

SDR Receiver – Part 1

Components

I published a construction article in the January 2021 edition of Practical Wireless Magazine.

Electronic viewing of the magazine, as part of a subscription, is here: <https://pocketmags.com/eu/practical-wireless-magazine>

Here is some guidance on the components I used. I have lots of components left over from projects so for the purpose of this list I have identified the Mouser part to give you guidance. Beware that I do make mistakes so please check everything to your own satisfaction before buying or making anything.

Resistors

For all my work I normally use 0.25W, 1%, metal film resistors which come from Mouser – I like the variety made by Xicon or YAGEO.

If I was not using software that allowed any amplitude and phase imbalance to be adjusted (like HDSDR does) then you must either select R125, R126 & R127 to R138 to be as close as possible in value or use higher tolerance devices.

For the twelve 10K resistors (R127 to R138) I used Vishay RN series devices which have close tolerances (0.1%) as well as very low-noise and low-voltage coefficient specifications. These cost around €1 each.

Capacitors

For the non-electrolytic capacitors I usually use multilayer ceramic capacitors (MLCC), with a dc voltage rating of 25V, a C0G (NP0) dielectric with a 10% tolerance. I like the KEMET range.

Transformers

T3 is a Common Mode Chokes made by Würth Elektronik - model: 744205. It has 4 windings each of 100µH and I got mine from Mouser where the part number is 710-744205.

For T1 and T2 I used devices made by Triad Magnetics under model number SP-70 – these are available at Mouser under part number 553-SP70 but they cost €15 each.

Headers

You can of course avoid using headers and just solder straight onto the PCB.

I like to use MOLEX headers:

- 4 position locking header – Mouser 538-22-27-2041
- 4 position receptacle housing – Mouser 538-22-01-2047
- Terminals – Mouser 08-50-0114
- 2 position locking header – Mouser 538-22-27-2021
- 2 position receptacle housing – Mouser 538-22-01-2027

Isolated BNC Connector

I used a Trompeter model BJ21 (Mouser 530-BJ21) - this part is specified up to the GHz range. It does costs €7 and not strictly necessary unless you want to keep you antenna isolated from the circuit ground.

I have no personal connection with or financial interests in Mouser or Radionics.

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Figure 1. Basic block diagram