

Timing – C Plus by the Numbers

The C Plus is full of timers. Normally, the default settings are just right. But what are all of these timers for? Why are they important and when should they be changed? This note sheds some light on the numbers associated with the C Plus.

DTMF Timing

There are two timers used exclusively in DTMF signaling mode.

Minimum Character Duration

Minimum Character Duration is the shortest acceptable length of a DTMF character. If the character length is less than the definition, then the character is discarded. This allows an ability to adjust sensitivity. Valid DTMF tones can occur naturally in very short duration. This “noise” will decode if not discarded. The default *Minimum Character Duration* is 50mS. Any occurrence of DTMF that is shorter than 50mS will be treated as noise and discarded. The programmable range is from 25mS to 5000mS. For manual DTMF number entry via a DTMF pad, set this number high.

Inter-Character Maximum

Inter-Character Maximum is the maximum allowable time between DTMF characters. Subsequent received characters are assumed to be components of the same string only if they occur before the *Inter-Character Maximum* has elapsed. The default is 100mS. Any character received after 100mS will be considered a new string of characters and the display will be cleared to prepare for the new string. The programmable range is from 50mS to 9999mS. For manual DTMF number entry via a DTMF pad, set this number high.

Radio Timing

In a two-way radio system, timing is very important to successfully transmit data.

Attack Delay. Used in Conventional, Trunk and Tone Remote mode. This timer sets the time delay between start of transmit (or channel acquisition in trunking) and data transmission. If too small of a value is selected in conventional mode, the transmit mechanism of the radio may not be ready (stabilized frequency, max power out, repeater accessed, etc.) to effectively transmit data. Available time selections are 0ms to 9999ms in Conventional and Trunk mode. In Tone Remote mode, available time selections are 0ms to 3000ms.

Trunk Debounce. Used only in trunk mode. Some trunking radios have channel acquired logic which pulses while attempting to be granted access and then remain in a state showing access granted. This timer sets the debounce time so that pulsing is ignored. The unit will not transmit data until the specified time period has been exceeded. Available time selections are 0ms to 9999ms.

Trunk Timeout. Used only in trunk mode. This timer sets the maximum amount of time, which the unit will attempt to acquire a trunk. Once exceeded, the unit will quit attempts. See also *Trunk Key*. Available time selections are 0ms to 9999ms.

Trunk Key Time. Used only in trunk mode. This timer sets the time the unit is keyed while awaiting channel acquisition. In LTR systems, Trunk Key Time and Trunk Timeout should be the same. In more elaborate trunking schemes (e.g. MPT-1327) this timer allows the transmitter to be keyed and then unkeyed in order to request channel access. The time selected is the period the unit stays keyed. The Cimarron equipment will wait for the period designated in *Trunk Timeout* for a channel acquisition indication. When received, the unit will again key up and send out data. Available time selections are 0ms to 9999ms.

Post Dec. Many radios must “relax” after receiving before permitting transmission.

The C Plus waits a fixed 800ms after receiving an acknowledgeable message before it sends a response.

Other C Plus Times:

12 Hours	The amount of time the clock will keep its time without power.
6 Minutes	The amount of time it takes to load new flash into the C Plus using the serial port.
16 Seconds	How long the C Plus sends alternating emergency and PTT messages when given the \$\$LOOP command.
10 Seconds	How long the C Plus sends pseudo-data to assist adjusting TX deviation when given the \$\$KEYT command.
10 Seconds	The amount of time the C Plus "listens" at 9600,N,8,1 when first powered up. After that, it reverts to the user programmed parameters.
2 Seconds	The amount of time Out1/Out2 remain active once triggered.
1 Second	How soon you must press the clear button a second time to erase the secondary display in a C Plus III.
250 mS	The length of the annoying beep that goes off whenever a PTT ANI is received (default value).