Universal CPC Generator™ Programming Manual

The line powered **Universal CPC Generator™** has two mod jacks, with a short mod cord. It doesn't matter which jack you put the line with dial tone into, or plug the phone into. It works in either direction. We put the short cord on the side with the component sticking up:

You have to program the **Universal CPC Generator™** to tell it what to listen to and for how long, which lets it decide when to provide an open loop to tell the equipment to hang-up. The duration of the CPC (open loop at 0 volts) is fixed, at about 800ms.

The programming will stay after the line powered **Universal CPC Generator™** is unplugged.

If you have programmed the **Universal CPC Generator™** correctly, and are still off-hook at the end of the 800ms, you'll get new dial tone. Hopefully you'll program the **Universal CPC Generator™** to generate the 800ms open after hearing the tones or silence, and your phone system will look for a **500ms open** and hang-up automatically.

The phone system or device *always* needs to look for 0 volts *well under* 800ms.

If you program your phone system to look for 800ms, it may or may not see the open from the **Universal CPC Generator™** as a CPC open loop. Your phone system may actually be looking for 810ms, or the **Universal CPC Generator's™** open might be only 790ms. Either way, the phone system is never going to count high enough to trigger it to hang-up.

If you program your phone system for a 900ms open loop, it will *never* recognize the open from the **Universal CPC Generator™** because the phone system will get voltage back at 800ms, and stop counting up to 900ms.

IMPORTANT: Programming the phone system or device to look for a 500ms open makes the most sense!

There are five things you need to program, called **Registers** (programming instructions are farther down).

You need to know the frequencies of the tone you're listening for. If it's behind a phone system, look in the manual or ask the manufacturer what tones they are sending if they don't sound like the Precise tones used on real US phone lines.

If you are in another country, or need to listen for a custom tone, we can probably custom make it for you if you know what the frequencies are.

In the US, modern tones on real phone lines are:

Precise Dial Tone: 350hz and 440hz, Steady

So to look for dial tone, you'd tell the CPC Generator to listen for 350 or 440 Hz (10100000)

Busy Signal: 480hz and 620hz, for .5 seconds on and .5 seconds off (see Programming Examples below)

Receiver Off-Hook Tone (sometimes called the **Howler** tone): *Four frequencies* sent at the same time (instead of two, like most other tones used today):

1400hz, 2060hz, 2450hz, and 2600hz, at a 100ms cadence (.1 second on, .1 seconds off)

Since the **Universal CPC Generator™** doesn't look for 2450hz, just use 1400hz and 2060hz – which is what's needed to trigger it reliably (00000110)

Ringback Tone: 440hz and 480hz, for **2 seconds on** and **4 seconds off** (00110000)

IMPORTANT:

Always program *all five* Registers. If you are changing the unit from detecting a Busy Signal to detecting a Dial Tone, even though there is no cadence for a Dial Tone, you need to program
Register 02 for 0, **Register 03** for 0, and **Register 04** for 1 (or it won't trigger on a steady tone).

PROGRAMMING:

NOTES: • 4 beeps is the **Error Tone** when Programming.
   • When you're done programming Register 5 and get confirmation beep, just hang-up.
   • When you lift the receiver you have 3 seconds to enter program password before it goes into CPC Generator mode. After the 3 seconds the unit will ignore the program password.

Dial the **Program Password** ___   (see Examples below)
When you lift the receiver you have 3 seconds to enter program password before it goes into tone control mode.
After the 3 seconds the unit will ignore the program password.

Register 01 : Cadence On Time in Milliseconds (Default = 4000)

      Valid entries 1-20000
      Example: 01, listen for beep, 500 ##

Register 02 : Cadence Off Time in Milliseconds (Default =0)

      Valid entries 0-20000
      Example: 02, listen for beep, 500 ##

Register 03 : Cadence Tolerance in Milliseconds (Default = 0)

      Valid entries 0-500
      Example: 03, listen for beep, 50 ##   - Plus or minus 50ms to the Cadence on and off times
                           (this is how much slop [+ - milliseconds] the CPC Generator will tolerate)

Register 04 : Cadence Matches (Default = 1)

      Valid entries 1-20
      Example: 04, listen for beep, 2 ##
                           (this is how many times you want to hear the tone before generating the CPC)

Register 05 : Frequency Detection (Default = 10100000)

Enter the 8 frequency settings followed by ##
1 = Look for this frequency,
0 = Ignore this frequency

Frequency	350	400	440	480	620	1400	2060	2600
Entry	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1

      Example: 05, Listen for beep, 10100000 ##, listen for beep   Unit will detect 350hz or 440hz

Programming Examples (hang-up to exit programming):

How to detect a steady tone of 400hz, and minimum duration of 1000 milliseconds:

___, listen for beep,	Enter program mode
01, listen for beep, 1000 ##, listen for beep	Set duration to detect 1000ms
02, listen for beep 0 ##, listen for beep on)	Set cadence off time to 0 (only care when tone is
03, listen for beep, 0 ##, listen for beep	No need for cadence tolerance
04, listen for beep, 1 ##, listen for beep	Match one time
05, listen for beep, 01000000 ##	Match 400hz only

How to detect a (steady) dial tone of 350hz and 440hz, and minimum duration of 4000 milliseconds:

___, listen for beep   Enter program mode
01 listen for beep, 4000 ##, listen for beep   Set duration to detect 4000ms
02 listen for beep, 0 ##, listen for beep   Set cadence off time to 0 (only care when tone is on)
03 listen for beep, 0 ##, listen for beep   No need for cadence tolerance
04 listen for beep, 1 ##, listen for beep   Match one time
05 listen for beep, 10100000 ##, listen for beep   Match 350hz or 440hz

How to detect a busy tone that has frequency components of 480 Hz and 620 Hz, with an on cadence of 500 milliseconds and off cadence of 500 milliseconds, for 4 cycles:

___, listen for beep   Eenter program mode
01 listen for beep, 500 ##, listen for beep   Set cadence on to detect 500ms
02 listen for beep, 500 ##, listen for beep   Set cadence off time to detect 500ms
03 listen for beep, 50 ##, listen for beep   Set tolerance for cadence at 50ms (+-10%)
04 listen for beep, 4 ##, listen for beep   Match 4 cadence on and off cycles
05 listen for beep, 00011000 ##, listen for beep   Match 480hz or 620hz

How to detect 4000 milliseconds (4 seconds) of silence:

___, listen for beep   Enter program mode
01 listen for beep, 500 ##, listen for beep   Value doesn't matter for silence
02 listen for beep, 4000 ##, listen for beep   Set cadence off time to detect 4000ms of silence
03 listen for beep, 0 ##, listen for beep   Set tolerance to 0
04 listen for beep, 1 ##, listen for beep   Match one time
05 listen for beep, 00000000 ##, listen for beep   Disable all frequency components (silence)