

CCTV Tester

**User Manual**

(V01.00)

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- Thank you for purchasing the cctv tester. Please read the manual before using the cctv tester and use properly.
- For using the cctv tester safely, please first read the 「Safety Information」 carefully in the manual.
- The manual should be kept well in case of reference.
- Keep the S/N label for after-sale service within warranty period. Product without S/N label will be charged for repair service.
- If there is any question or problem while using the cctv tester, or damages occurred on the product, please contact our technical Department.

## Content

1 .Safety information .....	1
2. CCTV Tester Introduction .....	2
2.1 General .....	2
2.2 Packing list .....	3
2.3Function interface .....	4
3. Operation .....	7
3.1 Installing the Battery .....	7
3.2 Instrument connection .....	8
3.2.1Analog camera connection .....	8
3.2.2 HD Coaxial camera connection .....	9
3.2.3 HDMI IN.....	10
3.3 OSD menu .....	10
3.3.1 HDMI IN （*Optional ）.....	11
3.3.2 Video monitor test .....	14
3.3.3 Color-bar generator (TV OUT) .....	22
3.3.4 SDI Camera Test （*Optional ）.....	24
3.3.5 CVI camera test .....	25
3.3.6 TVI camera test .....	31
3.3.7 AHD camera test .....	33
3.3.8 Network tool .....	34
(1) PING Test .....	34
(2) IP address scan .....	35
(3) Network test (Ethernet bandwidth test) .....	36
(4) Port Flashing .....	39
(5) DHCP server .....	41
(6) Trace route .....	41

(7) Link monitor .....	42
3.3.9 Cable Test .....	43
3.3.10 Cable Tracer   (*Optional) .....	44
3.3.11 TDR cable test   (*Optional) .....	46
3.3.12 Digital Multi-meter   (*Optional) .....	49
3.3.13 Optical power meter   (*Optional) .....	57
3.3.14 Visual Fault Locator   (*Optional) .....	58
3.3.15 Audio Record .....	60
3.3.16 Audio player .....	61
3.3.17 Media Player .....	61
3.3.18 Update .....	62
3.3.19 LED Flashlight .....	63
3.3.20 System Setting .....	63
3.4 Audio test .....	66
3.5 HDMI output .....	66
3.7 DC12V 2A power output .....	66
3.8 USB 5V 2A power output .....	67
4. Specifications .....	67
4.1 General Specifications .....	68
4.2 Multi-meter specifications .....	70
4.3 Optical power meter specifications .....	72
4.4 Visual fault locator specifications .....	73

# 1 .Safety information

- ◆ The tester is intended to use in compliance with the local rules of the electrical usage and avoid to apply at the places which are inapplicable for the use of electrics such as hospital, gas station etc.
- ◆ To prevent the functional decline or failure, the product should not be sprinkled or damped.
- ◆ The exposed part of the tester should not be touched by the dust and liquid.
- ◆ During transportation and use, it is highly recommended to avoid the violent collision and vibration of the tester, lest damaging components and causing failure.
- ◆ Don't leave the tester alone while charging and recharging. If the battery is found severely hot, the tester should be powered off from the electric source at once. The tester should not be charged over 8 hours.
- ◆ Don't use the tester where the humidity is high. Once the tester is damp, power off immediately and move away other connected cables.
- ◆ The tester should not be used in the environment with the flammable gas.
- ◆ Do not disassemble the instrument since no component inside can be repaired by the user. If the disassembly is necessary indeed, please contact with the technician of our company.
- ◆ The instrument should not be used under the environment with strong electromagnetic interference.
- ◆ Don't touch the tester with wet hands or waterish things.
- ◆ Don't use the detergent to clean and the dry cloth is suggested to use. If the dirt is not easy to remove, the soft cloth with water or neutral detergent can be used. But the cloth should be tweaked sufficiently.

## About Digital Multi-meter

- ◆ Before using, you must select the right input jack, function and range.
- ◆ Never exceed the protection limit values indicated in specifications for each range of measurement.
- ◆ When the tester is linked to a measurement circuit, do not touch unused terminals.
- ◆ Do not measure voltage if the voltage on the terminals exceeds 660V above earth ground.
- ◆ At the manual range, when the value scale to be measured is unknown beforehand, set the range selector at the highest position.
- ◆ Always be careful when working with voltages above 60V DC or 40V AC, keep fingers behind the probe barriers while measuring.

- ◆ Never connect the meter with any voltage source while the function switch is in the current, resistance, capacitance, diode, continuity, otherwise it will damage the meter.
- ◆ Never perform capacitance measurements unless the capacitor to be measured has been discharged fully.
- ◆ Never measure any of resistance, capacitance, diode or continuity measurements on live circuits.

#### **Visual laser sources**

When you turn on visual laser sources, please don't stare at it, or will damage to eyes

When not using it, please turn it off and cover the protective cap.

## **2. CCTV Tester Introduction**

### **2.1 General**

The CCTV tester with 7 inch HD LCD display, is designed for maintenance and installation of analog cameras, TVI, CVI AHD, SDI/EX-SDI cameras, The unit support PTZ control. The tester is also a great tool for Ethernet network testing. It can test PING, and IP address searching. You can use the blue cable tracer to locate individual connected cables from a bundle of cables. Test LAN cable for proper connection termination. HDMI IN and OUT, CVBS loop test, testing IP and analog at the same time, LED Flashlight, DC 12V 3A power output and much more. Its portability, user-friendly design and many other functions make the cctv tester an essential tool for all installers or technicians.
















## **2.2 Packing list**

- 1). Tester
- 2). Adaptor DC12V 2A
- 3) Network cable tester
- 4) Polymer lithium ion battery (7.4V DC 5000mAh)
- 5). BNC cable
- 6). RS485 cable
- 7). SC,ST connector ( Only for optical power meter )
- 8). Multi-meter test leads one pair of red and black (only for the Multi-meter models)
- 9). Output Power cable
- 10). Audio cable
- 11). TDR alligator clamp (only for TDR models)
- 12). Safety cord
- 13). Tool bag
- 14). Manual
- 15).8GB SD card

2.3Function interface





1		Press more than 2 seconds, turn on or off the device ,short press to turn on or off the menu display
2		Far focus: Focus the image faraway/ PgUp for Manual APP
3		Near focus: Focus the image nearby
4		TELE: zoom in the image/PgDn for Manual APP
5		WIDE: zoom out the image/Update tester APP
6		Confirm the setting of parameters, open or enlarge the aperture/Home Menu up
7		Return/Close : Return or cancel while setting parameters of the menu, close or decrease the aperture
8		Home Menu down
9		Enter for Home Menu/ Zoom key/ long press to screeshot.
10		Upward, set function or add parameter. Tilt the PTZ upward
11		Rightward, select the parameter whose value will be changed. Add the value of the parameter. Pan the PTZ right
12		Downward, set function or reduce the value of the parameter. Tilt the PTZ downward
13		Leftward, select the parameter whose value will be changed
14		Enter for Mouse/Enter for APP Menu
15		Return/Close : Return or cancel while setting parameters of the menu, close or decrease the aperture
16		Multimeter interface ( <b>Optional</b> )
17		The charge indicator: it lights red while the battery is being charged. As the charging is complete, the indicator turns off automatically
18		The RS485 data transmission indicator: it lights red while the data is being

	transmitted
19	The data received indicator: it lights red while the data is being received
20	The power indicator: it lights green while the tester is powered on by the adapter

Top interface



Bottom interface



21	TDR cable test interface ( <b>Optional</b> )
22	SDI input (BNC interface) ( <b>Optional</b> )
23	RS485 Interface: RS485communication for the PTZ
24	HDMI IN
25	Video signal output ( BNC interface ) / cable tracer interface
26	CVBS IN/AHD /TVI/CVI Coaxial interface / ( BNC interface ) (AHD /TVI/CVI )
27	Optical power meter interface ( <b>Optional</b> )
28	Ethernet network test interface

29	DC12V2A power output , for provisional DC power supply
30	LED lamp
31	Visible red laser source emits Interface <b>(Optional)</b>
32	Power main switch
33	DC12V2A charging interface
34	Audio input
35	Audio output and earphone interface
36	USB 5V 2A power output (used only for power, not data)
37	UTP cable port: UTP cable tester port/ Cable tracer port
38	Micro SD card moveable,(comes with 8GB, supports up to 32GB)
39	HDMI output interface


## 3. Operation

### 3.1 Installing the Battery

The tester has built-in lithium ion polymer rechargeable battery. The battery cable inside battery cabin should be disconnected for safety during transportation!

Prior to the use of the instrument, the battery cables inside the battery cabin should be well connected.

Usually it doesn't need to disconnect the cable at the normal use

Pressing the key  continuously can power on or off the tester.




Notice:Pls use the original adaptor and connected cable of the device!




When the battery icon is full or the charge indicator turns off automatically, indicate the battery charging is completed.



Notice: When the Charge Indicator  turns off, the battery is approximately 90% charged.

The charging time can be extended for about 1 hour and the charging time within 12 hours will not

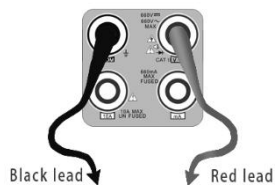
damage the battery.

**⚠ Notice :** Press the key  several seconds to restore the default settings when the instrument works abnormally.

Multi-meter: the red and black multi-meter pen must insert the corresponding port.

**⚠ Warnings:** Instrument communication port is not permitted access circuit voltage over 6V, otherwise damage the tester.

**⚠ Warnings:** Not allow insert multi-meter pen in the current terminal to measure voltage.



## 3.2 Instrument connection

### 3.2.1 Analog camera connection



- (1) ) Connect the camera's video output to the cctv tester's VIDEO IN. The image will display on the tester after pushing the PTZ icon.
- (2) CCTV Tester "VIDEO OUT" interface connect to the Video input of monitor and optical video transmitter and receiver, the image display on the tester and monitor.
- (3) Connect the camera or the speed dome RS485 controller cable to the tester RS485 interface .(Note :positive and negative connection of the cable)

### 3.2.2 HD Coaxial camera connection

\* SDI, CVI, TVI, AHD camera are classified as HD coaxial cameras. Hereby the following instruction of how to connect SDI camera to the tester is also applied to CVI, TVI, and AHD camera.



- (1) Connect the SDI camera's video output to the cctv tester's "SDI IN" interface, the image will display on the tester. The tester only come with SDI input interface. There is no SDI output interface.


(2) Connect the SDI camera or the speed dome RS485 controller cable to the tester RS485 interface.

### 3.2.3 HDMI IN


DVR or other device's HDMI in port connect to tester's HDMI in port, the meter will display input image.




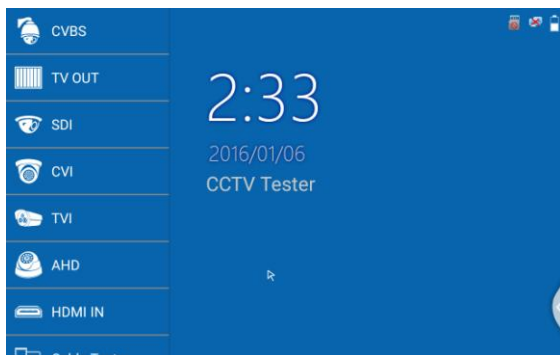
### 3.3 OSD menu

Press the key  2 seconds to turn on

Press the key  again to turn off

short press the key  to enter sleep mode, press it again to test.


If tester works abnormally and cannot be turned off , Press the key  several seconds to turn off, the tester reset.





OSD menu

### 3.3.1 HDMI IN (\*Optional)

HDMI in HD signal test, switch to HDMI interface “” to enter

When tester receives HDMI in image, the top tool bar shows the resolution of this image. You can

select “resolution” to set resolution in the setting menu . 720×480p /720×576p /1280×720p

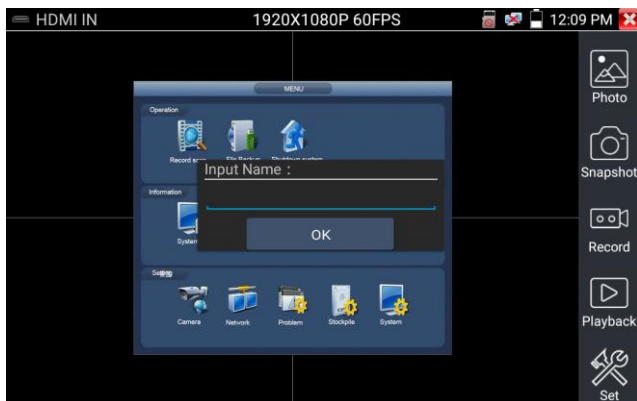
/1920×1080p /1024×768p/1280×1024p /1280×900p /1440×900p



### (1) Snapshot

Switch to “Snapshot “, when the video in, to take a picture and save the current video frame in the SD card as JPEG file.

If the unit is set to the manual mode an “Input Name” pop up box will appear and you can enter a title for the snapshot. If the unit is set up to automatically set file names, this box will not pop up.



### (2) Video record

When you switch to the “Record” icon, video starts recording. A red recording icon appears on the screen and begins to flash and a timer appears indicating the time elapsed for the video. Click on the “Record” icon again to stop recording and save the video file to the SD card.

if select manual storage, before recording begins ,appears dialog box “Input Name”,user-defined the files name(by Chinese character, English letter ,or digit) to store in SD card , tester will hereby store the files in SD card after recording . if select “Auto-storage ,tester will auto store the files in SD card after recording .





### (3)Photo

Switch to "photo" function, enter photo browsing interface.

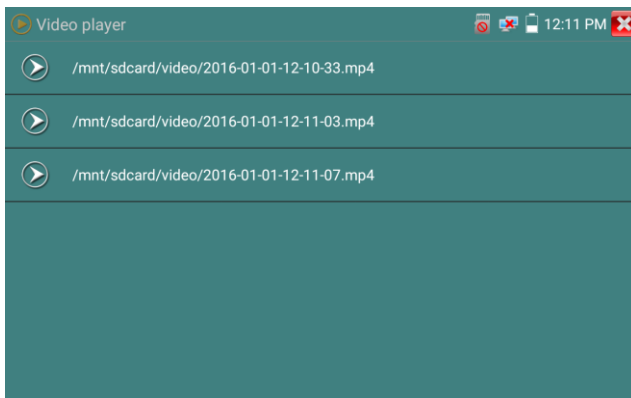
Press the Menu key to select the file to be displayed, which is displayed on the screen. Press the Back key to return to the video monitoring status.



### (4) Recorded video playback


Switch to "record" function, enter video playback interface.

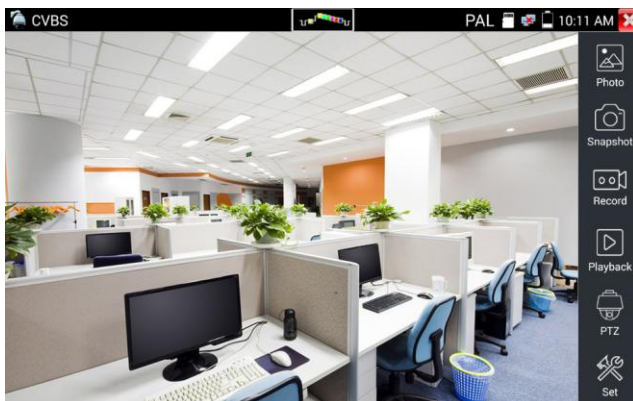
Press the Menu key to select the file, press the confirm button to display, press the Back button to return to the video monitoring status.




Video files also can play in the main menu “Video Player”.

### 3.3.2 Video monitor test

Analog camera test and PTZ control, click icon  to enter



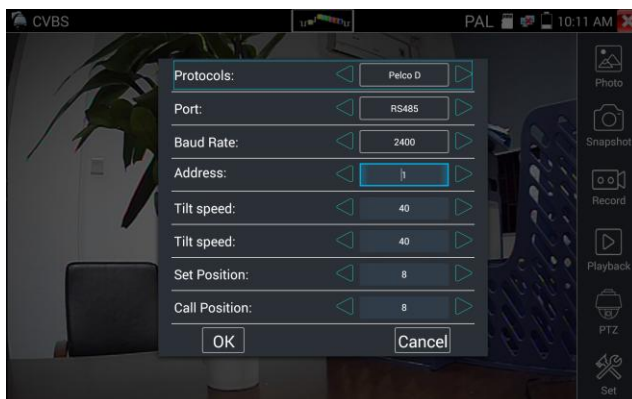
Display the input video image, click the top menu bar icon  to enter video level meter, (PEAK level, SYNC level, COLOR BURST measurement)

Select relative function on the right side Toolbar to operate , functions including “Photos”, “Snapshot”, “Record”, “Playback”, “PTZ”, “Set”,

Press the return key to close the function interface

### (1) PTZ controller parameter setting

Select and click icon “PTZ”, to enter PTZ setting:



#### A. Protocol

Use the arrow keys to move the cursor to the protocol selection, set corresponding Protocol and support more than thirty PTZ protocols. Such as Pelco-D,Samsung,Yaan,LiLin,CSR600,Panasonic,Sony-EVI etc.

#### B. Port

Use the arrow keys to move the cursor to the “port” selection

Select the communication port for the PTZ camera controlling (RS485)

#### C. Baud

Use the arrow keys to move the cursor to the “Baud” selection, Select the baud rate according to baud rate of the PTZ camera.(150/300/600/1200/2400/4800/9600/19200/57600/115200)

#### D. Address

Set the ID according the ID of PTZ camera (0~254), the setting address data must be consistent the speed dome address.

**E. Pan speed:** Set the pan speed of PTZ camera (0~63)

**F. Tilt speed:** Set the tilt speed of PTZ camera (0~63)

### G. Set preset position (Set PS)

Use the arrow keys to move the cursor to the “Set PS” selection, set and save preset position number(1~128).

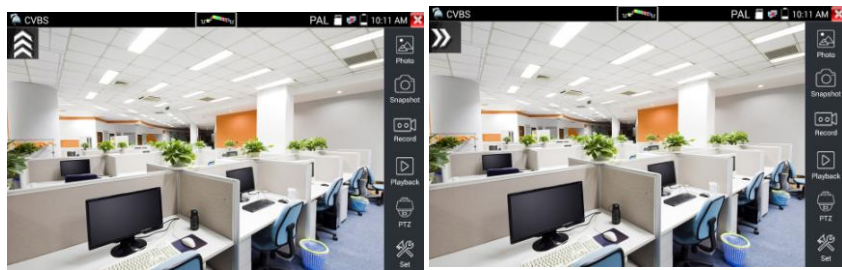
### H. Call the preset position (Go ps)

Use the arrow keys to move the cursor to the “Set PS” selection, set and save preset position number (1~128), click “sure” to save.

Call some special preset number, can call the dome camera menu





Check and set the protocols, address, interface and baud, all must be consistent with the dome camera, then the cctv tester can test .After setting the parameter, the tester can control the PTZ and lens



### PTZ Control:

Press the key     control the PTZ direction of rotation

Press the key  or  , to switch on or turn off the aperture.

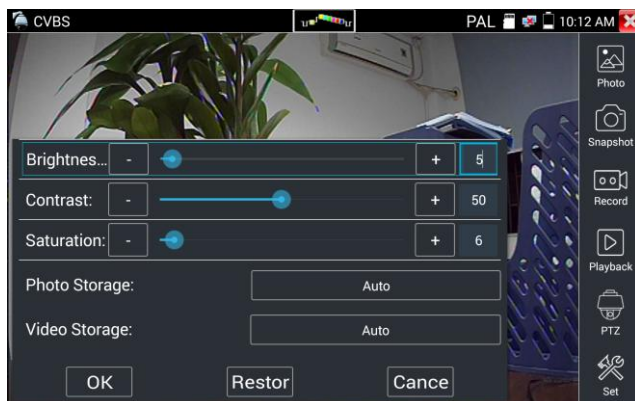
Press the key  or  , adjust the focus manually

Press the key  or  , manually adjust the zoom


## (2) Video and storage setting

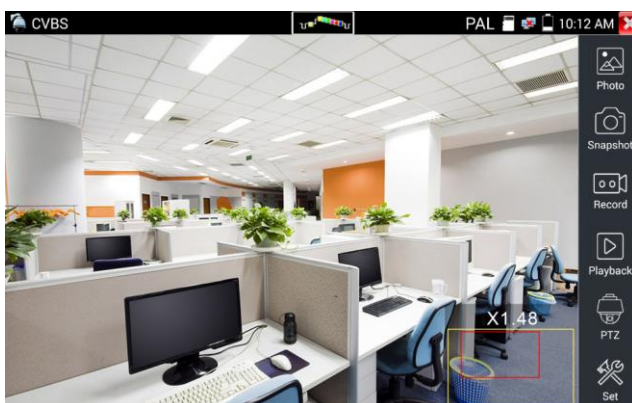
Click icon “set”,to enter and set analog video image brightness , contrast, color saturation, as well as the file storage way after snapshot and recording, support auto-storage and manual storage.



When select manual storage, user can name and store the files.



## (3) 4 x zoom image display and Video out

When image input, press  to enter “zoom”, press it again to quit. .



press the key  to zoom out , press the key  to zoom in, press upward and downward key to move the image

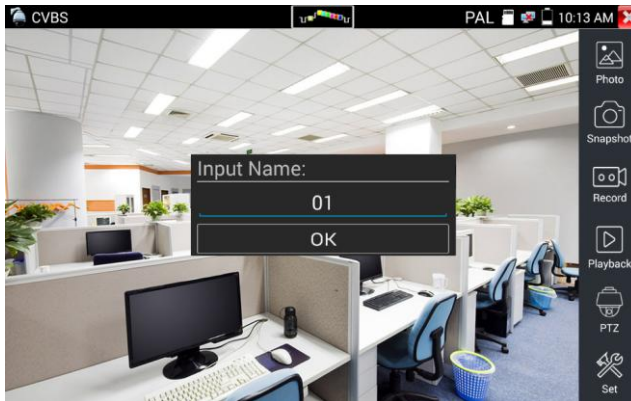


For analog video input, as the resolution is 720\*480, it is normal that the zoom in image is not clear.

#### (4) Snapshot

Click the icon “Snapshot”, when the video in, to take a picture and save the current video frame in the SD card as JPEG file.

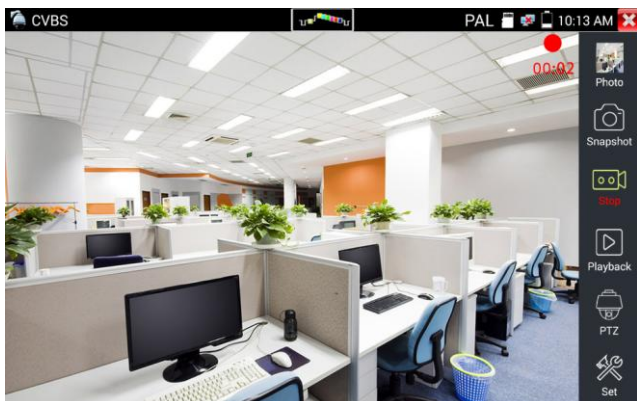
If the unit is set to the manual mode an “Input Name” pop up box will appear and you can enter a title for the snapshot. If the unit is set up to automatically set file names, this box will not pop up.



#### (5) Video record

When you click the “Record” icon, video starts recording. A red recording icon appears on the screen and begins to flash and a timer appears indicating the time elapsed for the video. Click on the “Record” icon again to stop recording and save the video file to the SD card.

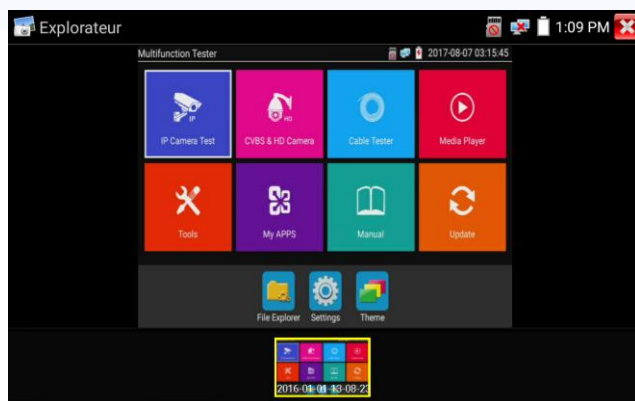
if select manual storage, before recording begins ,appears dialog box “Input Name”, user-defined the files name(by Chinese character, English letter ,or digit) to store in SD card , tester will hereby store the files in SD card after recording . if select “Auto-storage ,tester will auto store the files in SD card after recording .



#### (6)Photo

Switch to "photo" function, enter photo browsing interface.

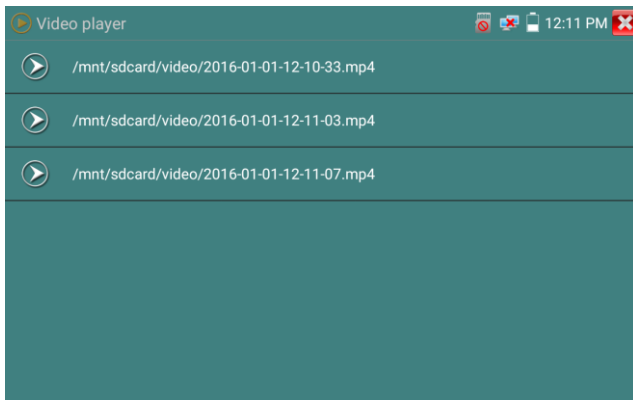
Press the Menu key to select the file to be displayed, which is displayed on the screen. Press the Back key to return to the video monitoring status.



#### (7) Recorded video playback

Switch to "record" function, enter video playback interface.

Press the Menu key to select the file, press the confirm button to display, press the Back button to return to the video monitoring status.



Video files also can play in the main menu "Video Player".

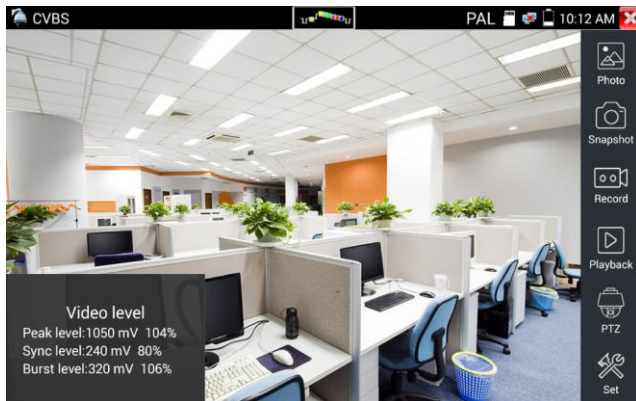
#### **(8) Video level meter**

Click the icon

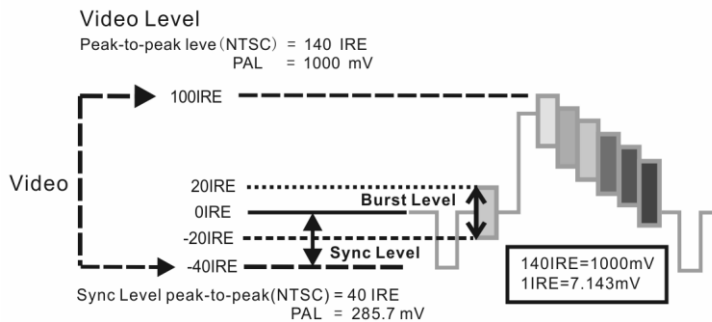


to enter, the cctv tester has adopted hardware high-speed sampling and processing technology, can perform both NTSC and PAL video amplitude signal measurements for PEAK to PEAK, SYNC levels and COLOR BURST chroma level. When an analog signal is fed into the meter, the tester displays the measurements on the bottom left corner of the screen





While in PAL format, the unit will be mV, While in NTSC format, it will be IRE.



NTSC	Video signal level	140±15IRE
	Chroma level( COLOR BURST)	40±5IRE
	SYNC signal level	40±5IRE
PAL	Video signal level	1000±200mV
	Chroma level( COLOR BURST)	300±35mV
	SYNC signal level	300±35mV

#### Video signal PEAK to PEAK level:

For NTSC format, the video signal level is 140±15IRE

For PAL format, the video signal level is 1000±200mV

If the level is too low, it will cause the image to lose quality and limit the distance it will travel over cable. If the level is too high, it will distort the image.

**SYNC level:** Tests the amplitude of the video sync pulse to verify if the video level is correct.

For NTSC format, the SYNC level is  $40 \pm 5$  IRE

For PAL format, the SYNC level is  $300 \pm 35$  mV

If the level is too low, it will cause the image to not frame out properly. If the level is too high, it will lead to a poor quality image.

**COLOR BURST level:** Testing the color burst level will determine if the burst signal is sufficient to trigger the displays color producing circuit. Burst will diminish in amplitude over longer cable runs and can get fall below the threshold for the video display to show a color image.


For NTSC format, the Chroma standard level is 40 IRE

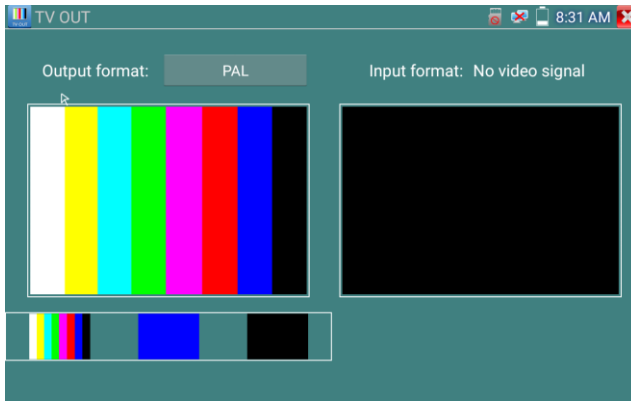
For PAL format, the Chroma standard level is 280 mV

If the Chroma level is too low, the color will not be as deep, and some details of the image will become lighter. If the Chroma level is too high, there will be distortions on the image. If the coaxial cable is too long, it will reduce the chroma level.

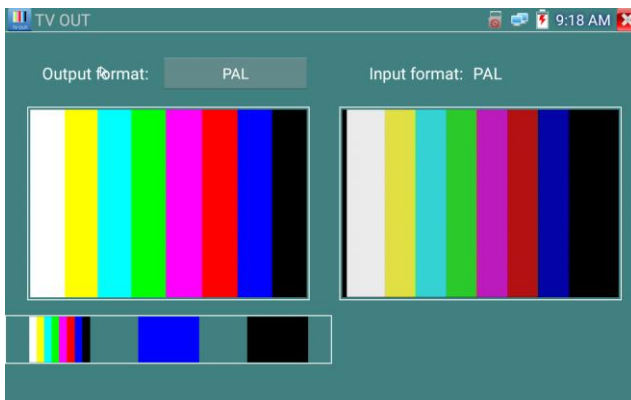
**Image loop test:** Test video optical transmitter and receiver and video cable, connect one end to the tester "VIDEO OUT" port ,and the other end connected to "VIDEO IN" port , the signal send via "VIDEO OUT" port ,and received via "VIDEO IN" port , If the testing is ok, the tester displays several gradually dwindling photos on the desktop.

### 3.3.3 Color-bar generator (TV OUT)

Select  enter Color-bar generator function, The image displayed on the screen is output via Video Out port. Move the cursor to select PAL/NTSC standard output.



Move the cursor to the bottom of the color bar, blue, black to choose the appropriate image output;  
Press the Back button to close and return to the main menu.



**BNC loop test:** Tester can send and receive color bar generator through the tester's "video out and video in" port, it is for testing transmission channels, such as video Optical, video cables etc. The tester "VIDEO OUT" port to connect optical terminal's sending port, and "VIDEO IN" Port to optical terminal' s connect its receiving port.

### Application


A. When maintaining the dome camera, the tester sends out the color bar by its BNC output to the

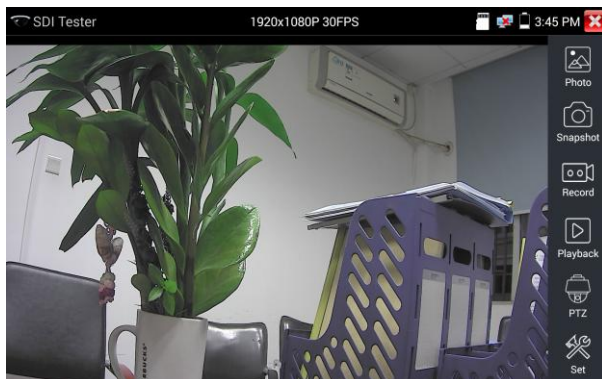
monitor at the monitoring center. If the monitor receive the color bar, it means the video transmit channel works normally. Meanwhile on the basis of the received color bar, the monitoring center can judge if transmission has loss or interference.

B. The tester sends out the pure color bar (such as white and black color), to test the monitor whether has bright or black dots

C. The tester sends out video signal image to test if the image received by the monitor has excursion.

### 3.3.4 SDI Camera Test ( \*Optional )

SDI camera test, Dome camera test and PTZ control, select icon  to enter.



When tester receives SDI camera image, it will display the image data.


The tester supports resolution as follows:

1280x720P 25Hz, 1280x720P 30Hz, 1280x720P 50Hz, 1280x720P 60Hz, 1920x1080P 25Hz


1920x1080P 30Hz, 1920x1080P 50Hz, 1920x1080P 60Hz, 3840x2160P 25/30FPS

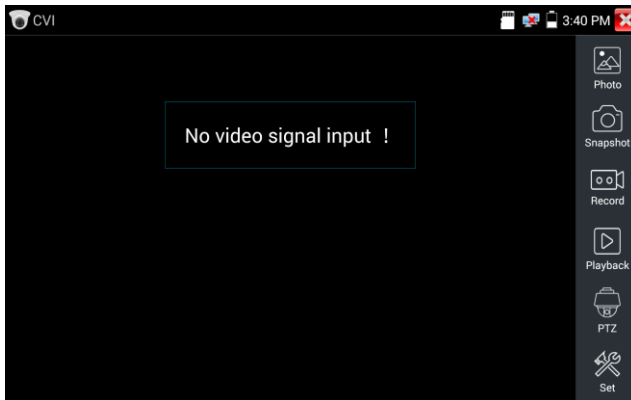
cctv tester's HDMI output port can be use as SDI to HDMI converter, output HD SDI image to HD TV monitor.

Select relative function on the right side Toolbar to operate, “Snapshot“ , “Record” , “Photos ”, “Video playback”, “PTZ control”, “Video Brightness and Storage set”, the operation is the same to the video monitor function, please refer to the relevant instructions “3.3.1” in the manual.

Click  , or Press the Back button to quit.

### 3.3.5 CVI camera test

HD CVI camera, CVI dome camera test and PTZ control, select icon  to enter



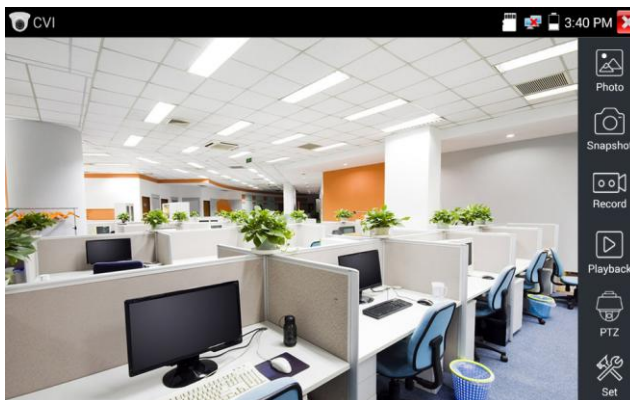
When HD CVI signal input, the tester will display the image resolution on the top bar.

The tester supports resolution as follows

1280x720P 25FPS / 1280x720P 30FPS / 1280x720P 50FPS / 1280x720P 60FPS

1920x1080P 25FPS / 1920x1080P 30FPS/ 2560 x 1440P 25/30 FPS / 3840 x 2160 12.5/15

FPS

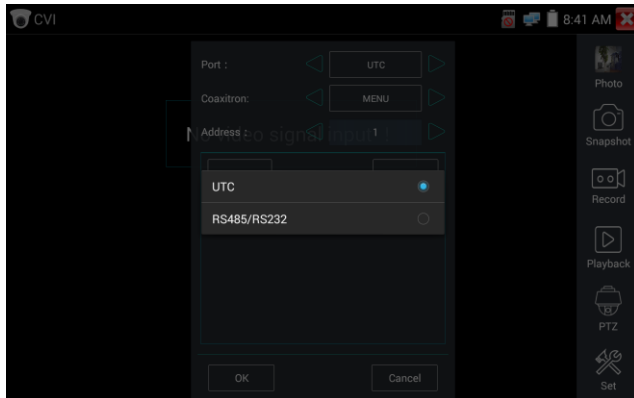


## (1) PTZ control

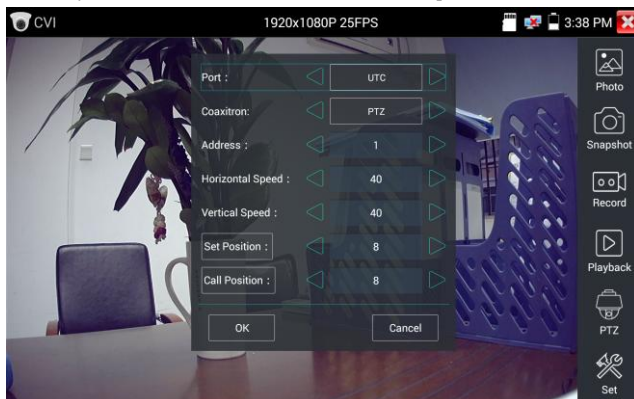
### 1.1 Coaxial PTZ control

Click the icon“PTZ”on the right toolbar to do the corresponding setting.

“Port”: select coaxial control



Press the arrow keys to move the cursor to set the PTZ address parameter







Operation instructions, please refer to “3.3.1 PTZ (1) Video monitor test”



The PTZ address in the tester must be consistent with the dome camera or decoder, then the cctv tester can test .After setting the parameter, the tester can control the PTZ and lens.

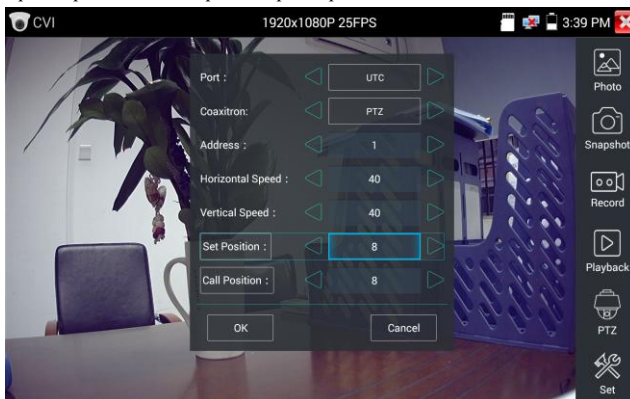


To control PTZ by key buttons

- ◆ Press arrow keys to control     to control the PTZ direction of rotation
- ◆ Press the key   to switch on or turn off the aperture.
- ◆ Press the key  , adjust the focus manually
- ◆ Press the key  , manually adjust the zoom

### Set preset position

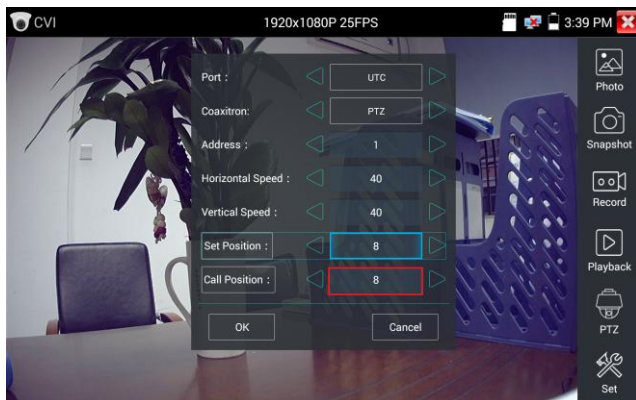
Setup preset position, move the PTZ camera to the preset position, the Tap it and input preset position number. Tap “Set position” to complete set preset position



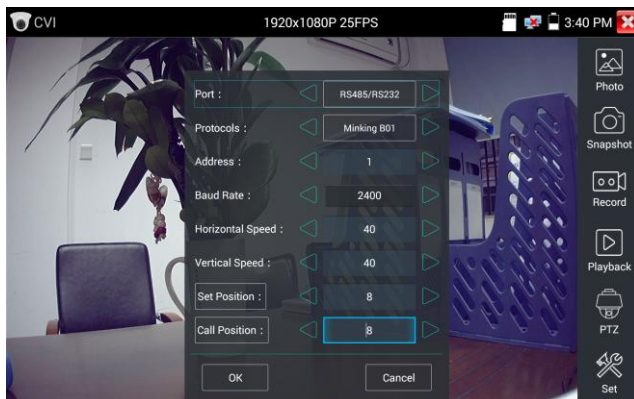
## Call preset position

Tap the preset position:

Tap the preset position area, input preset position number. Tap “call position” to complete call preset position.



## 1.2 RS485 control

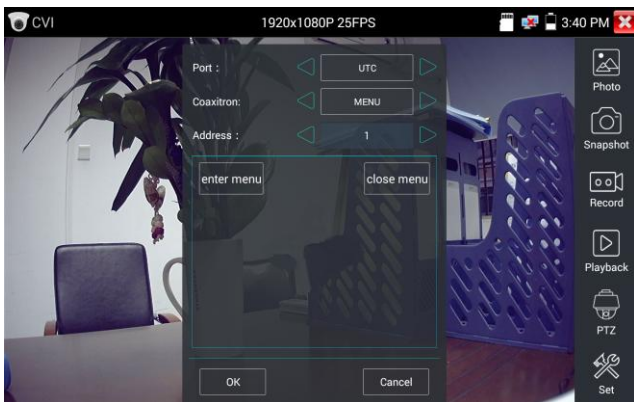


Operation instructions, please refer to “3.3.1 PTZ (1) PTZ control parameters setting”

### (2) Coaxial camera menu setting

Tap icon “UTC”, select “menu setting” to enter the dome camera menu.

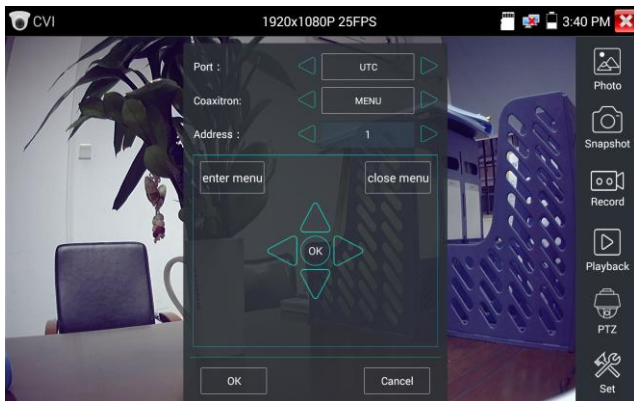




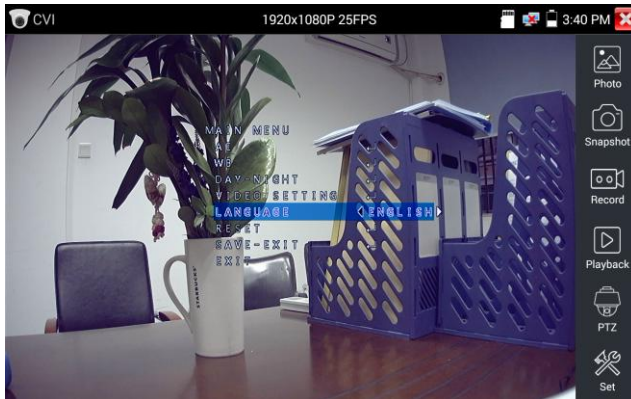
Input calling dome camera menu address code, after finishing the parameter settings, Move the cursor to




the icon ,click “enter” key to call the dome camera menu .

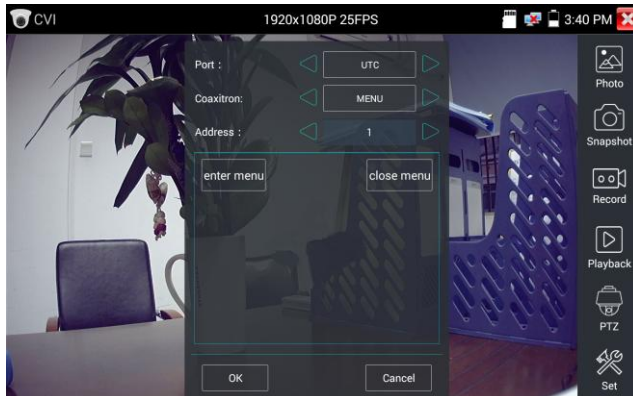


Press arrow keys     to set



(3) Snapshot, record, photo viewer and video play back, please refer to “3.3.1 PTZ (1) Video monitor test”

Tap “close menu” or press the key “” to close camera menu.



#### (4) Save setting


Click icon “Set” on the right toolbar to enter storage setting.

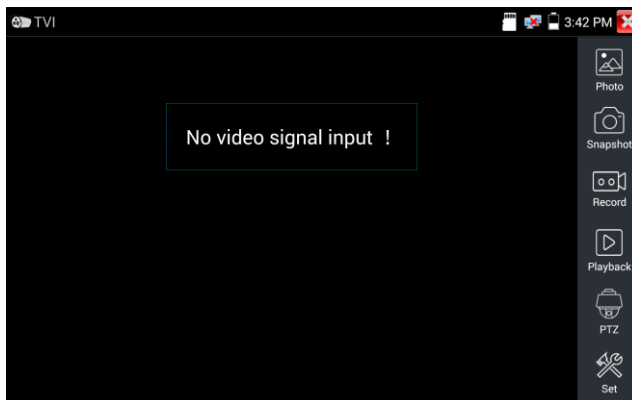
Support auto-storage and manual storage.

When select manual storage, user can name and store the files.



### 3.3.6 TVI camera test

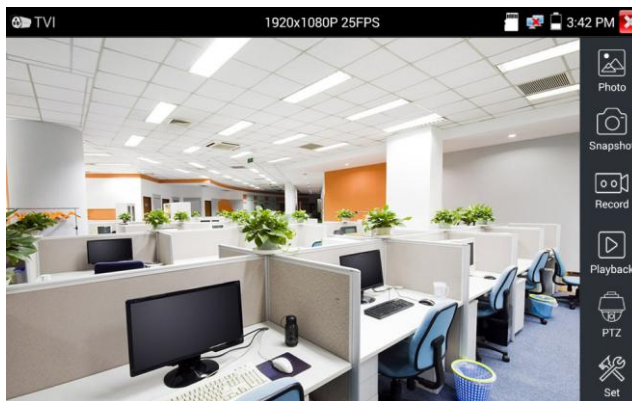
HD TVI camera, TVI dome camera test and PTZ control, Click icon  to enter



When HD TVI signal input, the tester will display the image resolution on the top bar. The tester supports resolution as follows:

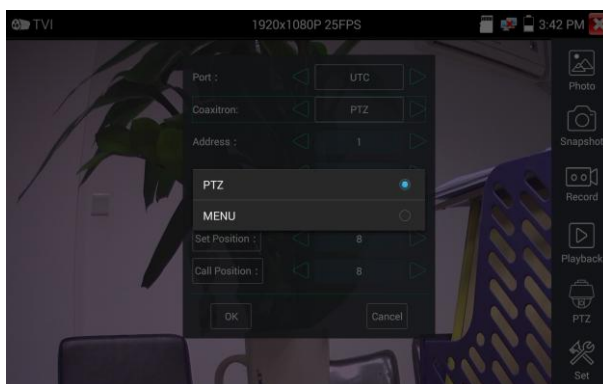
1280x720P 25FPS / 1280x720P30FPS / 1280x720P 50FPS / 1280x720P 60FPS


1920x1080P 25FPS / 1920x1080P 30FPS / 1920x1080P 50FPS / 1920x1080P 60FPS /2048x1536 18 FPS./2688 x 1520P 15FPS/ 2560x1440 15/25/30 FPS /2592 x 1944P 12.5/20FPS/ 3840 x 2160 12.5/15 FPS。

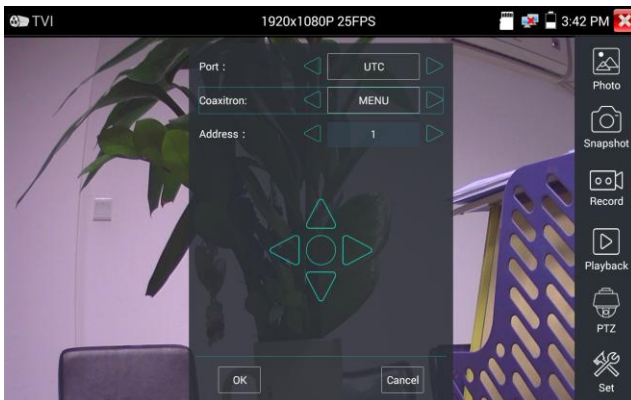


## Coaxial camera menu settings

Tap icon “UTC”, select “menu setting” to enter the dome camera menu.




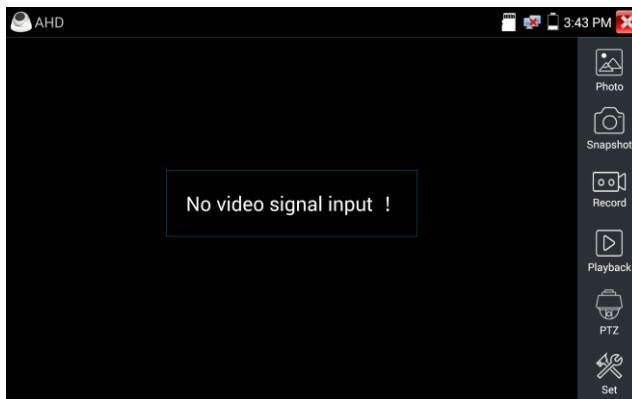
Enter the address code of the menu, after set the parameter, move the cursor to the icon  , press the "confirm" button to call out the main menu of dome camera



More operation instructions (such as PTZ control, coaxial camera menu setting ,snapshot, recording and playback etc), please refer to“3.3.5 CVI camera test”.

### 3.3.7 AHD camera test

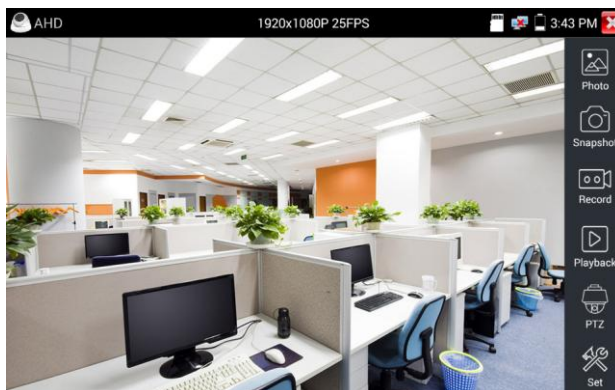
AHD camera, AHD dome camera test and PTZ control, Click icon  to enter



When AHD signal input, the tester will display the image resolution on the top bar. The tester supports resolution as follows:

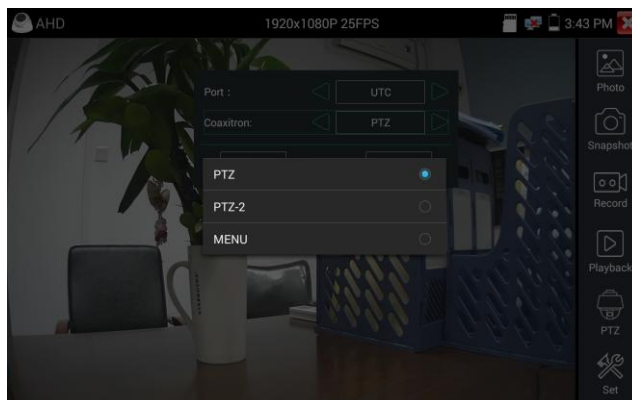
720p 25/30fps / 1080p 25/30fps/ 2048x1536P 18/25/30fps/ 2560x1440P 15/25/30fps/2592 x 1944P

12.5/20FPS, 3840x2160P 15FPS



(1) Coaxial PTZ control

UTC control : select “PTZ control or PTZ control-2”(AHD camera has two different order ,if select “PTZ” cannot control , pls go “PTZ-2” )




If to coaxial PTZ control the AHD camera, no parameters setting is needed.

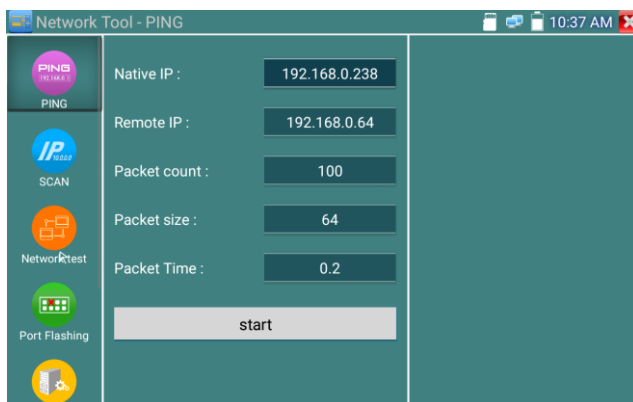
More operation instructions please refer to “3.3.5 CVI camera test”

### 3.3.8 Network tool

#### (1) PING Test

PING is the most conventional network debugging tool; it is used for testing if the connected IP camera or other network equipment’s Ethernet port is working normally and the IP address is correct


Connect a network cable to the LAN port and click the  icon to open the PING tool. You can set your LOCAL (native) IP address, Remote IP address (e.g. IP camera), Packet count, Packet Size, Packet time and Timeout. Press “Start” to start pinging. If the IP camera or network device is not configured properly or not plugged in, it will say “Destination host unreachable,” or have 100% packet loss. If the tester connects to the device, the send and receive packets will have a 0% packet loss.

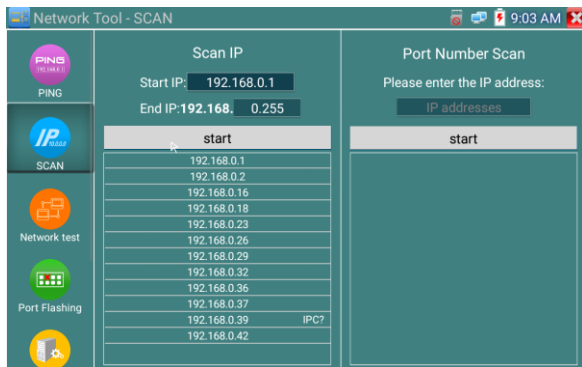


**Application:** PING testing is the most conventional network debugging tools. It is used for testing if the connected IP camera or other network equipment’s Ethernet port is working normally and the IP address is correct.

It’s normal that the first data packet will be lost when test start.

## (2) IP address scan


Connect the cable to the LAN port, click icon  to enter, Set your IP address search range by changing the Start and End IP addresses. Click the “Start” button to scan the IP address range. You can also input an IP address in the Port Number Scan to scan for open ports.

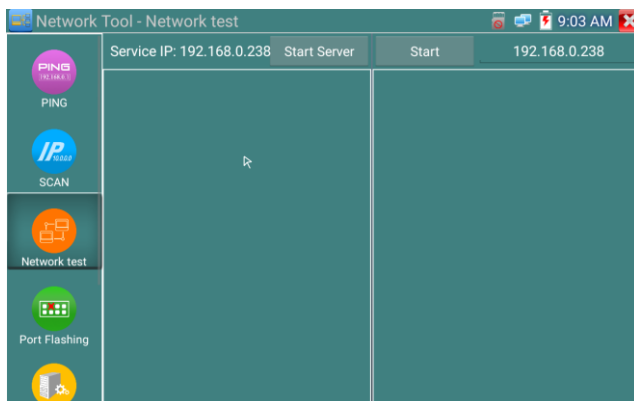


### (3) Network test (Ethernet bandwidth test)

Network test (Ethernet bandwidth test)

To use the Network tester, you will need two testers. One is used as a Server and the other as a Client.

Both devices must be on the same network segment in order to communicate. Click the  icon to open the Network Tester app.

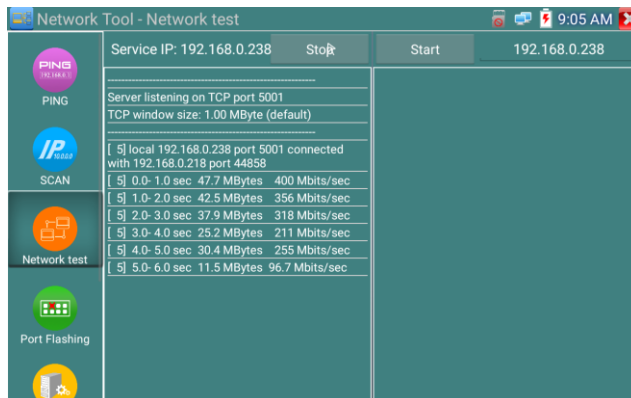


When test, need a tester or a computer installed Network Test Software as the Server, the other tester sends packet test. The two testers must be in the same network segment.

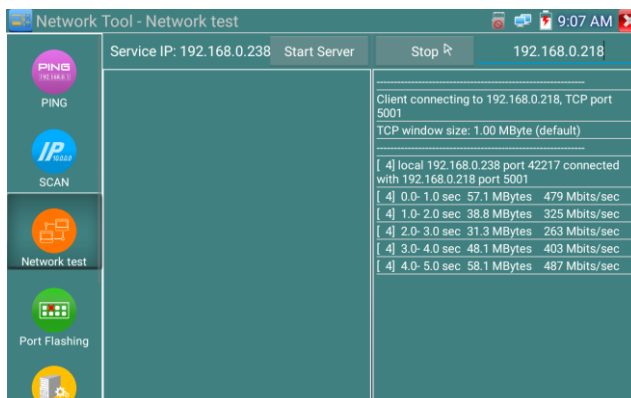
**a).Start the server:** Click “Start Server” button to use the tester as a Server. It will display its IP



address at the top of the screen.

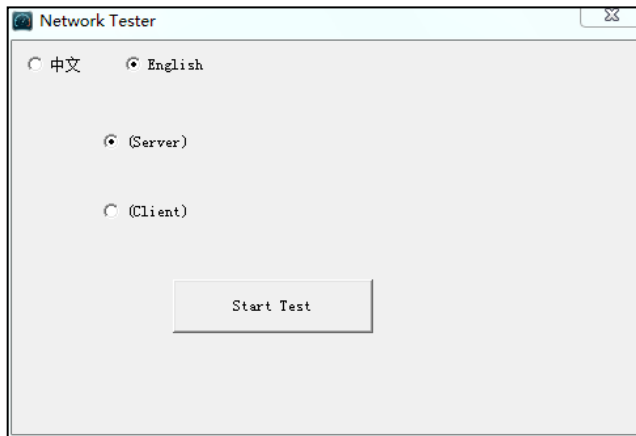


**b). Start send packet test:** Using the other tester, type in the Server's IP address at the top right corner of the screen. This app is used to send packets for network speed testing. Click the “Start” button to send the packets and start testing.

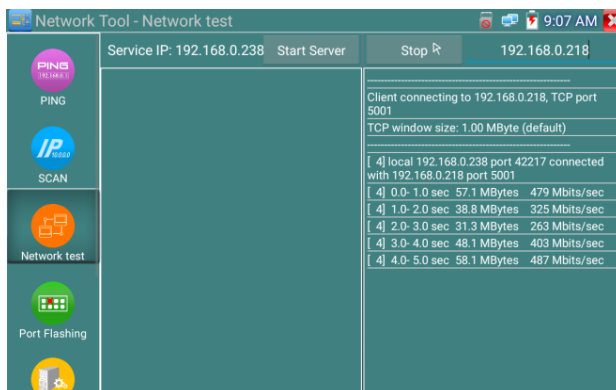


Network bandwidth testing can also be tested with a computer using compatible network bandwidth testing software. Install network bandwidth testing software on a computer, as a test Client or Server, to do the mutual testing with the tester. If use computer as the server, the computer IP address

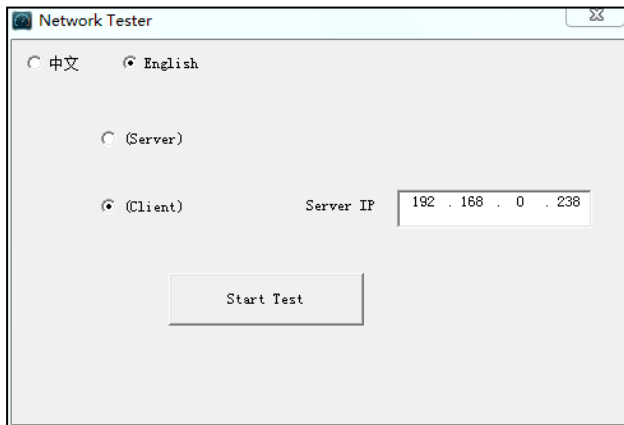
is :192.168.0.218



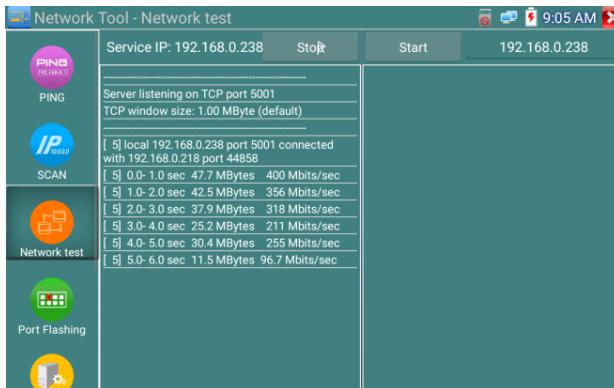
Tester as Client, tester's IP address is:192.168.0.238. The Server and the Client are at the same network segment, but with different IP address. Input Server's IP address 192.168.0.218 in the tester and click "Start" to test network bandwidth.




Or use tester as a Server, computer as test Client (select Client, input tester's IP address to test)

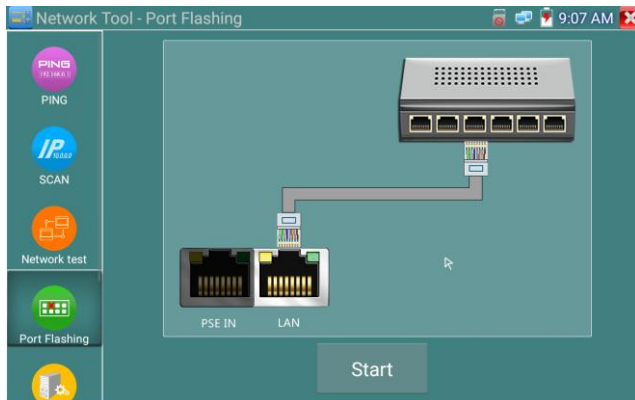


When use tester as Server,shows results:

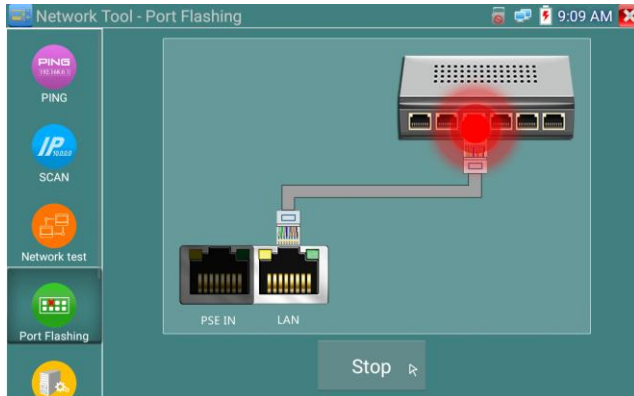


#### (4) Port Flashing

Connect a network cable to the meter's "LAN" port, click the icon  to open the Port Flashing app. Click "Start". The tester sends a unique signal to make the connected LAN port of the switch flash.



If the tester and PoE switch are connected well, the LAN port of POE switch flash at special frequency,  
If not, no any changes on the LAN port

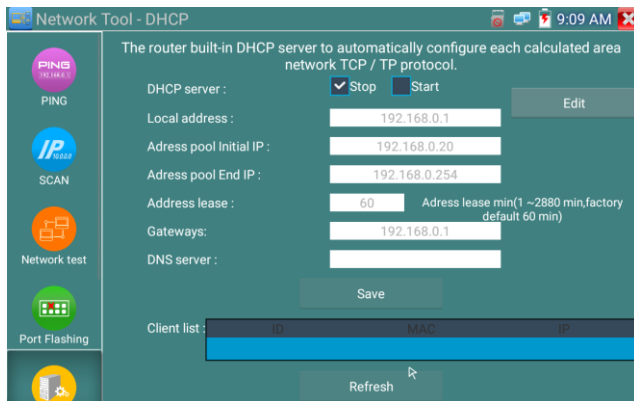


#### **Application:**

The tester will send special signals to make the connected LAN port flicker at special frequency, which will enable the installers to easily and quickly find the connected Ethernet cable. This function can prevent mistakenly insertion or disconnection non-corresponding cable to artificially interrupt network connection.

## (5) DHCP server

Click on the DHCP icon to open the DHCP server app. Select the “Start” check box at the top and make any desired changes to the network settings. Click “Save” to start assigning dynamic IP addresses for IP cameras and other networked devices. Click the “Refresh” button to check your Client list.



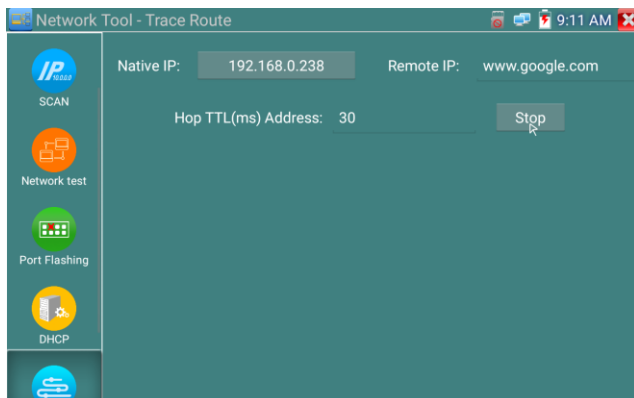
## (6) Trace route

It is used to determine path of the IP packet access target.

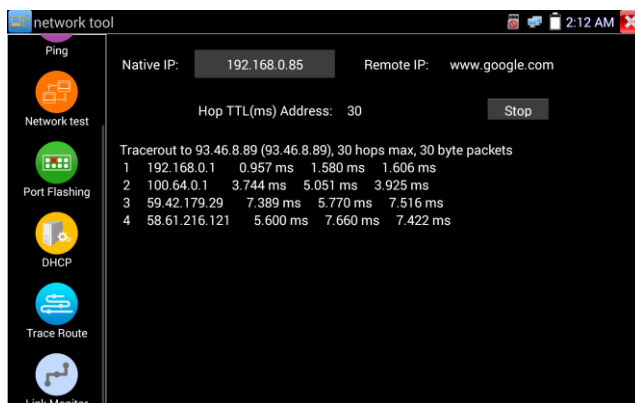
Note: Trace route testing results only for reference, for accurate test route tracking, Pls use professional Ethernet tester.

Click  to enter trace route


Input tracking IP address or domain name in the Remote Host IP. Set maximum hop count, normally default is 30



Click “start” to trace the goal address

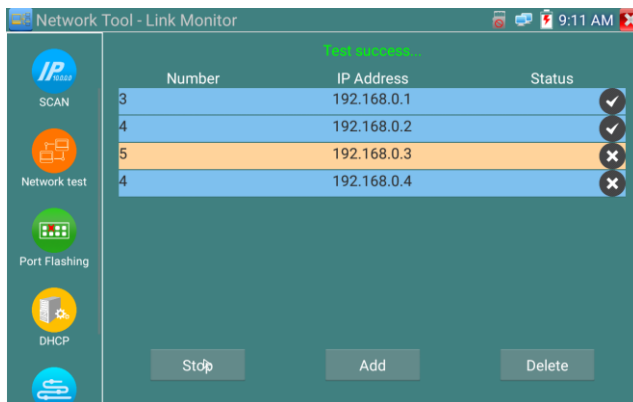


## (7) Link monitor

Click the  icon to open the Link Monitor app. This app is used to see if an IP address is occupied by other network devices. This will avoid new address conflicts

Click “Add” and enter the desired IP address. To test different network segments, click the “Settings” icon on the main menu and go to IP Settings and make the desired changes. Once the desired IP

addresses are added to the Link Monitor list, click “Start”. If the IP address status shows a check mark the IP address is occupied. If the IP address status shows an X the IP address is available. Click “Stop” to stop the testing

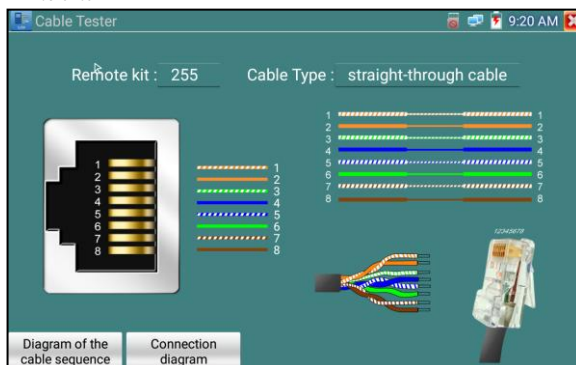


#### Application:

Add an IP camera or other network device to the current network group, the new IP address must not be occupied, otherwise it will cause IP conflicts and stop the equipment normal working. Link monitor can check if the new setting IP address is occupied.

### 3.3.9 Cable Test

Click icon  to enter



Test LAN cable or telephone cable.

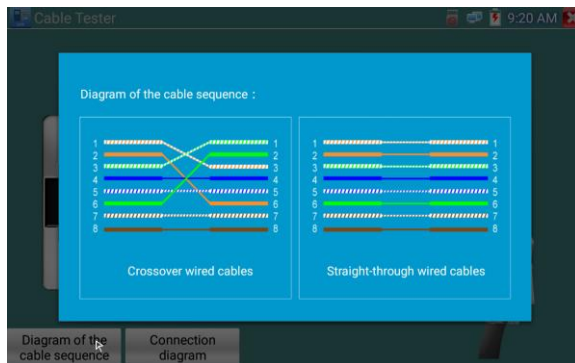
Connect LAN cable or telephone cable with the CCTV tester and cable tester. And then the connecting status, cable type and the sequence of wires as well as the serial number of the cable tester kit will be displayed.

The number of the cable tester is 255.


If need several different number other types cable testers, should pay the additional cost.

### Cable test

Tap "cable test sketch map" ,pop up Straight-through cable and crossover cable sketch, It is for line sequence reference ,when the crystal on the first pressure in the twisted-pair



### 3.3.10 Cable Tracer (\*Optional )

Connect test cable or BNC cable to the UTP port or the CABLE SCAN (VIDEO OUT) port on the bottom. Click icon  to enter, click the Number on the screen to adjust audio type.





Use the blue Combination cable identifier and network cable tester's copper pointer to touch all the cables in the bundle .

You are searching at the other end. The cable that gives off the loudest tone is the cable connected to the tester. Press the + or – buttons on your blue cable identifier to adjust the volume



**Note:** Install two AAA batteries in your blue Cable Identifier.



**Note:** While the cable tracer is receiving the audio signal from the tester, it may be induced into adjacent or crossing cables; however, the cable that makes the loudest noise is the one that's connected to the meter.

### Application

It's convenient for people to find out the other end of the cable from the messy cables in security maintenance and network engineering.

While searching BNC cable, connect one port of the alligator clips to the copper core or copper net of the BNC cable, the other one to connect the earth wire (barred windows).



**Note:** The battery of the cable tracer must according to corresponding positive pole + and negative pole -, otherwise will damage the tester.



**Note:** While the cable tracer tester is receiving the audio signal from the tester, it may be

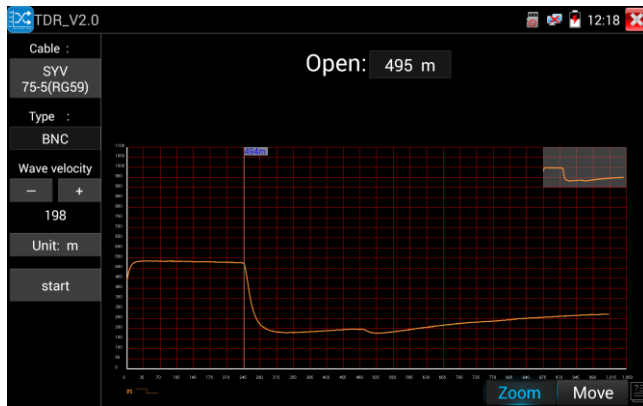
influenced by other signals and make some noise.

### 3.3.11 TDR cable test (\*Optional)



**Note:** The testing cable can't be connected to any equipment, otherwise it will damage the tester.

Connect Alligator clip cable to the TDR port, and the cable must connect well before testing, **otherwise** it will influence the accuracy. Built-in BNC cable, network cable, RVV control cable, Telephone line and TVVB cable etc can test. 11 groups user-defined cable can be set.



#### (1) Curved trajectory

##### 1) Curve result analysis

Inflection point: The position of break point or short-circuit of the cable, is where curve suddenly rises or falls after the smooth curve.

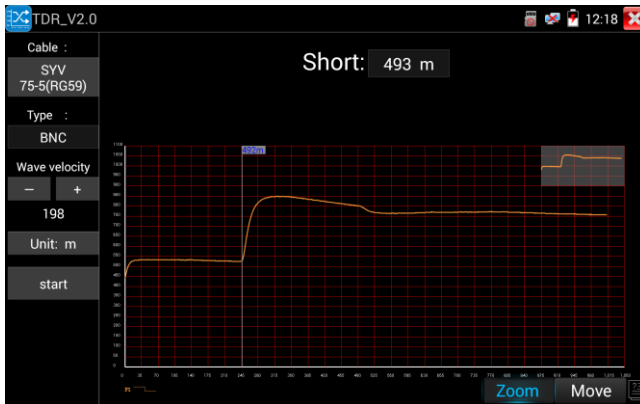
Short circuit: The curve shows an upward trend after the inflection point

Open (break point): The curve shows a downward trend after the inflection point

##### 2) Curve operation

Zoom: Zoom the curve. Click icon "zoom", tap the curves by two fingers or use virtual keyboard (tap the icon of the screen left edge, to call virtual keyboard)

Move: Move curve, click icon "move", and drag the curve to move.



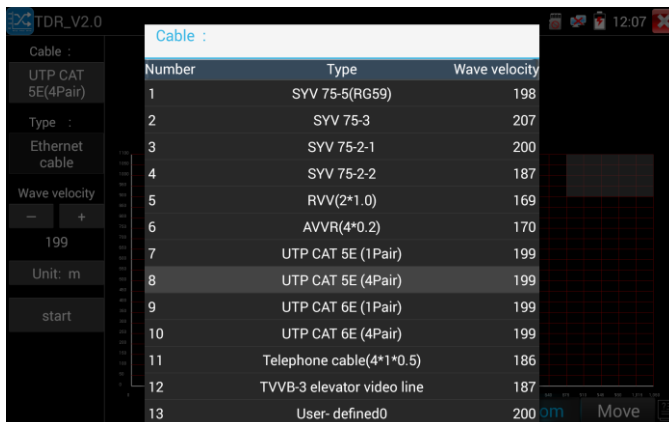
Distance bar: Display the current length, and use the virtual keyboard to move distance bar.

Curve thumbnail: Double-click the thumbnail, to restore the scaled curve

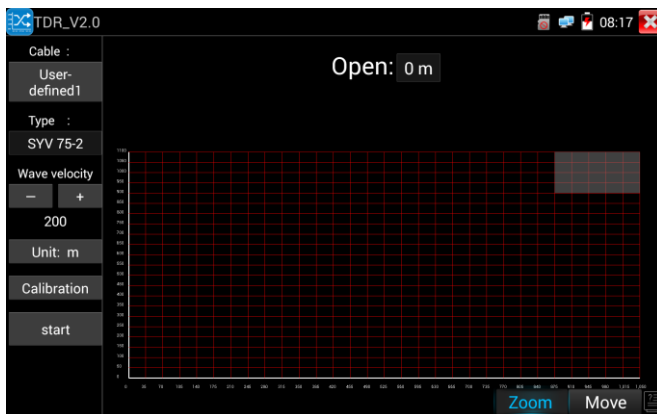
## (2) Calibration

Due to differences in production processes and materials, the cable impedance of different manufacturers may be different, which will lead to large deviations in the test results. The Calibration function can be used at this time.

Click "Cable" "Type" to select cable and start testing. One tap on "Start", do one testing. If select built in cable type for testing, click "+" and "-" to adjust cable's wave speed.



User-defined calibration: Choose the cable 100 meters to 200 meters (more than 50 meters), click "Cable", "Type" to select user-defined 1 for calibration, 11 groups user-defined can be set.



1. Select user-defined and click "Calibration" to enter test, click "user-defined 1" can define cable name, such as: AiPu BNC-5
2. Click "Cable", "Type" to select cable, and corresponding type, for example, if testing BNC cable, select "BNC", if testing communication cable 75-2, select SYV 75-2.
3. Click "+" or "-" to adjust wave speed, while display length is the same with the actual Length, click "Save" to save calibration data. It can be used for the same cable testing next time.



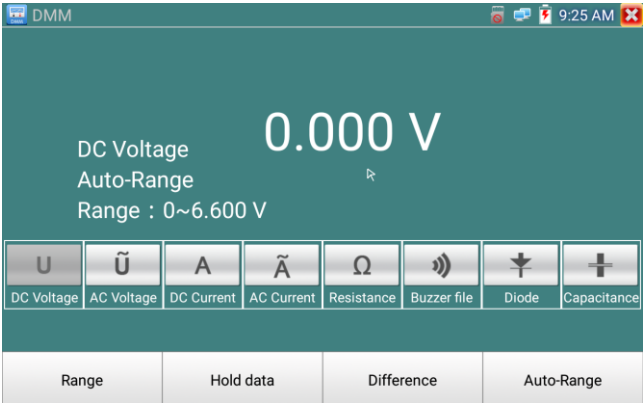
**Application:** TDR test is the use of pulse reflection method, to transmit pulse signal for tested cable,

when cable is open circuit or short-circuit, reflected pulse is generated, the tester receives and deals with the reflected wave, measurement results displayed on the screen. TDR can test cable open circuit and short circuit, help engineer quickly find the cable's problem location. It is more convenient and efficient to repair the faulty cable.

**⚠️Note:** The TDR reflect signal could be affected by the cable quality cable's not well connected etc to cause the different TDR measurement. The TDR measurement is for reference only.

### 3.3.12 Digital Multi-meter （\*Optional）

Click icon  to enter



#### 1) SYMBOLS:

- U:DC Voltage Measuring

Ω:Resistance Measuring

$\tilde{U}$ :AC Voltage Measuring

»):Continuity Testing
- A:DC Current Measuring

⚡:Diode Testing

$\tilde{A}$ :AC Current Measuring

⚡:Capacitance Measuring

AC/DC	Voltage and current measurement state display
-------	---

Auto- range	The Multimeter auto adjust the range by input signal or tested components
Data hold	Hold data
Relative measurement	Display the relative measurement value Press the key to change display state
10A socket	In 10A current measurement state ,indicate use 10A socket
Over range	The current measurement value over the range, if in the Auto range state, to switch Auto.

## 2) OPERATING INSTRUCTION

### A. DC Voltage Measuring

#### WARNING!

You can't input the voltage which more than 660V DC, it's possible to show higher voltage, but it's may destroy the inner circuit.

Pay attention not to get an electric shock when measuring high voltage.

a. Connect the black test lead to the "COM " jack and the red test lead to the "V/ $\Omega$ " jack.

b.Select U, enter the DC voltage measurement.

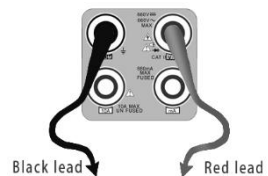
c. the tester default Auto range status ,by click "DC auto range" , press the key can select manual range and restore auto range .

Manual range: 0.000V  $\rightarrow$  6.600V range

00.00V  $\rightarrow$  66.00V range

000.0V  $\rightarrow$  660.0V range

000.0mV  $\rightarrow$  660.0mV rang



### B. AC Voltage Measuring

#### WARNING!

You can't input the voltage which more than 660V AC, it's possible to show higher voltage, but it's may destroy the inner circuit.

Pay attention not to get an electric shock when measuring high voltage.

a. Connect the black test lead to the “COM” jack and the red test lead to the “V/ $\Omega$ ” jack.

b. select U ~ , enter the AC voltage measurement.

C.the tester default Auto range status, by click “AC auto range”

d. Manual range can be select , press the key “NEAR” to restore Auto range

e. Manual range: 0.000V  $\rightarrow$  6.600V range

00.00V  $\rightarrow$  66.00V range

000.0V  $\rightarrow$  660.0V range

000.0mV  $\rightarrow$  660.0mV range

### C. DC Current Measuring (only manual range )

#### WARNING!

Shut down the power of the tested circuit, and then connect the meter with the circuit for measurement.

a. Connect the black test lead to the “COM ” jack and the red test lead to the “mA” jack for a maximum of 660mA current. For a maximum of 10A, move the red lead to the 10A jack.

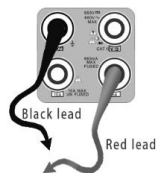
b. select A, enter the DC current measurement,the screen display“DC current ”, can select manual range;

c. Manual range: 0.000mA  $\rightarrow$  6.6mA range

00.00mA  $\rightarrow$  66.00mA range

000.0mA  $\rightarrow$  660.0mA range

00.00A  $\rightarrow$  10.00A range ( use 10A socket )



d. Select the range to enter current measurement



#### NOTE:

◆ When only the figure “OL” is displayed, it indicates over range situation and the higher range has to

be selected.

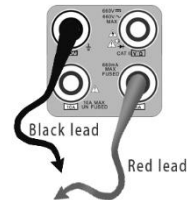
- ◆ When the value scale to be measured is unknown beforehand, set the range selector at the highest position.
- ◆ The maximum current of mA socket is 660mA, over-current will destroy the fuse, and will damage the meter.
- ◆ The maximum current of 10A socket is 10A, over-current will destroy the meter, and will damage the operator.

#### D. AC Current Measuring (Only Manual range)

##### **WARNING!**

Shut down the power of the tested circuit, and then connect the meter with the circuit for measurement.

- a. Connect the black test lead to the “COM” jack and the red test lead to the “mA” jack for a maximum of 660mA current. For a maximum of 10A, move the red lead to the 10A jack.



- b. select  $\tilde{A}$ , enter the AC current measurement, manually select the range

- c. Manual range: 0.000mA → 6.600mA range  
00.00mA → 66.00mA range  
000.0mA → 660.0mA range  
00.00A → 10.00A range (use 10A socket)



Note:

- ◆ When only the figure “OL” is displayed, it indicates over range situation and the higher range has to be selected.



- ◆ When the value scale to be measured is unknown beforehand, set the range selector at the highest position.
- ◆ The maximum current of mA socket is 660mA; over-current will destroy the fuse, and will damage the meter.
- ◆ The maximum current of 10A socket is 10A, over-current will destroy the meter, and will damage the operator.
- ◆ In“ AC ” mode, only can input “AC ”, if not, will damage the meter.

### E. Resistance Measuring

#### WARNING!

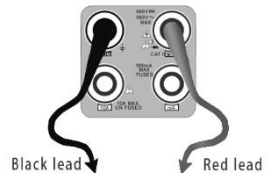
When measuring in-circuit resistance, be sure the circuit under test has all power removed and that all capacitors have discharged fully.

a. Connect the black test lead to the “COM ” jack and the red test lead to the “V/ $\Omega$ ” jack.

b. to select  $\Omega$ , enter the  $\Omega$  measurement

the tester default Auto range status, Press the key manually select range ,Press “NEAR” to restore “Auto range”

Manual range:(Connect the red lead to black leads, will display the measure range)



000.0 $\Omega$  → 660 $\Omega$  range  
 0.000 K $\Omega$  → 6.600K $\Omega$  range  
 00.00 K $\Omega$  → 66.00K $\Omega$  range  
 000.0 K $\Omega$  → 660.0K $\Omega$  range  
 0.000 M $\Omega$  → 6.600M $\Omega$  range  
 00.00 M $\Omega$  → 66.00M $\Omega$  range

### F. Continuity Testing

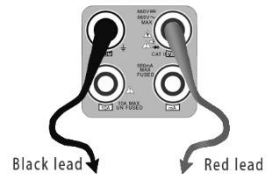
### WARNING!

When testing the circuit continuity, be sure that the power of the circuit has been shut down and all capacitors have been discharged fully.

a. Connect the black test lead to the “COM” jack and the red test lead to the “V/ $\Omega$ ” jack.

b. to select  $\gg$  , enter the continuity test, Connect test leads across two point of the circuit under testing.

c. If continuity exists (i.e., resistance less than about 50 $\Omega$ ), built-in buzzer will sound.



### G. Diode Testing

#### WARNING!

The capacitance of a capacitor should be tested separately, should not test in the installation of circuit.

a. Connect the black test lead to the “COM” jack and the red test lead to the

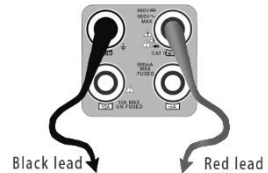
the “V/ $\Omega$ ” jack. (the red lead anode “+” )

b. to select  $\nabla$  , enter the diode testing.

c. Connect test red lead across to the anode, the black lead to the cathode of the diode under testing.

d. Connect test red lead across to the cathode, the black lead to the anode of the diode under testing.

e. Tested diode, forward voltage low 30mv, there is sound indication ,then can finish the testing quickly without view the screen.



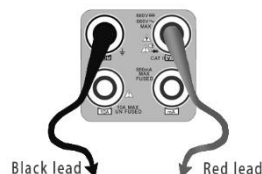
### H. Capacitance Measuring

#### WARNING!

To avoid electric shock, be sure the capacitors have been discharged fully before measuring the capacitance of a capacitor.

- a. Connect the black test lead to the“ COM ” jack and the red test lead to the “V/ $\Omega$  ” jack.
- b. Select “ $\frac{\square}{\square}$ ” to enter, enter the capacitance measurement.
- c. The tester default auto range status, and manual range by press upward and downward key, Auto rang by press the key “NEAR”

Manual range: 0.000nF	→	6.600nF	range
00.00nF	→	66.00nF	range
000.0nF	→	660.0nF	range
0.000uF	→	6.600μF	range
00.00uF	→	66.00μF	range
000.0uF	→	660.0μF	range
0.000mF	→	6.600mF	range
00.00mF	→	66.00mF	range



- d. Before connect test leads across two sides of the capacitor under measurement, be sure that the capacitor has been discharged fully.

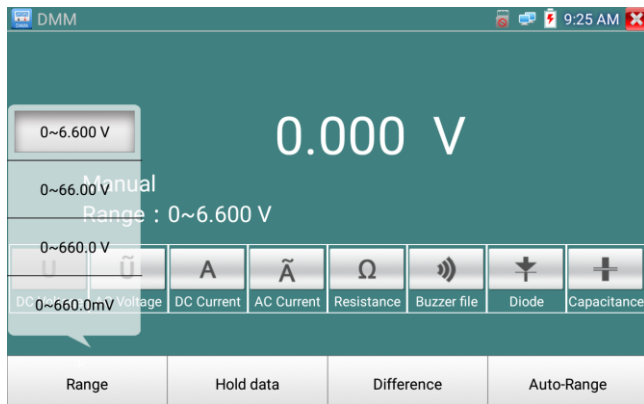


Note:

- a. The capacitance of a capacitor should be tested separately, should not test in the installation of circuit.
- b. To avoid electric shock, be sure the capacitors have been discharged fully before measuring the capacitance of a capacitor.
- c. While testing the capacitance of a capacitor to 660uF, the Max time will be 6.6 seconds, if the capacitor is leaked or damaged, the data can't be read. The tester will be normal after disconnecting the capacitor.

#### Manual range and Auto range

When testing, click “Range select ” to change the value, click “Auto range “to enter Auto measurement



### Data hold

Select “Hold data” to enter, the data be hold, the value is green. Press it again to quit.

### Relative value measurement

Select “Relative “to enter, the tester Auto-save the data, the displayed new measurement and relative value is red color. Press it again to quit

The hold function and the relative value be combined use, the display value is yellow

### The meter protection

#### ➤ Voltage protection

You can't input the voltage which more than 660V AC, it's possible to show higher voltage, but it's may destroy the inner circuit.

#### ➤ Resistance, Continuity, Diode, PTC component Protection

Wrong input voltage, will Auto enter protection state , It only suitable for short and limit time work. If input voltage over 600V, will damage the meter.

#### ➤ mA current fuse range: 250V 1A


if the current over the rated range ,fuse will melt to protect the meter .Pls use the same model when change the fuse, Pls opens the battery cover to change.



**Note:** 10A socket without fuse protection, if over the current range

Wrong using the 10A socket to measure the voltage, will damage the meter.

### 3.3.13 Optical power meter ( \*Optional )

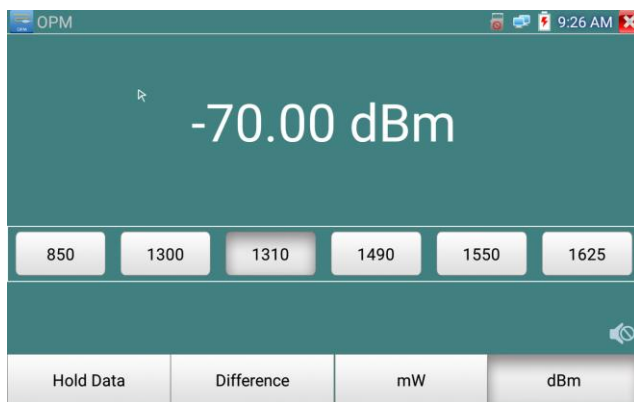
Click icon  to enter ,with five wavelength 1625nm,1550nm , 1490nm , 1310nm ,1300nm , 850nm ,linear or nonlinear optical power display, both for optical power testing and Fiber link loss relative measurement . It is necessary tool for installation and maintenance optical fiber communication, cable television and CCTV security system.



**Note:** Please keep the fiber connector and the dust cap be clean, and clean the detector with the special alcohol.

#### Data hold

While testing, click “Hold” to data hold, the data will not change. It’s convenient to read. Press again to quit.



#### Relative power value (optical link loss) measurement

While testing, set the wavelength for measurement. Click “relative”(difference) to test, the tester Auto save current fiber power value as the base reference value. Input another optical fiber to be measured, the displayed new measurement and relative value is red color. Press it again to quit.

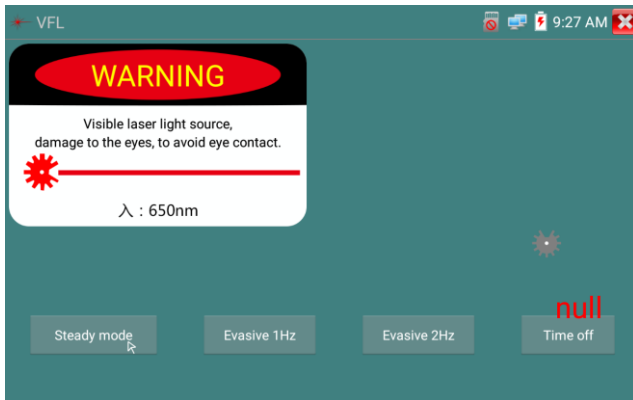


Data hold and Relative measuring use together, the data is yellow while the function is effect.

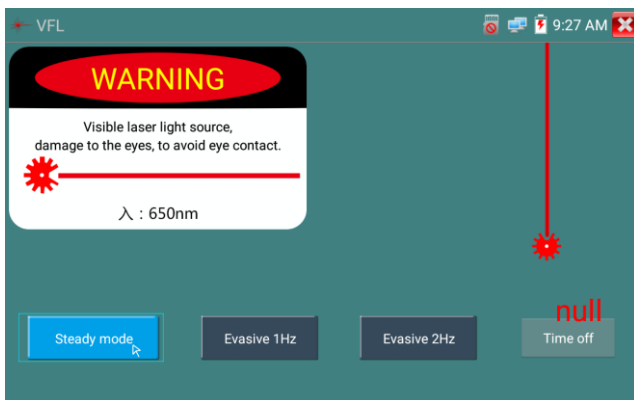


### 3.3.14 Visual Fault Locator ( \*Optional )

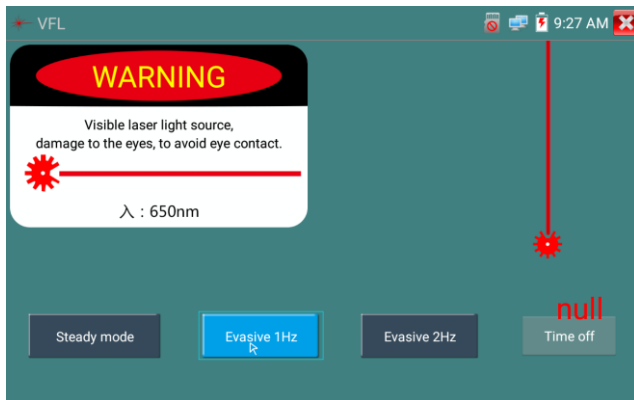
Click icon  to enter



VFL four status can select——“Steady mode”, “Evasive 1Hz”,“Evasive 2Hz”and“Time off”. Click button “Steady mode” to enter steady status, click button “Evasive 1Hz” and “Evasive 2Hz, to enter pulse mode, click button “Time off”, VFL is turned off. Timed turn off can select (5 mins, 10 mins, 30 mins, 60 mins and 120 mins).




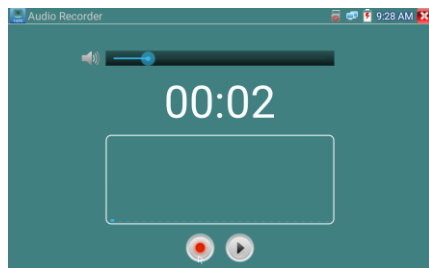
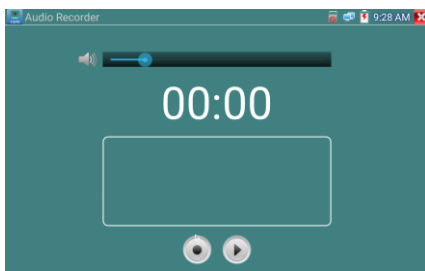
Click” Steady mode”, red laser source emits steady, click again to quit.



Click icons “Evasive 1Hz” or “Evasive 2Hz” to enter pulse mode, the red laser source is emitted by a certain frequency, press it again to quit


### 3.3.15 Audio Record

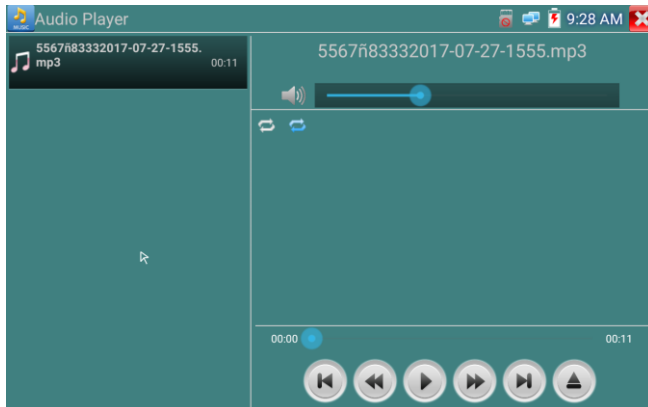
Connect an audio device to the CCTV tester's audio input port. Click the  icon to enter the Audio Recorder app. Click the red button to stop, and the unit will prompt you to save the recording





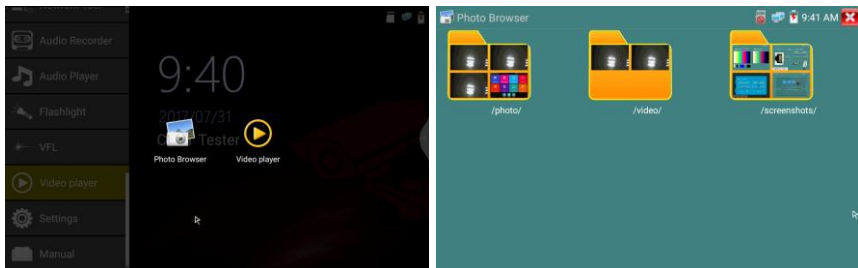
### 3.3.16 Audio player

Click the icon  to enter . The audio player only supports MP3 format Audio files.

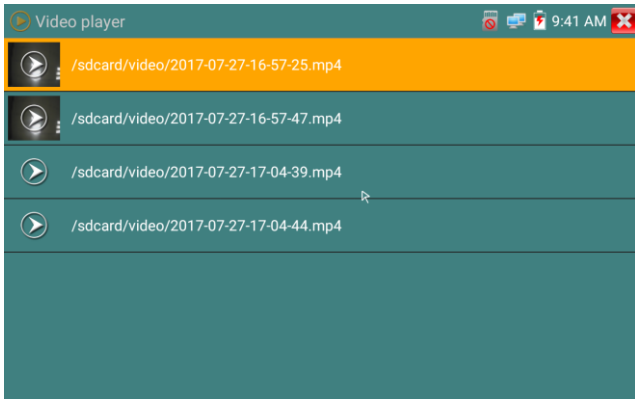


### 3.3.17 Media Player

Click the icon  to enter



The Media player can browse video and image files. It supports the video formats of MP4, H.264, MPEG4, and MKV. The cctv tester recorded files can play directly via the Media player. The Media player will automatically display the video files from the SD card. Press the Menu key to select the file to be played, which is played on the screen. Press the Back key to quit.

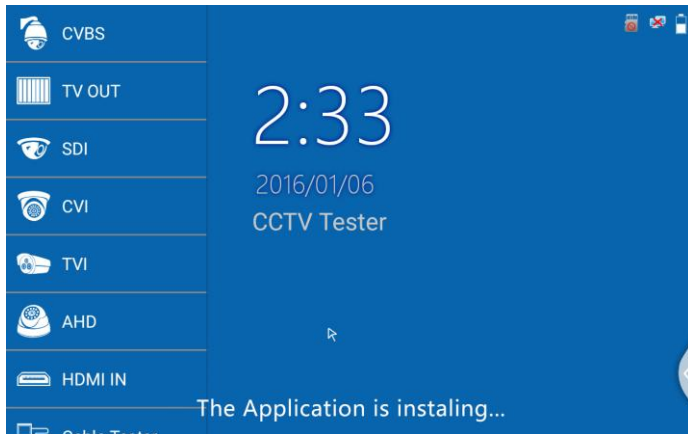


### 3.3.18 Update


Copy the update files to SD card "update" catalog ,if there no this catalog , please create one.

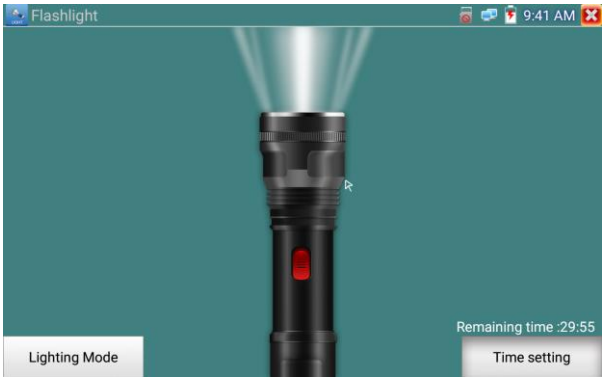
Make sure there are only have update apk files in SD card, long press "WIDE- " key until the screen prompts "The application is being installed".

The prompts are missing to indicate that the update is complete.



### 3.3.19 LED Flashlight

It is convenient for the installation or maintenance in the evening or in the dark. Click icon  to enter



While in the flashlight app, click the red button to turn on the LED lamp. Press it again to turn it off. Press the Back button to exit the application, the lamp will stay on. Click the Time Setting button to set a timer that will shut off the lamp.

### 3.3.20 System Setting

Click icon  to enter



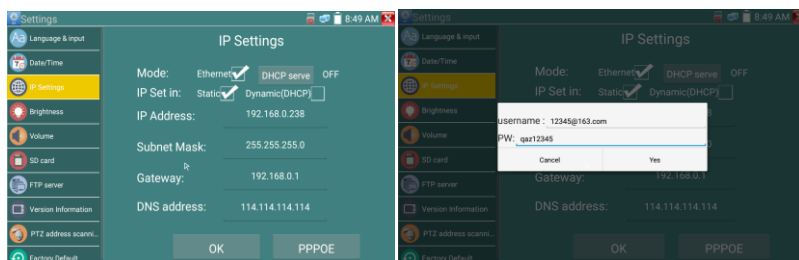
**Language:** Select your desired language: English, Chinese, Korean, Russian, Italian , Polish ,Spanish, French or Japanese.

**Typewriting:** You can select typewriting or install other typewriting:



**Date/Time:** Set the Date/time of the cctv tester

**IP setting:** Manually set the IP address, Subnet Mask, Default Gateway and DNS address or select “Dynamic allocation” to use DHCP. PPPOE test.



**Brightness:** Set the desired brightness of the cctv tester and adjust the sleep time settings.

**Volume:** Set volume level

**SD Card:** Displays SD Card Capacity. You can also format the SD card or unmount it before removing it.



will be removed.

### 3.4 Audio test

You can test the audio input from audio pickup devices by connecting the audio pickup device to the cctv tester with the supplied audio cable.



### 3.5 HDMI output

The built in HDMI output port can output live video from an analog camera, recorded files, media files and images to HDTV monitors. Connect an HDMI cable from the cctv tester to an HDTV monitor at any time. It supports up to 1080P resolution.

### 3.7 DC12V 2A power output

When the cctv tester is turned on, the 12VDC power output ON by default. The smaller end of the supplied converter cable connects to the tester's DC12V/2A OUTPUT and the other end connects to the camera's power input.



## Application

Power output function is mainly used in the camera field demonstration and testing, meanwhile, for some camera installation sites, If there is no power outlet for the adapter to power the camera, the tester can offer temporary power for it. But we do not suggest tester supply power for a long time.



### Notice:

- a. Don't input any power into the "DC12/2A OUTPUT" port of the tester.
- b. Man-made damage is not within our company's warranty.
- c. The cctv tester 's power output capacity is 2A. If the camera uses more than 2A, the tester will automatically enter a protection mode.
- d. The cctv tester power output is close to 2A, if the camera's power is over 2V, the tester will auto enter protection mode. Disconnect all the connections of the tester and then connect the tester with power adaptor to resume the tester.
- e. Make sure the tester has a sufficient charge otherwise the tester will not able to provide enough output power.

## 3.8 USB 5V 2A power output

When the tester is turned on, the DC 12V and DC 5V power output functions are automatically turned on. If the cctv tester is turned off, the DC 5VUSB can still be used to power an external USB device.

**NOTE: The USB port is for power only and not data.**



## 4. Specifications

## 4.1 General Specifications

Model	CCTV Tester 【*】 models Optional
Display	New 7 inch IPS screen cctv tester ,1920*1200 resolution
Network port	10/100M/1000M auto adjust, RJ45
SDI video signal test * (Optional)	1 channel HD-SDI/EX-SDI input (BNC interface), resolution support: 720P 60fps, 1080P 60fps, 1080i 60fps, EX-SDI: 2560 x1440P /25/30fps, 3840 x 2160P 20/30 fps, UTC control and call OSD menu
CVI video signal test	1 channel CVI input (BNC interface, resolution support 720P 25/30/50/60fps,1080P 25/30fps, 2560x1440P 25/30fps, 2592x1944 20fps, 2960x1920 20fps, 3840 x 2160 12.5/15 fps. UTC control and call OSD menu
TVI video signal test	1 channel TVI input (BNC interfce) ,resolution support 720P 25/30/50/60fps, 1080P 25/30fps, 2048x1536P 18/25/30fps, 2688x1520P 15fps, 2560x1440P 15/25/30fps, 2560x1944P 12.5/20fps, 3840 x 2160 12.5/15 fps, UTC control and call OSD menu
AHD video signal test	1 channel AHD input (BNC interface) ,resolution support 720P 25/30fps, 1080P 25/30fps, 2048x1536P 18/25/30fps, 2560x1440P 15/25/30fps, 2560x1944P 12.5/ 20fps, 3840 x 2160P 15 fps, UTC control and call OSD menu
Analog video test	1 channel BNC Input & 1 channel BNC Output , NTSC/PAL (Auto adapt)
Video level meter*	PEAK video signal level, SYNC signal level, COLOR BURST chroma level measurement for cvbs camera.
Zoom Image	Supports HD analog camera image zooming & movement
Snapshot, Video record and playback	Capture current images and record live video as JPG file. Media player will view photos and playback video
HDMI IN	HDMI IN, Support 720×480p /720×576p /1280×720p /1920×1080p /1024×768p/1280×1024p /1280×900p /1440×900p。



<b>HDMI output</b>	1 channel HDMI output, supports up to 1080p
<b>12V/3A power output</b>	Output DC12V/3A power to camera
<b>USB 5V power output</b>	5V 2A power output only ,NO data
<b>Audio test</b>	1 channel audio signal input and 1 channel audio signal output to connect headphones
<b>PTZ control</b>	SupportRS485 control, Baud 600-115200bps, Compatible with more than 30 protocols such as PELCO-D/P, Samsung, Panasonic, Lilin, Yaan, etc
<b>Color bar generator</b>	Output one channel PAL/NTSC color bar video signal for testing monitor or video cable.(red, green ,blue, white and black color )
<b>UTP Cable tester</b>	Test UTP cable connection status and display on the screen. Read the number on the screen
<b>Network test</b>	IP address scan, link scan, and Ping test. Quickly search the for IP camera's IP address on your network
<b>Cable tracer* (Optional)</b>	Find a connected cable from a bundle of cables using audio tones
<b>Digital Multi-meter *(Optional)</b>	AC/DC Voltage, AC/DC current, Resistance, Capacitance, Data hold, Relative measurement, Continuity testing . Testing speed: 3 times/ seconds, Data range -6600~+6600.
<b>Optical power meter *(Optional)</b>	Calibrated Wavelength(nm) :850/1300/1310/1490/1550/1625nm Power range(dBm) :-70~+10dBm
<b>Visual fault locator *(Optional)</b>	Test fiber's bending and breakage ( SM and MM fiber)
<b>TDR cable test *(Optional)</b>	Cable's open circuit (Breakpoint) and short circuit measurement(BNC cable, telephone cable)
<b>POWER</b>	
<b>External power supply</b>	DC 12V 2A
<b>Battery</b>	Built-in 7.4V Lithium polymer battery ,5000mAh

<b>Rechargeable</b>	Fast charging, after charging 2.5 hours, normal working time 10hours
<b>Parameter</b>	
<b>Operation setting</b>	IPS screen, OSD menu, select your desired language: English, Chinese, Korean, Russian, Italian or Polish, etc
<b>Auto off</b>	1-30 (mins)
<b>General</b>	
<b>Working Temperature</b>	-10°C---+50°C
<b>Working Humidity</b>	30%-90%
<b>Dimension/Weight</b>	255mm x 160mm x 46mm / 0.95Kg

## 4.2 Multi-meter specifications

Counts:-6600~+6600

Conversion rate: 3times/s

Current modes for clamp meter with ZERO function

Isolation: the Multi-meter connector must be isolated with the other connector.

### DC voltage

Range	Accuracy	Resolution
660mV (Manual range)	$\pm (0.3\%+4)$	0.1mV
6.600V		1mV
66.00V		10mV
660.0V		100mV

### AC voltage

Range	Accuracy	Resolution
660.0mV (Manual range)	$\pm (1.5\%+6)$	0.1mV

6.600V	$\pm (0.8\%+6)$	1mV
66.00V		10mV
660.0V		100mV

#### DC current

Range	Accuracy	Resolution
6.600mA	$\pm (0.5\%+3)$	1uA
66.00mA		10uA
660.0mA		100uA
10.00A	$\pm (1\%+5)$	10mA

#### AC current

Range	Accuracy	Resolution
6.600mA	$\pm (0.5\%+3)$	1uA
66.00mA		10uA
660.0mA		100uA
10.00A	$\pm (1\%+5)$	10mA

#### Resistance

Range	Accuracy	Resolution
660.0 $\Omega$	$\pm (0.8\%+5)$	0.1 $\Omega$
6.600K $\Omega$	$\pm (0.8\%+2)$	1 $\Omega$
66.00K $\Omega$		10 $\Omega$
660.0K $\Omega$		100 $\Omega$
6.600M $\Omega$		1K $\Omega$
66M $\Omega$	$\pm (1.2\%+5)$	10K $\Omega$

») Continuity

Range	Resolution	Function
660.0Ω	0.1Ω	The measurement value less 30Ω±3Ω,the tester will sound

Diode

Range	Resolution	Function
2.0V	1mV	Schottky diode:0.15~0.25V rectifier diode:0.6~1.0V triode PN junction:0.5~0.8V

Capacitance

Range	Accuracy	Resolution
6.600nF	± (0.5%+20)	1pF
66.00nF	± (3.5%+8)	10pF
660.0nF		100pF
6.600μF		1nF
66.00μF		10nF
660.0μF	± (5%+8)	100nF
6.600mF		1μF
66.00mF		10μF

### 4.3 Optical power meter specifications

Measure Range(dBm)	-70~+10dBm
Wavelength(nm)	850nm,1300nm,1310nm,1490nm,1550nm,1625nm

<b>Detector</b>	InGaAs
<b>Uncertainly</b>	$\leq \pm 3\% \text{dB} (-10\text{dBm}, 22^\circ\text{C})$ $\leq \pm 5\% \text{dB} (\text{full range}, 22^\circ\text{C})$
<b>Display Resolution</b>	Linear: 0.1% ; Nonlinear: 0.01dBm
<b>Operating Temperature(<math>^\circ\text{C}</math>)</b>	-10 $\sim$ +50
<b>Storage Temperature (<math>^\circ\text{C}</math>)</b>	-20 $\sim$ +70
<b>Connector type</b>	FC/PC

#### 4.4 Visual fault locator specifications

<b>Laser type</b>	LD
<b>Wavelength Calibration</b>	650nm
<b>Output power</b>	5mW (Optional 10mW, 20mW)
<b>Modulation mode</b>	CW/1Hz/2Hz
<b>Measurement Range</b>	5KM (Optional 10-20KM)
<b>Connector</b>	FC/PC exchangeable
<b>Working Temperature</b>	-10 $^\circ\text{C} \sim +50^\circ\text{C}$
<b>Operating Temperature</b>	-20 $^\circ\text{C} \sim +70^\circ\text{C}$

The data above is only for reference and any change of them will not be informed in advance. For more detailed technical inquiries, please feel free to call the Technical Department of our company.