

XModule

COLLABORATORS

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Contents

1	XModule	1
1.1	XModule.guide	1
1.2	XModule.guide/Overview	1
1.3	XModule.guide/Distribution	2
1.4	XModule.guide/Getting Started	3
1.5	XModule.guide/User Interface	4
1.6	XModule.guide/Windows Layout	5
1.7	XModule.guide/Shortcut Keys	5
1.8	XModule.guide/On-Line Help	6
1.9	XModule.guide/Localization	6
1.10	XModule.guide/Commodities	6
1.11	XModule.guide/Default Icons	7
1.12	XModule.guide/Panels	8
1.13	XModule.guide/ToolBox	8
1.14	XModule.guide/Pattern Editor	10
1.15	XModule.guide/Instruments	12
1.16	XModule.guide/Song Information	13
1.17	XModule.guide/Sequence	15
1.18	XModule.guide/Save Format	15
1.19	XModule.guide/Clear Song	16
1.20	XModule.guide/Sample Editor	16
1.21	XModule.guide/Effects	16
1.22	XModule.guide/Format Conversion	17
1.23	XModule.guide/NoiseTracker	18
1.24	XModule.guide/ProTracker	18
1.25	XModule.guide/SoundTracker	18
1.26	XModule.guide/StarTrekker	19
1.27	XModule.guide/UNIC-Tracker	19
1.28	XModule.guide/FastTracker	19
1.29	XModule.guide/TakeTracker	20

1.30	XModule.guide/Oktalyzer	20
1.31	XModule.guide/MED	20
1.32	XModule.guide/OctaMED	20
1.33	XModule.guide/ScreamTracker	21
1.34	XModule.guide/MIDI File	21
1.35	XModule.guide/Optimization	21
1.36	XModule.guide/ARexx Interface	22
1.37	XModule.guide/Known Bugs	22
1.38	XModule.guide/Future Plans	23
1.39	XModule.guide/Programmers	24
1.40	XModule.guide/XModule Format	24
1.41	XModule.guide/Credits	26
1.42	XModule.guide/Author Info	27
1.43	XModule.guide/Concept Index	28

Chapter 1

XModule

1.1 XModule.guide

This manual documents XModule version 3.4 released on 14 Jun 95.

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Freely distributable.

If you haven't done it yet, have a look at the ReadMe file first.

Overview	An overview of XModule.
Distribution	Licence & Disclaimer.
Getting Started	How to run XModule.
User Interface	General notes on the user interface.
Panels	Description of all XModule windows.
Effects	List of all the player effects.
Format Conversion	Description of module conversion with XModule.
Optimization	How to save memory and disk space with modules.
ARexx Interface	Every program should have one nowadays, doesn't it?
Known Bugs	Notes on things that are still not working...
Future Plans	What XModule should feature in the next releases.
Programmers	Notes on the C source and TexInfo documentation.
XModule Format	Description of the module format used by XModule.
History	See what has changed since the last version of XModule. ↩
READ THIS!	
Credits	Some people I wish to express my gratitude to.
Author Info	How to contact me.
Concept Index	

1.2 XModule.guide/Overview

Overview

The Amiga computer has standard file formats for almost everything. Graphics, text, animation, hypertext and many other data types are easily imported into any program that supports the given standards, but this isn't true for music. Too bad the music interchange file format defined by Electronic Arts (the old IFF SMUS) was too poor to be usable in high-quality music sequencers. Therefore, every music editor created its own proprietary module format, so that, for instance, you cannot load into ProTracker music written with Oktalyzer.

XModule (pronounced Cross Module) born as music module conversion utility that tries to solve this problem. The project started in early 1993, as a friend of mine (Fabio), who wrote a lot of (good) music on Oktalyzer, needed ProTracker to obtain certain effects. He had an old PD conversion program called Tracker that worked only in particular conditions and was really bogus. So I decided to contact the author and he let me have the source for Lit30000 (about \$20).

The original program has been completely rewritten from scratch, as the source was poorly coded. Now XModule is a completely different program sports many other features, like module optimization, a nice user interface and complex module editing functions and it is quickly turning into a full featured music editor.

This is why I like to call XModule a module processor. XModule is to music processing what ADPro and ImageFX are to image processing (I am not very modest :-).

1.3 XModule.guide/Distribution

Distribution

XModule is a Freeware program. This means that you (probably) have got it free and you must not ask any money if you decide to copy it for someone else. If, instead, someone sold you XModule for a price higher than the media used to store it on (i.e. \$1 for a DD disk), tell him he should try making money honestly.

I'm not asking you to pay for XModule because I've never paid for a ShareWare program, so I felt that I somehow had to pay my debt and I decided to distribute XModule as free software, a little gift to all the Amiga community. Feel free to distribute XModule to your friends and enemies, but, if you do so, you must keep the documentation and the other distribution files together with the executable. The source code is not required, but I'm distributing it to let others take advantage of my work, so, if possible, try to include the source too.

Fred Fish, SAN, ADS and Aminet are especially granted permission to include XModule into their PD libraries. Other PD libraries are welcome as well.

If you intend to include XModule or parts of it in a commercial package, please at least send me a free copy of the product. I would be honored to see one of my programs being part of a commercial package.

You can modify or improve XModule (see Programmers), only be so kind to return the new source code to me, so I can put the new features in the next release. And, please, do not strip my name from the documentation, the program source, or the executable.

This product is provided as is, without warranties of any kind: the author of this program cannot be held liable for any defects in the executable nor in the documentation or in any other files contained in this package. Any damage directly or indirectly caused by the use/misuse of XModule is the sole responsibility of the user her/him-self. In other words: XModule never formatted my hard disk nor killed my dog, so I suppose it won't cause any damage to your system either, but, just in case, do not blame me if something nasty happens.

1.4 XModule.guide/Getting Started

Getting Started

XModule requires Kickstart version 2.0 or greater. The reason is that I hate programming on 1.3 and I won't do it any more. If you still haven't upgraded to 2.0, you'll miss the chance to run XModule and many other wonderful programs. So what are you waiting for?

XModule also takes advantage of some 2.1 and 3.0 features, such as DataTypes, AmigaGuide, Locale and many enhancements for the user interface.

You can invoke XModule either from the Shell or Workbench. XModule accepts both command line and ToolTypes arguments. Workbench and Shell parameters are the same. The full AmigaDOS template is:

```
XModule FROM/M,PUBSCREEN/K,PORTNAME/K,SETTINGS/K,  
CX_POPUP/T,CX_POPKEY/K,CX_PRIORITY/K/N,  
ICONXPOS/K/N,ICONYPOS/K/N,ICONNAME/K
```

The FROM keyword specifies modules to load at startup time. Standard AmigaDOS wildcards can be used to match more than one module. From Workbench, you multi-select module icons instead of specifying a ToolType.

Specifying the PUBSCREEN keyword, followed by a public screen name, allows you to open XModule on an existing public screen. The given name should match exactly (case matters), or the system won't be able to find the requested screen. If the requested screen does not exist, a new public screen will be opened, cloning the resolution and colors of the default public screen (usually the Workbench screen). Specifying an empty string (eg: "") you will automatically pick the default public screen. Note that this behavior is not standard: most commodities will

abort if the requested public screen does not exist. The default is to use or create a public screen called XModule.

PORTNAME will change the name of XModule's ARexx port. If a port with this name already exists, a number (eg: .1) will be appended to the name, until a unique name is found. You can disable the ARexx port providing an empty string (eg: "") for PORTNAME. The port name defaults to XMODULE. For more information about the ARexx port, consult the ARexx Interface chapter.

SETTINGS causes XModule to use the given settings file instead of looking for the default preferences file.

CX_POPUP controls whether the user interface should show as soon as XModule starts. The default is to always show the interface. When used from the shell, CX_POPUP acts as a toggle, turning off the user interface. From Workbench, you specify CX_POPUP=YES or CX_POPUP=NO to show and hide the user interface, respectively. See Commodities.

CX_POPKEY specifies the hotkey that pops up XModule's user interface. The given string should be a valid Commodities input description. You can disable XModule's Commodities broker specifying an empty string (eg: "") for CX_POPUP. The default is ctrl alt x. See Commodities.

CX_PRIORITY sets the Commodities priority for the XModule broker. An high priority causes the input to be processed by {No Value For "prgnmae"} before other commodities with a lower priority. The priority ranges from +127 to -128. The default priority is 0. See Commodities.

ICONXPOS specifies the X position of XModule's AppIcon. The default is to let Workbench choose a suitable position for the icon.

ICONYPOS specifies the Y position of XModule's AppIcon. The default is to let Workbench choose a suitable position for the icon.

ICONNAME specifies the name of XModule's AppIcon. The default name is XModule.

1.5 XModule.guide/User Interface

User Interface

XModule's GUI follows Commodore's 2.0 style guidelines. Under Kickstart 3.0 and above, XModule takes advantage of new OS capabilities to enhance some aspects of the GUI.

- Windows Layout
- Shortcut Keys
- On-Line Help
- Localization
- Commodities
- Default Icons

1.6 XModule.guide/Windows Layout

Windows Layout
=====

Gadget and menu layout is font sensitive, but using some fancy fonts could result in a somewhat weird look. If you are using a very big font and a window becomes too big to fit in the screen, topaz/8 will be used as a fallback for rendering that window.

When you close a window, it will remember its position and size when you open it again. The same is true for window zooming operations.

XModule will also try to make the active window visible by scrolling the screen automatically. This feature comes handy if you use a virtual screen which is wider and/or taller than the default.

1.7 XModule.guide/Shortcut Keys

Shortcut Keys
=====

In all windows, the following shortcut keys are active:

ESC

Close the active window. Does not work with ToolBox window, as it would make it too easy to accidentally exit the program.

HELP

Bring up AmigaGuide on-line help. See On-Line Help.

TAB

Cycles forward through string and numeric gadgets within the active window. SHIFT-TAB will cycle backwards. TAB also activates the first string or numeric gadget if none is selected.

Alt-TAB

Activates the next XModule window. ALT-SHIFT-TAB activates the previous window.

RETURN

Activate the first string or numeric gadget in the active window.

Cursor UP/DOWN

Move up and down in a viewlist whenever the active window contains one. SHIFT-Cursor moves 5 items up/down. ALT-Cursor moves to the top or to the bottom of the list. This shortcut requires at least Kickstart 3.0.

In addition, gadgets with underscored characters in labels, can be operated hitting the highlighted key. SHIFT-key acts the opposite of the unshifted key (sliders are decremented by one, cycle gadgets will cycle backwards, etc). Keyboard shortcuts will not work for all gadget kinds under Kickstart 2.0.

1.8 XModule.guide/On-Line Help

On-Line Help

=====

This feature requires amigaguide.library, which is distributed with Workbench version 2.1 and up, and XModule.guide located in the current directory or in the same directory of XModule's executable or in the HELP:language/ directory, where language is any of your Locale preferred languages. AmigaGuide(TM) is also available as a freely distributable package for 1.3-2.0 users.

To get help on a gadget, press HELP while the mouse pointer is over the gadget. To get help on a string gadget, activate it and press HELP. Hitting HELP while the mouse isn't over a gadget, will give you help on the active window.

To get help on a menu item, highlight the item and press HELP while keeping the right mouse button pressed.

1.9 XModule.guide/Localization

Localization

=====

Localization requires locale.library, which is distributed with Workbench version 2.1 and up, and the catalog file XModule.catalog located in the same directory of XModule's executable or in the LOCALE:catalogs/language/ directory, where language is any of your Locale preferred languages.

If you speak a language for which a catalog isn't yet available, please consider writing it yourself and then send it to me, so it will be included in the next release of XModule. Look at the empty catalog translation file Empty.ct in the Catalogs/. It can be used to create new catalog descriptions for XModule. Then, use a tool like 'FlexCat', 'KitKat' or 'CatComp' to compile it into a catalog file.

1.10 XModule.guide/Commodities

Commodities support
=====

XModule is a Commodity and can be controlled by the Commodities Exchange program.

XModule will pop up when its hotkey is typed; the main window will activate and the screen will move to the front. If XModule's interface is hidden, it will be revealed.

The user interface can be hidden with the Exchange program. When the user interface is hidden, the only ways you have to still operate XModule is through the ARexx port or the AppIcon.

You can also control XModule by sending the following signals to its process:

*CTRL-C
Quit XModule.

*CTRL-D
Disable the Commodities broker (equivalent to selecting Inactive with Commodities Exchange).

*CTRL-E
Enable the Commodities broker (equivalent to selecting Active with Commodities Exchange).

*CTRL-F
Deiconify XModule (equivalent to double-clicking on the AppIcon).

1.11 XModule.guide/Default Icons

Default Icons
=====

When XModule creates an icon for a file, it looks for the user preferred icon for the type of data being saved.

The template icons can be placed in the Icons drawer which is located in the same drawer where the XModule executable resides. p{No Value For "rgname"} will also look for its icons in the ENV:Sys/ directory. If you choose to use ENV:Sys/, you will probably want to store the icons in ENVARC:Sys/ to have them copied automatically to ENV:Sys/ every time the system boots up.

Template icons should be only of type Project. When XModule does not find a template icon, it uses the default Project icon instead.

Whenever the default icon does not have its own default tool, it will be set to XModule's executable.

The following default icons are supported:

```
-def_Module  
-def_Instrument
```

1.12 XModule.guide/Panels

```
Panels  
*****
```

Sorry, XModule's documentation is still incomplete. The next release will hopefully be more accurate.

But wait! Do not commit suicide for this reason: XModule is very easy to use, and you will be able to operate it even without this chapter.

```
ToolBox  
Pattern Editor  
Instruments  
Song Information  
Sequence  
Save Format  
Clear Song  
Sample Editor
```

1.13 XModule.guide/ToolBox

```
ToolBox Window  
=====
```

```
Gadgets  
-----
```

```
Patterns (P)  
    Opens or activates the Pattern Editor window.
```

```
Instruments (I)  
    Opens or activates the Instruments information window.
```

```
Sequence (Q)  
    Opens or activates the Sequence editor.
```

```
Songs (S)  
    Opens or activates the Song Information window.
```

```
Optimization (O)  
    Opens or activates the Optimization window.
```

```
Play (P)  
    This option has not been implemented yet.
```

Project Menu

New (Amiga-N)

Creates a new empty song.

Open (Amiga-O)

Opens a song over the current one. A file requester will be put up to let you choose the module. The file requester is asynchronous, so you can continue operating XModule while keeping the requester open. You can use multiselection to open several modules at once.

Save (Amiga-S)

Saves the current song to the same path it was loaded from.

Save As (Amiga-A)

Opens a file requester and saves the current song to the selected file name and path.

Clear Module (Amiga-K)

Opens or activates the Clear Song panel.

About (Amiga-?)

Brings up a requester showing various information on XModule.

Help (HELP)

Shows the main node of the AmigaGuide on-line help. See On-Line Help.

Iconify (Amiga-I)

Closes all open windows and screens and puts an AppIcon on the Workbench. You can De-Iconify XModule by double clicking on the icon or by using Show Interface in the Commodities Exchange program. See Commodities.

Quit (Amiga-Q)

Quits XModule. A requester will ask if you are sure if the Settings/Confirm Exit menu item is checked.

Settings Menu

Save Format

Opens or activates the Save Format window.

User Interface

Opens or activates the User Interface window.

Save Icons?

When this menu item is checked, XModule will automatically add an icon to the files it saves. See Default Icons.

Confirm Overwrite?

When this menu item is checked, XModule will ask before overwriting an existing file when saving something.

Confirm Exit?

When this menu item is checked, XModule will ask if you are really sure before quitting.

Verbose?

When this menu item is checked, XModule will be output more detailed information on various operations.

Open Settings

Opens a file requester asking for an XModule preferences file. The changes will take place immediately.

Save Settings

Saves the current settings to PROGDIR:XModule.prefs, which is where preferences are looked for first.

Save Settings As

Opens a file requester and saves the current settings to the selected file and path name.

1.14 XModule.guide/Pattern Editor

Pattern Editor Window

=====

Overview

The pattern editor is used to actually edit notes into your song. A song is made up of several patterns which are played one after the other following the order defined in the Sequence editor.

A pattern is subdivided into tracks. Each track is made of several note slots. Each note slot has four basic fields: the actual note, the number of the instrument used to play this note, a field for the effect (also called command) and a value for the effect, the meaning of which depends from the type of effect (see Effects). A line is an horizontal set of note slots. The lines are numbered starting from 0 (line numbers are displayed in the leftmost column of the pattern editor).

A pattern can have 1 to 32 tracks. The more the tracks, the more the notes that can be played at the same time. When XModule plays a pattern, it reads the lines one by one, playing all the notes and executing all the effects as soon as it encounters them. A pattern line can be imagined as one sixteenth of a beat when the pattern is played at the default speed and tempo.

A pattern row looks like this:

```
C-2 5 C40
~~~ | |~~
|   | ||
|   | |+---- Effect Value
```

```

|   | +----- Effect Command
|   +----- Instrument
+----- Note

```

Notes are shown in anglosaxon notation, followed by the octave number. So C-2 is a second octave DO in classic notation and A#3 is a third octave diesis LA. There are 5 octaves numbered from 0 to 4; a C-2 note is twice the frequency of a C-1, and it's instrument will be played at double speed.

The duration of the note is determined by the space left from one note to the next. For example, if a note is immediately followed by another note on the same track, it's duration will be one sixteenth of a beat at four quarters. If two notes are put one at line n and the other at line n+4 (leaving three blank spaces between), the duration of the first note will be exactly one quarter.

Calculating the duration of a note can become trickier when weird combinations of speed and tempo are used. Also, notes can be associated to instruments which have an endless loop (like a flute) or to instruments that only last for a short time and then stop (like a snare drum). In the latter case, the duration of a note could be shorter than it's distance from the following note. Experience will help understanding these simple rules.

Editor Keys

up down left right

Move the cursor one position towards the respective direction. Keeping cursor keys pressed will repeat the movement until the key is released.

Cursor keys in combination with the SHIFT key will move the cursor a whole page up/down or one track left/right, keeping it on the same column.

Cursor keys in combination with the ALT key will move the cursor to the top/bottom/leftmost/rightmost position.

Cursor keys in combination with the CTRL key will scroll the view without moving the cursor. This is useful to reveal something without having to reposition the cursor.

NOTE: You can adjust the repeat speed and delay with the 'Input' system preferences.

TAB

Move to the note column of the next track. Pressing TAB on the last track, will bring the cursor to the first track. SHIFT-TAB moves backwards.

DEL

Delete the field under the cursor. SHIFT-DEL kills all the note slot (note, effect and value).

Project Menu

Open Pattern (Amiga-O)
Opens a file requester where you can select a pattern to be loaded in place of the current one.

Save Pattern (Amiga-S)
Saves the current pattern to a file with the same name of the pattern. If the pattern has no name, a file requester will open.

Save Pattern As (Amiga-A)
Opens a file requester where you can select the file and path name where the current pattern will be saved to.

Edit Menu

Mark (Amiga-M)
Toggles mark mode in the pattern editor.

Cut (Amiga-X)
Copies the currently marked region to the clipboard and erases it from the pattern.

Copy (Amiga-C)
Copies the currently marked region to the clipboard.

Paste (Amiga-V)
Gets the last pattern stored into the clipboard and pastes it in the current pattern starting at the current cursor position.

Erase (Amiga-E)
Clears the currently marked region.

Undo (Amiga-U)
Restores the pattern to the state it was before the last modification.

Redo (Amiga-Y)
Remakes the last change undone with the Undo function.

1.15 XModule.guide/Instruments

Instruments Editor Window
=====

Gadgets

Instruments List (Cursor up/down)
This list shows all the instruments of a song. The leftmost column is the instrument number (hexadecimal), followed by its name. Some musicians usually use the instrument names to include short texts inside the modules they distribute. Picking an instrument

from this list will set it as the current instrument. An empty instrument slot with no name will have the word -empty- in place of its name.

Instrument Name (RETURN or TAB)

(The string gadget immediately below the Instruments list). Allows editing the name of the currently selected instrument.

Volume (V)

Default instrument volume. Ranges from 0 (mute) to 64 (maximum volume).

Fine Tune (F)

Sets the instrument fine tune. 0 is the default tuning. Negative values cause the instrument to be played at a slightly lower frequency. Positive values cause the instrument to be played at a slightly higher frequency.

Lenght

Displays the instrument lenght in bytes.

Kind (K)

This function has not yet been implemented.

Edit (E)

Opens or activates the Sample Editor panel.

Instruments Menu

Load (Amiga-L)

Loads an instrument in the current intrument slot. A file requester will be put up to let you choose the instrument. The file requester is asynchronous, so you can continue operating XModule while keeping the requester open.

Save (Amiga-S)

Saves the current instrument to a file with its current name.

SaveAs (Amiga-A)

Opens a file requester and saves the current instrument to the selected file name and path.

Remap (Amiga-R)

Remaps all the instruments removing all empty slots between them. The song patterns are updated to keep the correct instruments. This function is useful to save a module to a format which has a limited number of instruments, like SoundTracker.

1.16 XModule.guide/Song Information

Song Information Window

=====

Gadgets

New

Creates a new module and makes it the current module.

Del

Deletes the current module from memory. If the module has been modified since last saving, a requester will give you the chance to abort the operation.

Open... (O)

Opens a song over the current one. A file requester will be put up to let you choose the module. The file requester is asynchronous, so you can continue operating XModule while keeping the requester open. You can use multiselection to open several modules at once. This gadget behaves exactly like the Open menu item in the ToolBox panel.

Save (S)

Saves the current song to the same path it was loaded from. This gadget behaves exactly like the Save menu item in the ToolBox panel.

Song Name (N)

Displays the name of the current song. You can use any character in the song name, but keep in mind that the name you type will be used by default as the filename for the song, so be careful with special characters such as / and :!

Author (A)

Displays the author of the current song. XModule tries to guess the author when it loads a module whose format has no direct support for embedded author name. XModule scans the instruments names looking for a line beginning with a pound sign (#). This convention started with 'IntuiTracker', an old module player for the Amiga. If the author name can't still be found, XModule looks again for an occurrence of by , by: or (c), which is usually followed by the author name. The author name is ignored when saving to a format which does not support embedding the author name.

Tempo (T)

Displays the default tempo for the current song. Valid range is 32-255, the default is 125. The default tempo is used when the song starts playing and can be overridden by the Set Tempo command. See Effects.

Speed (P)

Displays the default speed for the current song. Valid range is 1-31, the default is 6. The default speed is used when the song starts playing and can be overridden by the Set Speed command. See Effects.

Restart (R)

Displays the position where playback will continue once the song end has been reached. The restart position is lost when saving to

formats which do not support it.

Patterns

Displays the total number of patterns in the song.

Tracks

Displays the maximum number of tracks in the song.

Length

Displays the number of positions in the song sequence.

Total Module Size

Shows an approximation of the memory used up by the song and its data. This value will usually be similar to the file size.

Total Instruments Size

Shows an approximation of the memory used by all the instruments of the current song.

Song Menu

Merge Songs (Amiga-M)

Join Songs (Amiga-J)

Clear (Amiga-K)

1.17 XModule.guide/Sequence

Sequence Editor Window

=====

Gadgets

Had no time to write it, sorry. ;-)

Menu

Had no time to write it, sorry. ;-)

1.18 XModule.guide/Save Format

Save Format Window

=====

Gadgets

Had no time to write it, sorry. ;-)

Menu

Had no time to write it, sorry. ;-)

1.19 XModule.guide/Clear Song

Clear Song Window

=====

Gadgets

Had no time to write it, sorry. ;-)

Menu

Had no time to write it, sorry. ;-)

1.20 XModule.guide/Sample Editor

Sample Editor Window

=====

Gadgets

Had no time to write it, sorry. ;-)

Menu

Had no time to write it, sorry. ;-)

1.21 XModule.guide/Effects

Effects

Had no time to write it, sorry. ;-)

1.22 XModule.guide/Format Conversion

Format Conversion

XModule can load and save modules created by other music editors. The following is a list of all supported module formats:

```
XModule
NoiseTracker
ProTracker
SoundTracker
StarTrekker
UNIC-Tracker
FastTracker
TakeTracker
Oktalyzer
MED
OctaMED
ScreamTracker
MIDI File
```

As a matter of fact, there are things that simply cannot be done because of the big differences between different module formats. Below is a list of the internal limitations of each module format. When you save to a particular format and the module exceeds one of these values, or makes use of features not implemented, some data will be stripped away to produce at least a partial conversion.

Program	Instr	MaxPatt	PattLen	SongLen	InstrLen	Tracks
Oktalyzer	36	128	128	128	128K	4
SoundTracker	15	64	64	128	64K	4
NoiseTracker	31	64	64	128	64K	4
StarTrekker	31	64	64	128	64K	4/8
ProTracker	31	100	64	128	64K	4
Fast Tracker I	31	100	64	128	64K	4/6/8
MED/OctaMED	63	256	256	256	No Limit	1-64
XModule	63	256	32768	32768	No Limit	1-32

Where:

```
#Instr  is the maximum number of instruments,
MaxPatt is the maximum number of patterns,
PattLen is the maximum number of lines per pattern,
SongLen is the maximum number of positions in a song,
InstrLen is the maximum size of an instrument in bytes,
Tracks  is the maximum number of tracks in a pattern.
```

Effects are the hardest thing to convert. While Speed and Volume are almost the same between different music editors, some effects (such as Oktalyzer's H and L) cannot be converted because there are no equivalents in other music editors. Therefore, you will have to modify

the score manually if you intend to convert a module while keeping such effects. In addition, some effects behave in different ways even if they claim to do the same thing.

Last but not least, some music editors support synthetic or hybrid instruments. XModule does not convert such instruments, because I can hardly think of a way to implement a sample to synth conversion (any ideas?). I used to like synthetic music, but it seems that all those great composers on the good old C64 have vanished... Why have you musicians become so lazy? 8-(

1.23 XModule.guide/NoiseTracker

NoiseTracker
=====

Noise/ProTracker 31 instruments module. This is absolutely the most common module format; almost any music editor and module player (even the crap ones for the PeeCee) understand this format. Noise/ProTracker modules can be recognized by looking for the ID M.K. at offset 1080 (\$438 in hex) in the file. M.K. are the initials of Mahoney & Kaktus, the two guys who designed this format.

Unfortunately, there is an infinite variety of standard NoiseTracker modules with fancy IDs. In fact, most tracker clones put their own ID instead of the standard one even if there is no reason to do it. If you find such a module, try replacing the ID with an hex editor and you will be able to load it most of the times.

1.24 XModule.guide/ProTracker

ProTracker 100 Patterns
=====

XModule will automatically switch to ProTracker 100 whenever the module being saved exceeds the 64 patterns limit of NoiseTracker modules. Modules with more than 64 patterns have the ID M!K! instead of the standard Noise/ProTracker ID (M.K.).

Note: You must load such a module with ProTracker 2.3 or better in order to play/edit it. Older players will either refuse to load it or they'll turn the module into scratch dance.

ProTracker 3.0+ has a completely new file format, but this isn't supported yet, as I've never seen a module of this kind yet.

1.25 XModule.guide/SoundTracker

SoundTracker 15 Instruments
=====

This format is pretty useless as SoundTracker is becoming really rare. Do not save SoundTracker modules unless you really need to, because most players/editors will stop supporting this format very soon. There is no way to identify a SoundTracker module, therefore XModule will ask you to confirm a SoundTracker module when the file being loaded matches no other known module format.

1.26 XModule.guide/StarTrekker

StarTrekker
=====

StarTrekker is another NoiseTracker clone, which is capable of playing modules with 4 or 8 channels and supports MIDI devices. The format of 4 channels modules is the same of NoiseTracker, except for the FLT4 ID. Modules with 8 channels have the ID FLT8, and keep the extra data in a second file, whose structure I don't know. If you want support for 8 channels StarTrekker modules, please send me some information on its format.

1.27 XModule.guide/UNIC-Tracker

UNIC-Tracker
=====

Actually, I've never seen UnicTracker, but I sometimes ripp Unic modules with ExoticRipper, so I decided to give support for this weird Tracker clone too. The format is very similar to that of ProTracker modules, except for the EMW3 ID.

1.28 XModule.guide/FastTracker

FastTracker 1.0
=====

The format of FastTracker 1.0 modules is exactly the same of TakeTracker, but they can have only 6 or 8 channels. XModule does not support FastTracker 2.0 modules (those with extension .xm) yet.

1.29 XModule.guide/TakeTracker

TakeTracker
=====

These are Standard ProTracker modules, but they can have up to 32 channels. Their ID is 5CHN, 6CHN, and so on, up to 32CH. This format comes from some damn PeeCee tracker, which I've never seen. Anyway, adding this format was a matter of five minutes.

1.30 XModule.guide/Oktalyzer

Oktalyzer 1.1
=====

Oktalyzer is an old editor which can play up to 8 channels by mixing instruments in real time. Oktalyzer modules start with the ID OCTASONGGMOD. Development of Oktalyzer has been discontinued, as the author seems to be programming on Windoze now. It's really a shame, as many musicians found that Oktalyzer was one of the most powerful trackers for the Amiga.

1.31 XModule.guide/MED

MED
===

Not all features of MED are supported by XModule. Synthetic and hybrid instruments are ignored.

1.32 XModule.guide/OctaMED

OctaMED
=====

MMD2 modules are not supported. XModule will only load the first song in multisong modules.

XModule currently has an internal limit of only 32 tracks, while OctaMED can do up to 128 tracks. However, OctaMED can only play the first 8 tracks, so what are the other tracks for? ;-)

1.33 XModule.guide/ScreamTracker

ScreamTracker
=====

ScreamTracker 3.01 is a damn PeeCee program made by those Future Crew guys who are trying to turn clones into Amigas. ScreamTracker has the amazing feature of playing 32 tracks, 16 of which are for 8-bit digital samples. The other 16 tracks play ADLib FM synths (not supported by XModule).

1.34 XModule.guide/MIDI File

MIDI File
=====

MIDI is the industry standard musical score format (the same way Windoze is the industry standard graphic interface :-). The MIDI concept is very different from tracker modules. There are no sequence and patterns, but a long stream of events (notes) that have to be sent to some MIDI compliant device, one after the other, at specific time intervals, based on the duration of each note. There are no instruments inside MIDI files; instead, each note is associated with a preset number that matches a particular instrument in the device to which the MIDI events are sent.

XModule's MIDI file saver is based on Andrew Scott's MidiMod program and I wish to thank him for granting me permission to use his code in XModule.

1.35 XModule.guide/Optimization

Optimization

Module optimization is achieved by removing all unused data in such a way that the module will sound the same as before. XModule can process a module to reduce its size as much as possible. It is generally a good idea to optimize a module before distributing it, but never while you are still composing it, because you could easily lose some data that you didn't want to discard. Do not expect to gain a lot of bytes optimizing modules: saving 20% of the total size is usually a very good result.

* Unused patterns

Some formats (e.g.: Sound/Noise/ProTracker) store empty patterns in a module if a pattern with a greater number is used. For instance, a song using patterns 1, 2 and 5 will contain patterns 3 and 4 as well.

Warning: If a song contains a part that has not been finished yet and has not already been inserted in the position table, you will lose it.

Warning: When a song is saved to Noise/ProTracker, patterns beyond the last used patterns are discarded regardless of this switch. This is due to a limitation of Noise/ProTracker module format.

* Pattern Cutting

When a pattern is broken with the Pattern Break effect, it is cut to the line containing the break. When saving to a format that does not support variable length patterns (eg.: SoundTracker), the pattern is grown again, so this optimization won't help with such formats.

* Unused instruments

A composer may decide to use an instrument and then change his mind, but forget to clear the instrument. In this case the module will contain an instrument that is never played. These instruments are simply stripped away.

* Sample data after a loop

The part of an instrument following a loop is never played and is therefore discarded.

* Instruments zero tails

Long zero tails eat up memory and produce no sound. This optimization is performed only on loopless instruments, as a zero sequence inside a loop does make difference. XModule leaves at least two zero bytes to avoid the nasty click produced by the speaker dropping its volume to zero too quickly.

1.36 XModule.guide/ARexx Interface

ARexx Interface

Sorry, sorry! XModule's documentation is still incomplete. The next release will hopefully be more accurate (and it's already four releases I'm promising it :-).

Anyway, XModule's ARexx port is a little brain dead at the moment, so you're not missing a great deal.

1.37 XModule.guide/Known Bugs

Known Bugs

Murphy's laws state that nothing can be perfect, not even computer

programs. XModule is far from being perfect and I need your help to fix as many bugs as possible. If you discover a bug which isn't reported in the list below (note: there is no list at the moment; this is a beta release, remember?), please notify me.

When you report a bug, state exactly what happens and indicate how to reproduce the conditions that generated the problem. Reports like 'XModule sometimes crashes converting my favorite module' does not help at all. Include your name if you want to be credited in future XModule releases.

If the program refuses to convert a module, mail it to me on a disk or upload it to a BBS that I can reach and I'll try to fix the problem as soon as possible. Glass Globe BBS, whose address can be found in the Author Info chapter, will do. If you want the disk back with the fixed version of XModule, send me a self-addressed envelope with enough italian stamps or enough money for a reply.

XModule has been tested on several machines running Kickstart 2.0, 3.0 and 3.1. It should work on any 68K family processor (was tested on 68000, 68030 and 68040) and is Enforcer and Mungwall proof. I have also tested XModule with virtual memory programs such as VMM and found that everything ↵ seems to work correctly.

1.38 XModule.guide/Future Plans

Future plans

* Other module formats

Some formats I'd like to give support for in XModule as soon as possible:

- FastTracker II (.XM)
- MultiTracker (.MTM)
- OctaMED MMD2
- Face The Music (.FTM)
- Quadra Composer

If you have documentation regarding a format you would like to see in the next release, please send it to me together with a couple of modules and, if possible and legal, the program that created them. I'll try to implement the new format only if it is somewhat easy: it is very hard to convert, say, Future Composer to SoundTracker. Please, do not send a module without at least a text file describing its structure, as I'm not willing to spend my nights hex-dumping modules :-).

* TeX

Another format I'd like to add is AmigaTeX. If you know TeX, you'll surely be wondering what a typesetting program can be used for in music. Well, AmigaTeX is at the moment is the best implementation available on any computer of the TeX typesetting environment, and its distribution includes MusicTeX, a powerful music language which can output notes in a great standard staff notation. I know no other program on the Amiga that can print notes of such fine quality (if you do, let me know!), so I think that many musicians would appreciate such an option.

* External Loaders/Savers

Add support for 3rd party loaders and savers in XModule. Currently, I'm thinking about the best implementation of the external module interface. The really best way would be making a new DataTypes class for modules, but it's not that easy...

1.39 XModule.guide/Programmers

Programmer notes

XModule has been written in C and compiled with SAS C 6.51, Other compilers may require some changes in the source code.

The program is written in respect of the Amiga multitasking operative system and complies with Commodore programming guidelines. All allocated resources will be (hopefully) freed before program termination. I wrote XModule with the goal in mind of keeping the executable fast and small.

This manual has been typeset using MakeInfo, a GNU PD utility ported to the Amiga by Reinhard Spisser and Sebastiano Vigna. I found that the time I saved writing one file for three was nearly compensated by the time spent learning how to operate MakeInfo.

Besides, English is not my first language (as you might have guessed) and I bet this document is full of grammar mistakes.

If you intend to translate, improve or somewhat edit this document, please work on the supplied TexInfo file and then process it with the utilities supplied in the MakeGuide distribution. You can find MakeGuide in several PD libraries such as Aminet.

Do not hesitate sending criticisms to my work, and, even better, advices on how to improve the program and its documentation. See Author Info.

1.40 XModule.guide/XModule Format

XModule Module Format

Before going into the details of the XModule module format, I'd like to explain why I felt the need to invent yet another module format. There were plenty of them, but none had the flexibility I was looking for. The only one exception is in my opinion OctaMED's MMD. But the MMD file format is very complicated, hard to read and poorly documented. When I designed it, I wanted XMOD to be as flexible, easy, efficient and expandable as possible. If you are developing a music program, please consider supporting XMOD. If you have troubles with the following format description, contact me and I'll be glad to help you.

XModule modules are standard IFF files. They consist of a sequence of chunks (also called proprieties) each storing a particular type of information related to the module. Text chunks, such as NAME and AUTH chunks are variable sized and NOT null terminated. When you read such a chunk, you should take care to clip the string to your maximum buffer size. NAME and AUTH fields are optional and should be assumed empty when missing.

As with every IFF file, you should not depend on the order and size of any chunk. However, as usual with most IFF formats, header chunks must always precede related BODY chunks. XModule requires this for PHDR chunks because it isn't possible to load a pattern without knowing its length and number of tracks. Some chunks may grow in size in future versions of XModule.

FORM XMOD

[NAME]

The name chunk contains the original name used to save the module.

[ANNO]

XModule stores its copyright information here.

MHDR

Module header. Contains a ModuleHeader structure as defined in <XModuleClass.h>.

FORM SONG

The song FORM contains all data relative to one song. Any number of songs can be stored into one module.

[NAME]

Name of the song.

[AUTH]

Author of the song.

SHDR

Song Header. Contains a SongHeader structure as defined in <XModuleClass.h>.

SEQN

Song Sequence. The contents of this chunk are unsigned words representing the pattern to play at a particular position. The size of this chunk should be twice the Length field of the SongHeader.

When a song contains multiple sections, one SEQN chunk will be stored for each of the song sections (not implemented).

FORM PATT

Each occurrence of this FORM contains one pattern. Patterns are numbered starting from 0. Each pattern has its own length and number of tracks.

[NAME]

Name of this Pattern.

PHDR

Pattern Header. Contains a PatternHeader structure as defined in <XModuleClass.h>.

BODY

The BODY chunk is stored as an array of PatternNote structures. Tracks are stored one after the other. There are NumTracks*Length Note structures in the BODY chunk.

END FORM PATT

FORM 8SVX

Each SONG contains one or more occurrences of this FORM, one for each sample. XModule currently saves and loads only the NAME, VHDR and BODY chunks. Be prepared to decode Fibonacci Delta Encoded BODY chunks. An additional non-standard chunk is saved:

INST

XModule instrument info. Contains an InstrumentInfo structure as defined in <XModuleClass.h>.

When the BODY chunk is missing, the sample must be loaded from the instrument library using the contents of the NAME chunk as the file name.

See the IFF 8SVX documentation for more details.

END FORM 8SVX

END FORM SONG

END FORM XMOD

1.41 XModule.guide/Credits

Credits

These people have helped me in developing XModule:

- * Fabio Barzagli, for beta testing XModule and for giving me all his awesome modules!

Keep on making good music, Fabio!

- * Jarno Paanen, for sending me the obfuscated source of his 32 channel replay engine and for the e-mail support.

Perhaps I would have understood more by disassembling the PS3M executable. :-))

- * Peter Kunath, for sending me all the sources I asked him for and for giving me very detailed information on them.

What would have happened if I asked you for the complete DeliTracker sources? :-))

- * Massimo Brogioni, for being my boss and for spreading all those bogus XModule releases all around the world.

Hey boss, have you got a spare 5Gig hard disk?

- * Erno Tuomainen, for his wonderful finnish BBS, for his kindness and for all the support he gave me.

Are there any more top-rated modules to leech?

- * Pauli Porkka, for his kindness, for letting me win a free DASMP key, for the sources and for all the e-mails.

Will you support my format in the next DASMP release?

- * Woody (Nicola Ferruzzi), for S3M and XM format descriptions.

I'll send you a postcard from Japan as soon as I go there. :-)

- * The Amiga, for being the best computer in the world. :^)

Commodore: You've put really a lot of effort trying to kill the Amiga, but you won't succeed!

1.42 XModule.guide/Author Info

How to contact the author

If you want to make me aware of your suggestions, bug reports, ideas or you want to send me a gift, a good module or, why not, some money :-), reach me in any of the following ways:

- * Mail
-

Bernardo Innocenti
Via Ventiquattro Maggio, 14
50129 - Firenze
ITALY

* FAX

+39-55-8877771
Attn: Bernardo Innocenti
Subj: Amiga/XModule

* E-Mail

FidoNet: Bernardo Innocenti 2:332/118.4
AmigaNet: Bernardo Innocenti 39:102/201.4
UseNet: bernie@shock.nervous.com

* SystemShock BBS

Phone: +39-55-499038
Sysop: Bernardo Innocenti
Message area 300: XModule Support

I'll try to reply to all my E-Mail, but I'm too lazy to reply snail-mail. Your suggestions will be taken into account unless they are 'I want XModule to do ice tea'-style.

1.43 XModule.guide/Concept Index

Concept Index

100 Patterns ProTracker modules	ProTracker
32 Channels ProTracker Modules	TakeTracker
6CHN	FastTracker
8CHN	FastTracker
Acknowledgements	Credits
Arguments, command line	Getting Started
Author's address	Author Info
Break signals	Commodities
Bug reports	Known Bugs
Bugs, known ones	Known Bugs
Commands	Effects
Compiling XModule	Programmers
Contact the author, how to	Author Info
Credits	Credits
def_Instrument	Default Icons
def_Module	Default Icons
Distribution	Distribution
Effects	Effects
FastTracker	FastTracker
File Format used by XModule	XModule Format
Font Sensivity	Windows Layout
Format Conversion	Format Conversion
GUI	User Interface
Help, On-Line	On-Line Help
How to contact the author	Author Info

Icons, changing defaults	Default Icons
Instruments Editor Window	Instruments
Introduction	Overview
Keys, Shortcuts	Shortcut Keys
Known Bugs	Known Bugs
Language selection	Localization
Layout, of Windows	Windows Layout
Localization	Localization
M!K!	ProTracker
MED	MED
MIDI File	MIDI File
MMD Format	OctaMED
Modifying XModule	Programmers
Module Formats	Format Conversion
NoiseTracker	NoiseTracker
Notation	Pattern Editor
OctaMED	OctaMED
Oktalyzer	Oktalyzer
On-Line Help	On-Line Help
Optimization	Optimization
Overview of XModule	Overview
Panels	Panels
Pattern Editor Window	Pattern Editor
Programmers, notes for	Programmers
ProTracker	ProTracker
S3M Format	ScreamTracker
Save Format Window	Save Format
ScreamTracker	ScreamTracker
Sequence Editor Window	Sequence
Shortcut Keys	Shortcut Keys
Song Information Window	Song Information
SoundTracker	SoundTracker
Starting XModule	Getting Started
StarTrekker	StarTrekker
TakeTracker	TakeTracker
Thanks	Credits
ToolTypes	Getting Started
UNIC-Tracker	UNIC-Tracker
Usage	Getting Started
User Interface	User Interface
Windows	Panels
Windows Layout	Windows Layout
Writing a new language catalog	Localization
