Comments, Common Problems, Updates, and Design Warts

May 26th 2019

At this date there have been 31 kits assembled, and 2 builders have experienced the following symptoms……….

(a) The analyser works on the lower frequency ranges with no load, giving full output voltage at the N connector (1 volt RMS or 2.8 volts peak to peak of sine wave) but either does not work at all, or puts out very small sine levels on the upper frequency ranges. An alternate indication is that TP1 (the rectified peak level of the output sine wave) is at 1.1-1.2 volts dc on the lower ranges, and much less or zero on the higher ranges.

This is due to the 2N2222 transistors being put into circuit backwards. i.e. with the collector and emitter leads being reversed. As pointed out in the instructions, both the 2N2222/PN2222 and 2N9018/PN9018 are available in two mirror image versions depending on who made them. Remarkably, the very large design margins and the considerable amounts of negative feedback used in these circuits allow the circuit to "sort of" work at lower frequencies with reversed transistors.

 MORAL- do the current gain check firmly recommended in the instructions with transistor testing socket provided on most digital multimeters The lower case "e" shown next to each transistor outline on the Component Overlay drawing indicates the correct position of the emitter terminal.

(b) Remove and discard the rotary switch travel limiting ring, to be found on the switch supplied under the mounting nut and washer. On this instrument the ring is not required because all 12 rotary switch positions should be available for possible use.

September 2019

(c) On early versions of the printed circuit board, TR8 is incorrectly shown as a PN9018 transistor. It is in fact a 2N2222 as specified correctly in the circuit diagram, component overlay drawing and parts list.

(d) In early versions of the documentation accompanying the kit, the circuit shows the input and output pins of IC2A and IC2B transposed. Correct pin numbering i…IC2A output, inverting input and non inverting input are pins 1,2 and 3. IC2B output, inverting input and non inverting input are pins 7,6,5. ….as per the correct pcb track routing.