

3.0 THEORY OF OPERATION

NOTE: In the discussion that follows, the expression "logic HI" refers to a voltage which is approximately 5VDC, while "logic LO" refers to a voltage which is approximately 0VDC.

The conditioned squelch voltage (either from the receiver or a COR board such as the CTC100) is applied to terminal E1 of the TRA-1. When a signal is received, the level into E1 will go "LO", driving pin 3 of IC1 "HI". This "HI" signal charges C2 almost instantly through CR1. This "HI" on C2 (and thus pins 5&6 of U1) causes pin 4 of U1 to go "LO", triggering the main timers in the repeater control circuitry.

When the signal disappears, the conditioned squelch voltage into E1 goes "HI", causing pin 3 of U1 to go "LO". This in turn causes C2 to discharge slowly through R3. When the voltage on C2 reaches the threshold voltage of U1 (1.6-3.0 volts), pin 4 of U1 goes "HI", resetting the time-out timer in the COR control circuits. (It is assumed here that the time-out timer was configured to reset immediately upon loss of input signal). At the same time that pin 4 of U1 goes "HI", a pulse, whose width is set by R4 and C3, is coupled into pin 9 of U1. If E6 is also "HI" (indicating no ID is in progress), E5 will go "LO" for the duration of the pulse on pin 9, and will trigger the tone oscillator in the ID circuit. The normal "Hang" timer in the repeater will keep the transmitter on during this time. (The TRA-1 does not affect the "Hang" timer of the CTC100 board.) The net effect of the whole circuit is that E4 will go "LO" instantly following E1, but will not go "HI" until some delay time after E1 goes "HI". The "beep" is triggered at the end of this delay (set by R3) and the repeater's time-out timer is simultaneously reset.