

**THX**

Dexter/Abyss!

<b>COLLABORATORS</b>
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## Chapter 1

# THX

### 1.1 THX Sound System v2.3d Documentation Guide

```

=====
== use ===== t h x - s o u n d   s y s t e m ===== use ==
== the ===== this ==
== inbuilt ===== d o c u m e n t a t i o n   g u i d e ===== help ==
== thx help ===== pressing ==
== pressing ===== shift-help ==
== help in thx ===== v e r s i o n   2 . 3 d - s p 1 ===== in thx ==
=====

```

About~~~~~

The~Song~Editor~~~~~

Contacts~~~~~

The~Instrument~Editor~~~

The~Subsongs~~~~~

The~Instruments~~~~~

The~Positions~~~~~

Edit~Commands/Shortcuts~

The~Tracks~~~~~

Track~Commands~~~~~

The~Volumes~~~~~

PerformanceList~Commands

## 1.2 About

About THX Sound System v2.3d-spl

Generally:

We've tried to make the editor most comfortably to use,~which~means~that we're using the same keymap and track format as~ProTracker~does. If you need any help,~read the~ProTracker~doc -- hehehe or just press HELP in THX and get surprised (Press SHIFT-Help to open this Amiga-GUIDE) -- or contact any of the authors (Dexter or Pink).

We friendly ask you to read the in-built help (you'll need pt.font!) as there were many changes/additions in the track-/plist-commands!

Note: There are NO more~audio-hardware problems~(since~v1.00)!

\*\*\* Now you can use double-/triple-/quadruple-speed cia-timing, too. \*\*\*

THanX to Edd Dumbill for Heddley!

## 1.3 Contacts

If you have ANY suggestions, bugreports or whatever then contact us!

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## 1.4 The Song Editor

---

## The Song Editor

### Buttons:

POS (Current POSition): The current position being (dis-)played  
 LEN (SongLENgth): The length of the song in positions  
 RES (REStart Position): The position where THX restarts the song at  
 TRL (TRAckLength): The length of the tracks in steps  
  
 SS (SubSongs): Number of subsongs (exluding the mainsong!)  
 SSN (SubSongNumber): Number of subsong to edit/play  
 SSP (SubSongPosition): Position of subsong nr. SSN  
  
 PLAY (PLAY Song): Play the current song at the current POSition  
 STOP (STOP Playing): Stop any playing  
 INS (INStrument Editor): Go to instrument editor  
 NAME (NAME of the song): The Songname  
 <LOAD> (LOAD Song): Load Song  
 <01> (Instrument Number): The number of the current instrument  
 <UP> (Next Instrument): Select the next highest instrument  
 <DOWN> (Prev Instrument): Select the next lowest instrument  
 <NAME> (Instrument NAME): Name of the current instrument  
 <LOAD> (LOAD Instrument): Load Instrument

## 1.5 The Instrument Editor

### The Instrument Editor

One Instrument consists of:

Instrument Volume	0-64	reference the Volume chapter for more info.
Wavelength~	4-80~	Wavelength in bytes (\$4,\$8,\$10,\$20,\$40,\$80) the lower the value, the~higher~the instrument will sound.

---VOLUME ENVELOPE---

Attack (Frames)	1-255	Number of frames (1/50 secs)~for~attacking
Attack Volume	0-64	to Attack Volume
Decay~(Frames)~	1-255~	Number of frames (1/50 secs) for decaying
Decay~Volume~	0-64~	to Decay Volume
Sustain (Frames)	1-255	Number of~frames~(1/50~secs) for sustain
Release (Frames)	1-255	Number of~frames~(1/50~secs) for releasing
Release Volume	0-64	to~Release~Volume

---VIBRATO CONTROL---

Delay	0-255	Delay until Vibrato starts (in~1/50~secs)
Depth	0-15	0=No Vibrato, else Depth of~Vibrato
Speed~	0-63	Speed of Vibrato (higher->faster Vibrato)

---SQUARE MODULATION---

Lower Limit	1-63	Lower Limit of Square Modulation
Upper~Limit~	1-63	Upper Limit of Square Modulation
S(quare)~Speed~	1-255~	Speed in 1/50 seconds example: 6 means that every 6th. frame 1 modulation takes place

\*NEW:\* You needn't start IN the range anymore since v2.0!  
Your~start may~be~out of the range and thx will slide INTO the range and  
then~loop the~range, you may also set the initial slide~direction!  
(see cmd. 4 in pList!)

---FILTER MODULATION---

Lower Limit	1-63	Lower Limit of Filter Modulation
Upper~Limit~	1-63	Upper Limit of Filter Modulation
F(ilter)~Speed~	1-255~	1: 4 modulations every frame (1/50 second) 2: 3 modulations every frame (1/50 second) 3: 2 modulations every frame (1/50 second) 4: 1 modulation every frame (1/50 second) (would equal Square Speed 1 !!!) 5: 1 modulation every 2nd frame (1/50 sec) 6: 1 modulation every 3rd frame (1/50 sec) 7: 1 modulation every 4th frame (1/50 sec) and so on.

\*NEW\* You needn't start IN the range anymore since v2.0!  
Your~start may~be~out of the range and thx will slide INTO the range and  
then~loop the~range, you may also set the initial slide~direction  
(see cmd. 4 in pList!)

---PERFORMANCE EDITOR---

Speed	1-255	Speed like speed in the tracks (Fxx cmd!) but here for the Performance List may be changed in perfList also~with~Fxx
Length	0-255	Length of Performance List (NEEDS to be set to AT LEAST 1 if this instrument will be used!!)
Hard Cut	0-7	0: No Hard Cut 1-7: Cut this instrument HardCut frames before a new instrument is hit! (only the next step is checked for an instrument)
Release Cut	On/Off	Off: Sets InstrumentVolume to 0 (like EC) when it's time to HardCut (needs Hard Cut to be set to range 1-7) On: Fades the Current ADSR~Volume to the given RELEASE~Volume in HardCut frames in order to be at the release adsr~volume when the new instrument is being hit!

---PERFORMANCE LIST---

```
000 C-1 o 3 320 000
001 --- o 0 000 000
002 --- o 0 000 000
003 --- o 0 000 000
004 --- o 0 000 000
```

This would be a simple square wave with the relation \$20:\$20, indicated-by~320, 3 the cmd, 20 the parameter.

/\~C-1 with the UNfilled~sign means~that the C-1 is not fixed.

\/~If~you play E-3 in the track, then it will be a E-3

If you fix~the note by pressing RETURN the sign will be filled and if you have E-3~in~the~track C-1 would be played!

If you play an F-4 in the track with a NOT-fixed D-1 in the pList, then this would be ... take a look at this:

```
F-4 + D-1 (not-fixed) = G-1
F#4 + C-1 (not-fixed) = F#1
D-5 + G#3 (fixed) = G#3
D#3 + C-2 (not-fixed) = D#4
```

Note: You shouldn't play a square-wave without setting its relation (using cmd. 3) if you don't have anything special in mind!!

The others cmds are explained in the instrument editor's window...

They~are~mostly~working like the ones of ProTracker...

If you need some help on them or the NEW commands, then use the internal help (press the HELP key :-)

## 1.6 The Subsongs

### The Subsongs

Number of subsongs (SS) IS NOT the number of songs in the THX module! There's always your main song (so called subsong 0) and then there are SS subsongs which means there are SS+1 songs altogether. So if you just want to make a normal THX song, leave this field to 0.

Example: For a game you need 3 songs (Titel, Ingame and GameOver), so you have to set SS to 2.

Subsong Number (SSN) is the number of the subsong to edit/play.

Subsong Position (SSP) is the positinon to play at the entered Subsong.

Attention: If you use subsongs, RES (Restart position) will be active for the last subsong only !!! (Subsongs 0 and the rest except the last subsong have to loop themselves using the 0 and B cmd.

Back to the example: You have your main song (subsong 0) starting at position 0 (Titel), then enter 1 into SSN, then the position of the Ingame song to the SSP gadget. Enter 2 into SSN and then the position of the



GameOver song into SSP.

## 1.7 The Positions

The Position Editor

```
>pos voice1 voice2 voice3 voice4<

000 001-00 000-00 000-00 000-00
001 001-0C 000-00 000-00 000-00
002 001-00~003-00 007-00 000-00
003 002-00 004-00 007-FC 000-00
004 001-00 003-02~006-00 010-00
005 002-00 005-00 006-00 011-00
    ||| |||                                     12 halfnotes = 1 octave !
    ||| |||
    ||| \___ The transposing, $0C = 12, which means one octave up
    \ \                                     $F4 =-12, which means one octave down
    \ \___ The track to be played in this voice at the given position
```

## 1.8 The Tracks

The Tracks

On the lower part of the screen you can see 4 tracks, which DO NOT urgently~have to represent the 4 voices being played... You can edit them~how you want. When playing the song the 4 tracks WILL represent the 4~voices!

Anyway, take a look at the internal THX help, just press HELP in THX!

Information: Octave 3 to 5 represent PTs Octave 1 to 3 !!!

Left to the first voice's track-nr. you can set a value between 1 and 4, which represent the player's cia-speed. You can now use double-/triple-/quadruple-speed cia-timing to make more hardcore c64 tunes!

If THX is not in CIA mode, you can't set this value (stays 1) and you can't load double-/triple-/quadruple-speed thx-modules either. Use this option sparingly, as this will eat 2-/3-/4-times of the player's cpu-usage!

## 1.9 The Instruments

The Instruments

There are 63 instruments to use in a THX-Module.~THX-Instruments~can~also be loaded/saved using the Instruments-menu in the~main screen~or the LOAD button on~Instrument-Editor screen.

Press CTRL and Left/Right to increase/decrease~the current~Instrument.  
 Press ALT and F3/F4/F5 to Cut/Copy/Paste (to) the current Instrument.  
 ~Press~0-9 on the Keypad to enter the lower digit of~the~instrument.  
 Press~Enter on~the Keypad and then 0-9 to enter the upper~digit.

Example:~Enter+2+7 will~select instrument 27  
 +3 will select instrument 23  
 Enter+0 will select instrument 03  
 +7 will select instrument 07

## 1.10 The Volumes

### The Volumes

The highest volume per voice is the so called "Voice Master Volume", which may be set using the \$CA0-\$CE0 command (in both, pList and Track). \$C50-\$C90 in the Tracks will set the Voice Master Volume for ALL 4 voices. Then there is the "Instrument Volume", which is set by the field Volume in the Instrument Editor and may be set using the \$C00-\$C40 command (in both, pList and Track).

The last volume THX has is the so called "perfSubVolume" which is a volume that is set to \$40 when you hit the instrument and may be set to any other value with the \$C50-\$C90 command in the pList only! This volume is to make relative volume effects in the instruments, just a short example:

```
Instrument 01: Volume 64      000 C-1 3 320 C90
                        001 --- 0 000 C80
                        002 --- 0 000 C70
                        003 --- 0 501 000
```

This Instrument can now be played with any volume you want (\$C00-\$C40 in the Tracks!), the volume sliding will keep!!

```
Instrument 02: Volume 32      000 C-1 3 320 C40
                        /\      001 --- 0 000 C30
                        xx      002 --- 0 000 C20
                        003 --- 0 501 000
```

This Instrument won't do the same effect as Instrument 01, as the \$C40 / \$C30 / \$C20 command would override Instrument's volume 32 (xx) !!!

Well, I hope you got that principle :-)

The adsr is an other volume.. but u can't override it manually :-)  
 You can only use HardCut w/ ReleaseCut On, which will override the adsr and set/jump to the Release-phase.  
 And in the replayer there's a main-volume, which cannot be set in THX (you shall set the Voice Master Volume on all 4 voices then (see 33 lines up!). It should be setable using a slider bar in the Editor (like the bar on DeliTracker!) but as I didn't succeed implementing a simple slider

gadget, it's not there!!! So THX always plays at high volume and if you get a phone call the guy on the other end has to listen to THX sound, too! WHAT A PITY heheh :-)))

## 1.11 Edit Commands/Shortcuts

### Edit Commands / Key Shortcuts

L-AMIGA+Return: Display Tracks given in PosEd's current Position \*NEW\*

R-ALT: Play Song

R-AMIGA: Play Position

R-SHIFT:~ Record~Position

Space: Switch~between~edit/non-edit~mode or stop playing

Note-Keymap: Same as in~ProTracker

F1-F5:~ Select current octave (Note: we're using >5< octaves!)  
Ocatves 3 to 5 represent PTs octaves 1-3 !!

F6-F10: Jump to step 0, 16, 32, 48, 63 (if TrackLength=~64)

Tab: Jump to next voice

Tab & L-ALT ~ Jump~to~next voice's note-column

Tab & L-SHIFT Jump to previous voice

Tab & CTRL Jump to current voice's note-column

L-ALT & ~YXCV:~ Toggle~Voices 0-3 on/off

Del:~ Delete~Note / Pos

Del & L-SHIFT: Delete Note + Command / Pos + Tranpose

Del & L-ALT: Delete Commands / Transpose

Ret & L-SHIFT: ~Insert~Empty~Note&CMD/Position at current step/position

Ret & CTRL: Insert~Empty~CMD at~current step (also pList)

BKSPC & L-SHIFT:~Drag~Note&CMD/Position one step/position up (pList)

BKSPC & CTRL: Drag~CMD one~step up~(also pList)

. (Keypad,=Del): Delete current~Instrument

CTRL-M:~ Toggle Multi On/Off! No order yet!

CTRL-Left/Right: Instrument up/down

L-ALT & Left/R.: Track~up/down~

<: ~Kill Voices but don't switch (Key right to the L-Shift)  
editmode/testmode in opposition to SPACE.

CTRL~&~B/C/V/I:~ Mark/Copy/Paste/Insert in Pos. Ed

CTRL & B/C/V/I: Mark/Copy/Paste/Insert in Track Ed

-->Track-Editor

L-SHIFT~&~F3-F5: Cut/Copy/Paste track

CTRL & F3-F5: ~Cut/Copy/Paste~track-commands~only

-->Instrument-Editor

CTRL & F3-F5: Cut/Copy/Paste instrument w/o pList <--> buffer

L-SHIFT & F3-F5: Cut/Copy/Paste instrument's pList <--> buffer

-->Both Editors

L-ALT & ~F3-F5:~ Cut/Copy/Paste~instrument <--> buffer

CTRL-T: Swap Voices~in PosEd see pt!

CTRL-K: Kill to end of track

CTRL-0 to 9: ~Editskip (TrackEd/pListEd) seperate~handled!  
(No display as in PT, sorry!)

(L-ALT &) -/+/= Copy down command w/~or~w/o~increasing/decreasing  
(100% pt, the 3 keys left to BKSPC!)  
(You don't need L-ALT when you're not in the note-field)

L-SHIFT & Up/D.: Faster scrolling (3 steps at once), like in PT...

CTRL & Up/Down: Scroll Positions while cursor's in Track-Editor  
and vice versa

Esc: Switch~between~Main~Screen and Instrument Editor  
equals the INS/MAIN gadget)

Return:~ NOT the~keypad~one! Switch between Position/Track Ed.

Keypad-ENTER: Select upper instrument digit instead of lower

Keypad-0 to 9: Enter instument's lower (w/ ENTER: upper) digit

Caps-Lock: Set Test-Mode in instrument editor

Return: Toggle Fixing in instrument editor

#### Menu-Commands:

L-AMIGA & L:~ Load~Module (THX or M.K. (=ProTracker!))

L-AMIGA & S: Save THX-Module

L-AMIGA & C: ~Clear~ALL/Tracks/Pos/Ins of current Module

L-AMIGA & A: About THX Sound System (MPEG anims ruule!??)

L-AMIGA & Q:~ Quit~THX Sound System (keyboard shortcut works now)

L-AMIGA & P: Preferences

L-AMIGA & R: Toggle Rastertime display On/Off

L-AMIGA & O: Toggle VolumeMeter display On/Off

L-AMIGA & V may be your SNAP-program, so i took O !!

SOON TO FOLLOW (IF YOU STILL HAVE OTHER SHORTCUT-REQUESTS -> EMAIL ME!)

- You can also use ctrl-a to toggle an audiochannel, and ctrl-q to unmute all channels. Ctrl+shift-a will solo the
- ctrl & e/o
- shft & 0-9
- transposing using alt & lqay / 3edc

## 1.12 Track Commands

### EFFECT COMMANDS

-----

Effect commands on THX should be compatible with all other trackers.

0~~~None/JumpPos~Hi~~  
8~~~Ext.~Timing~~

1~~~Portamento~Up~~~~  
9~~~Overr.~Square

2~~~Portamento~Down~~  
A~~~VolumeSlide~~

3~~~TonePortamento~~~~  
B~~~PositionJump~

```

4~~~Set/Overr.~Filter
C~~~Set~Volume~~~

5~~~ToneP~+~VolSlide~
D~~~PatternBreak~
  6 - * NOT USED *
E~~~Misc.~Cmds~~~
  7 - * NOT USED *
F~~~Set~Speed~~~
  Cmd 0. Set Pos-Jump Hi [HiPos:$0-$9]

```

-----  
Usage: \$0 + positionjump hi

Jumping to e.g. position 123 (decimal) must be done using Cmd. \$0 + \$01 and Cmd. \$B + \$23. Value will be reset to \$00 after jumping (using \$B) to the desired position.

Example: ---00002 0 is the command,  
          2 is positionjump hi

Cmd 1. Portamento up [Speed:\$00-\$FF]

-----  
Usage: \$1 + portamento speed

Portamento up will simply slide the sample pitch up. You can NOT slide higher than B-5! (Period 113)

Example: C-300103 1 is the command,  
          3 is the portamentospeed.

NOTE: The portamento will be called as many times as the speed of the song. This means that you'll sometimes have trouble sliding accurately. If you change the speed without changing the sliderates, it will sound bad...

Cmd 2. Portamento down [Speed:\$00-FF]

-----  
Usage: \$2 + portamento speed

Just like command 1, except that this one slides the pitch down instead. (Adds to the period).

You can NOT slide lower than C-1!  
(Period 856)

Example: C-300203 2 is the command,  
          3 is the portamentospeed.

Cmd 3. Tone-portamento [Speed:\$00-\$FF]

-----  
Usage: Dest-note + \$3 + slidespeed  
WON'T WORK IF THE TRACK IS TRANSPOSED!!

This command will automatically slide from the old note to the new.

You don't have to worry about which direction to slide, you need only set the slide speed. To keep on sliding, just select the command \$3 + 00.

Example: A-200000 First play a note.  
          C-300305 C-3 is the note to slide to, 3 the command, and 5 the speed.

Cmd 4. Set/O. Filter [\$01-\$3F,\$41-\$7F]

-----  
Usage: \$4 + filter / filter+\$40

Example: C-300405 4 is the command, 5 is filter \$05 (when Cmd 0 in pList),  
          C-300443 4 is the command, 43 is filter \$03 and set filter immed.

Values \$01-\$3F will override Cmd.\$0 in pList and set the filter when it's set through Cmd.\$0 in the pList.

Add \$40 to the filter you want to set to set the filter immediately.

Cmd 5. ToneP + Volsl [Spd:\$0-\$F/\$0-\$F]

-----  
Usage: \$5 + upspeed + downspeed

This command will continue the current toneportamento and slide the volume at the same time. Stolen from NT2.0.

Example: C-300503 3 is the speed to turn the volume down.

          C-300540 4 is the speed to slide it up.

Cmd 8. External Timing [User:\$01-\$FF]

-----  
Usage: \$8 + externaltimingdata

This command will set the External Timing byte in replayer's public-mem section. Refer to replayer's documentation for further information/usage.

---

Example: ---00827 27 is the value set  
for external timing.

Cmd 9. Set SquareRelation [SR:\$01-\$3F]

-----  
Usage: \$9 + square-relation

This command will set the square-  
relation (set in pList using Cmd.\$3xx)  
immediately and will disable the first  
\$3xx Cmd. (if appearing in the pList).

Example: C-300920 20 is the square-  
relation  
---00918 18 is the square-  
relation  
---00910 10 is the square-  
relation

Cmd A. Volumeslide [Speed:\$0-\$F/\$0-\$F]

-----  
Usage: \$A + upspeed + downspeed

Example: C-300A05 5 is the speed to  
turn the volume down.

C-300A40 4 is the speed to  
slide it up.

NOTE: The slide will be called as  
many times as the speed of the song.  
The slower the song, the more the  
volume will be changed on each note.

Cmd B. Position-jump [Pos:\$00-\$99]

-----  
Usage: \$B + position to continue at

Example: C-300B00 B is the command,  
0 is the position to  
restart the song at.

This command will also perform a  
pattern-break (see 2 pages below).

You have to enter the position in  
decimal (NOT in hex as in PT). Use  
Cmd. \$0 to jump to positions >100.

Cmd C. Set volume [Volume:see below]

---

```
-----
Usage: $C+$00-$40: Instrument volume
       $C+$50-$90: VMvol. 4 all voices
       $C+$A0-$E0: Voice Master vol.
```

Well, this old familiar command will set the current volume to your own selected. The highest volume is \$40. All volumes are represented in hex. (Programmers do it in hex, you know!)

Example: C-300C10 C is the command, 10 is the volume (16 decimal).

```
Cmd D. Pattern-break
      [Pattern-pos:00-63, decimal]
```

```
-----
Usage: $D + pattern-position
```

This command just jumps to the next song-position, and continues play from the patternposition you specify.

Example: C-300D00 Jump to the next song-position and continue play from patternposition 00.

Or: C-300D32 Jump to the next song-position and continue play from patternposition 32 instead.

## E - COMMANDS

The E command has been altered to contain more commands than one.

E0- \* NOT USED \*

E8- \* NOT USED \*

E1- Fineslide Up

E9- \* NOT USED \*

E2- Fineslide Down

EA- FineVol Up

E3- \* NOT USED \*

EB- FineVol Down

E4- Vibrato Control

EC--~NoteCut~~~~~

E5- \* NOT USED \*

ED--~NoteDelay~~~~

E6- \* NOT USED \*

EE- \* NOT USED \*

E7- \* NOT USED \*

EF- \* NOT USED \*



Cmd E1. Fineslide up [Range:\$0-\$F]

-----  
Usage: \$E1 + value

This command works just like the normal portamento up, except that it only slides up once. It does not continue sliding during the length of the note.

Example: C-300E11 Slide up 1 at the beginning of the note.

(Great for creating chorus effects)

Cmd E2. Fineslide down [Range:\$0-\$F]

-----  
Usage: \$E2 + value

This command works just like the normal portamento down, except that it only slides down once. It does not continue sliding during the length of the note.

Example: C-300E26 Slide down 6 at the beginning of the note.

Cmd E4. VibratoControl [Value:\$0-\$F]

-----  
Usage: \$E4 + VibratoDepth.

This command will set/override the VibratoDepth value set in the current instrument's Performance-List!

Example: C-301000 Hit Insturment 1  
---00E40 Stop Vibrato  
---00E48 Medium Vibrato

Cmd EA. FineVolsl up [Range:\$0-\$F]

-----  
Usage: \$EA + value

This command works just like the normal volumeslide up, except that it only slides up once. It does not continue sliding during the length o the note.

---

Example: C-300EA3 Slide volume up 1  
at the beginning  
of the note.

Cmd EB. FineVolsl down [Range:\$0-\$F]

-----  
Usage: \$EB + value

This command works just like the normal volumeslide down, except that it only slides down once. It does not continue sliding during the length of the note.

Example: C-300EB6 Slide volume down  
6 at the beginning  
of the note.

Cmd EC. Cut note [Value:\$0-\$F]

-----  
Usage: \$EC + Tick to Cut note at.

This command will cut the note at the selected tick, creating extremely short notes.

Example: C-300F06 Set speed to 6.  
C-300EC3 Cut at tick 3 out  
of 6.

Note that the note is not really cut,  
the volume is just turned down.

Cmd ED. NoteDelay [Value:\$1-\$F]

-----  
Usage: \$ED + ticks to delay note.

This command will delay the note to the selected tick.

Example: C-300F06 Set speed to 6.  
C-300ED3 Play note at tick  
3 out of 6.

Cmd F. Set speed [Speed:\$00-\$FF]

-----

---

Usage: \$F + speed

This command will set the speed of the song.

Vblank: Range 01-FF - Normal timing

CIA: Range 01-FF - Normal timing

Both: Range 00 - STOP song.

## 1.13 PerformanceList Commands

EFFECT COMMANDS (pList)

-----

Effect commands on THX v2.0! should be compatible with older THX-Versions.

- 0 - Init Filter
- 1 - Portamento Up
- 2 - Portamento Down
- 3 - Init Square
- 4 - Toggle Mod. (S+F)
- 5 - Jump to Step
- 6 - Volume (C)
- 7 - Speed (F)

Cmd 0. Init Filter [Filter:\$01-\$3F]

-----

Usage: \$0 + filter

Sets the filter.

Value \$01-\$1F: Low-Pass Filter  
           \$01: heavy filtered  
           \$1F: slightly filtered  
       \$20: No filter (std. value)  
       \$31-\$3F: High-Pass Filter  
           \$21: slightly filtered  
           \$3F: heavy filtered

Cmd 1. Portamento up [Speed:\$00-\$FF]

-----

Usage: \$1 + portamento speed

Portamento up will simply slide the sample pitch up. You can NOT slide higher than B-5! (Period 113)

Example: C-3x103000 1 is the command,  
3 is the portamentospeed.

NOTE: The portamento will be called as many times as the speed of the pList. This means that you'll sometimes have trouble sliding accurately. If you change the speed without changing the sliderates, it will sound bad...

Cmd 2. Portamento down [Speed:\$00-FF]

Usage: \$2 + portamento speed

Just like command 1, except that this one slides the pitch down instead. (Adds to the period).

You can NOT slide lower than C-1!  
(Period 856)

Example: C-3x203000 2 is the command,  
3 is the portamentospeed.

Cmd 3. Init Square [Sq.-Rel:\$01-\$3F]

Usage: \$3 + square-relation

Sets the square-relation.  
Values depend on the wavelength of the instr. !! Don't use lower values than:  
Wavelength \$80: Range \$01-\$3F  
\$40: Range \$02-\$3F  
\$20: Range \$04-\$3F  
\$10: Range \$08-\$3F  
\$08: Range \$10-\$3F  
\$04: Range \$20-\$3F

Only for SquareLowerLimit these Values will be corrected if a new WLen is set!

Cmd 4. Toggle Mod. [\$00,\$1/\$f,\$1/\$f]

Usage: \$4+toggle filter/toggle square

The upper nibble will toggle filter-modulation, the lower nibble will toggle square-modulation:  
Values \$1 for pos. start-signum/off  
\$f for neg. start-signum/off  
Cmd. \$4 + \$00 is kept compatible with older THX-Versions and is the same as Cmd. \$4 + \$01 (toggle squaremod. with positive signum! NOW YOU CAN ALSO SET THE START VALUE >OUT OF< THE RANGE! THEN THE SIGNUM WILL BE IGNORED!

Cmd 5. Position-jump [Pos:\$00-\$ff]

-----  
Usage: \$5 + position to loop to

You have to enter the position in  
HEX-Values !!

Cmd C. Set volume [Volume:see below]

-----  
Usage: \$C+\$00-\$40: Instrument volume  
      \$C+\$50-\$90: perfSub volume  
      \$C+\$A0-\$E0: Voice Master vol.

Well, this old familiar command will  
set the current volume to your own  
selected. The highest volume is \$40.  
All volumes are represented in hex.  
(Programmers do it in hex, you know!)  
The perfSub volume is for relative  
volume in the instr. while you're  
playing the same instrument in the  
tracks only with other Instr. volume

Cmd F. Set pList-speed [Speed:\$00-\$FF]

-----  
Usage: \$F + pList-speed

This command will set the speed of the  
Performance List.

Vblank: Range 01-FF - Normal timing

      CIA: Range 01-FF - Normal timing

Both:       00       - STOP pList  
      (don't use!-senseless! just set  
      the pList-Length!)

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