

Instruction Manual

VDV Commander™

ENGLISH

- TESTS CABLES
- MEASURES CABLE LENGTH WITH TDR
- DETECTS FAULTS
- DETECTS AND MEASURES PoE
- LOCATES AND IDENTIFIES CABLES
- TESTS ACTIVE NETWORK
- SAVE AND PRINT REPORTS



KLEIN TOOLS®



VDV Commander™

Instruction Manual

FEATURES

The Klein Tools VDV Commander™ is a full-featured voice/data/video cable tester which includes cable length measurement, the ability to detect and/or identify PoE, link status and link capability – all in one product.

- Tests Cables
- Measures Cable Length with TDR
- Detects Faults
- Detects and measures PoE
- Locates and Identifies & Cables
- Tests Active Network
- Reporting
- Link Light
- Cable Identification (up to 20 locations)
- Shield Detection
- Voltage Warning
- Low Battery Indicator
- Multiple-Style Tone Generator
- Color LCD Display
- Multiple Languages
- Imperial and Metric Results
- Auto Power Off
- Customizable Setup
- USB Interface
- Upgradeable Firmware

GENERAL SPECIFICATIONS

- **Dimensions:** 6.8" L x 3.6" W x 1.85" D
(173 mm L x 91 mm W x 47 mm D)
- **Weight:** 18 oz. (510 g) with batteries
- **Operating Temperature:** 32°F to 122°F (0°C to 50°C)
- **Storage Temperature:** -22°F to 140°F (-30°C to 60°C)
- **Humidity:** 10% to 90%, non-condensing
- **Altitude:** 10,000 ft (3,048 m) operating
- **Voltage:**
 - **RJ Jack:** 66V DC or 55V AC
 - **F-Connector:** 50V DC or AC
- **Voltage Warning:** At maximum Safety Extra Low Voltage limits (60V peak AC or DC). Measurement continues while warning is displayed.
- **Battery Life:** 6 x AA alkaline batteries
 - **Standby:** 10 years
 - **Active:** 20 hours (average)
- **Enclosure:** High-strength PC/ABS plastic with UL94, V0 rating with boot.
- **Drop Protection:** 4 ft. (1.2 m)
- **Languages:** English, Spanish, French
- **Measurement Method:** Time Domain Reflectometry (TDR)
- **Cable Measurements:**
 - **Cable Testing and ID:** up to 1,000 ft (305 m)
 - **Split Pair Detection:** 3 ft. (1 m) to 1,000 ft. (305 m)
 - **Length:** 0 to 1,500 ft (457 m), $\pm 5\%$ and 1 ft. (0.3 m)
- **Remote support:**
Supports 8 Test-n-Map™ ID remotes (RJ11/12/45)
Supports 20 RJ-45 and 20 F-Connector ID only remotes
- **Power over Ethernet:**
Tests for IEEE 802.3af and IEEE 802.3at (PoE Plus) compliant PoE
Tests for classes and loads cable up to 25.5 watts
(at class 4) Identifies Mode A or B (pairs with PoE)
- **Active Ethernet:** Indicates advertised speeds of 10/100/1000base-t half or full duplex. Can link to network at 10/100base-t
- **Tone Generation:** Tone frequencies: 730 Hz and 1440 Hz
- **Test Memory Storage:** Stores up to 256 cable or network tests with user defined names.
- **Safety Compliance:** CE
- **Disposal Compliance:** WEEE



⚠ WARNINGS

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

The VDV Commander is designed for use on cabling systems with Safety Extra Low Voltage (SELV) or without voltage.














- Do NOT use the VDV Commander when the Voltage! icon is present. The Voltage! icon turns on when the voltage exceeds Safety Extra Low Voltage (SELV) rating of 60 Volts peak AC or DC. Operating the VDV Commander when a voltage source exceeds 60 Volts peak AC or DC may pose a safety hazard for the user.

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.
	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.

OVERVIEW

ACCESSORIES

Description		VDV501-097 Starter Kit	VDV501-829 Test & Tone Kit
VDV Commander Tester		✓	✓
PROBEplus Tone Tracing Probe			✓
CoaxMap + LanMap Starter Set ID Remotes (1-5)		✓	
LanMap ID Remotes (1-20)			✓
CoaxMap ID Remotes (1-20)			✓
VDV Test-n-Map ID Remote #1		✓	✓
Test Cable - Micro USB to USB A		✓	✓
Test Cable - Universal RJ12 Jumper, 9"		✓	✓
Test Cable - RJ45 Jumper, 9"		✓	✓
Coax Adapter - Barrel, F-F, Female		✓	✓
AA Batteries (6)		✓	✓
9-Volt Battery (1)			✓
VDV Commander Carrying Case		✓	✓

LCD SCREEN

The VDV Commander features a full-color graphic LCD screen. Press any of the four blue buttons  below the on-screen icon to select that function. Alternately, you can use the side or up/down arrows     to scroll to desired on-screen function and press the "Enter" button .

Types of Faults


Several possible error conditions on the cable are detected and displayed on the screen of your VDV Commander.

Cable Fault	Description
Miswire	Cable's wire connection does not follow cabling standards.
Open	Wire connection is not continuous throughout cable length.
Short	A pair has a high resistance fault. This occurs when the wires are making contact with each other due to damage or improper termination.
Split	A cable can be wired with correct continuity but not with correct pairing. This happens most when the cable is terminated consistently at both ends but in the wrong order.
Length	Displays the pair lengths found. Length discrepancies may be determined by these results.
Network Connectivity	Displays network connectivity which allows the user to determine if it is different than expected.
PoE	Displays results in red if voltages are lower than expected.

START-UP AND SHUT-DOWN

Follow instructions carefully and pay attention to warning and caution symbols. Failure to observe warnings can result in severe injury, death, and damage to the VDV Commander tester.





On/Off

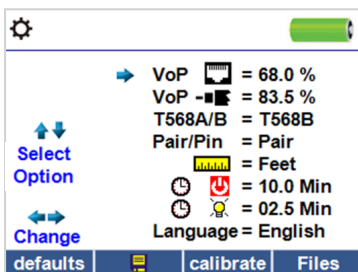
Turn unit On/Off – press the red "On/Off" button  to activate the VDV Commander or turn it off.








Auto Power Off

The VDV Commander automatically turns off to conserve battery power if no input or activity is performed on the device. See "setup" to adjust the length of time before automatic power down.









SETUP

From the main screen, press the blue function button  on the far right below the "setup" symbol . Use the up and down arrow buttons   to scroll through the Setup menu and to select an option.



- Use the up and down arrow buttons   to navigate through the settings.
- Use the left  and right  arrow buttons to select setting.
- Use the up and down arrow buttons   to change the selected setting.
- Press the "Enter" button  to accept your changes.
- Press the left arrow to unselect a setting.

Changing a Setting

- RJ45 VoP : VoP  Set the VoP to be used to measure RJ45 cable.
- Coaxial VoP : VoP  Set the VoP to be used to measure coaxial cable.
- TIA568A/TIA568B: Set the RJ45 wiring configuration to TIA568A or TIA568B wiring standard.
- Pair/Pin: Set the RJ45 wiremap to measure by pair or pin.
- Meters/Feet :  Set the length measurement to be displayed in Meters or Feet.
- Pair/Pin can be changed to test the RJ45 from Wire Order to Pair Order.
- Power Off Timeout:   Set the desired automatic timeout from 00.5 - 99.9 minutes.
- LCD Dimmer Timeout:   Set the desired automatic timeout from 00.5 - 99.9 minutes.
- Language: Set the desired language from English (default) to Spanish or French.
- Tone Generator Timeout: Set the desired automatic timeout 00.5 - 99.9 minutes.
- PoE Test: Turn the PoE test On or Off. Turning the PoE off will allow the VDV Commander to detect a network without running a PoE test.
- Press the "Calibrate" function button to calibrate the VDV Commander. This will calibrate the VDV Commander at 0 ft. No cables should be connected to the VDV Commander when performing a calibration.
- Press the "Save"  function button to save your options.
- Note: If only temporary change is desired, do not press the save button. If the save button is not pressed, the previous settings will be restored once the unit is powered off.
- To restore factory default values, press the "Defaults" function button.
- To view saved files, press the Files function button.

GENERAL TESTING PROCEDURES

Cable Testing Guidelines

The VDV Commander tests coax, network, and phone cables to detect possible faults, measure cable lengths, show wire pairing and examine a cable's physical/electrical properties.

Important Notes:

- RJ jacks for data and phone share internal connections on the VDV Commander. Connect just one RJ cable at a time.
- You cannot connect an RJ and coaxial cable at the same time.
- If testing RJ cables, remove any coax cable adapters.

Safety Notes

The VDV Commander is designed for use on cables with voltage below 60V. Do NOT plug the device into a source with voltage above 60V. Connecting the device to live AC power can damage the unit and pose a safety hazard.

Poorly terminated RJ plugs can damage the jacks on the VDV Commander. Inspect all RJ plugs before inserting them into the VDV Commander. Make sure you insert the plug into the appropriate jack of the remote or device.

Cable contacts should be recessed into the plastic housing of the receiving jack. Do NOT plug a six-position phone plug into an eight-position data jack on a remote or remote device.






Length Testing

VDV Commander measures cable length and length to faults using Time Domain Reflectometry (TDR). Velocity of Propagation (VOP) is the TDR measurement of the speed of the reflected waveforms compared to the speed of light. VOP values can vary among cable types, lots, and manufacturers. In most cases, these differences are minor and may be disregarded.


Cable Testing with Remotes

#1-8 Test-n-Map™ ID Remotes are used to verify connectivity at the opposite end of a cable and provide a location ID. To connect a telephone cable, use the included Tester Cable, Universal RJ12 Jumper 9", to a RJ11/12 wall plate. The #1-20 CoaxMap™ and #1-20 LanMap™ remotes are used to provide a location ID only.










How to Perform a Cable Test

- Press the "On/Off" button  to power on the VDV Commander.
- Connect a network, coax, or telephone cable to the appropriate connector on the top of the VDV Commander. WARNING: Do NOT plug an RJ12 cable directly into the VDV Commander. A standard RJ12 cable will damage the VDV Commander's RJ45 jack. Use the RJ adapter patch cable (VDV726-125) that is included with the VDV Commander.
- Press the "Enter" button  to display the cable test menu. The VDV Commander will automatically perform a test upon entering the cable test menu.
- To scroll through Cable Type mode, press the RJ45 function button. The icon will change with each press, from RJ45 to coax to telephone  /  / .

GENERAL TESTING PROCEDURES (CONTINUED)






- If a Test-n-Map™ remote is NOT being used (a one ended test), the VDV Commander will test the length of each pair, open, short, or split pair. Performing a one ended test will not verify connectivity on the opposite end of the cable.
- If a remote is being used, connect the remote to the opposite end of the cable.
- To calibrate the **VoP**, connect a known length of cable to the VDV Commander and press the up/down/left/right buttons to increase or decrease the **VoP**. Press the left and right buttons to select and change the **VoP** one digit at a time.
- While adjusting the **VoP**, press the test button until the desired length of the cable is displayed.
- To save the calibrated **VoP**, enter the settings menu and press the "Save" function button .







NOTE: your adjusted **VoP** will be displayed next to the RJ45 or coax icon.

- Press the green test button  or the loop mode function button  to perform additional tests.
- To save a cable test, press the "Save" function button .
- Use the arrow buttons     and the "Enter" button  to name the cable test file.
- Press the "Save" function button  to save the cable test file.

Network/Power over Ethernet PoE Testing

The VDV Commander PoE test identifies the link capability of a network drop and the connection status. VDV Commander detects the presence of PoE, PoE class per IEEE 802.3 af/at, and also measures PoE voltages under load. The Network/PoE tests can be saved for record keeping and printing.

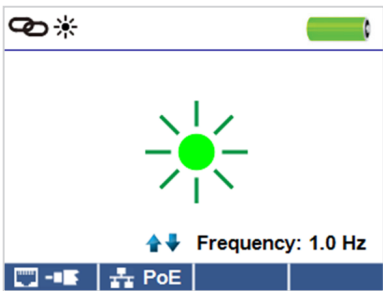
PoE	
Link Capability	Link Flow Control
10Base-T	Full / Half Duplex
100Base-TX	Full / Half Duplex
Connected at	PoE A 12.95W Max
100 Base-TX	57.9 V Min Load
MDI FDX	56.5 V Max Load
 	  PoE 





- Press the "On/Off" button  to power on the VDV Commander.
- Connect the VDV Commander to a switch or active network jack.
- Use the left or right arrow buttons to select the Network/PoE icon and press the "Enter" button  or press the Network/POE function button.
- The VDV Commander will automatically detect and display link capability, connection speed, PoE class, and PoE Min/Max voltages.
- To perform a network test only, press the PoE function button **PoE** .
- To save the PoE data, press the "Save" function button .
- Use the arrow buttons and the "Enter" button  to name the PoE file.
- Press the "Save" function button  to save the PoE file.

GENERAL TESTING PROCEDURES (CONTINUED)

Link Light

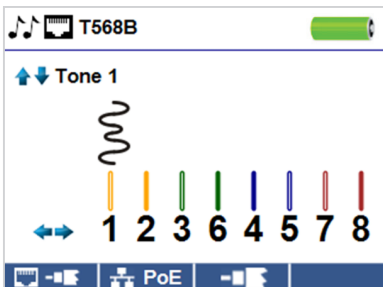
The Link Light test is used to help identify a hub or switch port.














- Press the "On/Off" button  to power on the VDV Commander.
- Connect the VDV Commander to an active network cable or port.
- Press the Network/PoE function button  PoE, then press the Link Light function button  .
- The Link Light will automatically begin to blink upon entering the Link menu.
- The Link LED above the LCD screen will flash at the same cadence as the port light.
- Use the up and down arrows to adjust the transmit frequency to suit the switch characteristics.

Tone Generator

Tone generation is used to trace cable runs and locate faults by sound. Selection of this mode emits a cadence from the VDV Commander through the connected cable. The tone is detected by a tone tracing probe*. Refer to the Accessories section.



- Press the "On/Off" button  to power on the VDV Commander.
- Use the left and right arrow buttons   to select the tone generator icon  and press the "Enter" button .
- The VDV Commander will automatically activate the tone generator upon entering the tone generator menu.
- Connect your cable to either the RJ45 jack or coax connector located on the top of the VDV Commander.
- To switch between network and coax cables, press the coax cable / RJ45 function button  / .
- Use the up and down arrow buttons   to select tone cadences 1 thru 4.
- Use the left and right arrow buttons   to select which pin or pair to place the tone.
- Use a tone tracing probe (PROBEplus VDV500-060) alongside the cable or at the end of the cable to hear an audible tone.

* Probe is included in some kits.

VDV COMMANDER APP

The VDV Commander application gives you the ability to view, save and print cable and network test results on your computer. This application can also update your VDV Commander's firmware.

To install the VDV Commander App

- Go to VDV Commander on www.kleintools.com to download the VDV Commander software application.
- Save the VDV Commander Application file to your computer's desktop. Double click on the file to open it.
- Double-click on "SET-UP.exe" to begin installation.

To view test results on your computer

- Open the VDV Commander App ("**Cable Tester**" shortcut).
- Connect the VDV Commander to your computer with the included USB cable.
- Press the "On/Off" button  to power on the VDV Commander. The software will display "Cable Tester Detected" at the bottom left of the screen.
- Click the "Import Test Results" icon to read the test results. The cable names will be displayed on the top left of the screen. The first cable name will automatically be selected and displayed at the top right.
- A new window will open displaying "Do you want to save imported test results?". Select "Yes" to store all data, or select "No" to select specific test results.
- Click on the cable IDs on the left of the screen to view test results for that ID.
- You may delete a single test by selecting it and clicking "Delete Selected Tests", or to delete the entire test list click on "Delete All Tests."

To save the cable results to your computer

- Click on "File" on the tool bar at the top left.
- Click on "Save File." A "Save As" dialogue will appear; navigate to where you want to save the test results and click "Save." You can also rename the file in the "Save As" dialog window. The computer software application will remember the last place you saved a file.
- Click "Create CSV Report" to download data in an editable format, or "Create PDF Report" for a PDF file.

To read previously saved cable tests

- Click on "File," "Open," and select the desired test result file.
- After tests have been saved, they will automatically be reloaded the next time the application is opened.

To write cable tests to the VDV Commander

- Connect the VDV Commander to your computer using the included USB cable.
- Open the VDV Commander software application. Click on "File", "Open", and select the desired cable tests.
- Click on "Write Commander" and the contents of the currently displayed tests will be written to the VDV Commander.

To print a test

- Select the desired test.
- Click on "File," "Print".

To create and print test results report


- First select the tests to be included in the report from the Test Results list box. To select multiple tests do one or more of the following:
 - Click on a test and drag to the end of the range of tests.
 - Click on the first desired test, then click on the last desired test while holding down the "Shift" key.
 - Click on a test while holding down the "Control" key to add or delete it from the selected tests.
- Select "Create Report PDF" under the File menu.
- When a Dialog box comes up, select the file name and location for the PDF file to be saved.

UPDATING FIRMWARE

To Download the New VDV Commander Firmware

- Go to VDV Commander product page on www.kleintools.com.
- Click on the VDV Commander Firmware update link to download the new firmware.
- Save the file to your computer.

Updating the VDV Commander

- Connect the VDV Commander to your computer using the included USB cable.
- Press the "On/Off" button  to power on the VDV Commander. The software will display "VDV Commander Connected" at the bottom left of the screen.
- Select the VDV Commander firmware file.
- The VDV Commander screen will go dark and it will begin the firmware installation (the screen will remain dark during the installation).
- The VDV Commander application will display a progress bar to indicate the download progress.
- Once complete, the VDV Commander application will display "success" along with the installation date and time in the Status Log window. The VDV Commander will power itself back on after the firmware installation.
- If the VDV Commander is interrupted or an error occurs during installation the VDV Commander screen will remain dark. To recover the VDV Commander firmware, close the VDV Commander application, disconnect the VDV Commander from the USB cable, then remove the batteries. Reinsert the batteries and follow the update instructions.

NOTE: The VDV Commander screen will remain dark until it has been reprogrammed.

BATTERY REPLACEMENT

- The VDV Commander is powered by six AA alkaline batteries.
- To replace batteries, open the back cover by unscrewing the single screw with a philips head screwdriver.
- Take out the old batteries and replace. Slide the new batteries in by following the directional guidelines in the battery chamber.
- Screw the back cover back on to the VDV Commander. Do not over tighten the battery back cover.

WARNING: Do NOT use carbon batteries. Do not mix new batteries with old batteries, due to the risk of battery leakage.

CLEANING

- Before cleaning, disconnect all cables from the VDV Commander. Failing to disconnect cables can damage the device and cause personal injury.
- Do not use harsh cleaners, abrasives, or solvents.
- Use a clean, damp cloth to clean the VDV Commander.

STORAGE

- Batteries should be removed if the device is stored for a long time.
- Do not expose the VDV Commander to high temperatures or humidity. See the specifications section for temperature limits.
- When not in use, store the VDV Commander in a dry, protective case.
- 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.

WARRANTY

www.kleintools.com/warranty

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

KLEIN TOOLS, INC.

450 Bond Street
Lincolnshire, IL 60069
www.kleintools.com