

## Ultimate3S kit info

Written by Hans Summers

Friday, 16 January 2015 06:37 - Last Updated Monday, 20 April 2015 05:12

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{gallery}ultimate3/0{/gallery}

The Ultimate3S QRSS/WSPR Transmitter Kit is the new edition of the third version in the "Ultimate" QRSS/WSPR kit series.

The price is USD \$29.00. [Visit QRSS Labs](#) to order please

The U3S kit was launched in January 2015. It is the new edition of the [earlier U3 kit](#) produced from November 2013 to December 2014. The U3S uses an [Si5351A frequency synthesiser kit](#) rather than the pre-built AD9850 DDS kit used in the [earlier U3 kit](#). The AD9850 DDS kit prices are rising and they are becoming less easily available. The [Si5351A frequency synthesiser kit](#) was developed to ensure continued low cost of the Ultimate QRSS/WSPR kit series.

Please also see the original version [Ultimate QRSS kit](#) and [Ultimate2 QRSS kit](#) pages, and the [earlier U3 kit](#) page to appreciate the heritage. Much of the information in these earlier pages is still relevant and informative.

The Ultimate3S QRSS/WSPR transmitter kit includes an [Si5351A synthesiser module kit](#) and [plug-in low pass filter modules](#) which are also available separately for bands from 2200m to 6m. The kit can transmit on any frequency from the amateur 2200m (137kHz) to 2m (145MHz) bands. Changing bands is a matter of plugging in the appropriate low pass filter kit to attenuate unwanted harmonic output. The [relay-switched LPF kit](#) may be used to automatically switch between up to 6 different bands.

**The kit supports the following modes:**

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- QRSS mode (plain on/off keyed slow CW)
- FSK/CW mode (frequency shift keyed slow CW)
- DFCW mode (dual frequency CW)
- WSPR mode (Weak Signal Propagation Reporter)
- WSPR-15 experimental WSPR mode with 15-minute frames
- Opera modes (8 speeds)
- PI4 beacon mode
- Slow-Hellschreiber (frequency shifted slow-Hell)
- Full-speed Hellschreiber
- Half-speed ("DX") Hellschreiber
- CW (plain CW)
- FSK (0-999Hz shift, fast-speed FSK CW)
- Customisable FSK patterns
- manually-keyed CW/FSK transmitter

### Other features:

- [Si5351A synthesised](#) output frequency (no SMD soldering!)
- Plug-in low pass filter boards (available for 10 HF and 2 LF bands)
- 2-row by 16-character blue back-lit LCD + two-button user interface
- User-programmable settings stored in EEPROM
- GPS interface, for frequency lock, timing and location information
- On-chip generation of WSPR encoded message (no PC required)
- WSPR maidenhead locator from GPS-derived latitude/longitude
- Selectable "frame" size, for stacked QRSS reception
- Plain CW callsign identifier at selectable interval
- Produces 250mW RF output on 30m (lower output on higher bands)
- Higher power with more PA transistors and/or higher PA supply voltage

## Instructions

Printed Instructions: [The Assembly instructions for the Ultimate3S kit](#) and the Low Pass Filter boards

Many thanks to [page1EIQ](#) for the Japanese translation. Toru also translated the v3.07 operating manual

[Assembly instructions](#)

[PCB rev 1](#)

[click here!](#)

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Assembly JAPANESE

Japanese translation

[click here!](#)

Operating manual

[Download from firmware page \(Japanese version also available\)!](#)

Si5351A manual

[Si5351 Assembly: download here!](#)

Low pass filter kit

[Download from page here](#)

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Version upgrades can be purchased at [QRP Labs](#) or you can upgrade your own firmware using the .hex and .EEP files from the Yahoo forum.

[Firmware Version History](#) - please [CLICK HERE](#)

The kit contains the PCB, back-lit blue LCD, programmed microcontroller and all board-mounted components. It also includes the separate [Si5351A synth kit](#) and a [LPF kit](#) for one band of your choice. Download the instruction manuals using the link above. The PCB is quite compact and care is required in the construction. A rich array of functionality is provided by the design; please read the instruction manuals to understand the facilities provided. Builder modifications will be [shown on this page](#) as they are developed!

Dimensions: the LCD module is 80mm x 36mm. The main board is 80 x 37mm.

### Kit photos (click for larger versions):

{gallery}ultimate3/1{/gallery}

More photos...

These photos show a working U3, complete with [attached relay-switched Low Pass Filter board](#), available for GBP 9. The relay-switched LPF board can have up to five additional LPF's plugged in, permitting the U3 to sequence between 6 bands (including the LPF on the main U3 board). Note that my photos

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show NO additional LPF's plugged in (as I only have one built LPF here right now).

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