NETWORK POWER PANEL™

INLINE CAT5/6 DVM AND PoE TESTER + TONE

USER'S GUIDE

THE NETWORK POWER PANEL IS AN INSTALLERS BEST FRIEND!

During the install or repair of a network device, use the Power Panel:

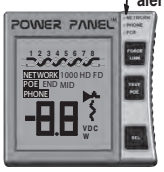
1. Locate the active devices and voltage on the Ethernet cable (or port)
2. Display the speed (10/100/1000), duplex and pinouts of the devices
3. Display the PoE voltage and pinouts (if PoE is present)

Once your installion is complete, use the Power Panel to:

1. Display the negotiated speed (10/100/1000) of the devices when connected
2. Measure the power usage (in watts) of the PoE device

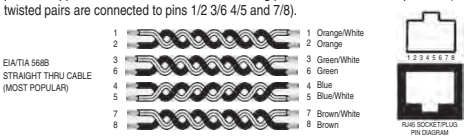
The Network Power Panel can plug into any device with an Ethernet plug... such as a computer, switch, VoIP phone, IP camera, or access point... ... the Network Power Panel works with them all.

3 *ultrabright* LEDs are the first alert of activity or voltage!



Watch the numbers. You can see which pair it is studying: 1,2....3,6....4,5....7,8. LAN devices, phones, PoE (voltages) are all displayed. "1" through "8" refer to the pin numbers of jack or cable connected to the Network Power Panel. See below for a typical cable diagram.

Ethernet: The network devices and cabling connecting computer devices is called "Ethernet". Ethernet cables, with few exceptions, are all the same: They are constructed of 4 twisted pairs of copper wire and connected in the following pattern to the connector pins 1-8 (the twisted pairs are connected to pins 1/2 3/6 4/5 and 7/8).



PoE: Power supplied to network devices over a CAT5/6 cable. See the bottom of page 5.

QUICK START GUIDE

DETERMINE SPEED OF SWITCH: Connect the tester directly to the switch port you wish to test (use either Power Panel jack).

The NETWORK LED is lit. Press SEL to go to the NETWORK screen. The display says the device is transmitting on pair 3,6. The speed and duplex are indicated (10,100,1000,HD,FD). A "Force Link" button coerces a dialog.

DETERMINE IF SWITCH HAS POE CAPABILITY: Connect as in above example.

The POE LED is lit. Press SEL to go to the PoE screen. A PoE "end span" voltage of 48V is on pairs 1/2 & 3/6. If a lower "discovery" voltage is displayed, press "PoE Test" to simulate a PoE device and prompt the full 48VDC of PoE.

DETERMINE THE NEGOTIATED SPEED OF TWO DEVICES: Connect the tester inline (in between) two devices (example: between the VoIP phone and switch).

When connected together, any 2 network devices negotiate a speed. The inline Network Power Panel goes in between the 2 devices and displays the result. In this case, it's 100MB/s, full duplex on pairs 1/2 & 3/6.

DETERMINE THE POWER DRAW OF THE CONNECTED DEVICE: Connect inline.

The POE LED is lit. Press SEL to go to the PoE screen. As in the above screen, the PoE voltage is on pairs 1/2 & 3/6. Watch the large digits. The first displayed is the PoE power draw in watts (8 watts shown). The second is the DC voltage amplitude (typically 48 VDC).

LOCATE A CABLE END WITH EITHER THE PORT BEACON OR TONE:

Hold for 5 secs to turn on **Port Beacon**. See page 4.

Turns Power Panel ON and OFF. Selects LCD displays. After tester is ON, hold for 4 secs to turn on **Locator Tone**.

GENERAL INSTRUCTIONS
THE 4 STEPS TO USING THE NETWORK POWER PANEL

Follow these 4 steps to use the Network Power Panel.
To trace cables or ports with the Locator Tone or Locator Port Beacon, see *Interactive buttons* at the bottom of the page.

① **POWER ON:** Press any button.
POWER OFF: Press and hold the SEL (select) button until off.
BATTERY SAVER: No activity for 5 minutes shuts the Power Panel OFF.

② **CONNECT THE POWER PANEL:** Connect the tester either directly to the device you wish to test (use center jack) or connect it inline (in between) two devices (inline is used for network monitoring and measuring PoE power).

③ 

WATCH ALERT LEDS. They light if a network device is ON or if a phone or PoE voltage is present.

④ **SELECT A LCD DISPLAY.** Each lighted LED has a corresponding LCD display with information. Use the SEL button to move between displays.

NETWORK LED. See page 4.
POWER LED. See page 5.
PHONE LED. See page 6.

Use the SEL button to select between displays.
Note: Display is available only if LED is lighted.

INTERACTIVE BUTTONS
LOCATOR TONE, PORT BEACON, FORCE LINK, TEST PoE

Turns Power Panel ON and OFF. Selects LCD displays. After tester is ON, hold for 4 secs to turn on **Locator Tone**.

Press to prompt devices to talk to you. Hold for 5 secs to turn on **Port Beacon**. See page 4.

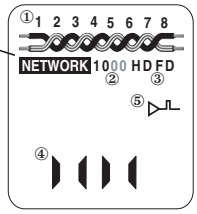
Simulates a Power over Ethernet (PoE) device, prompting full PoE voltage. See page 5.

"NETWORK" LED IS LIGHTED

The Network LED indicates a powered network device is present (switch, a PC NIC card, access point, VoIP phone, IP security camera, etc.). The Power Panel detects the link pulses, lights the ALERT LED and displays the pair(s), speed and duplex.

NETWORK ALERT LED LIGHTS IF PRESENT
When a VoIP phone, IP camera, switch or other network device is spotted, the NETWORK LED lights. Press SEL to locate display.

NETWORK DISPLAY
(available if LED is lit)



① **Pair(s) with activity**
② **Speed of the device**
(10,100,1000 MB/s). "Advertised" if a single unit. "Negotiated" if inline.
③ **Duplex of the device (half or full)**
④ **Data is flowing between devices**
(inline connection only)
⑤ **"FORCE LINK" button is pressed**

FORCE LINK BUTTON Press if you suspect a network device is present but are receiving little or no link information (an ALERT LED but no display). Some network devices refuse to "talk" unless prompted. The FORCE LINK button sends link pulses... prompting a dialog. Caution: When inline, link pulses from pressing FORCE LINK may disrupt existing communiactions.

LINK BEACON: When the FORCE LINK button is latched, transmitted link pulses cause the link LED on the receiving device to blink. This helps locate ports in crowded panels. To "latch", hold the button for more than 5 seconds (link pulses will transmit for 30 minutes). Press any button to unlatch. When latched, "Lb" displays on the LCD.

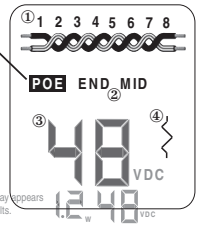
LEAVE CONNECTED: The Power Panel can remain connected inline between two devices without affecting the communication on the link. This is true whether the Power Panel is in ON or OFF. This makes the inline version perfect as a long term, practical monitoring device.

"POE" LED IS LIGHTED

The PoE LED indicates that Power over Ethernet is on the cable. The cable pairs, amplitude of PoE voltage and, if connected inline, PoE power are displayed. Further, pressing TEST PoE prompts the full 48VDC voltage (see glossary below).

PoE ALERT LED LIGHTS IF PSE/PoE PRESENT
Press SEL to locate display.
Discovery voltage is 5-15VDC. Full PoE (48VDC).
Typical power is 5-10 watts
Note: If not connected inline, use the center connector.

PoE DISPLAY
(available if LED is lit)



① **Pairs where PoE exist**
② **Type of PoE device***
③ **Power (watts) / Voltage (DC)**
(display auto toggles between power and voltage)
④ **"TEST POE" button depressed**

*A PSE at the end of a cable supplying power on 1/2 & 3/6 is an "endspan device" (typically a switch with built-in PoE). A PSE placed in the middle of a cable on pairs 4/5 & 7/8 is a "midspan device".

Power (watts) display appears first, followed by volts.

NOTE ON POWER (WATT) DISPLAY: To measure a device's power draw, the Power Panel must be connected inline (in between) the PSE switch and the PoE device.

Tests the operation of the PoE voltage source by applying a load in compliance with both IEEE and Cisco standards. This load should trigger the full 48VDC PoE voltage. Caution: When inline, only press if your are familiar with all devices and how they react to 48VDC.

WHAT IS POE: Power supplied to network devices over a CAT5/6 cable (no separate AC power required). Many VoIP phones, IP cameras and access points are PoE devices.
WHAT IS PSE: Devices that supply PoE are "Power Sourcing Equipment". PoE capable switches and PoE injectors are examples of PSE devices.
PoE OPERATION: PoE standard IEEE 802.3af suggests that a PSE send a low power "discovery voltage" and when a proper load is sensed, apply the full voltage (48VDC).

"PHONE" LED IS LIGHTED

Although not allowed by any standard, digital and analog phones and FAXs are on CAT5/6 cables. These high voltage devices can damage other devices if you are not aware of their presence. The Power Panel CAT5/6 DVM searches for them, lights the ALERT LED and displays the phones' voltages. Up to 4 phones can be displayed.

PHONE ALERT LED LIGHTS IF PRESENT
When a analog or digital phone or FAX machine is present, the PHONE LED lights. Press SEL to locate display.

PHONE DISPLAY
(available if LED lit)

① **Pairs with activity**
② **Amplitude of voltage**
48VDC is typical central office voltage

Up to 4 phone devices are displayed
LCD displays multiple phones automatically

LEAVE CONNECTED: The Power Panel can remain connected inline between two devices without affecting the communication. This is true whether the Power Panel is ON or OFF. The inline version is designed as a long term, practical monitoring device.

ByteBrothers™ Network Test and Repair Tools