SDR – Part 4

Websites & Components

I published a construction article in the April 2022 publication of Practical Wireless Magazine.

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

Here are links to the website I quote and some information on the components I used.

Samuel

1. Websites

Leo Bodnar

The Leo Bodnar GPS-disciplined reference clock is found here-

http://www.leobodnar.com/shop/index.php?main_page=product_info&cPath=107&products_id=234

On 19 February 2022 it was on offer for £150.

The Mini precision GPS reference clock sold on the same website, while cheaper, only has one output and therefore cannot be directly used like the Precision GPD reference clock .

QRP-Labs

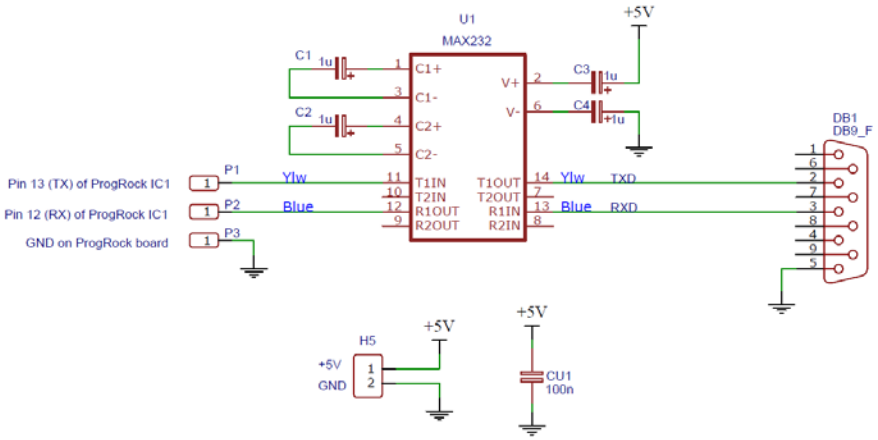
http://qrp-labs.com/

The QRP-Labs ProgRock kit:- http://shop.qrp-labs.com/progrock

On 19 February 2022 it was on offer for $18, the GNSS/GPS receiver was an additional $20 and the TCXO was offered at $8.25. For Europe these items are posted from Turkey – I have always used the FedEx option.

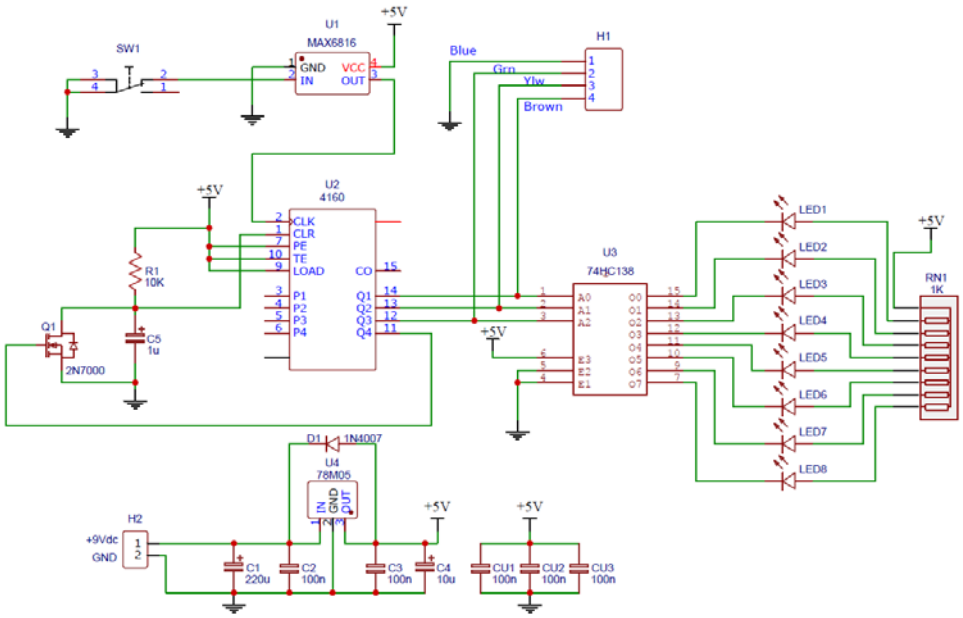
2. Components

RS-232 Converter – Figure 7.



For C1, C2, C3, C4 I used 1µF/25V Tantalum capacitor.

Bank selection circuit – Figure 8.



U1 is a MAX6816 CMOS switch debouncer – I bought these from Mouser as part number: 700-MAX6816EUST.

SW1 is a normally closed switch keeping pin 2 of U1 at ground when not pressed.

I bought the red SOT-23 to DIL-8 converter PCBs off EBay.

U2 is a MC14160 which is a synchronous Presettable 4-Bit BCD Counter – I have a tube of these but I am concerned that these particular ICs do not seem to be available through the usual component suppliers.

One solution is to use an alternative IC and I suggest either a 4510 or a 4516. As we are only counting to 7 before resetting the counter it does not matter if we use a BCD counter (4510) or a binary counter (4516). These alternatives are not pin compatible so some changes will need to be made.

Silicon Labs Si590 Crystal Oscillator – Figure 11.

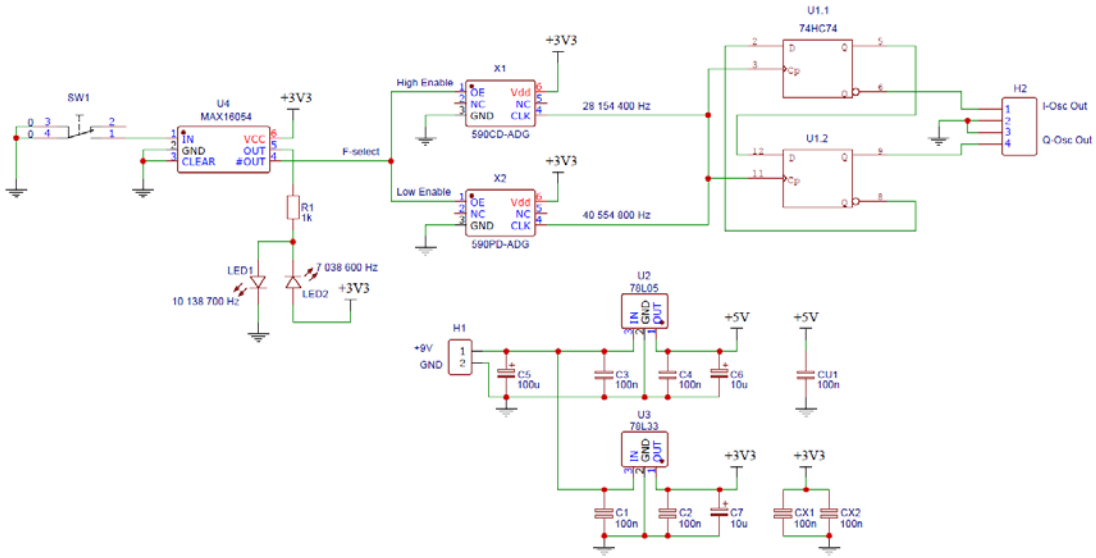


Figure 11. Schematic of the Si590 oscillator.

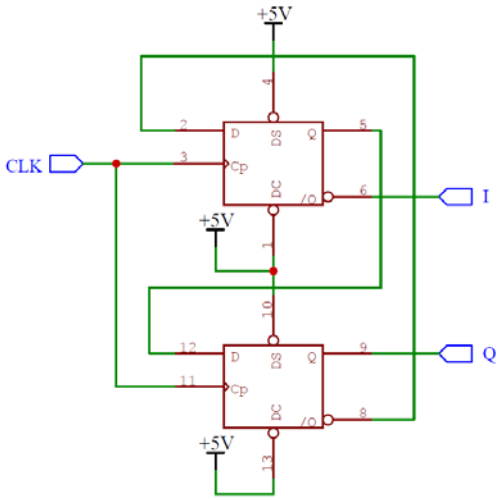
U4 is a MAX16054 CMOS switch debouncer – I bought these from Mouser as part number: 700-MAX16054AZTT.

X1is a SiLabs programmable crystal oscillator with manufacturer part number 590CD-ADG and Digi-Key part number 590CD-ADG-ND. The C part of 590CD indicates that this part operates at $3.3V_{dd}$, provides a CMOS output and has its output enabled when pin 1 is high.

X2 is a SiLabs programmable crystal oscillator with manufacturer part number 590PD-ADG and Digi-Key part number 590PD-ADG-ND. The P part of 590PD indicates that this part operates at $3.3V_{dd}$, provides a CMOS output and has its output enabled when pin 1 is low.

The D part of 590CD and 590PD indicates the total stability and temperature stability of the device. The D part has the best specification.

What is not shown in figure 11 is that U1 runs off 5V and there are additional connections required as follows:



Endnote.

I have no personal connection with or financial interests in Leo Bodnar Electronics, QRP-Labs, Mouser or any other software or components manufacturers mentioned in this document.