FDIM Buildathon 2018 4-Port Coupler/Power Meter. By: W5USJ v.3b 10 Jun 2018   Short Form Instructions

Voltages used for calibration at Buildathon were incorrectly used from the W7EL power meter. That meter used an entirely different directional coupler and generated 60% higher output voltage than the coupler used in the Buildathon power meter. Conversley, the Buildathon coupler voltage is only 40% of that from the W7EL coupler.
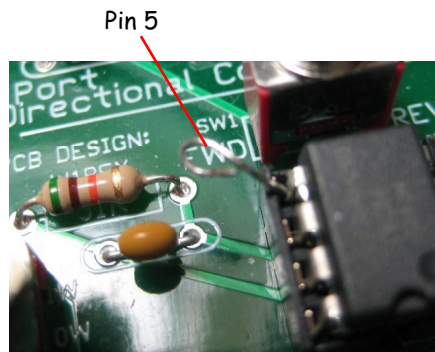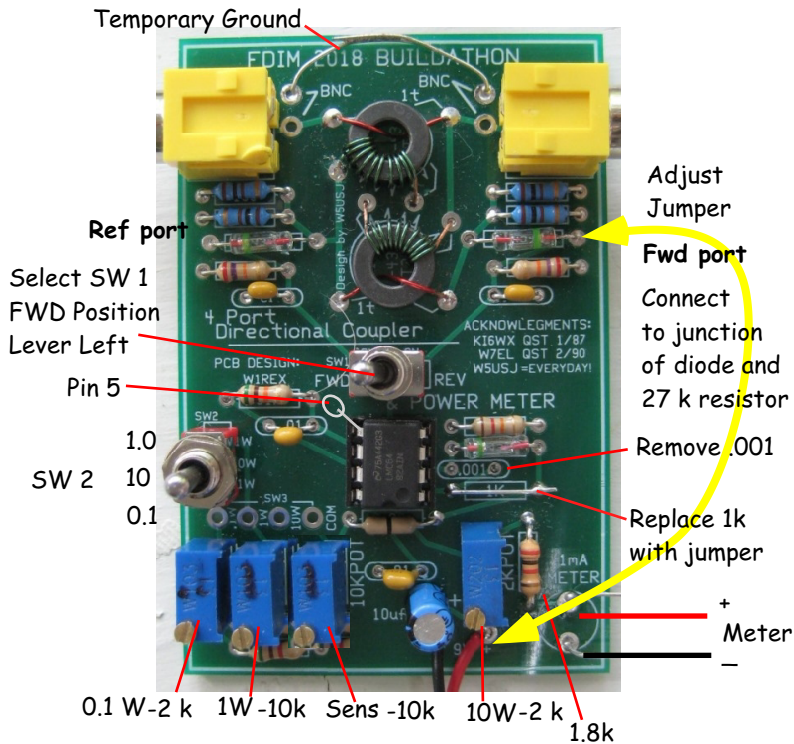
The 4-port directional coupler used in the Buildathon meter is similar to that used in the W1FB, WM-2, NoGaWatt, GQRP, W5USJs WM-2 work-a-like and others. QRPme first used the 4-port coupler for the Kit of the Month club project.

Ensure that phase of inductors is the same, that is, both windings are in the **same** direction, clockwise or anti-clockwise

[1] Connect 9V to DUT
[2] Connect 1mA or DVM/2000 uA meter to meter pads
[3] Connect jumper from 9 Vdc to Fwd port
[4] Set SW2 to 10W position
[5] Set Sens Pot for 2.6 V at pin 5
[6] Adjust meter pot for 1mA/1000 uA FS
[7] Set SW2 to 1W position
[8] Set Sens Pot to 0.8 V at pin 5

[9] Adjust 1W pot for 1mA/1000 uA FS
[10] Set SW2 to 0.1W position
[11] Set Sens Pot to 0.26 V at pin 5
[12] Adjust 0.1 W pot for 1mA/1000 uA FS
[13] Set SW2 to 10W position
[14]: Return Sens pot to top of range (9V)
[15] Remove all setup hookups but meter

Power Measurements
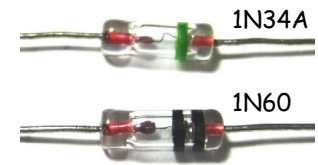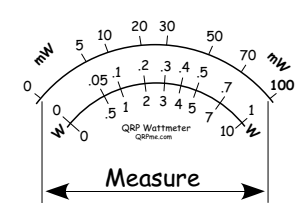[1] Source of accurately measured 10W
[2] Accurate 50 Ohm Dummy Load
[3] 10 dB and 20 dB attenuator or 2, 10s
[4] Input, 10 W observe meter
[5] Insert 10 dB SW2 to 1 W position observe meter,
[6] SW2 to 0.1 W pos, add 10 dB observe meter
If you're sure of accurate power levels, tweak the adjustments a little for full scale readings.

Temporary Ground

Ref port

Select SW 1
FWD Position
Lever Left

Pin 5

SW 2   1.0
        10
        0.1

0.1 W-2 k   1W -10k   Sens -10k   10W-2 k
                                    1.8k

Note Changes to Original Assembly

Adjust
Jumper

Fwd port

Connect
to junction
of diode and
27 k resistor

Remove .001

Replace 1k
with jumper

+
Meter
—

Pin 5

Insert wire clipped from installed
diode carefully along side Pin 5

1N34A

1N60

Use **ONLY** 1N34A Point Contact Diodes
or equivalent, e.g. 1N60, 1n270, 1N295.

Adjustment Reference

Voltage	Power
Vadj. x 1.0	10 watts
x 0.3162	1 w -10 dB
x 0.1	0.1 w -20 dB

Typical Logarithmic Power Scales

Measure

Adjust proportional to fit meter