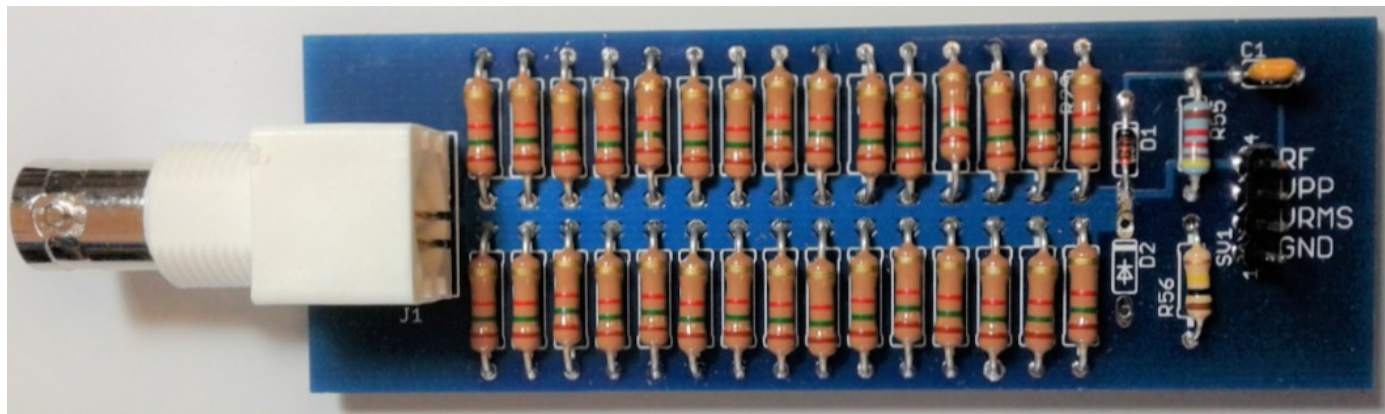


# Pacific Antenna 15 Watt Dummy Load Kit Assembly and Operating Manual



## Introduction

Our 10 Watt Dummy Load kit is a compact design using through hole parts

A great first time kit to learn or develop soldering skills

On board circuitry provides direct RF voltage as well as DC voltages representing the Peak to Peak and RMS values of the RF voltage.

Provides accurate measurements of RF Power from less than 100mW to 15 Watts using an inexpensive digital Multimeter

The kit can be assembled with common soldering tools and techniques and is a great starter kit for first time builders.

Usable from DC to 50MHz

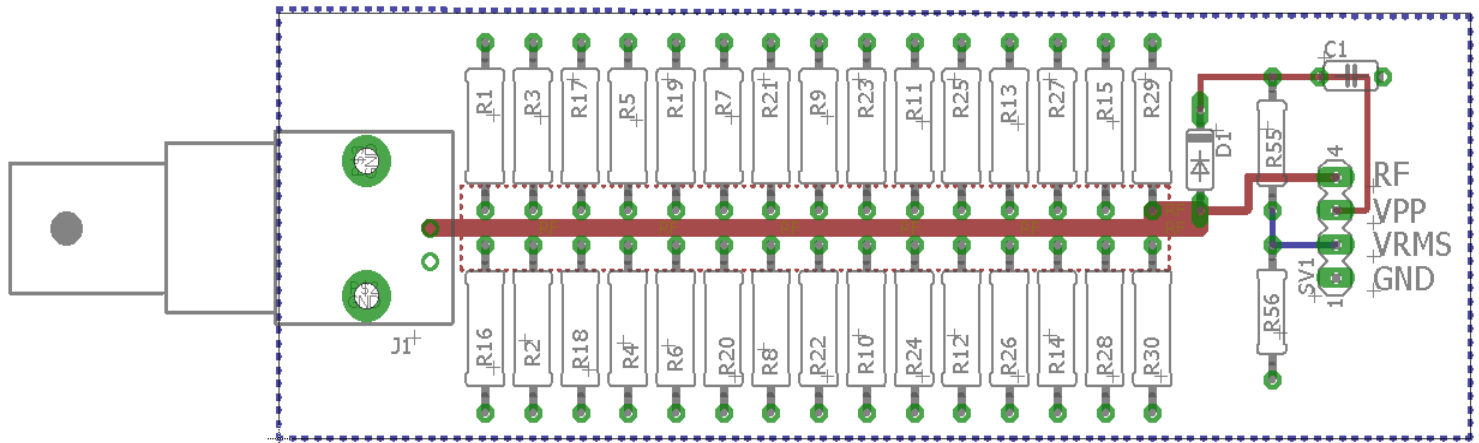
Includes all the components and circuit board.

## Inspection and Inventory

First, check the kit to be sure all parts are included. Should anything be missing, please contact us for a replacement.

- 30 – R1-R30, 1.5 K 1/2 watt resistors: Brown-Green-Red-Gold
- 1 – R55: 41.2K 1/4W, 1% resistor: Yellow-Brown-Red-Red--Brown
- 1 – R56: 100K 1/4W, 5% resistor: Brown-Black-Yellow-Gold
- 1 – D1: 1N4148 diode
- 1 – C1: 0.01uF monolythic capacitor, yellow, (marked 103)
- 1 – J1: BNC board mount connector
- 1 – SV1: 4 pin header
- 1 – Circuit board

## Board Layout



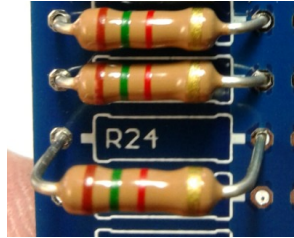
## Assembly

### Install R1- R30

These are the 1/2W. 1.5K ohm resistors and they go in the marked locations shown on the circuit board.

You may find it helpful to do one row of the resistors at a time to make soldering the leads easier.

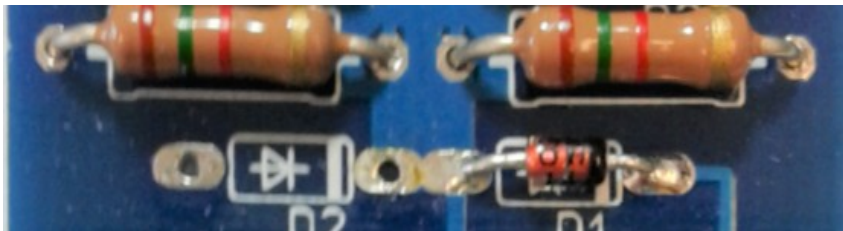
First, pre-bend the leads near the resistor bodies and then insert them into the board.



Push or pull the resistors down flush to the board and bend the leads on the backside to hold them in place while soldering.

Trim the excess leads close to the board.

Install, solder and trim the leads of D1. Be sure to match the band end to the diagram above and the outline on the circuit board. Note that the D2 location is not used.

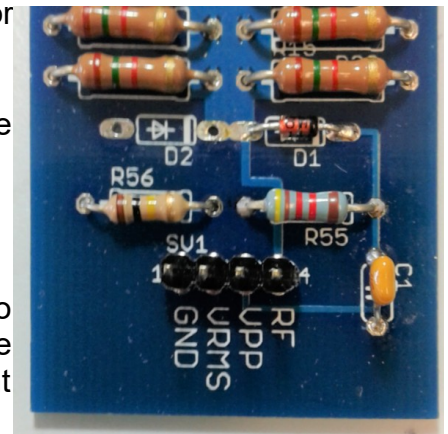


Install R55 the 41.2K ohm (Yellow-Brown-Red-Red—Brown) resistor in the marked location on the board

Install R56, the 100K resistor (Brown-Black-Yellow-Gold) in the marked location on the board.

Install C1 the 0.01uF capacitor in the location marked on the board.

Install the 4 pin Header in the location SV1. You will find it helpful to just solder 1 pin and then make sure it is straight and flush to the board. If not, reheat that pin and adjust the header for alignment before soldering the additional pins.



Now, solder the BNC connector, making sure to seat it fully into the board. Solder the two small wires and the two support pins. The support pins may require longer time, increased temperature or a larger soldering iron to properly solder.



**Congratulations, your dummy load kit is now complete!**

**Initial test**

To verify proper soldering, it is recommended to use a multimeter and measure the resistance across the input BNC connector or between the header pin 1 and 4. The value should be close to 50 Ohms.

If not, there may be one or more bad solder joints in the resistor array.

## Operation

The dummy load is easy to use. Simply connect your transmitter input to the BNC

To measure RF Power, connect your multimeter to pin 1 and Pin 2 or 3.

Pin 1 is ground and the DC output voltages appear on pins 2 and 3 of SV1.

Pin 2 provides the RMS value of the RF voltage.

Pin 3 gives the Peak value of the RF voltage.

Pin 4 is direct RF voltage across the resistors.

RF power is calculated from this relationship:  $Power = (V_{rms}^2)/50$

**Note:** The power input should be limited to 15W to avoid damaging the resistors and sense circuit components.

## Specifications

Power Limits:                   15 watts for 2 minutes  
                                      10 watts for 3 minutes  
                                      5 watts continuous

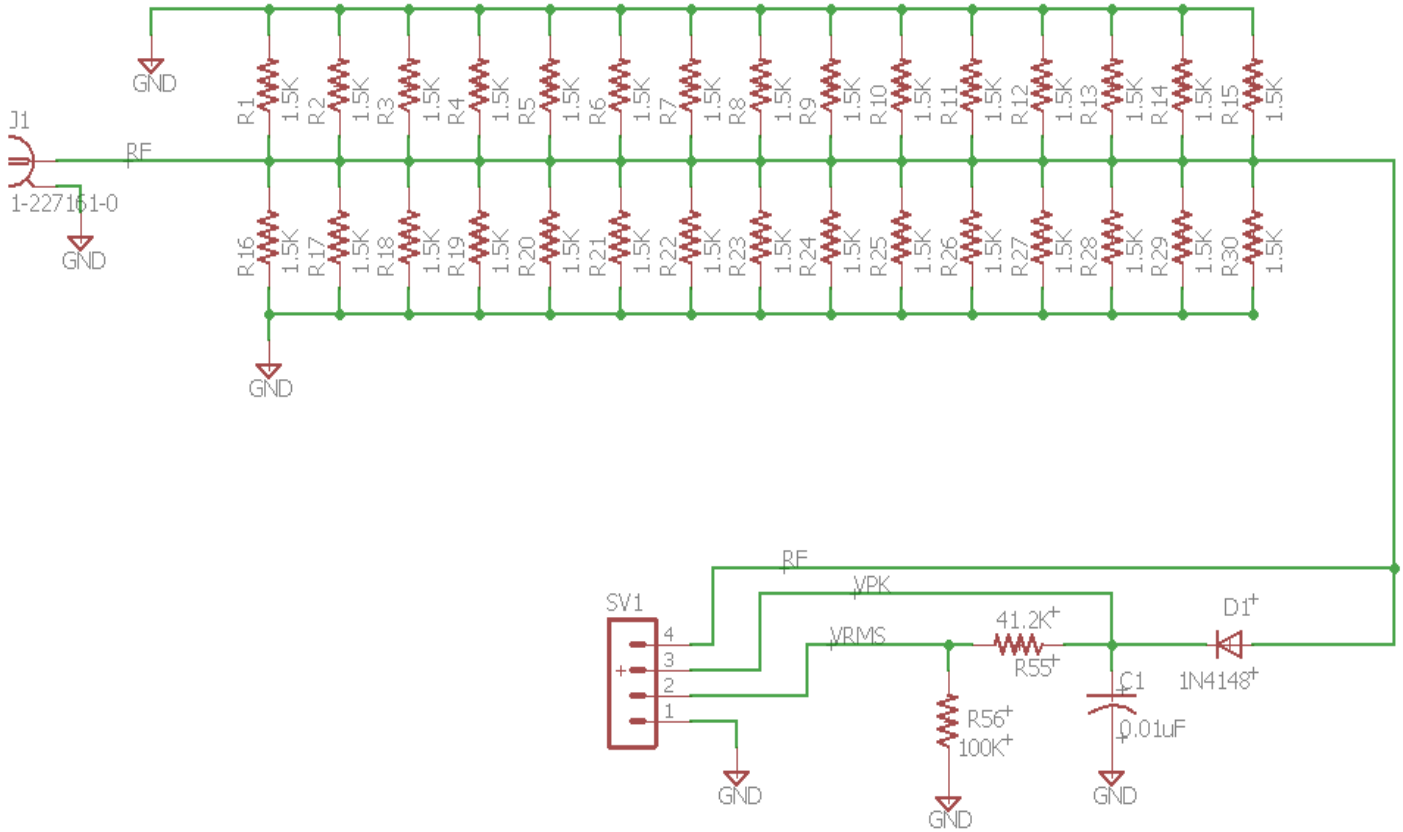
Input Impedance:               50 Ohms +/- 5%

Usable Frequency Range:      Up to 60MHz

Outputs on pin header SV1:

1. **Ground**
2. **V<sub>rms</sub>**: DC voltage representing the RMS value of the RF voltage
3. **V<sub>peak</sub>**: DC voltage representing Peak of the RF voltage
4. Direct RF voltage

# Schematic



$$POWER = (V_{rms}^2) / 50$$

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