Instruction Manual

VDV Scout® Pro 2
VDV501-098

VDV Scout® Pro 2 LT
VDV501-108

ENGLISH

- **VOICE, DATA, AND VIDEO CABLE TESTING**

- **DETECTS SHORTS, OPENS, REVERSALS, MISWIRES, AND SPLIT PAIRS**

- **CABLE ID**

- **LENGTH MEASUREMENT (LT MODEL)**

- **TONE GENERATOR**

- **EXTRA-LARGE LCD SCREEN**

- **AUTO POWER-OFF**

KLEIN TOOLS®

For Professionals… Since 1857® USA

CE

VDV Scout® Pro 2 & VDV Scout® Pro 2 LT
Instruction Manual

GENERAL SPECIFICATIONS

The Klein Tools VDV Scout® Pro 2 is a portable voice-data-video cable tester. It tests and troubleshoots RJ11, RJ12, RJ45, and F-connector terminated cables and provides built-in tone generation for cable tracing. The VDV Scout® Pro 2 LT combines these features with length measurement.

Section headers in **RED** are relevant only to VDV501-108 VDV Scout® Pro 2 LT.

VDV Scout® Pro 2 and VDV Scout® Pro 2 LT:

- **Dimensions:** 6.4" x 2.8" x 1.4" (16.3 x 7.1 x 3.6 cm)
- **Weight:** 9.0 oz. (255 g) with battery and remote
- **Operating Temperature:** 32° to 122°F (0° to 50°C)
- **Storage Temperature:** -4° to 140°F (-20° to 60°C)
- **Humidity:** 10% to 90%, non-condensing
- **Maximum Voltage** between any two connector pins without damage:
    - **RJ Jack:** 66V DC or 55V AC
    - **F-Connector:** 66V DC or 55V AC
- **Battery Life**: 9V alkaline battery typical
    - **Standby:** 4 years
    - **Active:** 425 hours
- **Cable Types:** Shielded or unshielded; Cat-7, Cat-7a, Cat-6a, Cat6, Cat-5e, Cat-5, Cat-4, Cat-3, Coax
- **Maximum RJ Cable Length:** 0 to 1,000 ft. (305 m)
- **Minimum Cable Length for Split Pair Detection**: 1.5 ft. (0.5 m)
- **Maximum Coax Cable Length:** 100 ohms maximum DC resistance, center conductor plus shield

VDV SCOUT® PRO 2 LT ONLY

- **Length Measurement Method:** Capacitance
- **Resolution:** 1 ft. (0.3 m)
- **Length Measurement Range:** 1 to 2,000 ft. (0.3 - 610 m) with 15pF/ft. length constant (or 30nF total capacitance)
- **Length Accuracy (Without Length Constant Accuracy):** ±(5% + 1 ft.) or ±(5% + 0.3 m)
- **Length Constant Range:** 10pF/ft. to 40pF/ft. (33pF/m to 132pF/m)

⚠ WARNINGS

To ensure safe operation and service of the tester, follow these instructions. Failure to observe these warnings can result in severe injury or death.

- The VDV Scout® Pro 2 is designed for use on unenergized cabling systems. Connecting the VDV Scout® Pro 2 to live AC power may damage it and pose a safety hazard for the user.
- Poorly terminated RJ plugs have the potential to damage the jacks on the VDV Scout® Pro 2. Visually inspect an RJ plug before inserting it into the tester. The contacts should always be recessed into the plastic housing of the plug. Plugging 6-position plugs into the 8-position jack on the tester has the potential to damage the outer-most contacts of the jack unless the plug is specifically designed for that purpose.

SYMBOLS:	
⚠	WARNING: Potential for personal injury. Caution: Potential for damage or destruction to equipment.
🥽	Always wear approved eye protection.
⚡	Do NOT use on energized circuits.
CE	Conformité Européenne. Conforms with European Economic Area directives.
🗑	This symbol indicates that equipment and its accessories shall be subject to a separate collection and correct disposal.

RJ45 Port: Data cable, Ethernet cable, 8-wire cable, 4 twisted pair cable, Cat5e, Cat6, Cat6a, Cat7.

F-Connector Port: Video cable, coaxial cable, RG6 cable, RG59 cable.

RJ11/12 Port: Phone cable, POTS (plain old telephone service) cable, 4-wire cable, 6-wire cable, 2 twisted pair cable, 3 twisted pair cable, Cat3.

VDV SCOUT® PRO 2 OR VDV SCOUT® PRO 2 LT

RJ45 port

F-connector port

RJ11/12 port

LOCATION ID REMOTES

Use for cable location identification mapping. Included in kit or sold separately.

CoaxMap™ Location ID Remote
VDV512-056
F-connector

LanMap™ Location ID Remote*
VDV526-055
RJ45-connector

**LanMap™ Location ID Remotes cannot be used to determine continuity.*

CONNECTORS

Barrel Connector
Female-to-female F-connector
Use with F-connector port

SELF-STORING ID REMOTES

Use for cable location identification mapping and/or continuity testing. Self-storing remotes display on tester as Remote ID #1.

Self-Storing Remote
VDV999-109

Self-Storing Test-n-Map™ ID Remote
VDV999-110

Front

Back

RJ11/12 port

RJ45 port

RJ11/12 port

RJ45 port

F-connector port

TEST-N-MAP™ ID REMOTES

VDV999-110

Use for cable location identification mapping and continuity testing. Remotes display on tester as Remote IDs #2-8.
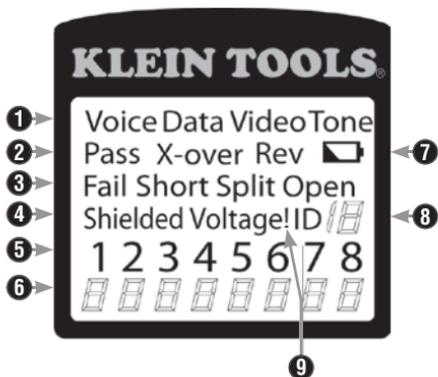
F-connector port

**RJ45 port**

Test-n-Map™ Remote ID #	Part #
2	VDV501-112
3	VDV501-113
4	VDV501-114
5	VDV501-115
6	VDV501-116
7	VDV501-117
8	VDV501-118

DISPLAY

1. **Mode:** The top line of the display shows the cable type test mode or tone generation mode.

2. **Pass/Special Cables:** "Pass" will be on if the cable is a properly wired 4-pair T568A/B data cable, a 3-pair one-to-one wired voice cable or a video cable with no faults. In addition, the "X-over" illuminates if a properly wired cross-over (uplink) cable is recognized, or the "Rev" illuminates if the cable is a properly wired reverse-pinned voice cable. The wire map will show actual pin connections.

3. **Cable Faults:** The "Fail" icon will be on only if the cable is not wired to one of the cabling standards. An open or short error takes precedence over miswires and the appropriate icon(s) illuminates. The "Split" icon illuminates if the designated pairs are not twisted together in the cable, an AC signal fault.

4. **Shield:** "Shielded" illuminates when a shielded data cable is properly connected at both ends. It will be flashing if there is a short to a wire in the cable along with that pin number and the "Short" indicator.

5. **Tester-End Wire Map:** The top line displays the pins on the tester end in order. These pins are mapped to the pins on the remote-end shown directly below them on the LCD.

6. **Remote-End Wire Map:** The bottom line displays the corresponding pin on the remote-end. Dash lines on the remote line indicate shorted pins. No pin numbers displayed on the remote line are open pairs. "U" indicates an unknown continuity, usually the equivalent of 10kΩ to 100kΩ of DC resistance.

7. **Battery Low:** The battery low symbol illuminates when the battery is nearing depletion. The symbol will begin to flash when the battery needs to be replaced. Results may be unreliable at this point.

8. **Location ID:** In the video or the ID modes, the "ID" icon will be on with the number of the remote ID displayed or an error message of "Open" or "Short". In continuous cable test mode, three segments will light up in turn to show when the tester is running subsequent tests.

9. **Voltage Detected Warning:** If voltage is detected on any of the tester connectors, the "Voltage!" icon is turned on. A check for voltage is performed before each test and if found, no test is run. The tester should be disconnected immediately from the source of the voltage.

KEYPAD
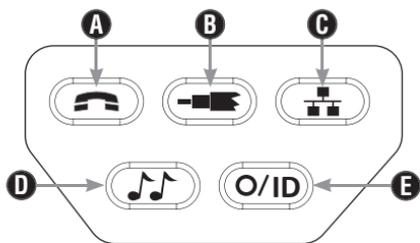
A. **Voice:** Each press of the Voice button causes one test to be run on the 6-position RJ jack and the results displayed. The VDV Scout® Pro 2 will turn off after 20 seconds automatically. If the button is pressed and held until "LOOP ON" is displayed, tests are run continuously and the display updated until the O/ID button is pressed or after 5 minutes of no change in results. Three hash marks will alternately light up on the display to show the tester is in continuous mode. Continuous mode is useful for trouble-shooting intermittent problems.

B. **Video:** Pressing the Video button starts the ID test, testing only for the F-connector, because the video continuity test is the same as the ID test. The test loops continuously until the O/ID button is pressed or for 5 minutes after last change in ID status.

C. **Data:** Each press of the Data button causes one test to be run on the 8-position RJ jack and the results displayed. The VDV Scout® Pro 2 will turn off after 20 seconds automatically. If the button is pressed and held until "LOOP ON" is displayed, tests are run continuously and the display updated until the O/ID button is pressed or after 5 minutes of no change in results. Three hash marks will alternately light up on the display to show the tester is in continuous mode. Continuous mode is useful for finding intermittent problems.

D. **Tone:** When Tone is pressed, the VDV Scout® Pro 2 begins sending an audio tone for the connector last tested with the pins and cadence previously selected for that connector type. To change the connector type, press a different connector type button. Pressing the same connector type button again will change the pins carrying the tone. Pressing the Tone button will cycle through the available tone cadences. To turn the VDV Scout® Pro 2 off, press the O/ID button. The VDV Scout® Pro 2 will turn off automatically 60 minutes after the last button press. The tone is compatible only with analog tone tracers such as the Klein Tools VDV500-060 or VDV526-054. It will not be audible without the aid of an analog tone probe.

E. **Off/ID:** Pressing O/ID will turn off the VDV Scout® Pro 2 when it is on in any mode. With the VDV Scout® Pro 2 off, pressing the O/ID button starts the ID test mode. The ID test mode scans for all possible ID types – voice, video and data. The "ID" icon and a progression of "o" are displayed on the bottom line of the display to indicate scanning is active. If no ID remotes are found, "Open" is displayed. When an ID remote is found, the connector type and the ID number are displayed. If multiple ID remotes are found, the ID or fault is displayed in sequence. The test loops continuously until the O/ID button is pressed or for 5 minutes after last change in ID status.

Note: The RJ jacks share internal connections so only one RJ cable can be connected at a time for accurate cable test results. However, an RJ cable and a coax cable may be connected at the same time. In ID mode, all connectors on the VDV Scout® Pro 2 may be connected at the same time.

VDV SCOUT® PRO 2 LT KEYPAD
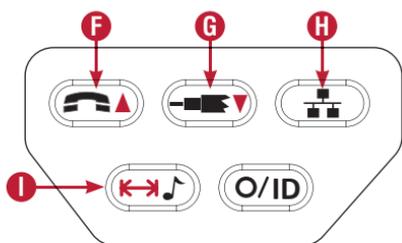
F. **Voice/Up Arrow:** In Length Measurement mode, press and release to measure length of a cable connected to the RJ11/12 port. Press and release again to change which pair of wires length is being measured on. By default, the VDV Scout® Pro 2 LT will test for length on the first pair with no faults found. In Length Constant Edit mode, this button will increase the length constant by 0.1pF. Hold down to scroll through values quickly.

G. **Video/Down Arrow:** In Length Measurement mode, press and release to measure length of a cable connected to the F-connector port. In Length Constant Edit mode, this button will decrease the length constant by 0.1pF. Hold down to scroll through values quickly.

H. **Data:** In Length Measurement mode, press and release to measure length of a cable connected to the RJ45 port. Press and release again to change which pair of wires length is being measured on. By default, the VDV Scout® Pro 2 LT will test for length on the first pair with no faults found.

I. **Tone/Length Measurement:** While the tester is off, press and hold for three seconds to enter Tone mode (see general Keypad section). While the tester is off, press and release to enter Length Measurement mode. In Length Measurement mode, press and release again to briefly show the length constant. Press and hold for three seconds to enter Length Constant Edit mode. Press and release the button one more time to exit Length Constant Edit mode.

VDV SCOUT® PRO 2 LT – MEASURING LENGTH OVERVIEW

The VDV Scout® Pro 2 LT uses the capacitive properties of a cable to measure its length. One end of the cable should be connected to the corresponding port on the top of the tester. The other end should be left disconnected or attached to the self-storing remote.

The Length Constant sections below discuss the best practices to follow when measuring length in order to achieve the most accurate results.

VDV SCOUT® PRO 2 LT – LENGTH CONSTANT

The length constant refers to the electrical characteristic of a cable used to characterize length. Every cable has an associated length constant in units of picofarads per foot. Setting the length constant on the tester is important to obtaining an accurate measurement from the VDV Scout® Pro 2 LT. The default length constants are as follows:

- **Voice:** 17pF/ft.
- **Data:** 15pF/ft.
- **Video:** 15pF/ft.

The length constant can sometimes be provided by the manufacturer of the cable (see EDITING LENGTH CONSTANT section). You may have to determine the length constant yourself (see DETERMINING LENGTH CONSTANT section). Length constants can range from 10pF/ft. to 40pF/ft.

Measurement accuracy is dependent on how close the tester can be set to the length constant of the cable being measured and the consistency of the cable along its length.

The length constant can vary from cable to cable, even of the same type produced by the same manufacturer. It can also vary over the length of one cable because the length constant is dependent on the physical properties of the cable, which may not be consistent throughout the entire cable. The change in wire pair spacing through the cable can vary the length constant along the length of the cable.

When setting the length constant using a length of cable, the cable should be at least 50 ft. long. This will yield a ±2% uncertainty (1 in 50) of length constant accuracy. A longer cable reduces this uncertainty.

VDV SCOUT® PRO 2 LT – MEASURING LENGTH

1. **Connect one end of the cable under test to the RJ45 port** (if you are testing an Ethernet cable) or RJ12 port (if you are testing a phone cable) or F-connector port (if you are testing a coax cable) located at the top of the main tester body. Leave the other end of the cable unterminated.

2. **Press the length button I to enter length mode.**

3. **Press the data button H or the phone button F or the video button G** on the keypad to begin the test on the Ethernet cable or phone cable or coax cable, respectively.

4. **(Optional) press H or F repeatedly to select the pair of wires** that should be measured. The first pair that is functional is chosen by default.

5. **Read the length measurement** as shown.

Note: A phone or data cable under test can be unterminated (open) or terminated by an RJ45 ID remote. If it is terminated by the self-storing remote, the reading will be 1 or 2 ft. greater than the actual measurement. In this case, subtract 1 or 2 ft. from the reading to obtain the actual measurement. Coax cable under test must be left unterminated. Coax ID remotes cannot be used.

VDV SCOUT® PRO 2 LT – MEASURING LENGTH

Cable Type →

Length Measurement Mode

Test Running Continuously →

Measured Length = 45 ft.
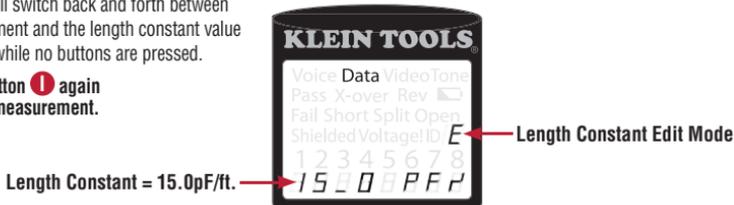
VDV SCOUT® PRO 2 LT – DISPLAYING LENGTH CONSTANT

1. **Assure the tester is off** and the screen is blank.
2. **Press the length button ❶ to enter length mode.**
3. **Press the length button ❶ again.**
   The length constant will be displayed
   on the screen for three seconds.

Length Constant Display Mode

Length Constant = 15.0pF/ft. →

VDV SCOUT® PRO 2 LT – LENGTH CONSTANT EDIT MODE

Follow these instructions to set the length constant based on a known value (for example, as given by the cable manufacturer).
The VDV Scout® Pro 2 LT stores a separate length constant for each of the three cable types (voice, data, and video).

1. **Follow the procedure in *MEASURING LENGTH* section** to set up the correct type of cable.
2. **Press and hold the length button ❶ for three seconds until EDIT CAP is shown** on the screen.
3. **Press the Up Arrow ❺ and Down Arrow ❻ to increment or decrement the length constant** in units of 0.1pF to the desired
   value. The screen will switch back and forth between
   the length measurement and the length constant value
   every two seconds while no buttons are pressed.
4. **Press the length button ❶ again
   to return to length measurement.**

Length Constant Edit Mode

Length Constant = 15.0pF/ft. →

VDV SCOUT® PRO 2 LT – DETERMINING LENGTH CONSTANT

Follow these instructions to set the length constant based on a sample cable of known length. For best accuracy, the sample cable
should be 50 ft. or greater.

1. **Cut or obtain a length of cable of the same type you would like to measure.** Measure the cable using standard methods (pad
   printing on the cable or a tape measure).
2. **Follow the procedure in *MEASURING LENGTH* section** to set up the cable to be tested.
3. **Press and hold the length button ❶ for three seconds until EDIT CAP is shown** on the screen.
4. **Press the Up Arrow ❺ and Down Arrow ❻ to increment or decrement the length constant** in units of 0.1pF. The screen will
   switch back and forth between the length measurement and the length constant value every two seconds while no buttons are
   pressed. Press the arrows until the length measurement is the same as the value measured earlier. The length constant can
   still be changed while the length measurement is being viewed in this mode.
5. **Press the length button ❶ again to return to
   length measurement.** You may now measure
   other unknown lengths of cable.

Length Constant Edit Mode

Pair of Wires Under Test →
Measured Length = 86 ft. →
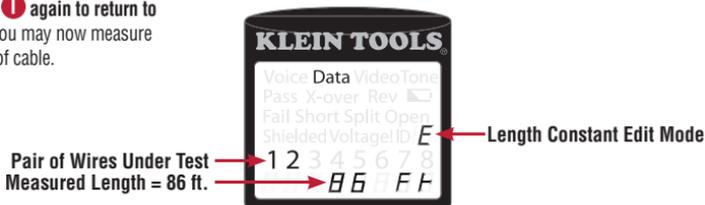
VDV SCOUT® PRO 2 LT – CHANGING UNIT OF MEASUREMENT

1. **Assure the tester is off** and the screen is blank.
2. **Press the length button ❶ to enter length mode.**
3. **Press the phone button ❺ and video button ❻ at the same time.** The screen will show "METERS" or "Ft." momentarily, then
   show the length measurement in the unit selected.

Note: Ft. unit readings have no decimal place and are displayed as "0 Ft.". Meters unit readings have one decimal place and are displayed
"0_0" for 0.0 meters. Length constants are displayed in pF/ft. or pF/m depending on the selected unit measurement mode.

TESTING CONTINUITY - OVERVIEW

When testing for continuity of a cable, you are checking that all conductors within a cable are connected properly from one end to the other.

Usually, faults occur when terminations on each side are not connected (an "open"), or when adjacent conductors are accidently connected (a "short").

TESTING CONTINUITY - TERMINATED OR INSTALLED RJ45/RJ12 CABLE

Test Remotes
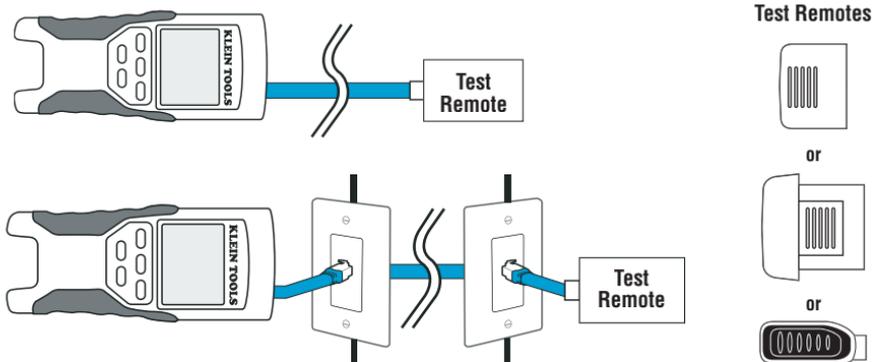
8-wire Ethernet cables can have an additional set of errors. A miswire simply means that the pin on one side of the cable is not connected to the identical pin on the other side of the cable (for example, pin 2 on one side is connected to pin 6 on the other side). Certain pairs of conductors are required to be twisted together from endpoint to endpoint. These errors are called split pairs, and can be present in cables that don't have any miswires.

Testing continuity is not the same as testing bandwidth. Other testers exist for verifying the amount of data that can pass through a cable.

1. **Connect one end of the cable under test** to the RJ45 port (if you are testing an Ethernet cable) or RJ12 port (if you are testing a phone cable) located at the top of the main tester body. If testing a wall port, connect a known good patch cable from the wall plate to the appropriate port at the top of the main tester body.

2. **Connect the other end of the cable** under test to the corresponding port on the testing remote (LOCATION ONLY ID remotes cannot be used). If testing a wall port, connect a known good patch cable[†] from the wall port to the appropriate port on the testing remote.

3. **Press the data button Ⓒ or the phone button Ⓐ** on the keypad to begin the test on the Ethernet cable or phone cable, respectively.

4. **Interpret the results** of the test using the *Wiring and Display Examples* section.

[†]Note: Only Klein Tools Universal RJ12 Jumper Cable (VDV726-125) or an approved equivalent should be used in the RJ45 jack of the Test-n-Map™ ID Remotes. Using a non-universal RJ11/12 patch cable could result in damaged contact pins.

TESTING CONTINUITY - TERMINATED OR INSTALLED COAX CABLE

Test Remotes
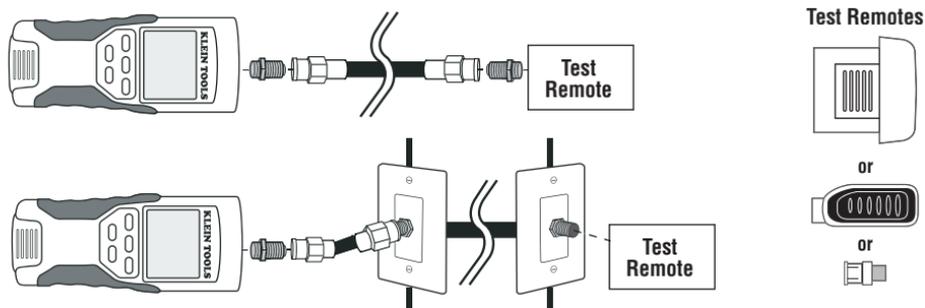
1. **Attach barrel connector** to the open coax port on the top of the main tester body.
2. **Connect one end of the cable** to the barrel connector at the top of the main tester body.
3. **If testing a terminated coax cable,** attach a second barrel connector to the other end of the cable under test. **This step is not necessary if testing an installed coax cable** (cable attached to a wall plate).
4. **Connect a numbered CoaxMap™ Location ID Remote** to the second barrel connector **or** attach one of the **Test-n-Map™ ID Remotes** to the barrel connector.
5. **Press the video button Ⓑ** on the keypad to begin the test on the coax cable.
6. **Interpret the results of the test** using the *Wiring and Display Examples* section.

CABLE IDENTIFICATION - OVERVIEW

It is often necessary to identify cables that branch out from the wiring closet in a star-topology network configuration. The VDV Scout® Pro 2 can assist in two ways:

The first and most convenient way to identify installed cables is by using location ID remotes. Using location ID remotes, you can trace up to 19 drop locations with one trip to the wiring closet or router. Identification with ID remotes is done digitally, and does not rely on any manual tracing.

The second way to identify cables is using the VDV Scout® Pro 2's built-in analog tone generator. The tester will place a low-frequency voltage on the cable. By using an analog tone probe (Klein Tools VDV526-054, VDV500-060, or most other manufacturers' analog tone probes, sold separately), a cable can be identified by the tone it is carrying. This technique only allows one cable to be traced per tone generator, but has additional benefits like the ability to trace a cable manually behind certain wall materials, or trace unterminated cables of non-standard types.

It is important to note that the *LanMap™ Location ID Remotes cannot be used to verify continuity*. Only the self-storing remote that snaps into the bottom of the tester or the Test-n-Map™ ID Remotes (included in some kits, or sold separately) can be used to test continuity of data or phone cables. However, *CoaxMap™ Location ID Remotes can be used to verify continuity and identify* coax cables. Any numbered CoaxMap™ Location ID Remote can be used to test continuity.

CABLE IDENTIFICATION - INSTALLED RJ45 CABLE
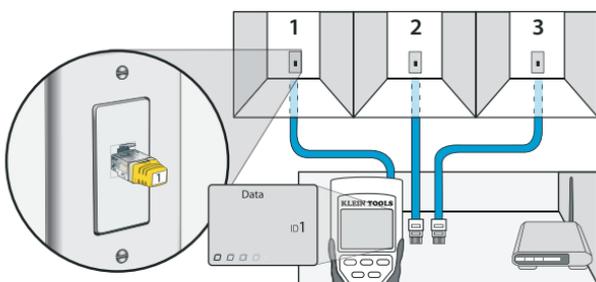
1. **Insert a numbered LanMap™ Location ID Remote into the RJ45 port** of each room that needs to be identified. Write down pairs of numbers and room names for later.
2. **Take the VDV Scout® Pro 2 to the wiring closet or router** (the source of the internet connection).
3. **Connect an unknown cable to the RJ45 port** on the top of the tester.
4. **Press the ID button 🅔** on the keypad to begin the ID test on the Ethernet cable. The LCD will read "Data ID#" where "#" is the ID number of the LanMap™ Location ID Remote connected to the other side of the cable. Compare this number to the number/room pair list you made in step 1 and mark the cable with a piece of labeled tape.
5. **Repeat steps 3 and 4 for each unknown cable** until all have been labeled. You can use these labels to determine which rooms should be connected to the router, or to troubleshoot intermittent connections in the future.

CABLE IDENTIFICATION - INSTALLED COAX CABLE
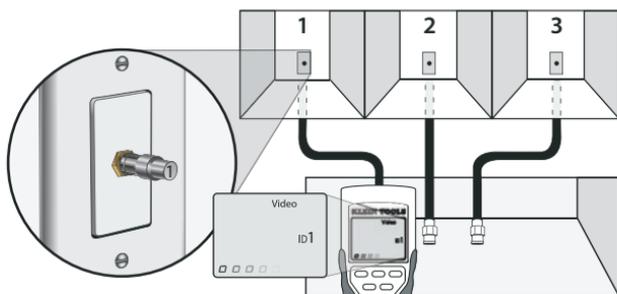
1. **Insert a numbered CoaxMap™ Location ID Remote into the F-connector port** of each room that needs to be identified. Write down pairs of numbers and room names for later.
2. **Take the VDV Scout® Pro 2 to the wiring closet or cable splitter** (the source of the cable connection).
3. **Connect an unknown cable to the video port** on the top of the tester.
4. **Press the ID button 🅔** on the keypad to begin the ID test on the coax cable. The LCD will read " Video ID#" where "#" is the ID number of the CoaxMap™ Location ID Remote connected to the other side of the cable. Compare this number to the number/room pair list you made in step 1 and mark the cable with a piece of labeled tape.
5. **Repeat steps 3 and 4 for each unknown cable** until all have been labeled. You can use these labels to determine which rooms should be connected to the cable splitter, or to troubleshoot intermittent connections in the future.

Note: Ethernet and coax cable can be identified simultaneously. When both cables are connected at the same time and the ID button is pressed, "Video ID#" and "Data ID#" will alternate on the LCD screen.

CABLE IDENTIFICATION - RJ45/RJ12 TONE TRACING
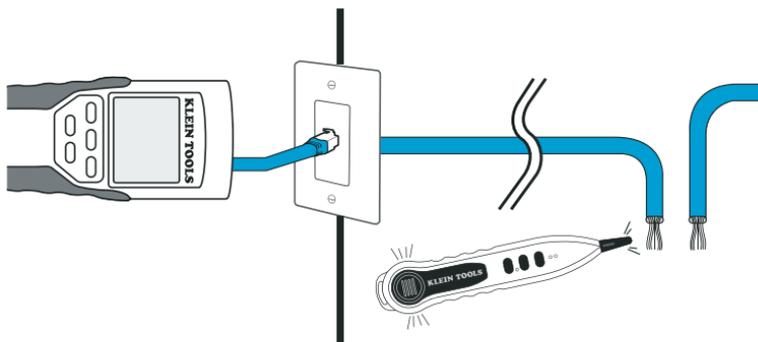
1. **Connect a known working patch cable** to the RJ45 port (if you are tracing an Ethernet cable) or RJ12 port (if you are tracing a phone cable) located at the top of the main tester body.
2. **Connect the other end of the patch cable** to the wall port at the satellite location of the cable under test (not at the wiring closet).
3. **Press the tone button D** on the keypad to initialize the tone generation. Press it repeatedly to change the tone cadence from a steady low or high tone to a warbling slow or fast tone.
4. **Press the data button C or the phone button A** repeatedly to select the output port of the tone and the pins the tone will be placed on.
5. **Take the analog tone probe to the wiring closet or router** (the source of the internet connection). Activate the tone probe (see tone probe instruction manual for details).
6. **Place the tone probe near each cable** entering the wiring closet. The tone will be loudest at the cable that the VDV Scout® Pro 2 is connected. Mark the cable with a label.
7. **Repeat steps 2-6** for each room that has installed cable.

CABLE IDENTIFICATION - COAX TONE TRACING
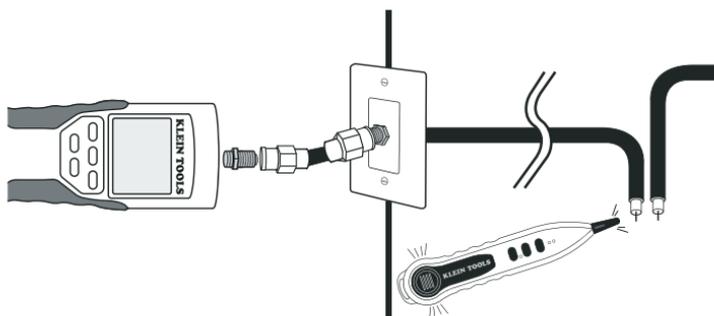
1. **Attach barrel connector** to the open coax port on the top of the main tester body.
2. **Connect a known working patch cable** to the barrel connector at the top of the main tester body.
3. **Connect the other end of the patch cable** to the wall port at the satellite location of the cable under test (not at the wiring closet).
4. **Press the tone button D** on the keypad to initialize the tone generation. Press it repeatedly to change the tone cadence from a steady low or high tone to a warbling slow or fast tone.
5. **Press the video button B** to place the tone on the coax output port.
6. **Take the analog tone probe to the wiring closet or cable splitter** (the source of the cable connection). Activate the tone probe (see tone probe instruction manual for details).
7. **Place the tone probe near each cable** entering the wiring closet. The tone will be loudest at the cable that the VDV Scout® Pro 2 is connected to. Mark the cable with a label.
8. **Repeat steps 2-7** for each room that has installed cable.

TESTING CONTINUITY & CABLE IDENTIFICATION SIMULTANEOUSLY – OVERVIEW

The VDV Scout® Pro 2 has the capability of simultaneously testing continuity and providing cable location identification for up to eight locations with Test-n-Map™ ID Remotes (included in some kits, or sold separately). The VDV Scout® Pro 2 series testers come with either the standard self-storing remote #1 or the Self-Storing Test-n-Map™ ID Remote #1. Test-n-Map™ ID Remotes #2 through #8 are included in some kits, or sold separately in the VDV Scout® Pro 2 Test-n-Map™ ID Remote Kit (VDV770-827).

VDV Scout® Pro 2 Test-n-Map™ ID Remote Kit (VDV770-827)

TESTING CONTINUITY & CABLE IDENTIFICATION SIMULTANEOUSLY – INSTALLED RJ45/RJ12 CABLE

1. **Attach a numbered Test-n-Map™ ID Remote to the RJ45/RJ12 port** of each room that needs to be identified using a known good patch cable‡. Write down the number of the remote and of the room number/description in which it is placed for comparing/identifying the cables later.

2. **Take the VDV Scout® Pro 2 to the distribution point** (often a wiring closet, switch or router at the other end of the cable being tested).

3. **Connect an unknown cable to the RJ45 port** on the top of the tester.

4. **Press the data button 🅒 or phone button 🅐** on the keypad to begin the test on the Ethernet or phone cable, respectively. The LCD will display "Data ID#" or "Voice ID#" where "#" is the ID number of the Test-n-Map™ ID Remote connected to the other side of the cable.

5. **Compare this number to the remote number/room pair list you made in step 1** and mark the cable with a piece of labeled tape, print a label or mark with a permanent ink pen. The LCD will also display the results of the continuity test. These results should be interpreted using the *Wiring and Display Examples* section.

6. **Repeat steps 4 and 5 for each unknown cable** until all have been labeled. You can use these labels to determine which rooms should be connected to the cable splitter, or to troubleshoot intermittent connections in the future.

‡**Note:** Only Klein Tools Universal RJ12 Jumper Cable (VDV726-125) or an approved equivalent should be used in the RJ45 jack of the Test-n-Map™ ID Remotes. Using a standard RJ11/12 patch cable could result in damaged contact pins.

TESTING CONTINUITY & CABLE IDENTIFICATION SIMULTANEOUSLY – INSTALLED COAX CABLE

1. **Attach a numbered Test-n-Map™ ID Remote to the F-connector port** of each room. Write down the number of the remote and of the room number/description in which it is placed for comparing/identifying the cables later.

2. **Take the VDV Scout® Pro 2 to the distribution point** (often a wiring closet, switch or router at the other end of the cable being tested).

3. **Connect an unknown cable to the video port** on top of the tester using a barrel connector.

4. **Press the video button 🅑** on the keypad to begin the test on the coax cable. The LCD will display "Video ID#" where "#" is the ID number of the Test-n-Map™ ID Remote connected to the other side of the cable.

5. **Compare this number to the remote number/room pair list you made in step 1** and mark the cable with a piece of labeled tape, print a label or mark with a permanent ink pen. The LCD will also display the results of the continuity test. These results should be interpreted using the *Wiring and Display Examples* section.

6. **Repeat steps 4 and 5 for each unknown cable** until all have been labeled. You can use these labels to determine which rooms should be connected to the cable splitter, or to troubleshoot intermittent connections in the future.

FREQUENTLY ASKED QUESTIONS

1. *Does the VDV Scout® Pro 2 measure cable length?*
   The VDV Scout® Pro 2 does not measure cable length. The VDV Scout® Pro 2 **LT** does measure cable length.

2. *Does the VDV Scout® Pro 2 LT use Time Domain Reflectometry (TDR)?*
   The VDV Scout® Pro 2 LT does not use TDR to measure cable length. The capacitive properties of a cable are used to determine the cable length.

3. *Does the VDV Scout® Pro 2 test the bandwidth of the cable?*
   The VDV Scout® Pro 2 only performs continuity related tests and split pair testing.

4. *The screen is flashing "3" and "6" with "U" underneath them when I try to test the continuity of an Ethernet cable. What's wrong?*
   The VDV Scout® Pro 2 only tests continuity on cables terminated with the Self-Storing Remote or a Test-n-Map™ ID Remote. It cannot test continuity on cables terminated with LanMap™ Location ID Remotes.

5. *The screen is flashing "For ID Test Only" with an ID number showing when I try to test the continuity of an Ethernet cable. What's wrong?*
   The VDV Scout® Pro 2 only tests continuity on cables terminated with the self-storing remote or Test-n-Map™ ID Remotes. It cannot test continuity on cables terminated with LanMap™ Location ID Remotes.

6. *When I am testing continuity of an Ethernet or phone cable, there are 3 vertical hash marks moving across the right side of the screen. What does this mean?*
   In continuity test mode, the vertical hash marks indicate that the tester is in loop mode. Tests are run continuously on the cable in this mode, and the tester will turn off automatically if the same test result is returned for 5 minutes. To enable or disable loop mode, hold the data button 🅒 or the phone button 🅐 for about 3 seconds. In coax continuity mode, loop mode is always active. In tone generation mode, the vertical hash marks indicate the tone is active.

7. *How do I know which end of a cable is bad?*
   It is not possible to directly determine which end of the cable is bad with the VDV Scout® Pro 2. Assuming that the cable is not damaged somewhere in its length (i.e. it's a brand new cable), you can sometimes determine which end to redo based on the diagnostic message. For instance, if the cable says there is this miswire:

   ```
   1 2 3 4 5 6 7 8
   2 1 3 4 5 6 7 8
   ```

   Then you can usually determine which end just by looking closely again at your terminations through the clear plug. For opens and shorts, it is not as easy to determine whether a pin is making contact with the wire just from observation. It could also be bad at both ends.

8. *Why don't I hear anything when the tester is in the tone mode?*
   In order to hear the tone, an analog tone probe must be used to pick up the signal emitted from the VDV Scout® Pro 2. (See Klein Tools' VDV526-054 or VDV500-060, sold separately).
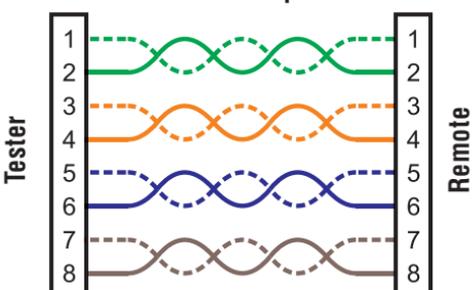
WIRING AND DISPLAY EXAMPLES

Properly Wired T568A UTP:
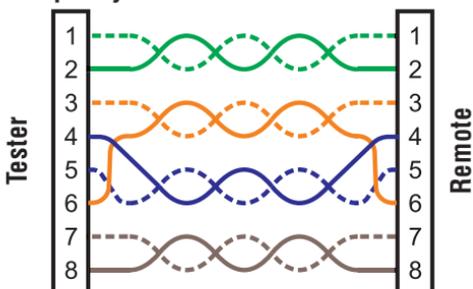

Properly Wired T568A UTP:
T568B is electrically identical to T568A, but swaps the green and orange pairs. Either standard will work as long as the same standard is used at both ends of a run or patch cable. Mixing "A" and "B" creates a cross-over cable.

T568A Cable with Split Pairs:

T568A Cable with Split Pairs: A common error in building a cable is to put all the pairs in pin sequence 1-2, 3-4, 5-6 and 7-8. This will produce the correct continuity, but the pairs are designated to be on pins 3-6 and 4-5 in the middle of the connector for compatibility with phone wiring. This wiring error is only detected by the split pair test since the designated pairs are not twisted together.

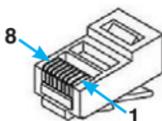### T568A Cable with a Short and Open:
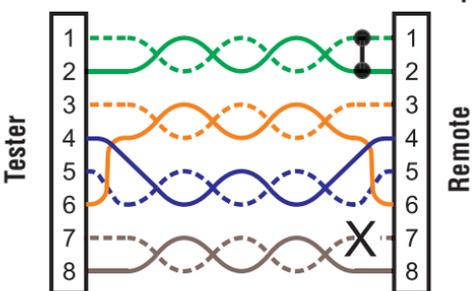
T568A Cable with a Short and an Open: The 1-2 pair pins are shorted together and the 7-8 pair is open. The pins with the errors are flashing. Dash lines (-) on the bottom (remote) display line indicate the short, while no numbers on the bottom line indicate the open pair.

T568A Cable with a Miswire and Unrecognized Continuity:
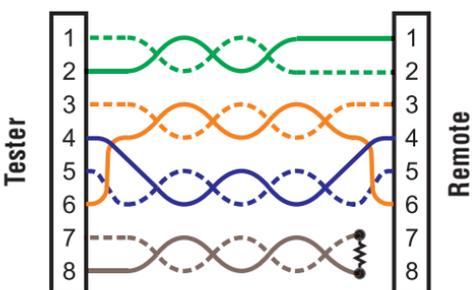
T568A Cable with a miswire and unrecognized continuity: 1 and 2 pins on the VDV Scout® Pro 2 are connected to pins 2 and 1 at the remote-end. The pins with this error are flashing. The "U" for the remote pin numbers indicates an unrecognizable continuity was detected that is neither a short or open. An ID remote connected to the VDV Scout® Pro 2 when in cable test mode would also show this error.

= FLASHING

Coax Cable Properly Wired:

KLEIN TOOLS ®

Voice Data **Video** Tone
Pass X-over Rev
Fail Short Split Open
ShieldedVoltage! **ID /**
1 2 3 4 5 6 7 8

Coax Cable Properly Wired with ID Remote #1: The #1 ID remote is used to terminate a properly wired coax cable. The video test passes, ID #1 is detected, and the "o"s across the bottom of the screen show that the tester is running tests continuously.

Coax Cable with an Open:

KLEIN TOOLS ®

Voice Data **Video** Tone
Pass X-over Rev
Fail Short Split **Open**
ShieldedVoltage!ID
1 2 3 4 5 6 7 8

Coax Cable with an Open: There is a break in the cable continuity. A break in the shield or in the center wire can cause an open fault. The cable does not pass and the ID remote number on the other end of the cable cannot be determined.

Coax Cable with a Short:

KLEIN TOOLS ®

Voice Data **Video** Tone
Pass X-over Rev
Fail **Short** Split Open
ShieldedVoltage!ID
1 2 3 4 5 6 7 8

Coax Cable with a Short: The center wire of the cable is connected to the shield, creating a short. The cable does not pass and the ID remote number on the other end of the cable cannot be determined.

BATTERY REPLACEMENT

1. Remove single screw in the middle of the back of the VDV Scout® Pro 2 with a #1 Phillips head screwdriver. Remove battery door.
2. Disconnect battery cable and recycle exhausted battery.
3. Acquire a 9 volt alkaline battery (IEC 6LR61, ANSI/NEDA 1640A).
4. Connect battery cable to new battery observing polarity and place into battery compartment.
5. Replace battery door and screw, taking care not to over-tighten it.

WARRANTY

www.kleintools.com/warranty

CLEANING

Turn instrument off and disconnect any cables. Clean the instrument by using a damp cloth. Do not use abrasive cleaners or solvents.

STORAGE

Remove the batteries when instrument is not in use for a prolonged period of time. Do not expose to high temperatures or humidity. After a period of storage in extreme conditions exceeding the limits mentioned in the Specifications section, allow the instrument to return to normal operating conditions before using it.

DISPOSAL / RECYCLE

Do not place equipment and its accessories in the trash. Items must be properly disposed of in accordance with local regulations.

Prior to disposal of this product, please contact Klein Tools for proper disposal options.

CUSTOMER SERVICE

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