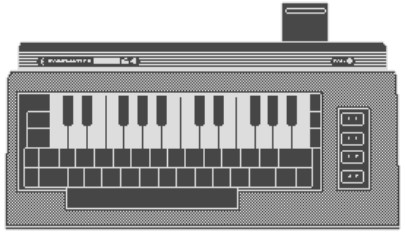
1. CYNTHCART V1.2.4

The Cynthcart is a cartridge for the Commodore 64 that turns it into an awesome analog synthesizer. It allows the Commodore to be played like a keyboard, and works best when used with the piano keyboard overlay accessory that is available frequently on eBay.



2. FEATURES

Patches – includes preset basic sound types.
LFO – low frequency oscillator for vibrato effects.
Portamento – sliding note mode.
Paddle support – paddle controllers can be used to control the filter cutoff, pulse width, LFO depth, or pitch bend.
Fifths – mode where the fifth of the top note is added.
Attack/Release – the rate that notes fade on and off can be adjusted.
Cool video – color patterns are displayed when notes are played.
Removable cartridge – cartridge can be removed after the program is loaded.
Stereo support – supports a second SID (at $DE00).
SID HEX Editor – advanced users can edit the SID registers directly to make custom sounds.

5. KEYBOARD REFERENCE

Patches:

Z=Saw Bass **X**=Saw Bass 2 **C**=Saw Filter 5ths **V**=Saw Port **B**=Pulse
N=Pulse High **M**=Triangle High Long **,**=Triangle Port **.**=Noise **/**=Mute
CTRL=Custom Patch

F1=octave 3 **F3**=octave 2 **F5**=octave 1 **F7**=octave 0
A=short release **S**=med release **D**=long release
:=volume low **;**=volume med **=**=volume high
Up/Down=fifths off **Left/Right**=fifths on **Space Bar**=whammy bar
RETURN=show keyboard help

Shift Key +
A=short attack **S**=med attack **D**=long attack
F=video mode 1 **G**=video mode 2 **H**=video mode 3
J=video on **K**=video when playing **L**=video off
:=full-screen video **;**=turn off full-screen video
Z=LFO slow **X**=LFO med **C**=LFO fast **V**=LFO warp
B=LFO off **N**=LFO low **M**=LFO med **,**=LFO high
Up/Down=filter paddle off **Left/Right**=filter paddle on
F1=portamento fast **F3**=port med **F5**=port slow **F7**=port off

Commodore Key +
ASDF row=set fixed filter value (0-7)
Z=filter on **X**=filter off **C**=filter disable
V=paddle 2 off **B**=paddle 2 > pulse width **N**=paddle 2 > LFO **M**=paddle 2 > pitch

RUN STOP +
QWERTY row=tuning (-40 cents to +50 cents)
A=filter on **S**=filter off **D**=filter disabled (stays off for all patches)
F1=SID HEX edit mode **F3**=save custom patch **F7**=piano keyboard SID HEX edit
Z=NTSC tuning mode **X**=PAL tuning mode

3. CONTROLS

All functions have dedicated keys on the keyboard so the program can be used easily without a video monitor. Key commands are available to adjust the sound, the way notes are played, the video display, and many other functions. See the keyboard reference on the last page for all available key commands. The program also contains an on-screen keyboard reference that can be toggled on/off with the RETURN key.

When the Cynthcart is used without the piano keyboard overlay, the QWERTY row is the white piano keys and the number row is the black keys.

A set of paddle controllers plugged into controller port 2 can control some sound parameters in real time. Since the paddles are not labeled, you may have to experiment to figure out which is paddle #1 and paddle #2. Paddle #1 will control the filter cutoff. To override the fixed filter setting that some patches use, twist the paddle and it will automatically be activated. The second paddle can be set to control pulse width, LFO depth/vibrato, or pitch bend using key commands (see keyboard reference). Note that the pulse width control only works with the pulse patch, which is selected with the B key.

For advanced users, the SID hex editor lets you edit SID registers directly, allowing you to create sounds beyond the preset patches. If you are using the piano overlay, activate the editor with RUNSTOP + F7, and use the black piano keys for 1-9, 0 and the middle white keys for A-F. If you are not using the piano overlay, press RUNSTOP + F1 to enter edit mode using standard keys. To edit a SID register, enter the two digit (in hex) SID register to modify followed by the two digit value to write. When you enter the SID editing mode, the software displays a chart of all the SID registers and their current values. The SID editor also includes special registers $22-$26 that allow you to edit all three oscillators at once.

When you create a custom patch, you can save it temporarily in memory by pressing RUNSTOP+F3. To recall the sound again press CTRL. Note that the custom sound will be erased when you turn off the computer or when you save a new custom patch.

The video chip in the Commodore 64 creates noise on the audio output, so the Cynthcart includes the ability to turn off video. Press SHIFT+K to set the video chip to only turn on when notes are being played, or press SHIFT+L to turn video off completely.

The Cynthcart includes tuning charts for both PAL (Europe) and NTSC (North America) Commodore 64s. It should detect the type of hardware automatically, but if it does not, there are key commands to set PAL or NTSC mode.

4. ABOUT

The Cynthcart was programmed by Paul Slocum (www.qotile.net) and is manufactured by AtariAge (www.atariage.com).