6-inch IP Speed Dome User's Manual

Table of Contents

Welcome

Thank you for purchasing our product!

This user's manual is designed to be a reference tool for the operation of your system.

Here you can find information about this IP speed dome features and functions.

Before installation and operation, please read the following safeguard and warning carefully!

Important Safeguard and Warning

1．Electrical Safety

All installation and operation should conform to your local electrical safety codes.
We assume no liability or responsibility for all the fires or electrical shock caused by improper handling or installation

2．Transportation Security

No heavy stress, violent vibration or water splash are allowed during transportation, storage and installation.
This series product must use split type package during the transportation.
We are not liable for any damage or problem result from the integrated package during the transportation.

3．Installation

Keep upwards. Handle with care.
Does not touch the lower dome cover; it may affect the video quality,
Do not apply power to the dome before completing installation.

4．Qualified Engineers Needed

All installation here should be done by the qualified engineers.
All the examination and repair should be done by the qualified service engineers.
We are not liable for any problems caused by unauthorized modifications or attempted repair.

6．Environment

This product has been tested and found to comply with the IP67 standard of Degrees of protection provided by enclosure (IP Code).
The dome should be installed in a cool, dry place away from direct sunlight, inflammable, explosive substances and etc.

7．About Camera

Camera should be installed away from direct sunlight or other strong artificial lights to avoid blooming and smear.
When the camera is aiming at bright light or object, such as spotlight or sun, smear or blooming may appear.
Only use mild detergent or dry cloth to clean the camera.

8. About Accessories
Always use all the accessories recommended by manufacturer.
Before installation, please open the package and check that all the components are included in the package:
Contact you local retailer ASAP if something is missing in your package.

1 Feature and Function

1.1 General Introduction

This 6-inch IP dome integrates the remote network monitor function and integration high intelligent speed dome together. It is easy to install and operate. This series IP speed dome has vivid video and supports intelligent recognition, privacy mask, alarm activation, wide dynamic region (WDR) function and etc. It can guarantee the stability of audio/video data and control data transmission via network technology, so that this series product can realize real-time monitor in anytime and at any where. Working with the built-in PTZ, the 6-inch IP speed dome can implement the quick, accurate and convenient positioning surveillance.

1.2 Feature

This series IP speed dome has the following features:

1.2.1 Storage
- Support central server backup function in accordance with your configuration and setup to save audio/video data.
- Support record via Web and the recorded file are storage in the client-end PC.
- Support local SD card hot swap and memory backup function, support short time backup when encounter network connection failure.

1.2.2 Network Monitor
- Supports audio/video data transmit to network terminal and then decode. Audio and video transmission protocol: HTTP, TCP, UDP, MULTICAST and RTP/RTCP and etc.
- Support Web access. Max supports 10 connections.

1.2.3 OSD
- This series IP speed dome support on-screen menu display and switch function in the Web. It is easy for you to view dome information and configure dome, camera parameters.

1.2.4 Support multiple protocols
- This series speed dome supports and intelligently recognize universally used protocols PELCO-P and PELCO-D. You can use various devices (such as matrix, control keyboard and DVR) and protocols to control the IP speed dome.

1.2.5 Proportional Pan and Tilt
- This function keeps the image from moving too fast when there is a large amount of zoom.
- Speed dome continually decreases or increases pan and tilt speeds in proportion to depth of zoom. When zooms speed is increasing, the camera moving speed becomes slow. When zooms speed is decreasing, the camera moving speed becomes fast.

1.2.6 Preset Setup and Recall
- Preset function is to save the address information (such as PTZ pan/tilt, focus and etc) to the memory so that you can quickly adjust the dome and PTZ to the correct position. This series speed dome supports 200 presets.

1.2.7 Auto Scan
- Camera scans back and forth regularly in a horizontal field. Here you need to set left and right limit and scan speed. This series IP speed dome max supports 5 scanning paths either via control keyboard or via the menu in screen.

1.2.8 Auto Cruise (Touring)

- Auto cruise is to add presets into a routine in a desired order and then set time and stop duration for each address. The dome will begin an auto cruise between these presets. System supports 8 cruise paths. Each cruise consists of max 32 presets.

1.2.9 Auto Pattern

- Auto pattern is to memorize dome operation such as pan, tilt, and zoom to repeat. Focus and iris are in auto mode during auto pattern. This series IP speed dome supports 5 pattern paths.

1.2.10 Privacy Masking

- Privacy masking is a user-defined, four-sided area that can not be viewed by you. The masking area will move with pan and tilt functions and automatically adjust in size as the lens zooms. You can set 8 privacy masking zones (Depends on camera type).

1.2.11 Action on Alarm

- This series speed dome support seven alarm inputs (normal close or normal open). Each alarm has tree types of PTZ actions. It can be individually programmed to initiated pattern, or go to an associated preset, cruise (touring) when received. The IP dome will return to a previously programmed state after alarm acknowledgement or to its previous position before alarm.
- For video loss alarm or camera masking alarm, the IP speed dome can alert you according to your setup (either pop up prompt or alarm). System can activate corresponding channel to record video or snapshot. The alarm information will be saved in the SD card or be sent to you via email.

1.2.12 Auto Flip

- This function allows you to trace the object manually. As long as you continue to hold the keyboard joystick in the down position, the dome rotates 180 degrees and repositions itself for uninterrupted viewing of any subjects that passes directly beneath the dome.

1.2.13 Self-diagnosis

There is a self-diagnosis procedure when IP dome boots up.
- Tilt and vertical engine check
- Camera diagnostics (mainly the zoom function diagnostics)
- Display IP dome information and diagnosis information such as address, protocol, baud rate, IP speed dome model and its self-diagnosis information and etc.

1.2.14 Day/Night Mode (B/W & Color Mode)

Auto/manual switches in low illumination.
- Auto: camera will automatically adjust CCD light level.
- Manual: use menu or function keys to select day/night mode.

1.2.15 Auto Focus

- Auto focus allows the lens to remain in focus during zoom-in, zoom-out and motion functions to get vivid image. You can use FAR or NEAR button to adjust focus manually.

1.2.16 Backlight Compensation

- Balance the brightest and darkest sections of a scene to produce a more vivid picture.

1.2.17 Pan Tilt and Zoom

- Supports zoom in and zoom out during tilt and pan movement. In this period focus and iris are both in auto mode to get vivid video.

1.2.18 3D Intelligent Location

- Working with DVR or WEB, just click part of the current scene, that zone will be displayed in the central window and automatically zooms. All of these allow you to trace precisely.

1.2.19 Idle Status
- When there is no available order, you can use menu to set dome idle status after specified period. The idle status includes turn to specified preset or go to scan, cruise or pattern function. You can set corresponding serial number for each actions.

1.2.20 Image Rotate
- Via menu, you can realize the image rotation function so that you can view the video more conveniently.

2 Protocol, Baud Rate, Address setup

Important

Before you control the IP dome via RS485, you need to set baud rate and address manually. Otherwise you can not control this series IP dome!

If you are going to use the Web to control the IP dome, you do not need to implement the above setup. Please refer to *6-inch IP Speed Dome Web Operation Manual* (chapter 3.2.8) included in the resources CD for detail information.

2.1 Protocol and Baud Rate Setup

Turn the IP dome transparent cover out, you can see the dial switch button in the main board. Please configure the following settings before begin controlling dome:

● Baud rate
● Address

Note: Each time, you need to reboot the speed dome to get all the setups activated!

Open the lower dome, the interface is shown as below. See Figure 2-1.
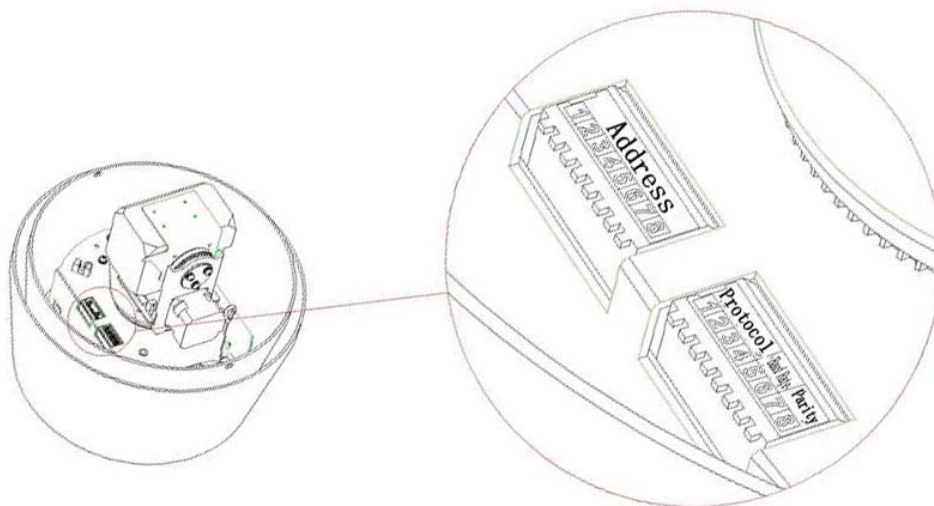
Figure 2-1

Please refer to the protocol sheets for detailed information.

Please note, this series IP speed dome can intelligently recognize the DH-SD, PELCO-D, PELCO-P. You do not need to set he protocol.

Protocol				Baud rate		Parity	
1	2	3	4	5	6	7	8

1	2	3	4	Communication Protocol
OFF	OFF	OFF	OFF	DH-SD （ Compatible with China industrial standard protocol）

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ON	OFF	OFF	OFF	PELCO-D
OFF	ON	OFF	OFF	PELCO-P
X	X	X	X	Reserved

Please refer to the baud rate sheet for detailed information.

5	6	Baud Rate
OFF	OFF	9600bps
ON	OFF	4800bps
OFF	ON	2400bps
ON	ON	1200bps

Please refer to the parity setup sheet for detailed information.

7	8	Parity
OFF	OFF	NONE
ON	OFF	EVEN
OFF	ON	ODD
ON	ON	NONE

2.2 Set address dial switch

The encode mode adopts binary system. 1 to 8 is valid bit. The highest address bit is 255. You can refer to the following sheet for more information.

Address	1	2	3	4	5	6	7	8
1	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF
2	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF
3	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF
4	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF
5	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF
6	OFF	ON	ON	OFF	OFF	OFF	OFF	OFF
7	ON	ON	ON	OFF	OFF	OFF	OFF	OFF
8	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF
……	……………………………………………………………………………							
254	OFF	ON	ON	ON	ON	ON	ON	ON
255	ON	ON	ON	ON	ON	ON	ON	ON

3 Cable Connection

3.1 RS485 and Power Cable Connection

This series IP speed dome has video cable port, RS485 control cable port, audio cable port, network port and power port. These cables are used to transmit video output signal, RS485 control signal, audio input and output signal and connect to the network cable and power cable and etc.

Please connect the power cable to the power socket, connect the RS485 control cable to the RS485 port, and then connect the audio/video cable to the IP speed dome audio/video port respectively. See Figure 3-1 and Figure 3-2.
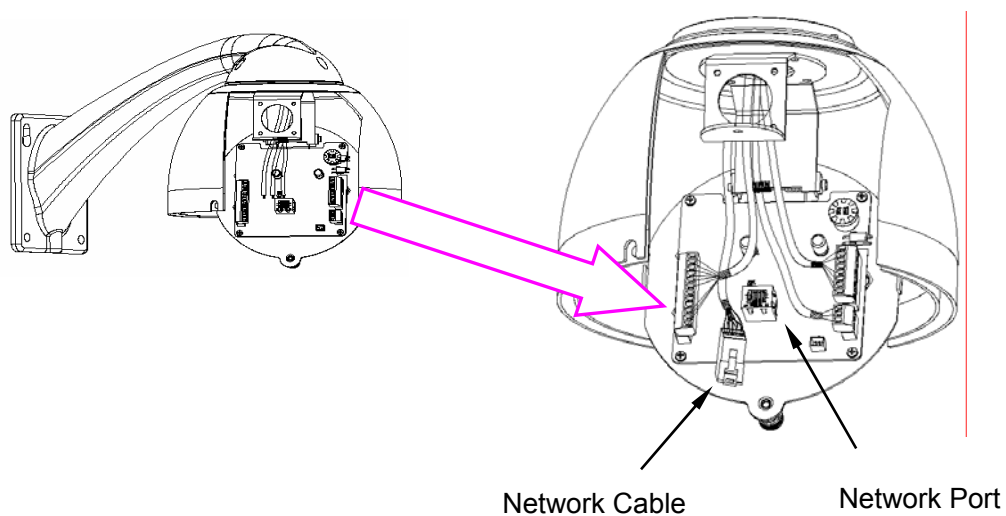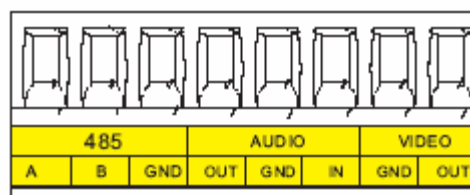

Network Cable   Network Port

Figure 3-1

Figure 3-2

Name		Function
485	A	485-A. It is to control IP dome built-in PTZ.
	B	485-B. It is to control IP dome built-in PTZ.
	GND	Ground.
AUDIO	OUT	Audio output port.
	GND	Ground port.
	IN	Audio connection port.

VIDEO	GND	Ground port.
	OUT	Video output port.

Power port connection interface is shown as in Figure 3-3.
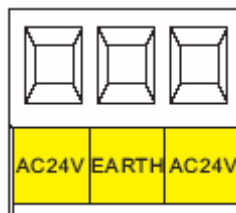

Figure 3-3

Name	Function
AC24V	24V power port. Connect to the power cable.
EARTH	Ground port.
AC24V	24V power port. Connect to power cable.

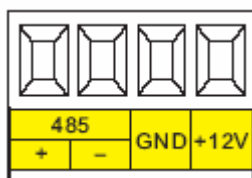Extension RS 485 port is shown as in Figure 3-4.

Figure 3-4

Name		Function
485	+	Extension peripheral 485 port. Such as control temperature, humidity sensor.
	−	Extension peripheral 485 port. Such as control temperature, humidity sensor.
GND		Ground port.
+12V		External device power port. Provide power to the peripheral equipment.

3.2 Alarm Cable Connection

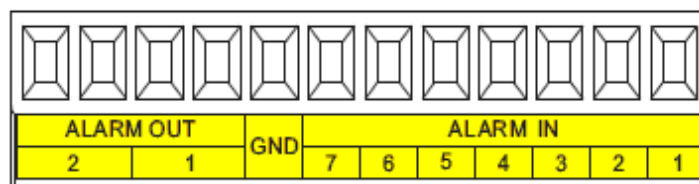Open the dome cover and take PTZ chip core out. Turn the core upside down; you can see the alarm port. See Figure 3-5.

Figure 3-5

Name	Function
Alarm out：1-2	• Two alarm output channels. When there is an alarm from current

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	channel, system activates relay or not.
	• Alarm output relay default setup is NO. You can use the jump-cap near the power board relay to set.
	• NO：Normal open alarm output.
	• NC：Normal close alarm output.
GND	Alarm input ground end.
Alarm in：1-7	• Seven alarm input channels. They are to receive relay signal from the external alarm source. You can go to dome menu to activate specified preset or patter.
	• When the activation mode is NO (normal open), dome alarms when there is low voltage. High voltage will not activate the alarm.
	• When the activation mode is NC (normal close), dome alarms when there is high voltage. Low voltage will not activate the alarm.
	Note: ● Dome alarm input message is ground mode. ● Dome alarm input signal are two modes: normal open and normal close.

3.2.1 System Layout

3.2.1.1 BUS connection

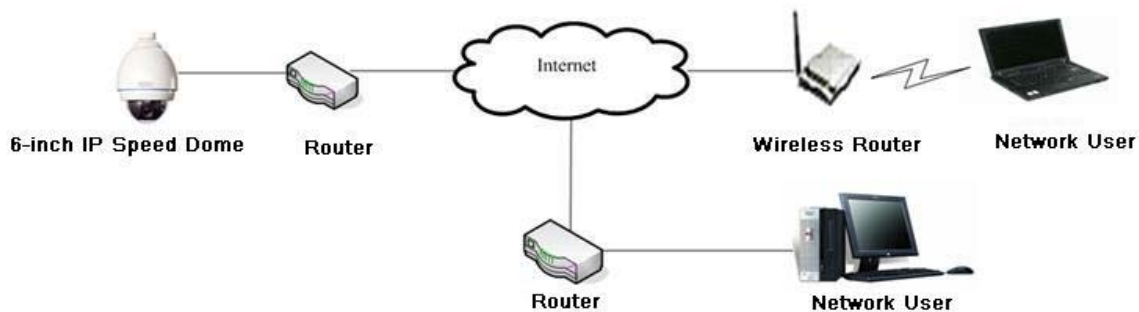Please refer to the following interface for Ethernet connection information.

Figure 3-6

Please refer to Figure 3-7 and Figure 3-8 for BUS cable connection.
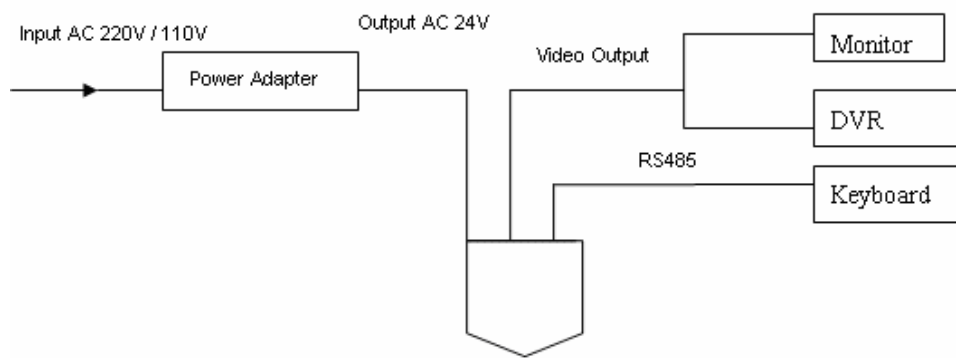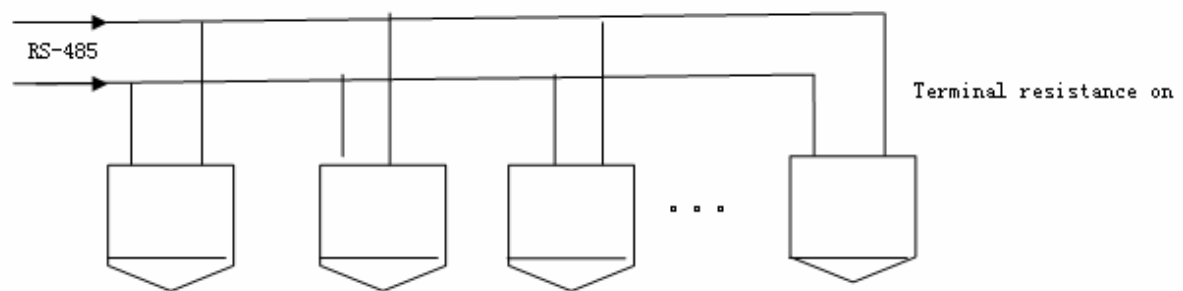
Figure 3-7

Figure 3-8

Note:

Please use shielded twisted pair. The shielded layer shall connect to GND firmly; otherwise it may adversely affect communication or video work.

3.2.1.2 Star Connection

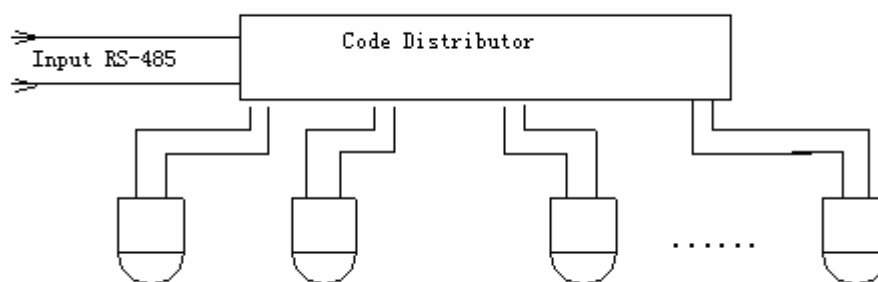Please refer to Figure 3-9 for start connection information.

Figure 3-9

3.2.2 Alarm Connection

Please refer to Figure 3-10 for alarm connection information.
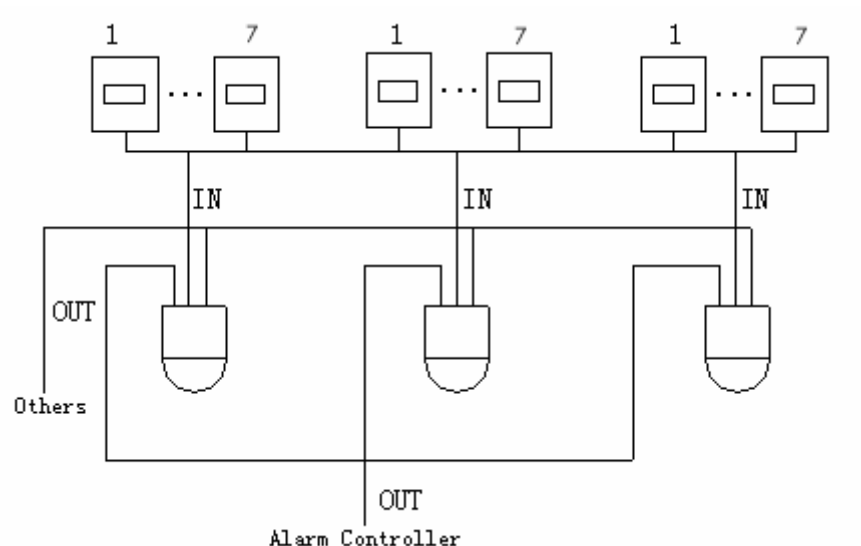
Figure 3-10

3.2.3 Keyboard Connection

This series IP speed dome supports keyboard operation. You can use keyboard to control the camera and PTZ. The display and control can work simultaneously. One keyboard can control maximum 255 speed domes. Please refer to Figure 3-11.
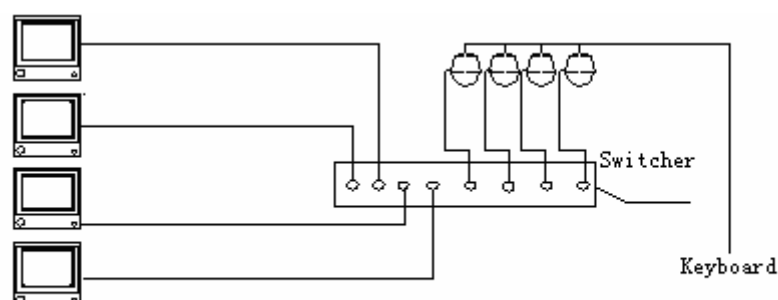
Figure 3-11

This series speed dome protocol is open and supports multiple popular system platforms in today's market. Please feel free to contact us if some matrix systems do not support dome camera communication protocol. The most direct and easy way is to use current system to process video signal and add some control keyboards to control speed dome. See Figure 3-12.
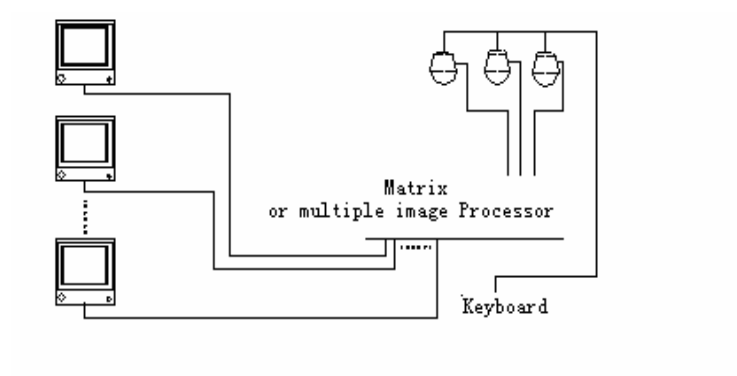
Figure 3-12

4 Quick Configuration Tool

4.1 Overview

Quick configuration tool can search current IP address, modify IP address. At the same time, you can use it to upgrade the device.

Please note the tool only applies to the IP addresses in the same segment.

4.2 Operation

Double click the "ConfigTools.exe" icon, you can see an interface is shown as in Figure 4-1. In the device list interface, you can view device IP address, port number, subnet mask, default gateway, MAC address and etc.
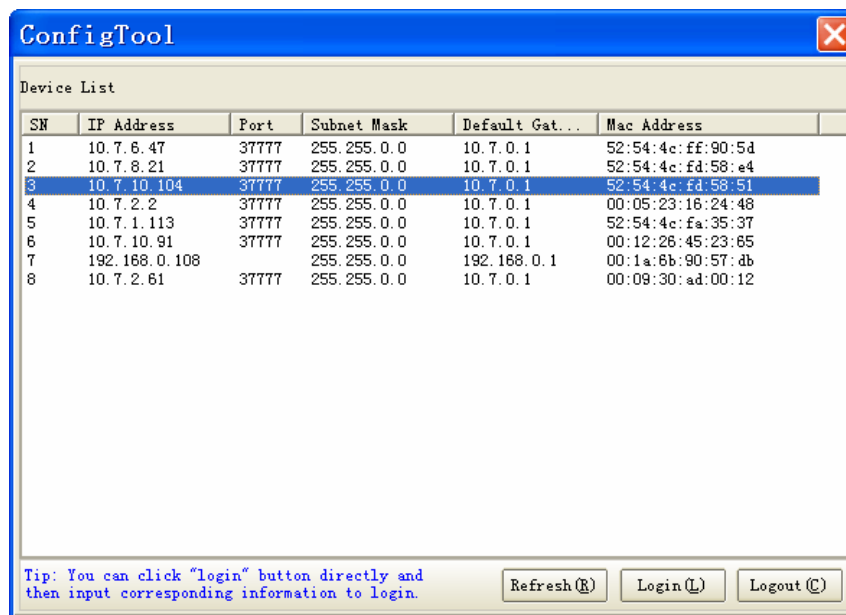
Figure 4-1

Select one IP address and then right click mouse, you can see an interface is shown as in Figure 4-2.
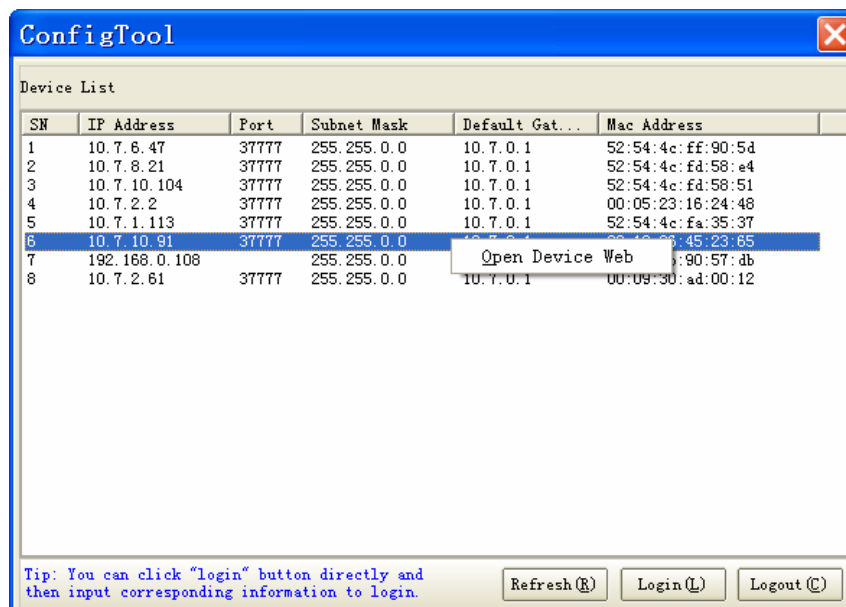
Figure 4-2

Select the "Open Device Web" item; you can go to the corresponding web login interface. See Figure 4-3.
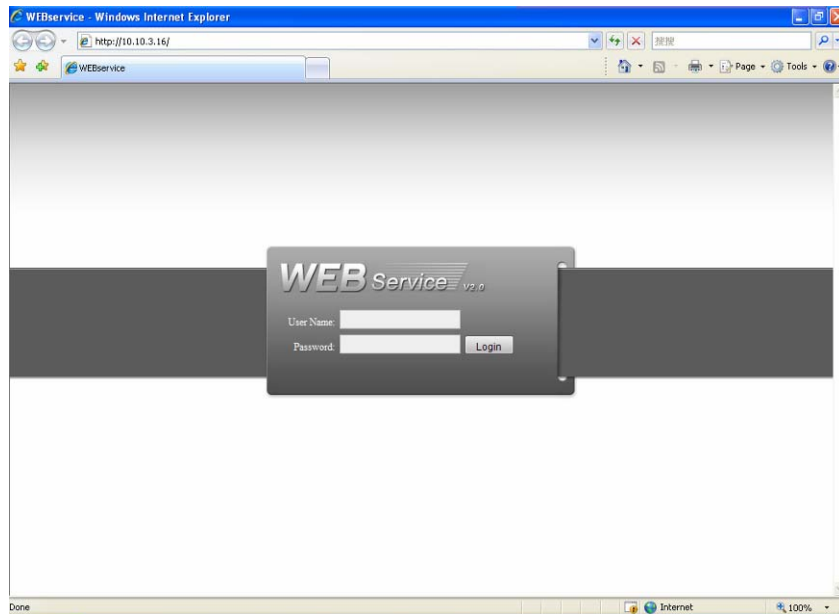
Figure 4-3

If you want to modify the device IP address without logging in the device web interface, you can go to the configuration tool main interface to set.

In the configuration tool search interface (Figure 4-1), please select a device IP address and then double click it to open the login interface. Or you can select an IP address and then click the Login button to go to the login interface. See Figure 4-4.

In Figure 4-4, you can view device IP address, user name, password and port. Please modify the corresponding information to login.

Please note the port information here shall be identical with the port value you set in TCP port in Web Network interface. Otherwise, you can not login the device.

If you are use device background upgrade port 3800 to login, other setups are all invalid.
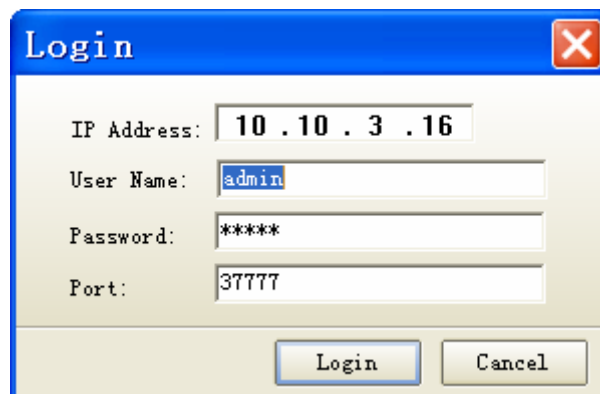
Figure 4-4

After you logged in, the configuration tool main interface is shown as below. See Figure 4-5.
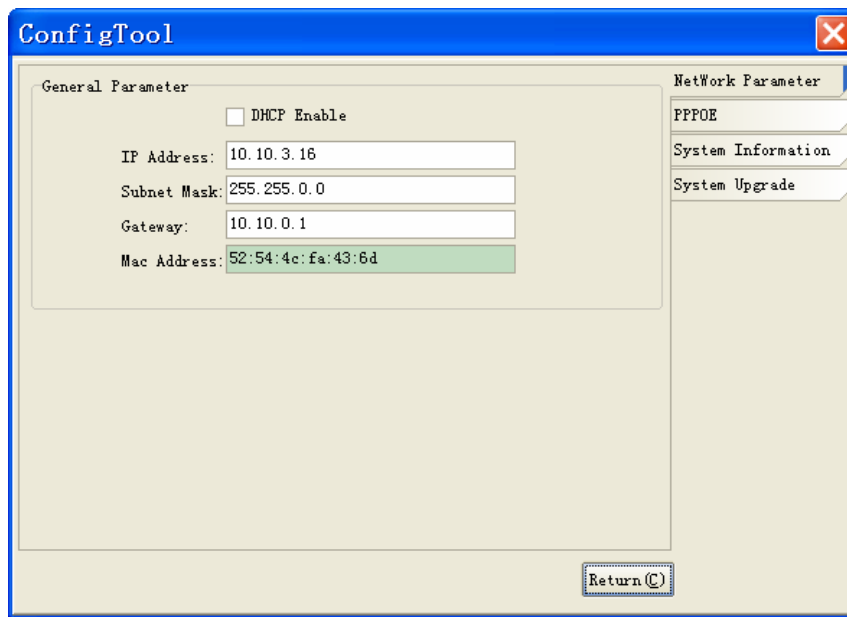
Figure 4-5

For detailed information and operation instruction of the quick configuration tool, please refer to the *Quick Configuration Tool User's Manual* included in the resources CD.

5 Web Operation

5.1 Overview

IP speed dome support Web access via PC to manage device.

Web operation consists of the following operation sections: monitor channel, record search, alarm setup, system setup, PTZ control and monitor window.

5.2 Login

Before web operation, please check the following items:

- PC and IP speed dome connection is OK.
- You have set PC IP address, IP speed dome IP address, subnet mask and gateway. (Please set the IP address of the same section for the PC and IP speed dome. Please input corresponding gateway and subnet mask if there are routers.) IP speed dome default IP address is 192.168.1.108.
- Use order ping ***.***.***.***(IP speed dome IP address) to check connection is OK or not. Usually the return TTL value should be less than 255.

Open IE and input device IP address in the address column. For example, if your device IP is 192.168.1.108(factory default IP address), then please input http:// 192.168.1.108 in IE address column. See Figure 5-1.
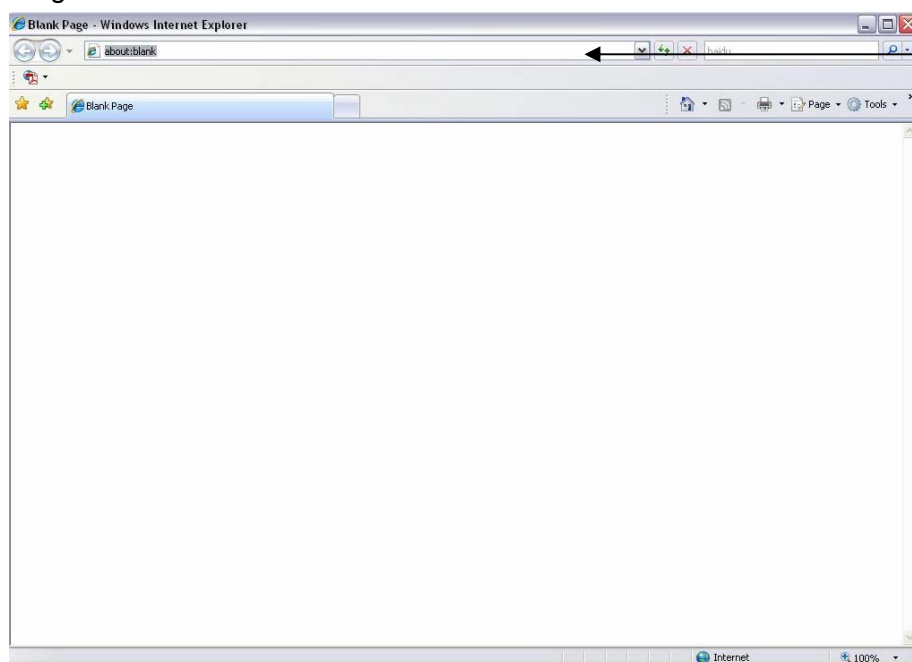
Figure 5-1

System pops up warning information to ask you whether install webrec.cab control or not. Please click yes button.

If you can't download the ActiveX file, please modify your settings as follows. See Figure 5-2.
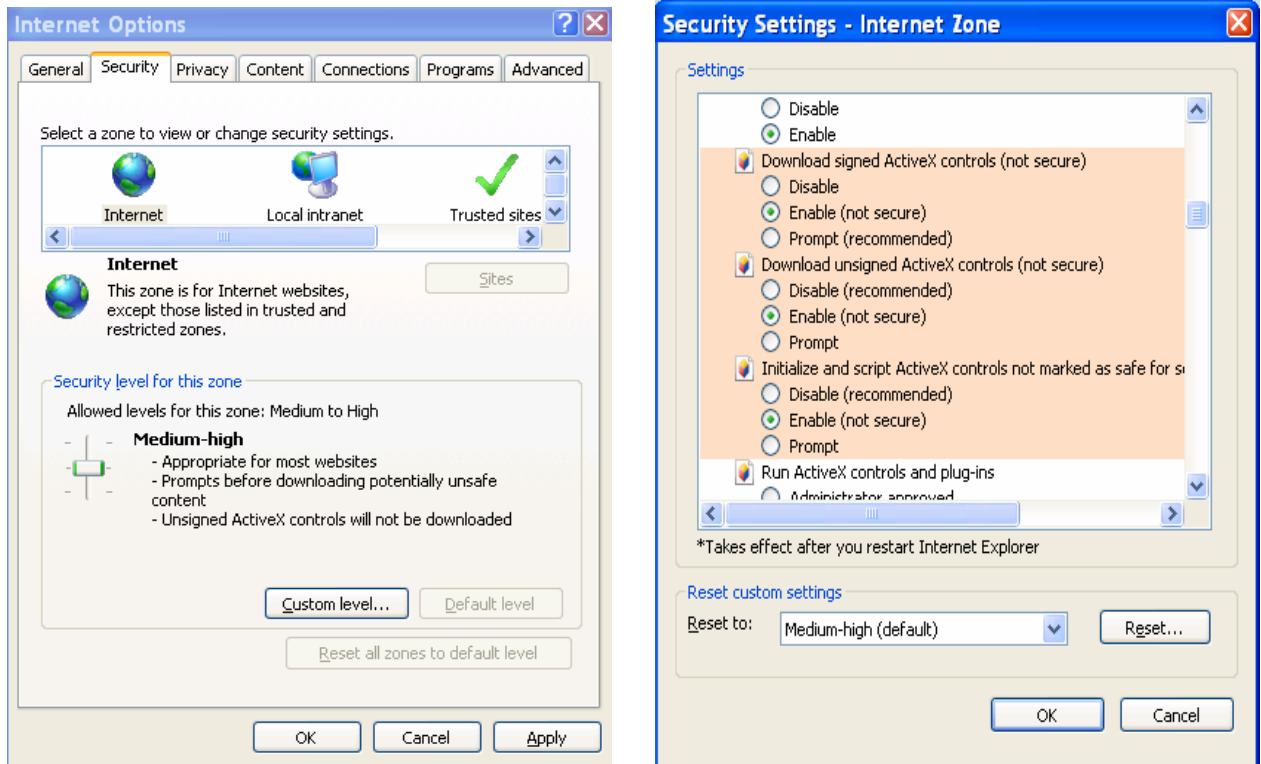
Figure 5-2

After installation, the interface is shown as below. See Figure 5-3.

Please input your user name and password.

Default factory name is admin and password is admin.

Note: For security reasons, please modify your password after you first login.
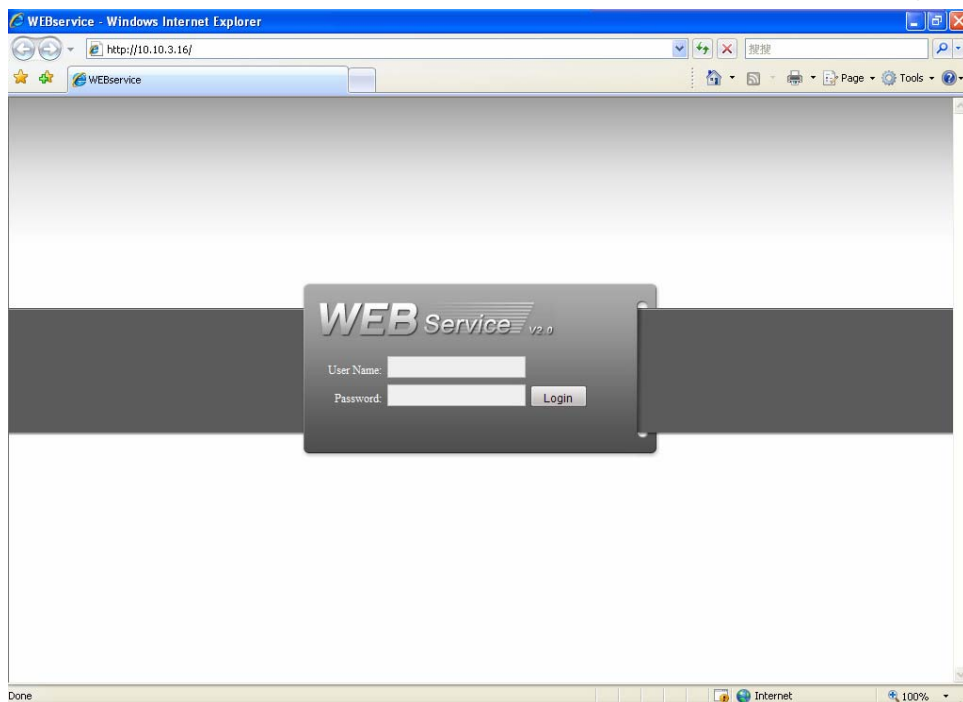
Figure 5-3

After you logged in, you can see the main window. See Figure 5-4.

There are six sections:

- Section 1: Monitor channel menu tree
- Section 2: System menu
- Section3: PTZ control
- Section4: Color setup and other setup
- Section5: Preview window
- Section 6: Monitor window switch
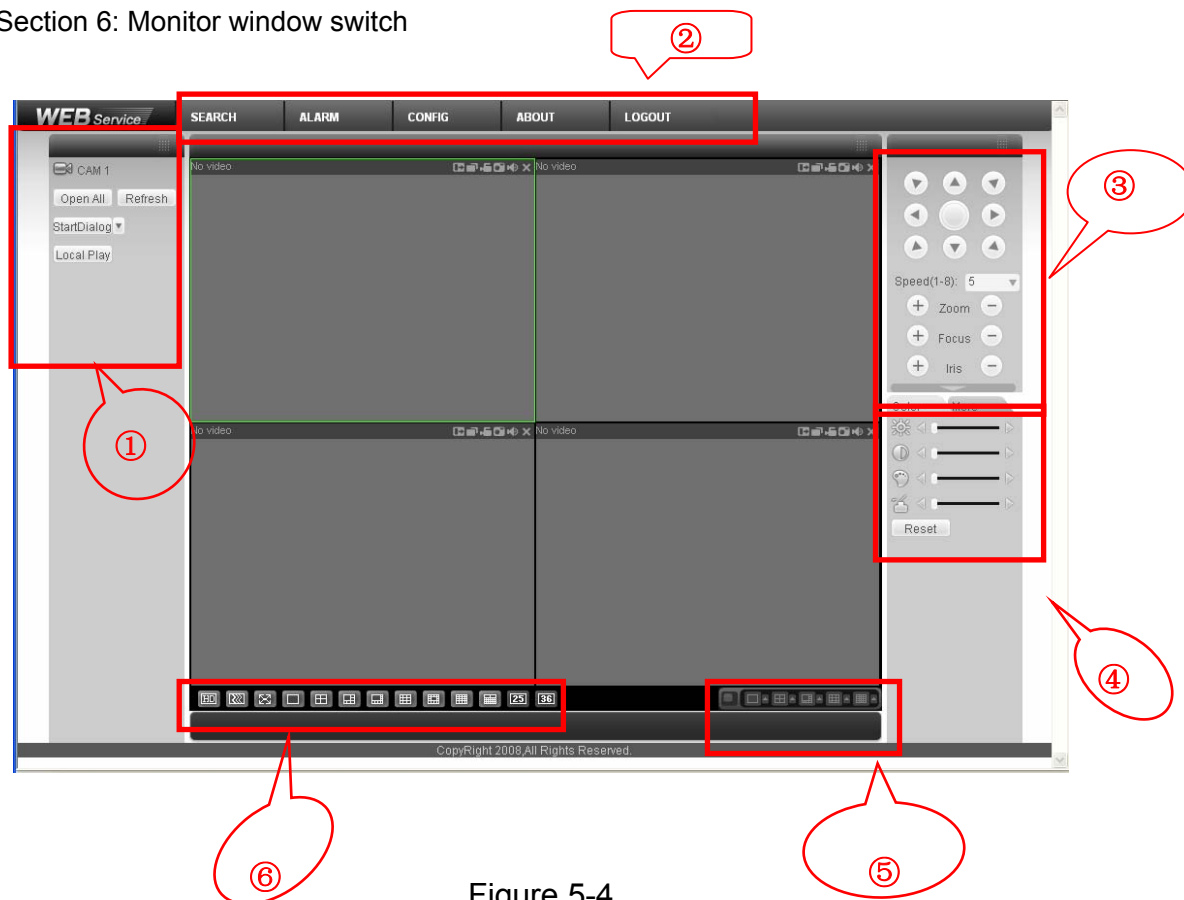
Figure 5-4

Please refer to *6-inch IP Speed Dome Web Operation Manual* included in the resource CD for detailed information.

6 Performance Specification

Specification		Index
Video	Standard Supported	PAL : 25f/s NTSC: 30f/s
	Encode capacity	One D1 + one CIF
	Encode bit stream	D1（704*576/704*480） HD1（352*576/352*480） CIF（352*288/352*240） BCIF（720*288） QCIF（176*144176*128） QVGA（320*240） QQVGA（160*128）
	Encode Speed	NTSC 1f/s-30f/s for each channel (Adjustable). PAL 1f/s-25f/s for each channel (Adjustable)
Network		Max supports 10 users to view real-time video via network. Network output bandwidth＞40Mbps. Network input bandwidth＞4Mbps.
Power Consumption		<50W
Power		24V AC
Temperature		-40～60ºC
Protection Level		IP66
Working Environment Humidity		Less than 90%
Package Dimension		525mm*325mm*340mm
Weight		5kg

7 Function Specification

Specification		Note
Lens Control	Zoom Adjustment	Manual
	Focus Adjustment	Auto/Manual
	Aperture Adjustment	Auto /manual
PTZ Control	Preset	200
	Auto Tour	8
	Auto Pattern	5
	Auto Scan	5
	Focus speed auto control	Auto adjusts the speed according to the focus distance.
	Auto flip	Tilt 90 degrees auto flip to realize 180 degrees continuing trace
	Auto rotation speed	$0.1^{\circ} \sim 300^{\circ}/s$
	Preset max speed	300°
	Manual tilt flip speed	$0.1^{\circ} \sim 150^{\circ}/s$
	RS485 PTZ control	Baud rate: 1200/2400/4800/9600
Video Process	White balance adjustment	Trace/auto/manual/indoor/outdoor
	Backlight compensation control	Manual
	Contrast ness adjustment	Manual
	Gain	Manual
	Electronic shutter control	Auto/Manual
	Color/B&W(Day/Night) switch	Auto/Manual/Schedule
Video	Resolution	D1/HD1/BCIF/CIF/QCIF/VGA/ QQVGA Max support D1 resolution.
	Video compression	H.264
	Motion Detection	Support motion detection zone setup.
	Dual-stream	Support one main stream and one extra stream.
Audio		Bidirectional Talk .Delaying value within 200ms
		Audio Listening .Support 1-ch MIC input.
Network		WEB Access
		PPPoE
		DHCP
		DDNS
		SMTP
		Support IP address auto search function
		Support IP address filter function
Record	Schedule Record	6 periods in one day.
	Manual Record	After enabling manual record, no matter system is in schedule or

		alarm status or not, system just begins recording.
	Alarm Record	System automatically enables recording function when alarm occurred.
	Motion Detection Record	When input video changes, system automatically enables record operation.
OSD	Time Title Display	Transparent value ranges from 0 to 255. O means completely transparent and 255 is opaque.
	Channel Title Display	Please refer to the above information.
	Privacy Mask	Max supports 8 zones.
Storage		Local Micro SD storage .Support high-speed card/low-speed card.
		Based on SDK network storage
Alarm		2-ch alarm output.
		7-ch local alarm/network alarm input
Event Management		Activate alarm via motion detection or external input. Please enable pre-record function when activating the alarm
		Upload JPEG file via email.
		Send out alarm notice via email, external port. Need anti-dither supported when alarm occurs frequently.
		Support video short time buffer storage before or after alarm Pre record is 2Mbytes Buffer storage video of 5s.
Control		RS485 PTZ control .Support semi-duplex communication way.
		PTZ control via Web
Device Upgrade		Network remote upgrade .Working wit the upgrade tool in the resource CD.
		COM upgrade. Working wit the upgrade tool in the resource CD.
Device Management		Log in the client-end software in the PC to monitor IPC.
Parameter Configuration		IP speed dome provides user interface to modify device information, video information, record setup, motion detection setup, alarm setup, OSD information.
		IP speed dome provides user interface to search log, status, user management, email setup, time and date setup to check

	system running information.
Log	Important event log record. It can record the following information：System operation, setup operation, alarm event, record management, user management, clear log.
Digital watermark	Prevent from unauthorized data modification.
RESET	Support hardware/software/Watchdog reset Watch dog max support 35 seconds.
Interface	7 alarm input ports
	2 alarm output ports
	1 analog audio input put and 1 analog audio output port.
	1 analog video port
	1 network port (RJ45 10M/100M self-adaptive Ethernet port)
	1 Micro SD card port. Support high-speed card/low-speed card.
Installation	Suspended, wall mount and embedded installation

8 Factory Default Setup

Function Configuration Type	Item Name		Default setup
General Setup	Date format		Y-M-D
	DST		Disable
	Date separator		' _ '
	Time format		24H
	Language		Simplified Chinese
	When HDD is full		Overwrite
	Record duration		60M
	Device No.		8
	Video type		PAL
Encode Setup	Main stream	Channel	Channel01
		Encode mode	H.264
		Stream Type	Main stream
		Audio/Video enable	Enable audio and video
		Resolution	D1
		Frame rate	25
		Bit stream control	VBR
		Quality	Good
		Bit stream value	2048
		I frame interval control	50
	Extra stream	Stream Type	Extra stream
		Audio/Video enable	Enable video
		Resolution	QVGA
		Frame rate	15
		Bit stream control	VBR
		Quality	Good
		Bit stream value	384
		I frame interval control	50
	Video color		Brightness:50 Contrast:50 Sautratioon:50 Hue:50
	Watermark		Enable Watermark: all Watermark type: character Watermark: Digital CCTV
	Privacy mask		Never
	Time title		Enable. OSD transparent :128
	Channel title		Enable. OSD transparent :128
Record Setup	Channel		Ch01
	Pre-record		5 seconds.
	Period Setup	Start time	0:00:00
		End time	23:59:59
		Record	Period 1:Enable motion detection/alarm
		Snapshot	Period 1::Enable motion

			detection/alarm
		Week	Sunday
COM Setup	Option		COM01
	Function		General
	Data bit		8
	Stop bit		1
	Baud rate		115200
	Parity		None
Network Setup	Ethernet		Port 01
	DHCP		Disable
	IP address		192.168.1.108
	Subnet mask		255.255.0.0
	Gateway		192.168.0.1
	Device name		Device factory default name
	TCP port		37777
	HTTP port		80
	UDP port		37776
	Network user connection amount		10
	Network transmission QoS		Disable
	Remote host		Multiple broadcast group
	Enable		Disable
	IP address		239.255.42.42
	Port		36666
	Email setup		Enable
	Multiple DDNs		Disable
	NAS setup		Disable
	NTP setup		Disable
	Alarm server		Disable
Alarm Setup	Event type		Local
	Alarm input		Input 01, disable
	Type		Normal open
	Setup		Period: Start time 0:00:00 End time:23:59:59 Period 1:enable Week: Sunday
	Anti-dither		0 second
	General output		Disable
	Alarm latch		10 seconds
	Record channel		1, enable
	Record latch		10 seconds
	Send email		Enable
	PTZ activation		Disable Event type: never Address: 0
	Snapshoot		Disable
Video Detection	Event type		Motion detection
	Channel		Ch01, Disable
	Sensitivity		3
	Time period setup		Period: Start time 0:00:00 End time:23:59:59 Period 1:enable Week: Sunday

	Anti-dither		5 seconds
	General output		Disable
	Alarm latch		10 seconds
	Record channel		Disable
	Record latch		10 seconds
	Send email		Disable
	PTZ activation		Event type: Never Address: 0 Disable
	Snapshot		Disable
PTZ Setup	Channel		Ch01
	Protocol		DH-SD1
	Address		1
	Baud rate		9600
	Data bit		8
	Stop bit		1
	Parity		None
Default and Backup	All		Disable
	General		Disable
	Encode		Disable
	Record		Disable
	COM		Disable
	Network		Disable
	Alarm		Disable
	Video detection		Disable
	Display output		Disable
	Channel No.		Disable
Advanced	Abnormity	Event Type	No disk, disable
		General Output t	Disable
		Alarm Latch	10 seconds
		Send email	Disable
	Record control		Auto. Ch1
	User account		admin--- password: admin 888888--- password: 888888 (reusable) 666666--- password: 666666 (reusable) default--- password: tluafed
	Snapshot	Channel	Ch01
		Snapshot mode	Scheduled
		Frame rate	1f/s
		Resolution	D1
		Quality	60%
	Auto maintain	Auto reboot	02.00 everday
		Auto delete old files	Never
Camera Property	Channel		1
	Exposure mode		N/A
	Day/night mode		N/A
	Backlight compensation		N/A
	White balance		N/A

	Signal Type	Internal input
	Mirror	N/A
	Flip	N/A
Auto registration	Enable	Disable
	SN	1
	IP	0.0.0.0
	Port	7000
	Device ID	Dahua
DNS Setup	DNS	202.101.172.35
	Alternative DNS	202.101.172.35

9 SD Card FAQ

Bug	
SD card hot swap	Before draw out SD card, please stop record or snapshot first and then wait for at least 15 seconds to remove the SD card. All the operations before is to maintain data integrity.
SD card write times	Do not set the SD card as the storage media to storage the schedule record file. It may damage the SD card duration.
I can not use the disk as the storage media.	When disk information is shown as hibernation or capacity is 0, please format it first (Via Web).
I can not upgrade the device via network.	The status indication light is shown as red when network upgrade operation failed. You can use port 3800 to continue upgrade.
Recommended SD card brand	Kingston 4GB、Kingston 1GB、Kingston 16GB、Transcend 16GB、SanDisk 1G、SanDisk 4G Usually we recommend the 4GB (or higher) high speed card in case the slow speed results in data loss.

10 Appendix I Daily Maintenance and IP Speed Dome FAQ

10.1 Daily Maintenance

Please clean dome cover regularly to get vivid image.

Handle the cover with care. Use water to wash. Don't use cloth to clean.

Use mild detergent to clean if there is too much dust.

Note:

The sweat from your hand may erode plating surface, your nail may scrape dome cover result in blur image.

10.2 FAQ

SYMPTOM	CAUSE	SOLUTION
No self-diagnosis, no video signal when I connect dome to power.	Red LED is not on. ● 24V AC does not apply to the power. Or connection is too loose. ● Power off or Transformer problem.	● Check 24V AC power is connected or properly earthed. ● Check power supply condition or check 24V transformer.
	Red LED light is on ● 24V AC power is low ● Something wrong with power socket.	● Use multimeter to check dome load. If it is lower than 24V AC, then the IP speed dome can not work. ● Please contact your local retailer to replace power socket.
No self diagnosis. There is a noise	Power supply is inadequate.	Replace power socket.
	Mechanical malfunction.	Need electrical engineer help.
Self diagnosis is ok. No video signal	Power connection is too loose.	Connect tightly
	Check the circuit connection.	Connect again
	Video switch connection is wrong or improper operation.	Please refer to user's manual for cable connection information.
Self diagnosis is OK but I can not operate the dome.	Control circuit is not properly connected	Check control cable connection.
	Dome address, protocol or baud rate setup is not right.	Please refer to user's manual for detailed setup information.
Video signal loss occurs in high speed rotation.	Power supply is not sufficient	Replace power socket.
Video signal is not successive	Circuit connection is too loose.	Connect tightly.
	Video switch or power problem	Need electrical engineer help.
Video is not clear.	Focus is in manual mode.	Control manually.
	Dome cover is dirty.	Wash dome cover
During camera switch, there is a tilt movement in the monitor.	Camera power is not in the same Phase.	When several domes are connected to one transformer, please connect the transformer output cable to the domes' same side.

11 Appendix II Thunder Proof and Surge Protection

This series speed dome adopts TVS lighting protection technology. It can effectively prevent damages from various pulse signals below 1500W, such as sudden lighting and surge. While maintaining your local electrical safety code, you still need to take necessary precaution measures when installing the speed dome in the outdoor environment.

- The distance between the signal transmission cable and high-voltage device (or high-voltage cable) shall be at least 50 meters.
- Outdoor cable layout shall go under the penthouse if possible.
- For vast land, please use sealing steel tube under the land to implement cable layout and connects one point to the earth. Open floor cable layout is forbidden.
- In area of strong thunderstorm hit or near high sensitive voltage (such as near high-voltage transformer substation), you need to install additional high-power thunder protection device or lightning rod.
- The thunder protection and earth of the outdoor device and cable shall be considered in the building whole thunder protection and conform to your local national or industry standard.
- System shall adopt equal-potential wiring. The earth device shall meet anti-jamming and at the same time conforms to your local electrical safety code. The earth device shall not short circuit to N (neutral) line of high voltage power grid or mixed with other wires. When connect the system to the earth alone, the earth resistance shall not be more than 4Ω and earth cable cross-sectional area shall below 25 mm2. See Figure 11-1.
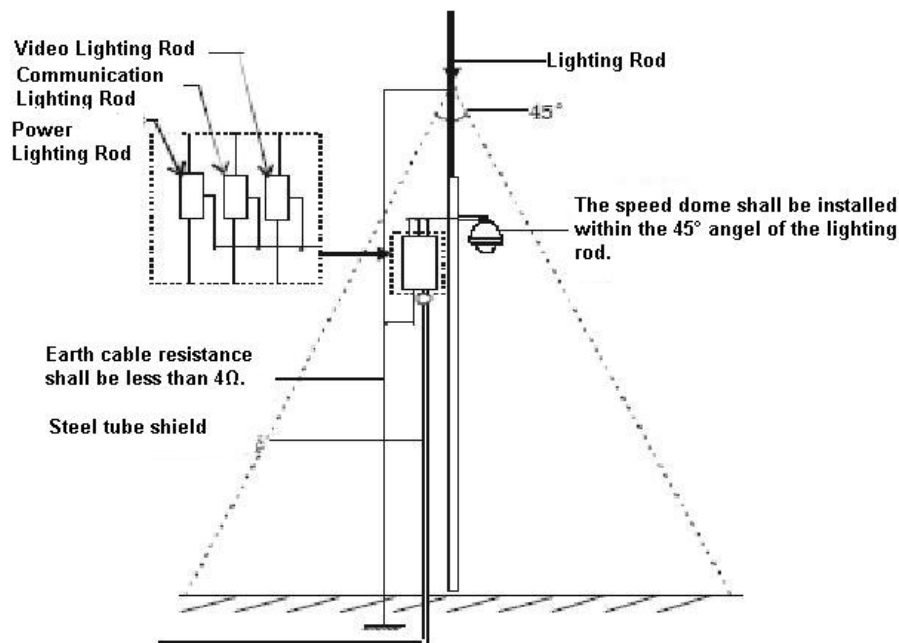

Figure 11-1

12 Appendix III About RS485 Bus

12.1 RS485 Bus Main Feature

RS485 is semi duplex communication cable of impedance 120Ω. Its max load amount is 32 effective loads (including main control device and devices to be charged).

12.2 RS485 Bus Transmission Distance

When we take 0.56mm (24AWG) twisted-pair as communication cable, the max transmission distance (theoretically) are listed below (according to different baud rates).

Baud Rate	Max Distance
2400 BPS	1800M
4800 BPS	1200M
9600 BPS	800M

In the following situations, the max transmission distance shall become shorter accordingly:
- The communication cable is a little bit thin;
- The surrounding environment has strong electromagnetic interference;
- There are too much devices connected to the RS485 bus;

And vice versa, the max transmission distance shall become longer.

12.3 Connection Methods and Terminal Resistance

RS485 bus requires all devices use the following connection methods. Both terminals shall have 120Ω resistance. See Figure 12-1.
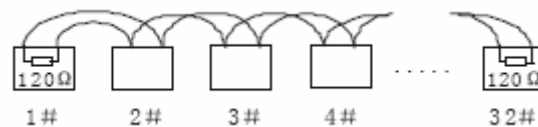

Figure 12-1

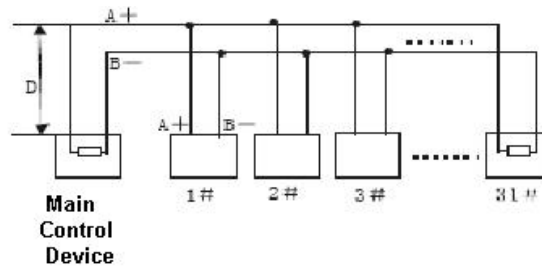Or you can refer to for the simplified way as in Figure 12-2. But the distance between "D" shall not exceed 7M.

Figure 12-2

About device terminal 120Ω connection

J2	1-2	2-3
120Ω	ON	OFF

There are 120Ω device terminal resistance in power socket. There are two connection ways. The first one is shown as in Figure 12-3. It is the factory default connection method. Now the jumper caps (connection board) are connected to the second and third socket, the 120Ω has not connected.

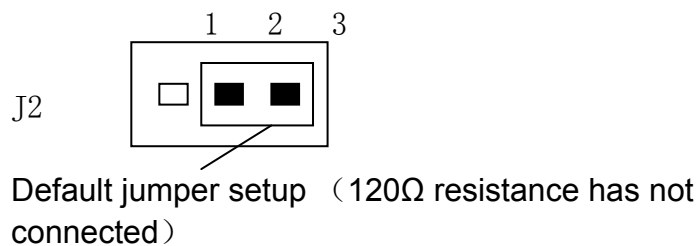
Default jumper setup （120Ω resistance has not connected）

Figure 12-3

If you want to connect to the 120Ω resistance, you can remove the jumper caps from the second and the third socket and then insert them to the first and second socket respectively. See Figure 12-4. Now you has connected to the 120Ω resistance.
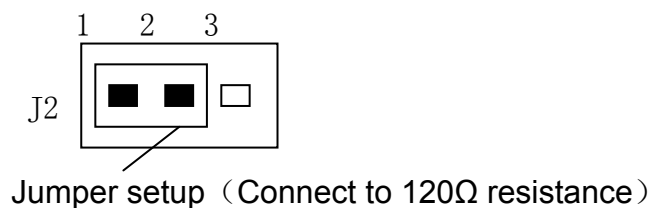

Jumper setup （Connect to 120Ω resistance）

Figure 12-4

12.4 The Problem in Practical Use

In practical usage, we usually adopt star type connection. The terminal resistance shall connect to the furthest two devices (Such as device 1# and device 15# in Figure 12-5). But this connection way does not conform to RS485 Bus standard. When the distances between devices are too long, the signal reflection occurs and anti-jamming decreases, thus the signal reliability becomes very low. You can see speed dome is not under control or speed dome is running automatically and can not stop.
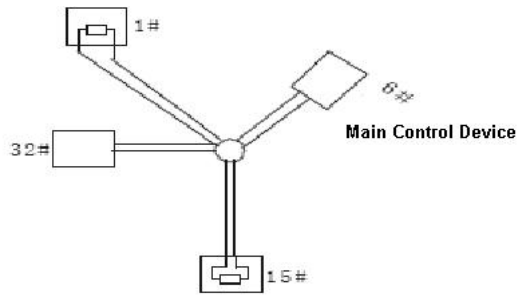
Figure 12-5

In this situation, we recommend RS485 distributor. This device can turn star type connection into the connection that conforms to RS485 bus industry standard, which can avoid the above mentioned problems and enhance communication reliability. See Figure 12-6.
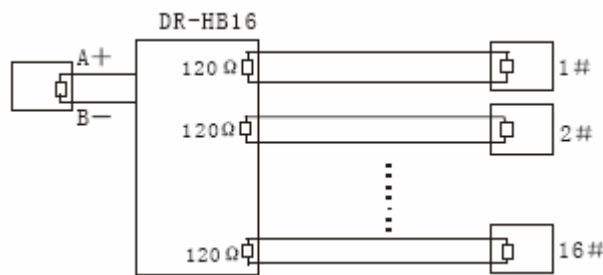

Figure 12-6

12.5 RS485 Bus FAQ

Phenomenon	Possible Reasons	Solution
Speed dome can run self-diagnosis but I can not control it.	● Host address(baud rate) and speed dome address(baud rate) are not match; ● Positive and negative end of RS485 Bus are misconnected; ● Connection cable is loose; ● RS485 Bus connection are cut off;	● Modify host or speed dome setup； ● Switch RS485 positive end and negative end； ● Fix connection cable firmly； ● Replace RS485 Bus.
I can control the speed dome but is not smooth	● RS485 Bus connection are not good； ● One RS485 bus is off； ● The distance between host and speed dome is too far； ● Parallel connected too much speed domes.	● Connect RS 485 Bus again； ● Replace RS485 Bus； ● Add terminal matching resistance； ● Add RS485 distributor.

Note:

● **This manual is for reference only. Slight difference may be found in the user interface.**

● **All the designs and software here are subject to change without prior written notice.**

● **Please visit our website or contact your local retailer for more information.**