

# **Minrray UV910 (VHD-A910)**

## **User Manual**



**[www.Minrray.com](http://www.Minrray.com) | 1 800 486-5276**

## **Preface:**

Thanks for using our HD video conference camera

The manual introduce the function, installation and operation of the HD camera. Prior to installation and usage, please read the manual thoroughly.

## **Warning**

This product can be only used in specified range in order to avoid to any damage or danger.

Don't expose the camera to rain or moisture place.

Don't remove the cover to reduce the risk of electric shock. Refer servicing to qualified personnel.

Never operate the camera under unqualified temperature, humidity and power supply.

Only use the replacement parts recommended by us.

Please use the soft cloth to clean the dome. Use neuter cleanser if bad smeared. No use the strong or corrosive cleanser avoiding scuffing.

Be careful of moving, never press the drive parts heavily avoiding camera trouble

## **Notes**

Electromagnetic fields at the specific frequency may affect the image quality.

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## Notes:

### Electric Safety

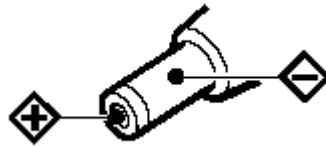
Installation and operation must accord with electric safety standard.

### Caution to transport

Avoid stress, vibration and soakage in transport, storage and installation.

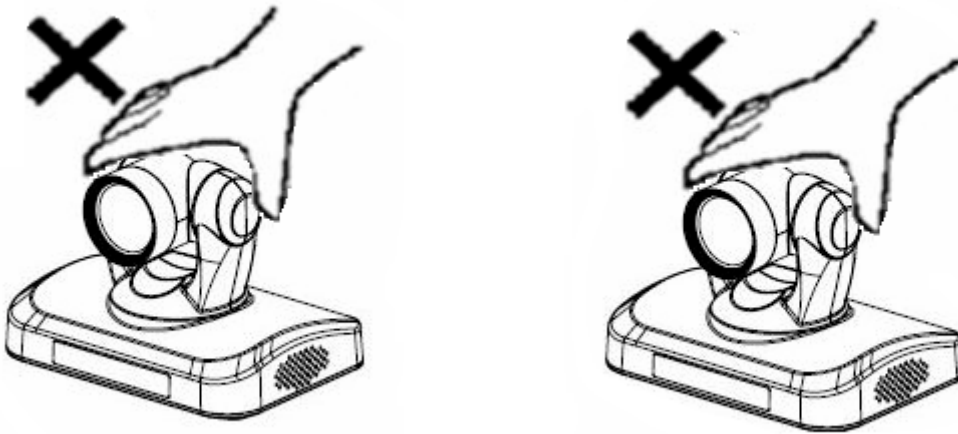
### Polarity of power supply

The power supply of the product is 12VDC, the max electrical current is 2A. Polarity of the power supply is as following drawing



### Careful of installation

Never move the camera by seizing the camera head. Don't rotate the camera head by hand, otherwise, mechanical trouble will occur.



1. This series item must be put on the smooth desk or platform and it can not be installed slantways
2. If the camera is installed on TV or PC, the base can be fixed by four double-sided adhesive tray.
3. Don't apply in corrosive liquid, gas or solid environment to avoid the cover corrosion which is made up of organic material.
4. To make sure no obstacle in rotation range.
5. Never power on before installation is not completed

### Don't dispatch discretionarily

This series items have no parts that user can repair by themselves. Don't disassemble the camera yourself, otherwise, such damage by that does not belong to the warranty scope.

## **Main Features:**

### **Real High Definition Video**

With 1/2.5 inch, 2.7 million pixel high quality HD CMOS transducer, to achieve 1920x1080 super high resolution video.

### **10x optical zoom**

Fast, accurate and stable auto focus lens, 10x optical zoom; F1.8-2.2 mechanical shutter.

### **Wide range, high speed and low noise Pan/Tilt rotation**

Step motor driving, smooth rotation and user friendly without dithering. Moving to the appointed position quickly and accurately, meanwhile, shooting large area.

### **High definition multiple video output format**

Offer 1080p, 1080i, 720p HD video format and can video out the HD analog signal and digital signal simultaneously from the interface of the YPbPr, HDMI, HD-SDI

### **High quality video transfer by HD-SDI**

Equipped with HD-SDI terminal interface(SMPTE292M), to support long distance, high quality HD video transfer.

### **High quality image output by high definition multi-media interface**

Digital high definition multi-media interface, digital high definition video signal output, which is connected to the HD display equipment by cable directly.

### **RS-232C remote controller( VISCA protocol)**

RS-232C(VISCA protocol) interface: All setting of the camera and Pan/Tilt/Zoom can be remote high speed communication controlled.

### **10 preset position**

10 preset position, preset pan, tilt, zoom, focus position, exposal mode and white balance. Preset data never lost when power is off.

### **In-ceiling installation function**

The camera can be installed in ceiling from structure design. By the serial command, camera image can flip in pan and tilt direction. And the setting can be saved after power off.

### **Multi-function remote controller**

Equipped easy and convenience remote controller. Except the basic setting and the control of Pan/Tilt/ Zoom, it can also set the relative parameters of camera by the remote controller.

### **OSD menu in Chinese and English**

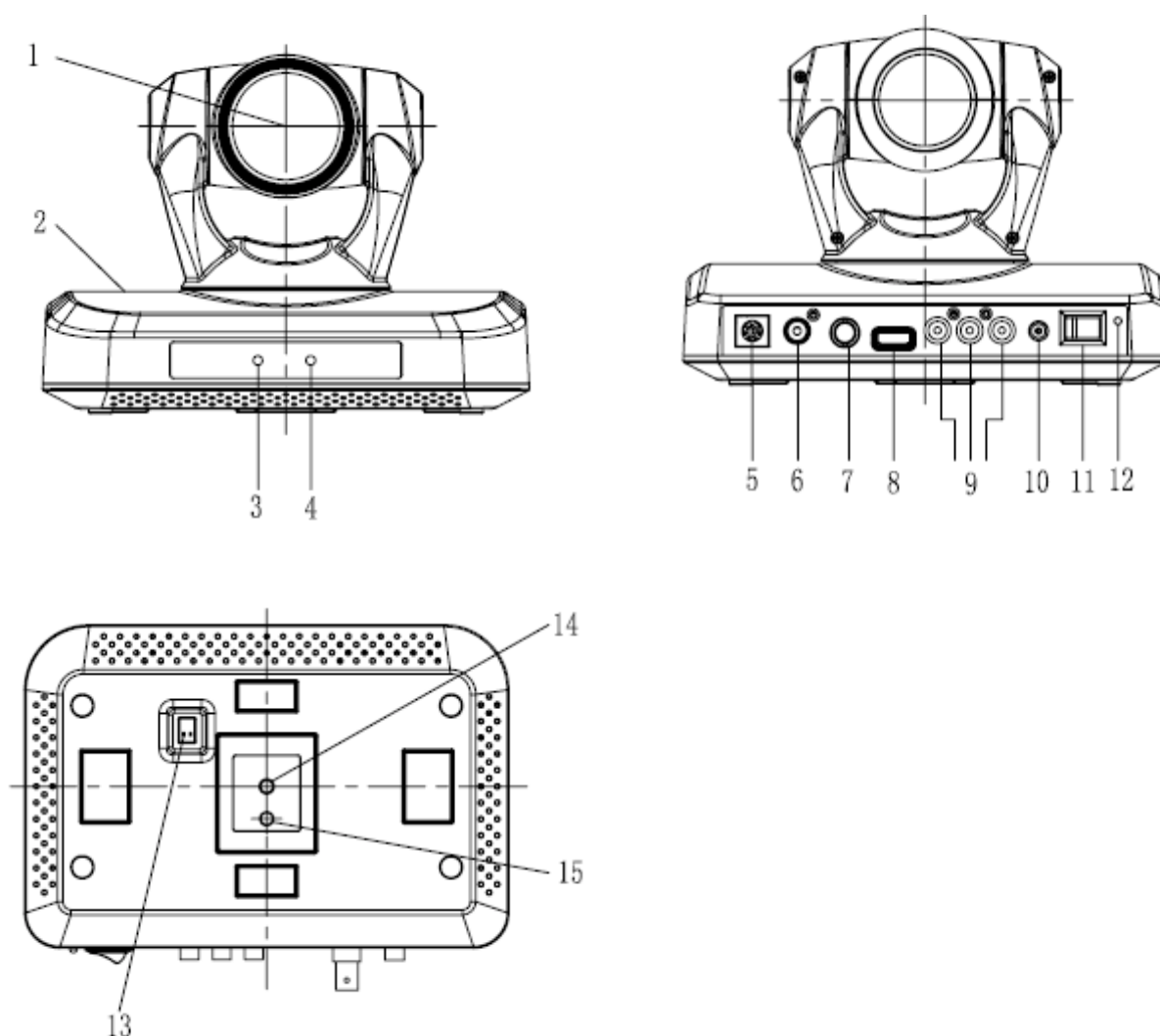
With Chinese-English OSD menu and by the menu the users can set the camera exposure parameter, change the video format and check the current status.

# Supplied Accessories

When you unpack, check that all the supplied accessories are included:

Camera.....	1
AC power adaptor.....	1
AC power cable.....	1
Remote controller.....	1
User manual.....	1
Double-side glue shim.....	4

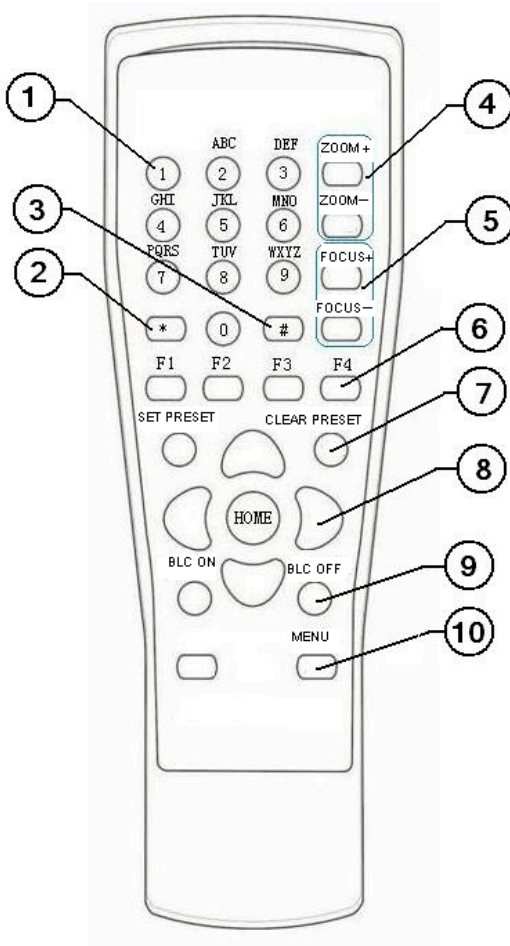
# Camera Interface Explanation



1. Lens
2. Main Camera Base
3. Remote Controller Sensor
4. Remote Controller Receiver
5. RS232 controller serial interface
6. CVBS SD Compound Video Output Interface (not available now)
7. HD-SDI High Definition Serial Digital Signal interface
8. HDMI High Definition Multi-Media Signal Interface
9. YPbPr high definition components video signal
10. DC12V Input Power Supply Jack
11. Power Switch, On is open, OFF is close
12. Power indicator light (red)
13. Bottom dial Switch
14. Tripod screw hole
15. Installation Orientation Hole

# Remote Controller:

## Definition of IR controller



### ① Number Key

### ② \* Key

### ③ # Key

**Run Preset:** press 0-9 number key,

**clear preset:** press # # # to clear all preset

### ④ Zoom control key

**Zoom +:** lens near

**Zoom -:** lens far

### ⑤ Focus control key

**Focus+:** from near to far

**Focus-:** from far to near

### ⑥ HD video output mode change key

\* # F1: HD video output mode 1080i/60

\* # F2: HD video output mode 720p/60

\* # F3: HD video output mode 720p/30

\* # F4: HD video output mode 1080p/30

\*+#+ ▼: HD video output mode 1080p/25

### ⑦ set preset

**set preset:**

\*SET PRESET\* + number key (0-9)

**clear preset**

"CLEAR PRESET"+number(0-9): clear the relative preset

# # # : Clear all preset

### ⑧ pan/tilt control key

press ▲ key: up

press ▼ key: Down

press ◀ key: Left

press ▶ key: Right

press "HOME" key: Return to the middle position

### ⑨ BLC control key

BLC ON: open the BLC

BLC OFF: close the BLC

### ⑩ Menu setting

Open or close the OSD menu



# Camera Function

It has 2 kinds of working modes.

Two working modes can be controlled by IR remote controller and VISCA serial interface command.

1. Normal working mode, camera can be controlled by remote controller and serial interface command.
2. Lens parameter adjustment mode, it can adjust the lens parameter, but normally user rarely use.

## ● Super wide visual angle

With selectable wide angle lens of more than 70°, for big, medium and small conference room.

## ● 10x optical zoom

With 10x optical zoom lens and wide angle lens, absolutely accord with all kinds of meeting room application. Users can use the IR remote or VISCA RS232 to control the zoom

## ● Focus

Auto focus mode and manual focus mode. It can be controlled by IR remote controller and VISCA command.

- 1, Auto Focus
- 2, Manual Focus

## ● Iris

- 1, Auto iris mode
- 2, Manual iris mode(Only control by serial interface command)

## ● Electric Shutter

Auto electric shutter

## ● Black light compensation

Open/close BLC can be realized by remote controller and VISCA command.

## ● White Balance

Multiple white balance modes can be set, including:

Auto, custom, manual, daylight, cloudy, shade, FL white, FL normal, FL daynight, and light bulb.

## ● Multi-control mode

- 1, by IR remote controller
- 2, by RS-232 serial interface, standard VISCA command

### ● Multi-SD and HD video output

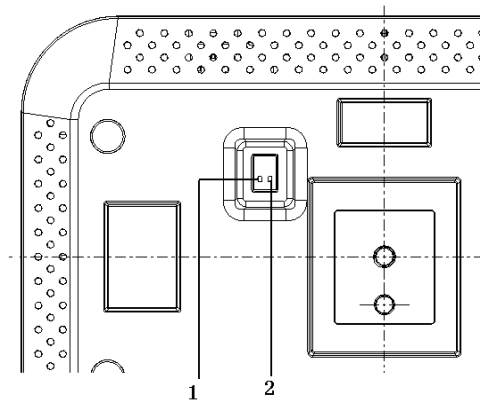
1, Standard definition video output: CVBS SD compound video signal output (unavailable now)

2, High definition digital video signal: HD-SDI high definition serial digital signal interface output uncompressed HD digital signal.

3, HDMI: High Definition digital video signal: Digital HD multi-media output uncompressed digital video signal.

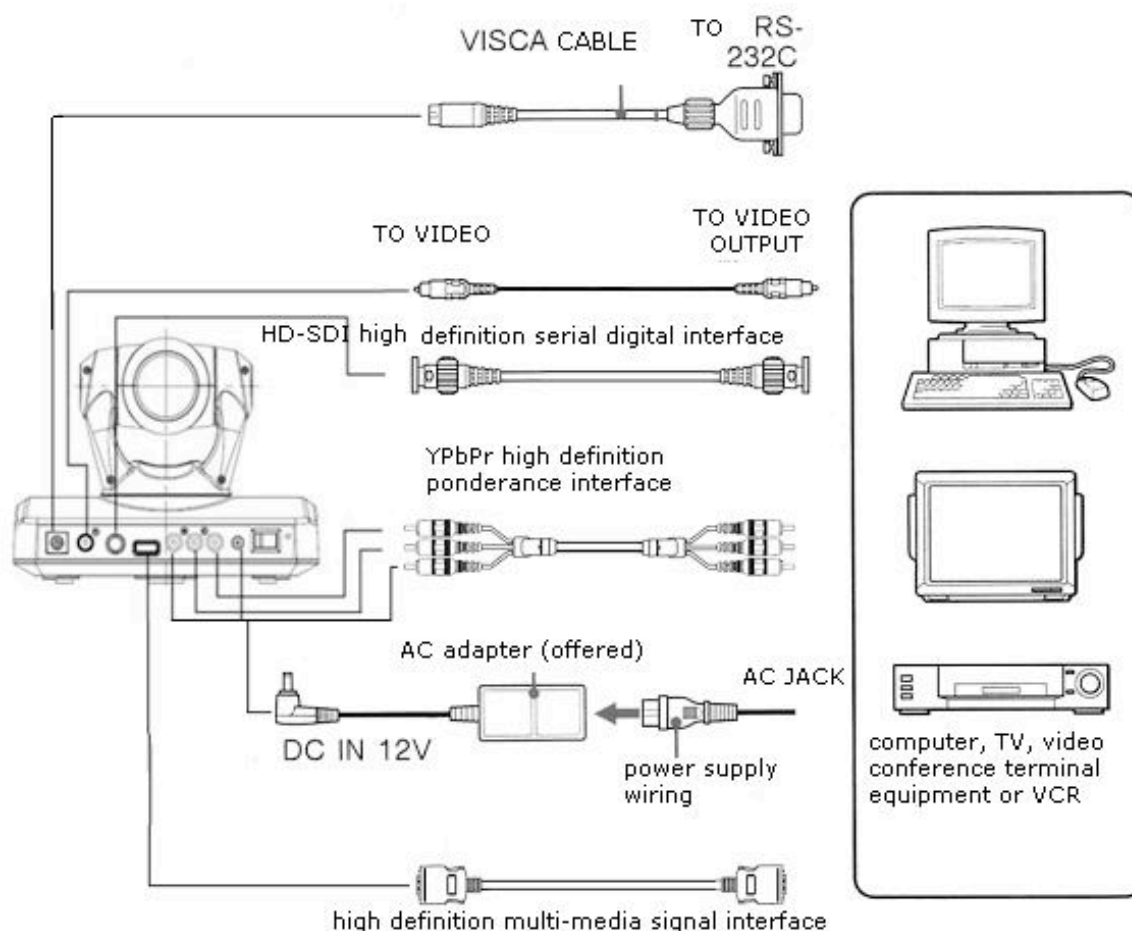
4, High Definition analog video signal: YPbPr high definition components video signal interface output high definition components analog video signal.

### Dial Switch of bottom



	SW-1	SW-2	Modes
1	OFF	OFF	Normal Working Mode
2	ON	OFF	Software Upgrade Mode
3	OFF	ON	Factory debug mode
4	ON	ON	None

## Connection



### HD camera Interface explanation:

- **Control interface RS-232**

RS232 serial interface, wiring is standard VISCA cable, one of the linker is 8pin mini DIN(1), the other is RS232C 9 core square linker ( DB-9, DB-25), which connect with computer or conference TV terminal.

- **Standard definition video signal CVBS**

SD compound video signal (unavailable now)

- **High Definition Digital Video Signal HD-SDI**

HD-SDI serial digital signal interface can transmit long distance and high quality high definition video, image will never lost.

- **HDMI High Definition Multi-Media Digital Signal**

High Definition Multi-Media Digital Signal interface output High Definition digital video signal

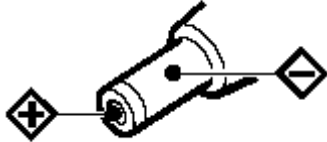
- **High Definition Component Video Signal YPbPr**

HD component video signal interface output high definition component analog video signal.

- **Power supply interface DC12V**

Input power supply is adopted external adapter to offer 12V/2A DC.

BNC polarity of power supply is shown as following external adapter:



- **Power supply switch**

On is open, OFF is close

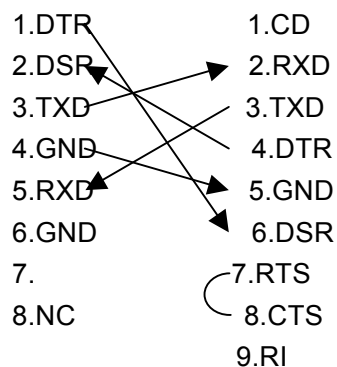
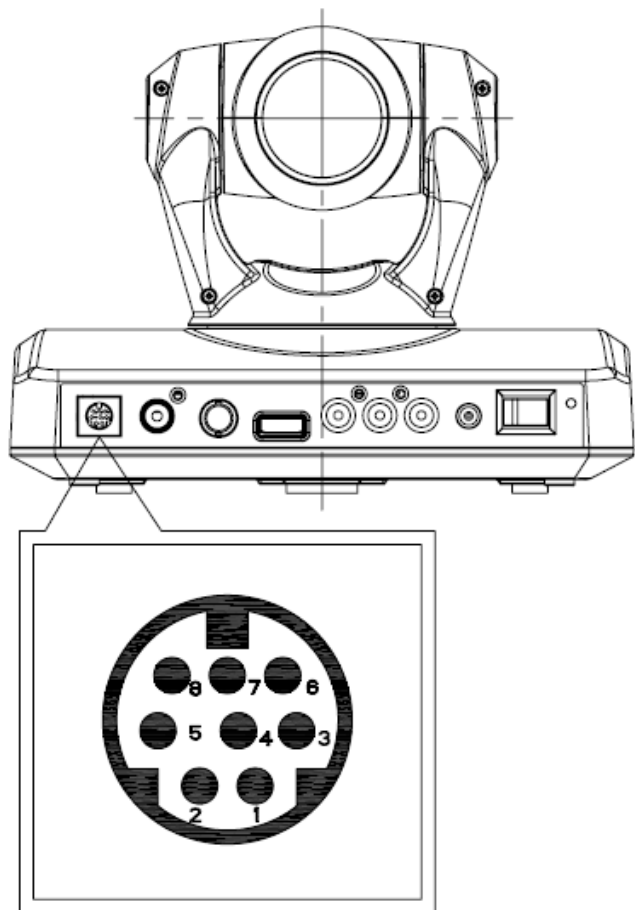
- **Power Indicator Light (Red)**

Power supply switch is "ON": indicator light is open, voltage is normal; otherwise, indicator light is closed, no power or voltage is abnormal.

# VISCA RS-232 Pin Spcs

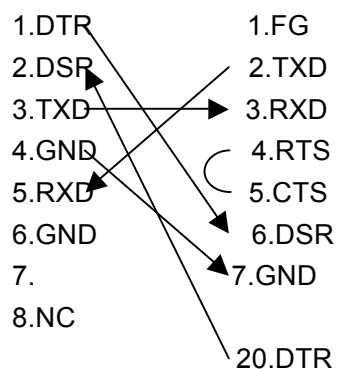
HD camera

Windows DB-9



HD camera

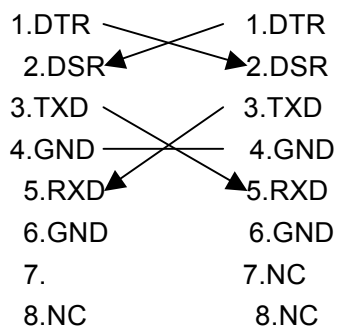
Windows DB-25



No.	Function
1	DTR
2	DSR
3	TXD
4	GND
5	RXD
6	GND
7	
8	NC

HD camera

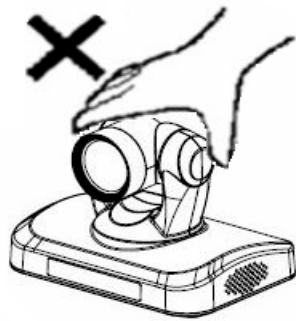
Mini DIN



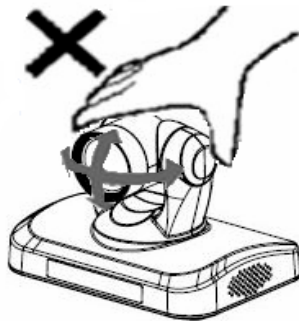
# Installation

## Notes

Do not grasp the camera head when carrying the camera.



Do not turn the camera head manually. Doing so will result in the camera malfunction.



## Installation and Application

There are different installations for different environment:

- 1, on desk
- 2, on terminal equipment
- 3, on the tripod
- 4, hoisting by hoisting stents

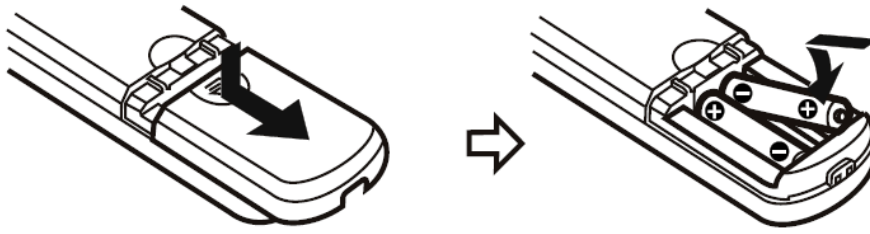
### Be careful when install

This series item can not be put on shake object to avoid bad image effect, and must put on the smooth desk or platform, and it can not be installed slantways;

### Install the batteries

Open the battery lid at the back of the remote controller, install battery properly, and then close the lid.

Note the polarity of battery



### **Notes on use of the Remote Controller**

If the remote controller doesn't work properly, change the batteries.

If there are objects between the remote controller and the sensor for the remote controller on the unit, the unit may not function properly, so point the remote controller directly at the sensors on the front or back of the unit when operating it.

# Operation

## ● Boot-Strap

- 1, Check whether the power wiring is corrects.
- 2, Set the power supply switch "ON" at the back of camera, power indicator light is red.
- 3, Camera initializes after 5 seconds: Rotate to the right limit, move to the down limit; Then turn left, motor stops when horizontal and vertical rotation is in the middle, camera lens will move to the wide angel position. Initialization finishes
- 4, when initialization finishes, HD video interface output video signal. Default signal is 1920x1080/60i
- 5, Default control mode is "Mode 0"

## ● Control Mode

HD color video camera has two kinds of control ways: controller command and COM command. Which kind of command the HD camera react depends on the work mode of the camera, the camera has four work mode; mode 0, mode 1, mode 2, mode 3.

The instruction of control way and the work mode of HD camera are as follows:

**Mode 0:** this is default mode

Camera can receive and execute the COM command. User can use COM port to control the camera's presets, pan/tilt rotation and so on.

User can use our remote controller to control camera's rotate, focus, presets, BLC and so on.

### **Mode 1**

Camera can receive but won't execute the COM command, so user can't use COM port to control the camera under this work mode.

User can use our remote controller to control camera's rotate, focus, presets, BLC and so on.

### **Mode 2**

Camera can receive and execute the COM command.

User can use our remote controller to control camera's rotate, focus, presets, BLC and so on.

The IR command of our remote controller can only be executed locally, and can not be passed to the terminal.

### **Mode 3:**

Can only use our remote controller to control under this work.

User can set the parameter of camera, also control the camera's rotate, zoom, BLC and so on.

As the parameter setting is also finished by number keys, so the presets operation can not be done in mode 3..

## **Mode setting:**

1 Setting mode by special terminal controller:

As for the special terminal controller, no matter which mode camera is in, only if camera is in the power-on status, camera can be set to mode 0, mode 1, mode 2, mode 3.

Mode 0: press \*+#+0



Mode 1: press \*+#+1

Mode 2: press \*+#+2

Mode 3: press \*+#+3

2 The working mode of the camera can also be set by terminal COM, the relative command can be seen in the COM command list.

3 Setting camera working mode by camera controller

Note: By the camera controller, the camera can only be set to mode 0 and mode 3. And only in mode 3, the camera parameter can be set. The camera can not be transferred to other mode.

Mode 0: \*+#+0

Mode 3: \*+#+3

For the convenience of video user, camera working mode will not be memorized automatically, and every time there will be mode 0, the default mode after power-on.

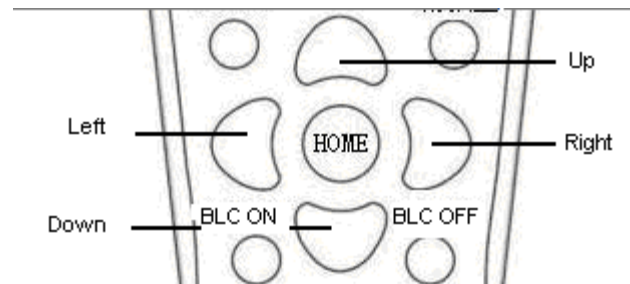
## IR Remote Controller

After power on, the camera can receive and execute IR remote command. By IR remote controller can control the preset, Pan/Tilt rotation etc.

Key-press note:

1, the key combination in this manual is operated based on the sequence, take one example: “\*+#+ F1” means press “\*” first, then press “#”, finally press “F1”.

### 1、PAN/TILT OPERATION



Up: press ▲

Down: press ▼

Left: press ◀

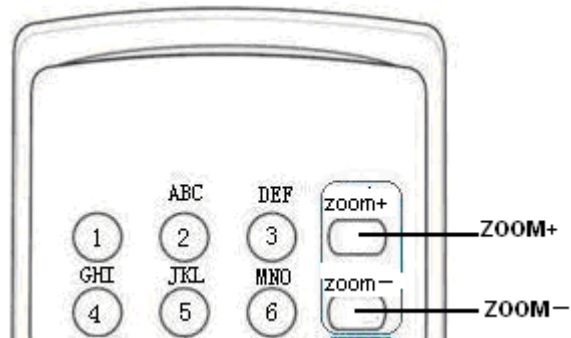
Right: press ▶

press“home”key: return to middle position.

There are three grades for speed level: when zoom is 1-4 the speed is fast; when zoom is 5-7 the speed is middle; when zoom is 7-10 the speed is low.

Press up, down, left, right key for long time, the camera can keep moving continuously, and stop when you release.

## 2、ZOOM OPERATION (put on reservation)

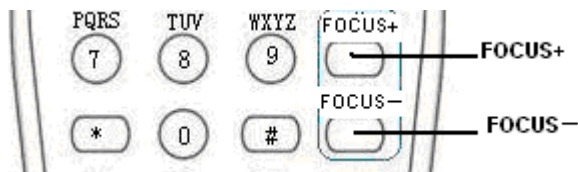


ZOOM OUT: press “ZOOM -” button

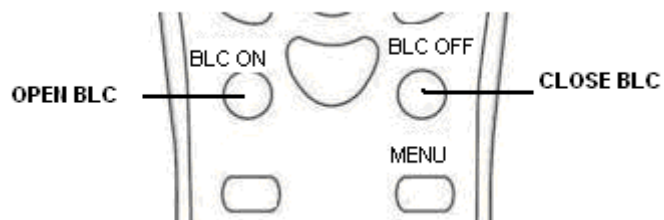
ZOOM IN: press “ZOOM +” button

Press these two keys for long time, zoom in and out can be executed continuously, and stop when you release.

## 3、Focus control



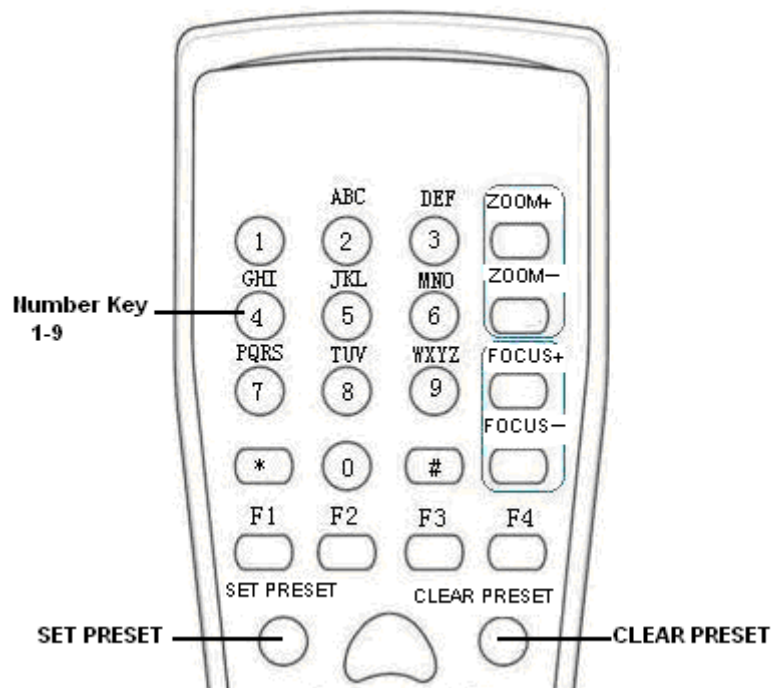
## 4、BLC setting



BLC ON: open BLC

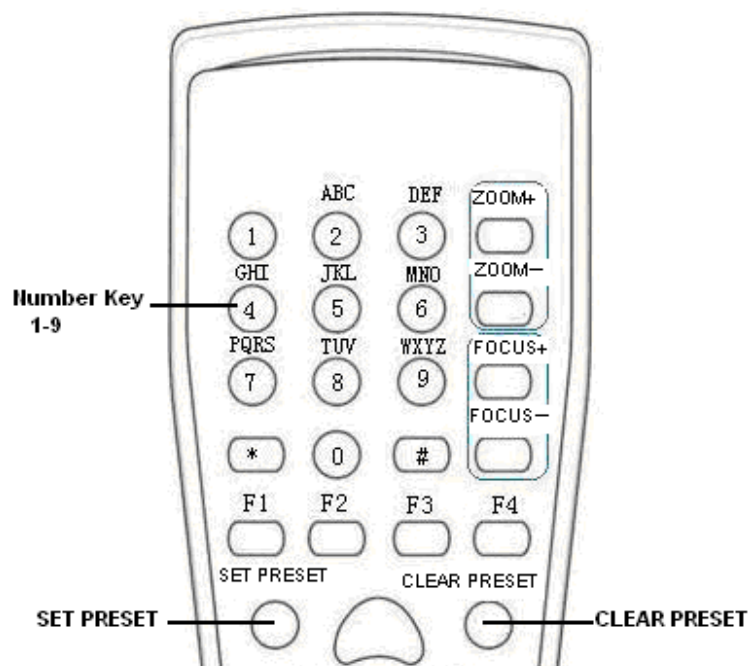
BLC OFF: close BLC

## 5、SETTING PRESET



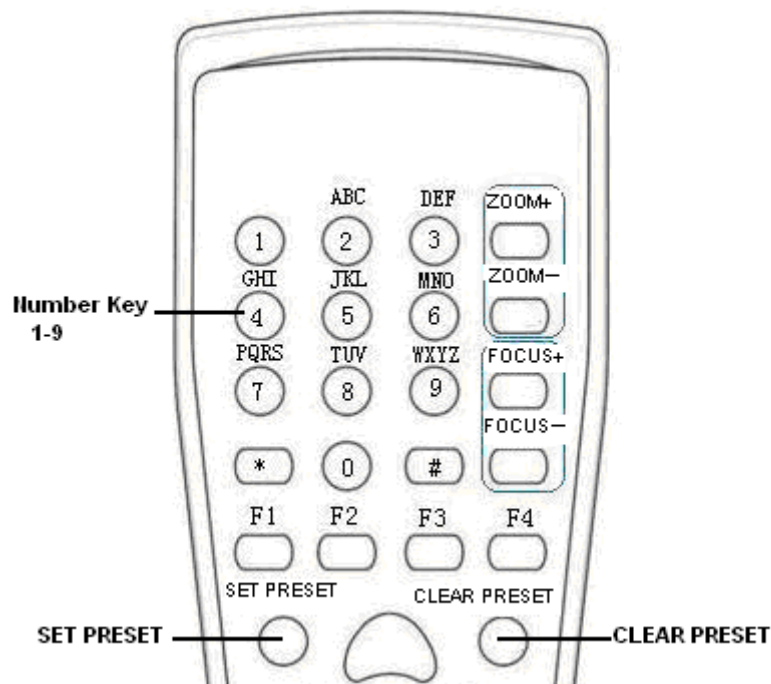
Pressing "SET PRESET" key and then press any number of 0-9 to set relative preset. (Notes: Total 10 Preset)

## 6、Clear Preset



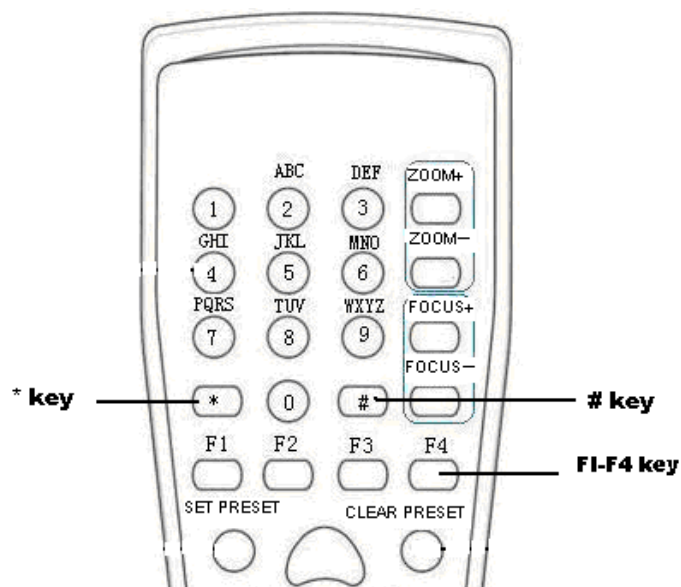
Press "CLEAR PRESET" and press any number of 0-9 to clean relative preset.  
Press "#" three times to cancel all preset.

## 7、Run Preset



Press any number of 0-9 to run relative preset.  
If there is no preset to relative number, then invalid..

## 8、 Video Output Mode



Press \* # F1: 1080i/60  
Press \* # F2: 720p/60  
Press \* # F3: 720p/30  
Press \* # F4: 1080p/30  
Press \* # ▼ : 1080p/25

### 9、The command of controller control the setting of lens parameter.

Setting: By pressing \*+#+3, the camera will be switched to mode 3, then press the corresponding number key for multi times to set the different parameter.

For example: to set *noise reduction*,

Press \*+#+3 to switch to mode 3,

Then press number key 2 for once, that means the noise reduction will be setted as HIGH.

Press the number key 2 for second time, it is 1 MIDDLE,

Press the third time, it is 2 LOW,

press the 4<sup>th</sup> time, it is 3 OFF;

Press for the 5<sup>th</sup> time, it return back to 0 HIGH,

After the successful setting of each time, the setting value will be output from COM, it will be more convenient for the users to observe the setting status. Other setting will be also like this.

### The special camera controller command list:

Number key	function	settings	
1	flicker reduction	0	AUTO
		1	OFF
2	noise reduction	0	HIGH
		1	MIDDLE
		2	LOW
		3	OFF
3	sharpness reduction	0	HIGH
		1	MIDDLE
		2	LOW
4	expose mode	0	MANNUAL
		1	PAE
		2	AAE
		3	SAE
5	ISO sensitivity	0	AUTO
		1	MANNUAL
6	ISO correction	0	ISO80
		1	ISO100
		2	ISO 200
		3	ISO 400
		4	ISO 800
		5	ISO 1200
this item is the setting of ISO sensitivity in MANMUAL mode			

7	White balance	0	AUTO
		1	custom
		2	manual
		3	daylight
		4	cloudy
		5	shade
		6	FL white
		7	FL NORMAL
		8	FL daynight
		9	light bulb
8	EV correction	0	-2EV
		1	-1.66EV
		2	-1.33EV
		3	-1EV
		4	-0.66EV
		5	-0.33EV
		6	0EV
		7	+0.33EV
		8	+0.66EV
		9	+1EV
		10	+1.33EV
		11	+1.66EV
		12	+2EV
9	Metering light mode	0	Center weighted
		1	Spot
		2	Evaluation

## COM Control

In power-on working mode, camera can realize communication with video conferencing terminal by RS-232C; the baud rate of COM is 9600 bit/s, each frame data includes 1 start bit, 8 data bits and 1 stop bit.

Powering on, camera rotate to the middle position of Pan & Tilt.。 The zoom lens move to the fastest place, realize auto focus, and the Iris adjust to the default. It can send the relative command by COM and realize the function of pan/tilt rotate, lens zoom, manual focus, the control of camera preset and clean preset.

Preset control includes two aspects:

- (1) Response the preset checking command, and camera will show the current direction, tilt position and the variofocus position of lens..
- (2) Response the preset activation command, include the direction, tilt position, and the varifocus position of lens.

## 1. Inquiry Command

Inquiry Command	Command Message	Return Message	Comments
Inquiry RS232 connect	a5 5a c3 FF	aa bb cc FF	
Inquiry Version	a5 5a c4 FF or 81 09 04 22 FF	90 50 20 09 12 17 0b FF	the current version is 20091217b, and it will change according to software upgrade.
Inquiry camera lens model	a5 5a c5 FF 81 09 00 02 FF	90 50 00 00 08 09 FF	this return info stands for camera model
Inquiry work mode	a5 5a c6 FF	aa bb cc xx FF	xx 0, 1, 2, 3 the current working mode of camera
Inquiry camera orientation	a5 5a c7 FF	aa bb cc hh hl vh vl pp tt FF	hh pan position high 8 bits hl pan position low 8 bits vh tilt position high 8 bits vl :tilt position low 8 bits pp pan position terminal tt tilt position terminal pp=2: the right end pp=0: the left end pp=1: other un-pan end point tt=2: the up end tt=0: the down end tt =1: other un-tilt end point
Inquiry zoom	a5 5a c8 FF	aa bb cc zh zl FF	zh focus 8 (hight) zl focus 8 (low)
Inquiry status of the camera	A5 5A 02 00 00 FF	44byte data group	Include all the status info of the camera
Inquiry the module version of the camera	A5 5A 00 15 00 FF	10byte data group	Include the type of camera module
No: 2011-01-04 Is new added			(hardware version), Module software version, date;
Inquiry each inside status of the camera module	A5 5A 11 zz zz zz FF		The former two zz zz is the type of the command, the later zz is the length of the command

## 2. Movement control command

Movement Command		Control	Command Message	Reply Message	Comments
Turn up			81 01 06 01 04 03 03 01 FF		send rotate command to get continuous rotate, and stop at stop command HH for pan speed, from 0~0x14 VV for tilt speed, from 0~0x0A
Turn down			81 01 06 01 04 03 03 02 FF		
Turn left			81 01 06 01 04 03 01 03FF		
Turn right			81 01 06 01 04 03 02 03 FF		
Pan tilt stop			81 01 06 01 02 02 03 03 FF		
Zoom out			81 01 04 07 3z FF		Z= zoom speed Z= 0~F
zoom in			81 01 04 07 2z FF		
Zoom stop			81 01 04 07 00 FF		
Auto focus(default)			81 01 04 38 02 FF		
Manual focus			81 01 04 38 03 FF		
Focus far			81 01 04 08 02 FF		
Focus near			81 01 04 08 03 FF		
Focus stop			81 01 04 08 00 FF		
preset position command 1	Position preset		81 09 06 12 FF	90 50 0W 0W 0W 0W 0Z 0Z 0Z 0Z FF	W pan position bit V tilt position info
	Focus preset		81 09 04 47 FF	90 50 0Z 0Z 0Z 0Z FF	Z focus info
	Get position		81 01 06 02 04 03 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	90 40 FF	Y pan position bit Z tilt position info
	Get focus		81 01 04 47 0Z 0Z 0Z 0Z FF	90 40 FF	Z focus info
preset position command 2	Position, focus preset		81 01 04 3F 01 0z FF	90 40 FF	z can be from 0~9, means total 10 preset.
	Get position		81 01 04 3F 02 0z FF	90 40 FF	
	Clear preset		81 01 04 3F 00 0z FF	90 40 FF	
	HOME		81 01 06 02 12 0E 01 09 04 08 00 06 00 00 FF		
The operation of set and get position will be finished in GUI interface, the terminal will send the related command automatically to the camera.					



### 3. Mode set command

Mode Setting	Command Message	Reply Message	Comments
Work Mode 0	a5 5a c0 FF	aa bb cc FF	
Work Mode 1	a5 5a c1 FF	aa bb cc FF	
Work Mode 2	a5 5a c2 FF	aa bb cc FF	
Remote Controller replace command	C5 5C C0 HH II JJ KK TT 00 00 00 FF		HH 0: forbid use new ID controller 1: active use new ID controller II 0: replace end point controller 1 : replace camera special remote controller JJ KK New ID for remote controller, value can't be 00 or 0xFF, and they should be complementary TT 0: special controller or new ID controller will not do passthrough in mode 2. 1: special controller or new ID controller will do passthrough in mode 2.

- Note: 1. As in the mode 3, the lens parameter is setted by controller. So in order to avoid wrong operation, this mode can only be set by controller.
2. Remote controller displace command”is the back-up command for further upgrading, it rarely used in normal working.

### 4. Video output format

Video Setting Command		Command Message	Reply Message	Comments
Video Format	1080i60	81 09 05 00 FF		
	720p60	81 09 05 01 FF		
	720p30	81 09 05 02 FF		This mode can not be displayed on HDTV
	1080p30	81 09 05 03 FF		This mode can not be displayed on HDTV
	1080p25	81 09 05 04 FF		
		Once the video putput format be set, the camera can automatically memory.		
Image	Tilt flip	81 01 04 66 02 FF		

flip	Pan flip	81 01 04 66 04 FF		
	Pan/tilt flip	81 01 04 66 05 FF		
	No flip	81 01 04 66 03 FF		
Once the image flip is set, the camera can automatically memory.				
System reset command	81 01 06 05 FF		Initialize the pan/tilt and camera, reset the DSP; image output will keep the current format.	

## 5. Lens parameter setting

command	setting	
Iris control	Auto exposure	81 01 04 39 00 FF
	Manual iris	81 01 04 39 0B FF
	Iris +	81 01 04 0B 02 FF
	Iris -	81 01 04 0B 03 FF
AE lock	0	AE lock ON
	1	AE lock OFF
	command	a5 5a 02 28 0x 00 00 00 ff      x = 0/1    x is the setting number
Focus_Lock	0	Focus_Lock on
	1	Focus_Lock OFF
	command	a5 5a 02 2a 0x 00 00 00 ff      x = 0/1    x is the setting number
AF Range	0	Full range
	1	Normal range
	2	Macro range
	command	a5 5a 02 0A 0x 00 00 00 ff      x = 0/1/2    x is the setting number
Select scence	0	Scene effect    active
	1	Scene effect    inactive
	command	a5 5a 04 00 0x 00 00 00 ff      x = 0/1    x is the setting number
Select scence	0	potrait
	1	sports
	2	Night
	3	Spot night
	4	beach
	5	Snow
	6	fireworks
	7	Cinema
	8	Landscape
	9	Sunset
	A	Night view
	B	Night scene
	C	Text    mode
	D	AUTO
	command	a5 5a 04 00 00 0x 00 00 ff      x = 0—13    x is the setting number
Metering light mode	0	Center
	1	Spot
	2	Evaluation

	command	a5 5a 04 02 0x 00 00 00 ff    x = 0/1/2    x is the setting numbe	
expose mode	0	MANNUAL	
	1	PAE	
	2	AAE	
	3	SAE	
	command	a5 5a 04 04 0x 00 00 00 ff    x = 0/1/2/3    x is the setting numbe	
Exposure mode Diaphragm driven AE	0	Diaphragm F1.8	
	1	Diaphragm F2.0	
	2	Diaphragm F2.8	
	3	Diaphragm F4.0	
	4	Diaphragm F5.6	
	5	Diaphragm F8.0	
	6	Diaphragm F11	
	command	a5 5a 04 04 02 0x 00 00 ff    x = 0/1/2/3/4/5/6    x is the setting numb	
Exposure mode SHUTTER driven AE	2	Shutter 1/7.5	
	5	Shutter 1/15	
	8	Shutter 1/30	
	B	Shutter 1/60	
	C	Shutter 1/100	
	D	Shutter 1/120	
	E	Shutter 1/250	
	F	Shutter 1/500	
	10	Shutter 1/1000	
	11	Shutter 1/2000	
	12	Shutter 1/4000	
	command	a5 5a 04 04 00 00 xx 00 ff    xx = 2,5,8, B—12H    x is the setti number	
EV correction	0	-2EV	
	1	-1.66EV	
	2	-1.33EV	
	3	-1EV	
	4	-0.66EV	
	5	-0.33EV	
	6	0EV	
	7	+0.33EV	
	8	+0.66EV	
	9	+1EV	
	A	+1.33EV	
	B	+1.66EV	
	C	+2EV	
	command	a5 5a 04 06 00 0x 00 00 ff    x = 0--C    x is the setting number	
ISO sensitivity	AUTO	a5 5a 04 0A 00 00 00 00 ff	
		0	ISO80
		1	ISO100

	Manual	2	ISO200
		3	ISO400
		4	ISO800
		5	ISO1000
	command	a5 5a 04 0A 01 0x 00 00 ff      x = 0/1/2/3/4/5    x is the setting number	
flicker reduction	0	AUTO	
	1	OFF	
	2	MANUAL	
	command	a5 5a 04 0c 0x 00 00 00 ff      x = 0/1/2    x is the setting number	
flicker reduction MANUAL	0	50Hz	
	1	60Hz	
	command	a5 5a 04 0c 02 0x 00 00 ff      x = 0/1    x is the setting number	
White balance	0	AUTO	
	1	custom	
	2	manual	
	3	daylight	
	4	cloudy	
	5	shade	
	6	FL white	
	7	FL NORMAL	
	8	FL daynight	
	9	light bulb	
	command	a5 5a 04 12 00 0x 00 00 ff    x = 0/1/2/3/4/5/6/7/8/9    x is the setting number	
Digital effect	0	Normal	
	1	Antique	
	2	Monochrome	
	3	Posterization	
	4	Solerization	
	5	Nega	
	8	Cool	
	9	warm	
	command	a5 5a 06 06 0x 00 00 00 ff      x = 0/1/2    x is the setting number	
sharpness reduction	0	HIGH	
	1	MIDDLE	
	2	LOW	
	command	a5 5a 06 08 0x 00 00 00 ff      x = 0/1/2    x is the setting number	
noise reduction	0	HIGH	low noise, but not so good in definition
	1	MIDDLE	
	2	LOW	
	3	OFF	high noise, but high definition
	command	a5 5a 06 0a 0x 00 00 00 ff      x = 0/1/2/3    x is the setting number	
Chroma KEY Cr	0	high	
	1	Middle	
	2	low	

	command	a5 5a 06 0c 0x 00 00 00 ff	x = 0/1/2 x is the setting number
Chroma KEY Cb	0	high	
	1	Middle	
	2	low	
	command	a5 5a 06 0c 00 0x 00 00 ff	x = 0/1/2 x is the setting number
Auto slow shutter	0	ON	
	1	OFF	
	command	a5 5a 0a 06 0x 00 00 00 ff	x = 0/1 x is the setting number
Parameter save command(users can change the OSD parameter by COM, power off memory function can be realized by this command)		d5 5d 08 08 00 00 00 00 ff	

Parameter save command	Receive power off memory function; only 2010-7-28 and later version have this function	d5 5d 08 08 00 00 00 00 ff	users can change the OSD parameter by COM, power of memory function can be realized by this command
Reset default module parameter command	New add function 2011-05-06	81 01 88 88 ff	Back after executing that command: 90 50 ff means save successfully
Inquiry lens parameters command	New add function 2011-05-06	81 09 88 88 ff	Total return 16 bytes: 90 50 XX XX XX XX XX XX XX XX XX XX XX XX FF

## The definition of the returned parameters

90 50 XX XX XX XX XX XX XX XX FF from third to thirteenth: Exposure, BLC, ISO sensitivity, White balance, Digital effect, Sharpness, the status of Noise Reduction

command	Bytes number	The definition and specification of the bytes
	3	00auto exposure, 01Aperture Priority, 02Shutter Priority
	4	If the third byte is Aperture Priority, that byte is the value of the aperture size 00——F1.8, 01——F2.0, 02——F2.8, 03——F4.0, 04——F5.6, 05——F8.0, 06——F11 If the third byte is Shutter Priority, that byte is the value of the shutter speed 00——1/7.5, 01——1/15, 02——1/30, 03——1/60, 04——1/100, 05——1/120, 06——1/250, 07——1/500, 08——1/1000, 09——1/2000, 0A——1/4000
exposure		

	5	00 exposure compensation off, 01 exposure compensation on
	6	If exposure compensation on, the byte is the value of the exposure compensation 00——-2EV, 01——-1.66EV, 02——-1.33EV, 03——-1EV, 04——-0.66EV, 05——-0.33EV, 06——0EV, 07——+0.33EV, 08——+0.66EV, 09——+1EV, 0A——+1.33EV, 0B——+1.66EV, 0C——+2EV
BLC	7	00BLC ON, 01 BLC OFF
ISO sensitivity	8	00 ISO Auto 01 ISO Manual
	9	If manual ISO, the byte means the level of ISO sensitivity 00——ISO80, 01——ISO100, 02——ISO200, 03——ISO400, 04——ISO800, 05——ISO1000,
WB	10	Set WB mode: 00——Auto, 01——Custom, 02——Manual, 03——Daylight, 04——Cloudy, 05——Shade, 06——FL white, 07——FL normal, 08——FL daynight, 09——Light bulb
Digital effect	11	Set digital effect mode: 00——Normal, 01——Antique, 02——Monochrome, 03——Posterization, 04——Solerization, 05——Nega,
sharpness	12	Set the level of sharpness: 00——low, 01——middle, 02——high
Noise reduction	13	Level of noise reduction: 00——off, 01——low, 02——middle, 03——high
Video format	14	0——1080I60, 1——720P60, 2——720P30, 3——1080P30, 4——1080P60 (unrealize), 5——1080P25, 6——1080I50, 7——720P50
Image flip	15	0——normal (no flip), 1——Pan flip, 2——Tilt flip, 3——Pan/tilt flip

# Menu setting

## Enter menu

Using our remote control: press “menu” key

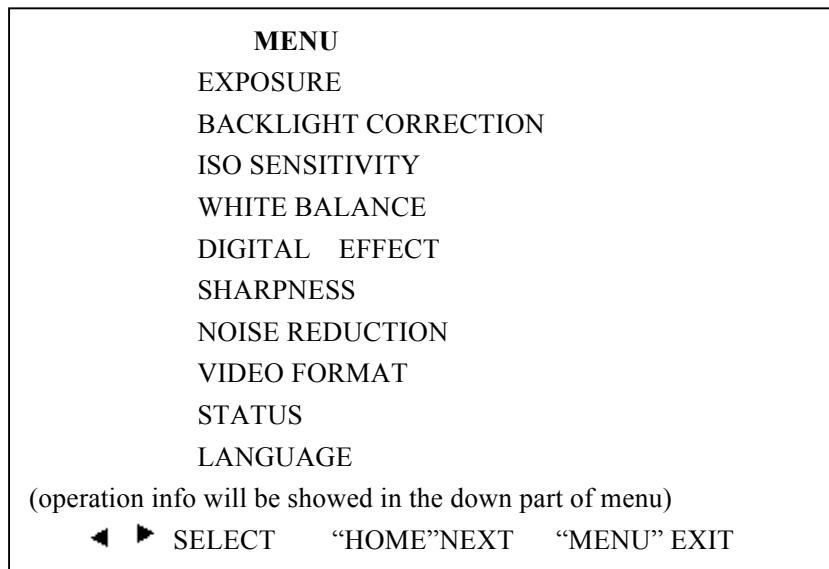
## Exit menu

Using our remote control: Press “menu” key two times continuously

By using the key of Up, Down, Left, Right, and HOME (the confirm key), users can choose different menu item, then set the camera parameter or see the current status of the camera.

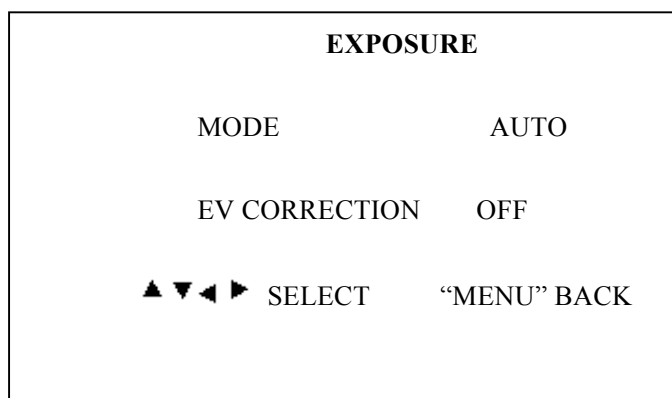
## MAIN MENU

Press the “MENU” key in normal image status, there will be one menu displayed on the screen



## EXPOSURE

Enter the EXPOSURE item by pressing direction key and HOME key



When you are in MODE status, you can choose the exposure mode by pressing the ◀ ▶ key .

The available options are: 1 Diaphragm driven AE    2 SHUTTER driven AE

If you choose **Diaphragm driven AE**, there will be **Diaphragm** item, as follow pic:

If you choose **Diaphragm**, press ◀ ▶ key, then you can set the Diaphragm to F1.8, F2.0, F2.8, F4.0, F5.6, F8.0 or F11

## 2.1 Diaphragm driven AE

If you choose **Diaphragm driven AE**, there will be **Diaphragm** item, as follow pic:

If you choose **Diaphragm**, press ◀▶ key, then you can set the Diaphragm to F1.8, F2.0, F2.8, F4.0, F5.6, F8.0 or F11

EXPOSURE	
MODE	Diaphragm driven AE
Diaphragm	F1.8
EV CORRECTION	OFF
▲▼◀▶ SELECT	“MENU” BACK

## 2.2 SHUTTER driven AE

If you choose **SHUTTER driven AE**, there will be **SHUTTER** item, as follow pic:

If you choose **SHUTTER**, press ◀▶ key, then you can set the shutter speed to 1/7.5, 1/15, 1/30, 1/60, 1/100, 1/120, 1/250, 1/500, 1/1000, 1/2000 or 1/4000

EXPOSURE	
MODE	SHUTTER driven AE
SHUTTER	1/7.5
EV CORRECTION	OFF
▲▼◀▶ SELECT	“MENU” BACK

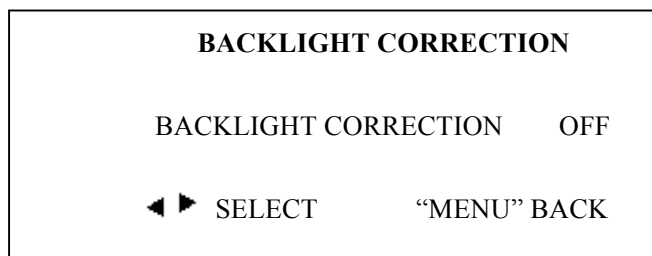
If you choose **EV CORRECTION**, and set the **EV CORRECTION** to **ON**, there will be **LEVEL** items. Then press ◀▶ key, the LEVEL can be set to -2EV, -1.66EV, -1.33EV, -1EV, -0.66EV, -0.33EV, 0EV, +0.33EV, +0.66EV, +1EV, +1.33EV, +1.66EV or +2EV, it will be as follow pic:

EXPOSURE	
MODE	AUTO
EV CORRECTION	ON
LEVEL	0EV
▲▼◀▶ SELECT	“MENU” BACK



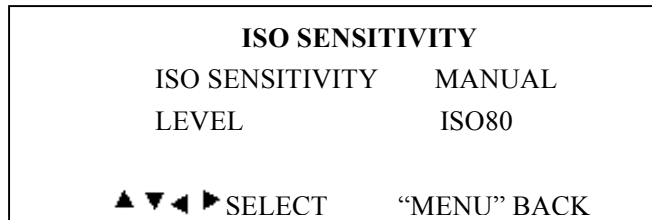
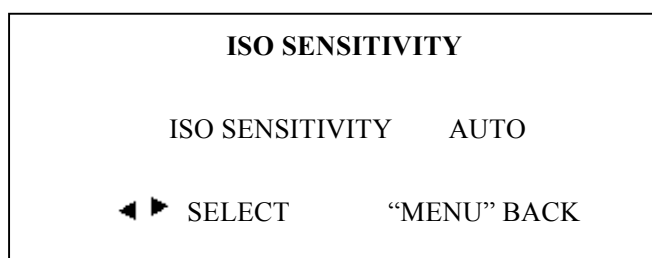
### 3. BACKLIGHT CORRECTION

Enter the **BACKLIGHT CORRECTION** item by press the direction key and **HOME** key in the first menu, the available options are **BACKLIGHT CORRECTION ON** and **OFF**. it will be as follow pic:



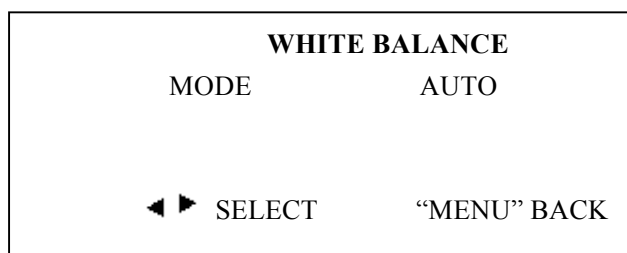
### 4. ISO SENSITIVITY

Enter the **ISO SENSITIVITY** item by press the direction key and **HOME** key in the first menu. The available options are **AUTO** and **MANUAL**. If set it to **MANUAL**, the ISO speed can be **ISO80**, **ISO100**, **ISO200**, **ISO400**, **ISO800** or **ISO1000**. It will be as follow pic:



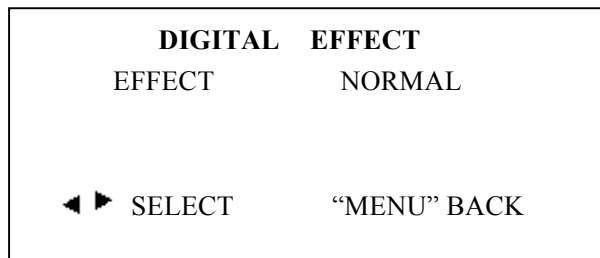
### 5. WHITE BALANCE

Enter the **WHITE BALANCE** item by press the direction key and **HOME** key in the first menu. The available options are **AUTO**, **custom**, **manual**, **daylight**, **cloudy**, **shade**, **FL white**, **FL NORMAL**, **FL daynight** or **light bulb**. It will be as follow pic:



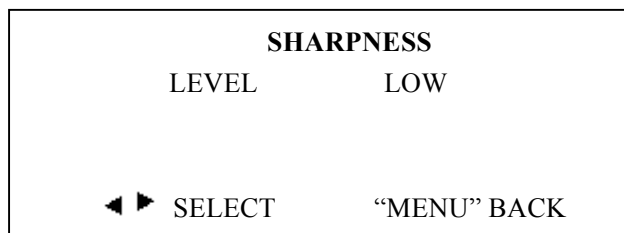
## 6. DIGITAL EFFECT

Enter the **DIGITAL EFFECT** item by press the direction key and **HOME** key in the first menu. By this item, user can set the digital effect of the output image, like **Normal**, **Antique**, **Monochrome**, **Posterization**, **Solerization**, **Nega**. It will be as follow pic:



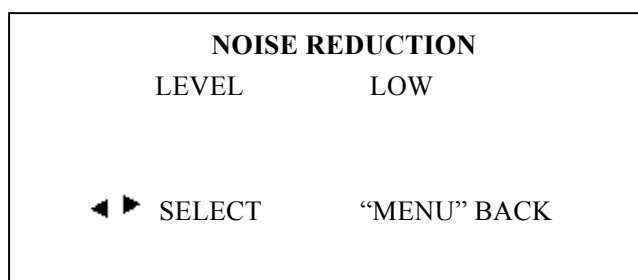
## 7. SHARPNESS

Enter the **SHARPNESS** item by press the direction key and **HOME** key in the first menu. By this item, user can set the sharpness of image, like **HIGH**, **MIDDLE** or **LOW**. It will be as follow pic:



## 8. NOISE REDUCTION

Enter the **NOISE REDUCTION** item by press the direction key and **HOME** key in the first menu. By this item, user can set the noise reduction level, like **HIGH**, **MIDDLE** or **LOW**. It will be as follow pic:



## 9. VIDEO FORMAT

Enter the **VIDEO FORMAT** item by press the direction key and **HOME** key in the first menu. By this item, user can choose and change the video format. The available options are 1080P25, 1080P30, 1080I60, 720P60, 720P30 . It will be as follow pic:



## 10. STATUS

Enter the **STATUS** item by press the direction key and **HOME** key in the first menu. By this item, user can check the setting status of camera parameters.

STATUS	
VIDEO FORMAT	1080I60
EXPOSURE MODE	AUTO
BACKLIGHT CORRECTION	OFF
ISO SENSITIVITY	AUTO
WHITE BALANCE	AUTO
DIGITAL	EFFECT
NORMAL	
SHARPNESS	LOW
NOISE REDUCTION	LOW

## 11. SETTING

Enter the SETTINGS item by press the direction key and **HOME** key in the first menu. By this item, user can set the language for Chinese or English; structure for on-desk or in-ceiling; Factory reset.

SETTINGS	
LANGUAGE	ENGLISH
STRUCTURE	FRONT
RESUME DEFAULT VALUE	NO
▲▼◀▶ SELECT "HOME" OK "MENU" BACK	

What's more, language choice and video format can be saved after power off. If restart the camera after power off, all other parameters of the camera will not saved and revert to the default setting mode.

# Maintenance and Troubleshooting

## Camera Maintains

If camera is not used for long time, please turn off power switch, adapter switch and AC plug.

Use soft cloth or tissue to clean the camera cover.

Use soft cloth to clean the lens; Use neuter cleanser if bad smeared. No use strong or corrosive cleanser or corrosive cleanser avoiding scuffing.

### *Unqualified Application*

No shooting extreme light object, such as sunlight, lamplight etc.

No operating in unstable light environment, otherwise image will twinkle

No operating in radio wave with great power environment, such as TV station or Wireless Launcher etc.

Image effective will be not good when the light is not accordant with camera's lux.

## Troubleshooting

### Image

No image

- 1, Check whether the power cord, voltage is OK, power indicator light is ON.
- 2, Turn off the power supply to check whether the camera can auto configure.
- 3, Check the dial switch in bottom and make sure the two dial position are all on OFF.
- 4, Check video and TV wire is connected correctly.

Abnormal display of image

Check the video connecting wires is well and other connecting sockets and camera flat wires are well.

The camera can only works at one focus, other position can not be focused.

Change the position to see if this phenomenon still exists. If yes, it may be caused by Camera control drive focus control system trouble.

Image dithering at MAX. Zoom

- 1, Check whether camera is fixed correctly.
- 2, If there is vibrative mechanical object.

### Control

Remote Controller

- 1, Change the battery
- 2, Check the camera operation mode is right.

Terminal

- 1, Check the camera operation mode is right.
- 2, Check control wire is connected correctly.

## Specification

## 1. Camera and Lens features

- Video Transducer: 1/2.5 inch super quality HD CMOS transducer
- Image:   Dynamic Image: 4:3       390,000 pixel  
                                  16:9       2.07 million pixel  
          Static Image:     4:3       2.7 million pixel  
                                  16:9       2.1 million pixel
- Video Signal:   HD 1080i/60(transform from 1080p/30),1080i/50; 1080p/30; 1080p/25; 720p/30; 720p/60(transform from 1080p/30),720p/50.
- Lens zoom:   10x optical zoom, f=4.5- 45.0mm, F1.8-2.2
- Wide angle lens(option):   0.7x wide angle lens, caliber 30mm
- Visual Angle:(with wide angel lens)   5.4°(farness) --70°(nearness) there will be some effects to image when use wide angel lens.  
  (No wide angel lens)   3.8°(farness) --52°(nearness)
- Minimum Illumination: 10LUX
- White Balance:   Auto/Sunlight/Cloudiness/Shade/fluorescence white balance mode
- Focus:   Auto/Manual
- Iris: Auto/Manual
- Electronic Shutter: Auto
- Black light compensation: Auto/munual
- S/N Ratio: >50dB

## 2. Rotation Feature:

- Pan Rotation:  $\pm 100$  degree
- Tilt Rotation:  $\pm 30$  degree
- Manual Control Speed:  
Pan speed:  $25^\circ/\text{sec}$   
Tilt speed:  $25^\circ/\text{sec}$
- Preset Speed:  
Pan running:  $25^\circ/\text{sec}$   
Tilt running:  $25^\circ/\text{sec}$
- Preset: 10

### 3. Input/Output Interface:

- Standard Definition Compound Video Output: RCA Jack, 1Vp-p, 75Ω unbalance.(unavailable now )
- High Definition Interface: HD multi-media signal interface

- High Definition Interface: HD standard interface
- High Definition Interface: HD-SDI
- High Definition Interface: YPbPr
- Controller Signal Interface: 8 core mini DIN
- Controller Signal Interface: Start bit: 1; Data bit: 8; Stop bit: 1; Baud Ratio: 9600bps
- Power supply interface: HEC3800 power jack

## 4. Electrical Index

- Power supply adapter: DC12V/2A
- Input voltage: DC12V(DC10.5-DC14V)
- Input power: 18W(MAX)

## 5. Structure

- Material: All-alloy, PC plastic
- Weight: about 2 KGs
- Dimension(width x highness x depth) : 210mm x 143mm x 140mm
- Working environment: Indoor
- working temperature: -0℃ to +45℃
- Storage temperature: -10℃ to +60℃
- Color: Silver grey/black

**Dimension: (unit:MM)**

