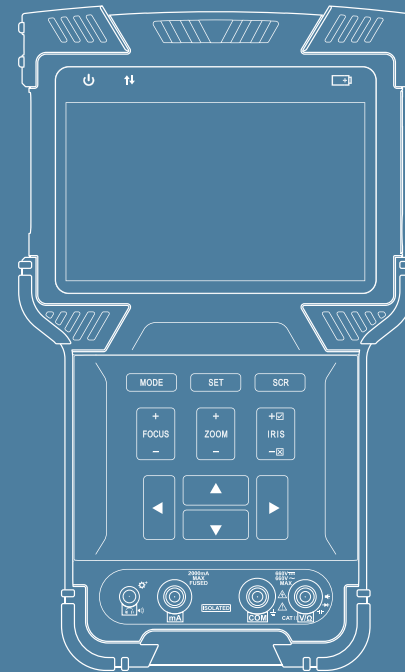


Integrated Mount Tester **User Manual**



- ◆ Thank you for purchasing the integrated mount tester. Please read this manual before using the tester, and use it properly.
- ◆ Before using the tester, please read the safety information carefully.
- ◆ The manual should be kept in a safe place for future reference.
- ◆ If you have any questions while using the tester, or if damages occur to the product, please contact our technical department.
- ◆ The operation interface and methods of the tester might vary with different software versions.
- ◆ Figures and port descriptions in the manual are for reference, which might vary with different tester models.

About the Manual

- ◆ The manual is for reference only. If there is inconsistency between the manual and the actual product, the actual product shall prevail.
- ◆ We are not liable for any loss caused by the operations that do not comply with the manual.
- ◆ The manual would be updated according to the latest laws and regulations of related regions. For detailed information, see the paper manual, CD-ROM, QR code or our official website. If there is inconsistency between paper manual and the electronic version, the electronic version shall prevail.
- ◆ All the designs and software are subject to change without prior written notice. The product updates might cause some differences between the actual product and the manual. Please contact the customer service for the latest program and supplementary documentation.
- ◆ There still might be deviation in technical data, functions and operations description, or errors in print. If there is any doubt or dispute, please refer to our final explanation.
- ◆ Upgrade the reader software or try other mainstream reader software if the manual (in PDF format) cannot be opened.
- ◆ All trademarks, registered trademarks and the company names in the manual are the properties of their respective owners.
- ◆ Please visit our website, contact the supplier or customer service if there is any problem occurred when using the device.
- ◆ If there is any uncertainty or controversy, please refer to our final explanation.

Table of Contents

1. Safety Information	01	3.6.1 Analog Video Generator.....	30
2. Integrated Mount Tester Introductions	02	3.6.2 Connection of Analog Video Generator.....	31
2.1 Overview.....	02	3.7 RJ45 Cable TDR Test	31
2.2 Features.....	02	3.8 Network Analysis (Network Tools).....	33
2.3 Product Functions.....	03	3.8.1 Ethernet Sniff.....	34
2.4 Packing List.....	04	3.8.2 List Subnet.....	35
2.5 Structures.....	05	3.8.3 Ping Test.....	35
3. Operation Instructions	09	3.9 Record Playback.....	38
3.1 Installing and Recharging the Battery.....	09	3.10 Digital Multimeter.....	41
3.2 Lanyard Wearing.....	10	3.11 Data Monitor.....	49
3.3 Basic Starting Instructions.....	10	3.12 Device Settings.....	50
3.4 ONVIF Test.....	11	3.12.1 Automatic Power off Time.....	50
3.4.1 ONVIF Test Step 1: Ethernet and IP Test.....	11	3.12.2 Keypad Tone.....	50
3.4.2 ONVIF Test Step 2: Discovering Cameras.....	16	3.12.3 Tester Language.....	51
3.4.3 ONVIF Video Test.....	21	3.12.4 Screen Backlight Brightness.....	51
3.5 Analog Video Test and PTZ Control.....	25	3.12.5 System Time and Date.....	51
3.5.1 Connecting to Analog Camera.....	25	3.12.6 Software Upgrade.....	51
3.5.2 Analog Camera Test.....	26	3.12.7 USB Storage Mode.....	53
3.5.3 Full Screen and Digital Zoom of Analog Video Image.....	26	3.12.8 Tester Serial Number.....	53
3.5.4 Analog Video Snapshot and Video record.....	27	3.13 Audio Test.....	53
3.5.5 HD Coaxial PTZ Control.....	27	3.14 Powering PoE Devices.....	54
3.5.6 RS-485 PTZ Control.....	28	3.15 Powering the Camera with 12V/2A Output.....	54
3.5.7 UTC.....	29		
3.6 Analog Video Generator.....	30		

1. Safety Information

- ◆ When using the tester, be sure to comply with local electrical rules. Avoid hospitals, gas stations, and other places where electrical use is not allowed.
- ◆ When using the tester, please use the original accessories to avoid damage caused by the use of unauthorized ones.
- ◆ Supplied accessories are only for usage by the intended equipment. Please do not use them for other purposes to avoid malfunctions or unpredictable accidents.
- ◆ Do not expose the product to rain or moisture. This can cause performance degradation or damage.
- ◆ Do not allow the instrument to be exposed to or come in direct contact with dust or liquid.
- ◆ During the transportation and usage of the tester, avoid violent collision and shock. Otherwise, the product may not work properly due to damage of the components.
- ◆ While charging the tester, please do not leave it unattended. If the battery becomes too hot, you should cut off power immediately. Charging time should be no more than 8 hours.
- ◆ Do not use in high humidity areas. If the device gets wet, the battery, power cable, and all other cables should be disconnected immediately.
- ◆ Do not use in environments containing flammable gases.
- ◆ Do not attempt to disassemble the tester. If necessary, please contact our technical department.
- ◆ Do not use in environments with strong electromagnetic interference.

2. Integrated Mount Tester Introductions

2.1 Overview

This tester is designed for installation and maintenance of video surveillance system. It can be applied to analog SD video, analog HD video, HD IP CCTV systems, RS-485 PTZ control test, IP camera test, Ethernet test, TDR cable test, video snapshots, video recording, video playback, analog camera test, and more.

It is powerful, portable, and suitable to meet most of current security needs. The Tester greatly improves engineering efficiency and reduces the cost of maintenance.

2.2 Features

- ◇ Integrate surveillance systems of traditional analog SD video, analog HD video, and IP HD video in one product.
- ◇ Step-by-step test guide allows you to locate faults quickly.
- ◇ Highly compatible with ONVIF protocols.
- ◇ Ergonomic, portable design and single-handed operation available.
- ◇ On-screen operation tips.
- ◇ PoE power supply, PD power acceptance, and 12V/2A power output.
- ◇ Dual 1000 Mbps network ports, supports packet loss detection, data flow monitor, and more.
- ◇ 4.0 inch IPS display with 800 × 480 resolution and 16.7M colors.
- ◇ Flip keyboard input.
- ◇ Replaceable lithium-ion polymer battery, working for about 8 hours.
- ◇ Rubber protection layer.
- ◇ Dual LED torch lights.

2.3 Product Functions

2.3.1 PoE Power supply, PoE Power Acceptance, and 12V/2A Output

The tester can supply PoE (48V, 25.5W max) or 12V/2A temporary power for camera. It also can receive power from PoE device.

2.3.2 ONVIF Test

This function is a step-by-step guide for network camera test.

Step 1. Testing Ethernet connection, IP settings, DHCP request, and DHCP service.

Step 2. Discovering camera, and showing a snapshot from selected camera.

Step 3. Display camera video and controlling PTZ.

You can continue to adjust camera settings, take snapshots of videos or record video.

2.3.3 Analog Video Test and Coaxial PTZ control

The tester can display the video image which input from BNC port. And it also can identify SD and HD analog signal. Besides, it displays the TV format of image, resolutions, and other information when the image is displayed.

It also support coaxial PTZ protocol, not only display image, but also support PTZ control simultaneously.

2.3.4 RS485 PTZ Control

The tester supports RS-485 PTZ control. Over 30 PTZ protocols are supported. RS-485 PTZ control are allowed through a RS-485 port.

2.3.5 Analog Video Generator

The tester can generate analog video signals, which can be used to test analog transmission routes, recorders, and more. The input video signal is also displayed on the interface, so that you can compare the input video and the output video. The generated video can be PAL/NTSC format and support EBU color bar, PM5544, and more.

2.3.6 RJ45 Cable TDR Test

This function is used to test an RJ45 cable using TDR (Time Domain Reflectometer) analysis method. Connection status and length of cable can be measured.

2.3.7 Video Snapshot, Record and Playback

Under the condition of video play in ONVIF test and analog video test (including SD and HD), it can take snapshot and record. And under the condition of recording play back, it can display the snapshot and the recorded video which were saved.

2.3.8 Data Monitor

It can collect data from RS-485, and you can analyze the data according to the request.

2.3.9 Audio Test

You can test front end microphones or other audio sources.

2.3.10 High-precision Digital Multimeter

The digital multimeter can test AC/DC voltage, AC/DC current, resistance, capacitance, diode forward voltage, and circuit conductivity. It features +/-20000 count (4½ digits) high precision reading, simulated mechanical pointer, history chart, AC waveform display, save report and data recording of up to 9999 hours. It also has a earphone/extension port for conductivity beeper or function extension.

2.4 Packing List

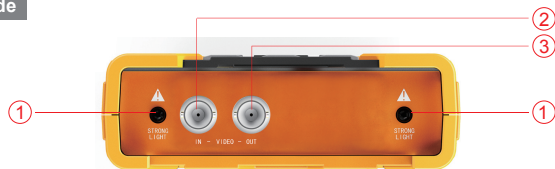
- | | |
|-------------------------------|--------------------------|
| 1. Integrated mount tester x1 | 9. RS-485 cable x1 |
| 2. Lanyard of the tester x1 | 10. RS-485 terminal x1 |
| 3. Lanyard of the tool bag x1 | 11. Power output cord x1 |
| 4. User manual x1 | 12. Audio cable x1 |
| 5. Tool bag x1 | 13. USB cable x1 |
| 6. PoE power injector x1 | 14. Charging cord x1 |
| 7. Network cable x1 | 15. Multimeter probes x1 |
| 8. Coaxial cable x1 | |

2.5 Structures

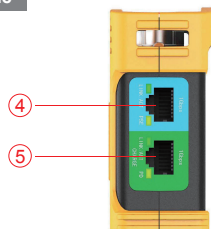


①		Power indicator light: Light up the tester starts.
②		Data transmission indicator light: The icon flashes red when the data is being transmitted or received.
③		Charge indicator light: Red when charging, off when fully charged.
④		Battery level Icon: Display the remaining battery.
⑤	Title Bar	Display current function mode and system time.
⑥	Display Area	Display function interface, live video, and more.
⑦	Rubber Protector	Provide for better handling and protection against dropping or bumping (non-replaceable).
⑧	SCR	Used to enter or exist full screen video display.
⑨	MODE	Function selection button: Press to enter function selection menu. Press the button or use to select desired function.
⑩	SET	Setting button: Brings up settings menu for different functions.
⑪		Direction buttons: Navigate menus, alter settings, control PTZ, etc.
⑫		Control PTZ focus and other functions according to on-screen tips.
⑬		Control PTZ zoom and other functions according to on-screen tips.
⑭		Control PTZ iris and other functions according to on-screen tips. When modifying settings, use to confirm and to cancel.
⑮		Earphone port or DMM extension port.
⑯		AC/DC current measuring port.
⑰		COM: DMM common probe port.
⑱		V/Ω: Test port of voltage, resistance, capacitance, diode, and more.
Flip Keyboard		
⑲	Internal Flip Keyboard	Open the internal flip keyboard to enter characters, numbers, or symbols.
⑳	TAB Key	Press the key to switch to another entering area.
㉑	CAPS Key	Press the key to enable or disable letter capitalization.
㉒	CAPS Indicator	The light glows green when capitalization is enabled.
㉓	SYMBOL Key	Press the key to switch between symbols and letters.
㉔	SYMBOL Indicator	The light glows red in symbol mode.

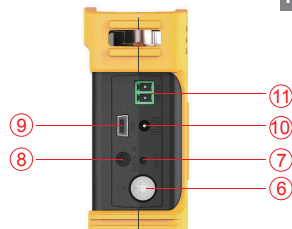
TOP Side



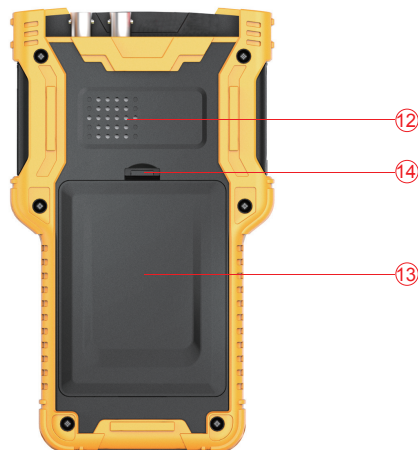
Left Side



Right side



Back Side

**TOP Side**

- ① LED torch lights.
- ② Analog video input BNC port.
- ③ Analog video output BNC port.

Left Side

- ④ Network port 1 (blue), with PoE power supply.
- The right indicator light glows orange during PoE power supply.
- The left indicator light glows green during data transmission.
- ⑤ Network port 2 (green), with PoE power input test and tester charging function.
- The right indicator light glows orange when receiving PoE power.
- The left indicator light glows green during data transmission.

Right Side

- ⑥ Power button: Press and hold for 2 s to turn on or off the tester. When the tester is on or off, double-press the button to turn on or off the LED torch lights.
- ⑦ Reset button: Use a small tool, such as a pen, to press the button inside the small hole to reboot the device when necessary.
- ⑧ Audio input: 3.5mm audio input.
- ⑨ Mini USB port: Used to connect the tester to a computer.
- ⑩ 12V/2A DC power output port: Diameter 4 mm, internal pin diameter 1.65 mm.
- ⑪ RS-485 output: Used to control PTZ.

Back Side

- ⑫ Built-in speaker.
- ⑬ Battery cover.
- ⑭ Battery cover buckle.

3. Operation Instructions

3.1 Installing and Charging the Battery

The tester uses a rechargeable lithium-ion polymer battery. To ensure safety when transporting, the battery is disconnected with the tester. There might be two battery conditions when the tester leaves factory:

1. The battery is placed inside the tester and insulated from the circuit with a thin plastic sheet. In this case, you need to open the battery cover, take out the battery, remove the plastic sheet, put the battery back in, and then put the battery cover back.
2. The battery is placed outside the tester. In this case, you need to open the battery cover, put in the battery, and then put battery cover back.

For the first time, after the battery is installed properly, the tester will automatically start.

If battery level is too low, the charging indicator icon will flash 3 times, and the tester cannot start.

When charging the battery which is inside the tester, use the provided PoE injector and RJ45 cable. Connect DATA/POWER OUT port of the PoE injector to network port 2 (green) with the RJ-45 cable. Connect the PoE injector to mains power supply, and then the PoE power receiving indicator light of network port 2 glows orange. The battery is charging.

-  Li-polymer battery does not have memory effect. You can charge the battery whenever wanted.
-  The battery charging indicator light  glows red during charging. After the battery is fully charged, the light turns off.
-  The battery can also be charged with a PoE switch or other PoE power source that meets IEEE 802.3af or IEEE 802.3at standard.

 Due to calculation deviation, the battery level might reach only 90% when the charging light turns off. You can further charge the battery by extending the charging time to ensure the battery is fully charged.

 Do not use non-standard PoE power supply to charge the battery, which might destroy the tester.

3.2 Installing the Lanyard

You can install the lanyard on the tester as needed. The lanyard can help you handle the tester, and prevent it from being dropped and damaged when you work at a high place.

To install lanyard, thread one end of the lanyard through the hole at the head of the device, and then thread it through the tri-glide buckle of the lanyard. Tighten the lanyard and confirm that it is locked.

3.3 Basic Starting Instructions

3.3.1 Turning the Tester on and off

- ◆ To turn on the tester, press  and hold for more than 2 seconds. The power icon  will glow green when the tester is turned on.
- ◆ To turn off the tester, press  and hold for more than 2 seconds, the tester will be turned off. You can also set the auto power off time on device setting interface.
- ◆ When the tester is on, press  multiple times or use  to select a function, and then press  to enter the corresponding function.

3.3.2 Using LED Torch Lights

In either on or off status of the tester, press  twice quickly to turn on or off LED torch lights.



The LED lights have high brightness. When opening them, do not look directly in order to avoid visual injury or cause other damages.

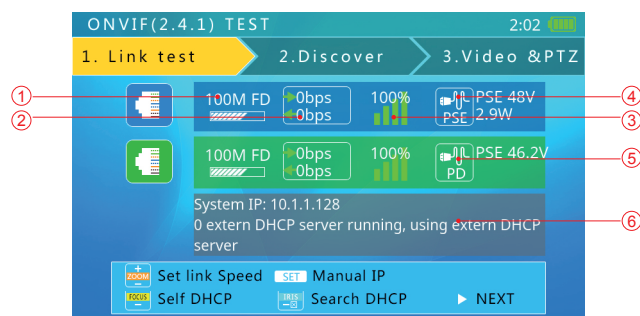
3.4 ONVIF Test

The ONVIF test function is designed as a 3 step trouble shooting guide. It combines functions of Ethernet tests, IP settings, camera discovery, camera authorization, video display, PTZ control, camera settings, and more.

After starting the tester, select ONVIF test, and then press  to enter ONVIF test step 1.

3.4.1 ONVIF Test Step 1: Ethernet and IP Test

A. User Interface



On this interface, blue bar is for network port 1 status information; green bar is for network port 2. The gray bar is IP test information. The bottom light blue bar are the operation tips.

Within the network port status bar:

①  Link Speed of Corresponding Port

When  is gray and the text is "link down", it means no network connection.

When  is white, and the text is digits and characters, 10M/100M/1000M is the link speed, "FD" means full duplex mode, "HD" means half duplex mode.

The link speed can also be observed from the icon, such as .

②  Ethernet Data Flow Monitor

This icon shows the current Ethernet data flow.

← is the sending data flow in b/s, kb/s, and mb/s.

→ is the receiving data flow in b/s, kb/s, and mb/s.

③  Packet Loss Monitor

This icon displays the packet transfer loss status. 100% means there is no packet loss. The color of this icon color differs according to the success rate, as shown in the table below:

RATE	No Link	100%	99%	≥95%	<95%
Color	gray	green	yellow	orange	red

④  PoE Power Supply Status

This icon is for network port 1, indicating the PoE power output status.

The first line of text is output mode:

◇ 12V: The device is outputting 12V and detecting PD at the same time.

◇ PD. CLAS: Shows the classification of the remote PoE device.

◇ PSE 48V: The remote PoE device is being powered.

The second line of text shows the output power in watts. When outputting power, the actual power consumption is decided by the remote device. The tester has a maximum power limit. When the remote device requires more power than the maximum power, the output will terminate automatically.

⑤  PoE Power Acceptance Status

This icon applies to network port 2, indicating the PoE power acceptance status.

The text displays the input voltage from PSE.

⑥ IP Test Information (Gray Bar)

The gray bar is the IP test information.

The IP setting has 3 modes: Static IP, DHCP request, and DHCP server.

B. Operation

1. Connect to Network or IP Cameras. Several Conditions:

① Connect to a 12V IP Camera

Use a standard RJ45 cable to connect the camera to network port 1 or 2. The network status will be displayed on the corresponding network port bar. The tester supports MDI/MDIX connection.

The camera can be powered using its own 12V power adapter or using the tester's 12V/2A power output. When using the tester's 12V/2A output, please use the 12V output cable to connect the 12V output port to the camera's 12V power port.

The tester supports a maximum output of 12V/2A. When the camera consumes more than 2A, the power output will terminate.



Note:

If there is a PoE powered device connecting to network port 1, then the 12V output is disabled. The PoE power output has higher priority.



② Connect to PoE Switch and Charge the Battery at the Same Time

Use a RJ45 cable to connect the PoE switch to the tester network port 2 (green). The orange indicator light on the network port will turn on, indicating acceptance of the PoE power. If the battery level is below 95%, the charging light will turn on.

Multiple ONVIF cameras can connect to a switch. Cameras can use their own external power or PoE power.

③ Connect with a PoE Camera

Use a RJ45 cable to connect a PoE camera to tester network port 1 (blue). The tester will first detect the PoE camera and then supply power.

When powering PoE camera, 12V output of the tester is disabled, if they are used simultaneously.

When a PoE device requires more power than the maximum, the PoE power output will terminate.

The PSE mode of the tester meets the 802.3af/802.3at standard. The maximum power is 25.5W.

2. Setting IP Mode

The tester supports 3 IP modes: Static IP, DHCP request, and DHCP server. These 3 modes can be switched.

① DHCP Request Mode

This mode is suitable when connecting to a used network.

When entering the ONVIF test, the IP mode is set to DHCP request by default.

You can switch to this mode by pressing .

In this mode, the tester will try to find a DHCP service in the network and get an IP. Then the server assigned IP from the server will be displayed in the gray bar.

② DHCP Server Mode

This mode is suitable when connecting to a single IP camera that uses DHCP.

Press  to switch to DHCP server mode. In this mode, the tester will set the local IP to static, enable the DHCP server, wait for a remote DHCP request, and then assign an IP to another device.



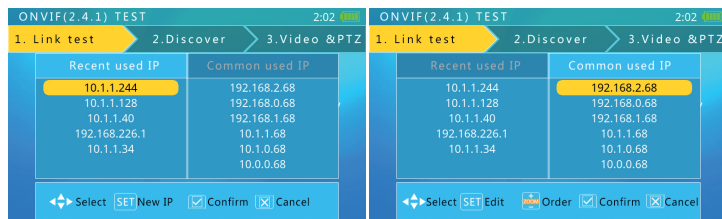
Note:

If the connected network is in use and already has a DHCP server, some devices will get incompatible IP addresses and be interfered due to multiple DHCP servers.

③ Static IP Mode

This mode is suitable when connecting a camera or network that uses a static IP.

Press **[SET]** to switch to static IP mode. The IP setting interface is displayed.



Under this mode, you can use **Recent used IP** or **Common used IP** as static IP.

Press **[Left Arrow]**, **[Up Arrow]**, **[Down Arrow]**, **[Right Arrow]** to select, and then press **[TAB]** to confirm.

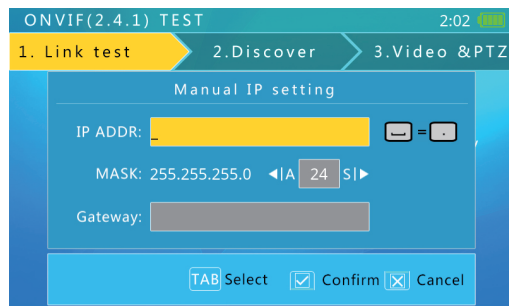
Under the item of **Common used IP**:

◇ Press **[SET]** to modify IP addresss.

◇ Press **[Up Arrow]** to sequence the selected IP.

Under **Recent used IP**:

Press **[SET]** to switch to static IP mode. The IP setting screen is displayed.



Please use the flip keyboard to enter the IP and use the A/S key to adjust the mask. To access internet, gateway is also needed.

When entering, character 'd' and symbol '.' will be automatically switched. Press **[TAB]** to go to next item.

When the configuration is completed, press **[TAB]** to confirm.

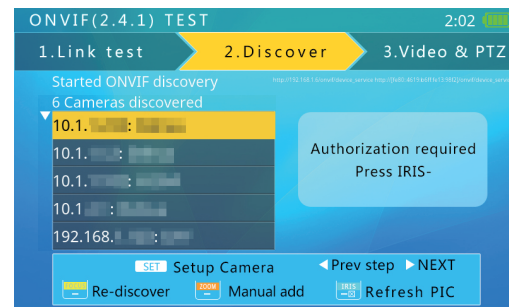
When the network connection information is confirmed to be normal and the tester has acquired an IP, press **[Next Arrow]** to enter the next step.

3.4.2 ONVIF Test Step 2: Discovering Cameras

This step will discover and list the camera IP in the network. It will show a camera video snapshot for quick identification. Camera video information is displayed as well.

3.4.2.1 Discovering Cameras

When entering this step, the tester will try to discover ONVIF cameras, and then add them to the list on the left.



The text above the list shows the number of discovered cameras.

When there are too many items on the list, inverted triangle will show on the left. It indicates that there are more items which are not shown.

Use the up/down buttons to select a camera in the list. The tester will automatically initialize the link with the corresponding camera, then show the camera video snapshot on the right side of interface.

In this interface, press **Zoom** will clear the camera list and restart the discovery process.

Some cameras may not respond the ONVIF discover request, or cannot reply due to different IP segments. In such a case, you should first return to step 1 and set the local IP to be the same segment as the camera (Please remember your local IP cannot be in conflict with other devices in network). Then enter step 2 to discover the cameras again. If the camera still cannot be discovered, you can add it manually.

3.4.2.2 Manually Adding a Camera

Press **Zoom** to manually add an IP camera.



To manually add a camera, you need to know the camera's exact IP and ONVIF service path.

In the URL bar, after finishing entering IP address, press **TAB** to automatically complete default path (For example, enter http://10.1.1.100/ and then press **TAB**, the path will be automatically completed like this: http://10.1.1.100/onvif/device_service). After finishing configuration, press **Enter** to confirm.

3.4.2.3 Viewing Camera Video Snapshot and Video

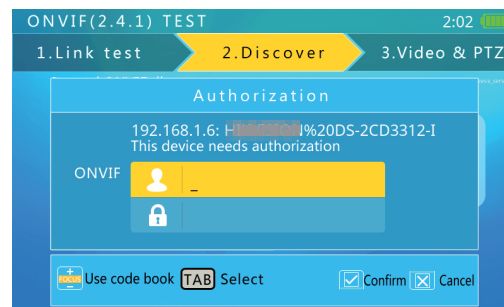
Use **Up/Down** to select a camera in the left list. After 1 to 3 seconds, a video snapshot from the corresponding camera will be displayed on the right for identification.



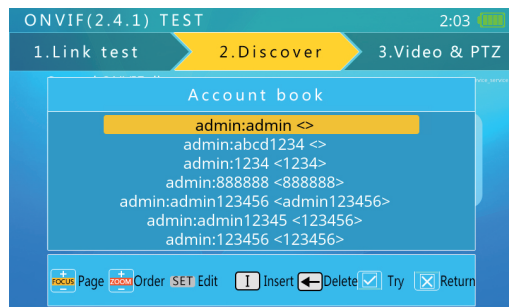
Video resolution, refresh rate, and the compression method of the camera are displayed at the top of the image.

3.4.2.4 Identity Authentication and Account Book

Some cameras need ONVIF authorization. If the video interface displays "Authorization required, press IRIS-", you need to press **IRIS** to go to the authorization interface.



Use the flip keyboard to enter username and password, and then press  to confirm. On the authorization interface, press  to enter account book interface. See the figure below:



Press  to select username and password (the content in the <> is the password), and then confirm. The tester will use the selected username and password for authentication.

If there are more than one page of account book, press  to turn the page.

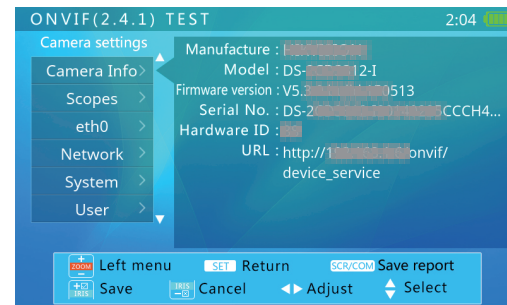
Press  to sequence the selected item.

Open the flip keyboard, press  to delete the username and password. Press  to add a new username and password. The interface is as follows:



3.4.2.5 Camera Settings

Press  to enter the camera setting interface.



The left side of the display shows the setting item, and the right shows the setting details.

The setting item and details are as follows:

Item	Descriptions
Camera Info	Display camera model, SN, firmware version, and more. The information cannot be modified.
Scopes	Display camera name, location, hardware, type, and more. The information cannot be modified.
Eth0	Camera network port settings, including IP, gateway, etc. For a multi-port camera, there may be more than one port setting, and the name of port may also vary.
Network	Camera network settings, such as host name and DNS.
System	Restart camera, restore to factory defaults, service ports information, and ONVIF discover enabling or disabling.
User	Display username and user level.

To select items on the left, use .

To select items on the right, use .

For setting of parameters, use  to adjust.

To enter parameters, use the flip keyboard.

When finishing setting, press **+B** to confirm. The tester will send new settings to the camera. If the camera accepts the new settings, the setup successful prompt will show. Otherwise, failure information will show.

Press **SCR** to produce reports, and save the parameters of the camera in the USB storage. If you want to view the reports, connect the tester to a computer through USB mode, and then find .html document.

! After setting successfully, restart the tester because some parameters will take effect by doing so.

3.4.3 Onvif Video Test

Select the camera, then press **▶** to enter step 3 for video test. You can watch live video of the camera, control PTZ, and set parameters.

Some cameras need RTSP authorization, and the tester will display the authorization interface. The RFSP authorization is the same as that of ONVIF.

3.4.3.1 Displaying Live Video

After entering step 3, the tester displays live video automatically, and the video image will re-size on the reserved area of the interface.

Press **+C** to switch between UDP and TCP.



A and V mean the success rate of data transmission.
V is for video and A is for audio. if the value is less than 80%, video and audio displaying might be affected.

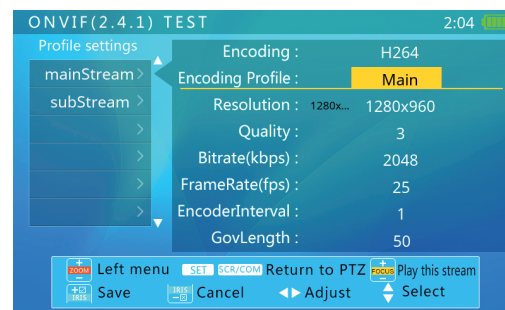
3.4.3.2 ONVIF PTZ Control

Press **SCR** to switch to full screen video display mode. The video image will cover most of the screen area. Due to depth-to-width ratio differences, part of the screen could be black with nothing to display.

In full screen mode, use **+C** and **◀ ▶** to control PTZ.

3.4.3.3 Setting the Code Stream

Press **SET** to enter the stream setting interface.



To select stream on the left, use **+C**. Press **+C** to play the selected stream.

To select items on the right, use **◀ ▶**.

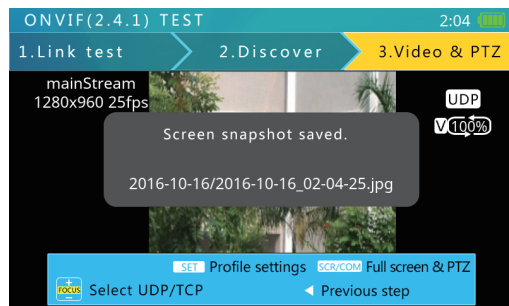
Press **+B** to undo modification. When finishing setting, press **+B** to confirm.

After finishing settings, press **SET** or **SCR** to return to the live video interface.

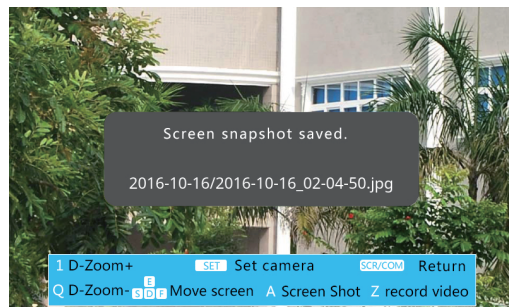
3.4.3.4 Video Snapshot and Video Record

Video Snapshot

On live interface, press A key to capture image, and the system will prompt "Screen snapshot saved." The example is as below:

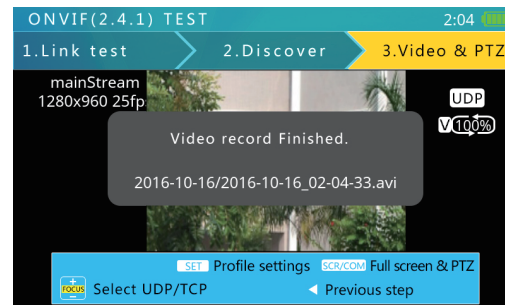


In full screen mode, you can also press A key to capture image. The example is as below:



Video Record

On live interface, press Z key to record video and press it again to end recording. Then the system will prompt "Video record Finished." The example is as below :



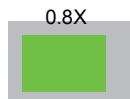
In full screen mode, you can also press Z key to record video. The example is as below:



3.4.3.5 ONVIF Video Digital Zoom

On live interface, press 1 key twice to digitally zoom in the image, and press Q key to zoom out. In full screen mode, directly press 1 or Q to zoom the image.

When the image is partly shown, a chart will be displayed at the lower-right corner, showing the display ratio. Press E, S, D, and F to move the viewing window to inspect different parts of the image.



3.5 Analog Video Test and PTZ Control

This function is used to test analog video signal, video display, video format, and more. It is also used to send commands through the RS-485 cable to control the PTZ.

3.5.1 Connecting to Analog Camera

Analog cameras are connected using the BNC port. Use a BNC cable to connect the camera to the video input port on the top side of the tester.

The camera can use external power or be powered by 12V/2A output from the tester.



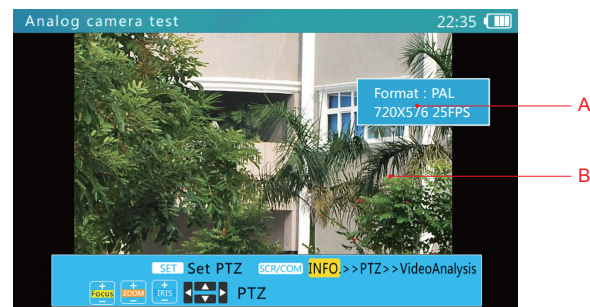
Note:

The tester's maximum output power is 12V/2A. When the current exceeds the limit, power output will automatically stop. Be cautious when using cameras with high power IR lights.

When network port 1 is connected to a PoE device, 12V output is disabled, if they are used at the same time.

3.5.2 Analog Camera Test

Press **MODE** or use up/down buttons to select analog camera test. Press **▶** to enter the function interface.



In the analog camera test interface, it can automatically identify signal format (such as NTSC, PAL, HD-CVI, HD-TVI, and AHD), resolution, and format from BNC port.

A. Signal Information

This area displays the video format, resolution, and frame rate.

B. Video Display Area

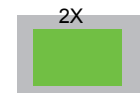
Due to different depth-to-width ratios, the displayed image might not be displayed in full screen.

3.5.3 Full Screen and Digital Zoom of Analog Video Image

After entering the analog video test function, press **SCR** to enter or exit full screen mode. In full screen mode, the prompt information is hidden.

To digitally zoom, press 1 or Q to zoom in or out.

When the image is partly shown, a chart will be displayed at the lower-right corner, showing the display ratio. Press E, S, D, and F to move the viewing window to inspect different parts of the image.



3.5.4 Analog Video Snapshot and Video Record

On live interface, press A key to capture image, and the system will prompt "Screen snapshot saved."

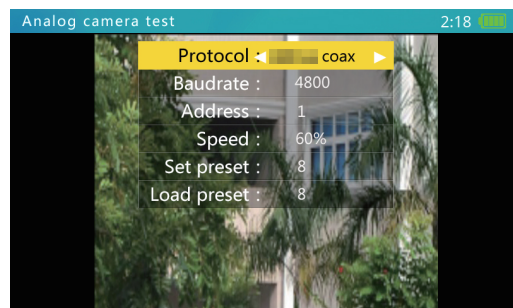
On live interface, press Z key to record video and press it again to end recording. Then the system will prompt "Video record Finished." The example is as below:



3.5.5 HD Coaxial PTZ Control

On the live interface, press **SET**, and then the PTZ setting menu is displayed.

Use **↑**/**↓** to select an item, and **←**/**→** to adjust it.



The settings are as follows:

Protocol	Select coaxial PTZ protocol.
Baudrate	Baud rate setting is only for RS-485 communication.
Address	No need for coaxial PTZ control.
Speed	Expected PTZ speed, from 10%–100%.
Set preset	Adjust this value, and then press SET to save the current PTZ position. This function is supported by PTZ controller. See camera user's manual for details.
Load preset	Adjust this value, and then press SET . The camera will go to the corresponding pre-saved position. This function is supported by PTZ controller. See camera user's manual for details.

When setting parameters, press **ESC** to restore previous values if you do not want to save the settings.

After setting, press **SET** to exit. Settings take effect immediately.

After setting, use **CODE**, **CODE**, **PTZ** and **↑**/**↓** to control the PTZ.

3.5.6 RS-485 PTZ Control

On the live interface, press **SET**, and then the setting menu is displayed.

Use **↑**/**↓** to select an item, and **←**/**→** to adjust it.



The settings are as follows:

Protocol	Select RS-485 PTZ protocol.
Baud Rate	RS-485 communication baud rate.
Address	Address of controlled PTZ. The value might deviate with +/-1 according to different manufacturers. Address range is dependent on the protocol.
Speed	Expected PTZ speed, from 10%~100%
Set preset	Adjust this value, and then press  to save the current PTZ position. This function is supported by PTZ controller. See camera user's manual for details.
Load preset	Adjust this value, and then press  . The camera will go to the corresponding pre-saved position at maximum speed. This function is supported by PTZ controller. See camera user's manual for details.

When setting parameters, press  to restore previous values if you do not want to save the setting.

After setting, press  to exit. Settings take effect immediately.

Use provided RS-485 cable to connect to PTZ RS-485 communication cable, and then use , , , and  to control the PTZ.

Call some special preset number, and then camera's OSD menu is displayed. See camera user's manual for details.

Some PTZ protocols use specialized instruction for OSD menu. When these protocols are selected, the system prompts "2 OSD menu", and you need to press 2 to enable or disable OSD menu.

3.5.7 UTC

On the live interface, press , and then the setting menu is displayed.

Select "SD-UTC" protocol, and then return to live interface. Long press  to switch to "TVI",  to "AHD",  to "SD", and  to "CVI."



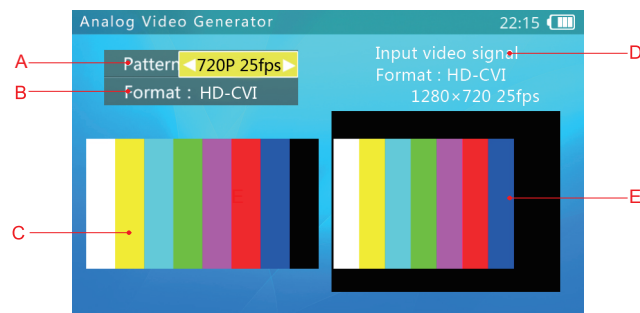
Note:

Select "UTC-B" protocol if the camera is a speed dome. Under HD mode, you need to enter OSD menu to switch between "TVI", "AHD", and more.

3.6 Analog Video Generator

3.6.1 Analog Video Generator

Press  or use up/down buttons to select analog video generator, and then press  to enter the function interface.



A. Test pattern: Support SD (PAL/NTSC), HD-CVI, HD-TVI, and AHD formats.

B. Test video format: Resolution switch. Under SD format, you can switch between PAL 50 Hz and NTSC 60 Hz. Under HD-CVI, HD-TVI, or AHD format, you can switch among 720p 25 fps/30 fps/50 fps/60 fps, and 1080p 25 fps/30 fps.

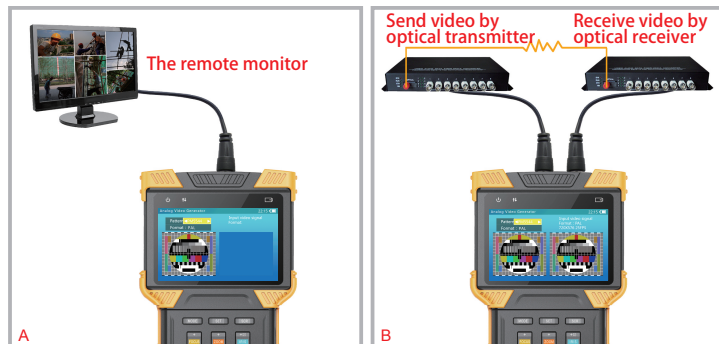
C. Test video image: The video to be output.

D. Format, resolution, and frame rate of the input video.

E. Input video image: To be compared with the test video image.

3.6.2 Connection of Analog Video Generator

As below :



A. Transmit test video to remote monitor or DVR, and judge the transmission quality by inspecting the image.

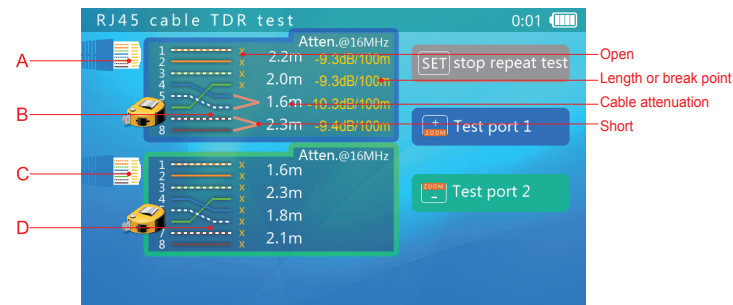
B. Test video is transmitted through an optical video transmitter, received by an optical video receiver, and then returned to the tester through the video input port. Transmission quality can be judged by comparing the image between the test video image and input video image.

3.7 RJ45 Cable TDR Test

This function is used to test an RJ45 cable using TDR (Time Domain Reflectometer) analysis method.

Circuit status such as connected, open, and short can be detected, and cable length is displayed. The accuracy is within 1 meter. To measure a cable, only one end of the cable needs to connect to tester, and the other end should be left open.

Press **MODE** or use up/down buttons to select RJ45 TDR test, and then press **▶** to enter the function interface.



A. Network port 1 icon: A measuring tape icon flashes on the interface when a cable is being tested.

B. Network port 1 test result: This area displays the test results of the last measurement. 12 36 45 78 stand for the 4 twisted pairs inside the RJ45 cable. The statuses can be "Normal", "Open", or "Short".

Cable quality example is as below:

atten.@16MHz	atten.@16MHz	atten.@16MHz	atten.@16MHz
-10.0dB/100m	-5.0dB/100m	-18.0dB/100m	-6.0dB/100m
-10.8dB/100m	-8.8dB/100m	-15.8dB/100m	-6.2dB/100m
-10.0dB/100m	-9.0dB/100m	-17.0dB/100m	-6.1dB/100m
-10.0dB/100m	-5.1dB/100m	-17.0dB/100m	-5.9dB/100m
Poor quality	36 45 pairing error	Wet cable	Qualified cat5 cable

C. Network port 2 icon: Similar to network port 1.

D. Network port 2 test result: Similar to B.

After entering this function, the device will take a measurement automatically.

To measure again, press **▶** to start a network port 1 or network port 2 test. To start repeated test, press **SET**. When the prompt at the upper-right corner changes to "stop repeat test", the cable is under repeated test.



Note:

Test result can be affected by temperature, moisture, cable diameter, and cable dielectric. Test results are only for reference, not for formal measurement.

Repeated measure is to help easily test multiple cables, and it will not increase test accuracy.

To guarantee the test accuracy, please do not connect any device to the untested end of the cable.

3.8 Network Analysis (Network Tools)

This function is a combination of several network tools, such as Ethernet sniff, subnet list, and ping test.

Press **MODE** or use up/down buttons to select network tools, and then press **→** to enter the function interface.



Network analysis function interface introduction:

A. IP Address and mask display: To change this setting, press **SET** to go to the IP setting interface. DHCP and static IP are supported.

B. Gateway and DNS display: If you want to change settings, it is the same as that of IP setting.

C. Ping destination: When the bar is yellow, use the flip keyboard for modification. IP and domain names are both supported.

D. Information display area.

E. Function icons.

3.8.1 Ethernet Sniff

You do not need to set network parameters or destination if you use Ethernet sniff. Press **Sniff** to start the function.

Once Ethernet sniff is started, the tester will keep listing to the network, waiting for broadcast data, detecting MAC and IP addresses. Unlisted MAC and IP addressed will be added to the list.

The format of the list is XX-XX-XX-XX-XX-XX I.I.I.I, where XX is a MAC address in HEX, and I is an IP address displayed in decimal.

Most network devices will send broadcast packets periodically. The sniff function will detect this data and discover these network devices with unknown IP.

When connecting to a device with unknown settings and IP, you need to use DHCP server to distribute IP to the device. If the device is not requesting an IP address, then use sniff function to detect the device.

Detecting a device using the sniff function may take 3 to 60 seconds according to the device broadcasting frequency, and the tester cannot detect a device if it has no response.

The sniff function is used to detect broadcast packets, so devices in different network segments or devices without setting IP address can also be found.



Note:

The sniff function does not detect uni-cast (point-to-point) packets.

To exit Ethernet sniff, press **Sniff**.

3.8.2 List Subnet

To use the list subnet function, IP and mask should be set, and the subnet mask should be 24 bits (the subnet size is 256).

When entering the network analysis function, current IP and mask will be displayed. You can press **SET** to change settings as needed.

After the IP and mask are set, press **SCAN** to start listing subnets.

The subnet list function will scan the whole subnet. Devices being scanned must reply, so the discover rate is 100% if the device is operating normally. This subnet list function will also measure the network latency, and display it in ms.

The subnet list display format is: XX-XX-XX-XX-XX-XX I.I.I.I N ms. XX is the MAC address displayed in HEX. I is the IP address displayed in decimal, and N is the network latency.

Compared to the network sniff function, this function cannot detect devices in different network segments, but the detection rate is 100% if devices are in the same network segment.

The subnet list will take 1–10 seconds to finish.

To exit the sub-net list function, press **ESC**.

3.8.3 Ping Test

3.8.3.1 Ping Function Introduction

Ping is a commonly used network test function. It can be used to check network connectivity, channel delay and other network status. It can help you analyze network and locate network faults.

This ping function is more powerful than which we use on computers. It can display history chart of last 120 seconds, as well as statistics chart of ping delay and packet lost.

3.8.3.2 Ping Operation

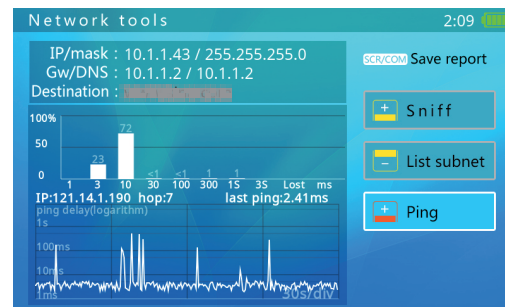
To use the ping function, IP address, mask and destination are needed. If the destination is a domain, then DNS and gateway are also needed.

To modify IP, mask, DNS, and gateway, press **SET**, and set them on the IP setting interface.

To modify a destination, use the flip keyboard when the destination bar is yellow.

When you have finished setting IP, mask, and destination, press **SCAN** to start the ping test.

The ping test displays result in chart form as follows:

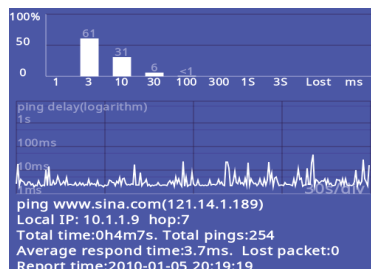


The bar chart displays the proportion of ping packets of this delay duration to the total ping packets.

The line chart displays the ping delay in last 120 seconds. Y-axis is the ping delay duration from 0 ms–10 s in logarithmic scale. X-axis is ping packet send out time.

3.8.3.3 Saving Report

Press **SCR** to generate the report. This report is saved in the tester built-in memory, you can use a USB cable to connect to PC and view reports. You also can access the tester by FTP to obtain reports. ftp address is IP address of tester, account name and password are both "ftp".



Note:

This example is for reference only and should not be used as a test standard.

The histogram shows percentage of each ping delay group, and there will be a red bar for packet lost percentage if there is packet lost during the test period.

Line chart displays the ping delays of most recent 120 seconds.

The first line of the report indicates ping target domain and corresponding IP address.

Local IP: IP address of tester.

Hop: Hops. It indicates gateway number (IP route nodes) for the packet to reach target.

Total time: Total time of ping test.

Total Pins: Total number of ping packet sent out.

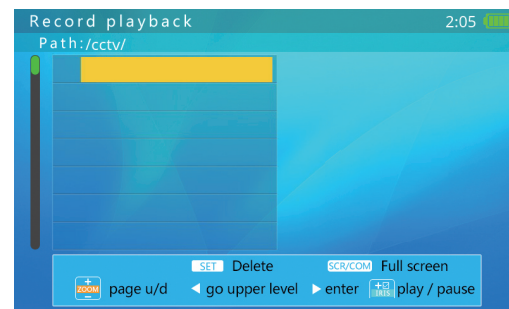
To exit the ping function, press **ESC**.

3.9 Record Playback

The tester can take snapshots and records of analog and IP cameras, and then save them. You can review saved snapshots and play back recorded videos.

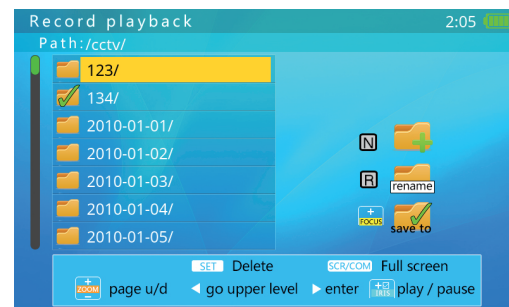
Press **MODE** or use up/down buttons to select record playback, and then press **ENTER** to enter the function interface.

When no snapshot or record is saved, the interface is as follows:



In this interface, you can open the flip keyboard, press N key to create a new folder. If you need to modify the selected folder name, press R.

When there are snapshots or records, the interface is as follows:



On this interface, you can:

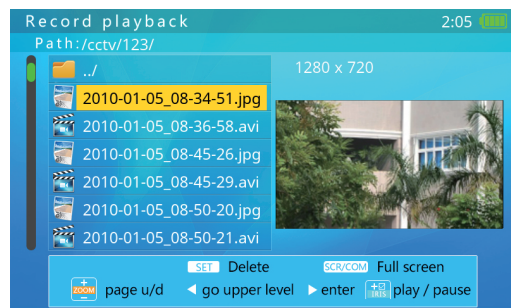
Press to move to the previous or next folder.

Press to quickly turn the page up or down if there are many folders.

Press to delete the folder. Press to confirm; press other keys to cancel.

Press to enter the folder, and then you can view the saved snapshots and records.

The sample interface is as bellow :



Operation on videos and snapshots:

When you press to select a snapshot or video file, snapshot or video will be played on the right side automatically.

Press to quickly turn the page up or down if there are many files.

Press to delete the file. Press to confirm; press other keys to cancel.

Press to play or pause playing the video.

Press to return to the upper directory.

Press or the to enter the full screen display.



Full screen snapshot playback

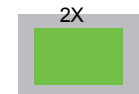
Full screen video playback

In the full screen snapshot playback interface:

Press to play back the previous or next snapshot.

Open the flip keyboard, press 1 or Q to zoom in or out the snapshot image. When the image is partly shown, a chart will be displayed at the lower-right corner, showing the display ratio.

Press E, S, D, and F to move the viewing window to inspect different portions of the image.



Press to delete the snapshots. Press confirm the deletion; press other keys to cancel.

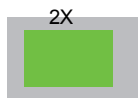
Press to exit the full screen display.

In the full screen video playback interface. Press to play back previous or next record.

Press to play the video in frame. Press to play or pause playing the video. Press to fast forward or back the video.

Open the flip keyboard, press 1 or Q to zoom in or out the snapshot image. When the image is partly shown, a chart will be displayed at the lower-right corner, showing the display ratio.

Press E, S, D, and F to move the viewing window to inspect different portions of the image.



Press **SET** to delete the recording. Press **+10** to confirm; press other keys to cancel.

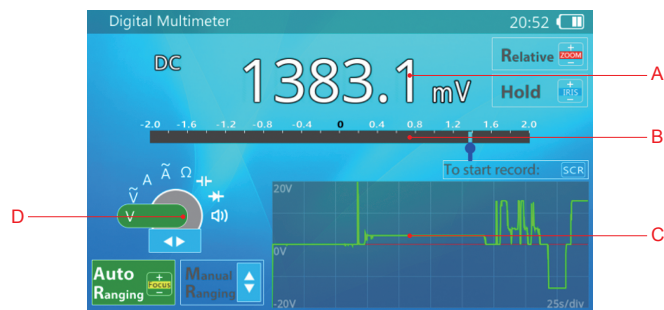
Press **SCR** to exit full screen video playback.

3.10 Digital Multimeter

Digital multimeter can measure AC/DC voltage, AC/DC current, resistance, capacitance, diode, and circuit conductivity. And it has an extension port, which can implement many more measuring functions.

Press **MODE** or use up/down button to select digital multimeter, and then press **▶** to enter the function interface.

The function interface is as below:



A: Measured value

B: Simulated pointer

C: History chart or waveform display

D: Function selection

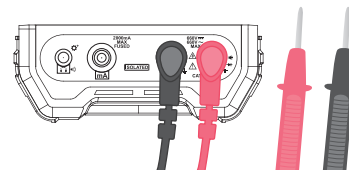
Operation

a) Press **◀▶** to choose the measuring function. The corresponding symbols of the functions are as below:

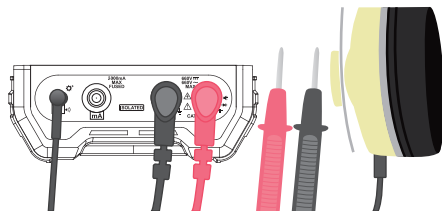
Symbol	Function
V	DC voltage
$\tilde{V}$	AC voltage
A	DC current
$\tilde{A}$	AC current
Ω	Resistance
$\text{--}\text{ }\text{--}$	Capacitance
$\text{--}\text{ }\text{--}$	Diode forward voltage
$\text{--}\text{ }\text{--}$	Conductivity test

b) Connect the test probe to the multimeter as needed. As shown in the figure below.

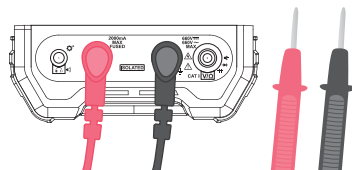
i. Voltage (AC/DC), resistance, and capacitance test. Connect the red probe to V/Ω port, and the black probe to COM port.



ii. Diode, and circuit on and off test. Connect the red probe to V/Ω port, and the black probe to COM port. If needed, connect an earphone to audio port in order to listen the beeper clearly in noisy environment. The earphone beeper also respond faster than the tester speaker.



iii. Current (AC/DC) test. Connect the red probe to mA port, and the black probe to COM port.



c) Connect probes to tested circuit or component, then read the value.

i. Voltage (AC/DC) Test

Connect probes to the test circuit directly.

The rough value or variation trend of the tested voltage can be observed through the simulated pointer. And the high-precision value can be read out after the data is stable.

The auto range is selected by default when using the multimeter to test the voltage.

The measured value from AC voltage test is true RMS (Root Mean Square). There is also a value displayed even if test circuit is not connected due to meter internal or environment electrical noise. It will not affect measuring accuracy of large voltage (>200).

In the range of 2V, even if test probes are shorted, the multimeter may have -10 to +10mV data readout. These parasitic values can be removed by using relative measuring. Please take the section of relative measure for reference.



Note:

The maximum voltage allowed on the test probes is 600V (DC) or 400V (AC).

In order to avoid electronic shocking to human being, please keep the circuit under the state of insulation when the tested circuit voltage is above 36V.

ii. AC/DC Current Test

Connect the probe as shown in b.iii

Please disconnect the power of the target circuit first, cut off the target cable, connect the red and black probes to cable respectively, and then turn on the power of the target circuit.

The rough value or variation trend of the tested voltage can be observed through the simulated pointer. And the high-precision value can be read out after the data is stable.

The auto range is selected by default when using the multimeter to test current. If the measuring range is not appropriate, the multimeter will change the range automatically.

The measured value from AC voltage test is true RMS (Root Mean Square). There is also a value displayed even if test circuit is not connected due to meter internal or environment electrical noise. It will not affect measuring accuracy of large voltage (>200).



Note:

The multimeter current connector has a one-time fuse. To protect the tested circuit and the device, the fuse will break if current is over the limit. The function of current test will not work if the fuse is broken, the data readout will be zero, and the circuit is under open circuit status.

Please replace the fuse with the same model.

The maximum input voltage allowed is 250V AC/400V DC when the fuse broke.

Test circuit's electronic potential may be on a high level. Please take care to avoid any harm by electronic shock during the operation.

The device's internal resistance will change significantly when the multimeter switches measurement range. This may change the tested circuit's status, thus lead to different test results. And this is a normal phenomenon.

The test current will heat up the internal sampling components, which affect the test accuracy. Therefore, test time should be limited to 15 seconds when testing high current (>0.1A).

iii. Resistance Test

This function can test resistor or circuit's resistance value.

Connect the probes to the resistor or two ends of the test circuit, and then the multimeter will automatically adjust to a suitable range and do test.

The rough value or variation trend of the tested voltage can be observed though the simulated pointer. And the high-precision value can be read out after the data is stable.

When testing the low resistance, make the red and black probe mutually touched, and then enter relative measuring mode. This operation can remove the test probe resistance. Please read the section of relative measuring for reference.

**Note:**

Please confirm the tested circuit is powered off, otherwise, the exact results cannot be acquired.

The meter will use different current to measure resistors in different range. If the target resistor or circuit is not pure resistive load, the reading may not be the same in different measurement range. And this is a normal phenomenon.

iv. Capacitance Test

Please discharge the capacitor before test, especially for large capacitor ($>100\mu\text{F}$) or high voltage capacitor (withstand voltage $>50\text{V}$). Please discharge the capacitor in case of any harm to human or damage to the meter.

For small capacitor ($<100\mu\text{F}$), and the charged voltage lower than 5V , the meter will automatically discharge the capacitor before testing.

Please connect the red and black probe to the tested capacitor's pins. Connect the red probe to positive electrode, and black probe to negative electrode if the capacitor has polarity.

The multimeter will automatically select a suitable range for testing. The rough value or variation trend of the tested voltage can be observed though the simulated pointer. And the high-precision value can be read out after the data is stable.

The test time may be longer ($>1\text{ s}$) if the tested capacitance is large ($>1000\mu\text{F}$). This is a normal phenomenon.

**Note:**

The capacitor should be tested by alone, instead of installing in a circuit. Otherwise, it may get a wrong testing result or cannot get the data readout.

The testing result may became larger due to capacitor leakage. And if the capacitor leaks badly, it may not get the data readout.

If the capacitor has a higher charged voltage ($>5\text{V}$) when testing, it may not be tested normally. If the voltage in the capacitor is over the maximum of the internal protection circuit, it may damage the meter.

If the capacitor has high charged voltage ($>36\text{V}$), it may do harm to human when touching.

v. Diode Test

The function of diode test can measure diode's forward voltage drop, and help to find diode's positive and negative terminals.

Connect red probe to diode's positive electrode (terminal A), black probe to diode's negative electrode (terminal K). The tested diode's forward voltage drop will be displayed by the device.

If tested value is OL, it means the connection of diode polarity is wrong, or the diode is damaged.

The meter's buzzer will sound when the tested diode's forward voltage is lower than 30mV . It means the tested diode may be breakdown and damaged.

Earphones can be used in the noisy environment.

**Note:**

The diode should be tested alone, not be installed in the circuit.

vi. Circuit Conductivity Test

It is to test the resistance of the circuit, whereby to judge the circuit is conductive or open.

Please cut off the circuit's power, and wait for the existed electricity in capacitors of the target circuit to be totally discharged.

Connect the red and black probe to the tested circuit, and the resistance value of the tested circuit will be displayed. The meter's buzzer will sound when the tested circuit's resistance is lower than 30Ω , that means the circuit is conductive.

**Note:**

The circuit being conductive or open is a relative concept. You should judge according to particular circuit and measured value, instead of judging it base on the buzzer.

The measuring value may vary continuously when the tested circuit have large capacitance, because the tested circuit's capacitance is being charged. It's a normal phenomenon. During charging, the smaller resistance cannot be considered as the circuit is connected, while it should be judged till the data readout is stable.

The tested circuit should be powered off, otherwise, it cannot get the correct testing result.

d) Auto/Manual Measuring Range

It shows that the device is on Auto Range when the auto measuring range indicator has green background. You can can press up/down button to enter manual measuring range when testing voltage, current, resistance and capacitance. At this time, the indicator of manual measuring range is on green light and auto measuring range is on transparent state. Press up/down button to adjust the measuring range. Press  to turn back to auto ranging.

e) HOLD Function

Press  to lock the data readout when testing. HOLD is indicated as green.

Press  again to unlock the data readout.

**Note:**

The meter is still on measuring under locked state. Auto measuring range, beep tone and data recording function are still working also. The chart is still on refreshing under data history chart mode. The wave is frozen under the mode of waveform display.

f) Relative Measuring

Press  to enter relative measuring mode during other test. The indicator of relative measuring turns green. And the meter will switch to manual ranging mode at the same time. The device will record the current reading as reference value once you use relative measuring. It will subtract the new measuring result with the reference value, so as to show the difference.

Press  again to exit difference measuring, and indicator turns transparent.

To test small voltage (2V range) or small resistance (2kΩ range), you can use relative measuring function to reduce the influence of stray voltage and test probe resistance. Operation procedures: Make the red and black probe mutually touched, and enter the mode of relative measuring when the data readout is stable. And then measure the tested circuit or resistor.

g) Data Recording

Press  to start recording. The recording time will be displayed on the interface. Press  again to stop the data recording.

When recording, the range will be automatically switched to manual range. If the measuring value is near the max, please increase the range. After data recording ends, the range mode will not be switched to auto.

Please disable the auto power off or adjust the time appropriately if long time data recording is needed.

The data recording is saved in the internal memory of the tester. The file name is the date and time when the recording started. For example: /cctv/DMM 2016-10-10_12-01-01.txt. The first line of the file is measuring setup, including measuring item, range, unit, start time, interval time, and more. From the second line, each line is a recorded data, without unit.

h) Precautions

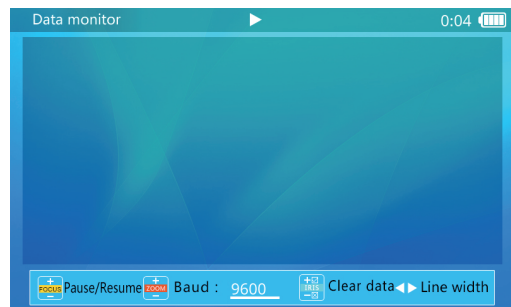
- i. Avoid electrical shock when testing high voltage circuit. Please don't touch any metal parts of the probe, otherwise it may do harm to human.
- ii. The electronic measurement part of the multimeter are electrically insulated from other circuits. It's safe to touch non electric measurement parts when the probe is connecting to target circuit with voltage below 600V. The non electric measurement parts are: BNC port, network port, audio input port, earphone connector, charging port, battery, RS-485 port, USB port and power output port.
- iii. The electronic measurement ports are COM, V/Ω, and mA. Please don't touch metal parts of these ports when testing high voltage circuit (>36V).
- iv. Improperly connect the voltage may damage the meter or tested circuit when testing resistance, capacitance, diode and conductivity. The meter has automatic protection capability if it improperly connect to a certain range of unwanted voltage. However, this protection can only be use by limitation. It will lower the meter's accuracy if protecting too many times. The device will be damaged permanently if connect to the voltage which is beyond the protection capability.
- v. The earphone connector can connect to 3.5mm 3-pin earphones, and it also can connect with some 4-pin earphones.
- vi. The earphone port is also a expansion port. It can connect to dedicated extension accessories.

3.11 Data Monitor

This function can be used to receive and display data from the RS-485 bus. Use this data to analyze whether the protocol data of PTZ controller is normal.

Connection method: Connect the RS-485 port of the tester to the tested RS-485 communication bus with the provided RS-485 cable. The red alligator clip connects to positive electrode and the black one connects to negative electrode.

Press **MODE** or use up/down buttons to select data monitor, and then press **▶** to enter the function interface.



Operations:

Press **+** to set the baud rate to match the baud rate of the measured RS-485 bus. When the tester receives the data, the data is displayed on the interface.

Press **+** to pause/resume receiving data.

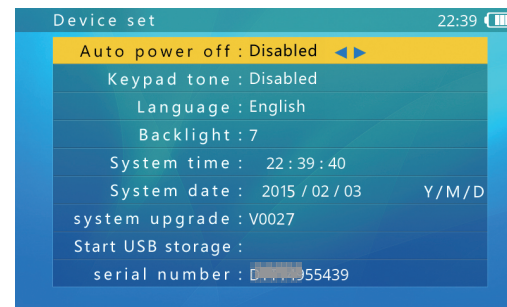
The tester will automatically wrap the line according to the received data. Press **◀ ▶** to set the line width (Each line will show the number of data, range: 3–20).

Press **↺ ↻** to clear the displayed data.

3.12 Device Settings

You can set system parameters, use USB storage, and software upgrade.

Press **MODE** or use up/down button to select device settings, and then press **▶** to enter the function interface.



Use **▲ ▼** to select an item.

After settings are modified, press **↵** to save settings.

3.12.1 Automatic Power off Time

Select the auto power off item, and adjust its settings using **◀ ▶**. Automatic power off can be set between 5 minutes (minimum) and 60 minutes (maximum).

When the selected time is at 5 minutes, press **◀** to turn off auto power off. "Disabled" will be displayed. The auto power off function is disabled.

When the tester is left untouched for longer than the auto power off time, the tester will automatically turn off.

3.12.2 Keypad Tone

Select keypad tone item, and adjust the setting using **◀ ▶**. When enabled, the speaker sounds a short tone of 2-3 KHz.

The keypad tone setting does not affect the audio test function.

3.12.3 Tester Language

The tester supports multiple languages display.

Select the language desired using .

3.12.4 Screen Backlight Brightness

The screen backlight has 10 selectable levels. For outdoor use, a higher brightness will have better contrast, while a lower brightness will consume less battery power.

Select the desired backlight brightness level using . The brightness adjustment will take effect immediately.

3.12.5 System Time and Date

To adjust system time, use to adjust the hour, to adjust the minutes, and to adjust seconds.

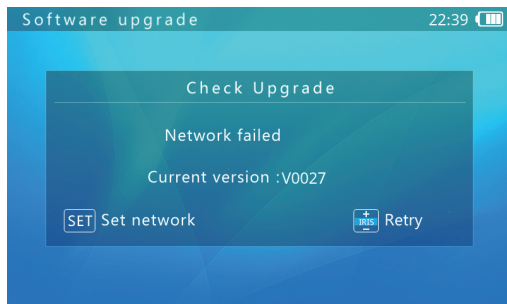
To adjust system date, use to adjust year, to adjust the month, and to adjust the day.

The date display format is year/month/day.

3.12.6 Software Upgrade

The tester software can be upgrade online.

In the device set interface, select software upgrade, and then press . The current software version will be displayed (e.g., V0027).



Connect to a router using the RJ45 cable, and press to set network parameters as shown below:



If the network is using DHCP, the tester will automatically acquire the IP settings. Otherwise, the IP settings should be completed by you.

After IP setup is completed, press to return. The tester will connect to the software upgrade server and try to find a new software version automatically.

When a new version is found, the new version number and current version number will be displayed. Press to enter the download interface. The download process is fully automatic, and an integrity check is automatically executed upon download completion. After this process, the tester will return to the upgrade interface automatically.

An upgrade download may take seconds to dozens of minutes, depending on the network speed. Please operate in a better environment. This will save you time.

After download succeeded, a "Start upgrade" prompt will be displayed on the interface. Press to start the upgrade. The system will reboot automatically, and then enter the upgrade interface. Follow on-screen prompts to continue the process. Press to start.

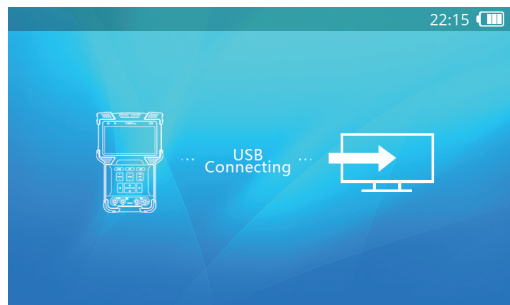


Before upgrading, make sure that the battery level is above 30%. You are recommended to use the external power to charge the tester during the upgrade, so as to avoid damage to the software system if the tester lacks of power during the upgrade.

Do not open battery cover, remove the battery, or press the Reset key while upgrading. This may cause system failure, and the device may not be able to boot up again.

3.12.7 USB Storage Mode

The USB storage function is disabled by default. To enter USB storage mode, enter the device set interface, and then select the USB storage function.



Use a USB mini-B cable to connect the tester to a computer. Further operation is the same as a common USB flash drive.

When using USB storage, do not press **[MODE]** or the power button. This will cause the USB storage device to be un-plugged from the computer, and you may lose data.

To disconnect the USB connection from a computer, eject or uninstall the USB flash drive from the computer before disconnection.

3.12.8 Tester Serial Number

The device serial number is shown at the bottom of the device set interface.

3.13 Audio Test

The tester is equipped with an audio test function. It can be used to test microphones or other audio devices.

Use the provided 3.5MM audio cable to connect to an audio device. Black cable is for earthing, and red one is for signal. Please connect earthing cable first, so as to avoid large noise during connection.

3.14 Powering PoE Devices

The tester supports PoE power supply. Use a standard RJ45 cable to connect the tester network port 1 (blue) to the PoE device. The tester will supply power to the remote device.

Note: The connected PoE device must meet 802.3af/802.3at standards. Otherwise, the tester will not supply power. It is safe to connect a non-PoE device to network port 1 (blue).

When using PoE power supply, enter ONVIF test step 1 to see the actual PoE output power.



Maximum PoE power output is 25.5W. Tester power output will terminate if power exceeds the limit.

Do not connect non-standard PoE power to network port 1 (blue). This may damage the tester.

When using PoE output, the operation time of battery may be greatly reduced due to external device's power consumption.

3.15 Powering the Camera with 12V/2A Output

The tester supports 12V power supply with a maximum current of 2A. The actual current is determined by the powered device. Connect the 12V output port to the camera with the provided 12V output cable, and the tester can supply power to the device.

Note: If the network port 1 (blue) is connecting to a standard PoE device, the tester will power the PoE device first and the 12V power supply will be disabled.

When using 12V power supply, you can enter ONVIF test step 1 to see the actual output power of the 12V output. If the output is displayed as PoE, it means that it is under PoE power supply mode, and the 12V output is disabled.



Note:

Please do not connect the external power supply (such as a charger) to the 12V/2A DC output port of the tester, otherwise the tester and the external power supply will be damaged.

The maximum current of the 12V power supply output is 2A. When the current is exceeded, the tester will automatically stop the output.

When using 12V output, the operating time of the battery is greatly reduced because the external device consumes a large amount of power.

