Fig.8: Mount the Camera

3. Fix the camera to the damper with a screw.

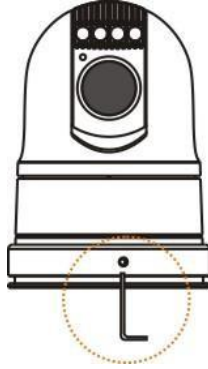
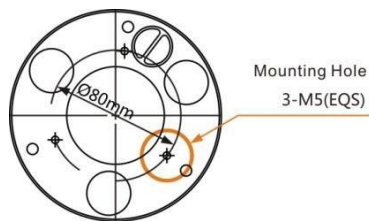


Fig.9: Fix the Camera

With No Damper

1. Take the PTZ camera out of packing and fix it to the target place as per the installation dimensions with correct screws.



Magnetic Mounts:

1. Take the PTZ camera out of the packing and put it to a metal smooth surface with the magnetic sucking to the surface firmly.

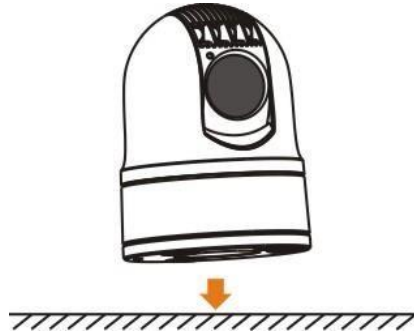


Fig.10: Fix the Camera

[Note] Please place the ptz camera in a safe place when there is no guard.

Camera Cable Package

Connect the cable with the right pins as per following pictures.

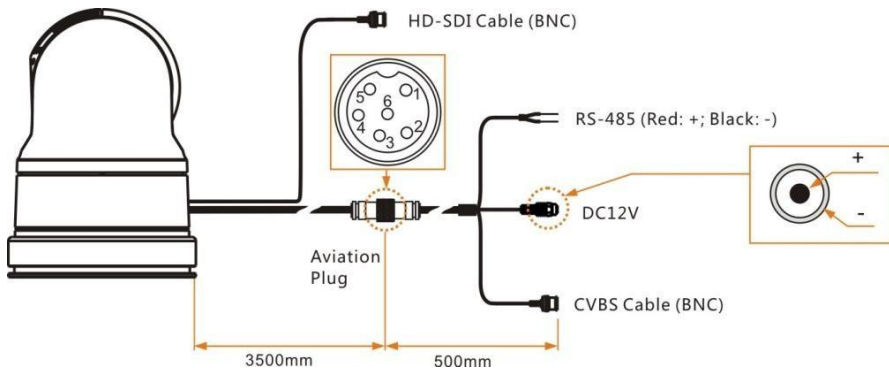


Fig.11: Cable Package

Pin Definition	
Pin #	Definition
1	Video +
2	Power -
3	Power +
4	RS485 -
5	RS485 +
6	Video -

[Note] Please make sure the camera is working with a right power supply. Wrong cable connection may cause damage to the device.

Special Control Panel Commands

The camera can be programmed and operated using various quick control panel commands.

Preset Number	Function	Default Value
<20, >82	General preset positions	-
21	Manual switch between color mode and mono mode	-
22	Auto switch between color mode and mono mode (for IR version only)	√
26	Turn on/off Image Flip;	Off
28	Turn on/off video freeze	Off
29	Turn on/off Digital Image Stabilization (DIS)	Off
32	Turn on IR lights (for IR version only)	-
33	Turn off IR lights (for IR version only)	√
39	Turn on/off digital zoom	Off
42	Set Left Boundary of Frame Scan	-
43	Set Right Boundary of Frame Scan	-
48	Turn On Random Scan	-
49	Turn On Frame Scan between two set presets	-
50	Turn On Cruise	-
51	Turn On Auto Scan(360° Scan)	-
52	Clear All Presets	-
53	Default Setting	-
62	Decrease The Camera Address By -1	-
63	Increase The Camera Address By +1	-
64	Auto shutter	√
65	Increase shutter speed	-
66	Decrease shutter speed	-
72	Turn On white lights (for White Light version only)	-
73	Turn Off white lights (for White Light version only)	√
74	1080i_50	Video Output Formats (Default: 1080i50)
75	1080i_60	
76	720P_50	
77	720P_60	
--		

Table 2Special Commands

“-” indicates current function not set or not open;“√” indicates the default setting of current function;“on”indicates the default mode of current function is on;“off”indicates the default mode of current function is off;

Operation

As the baud rate and protocol are self-adaptive, the PTZ cameras may not response for seconds on power up. It is recognizing the commands and adapting the setting.

IR / White Light

Auto Mode (For IR Version Only):

The default IR mode is auto. Auto mode can also be activated via preset 22. At this mode, the commands of preset 30~33 are disabled.

When the zoom module is in mono, the camera will automatically turn on IR lights. The high beam and low beam will be turned on/off as per the current zoom times.

When the module is in color mode, the camera will automatically turn off IR lights.

Manual Mode:

For IR version: Call Preset 21 to turn on the manual mode. The module will be switched into color or mono mode. And lights can be controlled via the commands of presets 30~33.

For White Light version: Call Preset 21 to turn on the manual mode. The module will be switched into color or mono mode. And lights can be controlled via the commands of presets 72 and 73.

[Note] All lights are suggested to be turned off to protect the camera when temperature is above 50°C.

Image Freeze

Call Preset 28 to turn on/off the function. When it is on, during a regular preset call (see following picture), the video will be frozen at point A till Point B. At Point B, the video will be displayed normally.

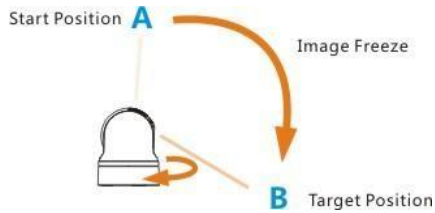


Fig.12: Image Freeze

Soft Address

The camera address can be changed via presets 62 and 63. The new address will take effect after the camera is rebooted.

Digital Image Stabilization (DIS)

The function is off as default. It can be turned on/off by calling preset 29.

It is used when the camera is used in a vibration environment, to compensate the vibration in video.

Frame Scan

Call preset 49 and the PTZ will do frame scan. When the left and right limits are not programmed , the function cannot be activated.

Problems	Possible Causes	Solutions
No action when powered on	Power supply failure	Replace power supply
	Wrong connection of the power	Check & reconnect the cables
Abnormal self-test with motor noise	Mechanical failure	Repair
	Camera inclined	Reinstall the camera
	Inadequate power supply	Replace the power supply
Normal self-test but no images	Video signal failure	Reinstall camera
	Wrong connection of the video	Check & reconnect the cables
	Camera damaged	Replace the camera
Normal self-test but out of control	Wrong connection of RS485 cable	Check and reconnect the cable
	Wrong camera address set	Check and reset the Switches
Vague image	Bad connection of the video	Check and reconnect the cables
	Inadequate power supply	Replace the power supply
PTZ camera out of control	Self test error	Restart the camera
	Wrong connection of RS485 cable	Check and reconnect the cables

Table 3 Trouble Shooting