

INSTALLATION INSTRUCTIONS

Mounting — Mount the unit using mounting holes provided or with double-sided adhesive tape.

Power — Connect (1) **BLACK** to ground and (2) **RED** to positive supply between 8 and 18 volts DC.

Signal Input — Connect (3) **GREEN** to the discriminator unless the tone at this point is less than 10mv RMS. If the tone level is too low, connect to the output of the next stage i.e. first limiter.

High Pass Input — Normally, the signal I/P and High Pass I/P will be the same point in a radio. Where they are not, (4) **YELLOW** should be connected to the audio path following the de-emphasis circuit, and J7 should be cut.

PTT — (5) **ORANGE** should be connected to a point in the radio which is at ground potential when the transmitter is keyed. Normally, this will be the PUSH-TO-TALK line. In radios using positive PTT function you cannot use the PTT line, instead look for another point that goes to ground when the transmitter is keyed.

Hookswitch/Monitor — (6) **WHITE** should be connected to the controlled side of the microphone hookswitch where the switch applies a ground potential when the microphone is on-hook. When the ground is removed by going off-hook the decoder will automatically switch to the monitor mode. Before installing the unit, cut jumper J4 to enable this input.

High Pass Output — (7) **BLUE** should be connected to the input of the stage following where the Signal Input (3) is connected. The audio path should be broken at this point.

Tone Output — (8) **BROWN** should be connected to the sub-audible tone input terminal of the transmitter audio stage. The impedance of the output is about 600 Ohms.

If the impedance of the tone input circuit is higher, a series isolation* resistor will be required. The value can be determined experimentally and then installed in series with the tone output. Start experimenting with 100K Ohm and vary up or down so that you have both sufficient level and that the tone input does not load down the voice modulation.

Caution — Carefully observe polarity when mating lead set with connector. No damage will result to the unit, but it will not function if the connector is reversed.

JUMPER OPTIONS:

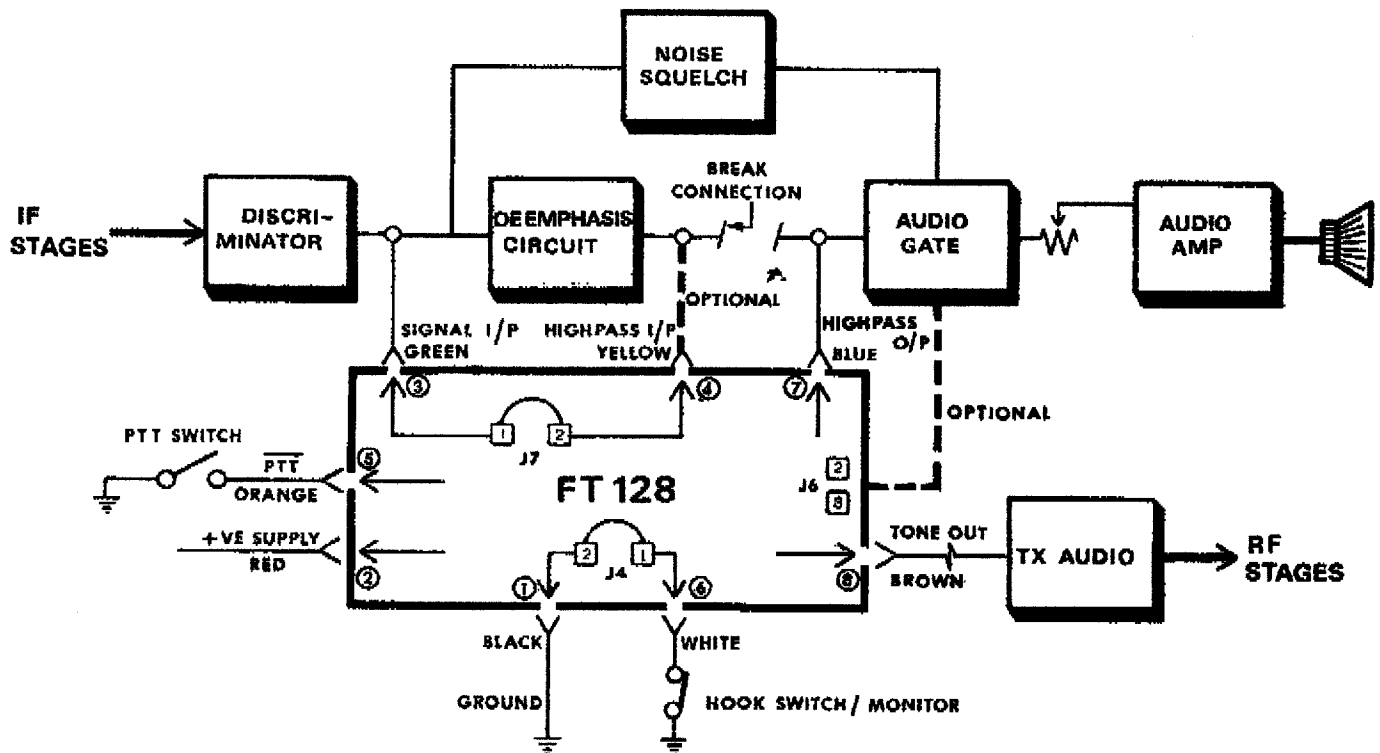
(-ve Ground to Monitor) — In cases where only (-ve) ground signal can be supplied for the monitor function (i.e. handheld units) use point J6-3 as the monitor connection. Grounding J6-3 will turn transistor Q5 off and thus enable the audio path at J6-2.

High Pass Muting — When not receiving the correct tone, Q5 conducts, applying reference ground to the input of the high pass filter, which shorts out the audio. This may not provide sufficient muting in all cases. If only partial muting occurs, first try changing J5 to 2 & 3 from 2 & 1. If this does not mute completely, the DC control of the radio will have to be connected to J6.

(-ve Squelch) — If a (-ve) going control voltage is needed to mute the audio in the radio, then transfer jumper J5 from (1-2) to (2-3) and use point J6-2 as the (-ve) squelch control point.

(+ve Squelch) — If a (+ve) going control voltage is needed to mute the audio in the radio, then remove jumpers J5 and J6 and use point J6-3 as the (+ve) squelch control point. If an open circuit is needed instead of a (+ve) voltage then cut R30 on the circuit board to remove the (+ve) bias from the collector of transistor Q4.

INTERCONNECTION DIAGRAM

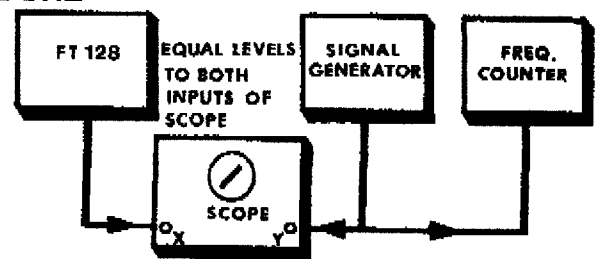


NOTE —

The encode and decode functions share the same active filter circuit, therefore only the encoder tuning procedure is used.

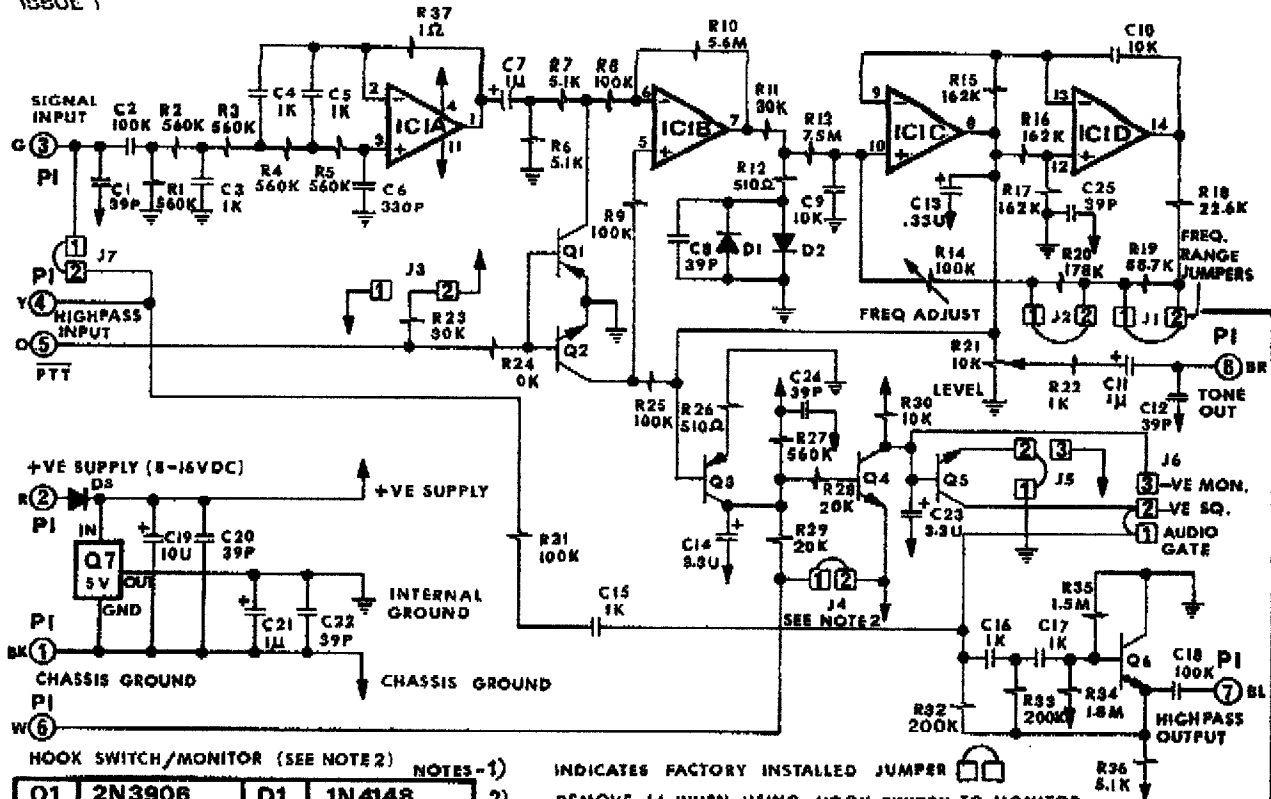
1. Adjust signal generator to desired frequency.
2. Set frequency range on FT128 according to tuning chart.
3. Adjust R14 (Frequency Adjust Potentiometer) until the image on the scope is a 45° line. (Adjust slowly up to desired frequency. If frequency is passed, continue for one full turn, before adjusting back to desired frequency).
4. The frequency is correct when there is no appreciable change in the lissajous figure.
5. Fix adjusting screw with lacquer or nail polish.

TUNING PROCEDURE



LISSAJOUS COMPARISON SET-UP

SCHEMATIC DIAGRAM



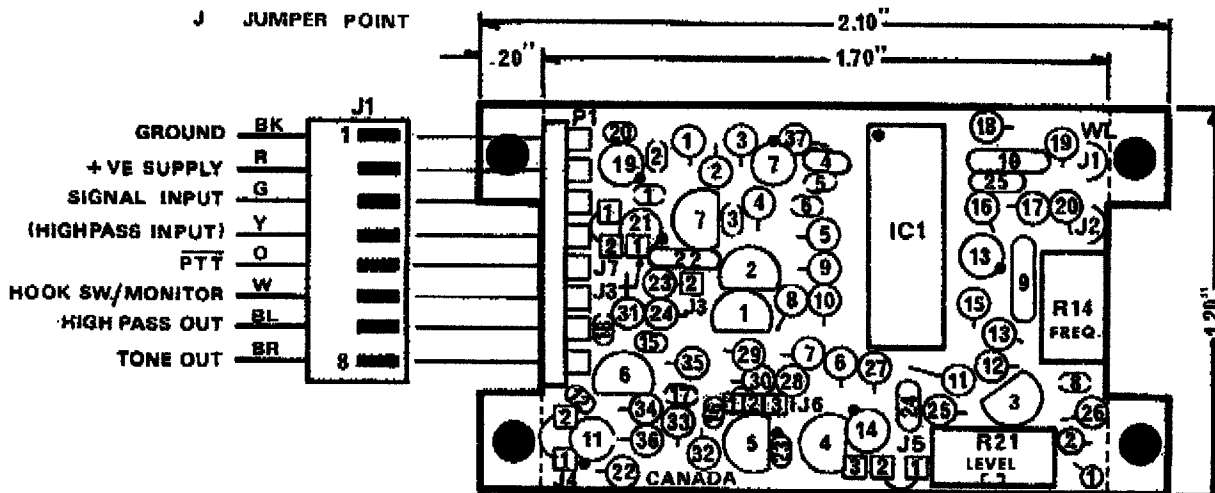
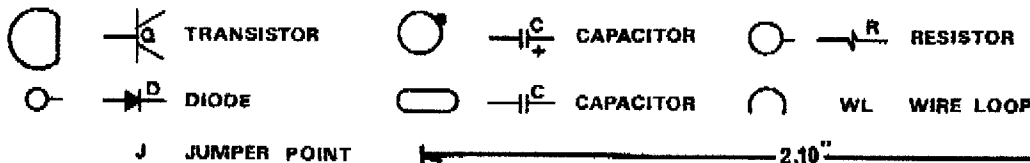
HOOK SWITCH/MONITOR (SEE NOTE 2) NOTES-1)

| | | | |
|----|--------|-----|----------|
| Q1 | 2N3906 | D1 | 1N4148 |
| Q2 | MPSA18 | D2 | 1N4148 |
| Q3 | 2N3906 | D3 | 1N4002 |
| Q4 | 2N3904 | IC1 | TL084-CN |
| Q5 | 2N3904 | | |
| Q6 | MPSA13 | | |
| Q7 | 78L05A | | |

INDICATES FACTORY INSTALLED JUMPER REMOVE J4 WHEN USING HOOK SWITCH TO MONITOR

| (J1) JUMPER | (J2) JUMPER | FREQ. RANGE (HZ) |
|-------------|-------------|------------------|
| OUT | OUT | 63.3 — 72.9 |
| IN | OUT | 72.1 — 87.8 |
| OUT | IN | 86.2 — 117.5 |
| IN | IN | 113.5 — 259.2 |

COMPONENT OUTLINE



DOTTED LINES INDICATE MINIMUM BOARD SIZE 12"X17"