

## SDR-Kits.net

### QRP2000 USB-Controlled Synthesizer Update

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1. Corrections to US-Synthesizer Kit Manual V1.0
2. AVR- Standalone Operation – Last Frequency Remember feature instead Si570 generating Factory Programmed frequency.

#### 1. Corrections to USB-Synthesizer Kit Manual V1.0

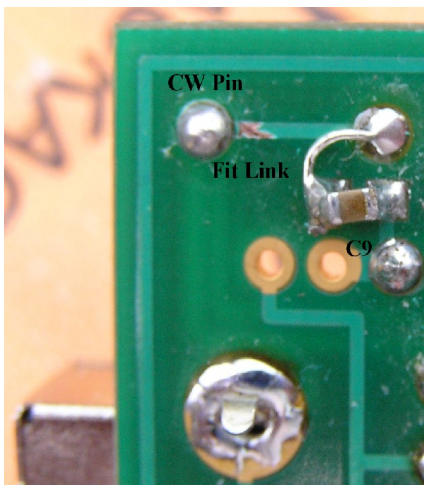
An updated version of USB-Synthesizer Kit Manual **V1.3** is has been published on [www.SDR-Kits.net](http://www.SDR-Kits.net) website, which includes an updated Circuit Diagram.

Following are the major changes:

A) JP1 Jumpering Options: Two jumpering positions – as follows:

- Pin 1 and pin 2 connected: USB-Bus Powered operation from PC. With correct operation the Module draws approx 100mA which most PCs should be able to supply.
- Pin 2 and Pin 3 connected: The Si570 is powered by External Power supply. Use this when the USB-bus cannot supply the required current to power the SI570.

B) On some versions of PCB supplied a link is required between floating side of C9 and the “CW” PCB terminal. Please fit wirelink as shown in fig 1 below:



*Fig 1: fit Wirelink*

- C) Circuit Diagram correction. Si570 Pin 4 output is obtained via C8 and R9. LVDS Pin 5 output via C7 and R10.
- D) Optional T1 transformer for LVDS is 5 turns trifilar 32 AWG 0.23mm enamelled wire on 43BN2402 core supplied.:

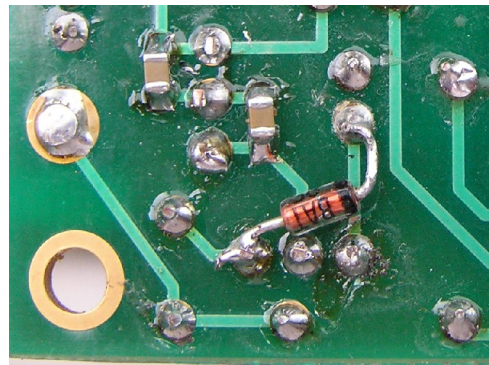
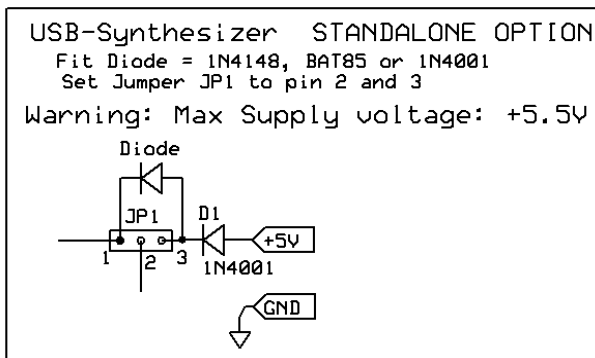
## 2. AVR- Standalone Operation – Last Frequency Remember feature

Tom Baier DG8SAQ provided a “Last Frequency Remember” feature in his Si570 USB\_Synth Program. This feature allows a user to specify a “last frequency to remember” in the Setup Menu which then is stored in the AVR EEPROM.

A modification is required for the USB Synthesizer module to operate as a standalone Frequency Module when NOT connected to the USB port.

The modification supplies the ATTiny45 AVR with a minimum of 4V DC when the module is NOT connected to the USB port. The easiest way to implement is to add a diode and to supply the module with a DC voltage of +5V as shown in Fig 1 below.

The photo shows how the diode may be fitted on existing PCBs. The diode feeds +5V to the AVR when the Module is not connected to the USB interface. The AVR firmware detects if the USB Port is not connected and programs the Si570 device with Last Frequency stored AVR EEPROM.

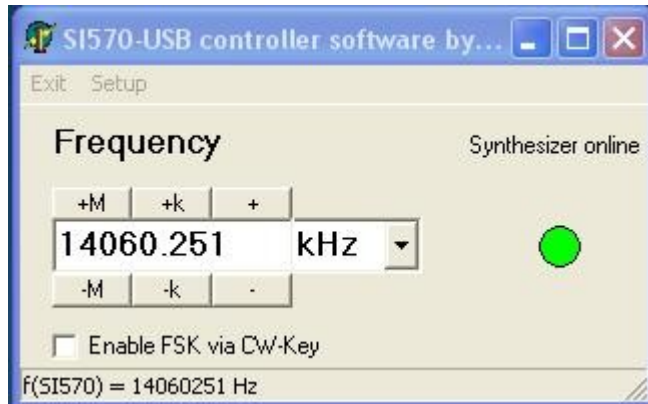


*fig 1 Adding a Diode for Standalone Operation*

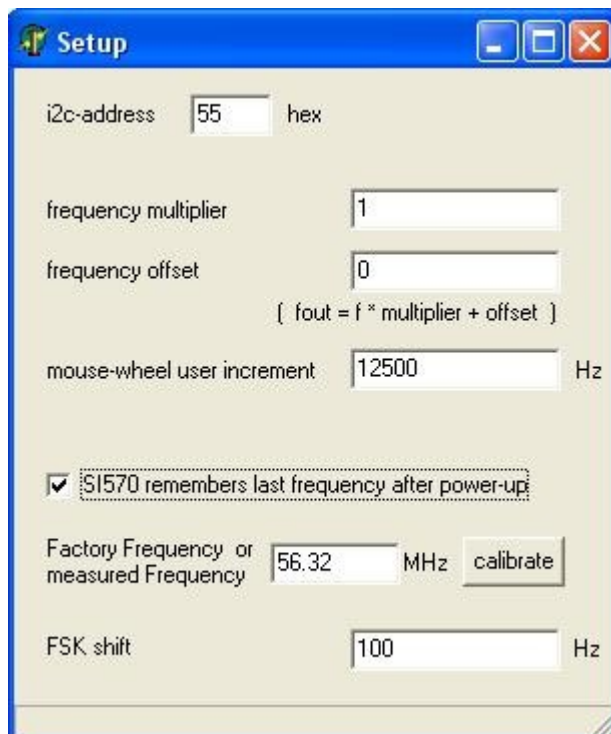
**WARNING:** With this modification the **Maximum Supply Voltage to the Module is +5.5V** otherwise the supply voltage of the ATTiny45 will be exceeded and could damage this chip. The minimum Supply Voltage is approx +4.7V. This is needed to supply the AVR with at least 4V for guaranteed operation as per the Atmel Datasheet. In practice reliable operation has been obtained with a supply as low as 4V, however this is not guaranteed. Supply Options include a +5V stabilized Supply, use a 4.8V Nicad or a 4.5V Dry Battery supply....

To use “Standalone AVR - Last Frequency Remember Feature”

- Run “USB-Synth Program
- Connect USB-Synthesizer Module to USB Port
- The Status should go Green “On Line”
- Enter the desired Frequency



- Select “Setup”
- Tick box “Si570 remembers last frequency after power-up”
- Exit Setup
- Exit “USB\_Synth Program”



When powering up module from +5V source with this mod, the USB-Synthesizer should generate "Last Frequency" instead of the Factory Default Option.

Best 73s

Jan G0BBL