sound modes

Cynthcart has 14 voicing modes that determine how played notes are distributed to the SID's three voices. The sound mode can be selected with the keyboard or through MIDI controller #2. When a second SID chip is installed, all the modes use a stereo chorus effect except the 6-voice polyphonic mode.

Name	Description	Name	Description
POLY	Default 3-voice polyphonic	**MONO2**	3-voice monophonic
5THS	Polyphonic with added 5th	**ARP1**	Arpeggiator up fast
5PORT	Poly portamento with 5th	**ARP2**	Arpeggiator up med
PORT1	Poly portamento Slow	**ARP3**	Arpeggiator up slow
PORT2	Poly portamento Fast	**ARP4**	Arpeggiator down med
PORT3	Poly portamento Faster	**ARP5**	Arpeggiator down fast
MONO1	3-voice mono w/ octave shifts	**6CHAN**	6-voice poly (requires 2nd SID)

fx modes

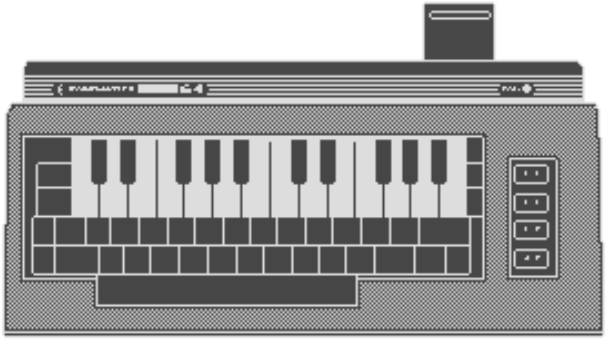
The FX modes add modulation to the filter or pulse-width using LFOs and envelopes. FX modes can be selected with key commands or through MIDI controller #3. Note that PULS1 and PULS2 will only work on presets and sounds that use the pulse waveform.

Name	Description	Name	Description
NONE	FX off	**FILT4**	Square LFO → Filter
FILT1	Slow LFO → Filter	**FILT5**	Fast Square LFO → Filter
FILT2	Slow Rising Envelope → Filter	**PULS1**	Slow LFO → Pulse Width
FILT3	Fast Drop Envelope → Filter	**PULS2**	Rising Env → Pulse Width

sid hex editor

The SID editor allows advanced users to modify SID registers directly. Press RUNSTOP+F1 to enter SID HEX editing mode. Use keys 0-9 and A-F to enter the two digit SID address to change, followed by the two digit value to write to that address. If you are using the piano keyboard overlay (which covers up the number keys), then start the SID editor in piano keyboard mode by pressing RUNSTOP+F7 and use the black piano keys for 0-9 and the center white piano keys for A-F.

The editor includes five special addresses ($22-$26) that simultaneously set all three SID oscillator registers to the same value. A customized sound can be saved by pressing RUNSTOP+F3, and that sound can later be recalled by pressing the "←" key.



cynthcart v1.5.2

Cynthcart is a cartridge for the Commodore 64/128 that turns the computer into a standalone analog synthesizer. Cynthcart's key-command user interface allows it to be played and controlled without a monitor, making it especially suitable for live performance. The original Commodore 64 piano keyboard overlay can be used (illustrated above) and DATEL-compatible MIDI interface cartridges are now supported.

features

+ 22 preset patches
+ Arpeggiator, portamento, vibrato, tremolo
+ Analog filter live control and effects
+ Mono stack, 3-voice mode, and 6-voice mode (with second SID)
+ Control of attack, release, and other sound parameters
+ MIDI support including pitch bend, patch changes, and controllers
+ On-screen help
+ Color visualizer display
+ SID hex editor for advanced users
+ Ability to turn off video chip to reduce noise
+ PAL and NTSC pitch tables with automatic selection
+ Copies itself to RAM (cartridge can be removed after loading)

supported accessories

+ Commodore 64 piano keyboard overlay
+ DATEL and Kerberos MIDI interface cartridges
+ Paddle controllers in port 2 for pulse width, vibrato, and pitch
+ 2nd SID chip at address $DF00 (supports SIDcart II)

keyboard controls

The top two rows of the Commodore's keys function as a piano keyboard and are configured to be compatible with the piano keyboard overlay that was produced in the 80s, often marketed as the "Incredible Musical Keyboard". The top number row is the black piano keys and the QWERTY row is the white piano keys. Notes can be locked using the SHIFT LOCK button. The Commodore 64's other keys are used to select patches and change settings as indicated in the following tables. Sound patches are italicized and include their MIDI patch number in parenthesis.

KEY	by itself	with SHIFT	with CTRL
A	*filter bass (#10)*	Note Attack = 0	Note Release = 0
S	*sweep arp (#11)*	Note Attack = 5	Note Release = 5
D	*pluck arp (#12)*	Note Attack = 8	Note Release = 8
F	*slow arp (#13)*	Video Pattern 1	Poly Mode (default)
G	*filter stack 1 (#14)*	Video Pattern 2	5ths Mode
H	*filter stack 2 (#15)*	Video Pattern 3	5ths Port Mode
J	*pulsar (#16)*	Video On	Mono1 Mode
K	*vibrato lead (#17)*	Video if Sound	Arp1 Mode
L	*slow rise (#18)*	Video Off	Arp2 Mode
:	*bend echo (#19)*	Full Screen On	Arp3 Mode
;	*arp lead (#20)*	Full Screen Off	Arp4 Mode
=	*6-voice saw (#21)*		Arp5 Mode
RETURN	Help Page	Clear Modulation	6-Channel Mode
Z	*saw bass (#0)*	Tremolo Speed=0	FX Off
X	*gritty bass (#1)*	Tremolo Speed=1	Filter FX 1
C	*portamento 5th (#2)*	Tremolo Speed=2	Filter FX 2
V	*saw portamnto (#3)*	Tremolo Speed=3	Filter FX 3
B	*pulse 5th (#4)*	Tremolo Level=0	Filter FX 4
N	*pulse high (#5)*	Tremolo Level=1	Filter FX 5
M	*triangle hi/lo (#6)*	Tremolo Level=2	Pulse FX 1
,	*triangle drop (#7)*	Tremolo Level=3	Pulse FX 2
.	*sid explosion (#8)*		Pulse FX 3
/	*mute (#9)*		
cursor up/down	5ths Mode Off	Paddle 1 = Off	
cursor left/right	5ths Mode On	Paddle 1 = Filter	Mono 2 Mode
SPACE	Bend Pitch		
F1	Octave Highest	Portamento = 3	Volume = 9
F3	Octave High	Portamento = 2	Volume = 6
F5	Octave Low	Portamento = 1	Volume = 4
F7	Octave Lowest	Portamento Off	Volume = 0
backarrow	Custom Patch		

KEY	with C= key	with RUNSTOP
A	Filter Cutoff = 0	Tuning = -40
S	Filter Cutoff = 1	Tuning = -30
D	Filter Cutoff = 2	Tuning = -20
F	Filter Cutoff = 3	Tuning = -10
G	Filter Cutoff = 4	Tuning = 0
H	Filter Cutoff = 5	Tuning = +10
J	Filter Cutoff = 6	Tuning = +20
K	Filter Cutoff = 7	Tuning = +30
L		Tuning = +40
Z	Filter On	Tuning = +50
X	Filter Off	
C	Filter Disabled	
V	Paddle 2 = Off	
B	Paddle 2 = Pulse Width	
N	Paddle 2 = LFO Speed	
M	Paddle 2 = Pitch Bend	
,	MIDI channel = omni	
.	MIDI channel = 1	
/	MIDI channel = 5	
F1		Open SID Editor (keyboard)
F3		SID Editor Save
F7		Open SID Editor (piano)

midi control

Cynthcart supports MIDI input through a DATEL or Kerberos MIDI interface cartridge. It responds to note data, patch changes, pitch bend, and various controllers. By default Cynthcart listens on all MIDI channels (omni mode) but single channels can also be selected by key command (see table above). MIDI patch numbers are listed in the keyboard chart beside the patch names, and the chart below lists the Cynthcart MIDI controller numbers.

CC#	Parameter	CC#	Parameter
0	Filter Resonance	**7**	Volume
1 (wheel)	Filter Cutoff	**8**	Tremolo Depth
2	Choose Voice Mode	**9**	Tremolo Speed
3	Choose FX Mode	**13**	Osc Waveform (all voices)
4	Attack	**14**	Osc Waveform (voice 2 only)
5	Release	**15**	Osc Waveform (voice 3 only)
6	Pulse Width		