IP HIGH SPEED DOME CAMERA

USER MANUAL

V 1.0

Catalogue

1 Precautions	1
2 Product Overview	2
3 Web Browse Operation Guide	6
4 OSD Menu Operation Guide	35
5 Appendixes	55

1 Precaution

- please read this manual carefully before the installations and operations.
- Transportation Security

No heavy stress, violent vibration or water splash are allowed during transportation, storage. The unit should be transported in separated packing. In shipments of distributor and delivery of maintenance, any damages caused by integral packing are not covered by warranty.

Installation

Avoid heavy stress and violent vibration during installation. Don't touch the camera cover directly by hand. When connecting the power source, please follow all electric safety standards and only use the power supply designated for this device. Keep the video and control signal in a decent distance from high voltage devices and cable. Don't apply power to camera before finishing the installation.

• Internal Environment

Keep metal and inflammable material away from camera body to avoid fire short circuit and damage. Please prevent all liquids material from entering the camera. If this occurs, please shut down the power and pull out the plug-in. Then please inform the technical personnel immediately.

• Electrical Safety

The video image would be interfered when the camera is installed near Television, radio transmitter, voltage changer and audio amplifier.

• Camera Protection

Avoid shooting very bright objects directly into the camera's CCD (such as the sun or light fittings) and avoid fixating the camera lens on bright static object for long time, as it will cause Irreparable damage to the camera's CCD.

• Cleaning Method

Please don't use abrasive and violent detergent to clean the camera. Please choose dry fabric and neutral detergent. And please use lens paper to clean the lens.

• please use our production under the following environmental standards:

Environmental Temperature:	- 35 ~60°C
Environmental Humidity:	<95%(no condensing)
Barometric Pressure:	86~106KPa

2 Product Overview

2.1 Features

- 2.1.1 Special Features
- High Definition

H.264 compression algorithm, save the network bandwidth and hard disk storage space, aspect

ratio of 16:9 and 4:3 adjust at will; h. 264 main profile levels and M - JPEG video streaming can be output at full frame speed. Support for dynamic coding parameters adjustment

•Fix/Veri-focus/Automatic focusing

With 20 x optical zoom, more than 20 times digital zoom and autofocus function, not only can provide an ideal field of vision, but also can realize perfect automatic focus

• Double stream free switch

Support the double stream, choose the main stream or sub stream according to different application.

Supported protocols

Support TCP/IP、PPPoE、DDNS、FTP、UPNP 、Onvif,etc

• Voice intercom function

Support Voice intercom

Alarm function

Support the local and network linkage signal; Provide area, mobile sensitivity detection alarm, regional block alarm

ROI function

Stream concentration makes the drawing region clearer, suitable for condition of the lack of stream.

•OSD function

Support camera picture character superposition

•Power-down memory storage function

Camera stays on some location meeting for time limit before power-down, when camera is power-on, it will back to the former location before power -down

2.1.2 Function Introduction

- · Stepless speed changes, auto zoom/speed matching
- Pan 0.01~360°/S, Tilt 0.01°~120°/S, Preset: 360°/S (high speed IR speed dome)
- Pan $0.5^{\circ} \sim 35^{\circ}$, Tilt $0.5^{\circ} \sim 35^{\circ}$, Preset: 350/s (for Vari-speed IR dome)
- Auto object track with zoom in/out and motion detection (Auto Track Model)
- Timing actions for 7 days of programmable schedule
- Built-in Semi-conductor heater & digital temperature sensor
- PWM cooling fan vari-speed temperature control
- Reserved network interface and space for network module
- Pan Tilt accuracy +/- 0.1°, 256preset positions
- 8 cruising tracks, each cruising track has 32 presets
- 4 pattern tours, 10 Mins memory, 500 programmable instructions

- Multi-Protocol through RS485 or coaxial cable.
- 8 auto scan with use-defined left and right boundaries and settable scan speed
- 8 Privacy Zones with defined English camera title
- Auto Compatible PELCO_P, PELCO_D compatible
- Guard Location: the dome will rotate back to preset position after a period of vacant time
- Alarm triggering: the alarm can trigger preset, auto scan, cruising and pattern tours functions
- Soft Address Function: the use can set up the dome address without uninstall the dome

2.1.3 Integrated Super Speed PTZ Rotator

- Delicate stepping motor, stable, sensitive and accurate
- 360 °Pan and 90 °Tilt range (auto-flip) without blind area
- Stepless speed change, auto zoom/speed matching
- Near / far IR Light auto matches camera zoom in/out

2.1.4 All-weather outdoor design

- IP66 Protection standard
- •TVS 3000V Protection standard

In this section, the text describes the main functions of the infrared PTZ camera and its implementation of general principles, not involving the specific operation method. Generally manufacturer's operation manual shall prevail, in some cases there will be some special requirements and operation method, please contact the dealer to obtain the necessary information.

• Preset Position Set up and Call Up

In the Preset function the camera stores the current pan/tilt angle, zoom and other position parameters in its memory. When necessary the camera recalls these parameters and adjusts the camera to a particular position. The user can store, recall and clear the presets easily and promptly by using the keyboard controller. The camera can store up to 256 presets.

• Auto Scan

Users can set up the left and right boundaries by control keyboard. Then camera can scan between these boundaries. It supports up to 8 groups of scanning paths.

• Cruising Track

The preset position can be programmed to be recalled in a set of sequences. This sequence can be set to let the camera scan from one position to the next in a cycle at a set speed. This feature is called the "auto cruise". The cruise sequence and dwell time of each preset can be set. It supports up to 8cruising tracks, each cruising track with 32 presets.

• Pattern Tour

Camera can memorize 600S running path or 500 programmable instructions. When start pattern tour, camera will move automatically according recorded action path. It supports 4 groups of pattern tours.

2.2 Technique Parameter

Technical Data	
Power Supply:	DC12V±10% 50W
Decoder:	Built-in
Manual Speed:	Pan:0.01° ~ 360°/S, Tilt: 0.01° ~ 120°/S (high speed)
Preset Speed:	360°/S (high speed) / 100°/S (Mid-speed)
Pan Angle:	360° continuous pan rotation
Tilt Angle:	90°(Auto Flip)
Number of Preset:	256
Preset Accuracy:	<u>±</u> 0.1°
Alarm input/output:	4input,2 output
Auto Scan:	8 auto scan tracks, user-defined left and right boundaries and scan speed
Auto Cruising:	8 cruising tracks, each cruising tracks has 32 preset positions, user-defined dwell time
Pattern Tour:	4 patterns, up to 500 instructions per pattern
Guard Location:	The dome will rotate back to preset position after a period of vacant time.
Operating Humidity:	0~90%
Operating Temp:	-35 °C <u>+</u> 60°C

2.3 OSD Menu operation

• Call up OSD menu

Call Preset 95 to enter the main OSD menu; call Preset 96 to close the OSD menu or Select "Exit"

• Confirm

The "Left "and "Right "button is controlled by PTZ can change the required item, and the changed item is the confirmed one without further confirmation. You can directly click "Up" and "Down" button to go on your further operation. When setting the left and right boundary for scan and pattern, you can click the "Focus Far" for confirmation.

• Cancel

The "up" and "down" button controlled by PTZ carry out the request for Further action; meanwhile, it carries out the "Cancel" order for last operation.

3 Web Browse Operation Guide

3.1 Common Operations

Factory settings:

IP speed dome camera is a kind of network equipment, you need configure network IP address, gateway and other information reasonably, and camera with default IP address in factory, and user could change it according to their requirement.

Default IP address: 192.168.0.99

Subnet mask: 255.255.255.0

Gateway: 192.168.0.1

WEB port: 8000

Network parameters

Take the example of Windows XP operating system. Make sure the IP address in network parameters of the user computer is in accordance with the one of the camera, they are in same segment, the IP address in the same LAN cannot be the same, otherwise, it will interfere with each other, causing the equipment couldn't operate normally.

After setting IP address, you could test whether it has been connected between the computer and the camera by using the PING order from clicking the "start"-"run" button in the bottom left corner. The format of the command: ping 192.168.0.99

If the screen shows like this:

```
pinging 192.168.0.99 with 32 bytes of data:

Reply from 192.168.0.99: bytes=32 time<1ms TTL=64
Reply from 192.168.0.99: bytes=32 time<1ms TTL=64
Reply from 192.168.0.99: bytes=32 time<1ms TTL=64
Reply from 192.168.0.99 bytes=32 time<1ms TTL=64
ping statistics for 192.168.0.99:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

As the picture shown above, it indicates that it has been successfully connected between the computer and the camera. However, if the screen shows like this:

```
pinging 192.168.0.99 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.
ping statistics for 192.168.0.99
Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

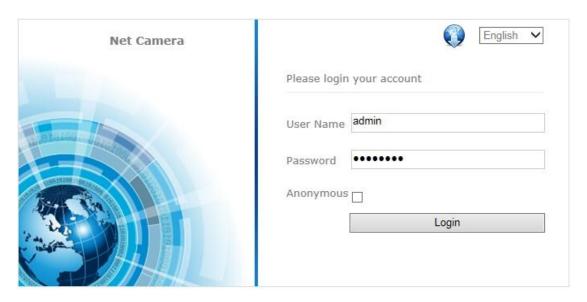
It indicates equipment is failure to install, you could check from the following aspects:

- If hardware connection is correct
- If computer TCP/IP is in the same segment as the camera
- If network forbid ping order, please connect network administrator

3.2 Web Login

3.2.1 Login

Enter IP address (default: 192.168.0.99) to open the interface, dialog box as follows comes out:



Picture 2.2.1-1 login interface

◆ user name: admin

◆ password: admin

◆ Port: Default 8000

3.2.2 Download playing component

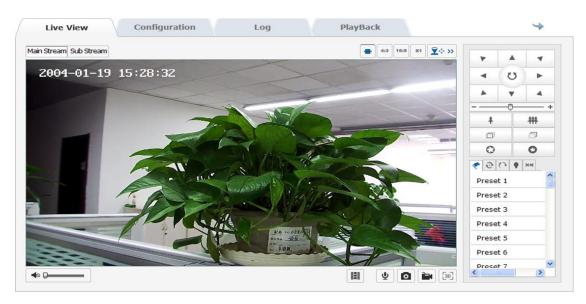
After you logged in, if the WEB browser indicates it is the first time of visiting or plug-in reminds you of the update of the new version. (See 3.2.2-1). Double-click this plug-in and it will remind you of the downloading process. Or you can double-click the icon at the top-right corner of the login interface. Double-click the downloaded WebPluginInstaller.exe and start install the playing plug-in for WEB browser, then confirm its installation as well as clicking the "Next "button until finished. You need to return to the WEB browser screen and refresh the display if you want to run this plug-in after installment, then you can watch the video.



Picture 3.2.2-1 Plug-in installation

Note: If you want to see the video through WEB browser, the plug-in must be installed. Currently this plug-in support Windows XP/2000-2014/Vista

The IP address again to the login screen after you have installed the plug-in and then input user name, code, and then click the "login "button to enter the "preview "screen. See picture 3.2.3-1



Picture 3.2.3-1 Preview screen

Icon	Instruction
4:3	Preview screen 4:3 ratio
16:9	Preview screen 16:9 ratio
X1	Original preview screen size
•	Self-adaptive preview screen
Main Stream Sub Stream	Choose main stream or sub stream
40 □	Volume
y	Start two-way audio
	Capture
	Record
[30]	3D positioning
♀ ÷ »	PTZ control

Sheet 3.2.3-2 Preview screen information

Icon	Instruction
▼ A ▼ A U F A V A	Control the vertical and horizontal movement of camera, and open or close the auto-scan
4 ##	Zoom in/out
	Focus
0 0	IRIS
	PTZ speed
*	Preset
[0]	Sequence
0	Pattern
•	IR setting
ю	Auto scan

Sheet 3.2.3-3 PTZ control screen information

In the preview screen, you can control the preview, video recording, snapshot, intercom and the on/off of the sound. The size of the image can be adjusted according to the needs of the user to set its original size; we have "4:3""16:9" or "self-adaptation "mode. Preview code stream can be set as "main stream" "sub stream". See 3.2.3-2

Click "camera "can open the control screen of the camera. See 3.2.3-3

Operation methods for preset position

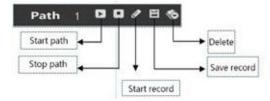
- 1. Enter the screen of setting preset position, and it will show the current preset position.
- 2. Setting preset position: select the number of preset position, and then operate the control panel of the camera, when the camera scene moves to the place you want to set, then click the "save "key to save this preset position.
- 3. Call the preset position: click "call "and the set preset position can be called.
- 4. Delete preset position: click "delete" can clear the information of preset position.
- 5. Special function preset position: this kind of preset position can be called, but it cannot be modified or deleted.



Picture 3.2.4 Sequence settings

Operation methods for pattern scanning

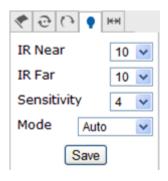
- 1. Enter the pattern scan screen, and it shows the current pattern scan path. See 3.2.3-5
- 2. Start recording the scanning: click start to record the pattern scan, and control the movement of the camera by the control panel.
- 3. Stop recording scanning: click save to save the scanning path.
- 4. Start and stop the pattern scan: click start to start the pattern scan, and click the stop key to stop the pattern scan.
- 5. Delete the pattern scan: click delete key to delete the pattern scan.



Picture 3.2.3-5 Pattern settings

Operation methods for IR LED

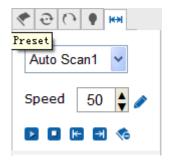
Enter the IR LED setting screen, user can set the power of the low beam lights as $1\sim10$ gear, the power of high beam lights, low beam lights compensation, enable illumination, IR status setting. See 3.2.3-6



Picture 3.2.3-6 IR LED Setting Screen

Auto scanning setting

Enter the auto scan screen, user can set scan speed, left boundary, right boundary, start scanning, stop scanning. Auto scanning include 8 scanning paths. See3.2.3-7



Picture 3.2.3-7 Auto scans settings

- 1. Scanning speed: from 1~100, the larger the gap between numbers, the more evident the effect. 2. The left boundary and right boundary of scanning: first make the camera to stop and then click the left boundary, and make the camera to stop and then click the right boundary, finally click the start key and the camera will move in the range of the left and right limit, and click the stop to stop the movement.
- 3. Other auto scanning path is as the same as the above setting methods

3.2.4 Playback

Click "playback" to enter the video searching playback screen. Playback screen can inquire, playback and download effective video saved in the SD card of the camera.

Select the inquire type, start and end time, click the "search "key, and the eligible video files will be displayed in the right box. Select it and double-click it to open, so the video files can be playback. See 3.2.4-1.



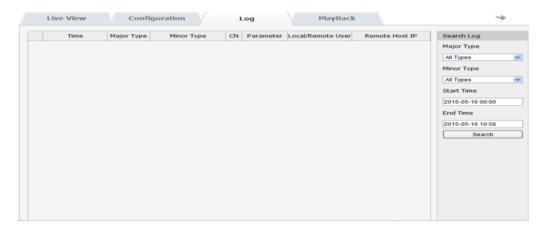
Picture 3.2.4-1 video playback

Note: playback function can be used under the circumstance when the camera is with SD card. If the camera has SD card, using it for the first time you must click the "storage "key to initialize the SD card and setting the video-recording plan.

3.2.5 Log

Click "log" key to enter the log inquiring screen. Log screen can search, show and output the log information stored in SD card of the camera.

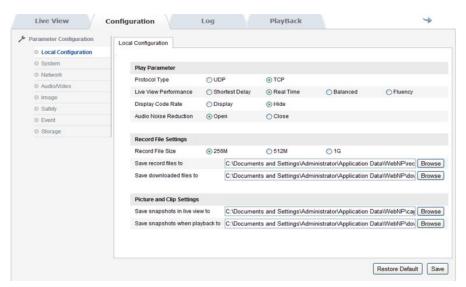
Select the type of the log, and set the start and end time of the log-search. And click the search key, and all the eligible log information will be displayed in the list. See 3.2.5-1. And click the "save" key, you can save the log information to your local computer.



Picture 3.2.5-1 log record screen

3.2.6 Parameter Configuration

Click "configuration", enter configuration interface. Configuration—local configuration as picture 3.2.6-1, each item instruction as picture 3.2.6-2



Picture 3.2.6-1

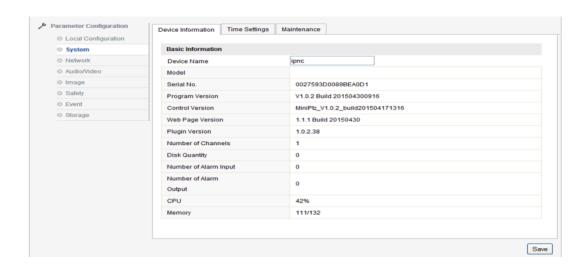
Parameter	Instruction
Protocol	TCP 、UDP optional
Live video performance	Shortest-delay , real-time , balanced , fluency(optional)
Display Code Rate	Display hide (optional)
Audio noise reduction	Open、close (optional)
Record file size	256M、512M、1G(optional)
Save record file to	According to the actual situation to set
Save downloaded file to	According to the actual situation to set
Save snapshots in live view to	According to the actual situation to set
Save snapshots when playback to	According to the actual situation to set

3.2.6-2 configuration information

SYSTEM → DEVICE INFORMATION

In Device Information screen, users can set Device Name, Model, Serial No., Firmware Version,

Encoding Version, Number of Channels, Number of HDDs, Number of Alarm input and output. See picture 3.2.6-3

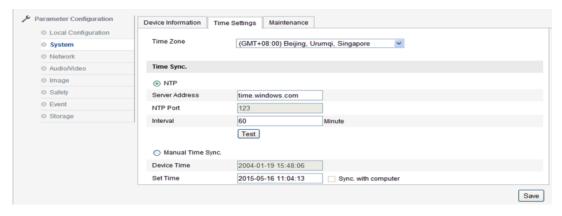


Picture 3.2.6-3 device information

System→Time settings

In the Time Settings screen, time sync is operational. "Time Zone" shows the current IP camera's time zone, and that can be set according to the actual situations. For "Time Sync", set NTP server address, NTP port, Internal, the device will be time sync every once in a while according to the setup. For "Manual Time Sync", set time and check "Sync with computer time", and then the time of the camera syncs with the local PC. After changing some parameters and click "save "to save the corresponding settings. See picture 3.2.4

Note: NTP port number is unchangeable



Picture 3.2.6-4 Time settings

System→Maintenance

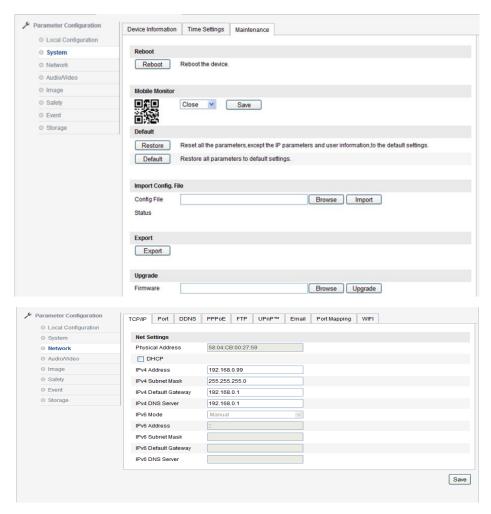
Enter system maintenance interface, See picture 3.2.6-5

Click"reboot"reboot the device. Click"restore restore device parameter, easily restore the

other parameters except IP address, subnet mask, gateway, 8000 port number, DNSS address and user name management information. Click "Default" will completely restore device parameter to default setting. Parameter import could lead to configuration file; parameter export could lead to configuration file. (Click then will show hint of after 59 seconds will automatically go to login interface)

Click "browse", choose local upgrade file or upgrade catalogue, then click "upgrade" to upgrade device version. "Status" shows the current upgrade progress, after the upgrade is complete, you will be prompted to upgrade successfully

Note: The upgrading process will be 1 to 10 minutes; please don't disconnect the Power to the device during the process. The device reboots automatically after upgraded.

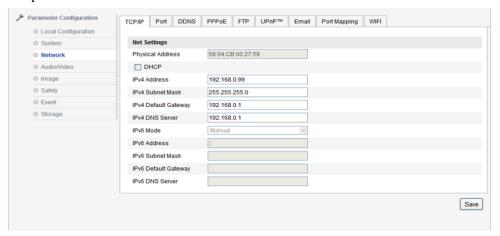


Picture 3.2.6-5 System maintenance interface

Network \rightarrow TCP/IP

In "TCP/IP" screen, users can set "IPv4 Address", "IPv4 Subnet Mask", "IPv4 Default Gateway", "IPv4 DNS Server" IPv4 mode". Ticking "auto", the device will obtain IP address

automatically. After changing some parameters you can click to save the corresponding settings. See picture 3.2.6-6



Picture 3.2.6-6 TCP/IP interface

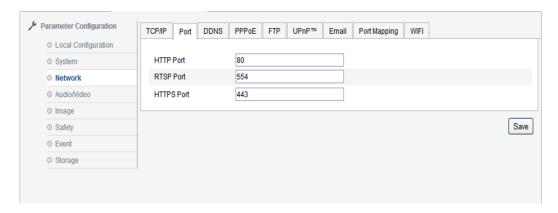
System→port

"Port" screen includes: "HTTP Port" (the default is 80), "RTSP Port" (the default is 554),

"HTTPS Port" (the default is 443). Through network access the device, users can set corresponding port as needed. After modifying the parameters, click to save the settings. See picture 3.2.6-7

Note: Reboot the IP camera after modifying the parameters.

Network \rightarrow DDNS



Picture 3.2.6-7 port configuration screen

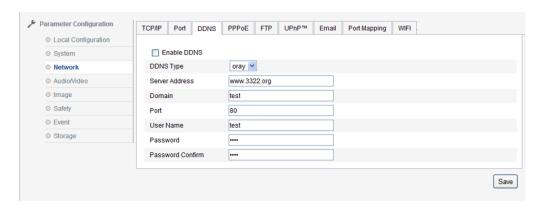
Enter DDNS setting screen, indicates enable DDNS function. DDS Type includes "Oray" or

[&]quot;Noip". See picture 3.2.6-8

Oray need to fill Server address, default open, server address is DNS server address software operator, domain is the one which user apply for in software operator website, port can be set according to configuration, user name and password is which user registered.

Noip operation is same as Oray.

After modifying related parameter, need to click "save" to save settings

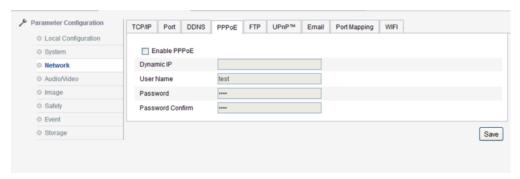


Picture 3.2.6-8

Network →PPPoE

Tick"enable PPPoE" indicates PPPoE function。 Input PPPoE user name and PPPoE password, click"save"restart, camera will gain a public IP address.

After modifying related parameter, need to click "save" to save settings. See picture 3.2.6-9



Picture 3.2.6-9 PPPoE configuration

Note: PPPoE configuration enable default gateway is invalid; Parameter in network settings is modified, need to reboot device.

Network→FTP

By setting FTP parameter, user could upload snapshot file to FTP server. See picture 3.2.6-10

Server address, port is the corresponding ones in FTP server. Directory structure could be set save path of file, "save in the root directory", "save in the parent directory", "save in the child directory", choosing parent directory including "use device name", "use device number" "use device IP address", child directory includes "use camera name", "use camera number"

After modifying related parameters, need to click "save" to save settings

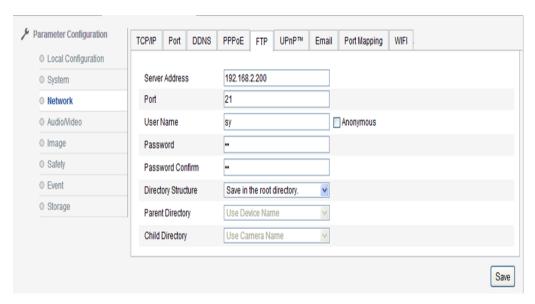
Note: PPPoE configuration enable default gateway is invalid; Parameter in network settings is modified, need to reboot device.

Network→FTP

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Server address, port is the corresponding ones in FTP server. Directory structure could be set save path of file, "save in the root directory", "save in the parent directory", "save in the child directory", choosing parent directory including "use device name", "use device number" "use device IP address", child directory includes "use camera name", "use camera number"

After modifying related parameters, need to click "save" to save settings



Picture 3.2.6-10 FTP setting

Network→UpnP

UPnP enable , this function could make device automatically found in LAN. For a camera in internal network, UpnP function could make gateway or router auto port mapping, Camera could map monitored network port from the gateway or router to a internal network device, gateway or router network firewall module began to open this port to other computers on the Internet. Users don't need to do port mapping in router, the precondition is that the router supports UPnP, and open this function. See picture 3.2.6-11

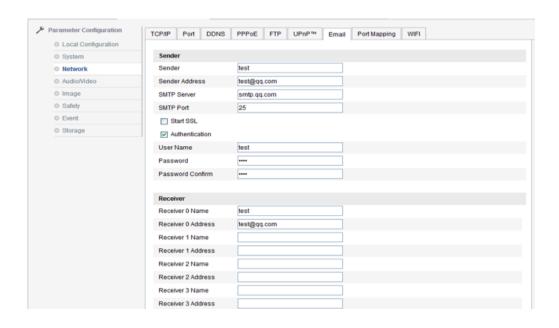


Picture 3.2.6-11 UPnP configuration

Network →Email

Enter email setting, fill sender , sender address, SMTP server, SMTP port $\,$ Tick $\,$ start SSL or authentication, user name, password and password confirm, receiver, receiver address, see picture 3.2.6-12

Note: Sender/receiver name could not be in Chinese, QQ mailbox port number is 25, other mailbox is 465, at the same time enable SSL, and user name is same as sender's name.



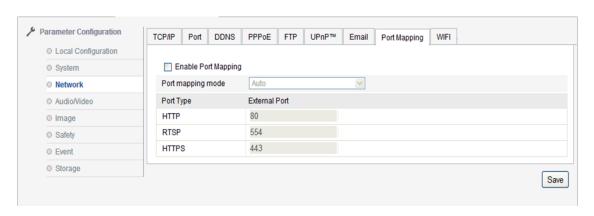
Picture 3.2.6-12 Email

Parameter	Instruction	
Stream type	Main stream/Sub stream	
Video type	Video stream	
Resolution	1920*1080	
Bitrate type	Variable/Constant	
Image quality	Lowest/low/lower/medium/highest/higher	
Frame rate	According to real condition	
Max rate	According to resolution to choose	
Video Encoding	According to real need	
I Frame Interval	Frame between former and back(1-100)	

Sheet 3.2.6-16 Video configuration instruction

Network →Port Mapping

By starting port mapping to open port, see picture 3.2.6-13



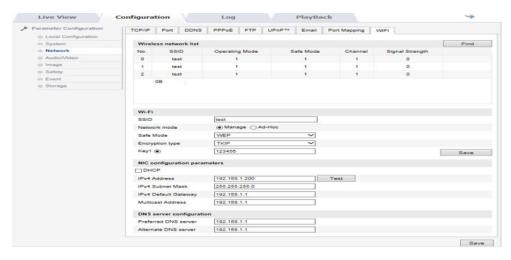
Sheet 3.2.6-17 audio settings

Parameter	Instruction
Audio encoding	G.711 ulaw
Audio input	Mic in Line in(optional)
Input volume	0~100(optional)

Picture 3.2.6-17 audio parameter instruction

$Network \rightarrow WIFI$

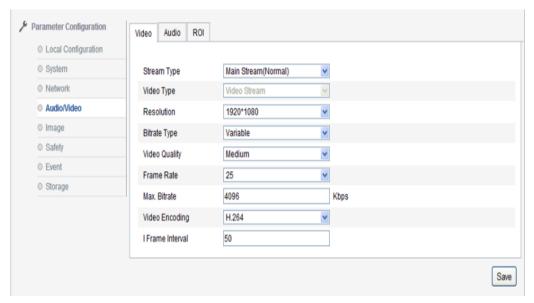
Enable WIFI insert, set related parameter to finish WIFI insert, see picture 3.2.6-14



Picture 3.2.6-14 WIFI settings

Audio/Video→Video

Enter video setting screen, user could set camera scream, resolution and bitrates type and other parameters. See picture 3.2.6-15, video settings detailed information, see picture 3.2.6-16.



Picture 3.2.6-16 Video setting

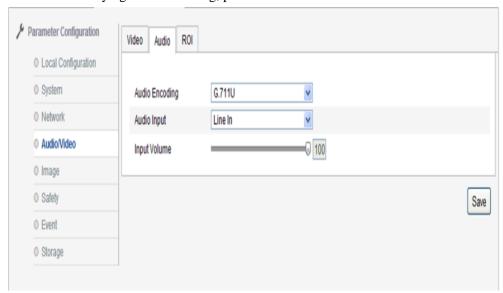
Parameter	Instruction	
Stream type	Main stream/Sub stream	
Video type	Video stream	
Resolution	1920*1080	
Bitrate type	Variable/Constant	
Image quality	Lowest/low/lower/medium/highest/higher	
Frame rate	According to real condition	
Max rate	According to resolution to choose	
Video Encoding	According to real need	
I Frame Interval	Frame between former and back(1-100)	

Audio/Video→Audio

In audio configuration, "audio encoding" version is the only kind named "G.711U". According to different model, hardware is different, "audio input" type: Line in and Mic in, if user use active pickup, choose Line in option, if for passive microphone, choose Mic in. "Input volume" is input source gain control value, the default value is 50, user could adjust 1-100 according to the actual volume needs

After modifying related parameter, need to click [save] to save settings. Audio configuration interface, see picture 3.2.6-17, audio configuration parameter shows in picture 3.2.6-17-1

Note: after modifying audio encoding, please reboot the device.

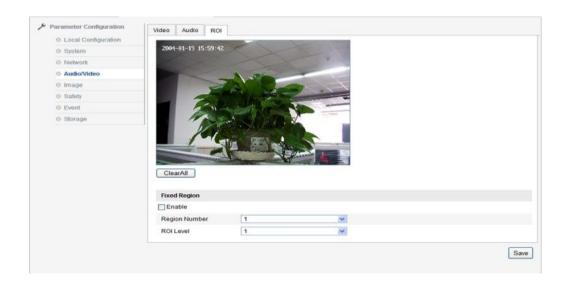


Picture 3.2.6-17 Audio setting

Parameter	Instruction
Audio encoding	G.711 ulaw
Audio input	Mic in Line in(optional)
Input volume	0~100(optional)

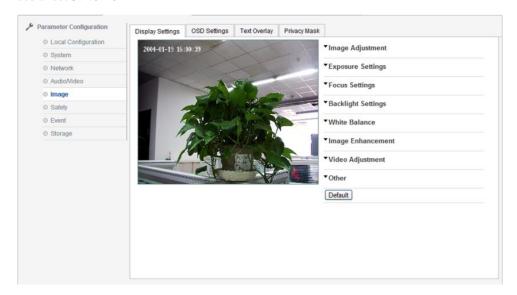
Audio/Video→ROI

Stream concentration makes the drawing region clearer, suitable for condition of the lack of stream



Picture 3.2.6-18 ROI

Enter image configuration interface, see picture 3.2.6-19, image configuration illustration see sheet 3.2.6-20



Picture 3.2.7-19 Display settings

Parameter	Instruction
Brightness	0-100
Contrast	0-100
Saturation	0-100
Sharpness	0-100
HUE	0-100
Exposure mode	Auto/Manual
Exposure bias	On/off
Compensation level	0-100
Gain limit	0-100
WDR	On/off
White balance	Auto/Manual
Digital noise reduction	On/off
2D noise reduction	0-100
3D noise reduction	0-100
Mirror	Off/left-right/up-down/center
Video standard	50Hz and 60Hz

Sheet 3.2.6-20 Image parameter

[&]quot;Sharpness": the higher, the image edge is clearer, while it could not be said the higher the sharpness, the better image quality, high sharpness can make the picture looks distorted.

[&]quot;Focus mode:" in "auto" mode, device automatic focus according to the monitoring scene

changing. Semi-automatic", focus one time after control PTZ and zoom, if focus clearly, even scene change, camera will not focus again. "Manual": through preview interface to focus clearly.

"Min. Focus distance": the distance from lens to scene is nearer than the one of setting, camera could not focus clearly.

"Exposure mode": auto/manual; Iris; shutter, only exposure bias open, the compensation level could be adjustable.

"Video standard": 50Hz, 60Hz (optional). Video standard modify for adapting to part of camera, after modifying, device need to reboot, when user choose 50Hz, real-time frame is 25frame/sec, if for 60Hz, real-time frame is 30frame/sec.

"Mirror": direction of symmetry includes "left/right", "up/down", center, video adjustment option, it is used to switch symmetry direction of image.

"WDR": On/Off

"White balance": Auto/MWB

"Digital noise reduction": it is used to adjust rank of noisy point in image, at the same time, it also reduce the detail of image.

"Default": click default, all the parameter in this display setting box will come back to factory default value.

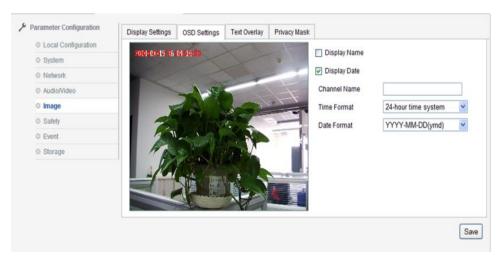
Note: All the option in configuration of camera is all the model option, Real camera model only has part of option, please take reference for specific camera model. If you modify some parameter, please reboot camera.

Image→OSD menu setting

User could set channel name according to their needs, display name, date or not. Time format: 24-hour time system/12-hour time system. Date

year", "XX day XX month XXXX year" optional.

After modifying parameter, need to click "save" to save settings. See picture 3.2.6-21

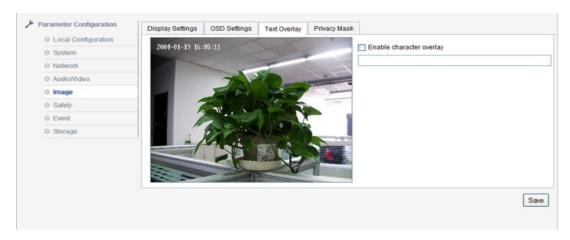


Picture 3.2.6-21 OSD Settings

Image→Text Overlay

Camera supports text overlay in the image, at most supports 40 characters content, see picture 3.2.6-22.

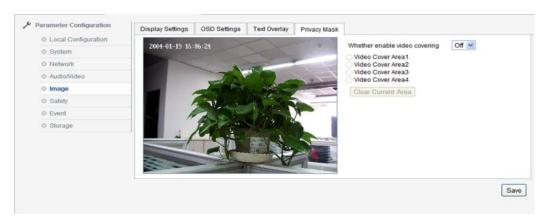
Input character in the box, then tick corresponding character number, then user could preview the input character. Through drag the mouse to choose displaying location which shows the character, click "save", then character will show in the image.



Picture 3.2.6-22 Text Overlay

Image →Privacy mask

User enable privacy mask, then according to their needs to set it, at most 4 area settable. See picture 3.2.6-23



Picture 3.2.6-23 Privacy Mask

Safety \rightarrow User

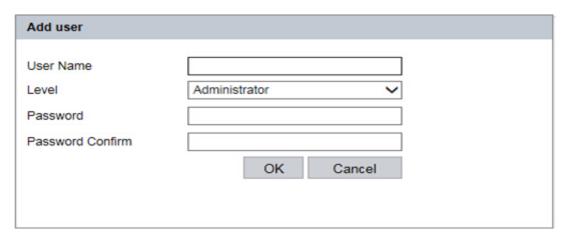
Enter Safety configuration interface, user could set user information, present administrator "admin", user could create other user according to needs, at most 8 users. See picture 3.2.6-23

User addition: click "addition", camera will display addition box, input user name, password, "user level": administrator, user, observer. Then click ok. See picture 3.2.6-24

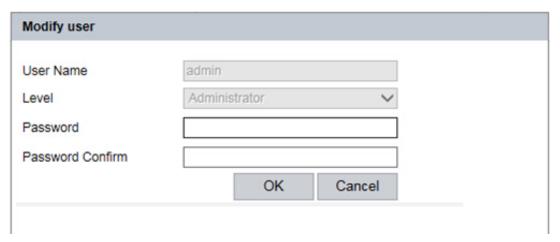
User modify: Choose user name you want to modify, click "modify" to enter interface, in this box, user need to modify "user name", "password", See picture 3.2.6-25

Delete user: choose the user name which you want to delete, it will come out dialog box, click confirm to delete the user.





Picture 3.2.6-24 Addition



Picture 3.2.6-25 Modify user

Security→RTSP Authentication

The authentication is "disable" or "basic" as optional.

"Disable": close RTSP authentication.

"Basic": enable RTSP authentication and need to carry the authentication information when send RTSP require to the IP camera at the moment.

After modifying the parameters, click to "save" the settings. See Picture 3.2.6-26



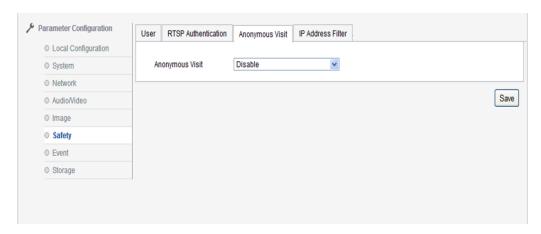
Picture 3.2.6-26 RTSP Setting screen

Security →Anonymous visit

Anonymous visit could choose "enable" and "disable", choosing enable will allow user anonymous login camera web interface.

Enable anonymous visit function, open camera web interface visit interface, login window will come out "anonymous" option

Tick "anonymous", then click [login] button, user could login directly. Anonymous visit only preview video, could not enter playback, log and configuration interface. See picture 3.2.6-27

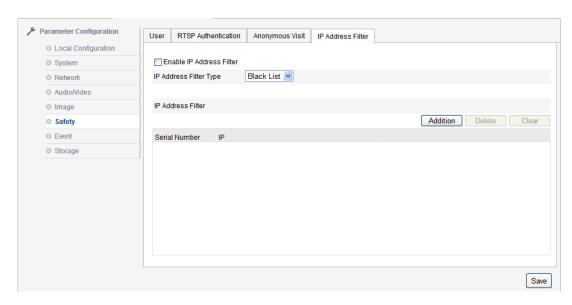


Picture 3.2.6-27 Anonymous visit

Security→IP address filter

User could tick "enable IP address filter" key to start the function.

"IP address filter type "include "black list", "white list", white list means the added IP address allow to visit the camera, black list means its forbidden. User could click [Addition] to add new IP address, after addition, user could click [modify], [delete] and [clear] to operate IP address. See picture 3.2.6-28



Picture 3.2.6-28 IP address Filter

Event→Motion detection

Area setting: click mouse left key and drag it, then release mouse left key, this will finish drawing area. When user finishes drawing all area, you can set arming schedule and linkage method.

Click "Clear all", will clear all drawing area.

Tick "enable motion detection" means start IP camera motion detection function. See picture 3.2.6-29

Sensitivity: 0-100 settable

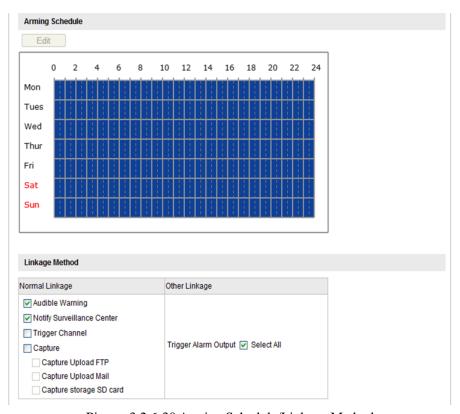


Picture 3.2.6-29 Motion Detection

Click [edit] could edit the arming schedule, could set arming schedule for the whole week or some day in a week.

[&]quot;Arming schedule" shows the arming time of the current motion detection.

User could set start time and end time specific for 4 periods per day, see picture 3.2.6-30



Picture 3.2.6-30 Arming Schedule/Linkage Method

After finishing parameter setting, click [confirm] key to save the settings.

Event→Video Tampering

Tick "enable video tampering" indicates start IP camera video tampering, see picture 3.2.6-31 Area Setting: default the whole screen

Sensitivity: 0-100 settable

After related parameter revised, need to click [save] to save related settings.



Picturer3.2.6-31 Video Tampering

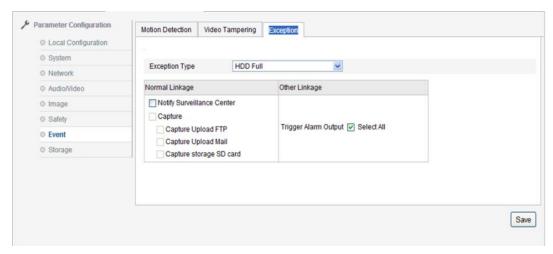
Event→Exception

"Exception Type" includes "HDD FULL", "HDD Error", "Network Disconnected", "IP address conflict"

"Normal Linkage" includes "Notify surveillance Center", "Capture"

"Other Linkage" includes corresponding alarm output channel.

After modifying related parameter, need to click [save] to save settings.



Picture 3.2.6-32 Exception

Storage→Record Schedule

Tick "enable record schedule", click "Editor" could edit record schedule, appoint record period and choose type. See picture 3.2.6-33. For edit schedule, see picture 3.2.6-34

Record time includes "all day", "section", if choose "section", user could choose time period specifically, supports 4 record period settings.

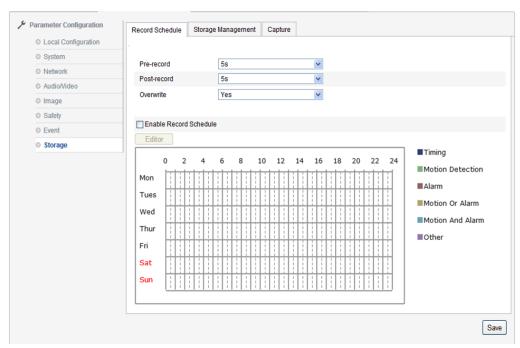
Record Type includes "Timing", "Motion Detection", "Alarm", "Motion Or Alarm", "Motion and Alarm", "Other".

Pre-record is the advanced record time before starting of record, 0-3sec (optional) and not limit.

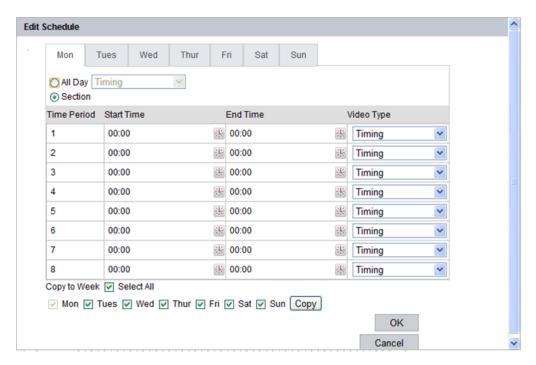
Post-record is the delayed time of record, 5sec-10min (optional)

After modifying related parameter, need to click "confirm" to save settings

Note: Overwrite is measured according to 2Mbps, the bigger scream you choose, the shorter, he pre-record time is.



Picture 3.2.6-33 Record schedule



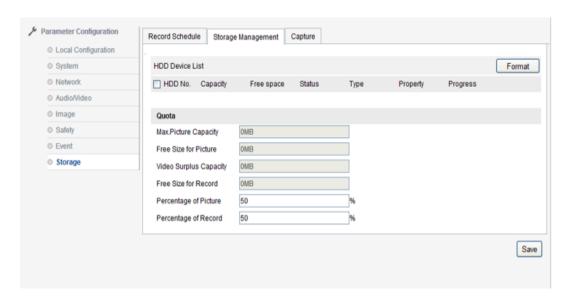
Picture 3.2.6.-34 Edit Schedule

Storage→Storage Management

Storage management is used to view the status and the capacity of the storage medium, and carry out format operation on the storage medium. Tick the inserted TF card, click the "format", will make the TF card format. As picture 3.2.6-35 shows

"HDD No." shows the serial number of the storage medium. "Capacity": shows the total capacity of a storage medium. "Free space", shows remaining space of a storage medium. "Status":

shows the current status of the storage medium. "Format": format operation of the storage medium.



Picture 3.2.6-35 Storage management

Storage→Capture

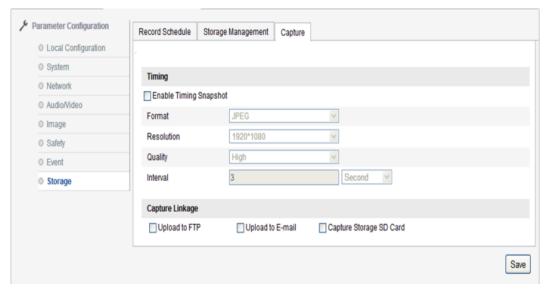
Through parameter configuration setting capture parameter, capture way is only for timing snapshot. As picture 3.2.6-36 shows

"Format" could support JPEG format snapshot, "Resolution" is present main stream's resolution.

"Quality" could choose High/Middle/Low

"Interval" could set according to interval, unit: "millisecond", "second", "minute", "hour", "day" (optional), interval range 1-604800 millisecond.

After related parameter modify, click [save] to save settings.



Picture 3.2.6–36 Capture

4 OSD MENU FUNCTION

MAIN MENU

[LANGUAGE]
INFORMATION
DOME
SETTINGS
MOTION
RESTART
FACTORY

INFORMATION

VERSION: VR220T-138

TEMPERATURE:32 °C

VOLTAGE:

12v

BACK

EXIT

The user can check the dome system information as required. The system information includes: Dome ID, dome address, baud rate, protocol, temperature, voltage, alarm information, dome title, version, date, time, and temperature scale.

Use the following steps to display the System Information screens:

- 1) Move the cursor to "INFORMATION".
- 2) Click IRIS + to enter, the INFORMATION screen opens.
- 3) Click up or town to select the item.
- 4) Click IRIS + to confirm the setup of each item.

LANGUAGE

MAIN MENU LANGUAGE: ENGLISH INFORMATION DOME SETTINGS MOTION RESTART FACTORY DEFAULT EXIT LANGUAGE

LANGUAGE CHINESE] BACK EXIT The language for the on-screen menus is Selectable. To change the display language: Click IRIS + to enter and click up or down button to select.

All on-screen menus are changed to the selected language.

IR LED

MAIN MENU

LANGUAGE: ENGLISH

< INFORMATION>

<DOME SETTINGS>

<MOTION>

RESTART

FACTORY DEFAULTS

DOME SETTINGS

- <IR LED>
- <WIPER>
- <IDLE>
- <ALARM>
- <ADVANCED>
- <OTHERS>

IR LED

CONTROL: AUTO

SENSE : ---- 【-】 ->4 | 6

NEAR POWER: 100% FAR POWER: 100% COMPENSATION: 0% AUTO CONTROL: OFF <AUTO CONTROL>

AUTO CONTROL

STANDBY POWER:50% DELAY :10SEC SENSITIVITY:MID

BACK EXIT

The user can open and close the IR LED manually and set up the IR LED work mode under this OSD mean. (Suitable for speed dome with IR Led):

1) CONTROL MODE:

AUTO	IR LEDs turn on or off automatically according
	to light conditions
TIMING	LED is adjusted according to Open and Close
	Time.
OPEN	IR LED forcedly open
CLOSE	IR LED forcedly close
CAMERA	IR LED status (Open/Close) will be
	synchronized with Camera day and night
	switching

2) SENSITIVIRY:

Here the user can manually set the sensitivity from 1-5. The smaller the number is, the lower light of the environment will be when the IR LED on.

- 3) **NEAR POWER COMPENSATION:** set the near power compensation at 10%, 20%, 30%, 40%, 50%, when near power opens, far power opens according to the power setting.
- 4) AUTO CONTROL: When it is on, the IR LED will turn its power consumption to the standby status which will effectively extend the service life of IR LEDs. And under this mode, when objects appear in the screen, the IR LED will turn its power consumption back to the normal status.

WIPER

MAIN MENU LANGUAGE: ENGLISH (> < INFORMATION> <DOME SETTINGS> <MOTION> RESTART FACTORY DEFAULTS EXIT

WIPER SETTINGS NUMBER: 03 SPEED: MID AUX ON: AUX1 RESET ACTIVATE BACK EXIT

The user can make adjustment for the wiper under this menu (suitable for wiper-equipped dome)

- *1) Numbers:* Move the cursor to "NUMBER" and click IRIS + to enter the setup of Wiper Number. Click the up or down button to select number (1-10), and then click IRIS + to confirm.
- 2) *Speed:* Move the cursor to "SPEED" and IRIS + to enter the setup of Wiper speed. Click the up or down button to select "HIGH", "MID "OR" LOW", then click IRIS + to confirm.
- 3) **Reset:** Move the cursor to "RESET" and click IRIS + to reset wiper.
- *4) Activate:* Move the cursor to "ACTIVATE" and click IRIS + to ACTIVATE wiper. Activate the wiper.

Note: Calling the preset number of 71 can also enable the wiper.

IDLE

MAIN MENU

LANGUAGE: ENGLISH

< INFORMATION>

SOME SETTINGS>

<MOTION>

RESTART

FACTORY DEFAULTS

EXIT

DOME SETTINGS

<IR LED>

<WIPER>

<IDLE>

<ALARM>

<ADVANCED>

<OTHERS>

BACK

EXIT

IDLE ACTION

TIME: 30 SEC ACTION: NONE

BACK EXIT User could set idle by OSD menu, can set idle action and time.

1. Action

Click up/down key to "action", click left/right key enter setting mode, click left/right key to choose idle action, action include: no action, preset 1, auto scan, auto cruse, pattern, click up/down key to operate next operation.

2. Delay

Click up/down key to "delay", click left/right enter setting mode, click left/right key to enter setting mode, click left/right key to operate time choice—1min, 5min,10min, click up/down key for next step.

ALARM

MAIN MENU

LANGUAGE: ENGLISH

- < INFORMATION>
- <DOME SETTINGS>
- <MOTION>

RESTART

FACTORY DEFAULTS

EXIT

DOME SETTINGS

- <IR LED>
- <WIPER>
- <IDLE>
- <ALARM>
- <ADVANCED>
- <OTHERS>

BACK

EXIT

ALARM SETTING

ALARM NO.: 1 CONTACT: N/O

ALARM MODE: OFF

ACTION: NONE ALARM OUT: OFF RESET DELAY: 10 SEC

BACK EXIT

The dome system has 4alarm inputs and 2 alarm output. (Optional function). When an alarm is received, an input signal to the dome triggers the user defined action (such as presets, patterns, etc.), and at meantime the alarm output signals is activated.

ALARM NO.: Move the cursor to ALARM NO. Click Iris + to enter and click up or down button to select the alarm input no. (Channel 1 and Channel 2)

INPUT STATE: Set the alarm contact status. There are two input states, OPEN and CLOSE.

ALARM MODE:

OFF	Alarm function is deactivated.
ON	Alarm function is activated.
AUTO	AUTO Alarm function will be activated and
	deactivated between START TIME and STOP
	TIME.

ACTION: Set the alarm action:

NONE	(default) No action
PRESET	Dome goes to preset. (Default as Preset 1)
SCAN	Dome starts auto scan (Default as Auto Scan 1)
SEQ	Dome runs auto cruise (Default as Auto Cruise 1)
PATTER	Dome runs pattern (Default as Pattern 1)
N	

ALARM OUT: Move the cursor to ALARM OUT. Click IRIS + to enter and click up or down button to select alarm output channels among "OFF" "OUTPUT1" "OUTPUT2" "ALL", which is used to set linkage alarm output switch after receiving effective alarm input signals.

RESET DELAY: Move the cursor to the ALARM OUT. Click IRIS + to enter and click up or down button to select reset delay among "10SEC" "30SEC" "1MIN" "5MIN" "10MIN". Which means the

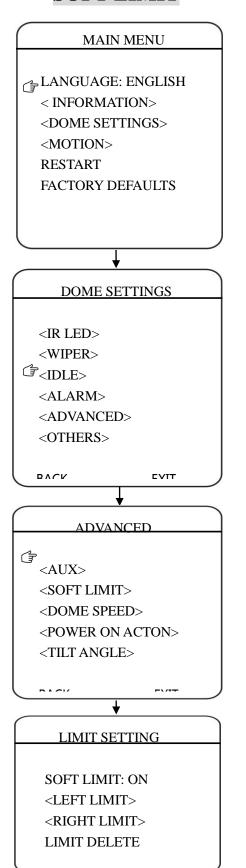
Time of the speed dome from detecting alarm signals to alarm reset and return to normal. The setting is valid under AUTO ALARM MODE.

AUX

MAIN MENU The user can set up the auxiliary output to trigger other devices from an alarm or a controller. '≨ LANGUAGE: ENGLISH < INFORMATION> Move the cursor to AUX and click IRIS + to enter and click up or <DOME SETTINGS> down button to select "ON" "OFF", then click IRIS + to confirm. <MOTION> RESTART **FACTORY DEFAULTS** DOME SETTINGS <IR LED> <WIPER> <IDLE><ALARM> <ADVANCED> <OTHERS> **BACK EXIT** ADVANCED ☞<AUX> <SOFT LIMIT> <DOME SPEED> <POWER ON ACTION> <TILT ANGLE> BACK **EXIT** AUX

AUX1: OFF AUX2: OFF

SOFT LIMIT



The user can set up the soft limit to define the left and right boundaries for the pan movement.

SOFT LIMIT: Move the cursor here and click IRIS + to enter. Click the up or down button to select "ON" or "OFF" to enable or disable this function.

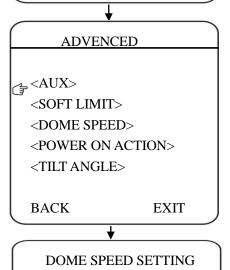
LEFT LIMIT: Move the cursor here and click IRIS + to enter. to control the PAN movement of the dome to a defined position for the left limit. Click IRIS + to confirm.

RIGHT LIMIT: Move the cursor here and click IRIS + to enter to control the PAN movement of the dome to a defined position for the right limit. Click IRIS + to confirm.

LIMIT DELETE: Move the cursor here and click IRIS + to delete all the settings.

DOME SPEED MAIN MENU LANGUAGE: ENGLISH < INFORMATION> <DOME SETTINGS> <MOTION> **RESTART** FACTORY DEFAULTS DOME SETTINGS <IR LED> <WIPER> <IDLE>

<ALARM> <ADVANCED> <OTHERS>



DOME SPEED:180 %S

EXIT

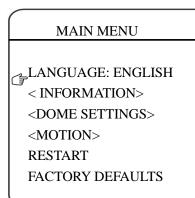
To make a selection of the dome speed, the user can enter this menu to set up.

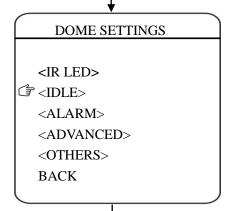
Move the cursor to DOME SPEED and click IRIS + to enter to select the dome speed when doing the pan movement.

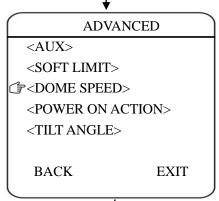
Move the cursor to BACK/EXIT and click IRIS + to run the command of BACK or EXIT.

BACK

POWER ON ACTION







POWER ON ACTION

POWER ON ACTION: NONE

BACK EXIT

The user can define the dome action when power on, Move the cursor to POWER ON ACTION and click IRIS + to enter the mode of setup.

NONE	(default) No action
PRESE	Dome goes to preset. (Default as Preset 1)
T	
SCAN	Dome starts auto scan (Default as Auto
	Scan 1)
SEQ	Dome runs auto cruise (Default as Auto
	Cruise 1)
PATTE	Dome runs pattern (Default as Pattern 1)
RN	

TILT ANGLE

MAIN MENU LANGUAGE: ENGLISH ⟨ S < INFORMATION > <DOME SETTINGS> <MOTION> RESTART FACTORY DEFUALTS DOME SETTINGS <IR LED> <WIPER> <IDLE> <ALARM> (ADVANCED> <OTHERS> ADVANCED <AUX><SOFT LIMIT> <DOME SPEED> <POWER ON ACTION> ⟨TILT ANGLE⟩ TILT ANGLE SETTINGS TILT ANGLE: 0 **BACK EXIT**

The user can set up the tilt angle under the menu of TILT ANGLE. Move the cursor to "TILT ANGLE" and click IRIS + to the setup of tilt angle. Click the up or down button to select the angle and click the IRIS + to confirm.

OTHERS

MAIN MENU

LANGUAGE: ENGLISH

⟨F< INFORMATION>

<DOME SETTINGS>

<MOTION>

RESTART

FACTORY DEFUALTS

DOME SETTINGS

<IR LED>

<WIPER>

<IDLE>

<ALARM>

<ADVANCED>

<OTHERS>

BACK

EXIT

OTHERS



TEMP MODE: AUTO

AUTO FLIP: ON

STOP TIME: 30 SEC

MENU OFF TIME: 5 MIN

<DISPLAY>

<AZIMUTH ZERO>

The user can set up TEMP MODE, INTERNAL FAN, PRESET FREEZE, and STOP TIME. MENU OFF TIME and NORTH ZERO here under the menu of "OTHERS"

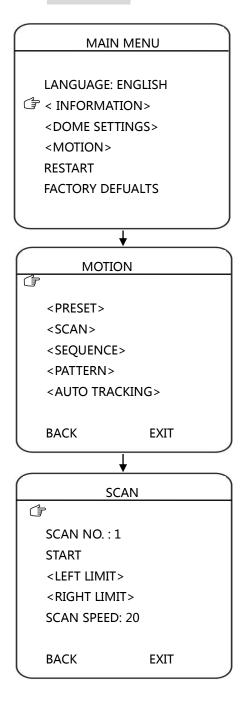
TEMP MODE: To set up the control mode of dome fans and heaters. It includes three modes of AUTO, FAN HIGH SPEED and FAN LOW SPEED.

AUTO FLIP: When the camera tilts downward and goes just beyond the vertical position, the camera will rotate 180 degrees. The user can click IRIS + to enter and choose to turn on/off this function.

MENU OFF TIME: To set up the time that OSD menu be off when no operations. Options include 1/2/5/10 min.

AZUIMUTH ZERO: To set up the due north of the dome (pan 0 °) Move the cursor here and click IRIS + to enter. Click the up or down button to control the dome to pan 0 °and click IRIS + to confirm.

PRESET



The dome supports 220 presets. Please check the following steps to set up a preset.

- 1) PRESET NO.: Move the cursor here and click IRIS + to enter the setup of Preset Number. Click the up or down button to select a preset number (1-64 and 100-255) and click IRIS + to confirm.
- 2) TITLE: Move the cursor here and click IRIS + to enter the setup of Preset Title. Check the detailed above in DOME TITLE settings.
- 3) <SET>: Move the cursor here and click IRIS + to enter. Move the dome to a defined position as preset point and click IRIS + to save the preset position.
- 4) CALL: Move the cursor here and click IRIS + to call up the current preset.
- 5) DELETE: Move the cursor here and click IRIS + to delete the current preset.
- 6) SPEED: Move the cursor here and click IRIS + to set up the preset call up speed of LOW, MID and HIGH.

AUTO SCAN

MAIN MENU LANGUAGE: ENGLISH INFORMATION> ODME SETTINGS> MOTION> RESTART FACTORY DEFUALTS MOTION AMOTION

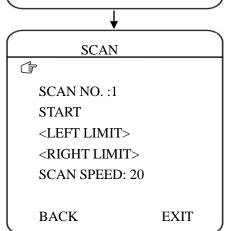
BACK EXIT

<AUTO TRACKING>

<SCAN>

<SEQUENCE>

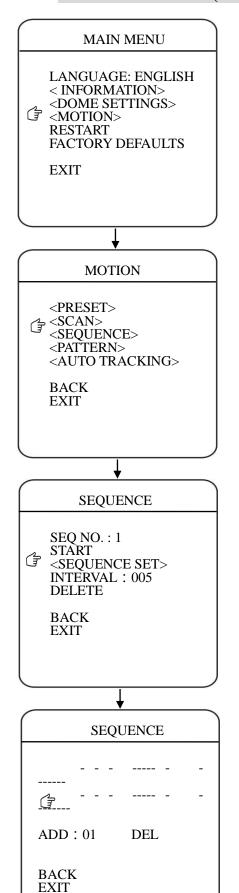
<PATTERN>



The dome supports 8 groups of auto scan. Please check the following steps to set up a scan.

- 1) **SCAN NO.:** Move the cursor here and click IRIS + to enter the setup of SCAN Number. Click the up or down button to select a preset number (1-8) and click IRIS + to confirm.
- 2) **TITLE:** Move the cursor here and click IRIS + to enter the setup of SCAN Title. Check the detailed above in DOME TITLE settings.
- 3) **<LEFT LIMIT>:** Move the cursor here and click IRIS + to enter. Move the dome to a defined position as left limit and click IRIS + to save this left boundary.
- 4) **<RIGHT LIMIT>:** Move the cursor here and click IRIS + to enter. Move the dome to a defined position as right limit and click IRIS + to save this right boundary.
- 5) **START:** Move the cursor here and click IRIS + to start the current scan.
- 6) **SCAN SPEED:** Move the cursor here and click IRIS + to set up the scan speed ranging 1-30.

AUTO CRUISE (SEQUENCE)



The dome supports 8 groups of auto cruise and each cruise supports 32 presets. Please check the following steps to set up cruise.

- 1) **SEQ NO.:** Move the cursor here and click IRIS + to enter the setup of Sequence Number. Click the up or down button to select a preset number (1-8) and click IRIS + to confirm.
- 2) *TITLE:* Move the cursor here and click IRIS + to enter the setup of Sequence Title. Check the detailed above in DOME TITLE Settings.
- 3) **SEQUENCE SET>:** Move the cursor here and click IRIS + To enter. Move the cursor to EDIT and click IRIS + enter Edit mode of sequence. Move the left and right button to Select each item.
 - a) When the <> is on the item NO., move the up or down button to select the Serial NO. Of the preset in a sequence. There are up to 32 presets in each sequence.
 - b) When the < > is on the item PRESET, move the up or down button to select the preset NO. That the user wants to add in the sequence.
 - c) When the < > is on the INTERVAL, move the up or down button to select the interval time between each preset.
 - d) When the <> is on the last item, move the up or down button to select edition mode as "INS (insert)", "ok" and "delete".

Click IRIS + when selecting INS to insert the settings into the position of current Serial No.

Click IRIS + when selecting OK to override the settings of Current Serial No.

Click IRIS + when selecting delete to delete the settings of the Current Serial No.

Click IRIS + to save all the setting and click IRIS CLOSE to exit.

4) **DELETE/START:** Move the cursor here and click IRIS + to delete/start the current sequence.

PATTERN TOUR

MAIN MENU

LANGUAGE: ENGLISH

<SYSTEM

INFORMATION>

<DISPLAY SETUP>

⟨₱ < DOME SETTINGS >

<CAMERA>

<MOTION>

RESTART

FACTORY DEFAULTS

MOTION

- <PRESET>
- <SCAN>
- SEQUENCE>
 - <PATTERN>
 - <ZONES>
 - <TIMING ACTION>
 - <MOTION DETECT>
 - <AUTO TRACKING>

PATTERN

PATTERN NO. :1

TITLE: PATTERN 1

START

<SET>

DELETE

BACK

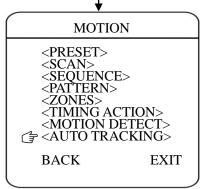
EXIT

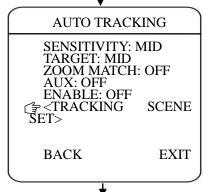
The dome supports 4 pattern tours and each pattern cover at most 10 Minutes of 500 commands. Please check the following steps to set up a pattern.

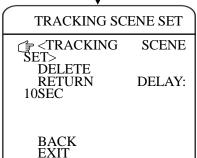
- 1) **PATTERN NO.:** Move the cursor here and click IRIS + to enter the setup of Pattern Number. Click the up or down button to select a pattern number (14) and click IRIS + to confirm.
- **TITLE:** Move the cursor here and click IRIS + to enter the setup of Pattern Title .Check the detailed above in DOME TITLE settings.
- 3) **SET>:** Move the cursor here and click IRIS + to enter. Click the dome up/down/left/right, make the zoom in/out and click IRIS + to save the pattern tour.
- 4) START: Move the cursor here and click IRIS + to start the current pattern tour.
- 5) **DELETE:** Move the cursor here and click IRIS + to delete the current pattern tour.

AUTO TRACKING

MAIN MENU LANGUAGE:ENGLISH <INFORMATION> <DISPLAY SETUP> <DOME SETTINGS> <CAMERA> MOTION> RESTART FACTORY DEFAULTS EXIT







Under the auto tracking mode, the dome will auto track the moving objects entering the scene. When the object is moving out of the scene, the dome will return to a preset position as defined after the defined time.

SENSITIVITY: The user can set up the auto tracking sensitivity under this menu. When set as LOW, the dome will do auto tracking when obvious object entering the screen. When set as HIGH, the dome will do auto tracking when small object moving into the screen. Move the cursor there and click the IRIS + to enter. The options include: LOW, MID and HIGH.

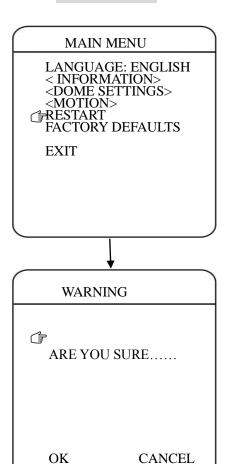
TARGET: To set up the size of the tracking object. The options include Large. MID and SMALL.

AUX: If set "ON" here, the object auto tracking will activate alarm aux output at the same time. Click IRIS + to enter to select "ON" or "OFF"

ZOOM MATCH: Under the auto tracking model, if turn on the function of ZOOM MATCH, the dome will do zooming in and out during auto tracking to keep the right proportion between the object and background. Move the cursor there and click the IRIS + to enter. And click the up or down to select the optical zoom.

ENABLE: Move the cursor here and click IRIS + to enter to select "ON" or "OFF" to enable or disable this function.

RESTART



TRACKING SCENE SET: Here the user can set up the scene that the dome will get back to when finishing the action of auto tracking. Move the cursor here and click IRIS + to enter. Move the dome to the wanted scene and click IRIS + to confirm.

DELETE: Move the cursor here and click IRIS + to delete the return scene.

RETURN DELAY: To set up the time that dome will waiting to return to this scene.

RESTART: The dome allows the user to reset its settings remotely under this menu.

Move the cursor here and click IRIS + to enter.

Select "OK" or "CANCEL" to continue the reset or cancel the reset.

FACTORY DEFAULTS

MAIN MENU LANGUAGE: ENGLISH < INFORMATION> <DOME SETTINGS> <MOTION> RESTART FACTORY DEFAULTS WARNING ARE YOU SURE.....

FACTORY DEFAULTS will allow the user to recover all the setting to factory default setting.

Move the cursor here and click IRIS + to enter. Select "OK" or "CANCEL" to continue the reset or cancel the reset.

5 APPENDIXES

Lighting protection and Anti-surge

This product USES the gas discharge tube of TVS diode and protection circuit, can effectively prevent the 3.0 kV following transient lightning and surge lamp all types of pulse signal to the damage of equipment. But, for outdoor installation according to the actual situation on the premise of guarantee the electrical safety to do the necessary protective measures:

- •Signal transmission line must be with the high voltage equipment goods between high voltage cable to keep a distance of at least 50 meters
- •Choose as far as possible outside wiring along the roof line
- •For open field must adopt sealing pipe buried wiring way, and the steel pipe by one-point earthing, absolutely forbidden by wiring overhead way
- •In strong thunderstorms or high induction voltage region (e.g., high voltage transformer substation), must be taken to add extra high power lightning protection equipment and installation of lightning rod and other measures
- •Lightning protection and grounding design of outdoor installation and wiring must be combined with the construction of lightning protection requirements into consideration, and conform to the requirements of relevant national standards and industry standards.
- •The system must be equipotential grounding. Grounding device must meet the system anti-interference and electrical safety requirements, and shall not be short term or mixed with strong power grid zero line. System separate grounding, grounding resistance is not greater than 4Ω .