USER MANUAL

Entry-level Infrared Safety Monitoring System

GUIDE

Table of Contents

1. Description

SFU, is the latest solution for thermal security industry with the advantages of small size, low cost and convenient installation that provided by Wuhan Guide Infrared Co., Ltd. Based on most advanced thermal imaging technology, many advanced technologies are integrated into the camera. The convenience and efficiency of the camera presents a new appearance while clear IR pictures are obtained and power consumption reduces.

The user manual provides the details to operate the SFU safely. In view of the professional and powerful function, please read the user manual or other relevant documents carefully before using the camera. The camera should be used, maintained by suitably trained personnel, capable of carefully following the procedures and guidelines given in this User Manual.

2. Cautions

Please follow the cautions strictly at any time:

- All User Manuals and leaflets should be read thoroughly before proceeding with operation of the camera.
- Please follow all cautions, instructions and operations in the manual.
- Disconnect the power before cleaning the camera.
- Please avoid dust into the camera and the installation cable should not be too long in case of overload.
- Do not install SFU on the unstable bracket or wall, otherwise both camera and personnel may be hurt.
- Do not try to repair the camera by yourself because of electric shock and other dangers when open or dissemble, please contact us for all repairs.
- Please use the approved parts or the same performance with the original parts when the parts need to be replaced.
- Please use thread fastening glue for installation.

- Do not use or store the camera beyond the standard working or storage temperature.
- Do not point the camera at very high-intensity radiation sources directly such as the sun, carbon dioxide lasers, arc welders; otherwise the detector in the camera may be permanently damaged.
- Put all accessories with the camera into the original package.
- Do not switch on or off the camera frequently. The interval time can't be less than 30 seconds.
- Don't strike, throw or vibrate the camera or its accessories, which will cause damage.
- Do not dissemble the camera that may cause damage and lose warranty.

Notes :

- Please prevent camera from heavy pressure, strenuous vibration and soaking that will cause damage.
- Please ensure that the power is off before changing the location.

  Do not disassemble or attempt to open the camera under any circumstances. Please contact Wuhan Guide Infrared Co., Ltd for any repair issues, for any fault that caused by un-authorized disassembling, the manufacturer will not take any responsibility.

Please follow the instruction when the camera needs to be cleaned :

Non-optical surfaces

- Please wipe off the surface with clean and soft cloth.

Optical surfaces

- Do not touch the Germanium lens with hands. Be careful when clean with professional lens paper, do not clean the lens too vigorously that can damage the anti-reflective coating.

3. Packing List

- Infrared camera（SFU3010A, SFU3015A, SFU3019A, SFU3025A, SFU3040A optional）
  （Remark: SD card is optional）
- Support
- Warranty card
- Packing box

4. Specification

Table 4.1 Specification

Detector	
Type	Uncooled FPA detector
Resolution（Pixel）	384×288（25μm）
Spectral Range	8μm~14μm
Lens	9.6/14.8/19/25/40mm optional；9.6/14.8/19mm are ~~fixed~~ focus free and athermalized，25/40mm are motorized.
Function	
Palette	Black/White hot, 7 colors optional
Composite Video	NTSC or PAL
Image Adjust	Brightness and contrast
Image Flip	Vertical, horizontal, diagonal
Digital Zoom	X2, X4
Intelligent Alarm	Temperature difference alarm
Protocol	PECLO-D、PECLO-P compatible
Baud Rate	2400/4800/9600/19200/115200 optional
Address	01～255 settable address
Environment	
Working	-20℃~+60℃

Temperature	
Humidity	0%~80%RH
Storage Temperature	-40℃~+60℃
Electrical Spec	
Operating Voltage	DC12V±3V or POE
Static Power	≤4.0W@12V, 25℃
Physical Spec	
Size	(203) mm× (93)mm× (92)mm （exclusive of bracket size）
Color	White （body），gray （front and back）
Certifications	
FCC	
CE	
ROHS	

5. Interface Description

- Power interface： DC12V (9~15V compatible)
- Analog video interface： 1.0Vp-p/75 Ohm （PAL, 25Hz/NTSC, 30HZ）
- Audio input： microphone interface （MIC IN） （G.711 standard zip）
- Audio output： audio signal output （AUDIO） （G.711 standard zip）

  Remark: this is a reserved interface.
- Internet interface：Support ONVIF 2.0；Ethernet（RJ45，10/100M），support TCP/IP, UDP, HTTP, RTSP and IE browser. Video management software for mobile browsing (iPhone, iPad, etc)； Support POE power over the Ethenet. The system will choose POE (IEEE802.3af) prior when POE and the adapter supply power at the same time. Video coding is H.264；
- Serial port communication interface: computer is used to inquire the relevant parameters and control the shutter, focus and switch the composite video. When the video format is chosen, the camera has to be restarted.

- Alarm output interface: on-off output; two pins are off while there is no alarm, and two pins are on while there is alarm.

6. Network Connection

There are two connection modes between SFU and the computer, via network cable or via switch (router), displayed in Figure 6.1 and 6.2.

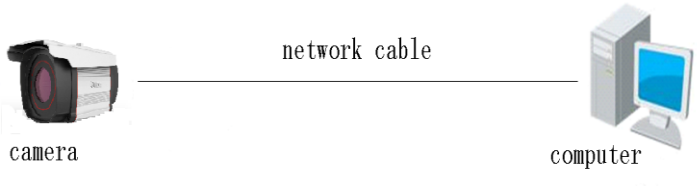


Fig 6.1 Connection via network cable

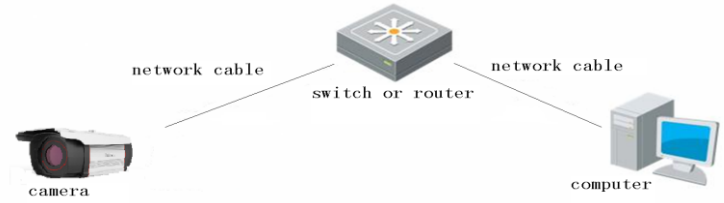


Fig 6.2 Connection via switch or router

Notes:

- Default IP address of SFU is “192.168.1.168”; port setting is“81”; user name is “admin”, and password is “9999”.
- IP setting of computer should be in the same network segment with the camera.

7. Setting of Network Access

7.1 Browser setting

Preview and set the relevant parameters of the camera after installation is finished. Here is the introduction of entering control interface via IE browser.

Note: It's required to set security level of browser for the convenience of plug-in installation when previewing image via IE browser. Open IE browser, and enter menu (tool/internet option/security/user-defined level) accordingly, and change the settings of ActiveX control and plug-in as Fig. 7.1 shown below.

For safety consideration, please restore security level of IE browser to default level after previewing image.

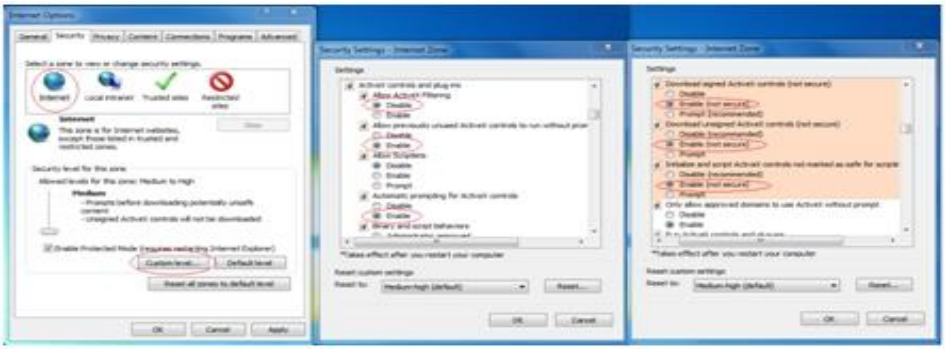


Fig 7.1 IE Security level setting

Notes:

- To avoid problems during plug-in installation, it is suggested to delete history of IE browser as per the following steps: enter menu 【Tool/Internet option/Common/Delete/Select all options except *Reserve website data in favorites*】, and click delete.
- It is requested administrator to operate IE browser.
- 64-bit browser is not available temporarily.

7.2 Plug-in installation

Input IP address of SFU series in address bar and click "Enter" to start download ActiveX plug-in and automatic installation, as Fig. 7.2 shown.

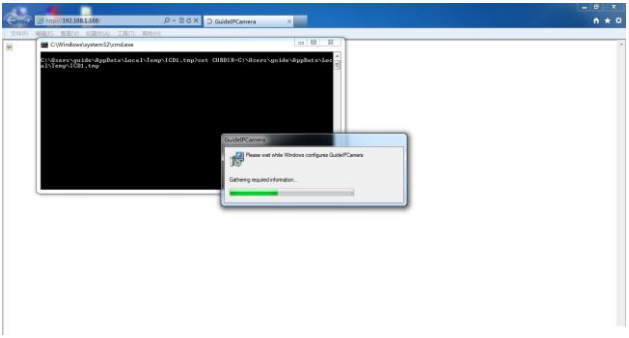


Fig. 7.2 Auto download and installation of plug-in

7.3 Log-in interface

Input the username of SFU (default name is “admin”), password (default is 9999), and click logon to preview image. Language is switchable by clicking the triangle icon on upper right corner.

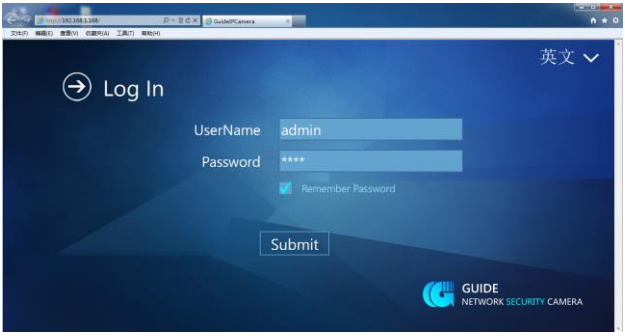


Fig. 7.3 Log-in interface

8. Control Interface

8.1 Real-time video information

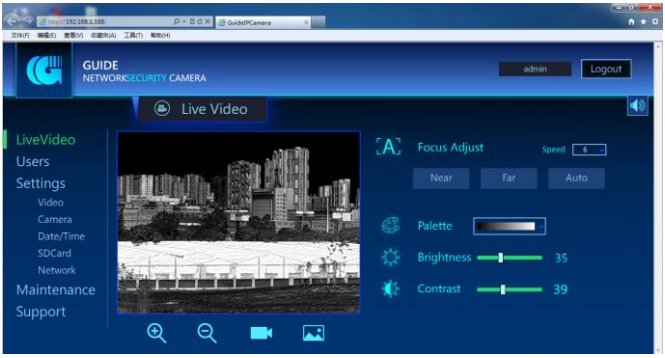
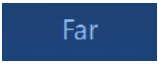
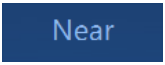


Fig. 8.1 Interface after log-in（real-time video）

Operations are as follows：

Table 8.1 Information of real-time video interface

Icon	Description
	Showing current user name or logout current user
	Audio signal switch
	Focus +
	Focus-
	Setting focusing speed from（1~10）
	Auto focus
	Zoom in
	Zoom out

	Start or stop video record
	Capture image
	Video polarity and palette（9）
	Brightness adjustment（0~100）
	Contrast adjustment（0~100）

Remarks：

- Click the video will switch to the full screen.
- To press F8 can open or close the live information.

8.2 User information

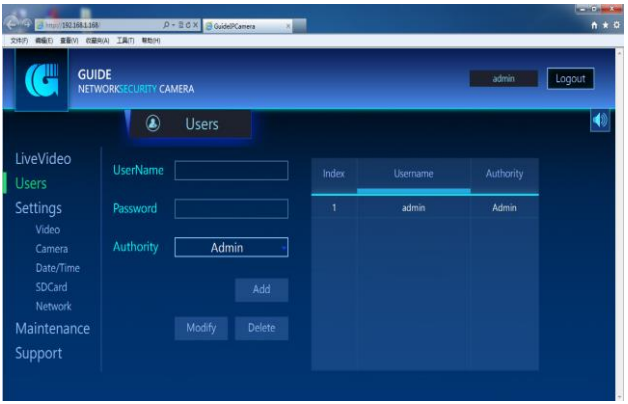


Fig. 8.2 User Information

Procedures as follows：

- Add User: Input the username, password and choose the authority, then click “add” to save. Information will be showed on the status bar on right.

Authority description：

Administrator: Do all the operations on the interface.

Operator: Do all operations except for “USER INFORMATION” and “DEVICE UPGRADING”

Viewer: Only check the information of real-time video.

- User Modification: Select the user you want to revise in the status bar, and input the new password and select to revise the user; or choose new user's authority in the authority bar. Note: username is not allowed to change.
- Delete User: Select the user you want to delete in the status bar, click "Delete User"

8.3 Setting-Video

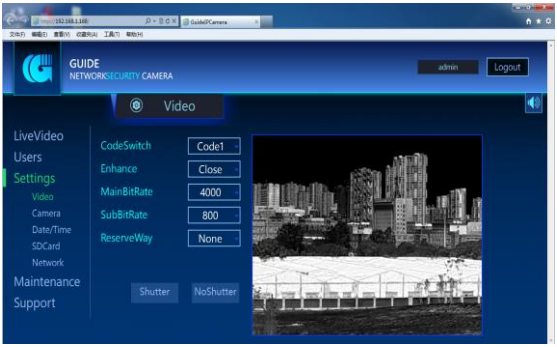


Fig. 8.3 Setting-video interface

Operations are as follows:

Table 8.3 Setting-video interface

Function	Option	Description
Stream Switch	Main stream	Digital video main bit rate output
	Sub stream	Digital video sub bit rate output
Image Enhancement	Off	Image enhancement off
	Mode 1	Enhancement 1
	Mode 2	Enhancement 2
	Mode 3	Enhancement 3
	Mode 4	Enhancement 4
Main bit rate	800	Set main rate at 800
	1600	Set main rate at 1600
	4000	Set main rate at 4000
Sub bit rate	400	Set sub bit rate at 400

	800	Set sub bit rate at 800
	1600	Set sub bit rate at 1600
Flip mode	None	Normal image display
	Flip X	Horizontal flip image display
	Flip Y	Diagonal flip image display
	Flip XY	Vertical flip image display
Shutter Calibration		Calibration with shutter movement
Scene Calibration		Calibration without shutter movement

8.4 Setting-Camera

Fig. 8.4 Setting-Camera interface

operations are as follows :

Table 9.3

Device Alarm	Close	Temperature difference alarm off
	DiffT1	Temperature difference alarm range 1
	DiffT2	Temperature difference alarm range 2

	DiffT3	Temperature difference alarm range 3
	DiffT4	Temperature difference alarm range 4
	DiffT5	Temperature difference alarm range 5
	DiffT6	Temperature difference alarm range 6
	DiffT7	Temperature difference alarm range 7
	DiffT8	Temperature difference alarm range 8
	DiffT9	Temperature difference alarm range 9
	DiffT10	Temperature difference alarm range 10
Sound collection	Enable	Transmit the audio signal from camera to computer
	Disable	Audio signal transmission function off
Auto Video	Enable	Auto video recording function on. If there is alarm signal and SD card is on, the video will be recorded into SD card.
	Disable	Auto video recording function off
Sleep Mode	Awake	Camera is in working condition
	Sleep	Camera is in sleep status
Shutter Calibration		Calibration with shutter movement
Scene Calibration		Calibration without shutter movement

8.5 Setting-Date and Time

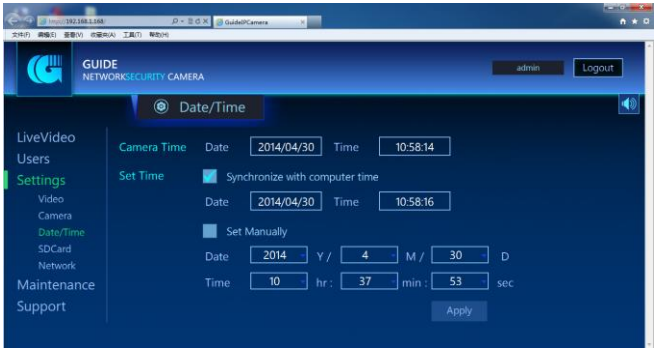


Fig. 8.5 Interface of Setting-date and time

Operation as follows:

- PC Sync: click “Apply” after choosing “Synchronize with computer time ”, and the date and time of the camera will be synchronized with PC’s; Note: after Synchronizing with computer, the real time of the camera may be delayed 2~4s with PC’s because of the time-lapse of arithmetic, but it won’t affect normal use.
- Manual setting : set date and time manually after choosing “Set Manually”, then click “Apply”, the date and time of the camera will be set;

8.6 Setting-SD card

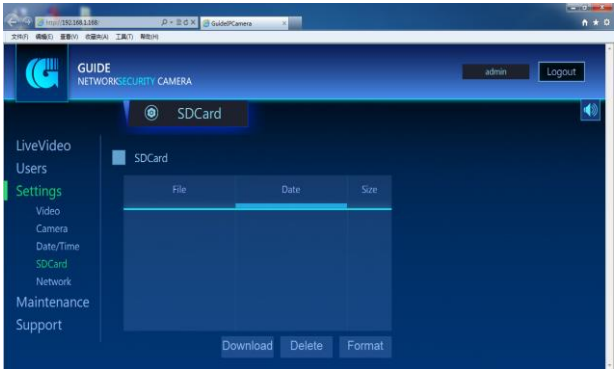


Fig. 8.6 Interface of Setting-SD card

Operations as follows :

- “SD card On”, not been selected, means no SD card;
- “SD card On”, selected, means the SD card is detected and the files inside will be displayed on the interface;
- The files in the list can be downloaded and deleted;
- The selected SD can be formatted;

8.7 Setting-Network

Fig. 8.7 Interface of setting-network

Operations:

This interface shows the network information of the camera, input the network address you want to set, click “set IP”, then the network information will be updated; Note: after updating the network information, you have to re-log in with new IP address to control the camera.

8.8 Camera upgrading

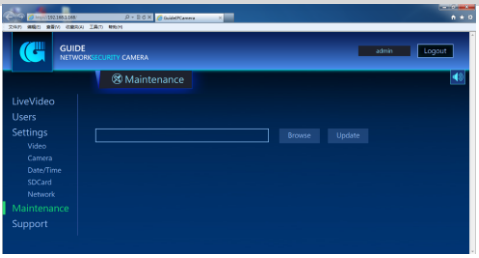


Fig. 8.8 Interface of setting-camera upgrading

Operations:

Click “Browse” to choose the updated file. Select “Open” and file name will be shown, then click “update”.

8.9 Support

Fig. 8.9 Interface of Setting-Support

Related instructions are as below:

Table 9.4

Function	Option	Instruction	
Camera name	Display the current camera name		
camera	Version information	Software Version	PC Software version
		Hardware Version	Module program version
	Support Information	Storage location for the relevant document	

9 Serial Port Control

9.1 Lens selection

The interface of lens selection appears as shown in Fig. 10.1 after installing and opening the computer software. Select the focus corresponding to the lens.

Fig 9.1 Interface of lens selection

9.2 System setting

Fig 9.2 Interface of system setting

Operations:

- Serial port setting on the left of the interface:

  Serial port number: select the number connected with the computer (1-30 optional);

  Baud rate: select the Baud rate used by the camera (2400/4800/9600/19200bps optional); Note: you can inquire the Baud rate via "Inquire Baud Rate" on the right side, and then set the value as per the inquired result.

Data bit: 8 default， No change.

Stop bit: 1 default， No change.

Odd-even check: default no verification, no change.

Protocol type: choose the control protocol type you wish, Pelco-D or Pelco-P.

- Camera setting on the right side of the interface:

  Inquire Baud rate: Randomly select Baud rate, open serial port, and click to inquire Baud rate.

  Set Baud rate: select and set Baud rate. Note: re-connect the serial port after Baud rate is set.

  Read camera address: read camera address.

  Set camera address: set the camera's address.

After the corresponding parameters (serial port number, Baud rate, and protocol type) are selected, select the serial port for communication via RS 485.

9.3 IR control

Fig. 9.3 Interface of IR Control

Operations：

Table 10.1 Operations of IR control interface

Function	Description	Remark
Shutter	Shutter Calibration	

Auto focus	Auto focus	These three items only for 25mm and 40mm motorized lens
Focus+	Far focus	
Focus-	Near focus	
P-N	Switch composite video PAL/NTSC	

9.4 Parameter inquiry

Fig 9.4 Interface of parameter inquiry

Operation :

Click “read module parameter” to read the relevant parameters.

Table 10.2 Description of parameter inquiry interface

Function	Option	Description
Flip mode	None	Normal image display
	Flip horizontal	Horizontal flip image display
	Flip diagonal	Diagonal flip image display
	Flip vertical	Vertical flip image display
Polarity	White/black hot or 7 colors optional	

Zoom mode	X1	Normal display
	X2	Digital zoom
	X4	Digital zoom
Image Enhancement	No	Image enhancement mode off
	Enhancement 1	Range 1
	Enhancement 2	Range 2
	Enhancement 3	Range 3
	Enhancement 4	Range 4
Brightness	Image brightness variation（0-100）	
Contrast	Image contrast variation（0-100）	

10 Default factory setting

If no special requirements, the default settings are:

Table 11.1 Table for factory setting

Category	Menu	Parameter value
Network setting	IP address	192.168.1.168
	Port	81
	Code stream	Main code stream
	Main bit rate	4000
	Sub bit rate	800
User information	User name	admin
	Password	9999
	Authority	Administrator
Communication	Baud rate	9600
	Address	1
Camera setting	Focusing speed	7
	Polarity	1

	Brightness	35%
	Contrast	40%
	Zoom	×1
	Enhance	off
	Flip mode	Normal display
	Video output	PAL
	TD alarm	off
	Shutter Calibration time	10 minutes

11 Product Installation

11.1 Considerations

- Open package box and check carefully to ensure all accessories are included.
- Please read carefully before installation.
- Power off all relevant devices before installation.
- Check power voltage to prevent any damage caused by the voltage mismatch.
- Installation environment: Do not operate under excessive moisture or high temperature environment. Keep good ventilation. Prevent raining and avoid installation under severe vibration environment.

11.2 Profile description

Profile description of SFU (with bracket) is as follows:

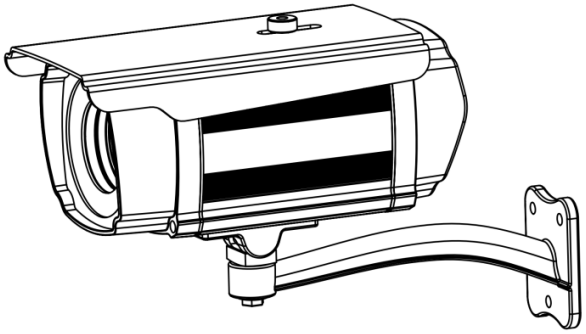


Fig. 11.1 Profile description

11.3 Installation size

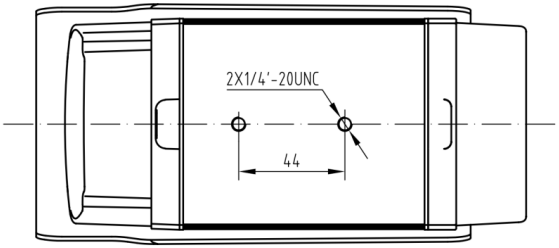


Fig. 11.2 Installation sketch of bottom hole location

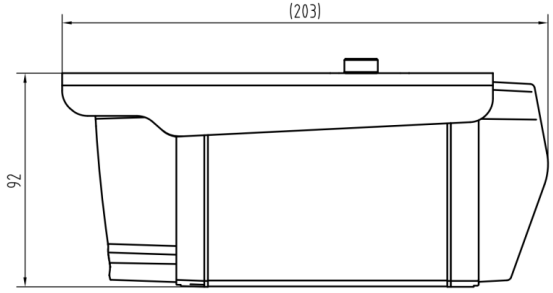


Fig. 11.3 Sketch of side length and height

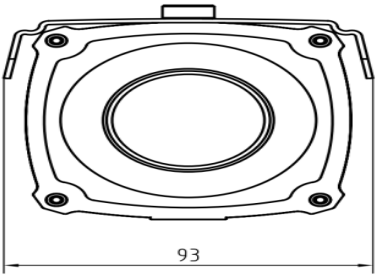


Fig. 11.4 Width sketch

12 Detection Distance

The detail distances for detection, recognition and identification with different lens is seen in the following table.

Table 13.1 Detection Distance

Lens (mm)	Detection (m)		Recognition (m)		Identification (m)	
	Human	Vehicle	Human	Vehicle	Human	Vehicle
9.6	250	750	60	180	30	100
14.8	350	1000	100	250	50	150
19	500	1500	120	350	60	180
25	650	1800	150	500	80	250
40	1000	3000	250	750	120	350

Remark: the actual detection distance varies from thermal imager setting, environmental conditions, and user experience, monitor or display types.

13 Troubleshooting Tips

- **Unable connect with network**

  Confirm whether the cable connection is OK;

  Confirm whether computer IP address is in the same network segment with that of the camera;

- **Unable Focus**

Please select the proper focus speed;

14 Appendix

- **Brief Introduction of Infrared Thermal Imaging Principle**

IR thermal imager belongs to passive Infrared, which is the non-contacting detective method. The infrared radiation energy (calories) focuses on the detector array through the lens inside the optical system. Detector array transfers different power radiation signals into electrical signals, Amplified through the back-end, to form the infrared image after image algorithms processing.

- **Temperature Difference Alarm**

Camera calculates the difference between the highest temperature radiation values and the whole image average radiation values. When the current value exceeds the setting threshold value, it will auto alarm. The alarm method in the image is locking the highest temperature point. The temperature difference alarm is set 10 shift, respectively 1, 2, 3, 4, 5, 6, 7, 8, 9, and 10. The alarm will appear large error, for infrared radiation energy is influenced by weather and target distance, so the customer should select the appropriate shift during the operation process.

The characteristic after alarm is shown and there is dotted line box flashed on the image, also the alarm output port of thermal core end is powered on with the alarm output (It is under broken status when no alarm)