

Ultimate3 kit info

Written by Hans Summers

Sunday, 06 October 2013 10:20 - Last Updated Thursday, 22 January 2015 04:38

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The current version of the kit is the [Ultimate3S](#) , which was launched in January 2015.

The Ultimate3 QRSS/WSPR Transmitter kit was produced from November 2013 to December 2014. It was the third version in the "Ultimate" QRSS/WSPR kit trilogy. It can produce QRSS, Hell, WSPR, Opera and PI4 slow-signal modes anywhere from audio to 10m and above. Plug-in LPF filters are available for all 12 HF/MF/LF bands. The [U3 firmware](#) is suitable for use in both the U3 and U3S kits.

Please also see the original [Ultimate2 QRSS kit](#) pages. The new "U3" version is similar to the "U2" in terms of

The [Ultimate3 QRSS Transmitter Kit](#) comes with a pre-assembled A29850 DDS module. The kit can transmit

The kit supports the following modes:

- 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 Hellshreiber
- Half-speed ("DX") Hellshreiber
- CW (plain CW)
- FSK (0-999Hz shift, fast-speed FSK CW)
- Customisable FSK patterns
- manually-keyed CW/FSK transmitter

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Other features:

- DDS-controlled output frequency (through-pin DDS module, no SMD soldering required)
- 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 (callsign, message, speed, FSK, mode, etc.), settings stored in EEPROM
- GPS interface, for locking the frequency, timing and location information
- On-chip generation of WSPR encoded message (no PC required)
- WSPR maidenhead locator can be generated from GPS-derived latitude/longitude
- Selectable "frame" size, for stacked QRSS reception
- Plain CW callsign identifier at selectable interval
- Produces 150mW RF output on 30m (lower output on higher frequency bands)
- Higher output power by additional PA transistor and/or higher PA supply voltage

Instructions

Printed Instructions: [The ARRL QRP Ultimate3 Kit: The PCB Band Filter kit manual.](#)

Assembly instructions	PCB rev 1	click here!
PCB rev 1 in ITALIAN		click here!
PCB rev 2		click here!
PCB rev 3 and rev 4		click here!
Operating manual		Download from firmware page!
Low pass filter kit		Download from page here !

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, pre-assembled DDS module, all board-mounted components, and a LPF kit for one band. Download the instruction

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manual 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 manual 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}

Reviews and blog entries

[Nice review by Antonio EA1CDV](#) Spanish
[Google](#)

[English translation by](#)

[Review part 2 by Antonio EA1CDV](#) Spanish

[English translation by Google](#)

[Ultimate3 kit review by Michael DL2YMR](#) German
[Google](#)

[English translation by](#)

[LPF kit review by Michael DL2YMR](#) German
[Google](#)

[English translation by](#)

[472kHz WSPR and SSB by HB9ASB](#) German
[Google](#)

[English translation by](#)

[Ultimate2 kit review by Claudio I1RFQ](#) Italian
[Google](#)
[U2](#)

[English translation by](#)

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[U3 blog by Claudio I1RFQ](#) Italian

[English translation by Google](#)

[U3 kit review by Steve G4HSK](#) English

[U3 Whispering 14,000km, by Hajo DL1SDZ](#) English

[WSPR'ing 411,200km per Watt, Hajo DL1SDZ](#) English

[Sverre LA3ZA reviews the Ultimate kits](#) English

[Lex PH2LB's build log, nice photos of his work!](#) English

[Blog posting about Simon G4TJC's U3 running with GPS](#) English

[Review by Karen RA3APW \(freq. stability & Glosnass\)](#) Russian
[sh translation by Google](#)

[Engli](#)

[eHam review \(Paul VK4APN\)](#) English

DDS testing and adjustment

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All AD9850 DDS modules supplied with the Ultimate3 kit are individually tested and adjusted to ensure correct and stable functioning suitable for use in a QRSS/WSPR transmitter, and to adjust the comparator threshold potentiometer which is necessary for the AD9850 comparator to produce a squarewave output for driving the Class-D PA in the Ultimate3. This testing/adjustment procedure is described in this separate page, [read more...](#)

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

{gallery}ultimate3/2{/gallery}