

VIDEO TEST MODULE

Instruction Manual

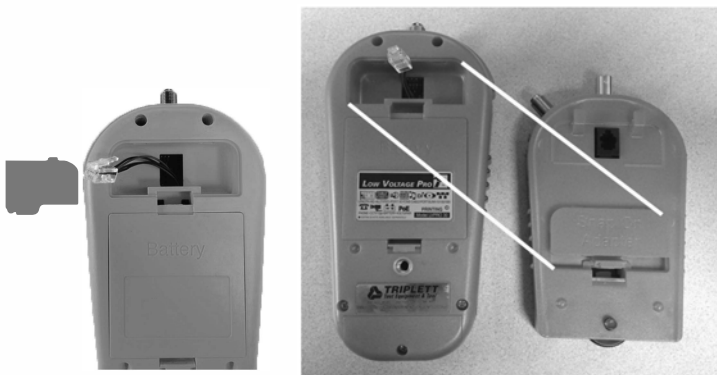


1. Introduction

Triplett's LVPro Video Test Module provides an easy way to extend the test and diagnostic capabilities of your LVPro20 or LVPro30 cable tester by simply attaching the expansion connector harness in the LVPro20 or LVPro30 cable tester to the module, and then securing the module to the tester. No additional software updates are required. The Video Test Module allows you to perform HDMI cable testing and type identification with the included Video Remote unit, generate a VGA resolution test pattern for checking monitor connections, and perform a basic DDC Channel test with HDMI cables. The Video Test Module also enables you to perform RF signal level measurement tests on RG6/RG59 type coaxial cables with either F-Type or BNC terminations, as well as to perform dB loss measurements and coaxial cable installation mapping with numbered Video Remotes. These features help to make you more productive with your LVPro20 or LVPro30 cable tester and maintain your investment in this multipurpose tool. The Video Test Module is powered by the LVPro20 or LVPro30 that it is attached to and requires no batteries of its own. The Video Remote Modules are powered by readily available 3V coin cell batteries (Panasonic CR2450).

2. Video Test Module Installation

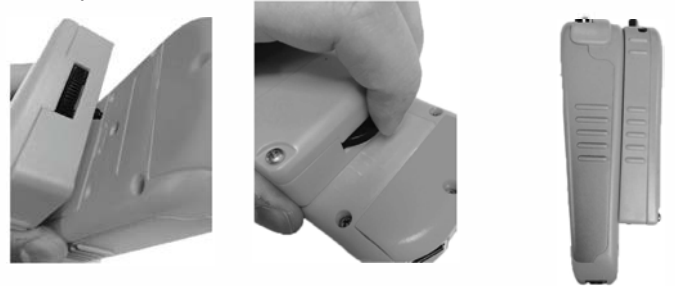
To install the Video Test Module, first power off the LVPro20 or LVPro30 cable tester and place it face down on a flat surface and remove the access panel located above the battery compartment on the back of the tester's case. Simply push upward on the plastic tab on the cover labeled "Snap On Adapter" and lift the cover from the LVPro tester's case.



There is a matching space on the Video Test Module case where you can snap this cover into place for safe keeping while the Video Test Module is installed on the LVPro.



Hold the Video Test Module so that the RJ11 connector on its back is near the snap on adapter cover space on the LVPro and insert the RJ11 harness plug into the Video Test Module's connector until it clicks into place. Lower the Video Test Module toward the back of the LVPro so that the two retaining hooks on the Test Module's case near the RJ11 connector go into the two slots in the LVPro's case in the top of the snap on adapter area. The threaded thumbscrew on the bottom of the Video Test Module should align with the threaded metal insert near the lower end of the LVPro tester case. Turn the thumbscrew clockwise to thread it into the insert and securely attach the Video Test Module case to the LVPro case. Your Video Test Module is now ready to use!



3. Video Test Menu Access

After the Video Test Module has been securely attached, turn on the LVPro cable tester. It should power up and display the same startup screen as before. To access the newly added Video Test Module functions, simply use the Left Arrow or Right Arrow buttons to navigate through the test category selections at the top of the screen. When the right arrow is pressed to navigate past the DATA RJ45 test category on the right of the screen, or the left arrow is pressed to navigate past the VOICE RJ11 category on the left side of the screen, the LVPro will check to see if the Video Test Module is installed. If it finds one, it will display an "X" on the LCD and show a flashing menu prompt of the module type and the number of tests available (VIDEO 1-7).



If no Video Test Module is found, the LVPro's LCD display will simply scroll around to the opposite side of the LCD screen and select the next test category as it normally does.

To enter the Video Test Module menu selection mode, simply press either the OK button, the Up Arrow button, or the Down Arrow button. The "X" will continue to be displayed, and the prompt will change to show which test is selected by displaying the word "VIDEO" and flashing the test number. Press the Up Arrow or Down Arrow button to change the selected test number to the desired test. To execute the test corresponding to the flashing number, simply press the OK button. The Hammer Icon will activate and remain active while the test is running. To stop a test, simply press the Exit Button to return to the menu selection mode where you can use the Up Arrow or Down Arrow keys to select a different test, or press the Exit button again to return to the top level video module menu (flashing VIDEO 1-7 prompt). From here, either press the Exit button or the Left Arrow or Right Arrow buttons to return to the other LVPro cable test categories.

The Test Number chart on the case of the Video Test Module provides a quick reference to identify the test functions and the Video Test Module port connector to be used for each video test number selection in the menu.

4. Video Module Test #1 (HDMI Cable Test)

This test is not to be used on HDMI cables that are connected to repeaters/splitters, or amplifiers, or which contain embedded signal amplifiers. Prior to performing this test, disconnect BOTH ends of the HDMI cable to be tested and attach the Video Remote to one end, and insert the other end into the TOP HDMI connector on the Video Test Module.

This test performs a continuity check on all pins of an attached HDMI cable, and displays a cable ID# corresponding to the HDMI pin connection map in the following chart. If the cable does not have the pin connections as found in the chart, it will display a "FAIL" message. Otherwise, it will display a "CABLE x" number corresponding to the matching cable map in the chart. The ID number of the Video Remote unit will also be displayed above the "CABLE x" information.

VTM Cable Type ID	HDMI Pin Number (X = connected)																		
	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
2	X		X	X	X	X	X		X	X		X	X		X	X		X	
3	X		X	X		X	X		X	X		X	X		X	X		X	
4	X	X	X	X			X		X	X		X	X		X	X		X	
5	X	X	X	X	X	X	X		X	X		X	X		X	X		X	
6	X	X	X	X	X		X		X	X		X	X		X	X		X	

HDMI cable pin connections vary from supplier to supplier. Some HDMI equipment will still operate with various pin connections missing, while some will not, or may operate at reduced video quality levels. Because of this variability in the cable implementation standards, we have determined that cable identification is the simplest approach to HDMI cable testing. The entries in this chart represent the various pin connections of working HDMI cables we have found through sampling a variety of suppliers. This test will work with unamplified HDMI cables of up to 50 feet in length.

5. Video Module Test #2 (HDMI DDC Channel Test)

This test uses the HDMI connector on the left SIDE of the Video Test Module (not the TOP). It is intended to be used with an HDMI video device, such as an HDMI monitor/display or television connected to the other end of the HDMI cable. The DDC channel pins of the HDMI cable are used to help identify capabilities and functions of connected video devices, and if this channel isn't working, various interoperability problems can occur. This test performs a simple read test of one or more parameters of the EPROM in the attached video device, and displays the value of the number it reads. The number can vary between manufacturers and between models from the same manufacturer, so the exact value isn't specifically important, simply that the test can complete, in order to verify functionality of the DDC channel.

6. Video Module Test #3 (HDMI VGA Test Pattern Display)

This test uses the HDMI connector on the left SIDE of the Video Test Module (not the TOP). It is intended to be used with an HDMI video device, such as an HDMI monitor/display or television connected to the other end of the HDMI cable.

This test generates a color bar test pattern of VGA (640x480) resolution, which is the simplest/default video image resolution that all video devices with HDMI inputs should be able to display. This test can be used to verify cable connectivity, monitor functionality and video port switch settings when no other video signal source is available.



7. Video Module Test #4

(F-Type Coaxial Signal Level Test with Remote ID)

This test uses the F-type threaded coaxial cable connector on the Video Test Module and one or more of the Video Remote Modules. This test is intended to be used to measure coaxial cable installation dB loss and to help identify cable routing to installed wall plates. There should not be any other active RF signal transmission, such as from a CATV provider, cable box or other video device on the connected coaxial cable installation when performing this test. One can use Video Module Test #5 (CATV Broadband signal Level Measurement) to help verify that no other RF signal sources are active on the cable prior to performing this test.

To perform this test, plug the Video Remote unit into a wall plate's coaxial connector. The Video Remote is activated by a trigger signal sent by the Video Test Module and does not need to be "switched on". Attach the coaxial cable end of the installation to be tested to the F-Type threaded coaxial connector on the Video Test Module and ensure that the connector is securely screwed on for best results. Select and activate the test – while the Hammer icon is animated, the module will periodically emit a 24MHz trigger signal on the coaxial connection and wait for responses from any attached Video Remotes. If it receives a response from a remote, it will display the Video Remote ID# at the bottom of the display, and the received signal power level (in units of dBmV) in the middle of the display. The peak transmit power level of the Video Remote with a fresh battery is approximately 50 dBmV. If multiple Video Remotes are used, they must each be a unique ID number (sold separately). If more than one Video Remote is used and detected by the Video Test Module, the other ID numbers will be also shown at the bottom of the display. The signal level measurement shown in the middle of the display will correspond to the selected (steady/non-flashing) Remote ID # shown at the bottom of the display. To show the signal power level measurements from the other detected Video Remote IDs, use the Left Arrow or Right Arrow buttons to scroll through the ID numbers detected. The power level displayed above will switch to show the measured power level of the signal as received from the selected Remote ID. As a troubleshooting aid, each Video Remote has an LED (next to its Hammer icon) which will light when it has received a trigger signal from the Video Test Module and is transmitting its 430MHz 50dBmV response message. Each Video Remote also has a low battery alert LED which will light when it has received a trigger signal from the Video Test Module but doesn't have adequate battery power remaining to transmit messages.

8. Video Module Test #5

(F-Type Coaxial Broadband signal Level Measurement)

This test uses the F-type threaded coaxial cable connector of the Video Test Module and it is used to measure the broadband signal power level in a coaxial cable installation with any general video signal source. An example application might be to verify that a CATV provider's signal is reaching a new extension/wall plate installation. The Video Test Module will display (in dBmV units) the broadband signal level of any signal it measures on the coaxial cable attached to the F-Type coaxial cable input. The frequency response range of the measurement is from approximately 15MHz to 3 GHz.

9. Video Module Test #6

(BNC SDI Cable Signal Level Test with Remote ID)

This test uses the BNC coaxial cable connector on the Video Test Module and it is used to measure coaxial cable installation dB loss and to help identify cable routing with SDI cable installations. There should not be any other active RF signal transmission, such as from an SDI video device, camera, or video signal source on the connected coaxial cable installation when performing this test. One can use Video Module Test #7 (SDI Signal Level Measurement) to help verify that no other RF signal sources are active on the cable installation prior to performing this test.

To perform this test, plug the Video Remote unit into an SDI cable installation end point. It may be necessary to use a BNC to F-Type (Female) adapter (not included) to connect with the push-on coaxial connector port of the video remote. The Video Remote is activated by a trigger signal sent by the Video Test Module and does not need to be "switched on". Attach the coaxial cable end of the installation to be tested to the BNC coaxial connector on the Video Test Module and ensure that the connector is securely latched on for best results. Select and activate the test – while the Hammer icon is animated, the module will periodically emit a 24MHz trigger signal on the coaxial connection and wait for responses from any attached Video Remotes. If it receives a response from a remote, it will display the Video Remote ID# at the bottom of the display, and the received signal power level (in units of dBmV) in the middle of the display. The peak transmit power level of the Video Remote with a fresh battery is approximately 50 dBmV. If multiple Video Remotes are used, they must each be a unique ID number (sold separately).

If more than one Video Remote is used and detected by the Video Test Module, the other ID numbers will be also shown at the bottom of the display. The signal level measurement shown in the middle of the display will correspond to the selected (steady/non-flashing) Remote ID # shown at the bottom of the display. To show the signal power level measurements from the other detected Video Remote IDs, use the Left Arrow or Right Arrow buttons to scroll through the ID numbers detected. The power level displayed above will switch to show the measured power level of the signal as received from the selected Remote ID.

As a troubleshooting aid, each Video Remote has an LED (next to its Hammer icon) which will light when it has received a trigger signal from the Video Test Module and is transmitting its 430MHz 50dBmV response message. Each Video Remote also has a low battery alert LED which will light when it has received a trigger signal from the Video Test Module but doesn't have adequate battery power remaining to transmit messages.

8. Video Module Test #7 (BNC SDI Signal Level Measurement)

This test uses the BNC coaxial cable connector of the Video Test Module and it is used to measure the broadband signal power level in a coaxial cable installation with any general video signal source, such as an SDI camera. An example application might be to verify that an SDI camera signal is reaching a new video recorder installation endpoint. The Video Test Module will display (in dBmV units) the broadband signal level of any signal it measures on the coaxial cable attached to the BNC coaxial cable input. The frequency response range of the measurement is from approximately 15MHz to 3 GHz.

9. Video Remote Unit

The Video Remote Unit is tested and configured at the factory for optimum performance. It doesn't have a power switch and the supplied CR2450 3V coin cell battery will provide power for hours of testing. If the unit indicates a low battery condition, or doesn't seem to respond even when directly plugged into one of the Video Test Module's coaxial ports and test #4 or test #6 is activated, it is recommended to replace the battery. Follow the Instructions in the section titled "Replacing Video Remote Unit Battery".

The Video Remote is used in combination with the Video Test Module for performing HDMI cable test #1, as well as video coaxial cable tests #4 and #6. It remains in an extremely low-power state except when activated by these tests and therefore cannot be used as a general signal source for performing tests #5 and #7.

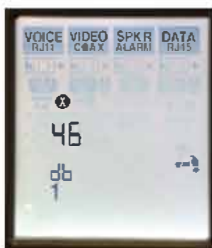
10. Replacing Video Remote Unit Battery

When it becomes necessary to replace the battery in the Video Remote Unit follow these steps:

1. If possible, perform the procedure in a static free environment.
2. Replace battery with Panasonic CR2450, Energizer CR2450, or equivalent Lithium 3V coin cell battery only. Rechargeable Li-Ion battery replacements are NOT recommended.
3. Using a small Philips (PH1) screwdriver, remove the (4) corner screws which hold the upper and lower case halves together. (See picture below).
4. Separate the case parts to expose the circuit board assembly with the coin cell battery holder facing upward.
5. Push the retaining tab to the right to release the coin cell battery. Remove the battery from the battery holder.



6. Observing proper polarity (flat side with engraved "+" facing upward), insert the new battery into the coin cell battery holder and press downward until the retaining tab clicks into place, securing the battery.
7. Position the case parts together in proper alignment, and reinstall the (4) corner screws.
8. You may check/verify that the battery is fully charged by selecting and running Video Test #4 with the Video Remote unit plugged directly into the F-Type coaxial connector on the Video Test Module. If the displayed signal level is 46db or greater, the battery is fully charged



11. Troubleshooting

The Video Test Module is powered by the same (4) AA batteries which provide power to the LVPro20 or LVPro30 which it is connected to. While it does power down various internal components to save energy whenever it can do so, the battery life expectancy of the LVPro will be shortened with use of the video test module.

You may find that it becomes necessary to replace batteries slightly more often with frequent use of the Video Test Module. To maximize LVPro battery life when you aren't planning to use the Video Test Module, simply unscrew the retaining thumbscrew, disconnect the RJ11 interface cable and remove the Video Test Module. Reinstall the snap on adapter cover on the back of the LVPro case to prevent debris from entering your LVPro20 or LVPro30's instrument casing.



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