



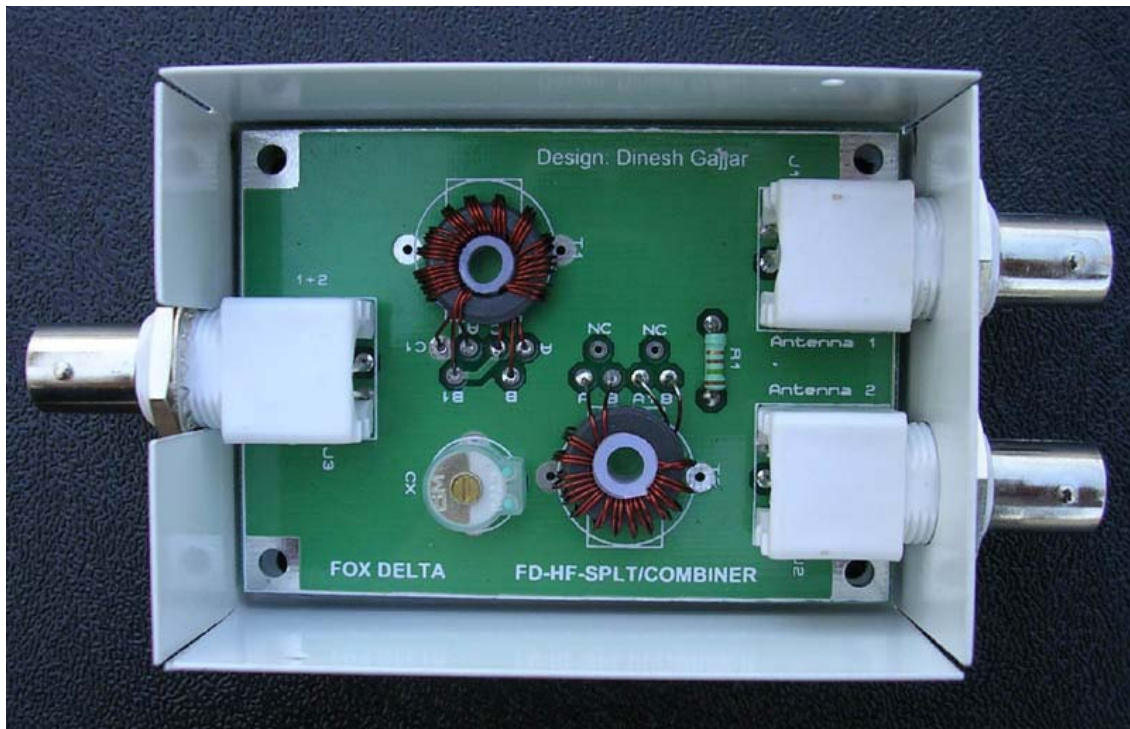
Fox Delta

Amateur Radio Projects & Kits

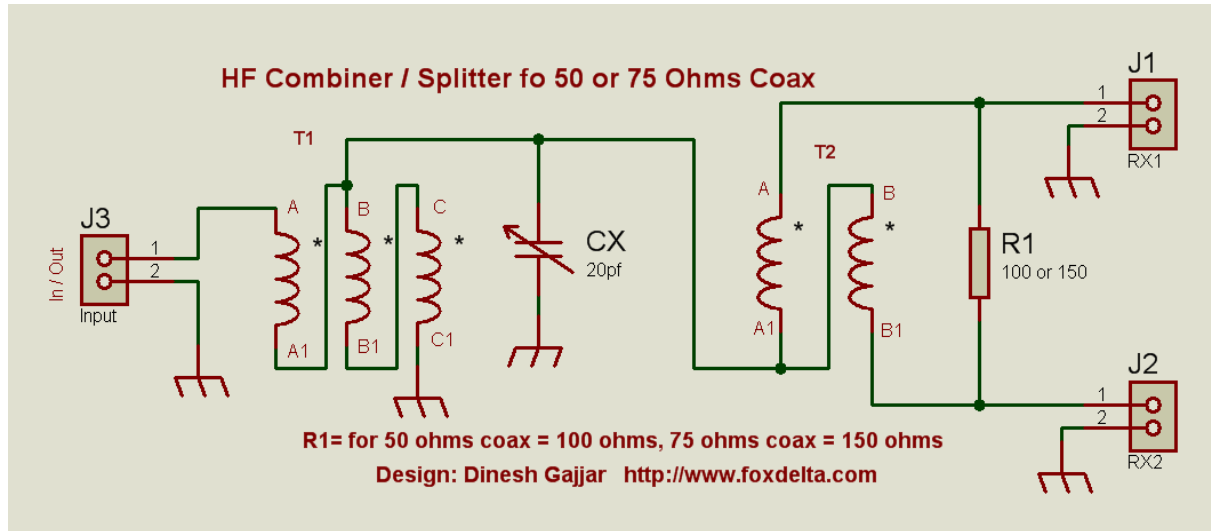
HF-Combiner

Technical Info Doc: A simple HF Power Combiner / Splitter

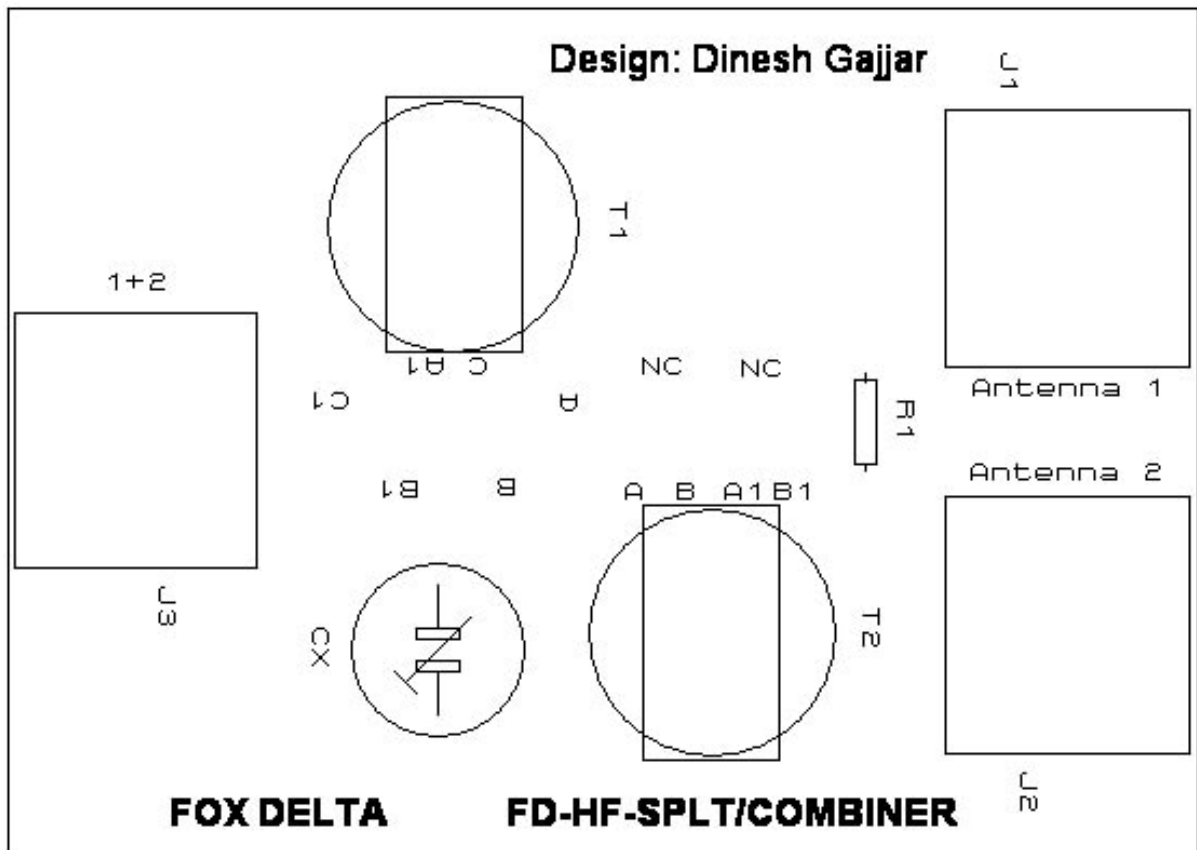
HF 50 / 75 Ohms Power Combiner / Splitter



Schematic:



Silk Snap:

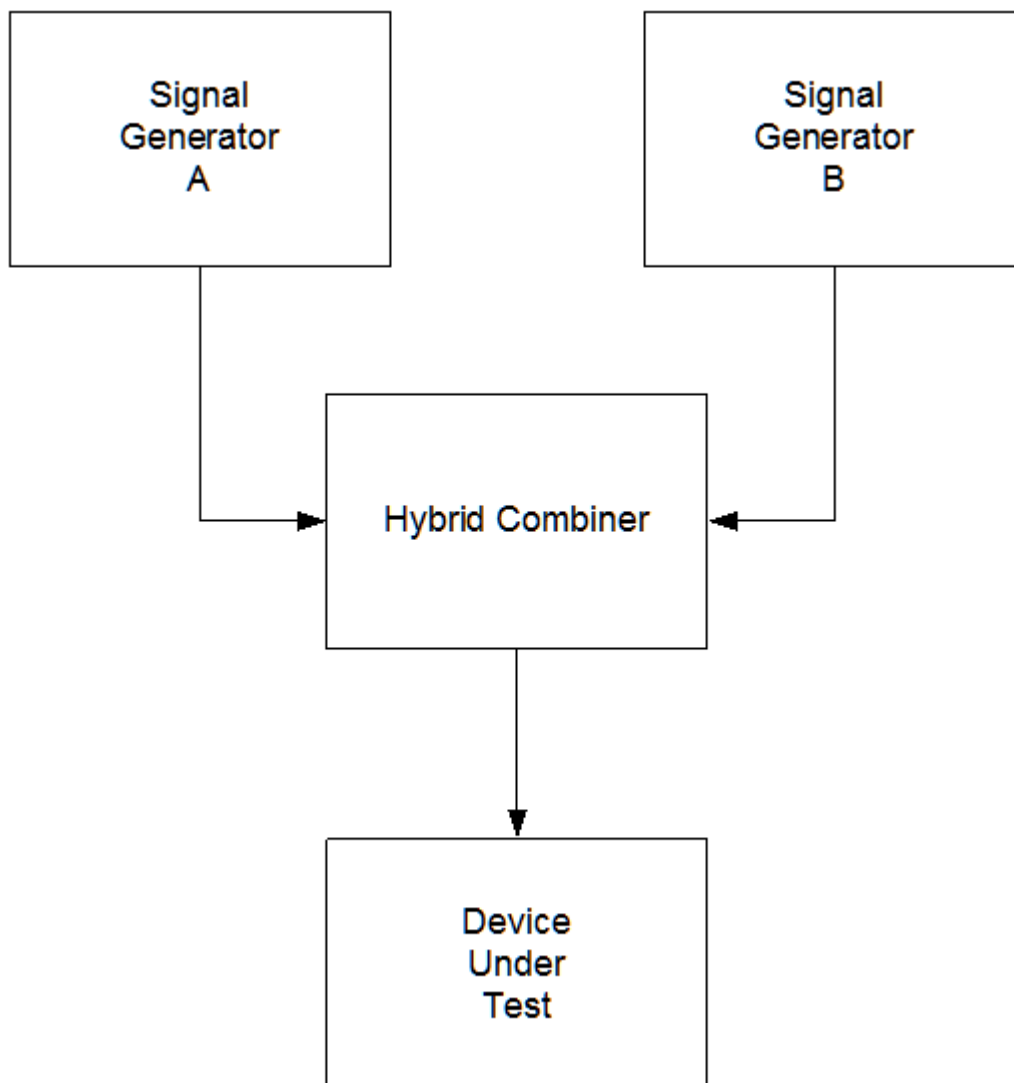


Parts List:

Quantity	Part ID	Details
1	CX	20pf Air Variable
2	T1, T2	FT-43-50 Toroid (or FT-61-50)
3	J1, 2, 3	BNC R/A PCB Connector
1	PCB	FD-HF-SPLT/COMBINER
1	100 ohms	Resistor $\frac{1}{4}$ W for 50 Ohms system
1	150 ohms	Resistor $\frac{1}{4}$ W for 75 Ohms System
1	2mtr	Copper Wire #28 AWG
1	Case	Metal powder coated case

COMBINER / SPLITTER:

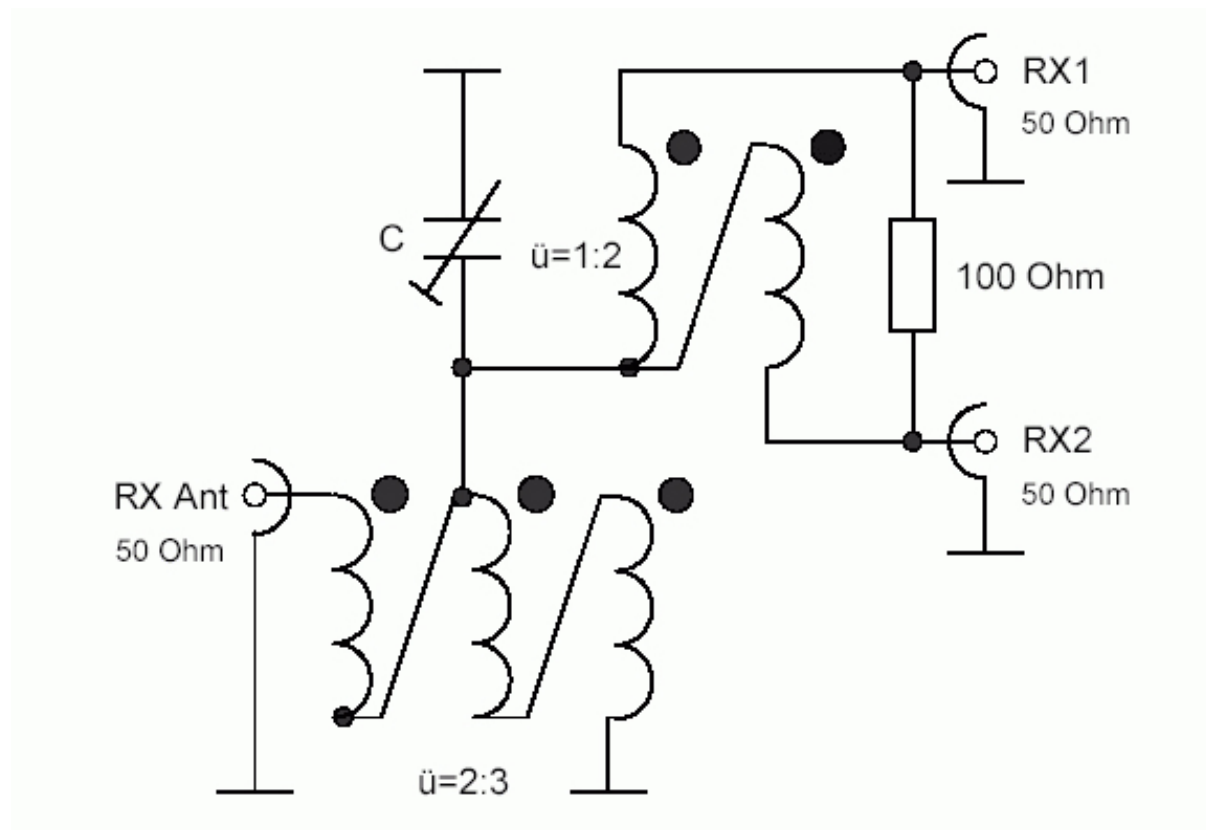
Passive hybrids are generally reversible, i.e., you may use one to split a single signal into two equal paths or you may combine two signals into one. Port-to-port isolation is an important measure of combiner performance, as is the loss between input and output



6B Coupler Schematic:

The 6 dB couplers detailed here is built around the schematic below. It can be found in many places, such as the ARRL Handbook for Radio Amateurs (1999 ed.)Page 26.40. The Handbook suggests T1 be wound as 10 turns no. 30 enamel magnet wire, bifilar wound on a FT23-77 core for 1-50 MHz coverage. The design is said to provide 40 to 50 dB isolation between ports.

Basic Design concept:



To the left on above schematic you can see a 1:2 Transformer T1. It's a Trifilar wound input transformer which generate an impedance of $(16/24)^2 \times 50 = 22$ Ohms at mid-band. Using this type of transformer opposed to a simple Auto-Transformer for input matching, better isolation of the output ports may be achieved.

I have used standard cores (FT-43-50) here but Binocular or tubular cores may be used and may provide better results. Cores used are 61 or 43 material ferrites.

CX may give small correction for best isolation between ports.

73s

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For more details on this project please visit <http://www.foxdelta.com>