



INSTRUCTION MANUAL

ST-F35TESTF **CCTV Test Meter**



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SAFETY INFORMATION



- ✓ The ST-F35TESTF is intended for use in compliance with the local regulations for electrical equipment. The user is not to use the ST-F35TESTF in environments or applications for which it is not intended.
- ✓ To prevent damage or failure the ST-F35TESTF must not be exposed to water or moisture.
- ✓ The ST-F35TESTF is not waterproof and must not be submerged in water or other liquids.
- ✓ Excessive vibration, knocking or dropping of the unit will result in component or product failure.
- ✓ During charging if the battery is found severely hot the ST-F35TESTF should immediately be turned off and disconnected from the charger.
- ✓ The ST-F35TESTF must not be charged for more than 8 hours.



- ✓ Do not use the ST-F35TESTF where the humidity is high. Once the unit is damp, it must be powered off immediately and moved away from any connected cables.
- ✓ Do not use the unit with wet hands.
- ✓ The ST-F35TESTF should not be used in any environment where there is flammable gas.
- ✓ Do not use the ST-F35TESTF where there is strong electromagnetic interference.
- ✓ Do not disassemble the ST-F35TESTF as disassembly may damage the unit and void the warranty. Contact your SecurityTronix dealer for assistance.
- ✓ Only use a slightly damp cloth to clean the unit. Do not use detergents or solvents.

PACKAGE CONTENTS

This package contains:

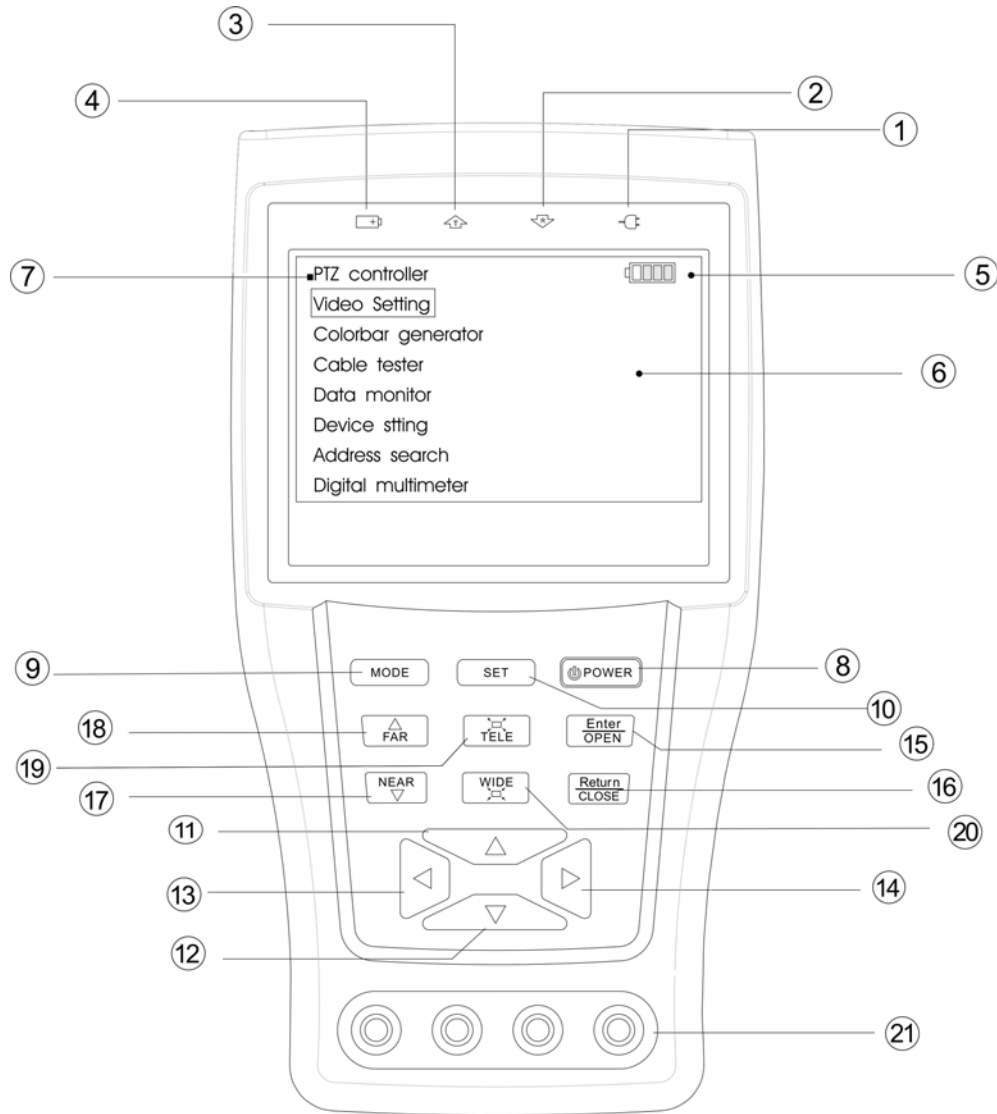
- One ST-F35TESTF meter
- One LAN cable tester
- One 5V 2A power supply
- One lithium ion polymer battery
- One BNC cable
- One RS485 cable
- One safety cord
- One case
- One instruction manual







PRODUCT DESCRIPTION

















The ST-F35TESTF has been developed for the on-site installation and maintenance of video monitoring systems. It can be used for displaying video, controlling PTZ, generating images, capturing data via RS485 and testing LAN cables. Its functions, portability and ease of use make it an invaluable test device for the CCTV technician. Key features include:

- 3.5" TFT LCD display with 960x240 resolution
- Video Level testing, with video signals measured in IRE or mV
- DC 12V 1 A power output for camera
- Audio input testing
- Digital multimeter – voltage, current, resistance and capacitance can be tested as well as continuity and diode testing
- PTZ control. Pan/tilts the P/T unit; zooms in/out of the lens; adjusts the focus and aperture; and sets and calls the preset position. Can perform PTZ address scanning with ID search of PTZ cameras.
- Automatically adapts and displays the video format of NTSC / PAL. Video display LCD brightness, contrast, color saturation are adjustable.
- NTSC / PAL multi-system colorbar video generator (seven system switchable; transmit, receive, seven-system color images).
- Captures and analyzes RS485 control data.
- Powerful LAN cable testing measuring the connecting status, displaying the sequence of connection and the NO. of the LAN cable.
- Supports RS232, RS485 and RS422 interfaces with baud rates ranging from 150, 600 to 19200bps.
- Supports more than twenty PTZ protocols, including PELCO-P, PELCO-D, SAMSUNG, etc.
- Advanced power control and protection circuit for its 3.7v DC3000mAh lithium ion polymer battery. Battery can last up to 12 hours for normal use after charging for 4 hours.

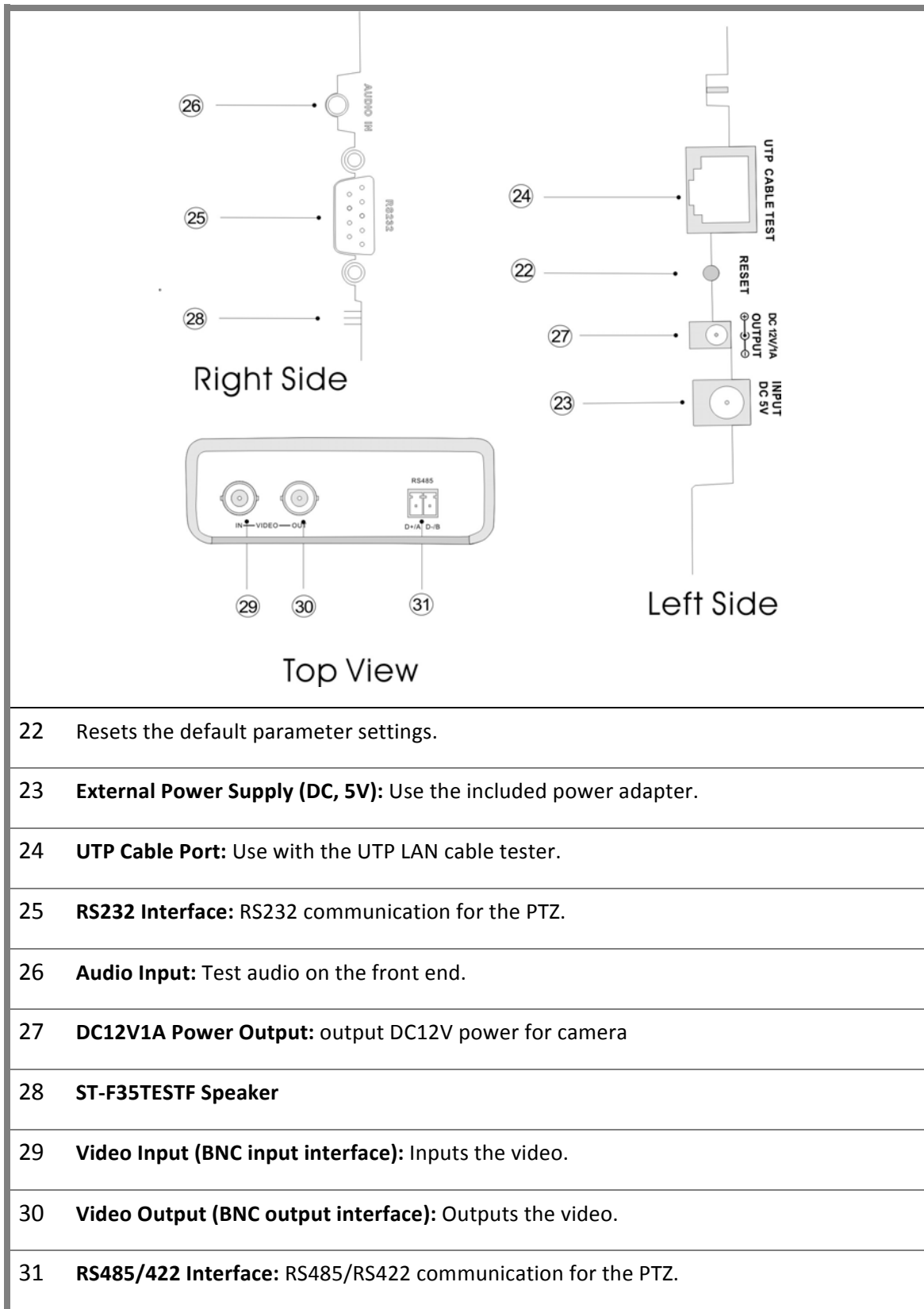
FRONT PANEL



1		Power Indicator: Lights green while powered on.
2		Data-Reception Indicator: Lights red while the data is being received.
3		Data-Transmission Indicator: Lights red while the data is being transmitted.
4		Charge Indicator: Lights red while the battery is being charged. When the charging is complete, the indicator turns off automatically.
5		Battery Level: Displays battery life on current charge.
6		Main-menu: Displays the ST-F35TESTF's main functions.

7		Sub-Menu: Shows and sets the values of functions.
8		Press for more than 2 seconds to turn on/off the tester. Press for less than 2 seconds to turn on/off the PTZ controller menu displaying.
9		Menu Key: Pops up the main-menu; constant-press MODE or press the  or  key can shift between functions.
10		Setup Key: Press SET or press left or right key to enter sub-menu to set the function.
11		Up: Select the item that will be set or add the value of the parameter. Tilt the PTZ upward.
12		Left: Enter the sub-menu or select the parameter whose value will be changed. Reduce the value of the parameter. Pan the PTZ left.
13		Right: Enter the sub-menu or select the parameter whose value will be changed. Add the value of the parameter. Pan the PTZ right.
14		Down: Select the item that will be set or reduce the value of the parameter. Tilt the PTZ downward.
15		Confirm/Open: Confirm the setting of parameters; open the aperture.
16		Return/Close: Return or cancel while setting parameters of the menu; close the aperture
17		Near Focus: Focus the image nearby.
18		Far Focus: Focus the image faraway.
19		TELE: Zoom in the image.
20		WIDE: Zoom out the image.
21		Digital Multimeter

SIDE and TOP VIEWS



BATTERY INSTALLATION

The ST-F35TESTF has a built-in lithium ion polymer rechargeable battery. The battery cable inside battery cabin should be disconnected for safety during transportation!




Prior to using the ST-F35TESTF, the battery cables inside the battery cabin should be securely connected.




Usually it is unnecessary to disconnect the cable during normal use.




Pressing  key continuously will power the unit on or off.

Prior to using the unit for the first time be sure the batteries are completely exhausted and then recharge for 4 or 5 hours.



The Charge Indicator  lights red when charging the battery and will automatically turn off when charging is completed.

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 8 hours will not damage the battery.

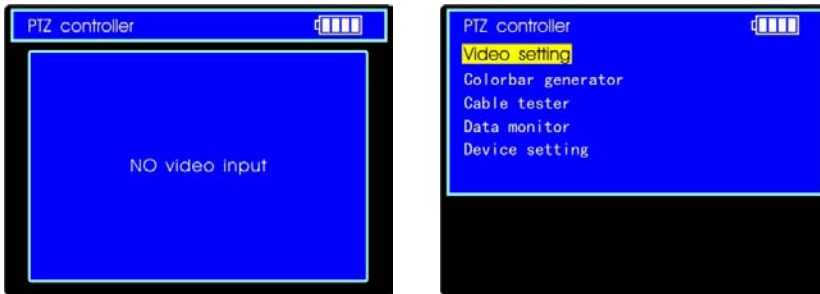
The ST-F35TESTF can be used while charging. However, the charging time will be extended.

Press the RESET key to restore the default settings if the ST-F35TESTF works abnormally.



OPERATION

POWER ON


Continuously press the **POWER** key (at least 2 seconds) to power on / off the ST-F35TESTF. When powered on, press the **MODE** key and the main menu will appear.

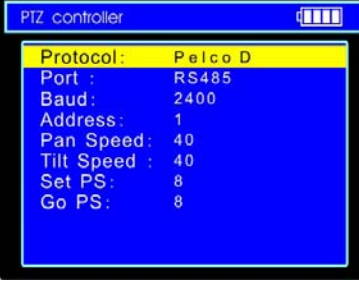

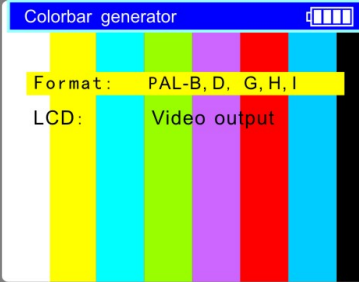
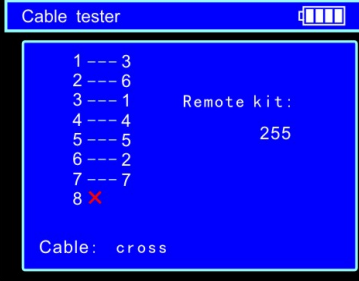



MENU and FUNCTIONS

Press the **MODE** key continuously or press the  or  key to select the function (PTZ Controller, Video Settings, Colorbar Generator, LAN Cable Tester, Data Monitors, Device Setting) and enter the corresponding function setting sub-menu. Press the **SET** key to set the parameters in the function sub-menu.

Note: When the ST-F35TESTF is powered on, it will return to the function being operated before it is turned off.

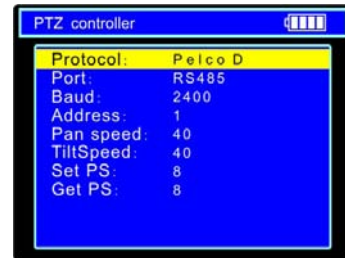
	<p>1. PTZ controller</p> <p>Display the input video images. Pan/tilt the P/T unit and zoom in/ out the image. Setup the controlling parameters (e.g., protocol, communication port, baud rate, PTZ ID, pan/tilt speed; set and call preset position).</p>
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	<p>2. Video Setting</p> <p>Adjust the LCD brightness, contrast, color saturation, video format and video level testing.</p>
	<p>3. Colorbar Generator</p> <p>Output or receive seven different forms of video colorbar to tester monitor, cable or other equipment.</p>
	<p>4. Cable Tester</p> <p>Test LAN cable or telephone cable. The connecting condition and the sequence of wires will be displayed as well as the serial number of the cable tester kit.</p>

 <p>Data monitor</p> <p>Port: 485 Baud: 4800</p> <pre> A0 00 00 08 00 40 AF 47 A0 00 00 00 00 00 AF 0F A0 00 00 10 00 40 AF 5F A0 00 00 00 00 00 AF 0F A0 00 00 04 40 00 AF 4B A0 00 00 00 00 00 AF 0F A0 00 00 02 40 00 AF 4D A0 00 00 00 00 00 AF 0F </pre>	<p>5. Data Monitor</p> <p>Captures the protocol from the controlling system and displays command data. A helpful tool to debug and maintain RS485 communications.</p>
 <p>Device setting</p> <p>Auto poweroff: 10 min</p> <p>Prompt sound: on</p> <p>Language: English</p> <p>Brightness: 7</p> <p>Address search: off</p> <p>Not saved</p> <p>Enter to apply</p>	<p>6. Device setting</p> <p>Set the parameters of the ST-F35TESTF (Auto power off/Keypad tone/Language/Brightness/Address search)</p>
 <p>Address search</p> <p>Protocol: Pelco P</p> <p>Port: Rs485</p> <p>Baud: 4800</p> <p>Address: 1</p> <p>Far Near -- Start search</p> <p>Wid Tele -- Adjust addr</p>	<p>7. Address Search</p> <p>Search the PTZ camera's ID</p>
 <p>Digital Multimeter</p> <p>DC Auto</p> <p>0.000 V</p> <p>U ~ U A ~ Ω » * #</p> <p>◀ ▶ Function</p> <p>▲ ▼ Range</p>	<p>8. Digital Multimeter</p> <p>Digital multimeter performs AD/DC voltage, AC/DC current, resistance, continuity, capacitance and diode testing. Supports both Auto and Manual Range, Data Hold and Relative Measuring</p>

PTZ CONTROLLER

Display the input video images. Has pan/tilt the P/T unit and zoom in/ out the image capability. Setup the controlling parameters (e.g., protocol, communication port, baud rate, PTZ ID, pan/tilt speed; set and call preset position).

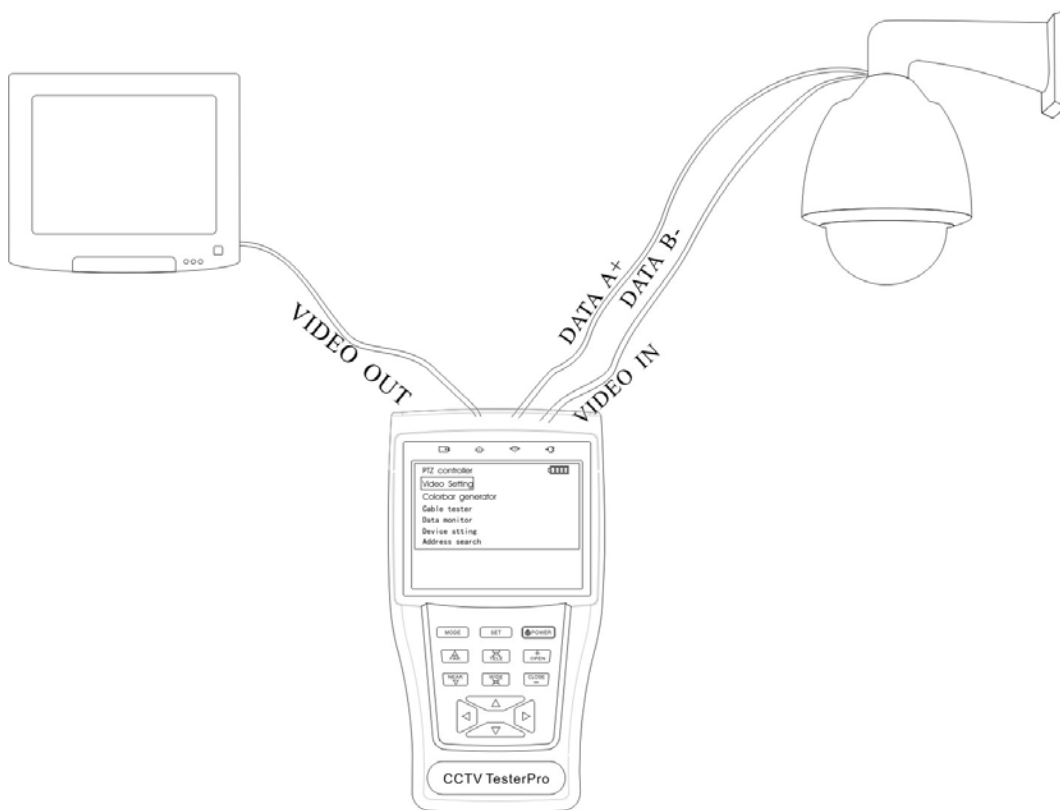






PTZ controller	
Protocol:	Pelco D
Port:	RS485
Baud:	2400
Address:	1
Pan speed:	40
TiltSpeed:	40
Set PS:	8
Get PS:	8





The following connections should be confirmed before use

- The Video In interface of the ST-F35TESTF and the output interface of camera
- Data A+ of the ST-F35TESTF and A+ of the PTZ camera or controlling device; data B- of the ST-F35TESTF and B- of the PTZ camera or controlling device





Note: Do not connect the communications interface with a circuit having a voltage greater than 6V.

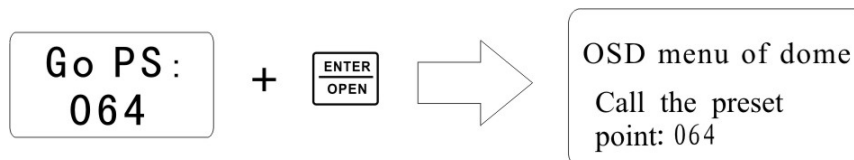


- Press the **SET** key to enter the PTZ controller sub-menu.
- Press the  or  key to select the parameter value to be changed.
- Press the  or  to select the new value.
- Press the **ENTER** key to save the change or press the **RETURN** key to escape the change.
- Press the **SET** key to exit the sub-menu.
- Press the **POWER** key for a full-screen image.

- A. **Protocol:** Select the protocol according to the PTC camera. Up to 21 popular protocols are available (e.g., Pelco P, Pelco D, Samsung, Yaan, LiLin, CSR600, etc.).
- B. **Port:** Select the communications port for the PTZ camera (RS232, RS422, RS485).
- C. **Baud:** Select the baud rate for the PTC camera.
- D. **Address:** Set the PTZ camera's ID (0-254).
- E. **Pan Speed:** Set the PTZ camera's pan speed (0-63).
- F. **Tilt Speed:** Set the PTZ camera's tilt speed (0-63)
- G. **Set PS:** Set the preset position (0-128)
 - a. **P/T/Z** the camera to desired position.
 - b. Press the **SET** key to enter PTZ controller sub-menu.
 - c. Move the yellow cursor to "Set PS" and then press  or  key to select the preset position number.
 - d. Press the **ENTER** key to complete preset position setting or press the **RETURN** key to escape the preset position setting.
- H. **Go PS:** Call the preset position (0-128). The PTZ camera will go to the desired preset position.
 - a. Move the yellow cursor to "Go PS" and then press  or  key to select the preset position number.
 - b. Press the **ENTER** key to complete preset position calling or press the **RETURN** key to escape preset position calling.

The way of calling the OSD menu and preset of the PTZ camera may vary with control systems from different manufacturers. Read the control system manufacturer's operation manual for details. By way of example:

- a. Move the yellow cursor to "PTZ controller" to enter the PTZ controller mode.
- b. Press the **SET** key to enter the PTZ controller sub-menu. Press  or  key to move the yellow cursor to "Go PS".
- c. Press  or  key to select the preset number 64, then press the **ENTER** key to call the OSD menu of the PTZ controller.



OSD Menu of Dome (for reference only)

MAIN MENU	MAIN MENU
1. DISPLAY SETUP	1. Display configuration
2. CAMERA SETUP	2. Set camera parameters.
3. CONTROL SETUP	3. Set PTZ controlling
4. CAMERA MASK SET	4. Set privacy mask
5. PROGRAM	5. Set auto-running functions
6. PAL CAMERA	6. PAL/NTSC Switch
7. CAM DEFAULT SET	7. Restore the default settings
8. DOME RESET	8. Reset the dome
9. EXIT	9. Exit the main menu

■ Operate auto-running functions by calling preset position (effective for some brands of PTZ camera)

Call preset-33—Open Auto-flip function

Call preset-34—Reset zero point of PTZ camera

Call preset-64—Enter the main menu of the PTZ camera

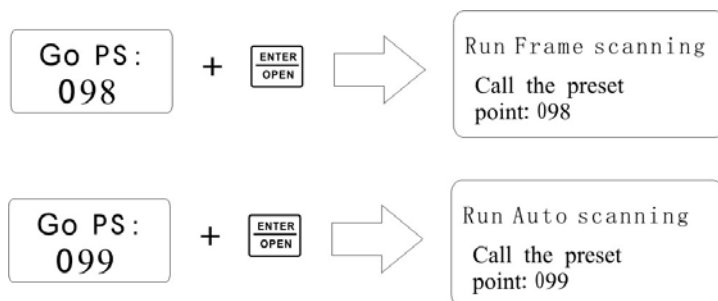
Call preset-95—Enter the main menu of the PTZ camera or stop the PATTERN recording.

Call preset-96—Run pattern-1

Call preset-97—Run preset tour-1





Call preset-98—Run frame Scan

Call preset-99—Run Auto scan



VIDEO SETTING

User can customize the brightness, contrast and saturation of the LCD according to the environment and display the format (PAL/NTSC) of video input.

- Press the  or  key to select the parameter for which you want to change the value.
- Press the  or  key to change the value. Press the **ENTER** key to save the change or press the **RETURN** key to escape.
- The Video Format and Video Level will be displayed in the lower portion of the screen. If there is no video signal at the Video IN port of the ST-F35TESTF, the type of NTSC or PAL, and Video Level will not be displayed.

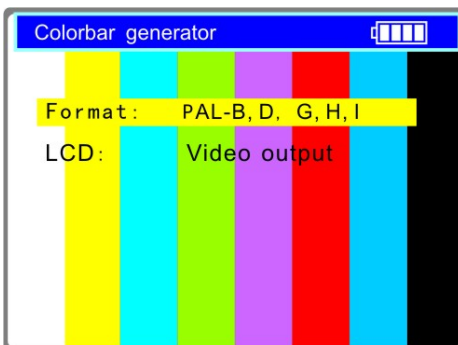






Depending on the type of camera connected to the ST-F35TESTF, the Video “Format” will automatically change between NTSC and PAL, and the Video Level will automatically change between IRE (Institute of Radio Engineers) and mV. NTSC signals measured in IRE units, PAL signals measured in mV.

The Video Level should be within the indicated range. Levels that are too low will result in a dim picture with reduced dynamic range. A Video Level that is too high will result in washed out pictures. The ST-F35TESTF will display “Normal” when video levels are $1000\text{mV}\pm 20\%$, “Exceed” or “Weak” will be displayed when video level out of $1000\text{mV}\pm 20\%$.

COLORBAR GENERATOR (Output Video in any mode)

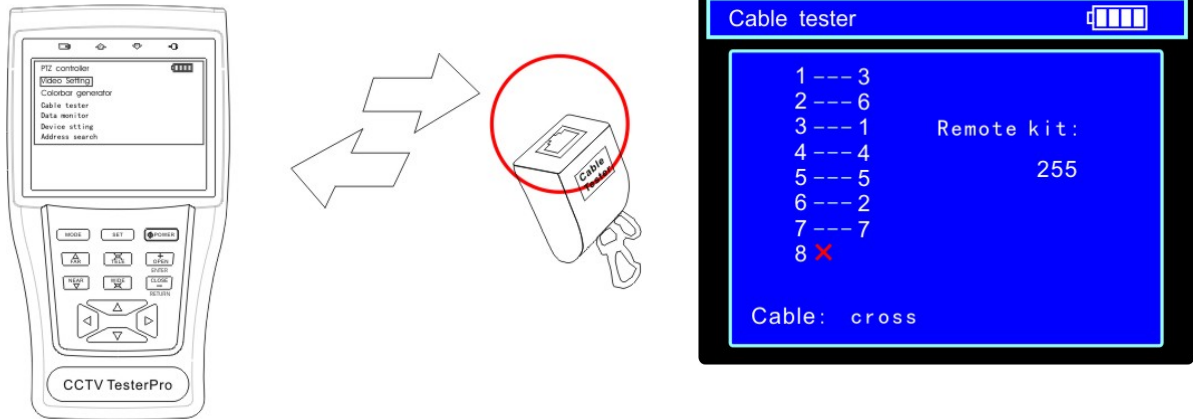
Output or receive seven different forms of video color bar to test monitor, video cable or other equipment.



- Press the  or  key to select the parameter for which you want to change the value.
- Press the  or  key to change the value.
- Press **ENTER** key to save the change or press **RETURN** key to escape.

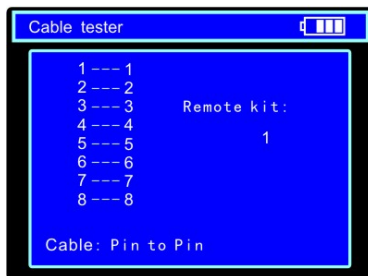
CABLE TESTER

Test LAN cable or telephone cable. Connect LAN cable or telephone cable to the ST-F35TESTF and cable tester. The connecting status, cable type and the sequence of wires will be displayed, as well as the serial number of the cable tester kit.

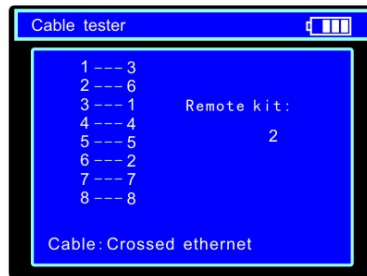


The right picture shows lines 1-7 are closed, line 8 is open and the number of the cable tester box is 255.

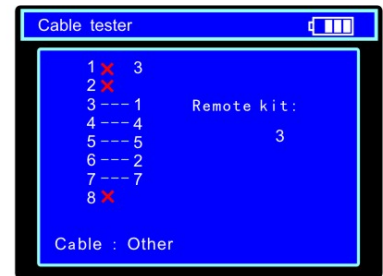
Straight-through Line



Cross Line







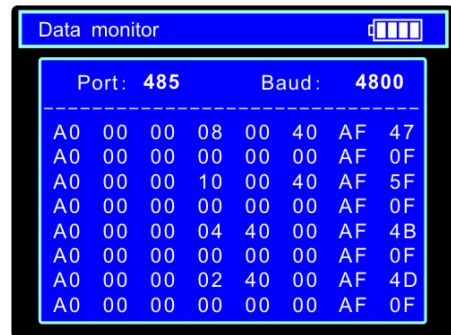
Open Line or Short



DATA MONITOR

Data Monitor captures the command data from the RS485 controlling system.

- Connect the RS485 or RS232 interface of the controlling system with the ST-F35TESTF's RS485 or RS232 ports. In the case of RS485, A to A, B to B.
- Press the **SET** key and then press  or  key to select the communications port according to the system connection. Press the **SET** key to save the change.
- Press  or  key to select the baud rate according to the controlling system's baud rate. Press the **SET** key to save the change and capture the command data from the controlling system.
- Press the **RETURN** key to clear the screen.



DEVICE SETTING

Device Setting sets the ST-F35TESTF's parameters.





Auto Poweroff: Sets the time for auto shut-down (Disable, 5, 10,...60). Disable: Disable the "Auto Poweroff" function. 5 means the unit will power off after 5 minutes of no operation.

Keypad Tone: Turn on or off the beep associated with pressing the keypad.

Language: Select language of the OSD menu.

Brightness: Sets the brightness of the OSD menu and background (0 – 7).

Address Search: Off / On. Open or close the PTZ address search menu.


- Press  or  key to move the parameter you want to change.
- Press  or  to change the value.
- Press the **ENTER** key to save the change or press **RETURN** to escape.



PTZ ADDRESS SCANNING

Device Setting allows the ID search of the PTZ camera. Note the PTZ camera to be searched must be isolated from other PTZ cameras before beginning the search. Not doing so will cause all PTZ cameras in the same system to pan at the same time.



- Press the **MODE** key to access the “Device Setting” menu.
- Scroll down to Address Search. Press  key to change from “off” to “on”. Press the **ENTER** key to save the change. Note the ST-F35TESTF returns to “off” after shutdown and the scan sub-menu closes automatically. Set “on” again for the next use.
- Press the **MODE** key to enter the sub-menu.
- Press the **SET** key to set the protocol, communications port and communications rate consistent with the PTZ camera.
- Press the **NEAR** or **FAR** key to increase or decrease the address values.



NEAR: The ST-F35TESTF will search up the ID list quickly and continuously (from 1 – 256). When the ID is found the PTZ camera will pan right. At this time press any key to stop the search.

FAR: The ST-F35TESTF will search down the ID list quickly and continuously (from 256 – 1). When the ID is found the PTZ camera will pan left. Press any key to stop the search.

WIDE: The ST-F35TESTF will search for the ID step-by-step (from 1 – 256). When the ID is found the PTZ camera will stop panning.

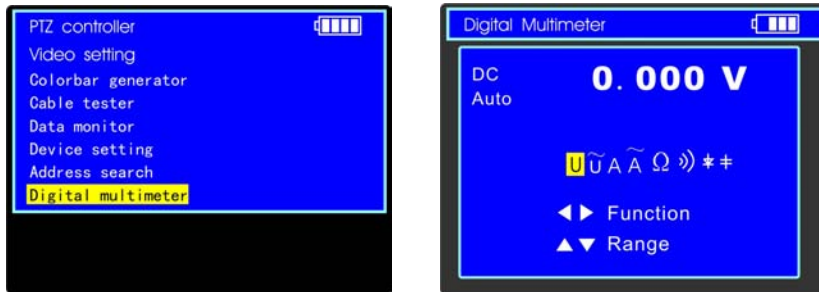
FAR: The ST-F35TESTF will search for the ID step-by-step (from 256 – 1) . When the ID is found the PTZ camera will stop panning.

If you press the **NEAR** key the ST-F35TESTF will search up for the ID quickly and continuously (from 1 – 256). When the ID is found the PTZ camera will pan right. Press any key to stop the search. Press **TELE** key for manual, single-step ID search step-by-step (from 256 – 1). When the ID is found the PTZ camera will stop panning.

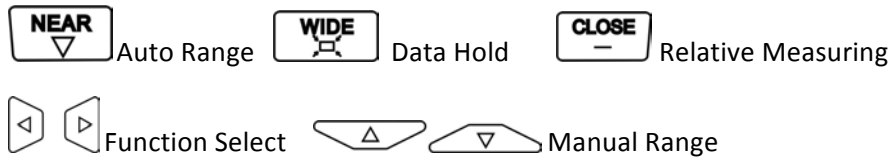
If you press the **FAR** key the ST-F35TESTF will search down for the ID quickly and continuously (from 256 – 1). When the ID is found the PTZ camera will pan left. Press any key to stop the search. Press the **WIDE** key for manual, single-step ID search step-by-step from (1 – 256). When the ID is found the PTZ camera will stop panning.

Press **MODE** key to quit the Address Scanning menu.

DIGITAL MULTIMETER



Function Buttons:



Symbols:

U : DC Voltage Measuring	~U : AC Voltage Measuring
A : DC Current Measuring	~A : AC Current Measuring
Ω : Resistance Measuring)) : Continuity Testing
⚡ : Diode Testing	⚡ : Capacitance Measuring

DC Voltage Measuring

WARNING: An input of more than 660 VDC may show higher voltage, but doing so may destroy the circuit. Also pay attention not to get an electric shock when measuring high voltage.

- Connect the black test lead to the COM jack and the red test lead to the V jack.
- Press to select **U**, enter the DC voltage measurement. Auto Range by pressing button, and Manual Range by pressing

Manual Ranges: 0.000V → 6.6V range
 00.00V → 66V range
 000.0V → 660V range
 000.0mV → 660mV range






- c. Connect test leads across the source or load under measurement.
- d. Measurement will be displayed on the screen. The polarity of the red lead connection will be indicated along with the voltage value.

NOTE:

- When only the “OL” figure is displayed the multimeter indicates an 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 to the highest position.

AC Voltage Measuring

WARNING: An input of more than 660 VDC may show higher voltage, but doing so may destroy the circuit. Also 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 jack.
- b. Press   to select \tilde{U} , enter the AC voltage measurement. Auto Range by pressing  button, and Manual Range by pressing  

Manual Ranges: 0.000V → 6.6V range
 00.00V → 66V range
 000.0V → 660V range
 000.0mV → 660mV range

- c. Connect test leads across the source or load under measurement.
- d. Measurement will be displayed on the screen.





NOTE:

- When only the “OL” figure is displayed the multimeter indicates an 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 to the highest position.

DC Current Measuring

WARNING: Shut down the power of the tested circuit before connecting the meter to the circuit for measuring.

- 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. Press   to select **A**, enter the DC current measurement. Manual Range by pressing  .

Manual Ranges: 0.000mA → 6.6mA range
00.00mA → 66mA range
000.0mA → 660mA range
00.00A → 10A range (use 10A jack)

- c. Connect test leads across the source or load under measurement.
- d. Measurement will be displayed on the screen.



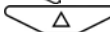

NOTE:

- When only the “OL” figure is displayed the multimeter indicates an 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 to the highest position.
- The maximum current of the mA jack is 660mA. Over-current will destroy the fuse and will damage the meter.
- The maximum current of the 10A jack is 10A. Over-current will destroy the meter and may injure the operator.

AC Current Measuring

WARNING: Shut down the power of the tested circuit before connecting the meter to the circuit for measuring.

- 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. Press   to select \tilde{A} , enter the AC current measurement. Manual Range by pressing  . Note that Auto Range will not work for AC current measuring.

Manual Ranges: 0.000mA → 6.6mA range
00.00mA → 66mA range

000.0mA → 660mA range
00.00A → 10A range (use 10A jack)






- c. Connect test leads across the source or load under measurement.
- d. Measurement will be displayed on the screen.

NOTE:

- When only the “OL” figure is displayed the multimeter indicates an 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 to the highest position.
- The maximum current of the mA jack is 660mA. Over-current will destroy the fuse and will damage the meter.
- The maximum current of the 10A jack is 10A. Over-current will destroy the meter and may injure the operator.

Resistance Measuring

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

- a. Connect the black test lead to the COM jack and the red test lead to the Ω jack.
- b. Press   to select Ω , enter the Ω measurement. Auto Range by pressing the  button and Manual Range by pressing the   button.

Manual Ranges: (connecting the red lead to the black lead will display the measuring range)

000.0 Ω → 660 Ω range
0.000K Ω → 6K Ω range
00.00K Ω → 66K Ω range
000.0K Ω → 660K Ω range
0.000M Ω → 6M Ω range
00.00M Ω → 66M Ω range




- c. Connect test leads across the source or load under measurement.
- d. Measurement will be displayed on the screen.

NOTE:








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

Continuity Testing

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

- Connect the black test lead to the COM jack and the red test lead to the Ω jack.
- Press   to select , and enter the continuity test.
- Connect test leads across to points of the circuit under testing.
- If continuity exists (i.e., resistance less than about 50Ω), the meter's built-in buzzer will sound.
- You can also get a reading from the meter's screen
- If the input open circuit (or the circuit resistance measured is higher than 660Ω) then the "OL" figure will be displayed.

Diode Testing

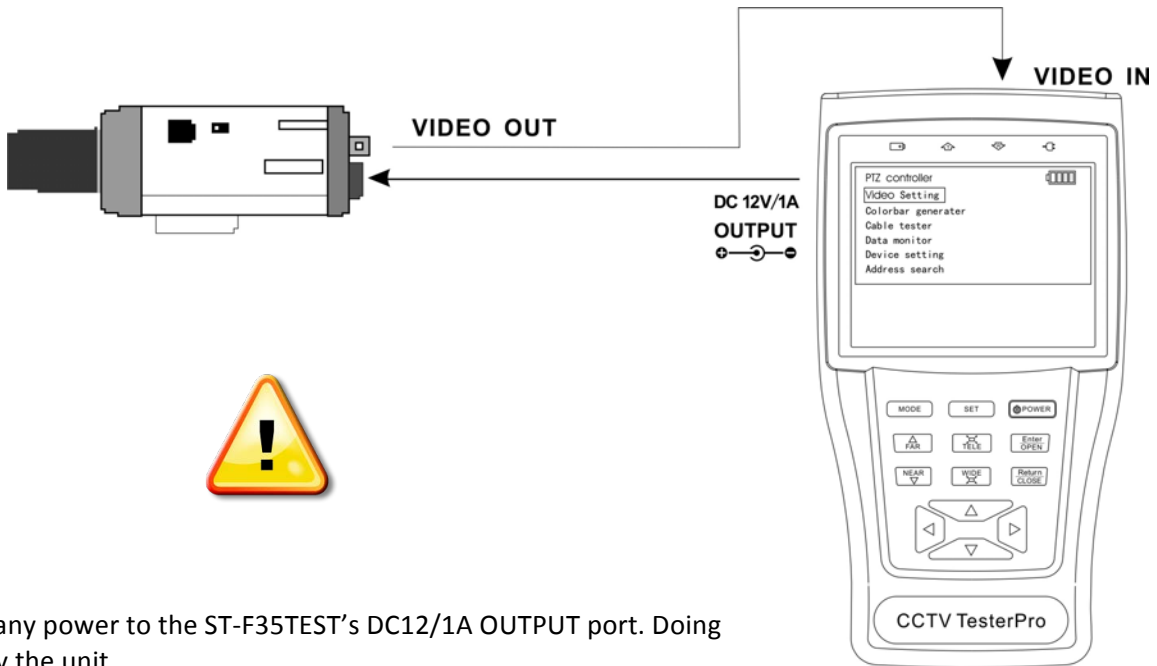
- Connect the black test lead to the COM jack and the red test lead to the  jack.
- Press   to select  and enter the capacitance measurement test. Auto Range by pressing the  button and the Manual Range by pressing the   button.

Manual ranges: 0.000nF \rightarrow 6.6nF range
00.00nF \rightarrow 66nF range
000.0nF \rightarrow 660nF range
0.000 μ F \rightarrow 6.6 μ F range
00.00 μ F \rightarrow 66 μ F range
000.0 μ F \rightarrow 660 μ F range
0.000mF \rightarrow 6.6mF range
00.00mF \rightarrow 66mF range

- Be sure the capacitor has been fully discharged before connecting the test leads across two sides of the capacitor under measurement.
- Measurement readings will be displayed on the meter's screen.

DC12V 1A POWER OUTPUT

A camera can be powered with DC12V 1A power from the ST-F35TESTF.



Do not input any power to the ST-F35TESTF's DC12/1A OUTPUT port. Doing so will destroy the unit.

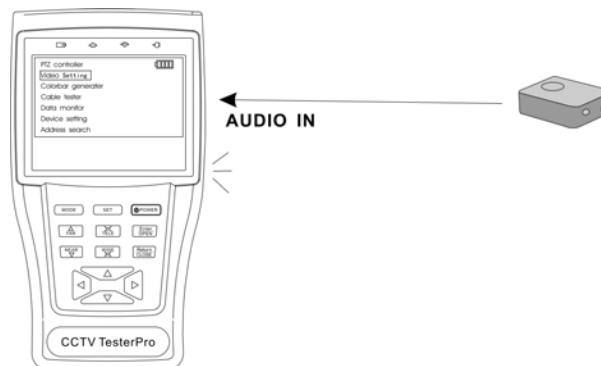
Do not output this DC12/1A power to the ST-F35TESTF's power port. Doing so will destroy the unit.

If the camera requires more than 1A of current the ST-F35TESTF will enter protection mode. If this happens you must disconnect all connections to the ST-F35TESTF and then connect the unit to the included power supply to resume.

AUDIO INPUT TEST

The ST-F35TESTF may be used to test audio input from pickup devices. Connect the unit to

the pickup device with the included audio cable.



SPECIFICATIONS

MODEL	ST-F35TESTF
Video Test	
Signal Mode:	NTSC/PAL (Auto adapt)
Display:	3.5 inch digital TFT-LCD ,960 x 240 resolution
LCD Adjustment:	Brightness, Contrast, Saturation adjustable
Video IN/OUT:	1 channel BNC Input & 1 channel Output
Video Output Mode	1.0 Vp-p
Video Level Test	
Level Test	Video signals measured in IRE or mV
PTZ Controller	
Communication:	RS232, RS422 simplex and RS485
PTZ Protocol:	Compatible with more than 20 protocols such as PELCO-D/P, Samsung, Panasonic, Lilin, Yaan, etc.
Baud Rate:	150,300,600,1200,2400,4800,9600,19200bps
Video Signal Generation	
Colorbar Generation:	Output one channel PAL/NTSC colorbar video signal for testing monitor or video cable.
Digital Multimeter	
Multimeter	Voltage, current, resistance and capacitance measurement, continuity and diode testing.
UTP CABLE TEST	
UTP Cable Test:	Test UTP cable connection status and display in the screen. Read the number of the test box.
DC12V 1A Power Output	
DC12V Power Output:	Output DC12V1A power for camera
Audio Input Test	
Audio Input Test:	Test the pickup and other audio equipments on the front-end
RS485 Data Analyst	

Data Monitor: Captures and analyzes the command data from controlling device

POWER

Power Adapter: DC5V, 2A

Battery: Built-in 3.7V Lithium polymer battery, 3000mAh

Rechargeable: After charging 3-4 hour, working time lasts 12 hours

Low Consumption: Energy saving technology

General

Working Temperature: -22°F to +158°F

Working Humidity: 30%-90%

Dimension/Weight: 7"x 3.7" x 1.4"/ 0.75lb.

MULTIMETER SPECIFICATIONS

Counts: -6600 ~ + 6600

Conversion Rate: 3 ties/s

Current modes for clamp meter with ZERO function

DC Voltage

Range	Accuracy	Resolution
660mV (Manual range)	± (0.3% to +4)	0.1mV
6.6V		1mV
66V		10mV
660V		100mV

AC Voltage

Range	Accuracy	Resolution
660mV (Manual range)	±(1.5%+6)	0.1mV
6.6V	±(0.8%+6)	1mV
66V		10mV
660V		100mV

DC Current

Range	Accuracy	Resolution
6.6mA	$\pm(0.5\%+3)$	1uA
66mA		10uA
660mA		100uA
10A	$\pm(1\%+5)$	10mA

AC Current

Range	Accuracy	Resolution
6.6mA	$\pm(0.5\%+3)$	1uA
66mA		10uA
660mA		100uA
10A	$\pm(1\%+5)$	10mA


Resistance

Range	Accuracy	Resolution
660Ω	$\pm(0.8\%+5)$	0.1Ω
6.6KΩ	$\pm(0.8\%+2)$	1Ω
66KΩ		10Ω
660KΩ		100Ω
6.6MΩ		1KΩ
66MΩ	$\pm(1.2\%+5)$	10KΩ

Continuity

Range	Function
)))	Built-in buzzer will sound, if resistance is lower than 50 Ω

Diode

Range	Resolution	Function
	1mV	Display: read approximate forward voltage of diode.

Capacitance

Range	Accuracy	Resolution
6.6nF	$\pm(0.5\%+20)$	1pF
66nF	$\pm(3.5\%+8)$	10pF
660nF		100pF
6.6 μ F		1nF
66 μ F		10nF
660 μ F	$\pm(5\%+8)$	100nF
6.6mF		1 μ F
66mF		10 μ F

SUPPORT

For technical support or assistance contact your SecurityTronix sales engineer at 1-800-688-9282