

Triggering of the I.D. sequence generator can come from one of 3 sources, any of which will set the trigger flip-flop, U505. These sources are: 1) an initial triggering input after inactivity, through D511; 2) a regularly scheduled I.D. during activity, through D512; 3) a manual I.D. at any time through E501. When the U505 flip-flop has been set, pin 3 will go high and pin 4 will go low. The high on pin 3 causes Q501 to turn on (assuming that E502 and E503 are jumpered), clamping the transmitter hold output (E529) to ground for the duration of the I.D. cycle.

The low on pin 4 of U505 causes binary counter, U501 to be released from its reset state (a high on the reset input keeps the counter from toggling). When pin 4 of U505 is low, pin 3 will be high turning on Q504 & Q505, and enabling the 5VDC supply to prom U502. Output pulses from the code speed oscillator, U506, cause U501 to count up in a binary sequence, and the binary outputs are applied to the address inputs of U502, a PROM organized in a 256 bit long by 4 bit wide configuration. Each of the 256 possible binary outputs from U501 corresponds to a unique 4 bit "word" which appears at pins 9,10,11, & 12 of U502. The contents of each "word" have been programmed at Spectrum so that, looking at any single "bit" of the 4 bit output, the sequence of 1's and 0's represents the morse code message. (A dot is a "1" in 1 bit location, while a dash consists of a "1" in 3 consecutive bit locations.) The particular 1 bit data channel desired is selected by U503, a quad analog switch. A high on any one of the 4 message select inputs (E529, E530, E531, E532) will cause one of the 4 outputs of U502 to control the U505 tone oscillator.

As long as code pulses appear at the output of U503, transistor Q506 will keep discharging C515 at regular intervals. If code output from U503 ceases long enough for C515 to charge up at the threshold level of U507 (a quad NAND gate with schmitt trigger outputs), pin 3 of U507 will go low, and pin 4 of U507 will snap high. This positive going pulse is differentiated by C513 and R536, and is applied as a reset pulse to 1 of the U505 flip-flop. When U505 is reset, pin 4 will go high, resetting U501 to zero and preventing any further counting. Pin 3 of U505 will go low, turning Q504 and Q505 off, thus removing the 5VDC supply to PROM U502. (Removing the 5VDC supply from U502 during standby saves about 80mA of current consumption, and results in a standby current draw of about 5mA.)

If E533 is grounded, pin 11 of U507 will go high, triggering the U505 tone oscillator through U506 for as long as E533 is grounded. If E534 is raised to a "high" level, pin 10 of U507 will oscillate at an approximate 20Hz rate keying the tone oscillator on and off at the same rate. This sound is intended to approximate a telephone "ringing" signal, and is intended for applications where a distinctive signalling sound is needed. (Autopatch, etc.)

The output of the tone oscillator, a harmonic rich square wave, is filtered by the L501/C506-8 tank circuit, and is finally buffered by emitter follower stage Q502. A 4 input dual Op Amp audio preamplifier/mixer is incorporated onto the ID250A board. The local microphone input (E519 & E520) to this stage is amplified by U510A. The 3 other inputs (RPT. AF, I.D., AUX. A.F.) are resistively summed with the U510A output, and the mixed A.F. output appears at E521 as composite repeater audio. The U510 stage was designed to operate with a medium impedance ceramic microphone (such as the Spectrum M-10), and the AUXILIARY A.F. INPUT has been provided with a level adjusting potentiometer. In normal use the audio output from E509 of the I.D. is connected to E525 of the mixer.

An Audio Muting Function has been incorporated into the ID250A and normally serves to mute Touch Tone control codes so that they will not be transmitted. When a 5-14VDC is applied to E517, at the base of Q507, all audio is effectively shunted to ground. Timing of this function is determined by the method used to supply voltage i.e., SCAP, TTC100 or 300, Manual Switching, or other external logic control.