
# Signal Conditioning Kits for Custom Couplings, Filters, & Terminations up to 3 GHz

### Applications

- DC Blocks
- Feed-through 50 Ω Termination
- Custom Attenuators
- Multi-Pole Filters
- Series Resistor, Inductor or R-L Network
- Feed-through Decoupling Capacitor
- Schottky Diode Line Terminator
- Diode Detector
- Transistor Switching Test Fixture*
- In-Line Amplifier*
- Diode Recovery Test Fixture*

*(w/optional Bias Tee)

### Features

- π-Network, T-Network, or Multi-Pole Filter Footprint on Both Sides of PCB
- Ground Plane and 50 Ω Transmission Line For Up To 3 GHz Bandwidth, Depending On Configuration
- Accepts #1206 and #0805 size SMT Components
- Populate With 1 to 28 Series or Shunt Components
- Accepts Mini-Circuits™ HFCN-2700 Series Filters (π and T models only)
- BNC Male/Female or Female/Female connectors
- Cylindrical Metal Enclosure Included for Shielding
- 16.3 mm OD x 67.5 mm or 78 mm Length

## Product Description:

PRL's new Signal Conditioning Kits enable quick and easy fabrication of custom signal-conditioning circuits, such as attenuators, filters, DC blocks, feed-thru 50 Ω terminations, etc. They can be used to build commonly-used circuits, such as a 50 Ω shunt termination, or to build one-of a-kind fixtures not commercially available. Three PCB designs (π, T and multi-pole) enable easy construction of nearly any series and/or parallel network. The double-sided footprints (identical on both sides of the PCB) enable non-standard resistor, inductor, and capacitor values to be fabricated easily and economically from standard-value components. With the addition of a Bias Tee, active device test fixtures can be built as well.

In one example, we easily fabricated a 24 dB attenuator with non-standard impedance for the interface between a vacuum tube output and a TTL input circuit, using a two-stage design with discrete SMT resistors. In another example, we level-shifted a –6 V to +10 V pulse to 0 V to +16 V for driving a high impedance circuit. In this case, we constructed a simple DC Restorer using a coupling capacitor and a shunt Schottky diode to ground.

Other examples include a feed-through decoupling capacitor, using one shunt capacitor, to make an ideal low pass filter for noise reduction at I/O ports. The kits can be populated with as few as one series component, or as many as 28 series and shunt components, enabling a wide range of applications.

Two available BNC connector styles (M/F or F/F) and a low-profile design enable inline insertion into your transmission line, with or without cables. A gender changer may be used to create a BNC M/M style. Combine any PCB with either connector style to suit your application. A metal tube enclosure provides protection and shielding.

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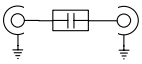
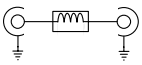
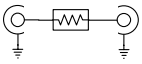
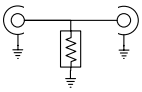
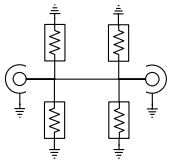
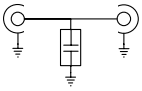
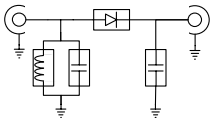
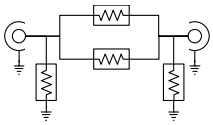
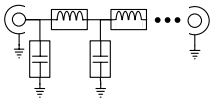
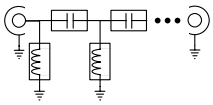
# Sample Applications:

| Application | Schematic | Kit Type | | |
|---|---|---|---|---|
| | | Pi | Tee | Multi |
| DC Block/ Coupling Cap |  | Y | Y | Y |
| AC Block/ RF Choke |  | Y | Y | Y |
| Series Termination |  | Y | Y | Y |
| Shunt Termination |  | Y | Y | Y |
| Precision Shunt Termination |  | Y | Y | Y |
| Feed-through Decoupling Cap |  | Y | Y | Y |

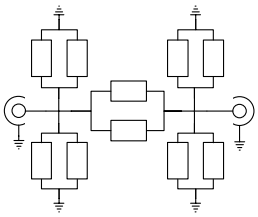
| Application | Schematic | Kit Type | | |
|---|---|---|---|---|
| | | Pi | Tee | Multi |
| Diode Detector |  | Y | Y | Y |
| Attenuator |  | Y | Y | Y |
| Low-pass Filter |  | N | N | Y |
| High-Pass Filter |  | N | N | Y |

Multiple units can be used in series to provide additional stages for Bandpass filters, etc. Front and back sides of PCBs provide parallel paths for Notch/Bandstop filters, etc.

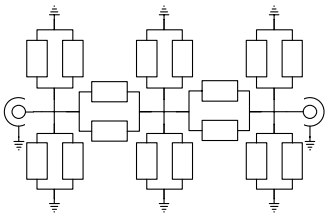
# PCB Configurations:

(Diagrams show all possible component positions on both sides of PCB. Unpopulated series positions may require 0 Ω jumpers.)

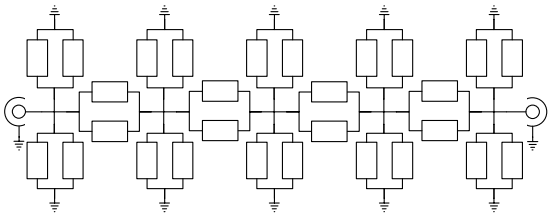
**π Network PCB:**
- Up to 2 series components
- Up to 8 shunt components
- Highest bandwidth
- Accepts Mini-Circuits™ HFCN-2700 Series Filters
- 67.5 mm module length



**T Network PCB:**
- Up to 4 series components
- Up to 12 shunt components
- For most applications
- Accepts Mini-Circuits™ HFCN-2700 Series Filters
- 67.5 mm module length



**Multi-Pole Network PCB:**
- Up to 8 series components
- Up to 20 shunt components
- Greatest flexibility for multi-pole networks
- 78 mm module length

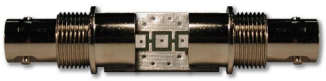
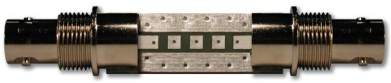


**80 dB Attenuator on Multi-Pole PCB**

**Multi-Pole model with cover installed**

# Ordering Information:

(All models include matching tube enclosure.)

| Connector Style | PCB Configuration (vias are plated through to identical pattern on reverse side) | | |
|---|---|---|---|
| | π Network | T Network | Multi-Pole Network |
| **Male/Female** |  **P/N: PRL-PINET-BMF** |  **P/N: PRL-TNET-BMF** |  **P/N: PRL-MNET-BMF** |
| **Female/Female** |  **P/N: PRL-PINET-BFF** |  **P/N: PRL-TNET-BFF** |  **P/N: PRL-MNET-BFF** |

**More information available at http://www.pulseresearchlab.com/BNCKits, including additional application notes, component value worksheets, links to filter calculators, attenuator calculators, etc.**