

Default

COLLABORATORS

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WRITTEN BY		August 24, 2022	

REVISION HISTORY

NUMBER	DATE	DESCRIPTION	NAME

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Chapter 1

Default

1.1 AL16 Manual Main Page

AudioLab16 On-Line Help System
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This is the main page of AudioLab16 On-Line Help System. To get on-line information while using AL16:

- select an AL16 window clicking on it, then press the HELP key on your keyboard...

or

- browse this document directly from here.

The following informations are available in this version:

Tooltypes

Configuration

Graphic Interface

Documentation for any gadget

HowTo...

Common operations

File Formats

Audio files

Data Exchange

Cross-platform compatibility

CDROMs

CDROM drives for digital tranfers

Trouble Shooting

Problems and solutions

Author
Contacting the author

1.2 Tooltypes

Tooltypes.

To configure AudioLab16 for your system access the icon tooltypes clicking once on the AudioLab16 icon and selecting 'Information' from the 'Icon' Workbench menu.

The following tooltypes are available:

Tooltype A_MEM_MODEL
Values MINI SMALL MEDIUM LARGE
Example A_MEM_MODEL=LARGE
Note affects the amount of RAM used by the application

Tooltype B_MEM_MODEL
Values MINI SMALL MEDIUM LARGE
Example B_MEM_MODEL=LARGE
Note affects the amount of RAM used by the Locator tool's
 caching system

Tooltype C_MEM_MODEL
Values MINI SMALL MEDIUM LARGE HUGE
Example C_MEM_MODEL=MEDIUM
Note affects the amount of RAM used by the MultiTrack
 Manager

Tooltype CDDA SCSI_DEVICE
Values <your CD-ROM scsi device name>
Example CDDA SCSI_DEVICE=gvp SCSI.device
Note sets the default scsi device name for CDROM users

Tooltype CDDA SCSI_UNIT
Values <your CD-ROM scsi ID number>
Example CDDA SCSI_UNIT=3
Note sets the default scsi ID for CDROM users

Tooltype MIDI_SERIAL_DEVICE
Values <your MIDI serial device name>
Example MIDI_SERIAL_DEVICE=serial.device
Note sets the default serial device name for MIDI users

Tooltype MIDI_SERIAL_UNIT

Values <your MIDI serial unit number>
Example MIDI_SERIAL_UNIT=1
Note sets the default serial device unit for MIDI users

Tooltype OUT_DRIVER
Values <your board's output driver name>
Example OUT_DRIVER=XYZOut
Note sets the output driver for audioboards users
(drivers aren't part of the AudioLab package)

1.3 Graphic Interface

GUI

AL16's Graphic Interface is composed by the following objects:

Main Window

'Control Window'
Main control window

Misc Windows

'Clock Window'
Clock requester

'Impulse Response Window'
FIR i.r. graph

'Frequency Response Window'
FIR f.r. graph

'Locator Display Window'
Locator graphic display

'Locator Control Window'
Locator control

'Other Prefs Window'
Preferences control

I/O Mapper Enviroment

'Analog (Out) Window'
Output to DAC

'CDAudio (In) Window'
Input from audio CDs

'File (In) Window'
Input from audio files

'File (Out) Window'
Output to audio files


```
'I/O Mapping Window'  
I/O mapping main control  
  
'Parallel (In) Window'  
Input from parallel port  
  
'Parallel:File Window'  
Parallel:File mapping control  
  
'Parallel:VU Window'  
Parallel:VU mapping control  
  
'TOC Window'  
Audio CDs control  
  
'VU (Out) Window'  
VU-meter display
```

Signal Processor Enviroment

```
'DSP Window'  
DSP main control  
  
'Amp Control Window'  
DSP operator  
  
'Clock Converter Window'  
DSP operator  
  
'Comb Filter Window'  
DSP operator  
  
'Distortion Window'  
DSP operator  
  
'Delay-1-Tap Window'  
DSP operator  
  
'Delay-N-Tap Window'  
DSP operator  
  
'Delay-Recursive Window'  
DSP operator  
  
'Fir Filter Window'  
DSP operator  
  
'Flanger Window'  
DSP operator  
  
'Hum Remover Window'  
DSP operator  
  
'MultiFlanger Window'  
DSP operator
```

'Noise Gate DSP operator	Window'
'Phase Inverter DSP operator	Window'
'Pitch Shift DSP operator	Window'
'Quantizer DSP operator	Window'
'Room DSP operator	Window'
'Skipper DSP operator	Window'
'Time Inverter DSP operator	Window'
'Time Stretch DSP operator	Window'
'Tone Control DSP operator	Window'

Edit List Managers Enviroment

'ELM ELM main control	Window'
'MultiTrack Display MultiTrack editor	Window'
'MultiTrack Mixer MultiTrack mixer	Window'
'MultiTrack Control MultiTrack main control	Window'
'Object MultiTrack object selector	Window'
'Markers MultiTrack markers	Window'
'Absolute Edit List Display Multitrack AEL display	Window'
'Relative Edit List Manager REL builder	Window'
'Rel List Item REL item selector	Window'

Triggers Enviroment

```
'Triggers Window'  
  Trigger selector  
  
'Programs Window'  
  Program list builder  
  
'Keyboard Window'  
  Keyboard trigger control  
  
'MIDI Window'  
  MIDI trigger control
```

Filter Design Enviroment

```
'Design Window'  
  Filter design main control  
  
'Windowing Window'  
  Windowing method control
```

Signal Generators Enviroment

```
'SigGen Window'  
  Generators selector  
  
'Cyclic Generator Window'  
  General wave generator  
  
'Tone Generator Window'  
  Accurate sine generator  
  
'Sweep Generator Window'  
  Sweeping sine generator
```

Tools Enviroment

```
'Tools Window'  
  Tool selector  
  
'(De)Interleaver Window'  
  Mono<->Stereo converter  
  
'MiniMixer Window'  
  MiniMixer
```

Great part of AL16's GUI was developed using
GadToolsBox © Jan van den Baard.
Thank you very much for that fine tool, Jan!

1.4 Control Window

Window: Control

The Control Window is used to access the various environments and to exit from AL16 (shut-down procedure). During shut-down it is possible to save to disk various informations such as windows positions, sizes and user preferences.

This window contains the following gadgets:

- 'Environments'
- 'Main Help'
- 'Other Prefs'
- 'About'
- 'Quit'
- (window close gadget)

1.5 Environments

Gadget: Environments
Window: Control

This gadget is used to access AL16 environments. The current environment is hilited. Any environment is composed by one or more additional windows. Selecting an environment in this gadget causes closing of current environment's windows and opening of new environment's windows.

1.6 Main Help

Gadget: Main Help
Window: Control

This gadget is used to recall the main page of the on-line help.

1.7 Other Prefs

Gadget: Other Prefs
Window: Control

This gadget is used to set some user configurable variables. Other variables are available via icon's tooltips.

1.8 About

Gadget: About
Window: Control

This gadget shows some information about the AL16 project.

1.9 Quit

Gadget: Quit
Window: Control

This is actually the window close gadget. It's used to exit AL16 and return to AmigaOS. Clicking this gadget starts the shut-down procedure.

AL16 will ask you if you'll want to:

- 1) Save current status and quit
- 2) Quit immediately
- 3) Cancel the operation.

Choosing the first option forces AL16 to save to disk:

- a) the position and size of any window
- b) the user preferences

The next time you'll start AL16 all these values will be restored.

1.10 Other Prefs Window

Window: Other Prefs

The Other Prefs Window is used to set some user configurable variables. Other variables are available via icon's tooltips.

This window contains the following gadgets:

'Reference Clock'
'Locator XScan'

'Task Priority'

'Internal Write'

To save the preferences to disk choose 'save current status' ←

during shut-down procedure.

1.11 Reference Clock

Gadget: Reference Clock
Window: Other Prefs

This gadget is used to select the reference clock for your machine. Select the right value according to your hardware setting (PAL or NTSC). This value is available to Analog Output drivers for pitch and timecode calculations; it doesn't affect the hardware setting.

1.12 Locator XScan

Gadget: Locator XScan
Window: Other Prefs

This gadget is used to select the default value for the Locator X Scan. The default value is used until you change the value in the XScan gadget (Locator Control window).

Lower values give high resolution, slow graphs, higher values give low resolution, fast graphs. You should set an high value as default and use the XScan gadget (Locator Control window) for fine tuning.

1.13 Task Priority

Gadget: Task Priority
Window: Other Prefs

This gadget is used to set the AL16 priority.

1.14 InternalWrite

Gadget: Internal Write
Window: Other Prefs

This gadget is used to set the audio data format used by AL16 when writing to disk.

1.15 Clock Window

Window: Clock

The Clock Window is used to help you selecting a clock value.

This window contains the following gadgets:

'Presets'
'Use'

'Value'

'OK'

'Cancel'

1.16 Impulse Response Window

Window: Impulse Response

The Impulse Response Window is used to display FIR filter impulse response graph. The horizontal axis represents time, the vertical axis represents impulse response amplitude.

1.17 Frequency Response Window

Window: Frequency Response

Actions:

Generate a FIR filter

Write a FIR filter

The Frequency Response Window is used to display FIR filter frequency response graph. This window contains two boxes:
- the upper (bigger) box displays magnitude
- the lower (smaller) box displays phase.

The upper box.

Values on the horizontal axis represent normalized frequency (the frequency/clock ratio).

Values on the vertical axis represent filter gain (in dB).

The lower box.

Values on the horizontal axis represent normalized frequency (the frequency/clock ratio).

Values on the vertical axis represent phase measured in degrees, mapped in the [-90,+90] interval.

1.18 Clock Window

Window: Clock

Actions:

Generate a FIR filter

Write a FIR filter

The Clock Window is used to help you selecting a clock value.

This window contains the following gadgets:

```
'Presets'  
  'Use'  
  
'Value'  
  
'OK'  
  
'Cancel'
```

1.19 Presets

Gadget: Presets
Window: Clock

This gadget is used to select one of the presets. The value corresponding to each preset is shown on the same row, in the 'Hard' or 'Soft' column depending on the current setting of the 'Use' gadget.

Current presets:

- DATx2: twice the (48KHz) clock of a DAT tape.
- CDax2: twice the clock of a CDAudio disk.
- AGAx2: twice the (AudioDMA) clock of an OCS/ECS/AGA Amiga.
- DATx1: the (48KHz) clock of a DAT tape.
- CDax1: the clock of a CDAudio disk.
- AGAx1: the (AudioDMA) clock of an OCS/ECS/AGA Amiga.
- DAT/2: half the (48KHz) clock of a DAT tape.
- CDA/2: half the clock of a CDAudio disk.
- AGA/2: half the (AudioDMA) clock of an OCS/ECS/AGA Amiga.

1.20 Use

Gadget: Use
Window: Clock

This gadget is used to select which one of the values, associated with each preset, is used.

1.21 Value

Gadget: Value
Window: Clock

This gadget is used to enter a clock value from the Amiga keyboard.

1.22 OK

Gadget: OK
Window: Clock

This gadget is used to accept the clock value shown in the 'Value' gadget and quit the clock selection operation.

1.23 Cancel

Gadget: OK
Window: Clock

This gadget is used to cancel the clock selection operation.

1.24 Locator Display Window

Window: Locator Display

The Locator Display Window is used to show a graphic description of an audio file.

The window contains two boxes:

- the upper (smaller) box describes the complete recording
- the lower (bigger) box describes a user selectable portion of the recording.

Upper box.

The position and size of the area currently displayed on the lower box (relative to the complete recording) is shown by two dark bars near the upper and lower borders of the upper box. The position and size of the currently selected range (if any) is shown by a white bar. Clicking with the left mouse button somewhere inside the upper box causes the lower box to display the recording area near that point (results vary depending on current X zoom factor).

Lower Box.

This box shows the signal graph. You can manipulate variables such as zoom factors, resolution and similar via the Locator Control Window. To select a portion of the complete recording (a range) click once on the graph with the left mouse button, then drag the mouse without releasing the left button (release it when you are done). The range is displayed in reversed colors (see also the description of the upper box).

1.25 Locator Control Window

Window: Locator Control

The Locator Control Window is used to control the Locator tool. The Locator tool is used to graphically navigate a recording and interactively select and play portions of it (ranges).

This window contains the following gadgets:

- ' Show/All'
- ' Show/Display'
- ' Show/Range'
- ' Show/Near Range'
- ' Show/Range Start'
- ' Show/Range End'
- ' Show/In'
- ' Show/Out'
- ' Show/<<'
- ' Show/<'
- ' Show/>'
- ' Show/;>>'
- ' Play/All'
- ' Play/Display'
- ' Play/Range'
- ' Play/Before Range'
- ' Play/Range Start'
- ' Play/Range End'
- ' Play/After Range'
- ' Play/Loop'
- ' Range/All'
- ' Range/Display'
- ' Range/Edit Step'

```
'Range/S'  
'Range/E'  
'Range/D'  
'Display/X Scan'  
'Display/X Zoom'  
'Display/Y Zoom'  
'Display/S'  
'Display/E'  
'Display/D'
```

1.26 Show/All

```
Gadget:    Show/All  
Window:    Locator Control
```

This gadget is used to force the Locator Display window to show the complete recording.

1.27 Show/Display

```
Gadget:    Show/Display  
Window:    Locator Control
```

This gadget is used to force the Locator Display window to show the same portion of the recording currently on display. This is useful to cause a file rescan after changing the horizontal resolution setting ('Display/X Scan' gadget).

1.28 Show/Range

```
Gadget:    Show/Range  
Window:    Locator Control
```

This gadget is used to force the Locator Display window to show only the ranged area of the recording. This action may change the current X zoom factor.

1.29 Show/Near Range

Gadget: Show/Near Range
Window: Locator Control

This gadget is used to force the Locator Display window to show the a portion of the recording surrounding the ranged area. This is usefull when you are fine-tuning the start/end points of a range.

1.30 Show/Range Start

Gadget: Show/Range Start
Window: Locator Control

This gadget is used to force the Locator Display window to show the a portion of the recording surrounding the start of the ranged area. This is usefull when you are fine-tuning the start point of a range.

1.31 Show/Range End

Gadget: Show/Range End
Window: Locator Control

This gadget is used to force the Locator Display window to show the a portion of the recording surrounding the end of the ranged area. This is usefull when you are fine-tuning the end point of a range.

1.32 Show/In

Gadget: Show/In
Window: Locator Control

This gadget is used to force the Locator Display window to double the x zoom factor for the recording currently on display.

1.33 Show/Out

Gadget: Show/Out
Window: Locator Control

This gadget is used to force the Locator Display window to halve the x zoom factor for the recording currently on display.

1.34 Show/⟨⟨

Gadget: Show/⟨⟨
Window: Locator Control

This gadget is used to force the Locator Display window to show a portion of the recording preceding the portion currently on display. The x zoom factor is not changed. The amount of the time shift (backward) is equal to the current display duration ('Display/D' gadget).

1.35 Show/⟨⟨

Gadget: Show/⟨⟨
Window: Locator Control

This gadget is used to force the Locator Display window to show a portion of the recording preceding the portion currently on display. The x zoom factor is not changed. The amount of the time shift (backward) is equal to the current display duration ('Display/D' gadget).

1.36 Show/⟨

Gadget: Show/⟨
Window: Locator Control

This gadget is used to force the Locator Display window to show a portion of the recording preceding the portion currently on display. The x zoom factor is not changed. The amount of the time shift (backward) is equal to half of current display duration ('Display/D' gadget).

1.37 Show/⟩

Gadget: Show/⟩
Window: Locator Control

This gadget is used to force the Locator Display window to show a portion of the recording following the portion currently on display. The x zoom factor is not changed. The amount of the time shift (forward) is equal to half of current display duration ('Display/D' gadget).

1.38 Show/⟩⟩

Gadget: Show/>>
Window: Locator Control

This gadget is used to force the Locator Display window to show a portion of the recording following the portion currently on display. The x zoom factor is not changed. The amount of the time shift (forward) is equal to the current display duration ('Display/D' gadget).

1.39 Play/All

Gadget: Play/All
Window: Locator Control

This gadget is used to play the complete recording.

1.40 Play/Display

Gadget: Play/Display
Window: Locator Control

This gadget is used to play the portion of the recording currently displayed in the Locator Display window.

1.41 Play/Range

Gadget: Play/Range
Window: Locator Control

This gadget is used to play the ranged area.

1.42 Play/Before Range

Gadget: Play/Before Range
Window: Locator Control

This gadget is used to play a short portion of the recording preceding the start point of the ranged area. This is useful when you are fine-tuning the start point of a range.

1.43 Play/Range Start

Gadget: Play/Range Start
Window: Locator Control

This gadget is used to play a short portion of the recording following the start point of the ranged area. This is usefull when you are fine-tuning the start point of a range.

1.44 Play/Range End

Gadget: Play/Range End
Window: Locator Control

This gadget is used to play a short portion of the recording preceding the end point of the ranged area. This is usefull when you are fine-tuning the end point of a range.

1.45 Play/After Range

Gadget: Play/After Range
Window: Locator Control

This gadget is used to play a short portion of the recording following the end point of the ranged area. This is usefull when you are fine-tuning the end point of a range.

1.46 Play/Loop

Gadget: Play/Loop
Window: Locator Control

This gadget is used to choose if the Locator playback function has to repeat forever ('Loop') or play only once ('No Loop').

1.47 Range/All

Gadget: Range/All
Window: Locator Control

This gadget is used to set the complete recording as the ranged area.

1.48 Range/Display

Gadget: Range/Display
Window: Locator Control

This gadget is used to set the portion of the recording currently displayed in the Locator Display window as the ranged area.

1.49 Range/Edit Step

Gadget: Range/Edit Step
Window: Locator Control

This gadget is used to set the step value for the timecode editing gadgets ('+' and '-' gadgets).

1.50 Range/S

Gadget: Range/S
Window: Locator Control

This gadget is used to show the timecode value for the range start point.

Holding the SHIFT key while clicking on the '+' or '-' gadgets allows using a greater increment/decrement step value.

1.51 Range/E

Gadget: Range/E
Window: Locator Control

This gadget is used to show the timecode value for the range end point.

Holding the SHIFT key while clicking on the '+' or '-' gadgets allows using a greater increment/decrement step value.

1.52 Range/D

Gadget: Range/D
Window: Locator Control

This gadget is used to show the duration of the ranged area.

1.53 Display/X Scan

Gadget: Display/X Scan
Window: Locator Control

This gadget is used to select a value for the X Scan variable. Lower values give high resolution, slow graphs, higher values give low resolution, fast graphs. After changing the X Scan value you should click on the 'Show/Display' gadget if you want to update the Locator Display window graph immediately. The first time you use the Locator tool the X Scan default value set in the 'Other Prefs' window is used.

1.54 Display/X Zoom

Gadget: Display/X Zoom
Window: Locator Control

This gadget is used to show the current horizontal zoom factor for the Locator Display window.

1.55 Display/Y Zoom

Gadget: Display/Y Zoom
Window: Locator Control

This gadget is used to change the vertical zoom factor for the Locator Display window.

1.56 Display/S

Gadget: Display/S
Window: Locator Control

This gadget is used to show the timecode value for the start point of the portion of the recording displayed in the Locator Display window.

1.57 Display/E

Gadget: Display/E
Window: Locator Control

This gadget is used to show the timecode value for the end point of the portion of the recording displayed in the Locator Display window.

1.58 Display/D

Gadget: Display/D
Window: Locator Control

This gadget is used to show the duration of the portion of the recording displayed in the Locator Display window.

1.59 Analog (Out)

Window: Analog (Out)

Actions:

Play a formatted file (AIFF,WAV,...)

Play a raw or unknown file

The Analog (Out) Window is used to control the hardware used to playback the audio signals. The window layout depends on the output driver installed.

SoftMary is an output driver for the Amiga built-in audio chip (Paula). It's window contains the following gadgets:

'Clock'

'Spatial Image'

'Loop Sample'

'LP Filter'

1.60 Clock

Gadget: Clock
Window: Analog (Out)

This gadget is used to set the playback clock. You can use the slide-bar to set the preferred value immediately or click on the "?" button to open the clock requester.

1.61 Spatial Image

Gadget: Spatial Image
Window: Analog (Out)

This gadget is used to set the amount of spatial expansion that SoftMary performs on audio signals. This is a stereo enhancer that works well with mono signals too, producing exciting spatial sounds.

1.62 Loop Sample

Gadget: Loop Sample
Window: Analog (Out)

This gadget is used to enable/disable playback looping. If this gadget is not checked the playback stops at the end of the recording, if it is checked the playback keeps repeating until you abort the operation.

1.63 LP Filter

Gadget: LP Filter
Window: Analog (Out)

This gadget is used to enable/disable the built-in hardware low-pass filter.

1.64 CDAudio (In)

Window: CDAudio (In)

Actions:

Record digital tracks from a CDAudio

The CDAudio (In) Window is used to access audio data on compact disks. You need an Apple CD300(+) compatible SCSI CD-ROM drive.

This window contains the following gadgets:

'Scsi Device'

'Unit'

'Door/Open'

'Door/Close'

'TOC/Read'

'Channel'

'Clock'

1.65 SCSIDevice

Gadget: SCSIDevice
Window: CDAudio (In)

This gadget is used to select the scsidevice for CD-ROM access.
Examples: scsi.device, gvpscsi.device, ...

You can set a default scsidevice via tooltypes accessing AL16 icon from WorkBench.

Examples:
CDDA SCSI_DEVICE=scsi.device
CDDA SCSI_DEVICE=gvpscsi.device

1.66 Unit

Gadget: Unit
Window: CDAudio (In)

These (actually three) gadgets are used to select which SCSI device is being referred to. You'll usually need only to set the CD-ROM SCSI ID (ID gadget).

NOTE 1: the ID gadget accepts values upto 9 for compatibily with some old controllers.

NOTE 2: the LUN gadget is present for compatibily with some old controllers.

You can set a default unit number via tooltypes accessing AL16 icon from WorkBench.

Example:
CDDA SCSI_UNIT=3

1.67 Open

Gadget: Door/Open
Window: CDAudio (In)

This gadget is used to open the CD-ROM's door. This operation will invalid the current TOC. During some operations AL16 doesn't allow an Open command. In these cases AL16 also asks the CD-ROM to disable the 'open' button present on the front panel. The Open gadget and button are enabled again as soon as the operation is completed/aborted.

1.68 Close

Gadget: Door/Close
Window: CDAudio (In)

This gadget is used to close the CD-ROM's door.

1.69 Read

Gadget: TOC/Read
Window: CDAudio (In)

This gadget is used to read a CDAudio Table Of Contents. An audio disk must be present into the CD-ROM drive.

1.70 Channel

Gadget: Channel
Window: CDAudio (In)

This gadget is used to select which audio channel is accessed.

1.71 Clock

Gadget: Clock
Window: CDAudio (In)

This gadget is used to select the clock of the audio data. The standard CDAudio clock is 44.1KHz, you can use it in AL16. Lower clocks are provided: they require less disk space but reduce audio quality.

If you want to lower the clock consider these possibilities:

- for fast preview work reduce the clock using this gadget (the rate conversion is performed without digital filtering).
- to keep the best quality copy the material with 44.1KHz clock, then use AL16 DSP tools to rate convert the signal.

1.72 File (In)

Window: File (In)

Actions:

Play a formatted file (AIFF,WAV,...)

Play a raw or unknown file

Convert a file format

The File (In) Window is used to access audio data contained into files.

This window contains the following gadgets:

'Name/?'
'Format'
'Sample Point Data'
'Analyze'
'Clock'
'Stream Limits/Start'
'Stream Limits/End'
'Stream Limits/Memol'
'Stream Limits/Memo2'
'Stream Limits/Recall1'
'Stream Limits/Recall2'
'Rename'
'Delete'

1.73 Name/?

Gadget: Name/?
Window: File (In)

This gadget is used to select the file via the file requester.

1.74 Format

Gadget: Format
Window: File (In)

This gadget is used to display the file format (AIFF,WAV,...).
If the 'Analyze' gadget is:

- selected:
AL16 will display the proper format name or (if the format is not recognized or the file is damaged) the string 'RAW'.
- deselected:
AL16 will display the string 'RAW'.

1.75 Sample Point Data

Gadget: Sample Point Data
Window: File (In)

This gadget is used to select the audio data type. The data type is automatically set by AL16 if the 'Analyze' gadget is selected AND the file format is recognized.

You can change the data type at any time.

1.76 Analyze

Gadget: Analyze
Window: File (In)

This gadget is used to enable/disable the automatic file format detection function. If the gadget is enabled every time you select a new file AL16 will try to recognize the file format.

1.77 Clock

Gadget: Clock
Window: File (In)

This gadget is used to display the file audio data clock. This information is only valid if AL16 has recognized the file format.

1.78 Start

Gadget: Stream Limits/Start
Window: File (In)

This gadget is used to select the position of the start point of the audio data. The position is relative to the beginning of the file and is measured in bytes. This gadget is automatically updated when AL16 recognizes the input file format.

1.79 End

Gadget: Stream Limits/End
Window: File (In)

This gadget is used to select the position of the end point of the audio data. The position is relative to the beginning of the file and is measured in bytes. This gadget is automatically updated when AL16 recognizes the input file format.

1.80 Memo1

Gadget: Stream Limits/Memo1
Window: File (In)

This gadget is used to store the current values of the Start and End gadgets. The values are recalled using the Recall1 gadget.

1.81 Memo2

Gadget: Stream Limits/Memo2
Window: File (In)

This gadget is used to store the current values of the Start and End gadgets. The values are recalled using the Recall2 gadget.

1.82 Recall1

Gadget: Stream Limits/Recall1
Window: File (In)

This gadget is used to recall values of the Start and End gadgets previously stored using the Memo1 gadget.

1.83 Recall2

Gadget: Stream Limits/Recall2
Window: File (In)

This gadget is used to recall values of the Start and End gadgets previously stored using the Memo2 gadget.

1.84 Rename

Gadget: Rename
Window: File (In)

This gadget is used to rename the audio data file.

1.85 Delete

Gadget: Delete
Window: File (In)

This gadget is used to delete the audio data file permanently from your hard disk.

1.86 File (Out)

Window: File (Out)

Actions:

Record digital tracks from a CDAudio

Convert a file format

Record from Parallel

The File (Out) Window is used to store audio data into files.

This window contains the following gadgets:

'Name/?'

'Format'

'Sample Point Data'

'Clock'

1.87 Name/?

Gadget: Name/?
Window: File (Out)

This gadget is used to select the file via the file requester.

1.88 Format

Gadget: Format
Window: File (Out)

This gadget is used to select the file format (AIFF,WAV,...).
This gadget setting affects the Data gadget setting.

1.89 Sample Point Data

Gadget: Sample Point Data
Window: File (Out)

This gadget is used to select the audio data type. The data type is automatically set by AL16 if you use the Format gadget. You can change the data type at any time. If you choose a data type not compatible with the current format type AL16 reports the wrong setting WHEN YOU CLICK ON EXECUTE GADGET.

1.90 Clock

Gadget: Clock
Window: File (Out)

This gadget is used to set the file audio data clock.

You can:

- type the number directly into the numeric gadget
- use the '?' gadget to open the clock requester
- use the 'Get Clock From Input' gadget to copy the current input clock value.

1.91 IOM_IOMapping

Window: I/O Mapping

Actions:

Play a formatted file (AIFF,WAV,...)

Play a raw or unknown file

Record digital tracks from a CDAudio

Convert a file format

Record from Parallel

The I/O Mapping Window is used to select one of the available audio stream mappings and start the mapping operation. ←

This window contains the following gadgets:

'Mappings'

'Execute'

1.92 Mappings

Gadget: Mappings
Window: I/O Mapping

This gadget is used to choose one of the available I/O mappings.

1.93 Execute

Gadget: Execute
Window: I/O Mapping

This gadget is used to start the currently selected I/O mapping.

1.94 Parallel (In)

Window: Parallel (In)

Actions:

Record from Parallel

The Parallel (In) Window is used to select one of the ↔ available audio stream mappings and start the mapping operation.

This window contains the following gadgets:

'Clock'

1.95 Clock

Gadget: Clock
Window: Parallel (In)

This gadget is used to set the input audio data clock.
You can:

- use the '?' gadget to open the clock requester
- use the slider to set the value directly.

Note that Parallel (In) clock range may have a different granularity than Analog (Out) clock range.

1.96 Parallel:File

Window: Parallel:File

Actions:

Record from Parallel

The Parallel:File Window is used to control the Parallel: File mapping operation. ↔

This window contains the following gadgets:

'Rec Mode'

'Memory/Info'

'StartMode'

1.97 Rec Mode

Gadget: Rec Mode

Window: Parallel:File

This gadget is used to choose the recording mode.

'Buffer In Ram' stores the digital data in ram and writes it to disk only at the end of the process. During recording the video DMA is turned off, producing a blank display. You can stop the recording process with a mouse click. The recording process automatically stops when there isn't further free ram or free space on disk.

'Direct To Disk' stores the digital data directly on disk. During the recording process the elapsed time and the time available before the disk is full are shown. You can stop the recording process with a mouse click. The recording process automatically stops when there isn't further free space on disk.

'Buffer In Ram' allows higher clocks but recording time is limited by available ram.

'Direct To Disk' allows longer recordings but clock is limited by CPU and disk speed.

1.98 Memory/Info

Gadget: Memory/Info
Window: Parallel:File

This gadget is used to show the available free space in ram and disk. The free space is shown as recording time (depending on current parallel clock) and as total number of samplepoints.

1.99 Start Mode

Gadget: Start Mode
Window: Parallel:File

This gadget is used to choose how to start recording.

'Mouse Click' starts recording at mouse click.

'Threshold' starts recording when the input level is higher than a user selectable threshold (use the slider to select a threshold).

1.100 Parallel:VU

Window: Parallel:VU

Actions:

Record from Parallel

The Parallel:VU Window is used to control the Parallel:VU ↔ mapping operation.

This window contains the following gadgets:

'Clock'

1.101 Clock

Gadget: Clock
Window: Parallel:VU

This gadget is used to set the (VU Clock)/(Parallel Clock) ratio. Higher ratios cause higher audio quality and slower graphic refresh in the VU window.

Note that this setting will not affect the audio quality when recording from parallel (it only affects monitoring quality when in Paralle:VU mode).

1.102 TOC

Window: TOC

Actions:

Record digital tracks from a CDAudio

The TOC Window is used to access the Table Of Contents (TOC ↔) of audio compact disks.

This window contains the following gadgets:

'CDDA Table Of Contents'

'Range Start'

'Range Start/Get'

'Range Start/Sector'

'Range End'

'Range End/Get'

'Range End/Sector'

'Play/Track'

'Play/All'

'Play/Range'

'Play/Stop'

1.103 CDDA Table Of Contents

Gadget: CDDA Table Of Contents

Window: TOC

This gadget is used to select an audio track from those available on the currently mounted audio compact disk. For each audio track, the following information is displayed:

- the track number
- the track duration
- the number of the first sector (of the track)
- the number of the last sector (of the track)
- the track start time
- the track end time.

Selecting a track automatically updates the 'Range Start' and

'Range End' gadgets.

1.104 Range Start

Gadget: Range Start
Window: TOC

This gadget is used to set the start point (mm:ss) of the range used for recording to HD.

Selecting a track automatically updates this gadget to track start.

1.105 Range Start/Get

Gadget: Range Start/Get
Window: TOC

This gadget is used to set the start point of the range used for recording to HD. First, start CD playback, then click on this gadget when playback reaches the preferred starting point.

Selecting a track automatically updates this gadget to track start.

1.106 Range Start/Sector

Gadget: Range Start/Sector
Window: TOC

This gadget is used to set the start point (sector number) of the range used for recording to HD.

Selecting a track automatically updates this gadget to track start.

1.107 Range End

Gadget: Range End
Window: TOC

This gadget is used to set the end point (mm:ss) of the range used for recording to HD.

Selecting a track automatically updates this gadget to track end.

1.108 Range End/Get

Gadget: Range End/Get
Window: TOC

This gadget is used to set the end point of the range used for recording to HD. First, start CD playback, then click on this gadget when playback reaches the preferred ending point.

Selecting a track automatically updates this gadget to track end.

1.109 Range End/Sector

Gadget: Range End/Sector
Window: TOC

This gadget is used to set the end point (sector number) of the range used for recording to HD.

Selecting a track automatically updates this gadget to track end.

1.110 Play/Track

Gadget: Play/Track
Window: TOC

This gadget is used to play, via the CD-ROM drive output, the currently selected track.

1.111 Play/All

Gadget: Play/All
Window: TOC

This gadget is used to play, via the CD-ROM drive output, the complete compact disk, starting from first track.

1.112 Play/Range

Gadget: Play/Range
Window: TOC

This gadget is used to play, via the CD-ROM drive output, the range defined by the 'Range Start', 'Range End' gadgets.

1.113 Play/Stop

Gadget: Play/Stop
Window: TOC

This gadget is used to stop the compact disk playback.

1.114 VU (Out)

Window: VU (Out)

Actions:

Record from Parallel

The VU (Out) Window is used to monitor the input signal level before recording from parallel.

Two boxes are shown:

- the upper box displays an analog VU meter
- the lower box displays a scrolling history of the signal levels.

The lower box graph is color coded. When signal level is under the hardware saturation threshold the color is white. If the signal exceeds the threshold for a very short period of time the color turns darker. If the signal exceeds the threshold for a longer period of time the color turns black. (Colors may differ when AL16 is used on a public screen such as the Workbench screen).

1.115 DSP

Window: DSP

Actions:

Use the DSP

The DSP Window is used to apply DSP operators to recordings.

This window contains the following gadgets:

'Source/?'

'Source/Play'

'Source/Recording/Duration'

'Source/Recording/Length'

'Source/Recording/Clock'

```
' Source/Recording/Clock/?'  
' Source/Range/Set '  
' Source/Range/S '  
' Source/Range/E '  
' Operators '  
' Operate On '  
' Destination/? '  
' Destination/Play '  
' Destination/Recording/Duration '  
' Destination/Recording/Length '  
' Destination/Recording/Clock '  
' Output '  
' Execute '
```

1.116 Source/?

Gadget: Source/?
Window: DSP

This gadget is used to select the file via the file requester.

1.117 Source/Play

Gadget: Source/Play
Window: DSP

This gadget is used to play the source recording.

1.118 Source/Recording/Duration

Gadget: Source/Recording/Duration
Window: DSP

This gadget is used to display the duration (hh:mm:ss:ff) of the source recording.

1.119 Source/Recording/Length

Gadget: Source/Recording/Length
Window: DSP

This gadget is used to display the size of the file that contains the source recording.

1.120 Source/Recording/Clock

Gadget: Source/Recording/Clock
Window: DSP

This gadget is used to display the signal clock of the source recording.

1.121 Source/Recording/Clock/?

Gadget: Source/Recording/Clock/?
Window: DSP

This gadget is used to edit the signal clock of the source recording.

1.122 Source/Range/Set

Gadget: Source/Range/Set
Window: DSP

This gadget is used to recall the 'Locator' tool, in order to define a portion of the whole source recording as a range. DSP operators can be applied to ranges (see 'Operate On' gadget).

1.123 Source/Range/S

Gadget: Source/Range/S
Window: DSP

This gadget is used to display the timecode value for the starting point of the range.

1.124 Source/Range/E

Gadget: Source/Range/E
Window: DSP

This gadget is used to display the timecode value for the ending point of the range.

1.125 Operators

Gadget: Operators
Window: DSP

This gadget is used to select a DSP operator for the source recording.

1.126 OperateOn

Gadget: Operate On
Window: DSP

This gadget is used to select which portion of the source recording has to be processed:

- 'Recording' : process the whole recording
- 'Range (save rng)' : process range and save range to destination
- 'Range (save all)' : process range but save also unprocessed portions to destination.

1.127 Destination/?

Gadget: Destination/?
Window: DSP

This gadget is used to select the file via the file requester.

1.128 Destination/Play

Gadget: Destination/Play
Window: DSP

This gadget is used to play the destination recording.

1.129 Destination/Recording/Duration

Gadget: Destination/Recording/Duration
Window: DSP

This gadget is used to display the duration (hh:mm:ss:ff) of the destination recording.

1.130 Destination/Recording/Length

Gadget: Destination/Recording/Length
Window: DSP

This gadget is used to display the size of the file that contains the destination recording.

1.131 Destination/Recording/Clock

Gadget: Destination/Recording/Clock
Window: DSP

This gadget is used to display the signal clock of the destination recording.

1.132 Output

Gadget: Output
Window: DSP

This gadget is used to select the output mode.
'File' selects direct-to-disk mode.
'Analog' selects real-time mode.

1.133 Execute

Gadget: Execute
Window: DSP

This gadget is used to start the currently selected DSP operator.

1.134 Amp Control

Window: Amp Control

Actions:

Use the DSP
The Amp Control Window is used to control parameters for ↔
the
'Amp Control' operator.
The 'Amp Control' operator allows modifying signal amplitude
(volume).

This window contains the following gadgets:

'Amp Optimization/Check'
'Amp Optimization/Margin'
'Amp Interpolation/Initial'
'Amp Interpolation/Final'
'Fade In/Fade Out'
'Apply'

1.135 Amp Optimization/Check

Gadget: Amp Optimization/Check
Window: Amp Control

This gadget is used to start the peak search function. See also
the 'Amp Optimization/Margin' gadget.

1.136 Amp Optimization/Margin

Gadget: Amp Optimization/Margin
Window: Amp Control

This gadget is used to display the distance (measured in bits)
between the maximum peak present in the recording and the maximum
level possible in a 16bit recording.

1.137 Amp Interpolation/Initial

Gadget: Amp Interpolation/Initial
Window: Amp Control

This gadget is used to set starting level for the interpolated
range.

'0' means 'silence'.

'100' means 'original level'.

1.138 Amp Interpolation/Final

Gadget: Amp Interpolation/Final
Window: Amp Control

This gadget is used to set ending level for the interpolated range.

'0' means 'silence'.

'100' means 'original level'.

1.139 Fade In/Fade Out

Gadget: Fade In/Fade Out
Window: Amp Control

This gadget is used to set the duration of both the fade-in zone and the fade-out zone.

1.140 Apply

Gadget: Apply
Window: Amp Control

This gadget is used to select one of the amp control methods. The following methods are available:

- 'Optimization' : a peak search is performed, then, if necessary, the signal is amplified to force the margin value to '0'
- 'Interpolation' : a linear amplitude interpolation is performed.
- 'Fade In/Fade Out': fading is applied at start and end points of the recording.

1.141 Clock Converter

Window: Clock Converter

Actions:

Use the DSP

The Clock Converter Window is used to control parameters for ↔ the

'Clock Converter' operator.

The 'Clock Converter' operator allows modifying the signal clock.

The operator assumes the signal has already been band limited.

This window contains the following gadgets:

'Target'

1.142 Target

Gadget: Target
Window: Clock Converter

This gadget is used to set the desired output clock.

You can:

- type the number directly into the numeric gadget
- use the '?' gadget to open the clock requester

1.143 Comb Filter

Window: Comb Filter

Actions:

Use the DSP

The Comb Filter Window is used to control parameters for ↔
the

'Comb Filter' operator.

The 'Comb Filter' operator allows removing a frequency (and its odd harmonics) from the signal.

This window contains the following gadgets:

'Base Frequency'

1.144 Base Frequency

Gadget: Base Frequency
Window: Comb Filter

This gadget is used to set the frequency to be removed from the signal. Note that its odd harmonics are remove too.

1.145 Distortion

Window: Distortion

Actions:

Use the DSP
The Distortion Window is used to control parameters for ↔
the
'Distortion' operator.
The 'Distortion' operator applies deformation to the signal,
producing more aggressive sounds.

This window contains the following gadgets:

'Gain'
'Output Level'

1.146 Gain

Gadget: Gain
Window: Distortion

This gadget is used to set the level of the signal going into the distortion box. Higher levels cause more saturation, producing more distortion. To balance the increased gain use the 'Output Level' gadget to attenuate the processed output.

1.147 Output Level

Gadget: Output Level
Window: Distortion

This gadget is used to set the level of the processed signal.

1.148 Single Tap Delay

Window: Single Tap Delay

Actions:

Use the DSP
The Single Tap Delay Window is used to control parameters for ↔
the
'Delay-1-Tap' operator.
The 'Delay-1-Tap' operator is a digital delay that produces a single echo.

This window contains the following gadgets:

'Delay Time'

'Attenuation'

1.149 Delay Time

Gadget: Delay Time
Window: Single Tap Delay

This gadget is used to set the amount of time between the original signal and the delayed signal.

1.150 Attenuation

Gadget: Attenuation
Window: Single Tap Delay

This gadget is used to set the volume attenuation for the delayed signal.

'0' means no attenuation.

1.151 Multi Tap Delay

Window: Multi Tap Delay

Actions:

Use the DSP

The Multi Tap Delay Window is used to control parameters for ↔ the

'Delay-N-Tap' operator.

The 'Delay-N-Tap' operator is a digital delay that produces a trail of multiple echos. You can control the envelope of the echo trail.

This window contains the following gadgets:

'Delay Time'

'Attenuation'

'Envelope'

1.152 Delay Time

Gadget: Delay Time
Window: Multi Tap Delay

This gadget is used to set the amount of time between successive echoes.

1.153 Attenuation

Gadget: Attenuation
Window: Multi Tap Delay

This gadget is used to set the volume attenuation for the delayed trail.

'0' means no attenuation (without attenuation the trail sounds louder than the input signal).

1.154 Envelope

Gadget: Envelope
Window: Multi Tap Delay

This gadget is used to select an envelope shape for the echo trail.

The following envelopes are available:

- 'Ramp Up Echo Trail' : the trail volume increases, then cuts off abruptly.
- 'Flat Echo Trail' : the trail volume keeps constant, then cuts off abruptly.
- 'Ramp Down Echo Trail' : the trail volume decays smoothly to silence.

1.155 Recursive Delay

Window: Recursive Delay

Actions:

Use the DSP

The Recursive Delay Window is used to control parameters for ↔ the

'Delay-Recursive' operator.

The 'Delay-Recursive' operator is a digital delay that produces multiples echos.

This window contains the following gadgets:

'Delay Time'

'Feedback'

1.156 Delay Time

Gadget: Delay Time
Window: Recursive Delay

This gadget is used to set the amount of time between the original signal and the delayed signal.

1.157 Feedback

Gadget: Feedback
Window: Recursive Delay

This gadget is used to set the amount of processed signal that is sent from output back to input.

Higher values mean more feedback (more echoes).

WARNING: if you set the feedback value too high, distortion may occur. Maximum feedback value depends on input signal amplitude peaks: high level peaks require low feedback values, low level peaks allow high feedback values.

If you need very high feedback values you should use the 'Amp Control' operator to attenuate the signal, before applying this effect.

1.158 FIR Filter

Window: FIR Filter

Actions:

Use the DSP

Generate a FIR filter

Write a FIR filter

The FIR Filter Window is used to control parameters for the ←
'FIR

Filter' operator.

The 'FIR Filter' operator allows performing digital filtering via a user supplied coefficients file. The coefficients file can be created by AL16's filter designer or typing it with a text editor (it's an ASCII file).

This window contains the following gadgets:

```
'Coefficients File/?'  
  
'Show Response'  
  
'Taps'  
  
'Gain'
```

1.159 Coefficients File/?

```
Gadget:    Coefficients File  
Window:    FIR Filter
```

This gadget is used to select the file containing the filter coefficients.

1.160 Show Response

```
Gadget:    Show Response  
Window:    FIR Filter
```

This gadget is used to open/close the windows displaying impulse and frequency response.

1.161 Taps

```
Gadget:    Taps  
Window:    FIR Filter
```

This gadget is used to display the total number of filter taps (coefficients).

1.162 Gain

```
Gadget:    Gain  
Window:    FIR Filter
```

This gadget is used to select the operating mode.

The following modes are available:

- 'Real' : the processed signal is sent, as is, to output.
 - 'Optimized': the processed signal is saved to a temporary file in 32bit precision, then the amplitude is optimized for 16bit storage.
-

1.163 Flanger

Window: Flanger

Actions:

Use the DSP

The Flanger Window is used to control parameters for the ' ↔
Flanger'

operator.

The 'Flanger' operator applies a sweeping comb filter to the signal.

This window contains the following gadgets:

'Freq.'

'Delay'

'Offset'

'Attenuation'

1.164 Freq.

Gadget: Freq.

Window: Flanger

This gadget is used to set the speed of the sweeping comb filter. Lower values mean slower sweep, higher values mean faster sweep.

1.165 Delay

Gadget: Delay

Window: Flanger

This gadget is used to set the amount of filter notches. Lower values mean less notches, higher values mean more notches.

1.166 Offset

Gadget: Offset

Window: Flanger

This gadget is used to set the amount of travel for the sweeping filter.

Lower values mean shorter travel, higher values mean longer travel.

1.167 Attenuation

Gadget: Attenuation
Window: Flanger

This gadget is used to set the depth of the notches created by the flanger.

Lower values mean more depth, higher values mean less depth.

1.168 Hum Remover

Window: Hum Remover

Actions:

Use the DSP

The Hum Remover Window is used to control parameters for the 'Hum

Remover' operator.

The 'Hum Remover' operator allows removing 50Hz/60Hz hum noise from a recording.

This window contains the following gadgets:

'Hum'

'Remove'

1.169 Hum

Gadget: Hum
Window: Hum Remover

This gadget is used to set the hum noise type. The hum noise type depends on the frequency used in the country where the material was recorded.

1.170 Remove

Gadget: Remove
Window: Hum Remover

This gadget is used to set the amount of material removed by the filter.

1.171 MultiFlanger

Window: MultiFlanger

Actions:

Use the DSP

The MultiFlanger Window is used to control parameters for the 'MultiFlanger' operator. The 'MultiFlanger' operator is a multi-tap digital delay with a time-varying delay of each tap.

This window contains the following gadgets:

'Group Delay'

'Voice2 Spread'

'Voice3 Spread'

'Attenuation'

'Freq.'

1.172 Group Delay

Gadget: Group Delay
Window: MultiFlanger

This gadget is used to set base delay for the digital delay unit.

1.173 Voice2 Spread

Gadget: Voice2 Spread
Window: MultiFlanger

This gadget is used to set the amount of delay to be added to the group delay for voice 2.

1.174 Voice3 Spread

Gadget: Voice3 Spread
Window: MultiFlanger

This gadget is used to set the amount of delay to be added to the group delay for voice 3.

1.175 Attenuation

Gadget: Attenuation
Window: MultiFlanger

This gadget is used to set the the volume attenuation for the processed portion of the signal.
'0' means no attenuation.

1.176 Freq.

Gadget: Freq.
Window: MultiFlanger

This gadget is used to set the speed for the time-varying delays.

1.177 NoiseGate

Window: NoiseGate

Actions:

Use the DSP

The NoiseGate Window is used to control parameters for ↔
the

'NoiseGate' operator.

The 'NoiseGate' operator is a very fast automatic volume control. As long as the signal has a level higher than an user selectable threshold, 'NoiseGate' keeps the volume to 100% (by-pass).

Whenever the signal level drops under the threshold 'NoiseGate' turns the volume to 0%, until the signal levels raises above the threshold again.

This is a simple method to remove background noise from signals that contain silence sections such as human talk or single-instrument tracks of a multitrack recording.

This window contains the following gadgets:

'Attack Time'

'Threshold Level'

1.178 Attack Time

Gadget: Attack Time
Window: NoiseGate

This gadget is used to set the amount of time (after the signal level drops below the threshold) the gate has to wait before muting the signal.

1.179 Threshold Level

Gadget: Threshold Level
Window: NoiseGate

This gadget is used to set threshold fro the gate. You should set it as little as possible over the average level of the background noise. Setting it too low produces limited gate activity (part of the noise is not removed), setting it too high produces excessive gate activity (parts of the signal are removed too).

1.180 Phase Inverter

Window: No window

Actions:

Use the DSP

The 'Phase Inverter' operator has no window because it ↔ doesn't

require parameters. It is usually used to invert the phase of one of the two channels of a stereo recording. Mixing together the channels of the phase-inverted stereo pair allows a strong attenuation of the sounds laying in the 'central' position (of the stereo space).

1.181 Pitch Shift

Window: Pitch Shift

Actions:

Use the DSP

The Pitch Shift Window is used to control parameters for ↔ the

'Pitch Shift' operator.

The 'Pitch Shift' operator allows increasing or decreasing signal pitch without affecting signal duration.

This window contains the following gadgets:

'Shift'

'Window'

'XFade'

1.182 Shift

Gadget: Shift
Window: Pitch Shift

These gadgets (actually three) are used to set the shift unit type and amount:

- the radio-button gadget sets the unit type
- the sliders set the amount of shifting.

1.183 Window

Gadget: Window
Window: Pitch Shift

This gadget is used to select the optimization method:

- lower values preserve rithm timing to the prejudice of sound quality
- higher values preserve sound quality to the prejudice of rithm timing.

Please understand that, being the output a synthesized signal, audible quality degradation may occur. The optimal value is different for different signals: a bit of experimentation is usually required.

1.184 XFade

Gadget: XFade
Window: Pitch Shift

This gadget is used to select the amount of smoothing performed on output signal.

1.185 Quantizer

Window: Quantizer

Actions:

Use the DSP

The Quantizer Window is used to control parameters for the 'Quantizer' operator. The 'Quantizer' operator allows reducing the PCM signal resolution. It is useful for experimenting with quantization noise effects and related techniques (oversampling, filtering,...).

This window contains the following gadgets:

'Reduce Resolution To'

'Align'

1.186 Reduce Resolution To

Gadget: Reduce Resolution To
Window: Quantizer

This gadget is used to select the amount of resolution reduction (in bits).

1.187 Align

Gadget: Align
Window: Quantizer

This gadget is used to select the alignment mode.

The following modes are available:

- Left : samplepoints are truncated
- Right: samplepoints are right shifted (signal level is reduced).

1.188 Room

Window: Room

Actions:

Use the DSP

The Room Window is used to control parameters for the 'Room' operator.

The 'Room' operator simulates ambient reverberation.

This window contains the following gadgets:

'Room Size'

'Reflections'

1.189 Room Size

Gadget: Room Size
Window: Room

This gadget is used to select room corner size. The room is cubic.

1.190 Reflections

Gadget: Reflections
Window: Room

This gadget is used to select amount of walls reflectivity. Setting the value too high may cause resonances that yield distortion.

1.191 Skipper

Window: Skipper

Actions:

Use the DSP

The Skipper Window is used to control parameters for the '↔
Skipper'

operator.

The 'Skipper' operator allows skipping or inserting samplepoints into the signal stream. This operator is the base for performing signal decimation and interpolation.

This window contains the following gadgets:

'Skip'

'Insert'

'Apply'

1.192 Skip

Gadget: Skip
Window: Skipper

This gadget is used to select the skipping mode (ratio).

The following modes are available:

- '2->1': every two samplepoints one is skipped
- '3->1': every three samplepoints two are skipped
- '4->1': every four samplepoints three are skipped

The output signal pitch changes depending on skipping ratio. Output clock is not automatically adjusted to allow experimenting outside the clock range managed by AL16.

You should band limit (low pass filter) the signal, depending on skipping ratio, BEFORE performing skipping.

1.193 Insert

Gadget: Insert
Window: Skipper

This gadget is used to select the zero inserting mode (ratio).

The following modes are available:

- '1->2': one zero is inserted between each samplepoint
- '1->3': two zeros are inserted between each samplepoint
- '1->4': three zeros are inserted between each samplepoint

The output signal pitch changes depending on inserting ratio. Output clock is not automatically adjusted to allow experimenting outside the clock range managed by AL16.

You should band limit (low pass filter) the signal, depending on inserting ratio, AFTER performing zero inserting.

1.194 Apply

Gadget: Insert
Window: Skipper

This gadget is used to select the operation mode.

The following modes are available:

- 'Skip' : removes samplepoints from input signal
- 'Zero Insert': inserts zeros between the samplepoints of the input signal.

1.195 Time Inverter

Window: Time Inverter

Actions:

Use the DSP

The Time Inverter Window is used to control parameters for ↔
the

'Time Inverter' operator.

The 'Time Inverter' operator allows reversing the signal (playing it backward). Mixed forward/backward playback is possible.

This window contains the following gadgets:

'Mode'

1.196 Mode

Gadget: Mode

Window: Time Inverter

This gadget is used to select the inverting mode.

The following modes are available:

- 'Complete' : the whole recording is reversed
- 'Paged Mix' : the recording is divided into pages (fragments) and, in each page, the original and reversed signals are mixed. This allows creating complex and strange textures when using sounds with long sustain (such as human voices or guitars). You control the mix with the slider gadget (higher values attenuate the reversed signal).

1.197 Time Stretch

Window: Time Stretch

Actions:

Use the DSP

The Time Stretch Window is used to control parameters for ↔
the

'Time Stretch' operator.

The 'Time Stretch' operator allows increasing or decreasing signal duration without affecting signal pitch.

This window contains the following gadgets:

'Stretch'

'Window'

'XFade'

1.198 Stretch

Gadget: Stretch
Window: Time Stretch

This gadget is used to select the amount of duration stretching:

'1000': stands for the original duration
'500' : means that the new duration will halve
'2000': means that the new duration will double.

Intermediate values allow fine tuning. Increasing stretching values are associated with increasing signal degradation. Note that time stretching changes the effect of reverberation that may be present in the original signal.

1.199 Window

Gadget: Window
Window: Time Stretch

This gadget is used to select the optimization method:

- lower values preserve rithm timing to the prejudice of sound quality
- higher values preserve sound quality to the prejudice of rithm timing.

Please understand that, being the output a synthesized signal, audible quality degradation may occur. The optimal value is different for different signals: a bit of experimentation is usually required.

1.200 XFade

Gadget: XFade
Window: Time Stretch

This gadget is used to select the amount of smoothing performed on output signal. This gadget only affects smoothing performed on compressed signals (duration reduced).

1.201 Tone Control

Window: Tone Control

Actions:

Use the DSP

The Tone Control Window is used to control parameters for the 'Tone Control' operator. The 'Tone Control' operator allows applying an IIR filter to the input signal.

This window contains the following gadgets:

'Zero'

'Pole'

'Output Level'

1.202 Zero

Gadget: Zero
Window: Tone Control

This gadget is used to control the IIR zero. Lower levels enhance high frequencies, higher levels enhance low frequencies.

1.203 Pole

Gadget: Pole
Window: Tone Control

This gadget is used to control the IIR pole. Lower levels enhance high frequencies, higher levels enhance low frequencies.

1.204 Output Level

Gadget: Output Level
Window: Tone Control

This gadget is used to select the amplitude level for the processed signal. Note that if the level is too high, depending on other filter settings, distortion may occur.

1.205 ELM

Window: ELM

The ELM Window is used to select an editing mode.

This window contains the following gadgets:

'Edit Mode'

1.206 Edit Mode

Gadget: Edit Mode
Window: ELM

This gadget is used to select an editing mode.

1.207 MultiTrack Display

Window: MultiTrack Display

Actions:

Setup a multitrack project

The MultiTrack Display Window is used for interactive ↔
access to
the MultiTrack Manager.

Elements:

'Areas'

'Menus'

'Hotkeys'

1.208 Areas

The MultiTrack Display Window is composed by the following ↔
areas:

```
*****
*                *                2                *
*                *****
```


- Number: TRACK NUMBER
 - the number surrounded by a rectangle indicates the selected track

The bottom zone contains (from left to right) the following icons:

- Selection Mode (objects/range)
- Output Channels (mono/stereo)

1.210 Global View Area

The Global View Area is used to display:

- BLACK BARS:the portion of the timeline currently displayed in the Tracks Area
- WHITE BARS:the portion of the timeline currently ranged.

Clicking with the left mouse button somewhere inside this area causes the Track Area to display the timeline near that point (results vary depending on current zoom factor).

1.211 Tracks Area

The Tracks Area is used to display the timeline.

This area is subdivided into tiled rectangles: each rectangle represents a track. Filled boxes inside tracks represent objects.

1.212 Timeruler Area

The Timeruler Area is used to display the timecode values corresponding to the positions into the Tracks Area, and to move the cursor.

The notation depends on the current timecode selected:

- when in hh:mm:ff:ss notation ruler displays h:mm:ss
- when in bars:beats:clocks notation ruler displays bbbb:bb

WARNING: if you require more than 9999 bars the ruler switches to bbbbb:b for values starting from (including) 10000:0

To move the cursor click into this area with the left mouse button, then drag the cursor. Release the button when you're done.

1.213 Markers Area

The Markers Area is used to display the user defined markers.

1.214 Information Area

The Information Area is used to display timecode values in realtime during dragging operations. Examples of such operations are object dragging, track dragging, cursor dragging...

Both bars:beats:clock and hh:mm:ss:ff are displayed.

1.215 Hotkeys

The following hotkeys are available. Please remember that the MultiTrack Display window must be selected to use them.

Key	Action

SPACEBAR	Execute
ESC	Abort dragging operation.
RETURN	Add object at cursor position
SHIFT+RETURN	Add object at selected timecode
DEL	Delete selected object
SHIFT+DEL	Delete any object in selected track
CTRL+LMB	Clone. Pressing CTRL before dragging an object causes object cloning. Pressing CTRL before dragging a track causes track cloning.
LEFT_AMIGA+LMB	Force track dragging. Usually, to drag a track, you have to click on a zone not covered by objects (otherwise you'd drag the object, not the track). This hotkey allows you to click on any zone of the track.
LEFT_ALT	Horizontal lock. If this hotkey is pressed during dragging operations, only vertical movements are allowed. Free movements are possible as soon as the key is released.
CUR_UP	Zoom out
ALT+CUR_UP	Zoom out (maximum)

CUR_DOWN	Zoom in
ALT+CUR_DOWN	Zoom in (maximum)
CUR_LEFT	Zoom backward
SHIFT+CUR_LEFT	Zoom backward (faster)
CUR_RIGHT	Zoom forward
SHIFT+CUR_RIGHT	Zoom forward (faster)
ALT+F1...F10	Store current view into memory slot (1...10)
F1...F10	Recall view from memory slot (1...10)

1.216 Menus

The following menus are available:

Project

- 'Load'
- 'Save'
- 'Clear'
- 'Control'
- 'Edit List'
- 'Markers'
 - Track
- 'Load'
- 'Save'
- 'Clear'
- 'Lock'
- 'Lock All'
- 'Unlock'
- 'Unlock All'
- 'Invert Locks'
- 'Force Level'
- 'Force Pan'
 - Object
- 'Add At Cursor'

'Add At Timecode'
'Delete'
'Locate'
'Change'
'Snap'
 Range
'Clear'
'Cut'
'Copy'
'Paste'
'Insert'
'MultiInsert'
'Load Clipboard'
'Save Clipboard'
'Clear Clipboard'
 Show
'All'
'Out'
'In'
'Max In'
'Range'
'NearRange'
'<<'
'<'
'>'
'>>'
'Near Object'
'Cursor'
'Cursor Max In'

1.217 Load

Item: Load
Menu: Project
Window: MultiTrack Display

This menu-item is used to load a multitrack project from disk.

1.218 Save

Item: Save
Menu: Project
Window: MultiTrack Display

This menu-item is used to save a multitrack project on disk.
Saved data include all the tracks, mixer settings, views, ...
The audio data is not saved: a project contains only control data.

1.219 Clear

Item: Clear
Menu: Project
Window: MultiTrack Display

This menu-item is used to clear the multitrack project.

1.220 Control

Item: Control
Menu: Project
Window: MultiTrack Display

This menu-item is used to open the MultiTrack Control Window.

1.221 Edit List

Item: Edit List
Menu: Project
Window: MultiTrack Display

This menu-item is used to open the Absolute Edit List Display Window.

1.222 Markers

Item: Markers
Menu: Project
Window: MultiTrack Display

This menu-item is used to open the Markers Window.

1.223 Load

Item: Load
Menu: Track
Window: MultiTrack Display

This menu-item is used to load a track from disk.

1.224 Save

Item: Save
Menu: Track
Window: MultiTrack Display

This menu-item is used to save the selected track to disk.

1.225 Clear

Item: Clear
Menu: Track
Window: MultiTrack Display

This menu-item is used to clear the selected track. Any object is removed from that track.

1.226 Lock

Item: Lock
Menu: Track
Window: MultiTrack Display

This menu-item is used to lock the selected track. A locked track is write-protected: no editing operation can modify it in any way. You can unlock a track at any time.

1.227 Lock All

Item: Lock All
Menu: Track
Window: MultiTrack Display

This menu-item is used to lock all the tracks.
A locked track is write-protected: no editing operation can modify it in any way. You can unlock a track at any time.

1.228 Unlock

Item: Unlock
Menu: Track
Window: MultiTrack Display

This menu-item is used to unlock the selected track.
An unlocked track is write-enabled: editing operations can modify it freely.

1.229 Unlock All

Item: Unlock All
Menu: Track
Window: MultiTrack Display

This menu-item is used to unlock all the tracks.
An unlocked track is write-enabled: editing operations can modify it freely.

1.230 Invert Locks

Item: Invert Locks
Menu: Track
Window: MultiTrack Display

This menu-item is used to invert the locking status (write-protected / write-enabled) of each track.

1.231 Force Level

Item: Force Level
Menu: Track
Window: MultiTrack Display

This menu-item is used to set the level of each object (of the selected track) to a common value.

The common value is the current Level setting displayed into the Object Window.

1.232 Force Pan

Item: Force Pan
Menu: Track
Window: MultiTrack Display

This menu-item is used to set the pan of each object (of the selected track) to a common value.

The common value is the current Pan setting displayed into the Object Window.

1.233 Add At Cursor

Item: Add At Cursor
Menu: Object
Window: MultiTrack Display

This menu-item is used to add an object to the selected track. An object must be defined into the Object Window before performing this operation.

The object's timecode is set equal to the cursor timecode.

The object's timecode displayed into the Object Window is ignored.

1.234 Add At Timecode

Item: Add At Timecode
Menu: Object
Window: MultiTrack Display

This menu-item is used to add an object to the selected track. An object must be defined into the Object window before performing this operation.

The object's timecode is set equal to timecode displayed into the Object Window.

1.235 Delete

Item: Delete
Menu: Object
Window: MultiTrack Display

This menu-item is used to remove the selected object from the selected track.

1.236 Locate

Item: Locate
Menu: Object
Window: MultiTrack Display

This menu-item is used to update the Object Window with the selected object's attributes.

1.237 Change

Item: Change
Menu: Object
Window: MultiTrack Display

This menu-item is used to substitute the selected object with a new object as defined into the Object Window.

1.238 Snap

Item: Snap
Menu: Object
Window: MultiTrack Display

This menu-item is used to adjust the selected object's timecode depending on the current snap mode.

1.239 Clear

Item: Clear
Menu: Range
Window: MultiTrack Display

This menu-item is used to clear the ranged sections of unlocked tracks.

1.240 Cut

Item: Cut
Menu: Range
Window: MultiTrack Display

This menu-item is used to cut the ranged sections of unlocked tracks.

Ranged data is copied to the clipboard, then the ranged sections are removed from the timeline.

Objects placed at the right of the range end are shifted backward in time to fit the empty area caused by the cutting operation.

1.241 Copy

Item: Copy
Menu: Range
Window: MultiTrack Display

This menu-item is used to copy the ranged sections to the clipboard.

1.242 Paste

Item: Paste
Menu: Range
Window: MultiTrack Display

This menu-item is used to paste data (contained into the clipboard) onto unlocked tracks.
Data is pasted at the current cursor position. Underlying data gets overwritten.

1.243 Insert

Item: Insert
Menu: Range
Window: MultiTrack Display

This menu-item is used to insert data (contained into the clipboard) into unlocked tracks.
Data is inserted at the current cursor position. Underlying data isn't overwritten. Object positioned at the right of the cursor are shifted forward in time to make room for inserted data.

1.244 MultiInsert

Item: MultiInsert
Menu: Range
Window: MultiTrack Display

This menu-item is used to insert data (contained into the clipboard) into unlocked tracks.
You can select how many times the operation should be automatically repeated.
Data is inserted at the current cursor position. Underlying data isn't overwritten. Object positioned at the right of the cursor are shifted forward in time to make room for inserted data.

1.245 Load Clipboard

Item: Load Clipboard
Menu: Range
Window: MultiTrack Display

This menu-item is used to load a file containing data for the clipboard. The file must be created with "Save Clipboard".

1.246 Save Clipboard

Item: Save Clipboard
Menu: Range
Window: MultiTrack Display

This menu-item is used to save a file containing data for the clipboard. The file can be loaded later with "Load Clipboard".

1.247 Clear Clipboard

Item: Clear Clipboard
Menu: Range
Window: MultiTrack Display

This menu-item is used to clear the clipboard.

1.248 All

Item: All
Menu: Show
Window: MultiTrack Display

This menu-item is used to show the complete timeline.

1.249 Out

Item: Out
Menu: Show
Window: MultiTrack Display

This menu-item is used to show a greater portion of the timeline.

1.250 In

Item: In
Menu: Show
Window: MultiTrack Display

This menu-item is used to show a smaller portion of the timeline.

1.251 Max In

Item: MaxIn
Menu: Show
Window: MultiTrack Display

This menu-item is used to show the smallest portions of the timeline.

1.252 Range

Item: Range
Menu: Show
Window: MultiTrack Display

This menu-item is used to show the ranged portion of the timeline.

1.253 NearRange

Item: Near Range
Menu: Show
Window: MultiTrack Display

This menu-item is used to show a zone surrounding the ranged portion of the timeline.

1.254 <<

Item: <<
Menu: Show
Window: MultiTrack Display

This menu-item is used to show a portion of the timeline at the left of the currently displayed one.

1.255 <

Item: <
Menu: Show
Window: MultiTrack Display

This menu-item is used to show a portion of the timeline at the left of the currently displayed one.

1.256 >

Item: >
Menu: Show
Window: MultiTrack Display

This menu-item is used to show a portion of the timeline at the right of the currently displayed one.

1.257 >>

Item: >>
Menu: Show
Window: MultiTrack Display

This menu-item is used to show a portion of the timeline at the right of the currently displayed one.

1.258 Near Object

Item: Near Object
Menu: Show
Window: MultiTrack Display

This menu-item is used to show a portion of the timeline surrounding the selected object.

1.259 Cursor

Item: Cursor
Menu: Show
Window: MultiTrack Display

This menu-item is used to show a portion of the timeline centered at the cursor's timecode.

1.260 CursorMaxIn

Item: Cursor Max In
Menu: Show
Window: MultiTrack Display

This menu-item is used to show the smallest portion of the timeline centered at the cursor's timecode.

1.261 MultiTrack Mixer

Window: MultiTrack Mixer

Actions:

Setup a multitrack project
The MultiTrack Mixer Window is used to control the tracks ↔ levels.

This window contains the following gadgets:

'1'
'2'
'3'
'4'
'5'
'6'
'7'
'8'

1.262 1/2/3/4/5/6/7/8

Gadget: 1/2/3/4/5/6/7/8
Window: MultiTrack Mixer

These (actually three) gadgets are used to control the corresponding track level.

Starting from top:

O/M gadget:
- O: track is ON
- M: track is MUTED (no output)

If a track is ON it will sound during multitrack playback.
 If a track is MUTED it won't sound during multitrack playback.
 This scheme can be altered by the solo mode (see below).

/S gadget:

- : normal operation
- S: SOLO mode

When a track is in SOLO mode, only that track will sound during multitrack playback. You can solo multiple tracks holding the SHIFT key when clicking on /S gadgets.

Level gadget:

this gadget controls track level.

- '200': corresponds to +6dB variation (doubled level)
- '100': corresponds to 0dB variation (original level)
- '50': corresponds to -6dB variation (halved level).

Levels higher than '100' may cause distortion.

SOLO MODE EXAMPLES:

*: track produces output
 O: track is ON
 M: track is MUTED
 S: SOLO mode

A)	B)	C)	D)
* **	*	**	**
12345678	12345678	12345678	12345678
OMMOO MM	OMMOO MM	OMMOO MM	OMMOO MM
	S	SS	SS

A)
 Tracks 1,4,5 and 6 are ON. They produce output.

B)
 Track 4 is in solo mode. It produces output but tracks 1,5 and 6 don't.

C)
 Tracks 4 and 5 are in solo mode (shift-clicking). They produce output.

D)
 Tracks 2 and 3 are in solo mode (shift-clicking). They produce output even if their O/M gadgets are set to MUTED position.

1.263 MultiTrack Control

Window: MultiTrack Control

Actions:

Setup a multitrack project

The MultiTrack Control Window is used to control the ↔
MultiTrack

Edit List Manager.

This window contains the following gadgets:

'Timecode'

'Timeline Size'

'Snap'

'Tempo'

'Trks'

'Range/S'

'Range/E'

'Range/D'

'Lev'

'Output'

'Execute'

1.264 Timecode

Gadget: Timecode

Window: MultiTrack Control

This gadget is used to set the desired timecode notation for the MultiTrack Display timeruler.

1.265 Timeline Size

Gadget: Timeline Size
Window: MultiTrack Control

This gadget is used to set the desired duration for the multitrack timeline.

1.266 Snap

Gadget: Snap
Window: MultiTrack Control

This gadget is used to set the snapmode.

1.267 Tempo

Gadget: Tempo
Window: MultiTrack Control

This gadget (actually two gadgets) is used to set the tempo for the MultiTrack Display timeruler.

BPS: sets the Beats Per Minute value.

QPB: sets the Quarters Per Bar value.

1.268 Trks

Gadget: Trks
Window: MultiTrack Control

This gadget is used to set the number of tracks showed into the MultiTrack Display Window.

1.269 Range/S

Gadget: Range/S
Window: MultiTrack Control

This gadget is used to show the timecode value for the range start point.

Holding the SHIFT key while clicking on the '+' or '-' gadgets allows using a greater increment/decrement step value.

1.270 Range/E

Gadget: Range/E
Window: MultiTrack Control

This gadget is used to show the timecode value for the range end point.

Holding the SHIFT key while clicking on the '+' or '-' gadgets allows using a greater increment/decrement step value.

1.271 Range/D

Gadget: Range/D
Window: MultiTrack Control

This gadget is used to show the duration of the ranged area.

1.272 Lev

Gadget: Lev
Window: MultiTrack Control

This gadget is used to control the multitrack master level.

1.273 Output

Gadget: Output
Window: MultiTrack Control

This gadget is used to select the output mode.
'File' selects direct-to-disk mode.
'Analog' selects real-time mode.

1.274 Execute

Gadget: Execute
Window: MultiTrack Control

This gadget is used to start the mixing operation.

When the MultiTrack Display Window is selected, hitting the SPACEBAR key is equivalent to clicking on this gadget.

1.275 Markers

Window: Markers

Actions:

Setup a multitrack project

The Markers Window is used to control the user defined markers ↔
for
the MultiTrack Display Window.

This window contains the following gadgets:

'00'

'01'

'02'

'03'

'04'

'05'

'06'

'07'

'08'

'09'

'Bank'

'Store'

'Recall'

'Clear'

'Clear Bank'

'Clear All'

1.276 00/01/02/03/04/05/06/07/08/09

Gadget: 00/01/02/03/04/05/06/07/08/09

Window: Markers

These (actually two) gadgets are used to set the marker text label.

The string gadget contains the text itself. Examples of valid texts are:

"Check this", "Guitar solo", "Insert here", ...

WARNING: CONFIRM ENTERED TEXT HITTING THE RETURN KEY (THIS ACTION WILL ALSO AUTOSELECT THE CORRESPONDING MARKER)

The radio button gadget is used to select the current marker. Other gadgets are available to perform operations on the current marker.

1.277 Bank

Gadget: Bank
Window: Markers

This gadget is used to select the current marker bank. Additional banks allow to use more than ten markers.

1.278 Store

Gadget: Store
Window: Markers

This gadget is used to set the current marker timecode. When you click on this gadget the current cursor position (on the MultiTrack Display Window) becomes the current marker timecode. The MultiTrack Display Window is updated to display the current marker. If the marker already had a timecode, that timecode is replaced by the new one.

1.279 Recall

Gadget: Recall
Window: Markers

This gadget is used to recall the current marker. When you click on this gadget the MultiTrack Display Window is updated to be centered at the current marker timecode.

1.280 Clear

Gadget: Clear
Window: Markers

This gadget is used to clear the current marker.

1.281 Clear Bank

Gadget: Clear Bank
Window: Markers

This gadget is used to clear all the markers contained into the current bank.

1.282 Clear All

Gadget: Clear All
Window: Markers

This gadget is used to clear all the markers.

1.283 Absolute Edit List Display

Window: Absolute Edit List Display

Actions:

Setup a multitrack project

The Absolute Edit List Display Window is used to show a track ↔
edit
list in text format.

This window contains the following gadgets:

'Absolute Edit List'

1.284 Absolute Edit List

Gadget: Absolute Edit List
Window: Absolute Edit List Display

This gadget is used to display the edit list. Each item is an object.

The following informations are shown, for each item in the edit list:

- File : the file containing the audio data
- Lev : object level
- Pan : object pan
- Time In : object start point
- Time Out : object end point (no overlapping considered)
- Duration : object duration (no overlapping considered)

1.285 Object

Window: Object

Actions:

Setup a multitrack project

The Object Window is used to select items for edit lists.

This window contains the following gadgets:

'File/?'

'Place At'

'Step'

'Set Range'

'Level'

'Pan'

1.286 File/?

Gadget: File/?

Window: Object

This gadget is used to select a file containing a recording.

1.287 Place At

Gadget: Place At

Window: Object

This gadget is used to set the position (timecode) in the edit list for the current item.

Holding the SHIFT key while clicking on the '+' or '-' gadgets allows using a greater increment/decrement step value.

1.288 Step

Gadget: Step
Window: Object

This gadget is used to set the amount of numeric increment and decrement for the 'Place At' gadget.

1.289 Set Range

Gadget: Set Range
Window: Object

This gadget is used to recall the 'Locator' tool, in order to define a portion of the whole source recording as a range.

1.290 Level

Gadget: Level
Window: Object

This gadget is used to set object level:

'200': corresponds to +6dB variation (doubled level)
'100': corresponds to 0dB variation (original level)
'50' : corresponds to -6dB variation (halved level).

Levels higher than '100' may cause distortion.

1.291 Pan

Gadget: Pan
Window: Object

This gadget is used to set the object stereo pan:

'0' : corresponds to full left panning
'50' : corresponds to centered panning
'100': corresponds to full right panning.

Please note that the values:

'0' : Full Left
'12' : 3/4 Left
'25' : 1/2 Left
'50' : Center
'75' : 1/2 Right
'88' : 3/4 Right
'100': Full Right

are optimized for faster operations.

1.292 Relative Edit List Manager

Window: Relative Edit List Manager

Actions:

Build a Relative Edit List

The Relative Edit List Manager Window is used to control ↔
relative
time edit lists.

This window contains the following gadgets:

'Relative Edit List'

'Item/Append'

'Item/Insert'

'Item/Delete'

'Item/Change'

'Item/Up'

'Item/Down'

'Item/Locate'

'Item/Play'

'List/Clear'

'List/Load'

'List/Make'

'List/Save'

'List/Play'

'List/Duration'

'List/Size'

1.293 Relative Edit List

Gadget: Relative Edit List
Window: Relative Edit List Manager

This gadget is used to display the edit list. Each item is an audio fragment (ranged data) present somewhere on disk. The following informations are shown, for each item in the edit list:

- File : the file containing the ranged data
- Start : the position (timecode) of the start point of the range (measured from the start of the recording)
- End : the position (timecode) of the end point of the range (measured from the start of the recording)
- Duration : the duration of the range
- GlobalStart: the position (timecode) of the start point of the range (measured from the start of the edit list)
- Rp : the number of repetitions for this item.

1.294 Item/Append

Gadget: Item/Append
Window: Relative Edit List Manager

This gadget is used to add, at the end of the edit list, the currently selected recording range.

1.295 Item/Insert

Gadget: Item/Insert
Window: Relative Edit List Manager

This gadget is used to add, at the current position of the edit list, the currently selected recording range.

1.296 Item/Delete

Gadget: Item/Delete
Window: Relative Edit List Manager

This gadget is used to remove the item at the current position of the edit list.

1.297 Item/Change

Gadget: Item/Change
Window: Relative Edit List Manager

This gadget is used to remove the item at the current position of the edit list and substitute it with the currently selected recording range.

1.298 Item/Up

Gadget: Item/Up
Window: Relative Edit List Manager

This gadget is used to move the currently selected item one position up (in the edit list).

1.299 Item/Down

Gadget: Item/Down
Window: Relative Edit List Manager

This gadget is used to move the currently selected item one position down (in the edit list).

1.300 Item/Locate

Gadget: Item/Locate
Window: Relative Edit List Manager

This gadget is used to force the Locator tool to display the recording range corresponding to the currently selected item.

1.301 Item/Play

Gadget: Item/Play
Window: Relative Edit List Manager

This gadget is used to play the currently selected item.

1.302 List/Clear

Gadget: List/Clear
Window: Relative Edit List Manager

This gadget is used to remove all the items from the edit list.

1.303 List/Make

Gadget: List/Make
Window: Relative Edit List Manager

This gadget is used to build a recording from an edit list.

1.304 List/Load

Gadget: List/Load
Window: Relative Edit List Manager

This gadget is used to load an edit list from a file.

1.305 List/Save

Gadget: List/Save
Window: Relative Edit List Manager

This gadget is used to save an edit list to a file.

1.306 List/Play

Gadget: List/Play
Window: Relative Edit List Manager

This gadget is used to play an edit list.

1.307 List/Duration

Gadget: List/Duration
Window: Relative Edit List Manager

This gadget is used to display the total duration of the edit list.

1.308 List/Size

Gadget: List/Size
Window: Relative Edit List Manager

This gadget is used to display the size of the file containing the recording generated from the edit list.

1.309 Rel List Item

Window: Rel List Item

Actions:

Build a Relative Edit List

The Rel List Item Window is used to select items for edit ↔ lists.

This window contains the following gadgets:

'File'

'Repeat'

1.310 File/?

Gadget: File/?

Window: Rel List Item

This gadget is used to select a file for the edit list. Selecting a file recalls the Locator tool: you have to choose a range of the recording to insert it in the edit list.

1.311 Repeat

Gadget: Repeat

Window: Rel List Item

This gadget is used to the number of repetitions for the currently selected range. Set it to 1 if you don't want repetitions.

1.312 Triggers

Window: Triggers

Actions:

Trigger playback

The Triggers Window is used to select a method to trigger ↔ operations.

This window contains the following gadgets:

'Triggers'

'Execute'

1.313 Triggers

Gadget: Triggers
Window: Triggers

This gadget is used to select a method to trigger playback operations.

Available methods:

- Arexx : trigger via Arexx messages
- Keyboard : trigger via Amiga keyboard
- MIDI : trigger via MIDI messages.

1.314 Execute

Gadget: Execute
Window: Triggers

This gadget is used to put AudioLab16 in triggering mode (listening to trigger messages).

1.315 Programs

Window: Programs

The Programs Window is used to control the programs table.

This window contains the following gadgets:

'Programs'

'Current Program'

'Current Program/?'

'Current Program/Clear'

'List/Clear'

'List/Load'

'List/Save'

1.316 Programs

Gadget: Programs
Window: Programs

This gadget is used to display the programs table. Each program (slot) in the table can be associated with a different recording. You refer to a recording via its program number (this is similar to perform a program change on a MIDI instrument).

1.317 Current Program

Gadget: Current Program
Window: Programs

This gadget is used to select a program in the programs table.

1.318 Current Program/?

Gadget: Current Program/?
Window: Programs

This gadget is used to associate a recording to the current program. A file requester allows to choose the file containing the recording.

1.319 Current Program/Clear

Gadget: Current Program/Clear
Window: Programs

This gadget is used to free the slot corresponding to the current program in the programs table.

1.320 List/Clear

Gadget: List/Clear
Window: Programs

This gadget is used to free any slot in the programs table.

1.321 List/Load

Gadget: List/Load
Window: Programs

This gadget is used to load the programs table from a file.

1.322 List/Save

Gadget: List/Save
Window: Programs

This gadget is used to save the programs table to a file.

1.323 Keyboard

Window: Keyboard

Actions:

Trigger playback

The Keyboard Window is used to configure triggering via ↔
Amiga
keyboard.

This window contains the following gadgets:

'Function Keys'

'Get Programs'

1.324 Function Keys

Gadget: Function Keys
Window: Keyboard

These gadgets are used to associate a program number to each function key.

1.325 Get Programs

Gadget: Get Programs
Window: Keyboard

This gadget is used to automatically associate the programs in the program list to the Amiga function keys.

1.326 MIDI

Window: MIDI

Actions:

Trigger playback

The MIDI Window is used to configure triggering via MIDI ↔ messages.

This window contains the following gadgets:

'Serial Device'

'In Channel'

'Unit'

'In Mode'

1.327 Serial Device

Gadget: Serial Device

Window: MIDI

This gadget is used to select the serial device for MIDI interface access.

Example: serial.device

You can set a default serial device via tooltypes accessing AL16 icon from WorkBench.

Example:

```
MIDI_SERIAL_DEVICE=serial.device
```

1.328 In Channel

Gadget: In Channel

Window: MIDI

This gadget is used to select the MIDI channel that AudioLab16 uses to receive MIDI messages. This value is used only in 'Poly' mode ('In Mode' gadget).

1.329 Unit

Gadget: Unit

Window: MIDI

This gadget is used to select the serial unit for MIDI interface access.

You can set a default serial unit via tooltypes accessing AL16 icon from WorkBench.

Example:

```
MIDI_SERIAL_UNIT=2
```

1.330 In Mode

Gadget: In Mode
Window: MIDI

This gadget is used to select the MIDI receive mode.
Available modes are:

- Poly: receive on a single channel
- Omni: receive on any channel.

1.331 Design

Window: Design

The Design Window is used to select a filter design method.

This window contains the following gadgets:

'Method'

1.332 Method

Gadget: Method
Window: Design

This gadget is used to select a filter design method.

Available methods:

- Windowing: FIR generation via sinc windowing.

1.333 Windowing

Window: Windowing

Actions:

Generate a FIR filter

Write a FIR filter

The Windowing Window is used to control parameters for ↔
FIR
coefficients generation via sinc windowing.

This window contains the following gadgets:

'Taps'

'CutOff Rel. Freq.'

'Freq. Shift'

'Remark'

'Windows'

'Save'

'Execute'

1.334 Taps

Gadget: Taps
Window: Windowing

This gadget is used to set the number of taps (coefficients) of the FIR filter. Usually is preferable to set an odd number instead of an even one.

1.335 CutOff Rel Freq.

Gadget: CutOff Rel Freq.
Window: Windowing

This gadget is used to set the cutoff point for the FIR filter. Units are 1/1000 of the signal clock. Note that the maximum frequency, for a digital recording, isn't higher than half of the signal clock (500 units). For example, a cutoff point in the middle of signal theoretical band corresponds to 1/4 of the signal clock (250 units).

1.336 Freq. Shift

Gadget: Freq. Shift
Window: Windowing

This gadget is used to shift the FIR filter response in the frequency domain.

A '0' value gives you an unshifted low-pass FIR filter.

A '500' value gives you an hi-pass FIR filter.

Intermediated values are here for experimentation. Usually they don't allow linear phase response.

1.337 Remark

Gadget: Remark
Window: Windowing

This gadget is used to insert a textual remark to the FIR filter file. FIR filter files are saved in ASCII form: you are allowed to read and edit then later, with a normal text-editor.

1.338 Windows

Gadget: Windows
Window: Windowing

This gadget is used to select one of the available windowing methods.

Generating a FIR filter via sinc function gives an infinite length filter response, without practical use. Truncating it (multiplying the response by a rectangular window) causes very limited stopband attenuation.

Better performances can be obtained using windows with smoother edges than the rectangular window ones.

1.339 Save

Gadget: Save
Window: Windowing

This gadget is used to save the generated FIR coefficients to a file.

1.340 Execute

Gadget: Execute
Window: Windowing

This gadget is used to start FIR coefficients generation. FIR filter frequency and impulse responses are shown.

1.341 SigGen

Window: SigGen

The SigGen Window is used to select one of the available signal generators.

This window contains the following gadgets:

'Generators'

1.342 Generators

Gadget: Generators
Window: SigGen

This gadget is used to select one of the available signal generators.

1.343 Cyclic Generator

Window: Cyclic Generator

The Cyclic Generator Window is used to control parameters for synthesizing 16bit signals. This generator synthesizes a single signal cycle and replicates it to fit the user's desired signal duration. Compared to the "Tone Generator", this technique allows faster operations but suffers of higher granularity when selecting the frequency of the synthesized signal.

This window contains the following gadgets:

'Type'

'Clock'

'Clock/?'

'Dur.'

```
'Points'  
  
'Frequency'  
  
'Size'  
  
'Execute'
```

1.344 Type

```
Gadget:  Type  
Window:  Cyclic Generator
```

This gadget is used to select the waveform.

1.345 Clock

```
Gadget:  Clock  
Window:  Cyclic Generator
```

This gadget is used to display the signal clock of the destination recording.

1.346 Clock/?

```
Gadget:  Clock  
Window:  Cyclic Generator
```

This gadget is used to edit the signal clock of the destination recording.

1.347 Dur.

```
Gadget:  Dur.  
Window:  Cyclic Generator
```

This gadget is used to edit the duration of the destination recording.

1.348 Points

Gadget: Points
Window: Cyclic Generator

This gadget is used to edit the number of samplepoints reserved for a single cycle of the waveform. This value AND the value in the Clock gadget determine the frequency of the synthesized signal.

Note: when synthesizing noise use the highest value possible (for 'Points') to reduce signal periodicity.

1.349 Frequency

Gadget: Frequency
Window: Cyclic Generator

This gadget is used to display the frequency of the synthesized signal (where applicable).

1.350 Size

Gadget: Size
Window: Cyclic Generator

This gadget is used to display the size of the file containing the synthesized signal.

1.351 Execute

Gadget: Execute
Window: Cyclic Generator

This gadget is used to start signal generation.

1.352 Tone Generator

Window: Tone Generator

The Tone Generator Window is used to control parameters for synthesizing 16bit signals. This generator synthesizes a sine tone. Compared to the "Cyclic Generator", this technique causes slower operations but allows more accurate selection of the frequency of the synthesized signal.

This window contains the following gadgets:

'Clock'

```
'Clock/?'  
  
'Dur.'  
  
'Freq.'  
  
'Size'  
  
'Execute'
```

1.353 Clock

Gadget: Clock
Window: Tone Generator

This gadget is used to display the signal clock of the destination recording.

1.354 Clock/?

Gadget: Clock
Window: Tone Generator

This gadget is used to edit the signal clock of the destination recording.

1.355 Dur.

Gadget: Dur.
Window: Tone Generator

This gadget is used to edit the duration of the destination recording.

1.356 Freq.

Gadget: Freq.
Window: Tone Generator

This gadget is used to set the frequency of the synthesized signal.

1.357 Size

Gadget: Size
Window: Tone Generator

This gadget is used to display the size of the file containing the synthesized signal.

1.358 Execute

Gadget: Execute
Window: Tone Generator

This gadget is used to start signal generation.

1.359 Sweep Generator

Window: Sweep Generator

The Sweep Generator Window is used to control parameters for synthesizing 16bit sweeping signals. This generator synthesizes a sine tone sweeping between two user selected frequencies.

This window contains the following gadgets:

'Clock'
'Clock/?'
'Dur.'
'Freq. A'
'Freq. B'
'Size'
'Execute'

1.360 Clock

Gadget: Clock
Window: Sweep Generator

This gadget is used to display the signal clock of the destination recording.

1.361 Clock/?

Gadget: Clock
Window: Sweep Generator

This gadget is used to edit the signal clock of the destination recording.

1.362 Dur.

Gadget: Dur.
Window: Sweep Generator

This gadget is used to edit the duration of the destination recording.

1.363 Freq. A

Gadget: Freq.
Window: Sweep Generator

This gadget is used to set the starting frequency. Signal will smoothly sweep from "Freq. A" to "Freq. B".

1.364 Freq. B

Gadget: Freq.
Window: Sweep Generator

This gadget is used to set the ending frequency. Signal will smoothly sweep from "Freq. A" to "Freq. B".

1.365 Size

Gadget: Size
Window: Sweep Generator

This gadget is used to display the size of the file containing the synthesized signal.

1.366 Execute

Gadget: Execute
Window: Sweep Generator

This gadget is used to start signal generation.

1.367 Tools

Window: Tools

The Tools Window is used to select one of the available auxiliary tools.

This window contains the following gadgets:

'Tools'

1.368 Tools

Gadget: Tools

Window: Tools

This gadget is used to select one of the available auxiliary tools.

1.369 (De)Interleaver

Window: (De)Interleaver

The (De)Interleaver Window is used to control the mono->stereo (interleaving) and stereo->mono (deinterleaving) conversions.

This window contains the following gadgets:

'Operation'

1.370 Operation

Gadget: Operation

Window: (De)Interleaver

This gadget is used to select between 'interleaving' and 'deinterleaving' operations.

- 'L+R->LRLR...': requires two single-channel files and produces one stereo (interleaved) file. The stereo file inherits the signal clock from the LEFT input file. The length of the shortest input file is used for both LEFT and RIGHT channel.

- 'L+R<-LRLR...': requires one stereo (interleaved) file and

produces two single-channel files.

Intentionally, the operator doesn't check the actual number of channels for the input file(s). This allows performing tricky operations on unknown/unsupported formats, once you have converted them to a supported 16bit file using the I/O Mapper.

1.371 Execute

Gadget: Execute
Window: (De)Interleaver

This gadget is used to start the '(de)interleaving' operation. After clicking this gadget a sequence of file-requesters allow you to select the input/output files.

1.372 MiniMixer

Window: MiniMixer

The MiniMixer Window is used to control the MiniMixer. Unlike the MultiTrack Manager, the MiniMixer requires a very minimal amount of RAM. On the other hand, each MiniMixer's track can contain only one recording. Pan or timecode parameters aren't available.

This window contains the following gadgets:

'Tracks/?'
'Tracks/File'
'Tracks/Clear'
'Tracks/Play'
'Tracks/Level'
'Tracks/End'
'Tracks/Mix'
'Destination/?'
'Destination/Play'
'Output'
'Execute'

1.373 Tracks/?

Gadget: Tracks/?
Window: MiniMixer

This gadget is used to associate a file, containing a recording, with this track.

1.374 Tracks/File

Gadget: Tracks/File
Window: MiniMixer

This gadget is used to display the name of the file, containing a recording, associated with this track.

1.375 Tracks/Clear

Gadget: Tracks/Clear
Window: MiniMixer

This gadget is used to remove the file, containing a recording, associated with this track.

1.376 Tracks/Play

Gadget: Tracks/Play
Window: MiniMixer

This gadget is used to play the file, containing a recording, associated with this track.

1.377 Tracks/Level

Gadget: Tracks/Level
Window: MiniMixer

This gadget is used to set the output level of this track. A '0' level mutes this track. Levels are relative to other track's levels, not absolute.

Example:

setting track-1 level to '5' and track-2 level to '10' is the same as setting track-1 level to '25' and track-2 level to '50'.

1.378 Tracks/End

Gadget: Tracks/End
Window: MiniMixer

This gadget is used to set a track end point as the global mixing end point (mixed recording stops at the end of the selected track).

1.379 Tracks/Mix

Gadget: Tracks/Mix
Window: MiniMixer

This gadget is used to include this track in the global mixing. If the gadget is checked this track is sent to the mixer. If the gadget is not checked this track is muted.

1.380 Destination?

Gadget: Destination
Window: MiniMixer

This gadget is used to select a file for the mixed output.

1.381 Destination/Play

Gadget: Destination/Play
Window: MiniMixer

This gadget is used to play the file containing the output of the last mixing.

1.382 Output

Gadget: Output
Window: MiniMixer

This gadget is used to select the output mode. 'File' selects direct-to-disk mode. 'Analog' selects real-time mode.

1.383 Execute

Gadget: Execute
Window: MiniMixer

This gadget is used to start the mixing operation.

1.384 File Formats

File Formats.

Normally, AudioLab16 requires one of the following 16bit file formats: AIFF, MAUD, MAESTRO. You can use the I/O Mapper environment to import/export from/to other formats. Using the programmable raw mode you can also import from unknown formats.

Stereo 16bit formats are supported.

Interleaved stereo files (left and right channels into the same file) can be used for storage and playback. Deinterleaved stereo files (left and right channels into two different files) must be used for editing/processing.

The following formats can be used into the I/O Mapper environment:

Format	Sample point structure	Channels
AIFF	PCM16 Lin Signed MSBLSB	1/2 interleaved
MAUD	PCM16 Lin Signed MSBLSB	1/2 interleaved
MAESTRO	PCM16 Lin Signed MSBLSB	1/2 interleaved
WAVE	PCM16 Lin Signed LSBMSB	1/2 interleaved
SUN	PCM16 Lin Signed MSBLSB	1/2 interleaved
1) STUDIO16_3	PCM16 Lin Signed MSBLSB	1 (2 n/a)
MAUD	PCM8 U-Law BYTE	1
SUN	PCM8 U-Law BYTE	1
AIFF	PCM8 Lin Signed BYTE	1
MAUD	PCM8 Lin Unsigned BYTE	1
MAESTRO	PCM8 Lin Unsigned BYTE	1
WAVE	PCM8 Lin Unsigned BYTE	1
VOC	PCM8 Lin Unsigned BYTE	1
8SVX	PCM8 Lin Signed BYTE	1
8SVX	DPCM Fibonacci NIBBLE	1
RAW	PCM16 Lin Signed MSBLSB	-
RAW	PCM16 Lin Unsigned MSBLSB	-
RAW	PCM16 Lin Signed LSBMSB	-
RAW	PCM16 Lin Unsigned LSBMSB	-
RAW	PCM8 U-Law BYTE	-
RAW	PCM8 Lin Signed BYTE	-
RAW	PCM8 Lin Unsigned BYTE	-

NOTES:

1) read-only, in this environment (see below)

The following formats can be used into the Triggers enviroment:

Format	Sample point structure	Channels
AIFF	PCM16 Lin Signed MSBLSB	1/2 interleaved
MAUD	PCM16 Lin Signed MSBLSB	1/2 interleaved
MAESTRO	PCM16 Lin Signed MSBLSB	1/2 interleaved

The following formats can be used into the Signal Processor enviroment:

Format	Sample point structure	Channels
AIFF	PCM16 Lin Signed MSBLSB	1
MAUD	PCM16 Lin Signed MSBLSB	1
MAESTRO	PCM16 Lin Signed MSBLSB	1
1)STUDIO16_3	PCM16 Lin Signed MSBLSB	1

NOTES:

1) When a Studiolo6_3 file is detected on input, output is forced to Studiolo6_3 format. This way the attributes carried by this file type (timecode, gain, pan,...) can be preserved on output.

The following formats can be used into the Edit List Managers enviroment (MultiTrack Manager):

Format	Sample point structure	Channels
AIFF	PCM16 Lin Signed MSBLSB	1/2 deinterleaved
MAUD	PCM16 Lin Signed MSBLSB	1/2 deinterleaved
MAESTRO	PCM16 Lin Signed MSBLSB	1/2 deinterleaved

The following formats can be used into the Edit List Managers enviroment (Relative Manager):

Format	Sample point structure	Channels
--------	------------------------	----------

AIFF	PCM16 Lin Signed	MSBLSB	1
MAUD	PCM16 Lin Signed	MSBLSB	1
MAESTRO	PCM16 Lin Signed	MSBLSB	1

1.385 How To...

How to...

- Setup a multitrack project
- Play a formatted file (AIFF,WAV,...)
- Play a raw or unknown file
- Record digital tracks from a CDAudio
- Convert a file format
- Use the DSP
- Build a Relative Edit List
- Generate a FIR filter
- Write a FIR filter
- Trigger playback
- Record from Parallel

1.386 Setup a multitrack project

How to setup a multitrack project.

In the 'Control' window, 'Environment' gadget, select the Edit List Managers environment.

In the 'ELM' window, 'Edit Mode' gadget, select 'MultiTrack'.

How to:

- Toggle objects/range editing
- Drag the cursor
- Add an object
- Select an object

Edit an object

Drag an object

Snap an object

Time-slip an object

Move an object to another track

Clone an object

Delete an object

Select a track

Drag a track

Time-slip a track

Swap two tracks

 Store markers

Recall markers

Set the multitrack clock

Add stereo recordings

1.387 Toggle objects/range editing

How to toggle objects/range editing.

Select the 'MultiTrack Display' window.

Toggle objects/range editing clicking on the icon at the bottom left of Icon Area.

When objects editing is active:

- objects in the Tracks Area can be dragged with the mouse
- playback is performed on the complete timeline.

When range editing is active:

- ranges can be selected in the Tracks Area with the mouse
- playback is performed on the ranged portion of the timeline.

1.388 How to drag the cursor

How to drag the cursor.

Select the 'MultiTrack Display' window.

Click on the Timeruler Area and hold the left mouse button pressed

while moving the mouse.

The cursor is shown into the Tracks Area; look at the Information Area to read the current timecode values.

1.389 How to add an object

How to add an object.

In the 'Object' window, click on 'File/?' gadget, to select a recording. Click on the 'Set Range' gadget if you want to use only a fragment instead of the whole recording.

Use the 'Level' gadget to set the object's volume, use the 'Pan' gadget to set the object's stereo position.

Now you have to choose the object's start time.

- Method1:

Use the 'Place At' gadget to set the start time.

Select the 'MultiTrack Display' window.

Hit SHIFT+RETURN to add the object.

- Method2:

Select the 'MultiTrack Display' window.

Click on the Timeruler Area and drag the cursor to the desired start time.

Hit RETURN to add the object.

1.390 How to select an object

How to select an object.

Select the 'MultiTrack Display' window.

Click onto an object in the Tracks Area.

The selected object turns to a different color.

1.391 How to edit an object

How to edit an object.

Select the 'MultiTrack Display' window.

Select an object clicking on it.

Now you have to move the object's attributes to the 'Object' window to edit them. Do it by double-clicking onto the object or by selecting 'Locate' from the 'Object' menu (the 'Object' window is updated to display the selected object's attributes).

Perform any desired change then select the 'MultiTrack Display' window. Select 'Change' from the 'Object' menu to apply the changes to the original object.

1.392 How to drag an object

How to drag an object.

Select the 'MultiTrack Display' window.

Click onto an object and, while holding the left mouse button pressed, move the mouse.

1.393 How to snap an object

How to snap an object.

Select the 'MultiTrack Display' window.

Select the 'Control' item into the 'Project' menu (the 'MultiTrack Control' window opens).

Use the Tempo gadgets to set the desired BPM Beats Per Minute value.

Use the Tempo gadgets to set the desired QPB Quarters Per Bar value.

Use the 'Snap' gadget to select:

- None : no snapping
- To Beat: autosnap objects to the nearest beat
- To Bar : autosnap objects to the nearest bar start.

Setting the 'Timecode' gadget to Bars:Beats:Clocks is recommended but not mandatory.

When active, snapping is performed on:

- any new object added at cursor position (RETURN hotkey)
- any dragged object.

Snapping doesn't affect:

- any new object added at a timecoded position (SHIFT+RETURN hotkey)
- any object already present onto the timeline.

1.394 How to time-slip an object

How to time-slip an object.

Select the 'MultiTrack Display' window.

Drag an object on the horizontal axis. While dragging, look at the Information Area displaying the current timecodes.

1.395 How to move an object to another track

How to move an object to another track.

Select the 'MultiTrack Display' window.

Hold the LEFT_ALT key (this avoids any unwanted horizontal

slipping).

Drag the object on the vertical axis until it reaches the desired track.

1.396 How to clone an object

How to clone an object.

Select the 'MultiTrack Display' window.

While holding the 'Ctrl' key pressed, select an object and drag it.

1.397 How to delete an object

How to delete an object.

Select the 'MultiTrack Display' window.

Select an object.

Press the DEL key.

1.398 How to select a track

How to select a track.

Select the 'MultiTrack Display' window.

Click onto a track in the Tracks Area or click onto a track number into the Icons Area.

1.399 How to drag a track

How to drag a track.

Select the 'MultiTrack Display' window.

Click onto a track's zone not covered by objects and, while holding the left mouse button pressed, move the mouse.

Please note that if you click onto a track's zone covered by an object, you'll drag the object, not the track.

To avoid this you can 'force' track dragging by holding the LEFT_AMIGA key before clicking onto a track.

1.400 How to time-slip a track

How to time-slip a track.

Select the 'MultiTrack Display' window.

Drag a track on the horizontal axis. While dragging, look at the Information Area displaying the current timecodes variations (positive/negative).

1.401 How to swap tracks

How to swap tracks.

Let's suppose you want to swap track A and track B.

Select the 'MultiTrack Display' window.

Drag track A on the vertical axis until it overlaps track B.

Release the left mouse button.

1.402 How to clone a track

How to clone a track.

Select the 'MultiTrack Display' window.

While holding the 'Ctrl' key pressed, select a track and drag it on the vertical axis.

Release the cloned track onto an empty or unwanted track.

1.403 How to delete a track

How to delete an object.

Select the 'MultiTrack Display' window.

Select a track.

While holding the SHIFT key, press the DEL key.

1.404 How to add markers

How to use markers.

Select the 'MultiTrack Display' window.

Drag the cursor to the position (timecode) where you want to attach a marker,

Select the 'Markers' item into the 'Project' menu (the 'Markers' window opens).

Select the 'Markers' window.

Select one of the markers using the radio button gadget.

Type some text into the marker string gadget.

Click on the 'Store' button (the marker appears into the Markers Area of the 'MultiTrack Display' window).

1.405 How to recall markers

How to recall markers.

Select the 'MultiTrack Display' window.

Select the 'Markers' item into the 'Project' menu (the 'Markers' window opens).

Select the 'Markers' window.

Select one of the markers using the radio button gadget.

Click on the 'Recall' button (the Tracks Area of the 'MultiTrack Display' window gets updated to show a zone of the timeline around the selected marker position: results vary depending on the current zoom factor).

1.406 How to set the multitrack clock

How to set the multitrack clock.

The multitrack signal clock is set automatically equal to the clock of the first object, track or project loaded into the timeline. This signal clock is valid until you clear the current project.

Objects of a multitrack project must share the same signal clock. To correctly use an object with a different signal clock firstly clear the current project, then add the new object.

1.407 How to add stereo recordings.

How to add stereo recordings.

To add a stereo recording to the timeline you have to create two objects: one for the left channel and one for the right channel.

If the recording is interleaved (left and right channels into the same file) you have to deinterleave it (create one file for each channel) using the (De)Interleaver tool ('Tools' environment).

Create an object with the left channel file and set the pan all the way left.

Select a track and a timecode, then add the object.

Create an object with the right channel file and set the pan all the way right.

Select another track but keep the same timecode, then add the object.

1.408 Play a formatted file

How to play a formatted file.

In the 'Control' window, 'Environment' gadget, select the I/O Mapper environment.

Now, in the 'I/O Mappings' window, 'Mappings' gadget, select 'File:Analog'. Be sure the 'Analyze File Type' gadget is checked. In the 'File (In)' window, click on the 'Name/?' gadget to open the file requester. Now choose the file you want to play. If the file is recognized the 'Format', 'Data' and 'Clock' gadgets ('File (In)' window) show the file parameters.

In the 'Analog (Out)' window the 'Clock' gadget is updated to match the input file clock (when a perfect match is not possible, the analog driver finds the best value according to hardware limitations).

In the 'Analog (Out)' window check the 'Loop' gadget if you want endless repeat during playback.

In the 'I/O Mappings' window click on the 'Execute' gadget to start playback.

1.409 Play a raw file

How to play a raw file.

In the 'Control' window, 'Environment' gadget, select the I/O Mapper environment.

Now, in the 'I/O Mappings' window, 'Mappings' gadget, select 'File:Analog'. Be sure the 'Analyze File Type' gadget is not checked.

In the 'File (In)' window, click on the 'Name/?' gadget to open the file requester. Now choose the file you want to play.

In the 'File (In)' window, choose a value for the 'Data' gadget.

In the 'Analog (Out)' window check the 'Loop' gadget if you want endless repeat during playback.

In the 'I/O Mappings' window click on the 'Execute' gadget to start playback. If the file is not correctly played (noise) choose a new value for the 'Data' gadget and try again.

1.410 Record digital tracks from a CDAudio

How to record digital tracks from a CDAudio.

In the 'Control' window, 'Environment' gadget, select the I/O Mapper environment.

Now, in the 'I/O Mappings' window, 'Mappings' gadget, select 'CDAudio:File'.

In the 'CDAudio (In)' window, check if the 'SCSI Device' gadget and the 'Unit/ID' gadget settings reflect your CD-ROM drive setup. You can set default values for these gadgets using the CDDA SCSI_DEVICE and CDDA SCSI_UNIT tooltypes from Workbench.

Now click on 'Door/Open' gadget (or use the button on drive front panel), insert an audio CD, click on 'Door/Close' gadget (or use

the button on drive front panel). Read the audio CD contents using the 'TOC/Read' gadget. If the CD is a valid audio CD the 'CDDA TOC' window opens.

In the 'CDDA TOC' window the 'CDDA Table Of Contents' gadget shows, for each audio track, the following information:

- the track number
- the track duration
- the number of the first sector (of the track)
- the number of the last sector (of the track)
- the track start time
- the track end time.

Select the track you want to record clicking on it (the 'Range Start' gadget and 'Range End' gadget are immediately updated). Play the range using the 'Play/Range' gadget (you are using the CD-ROM drive output, not the Amiga output. Be sure the drive audio output is connected correctly). Stop playback using the 'Play/Stop' gadget. You can change the range start/end points using the 'Range Start', 'Range End' gadgets. While the CD is playing you can set the start/end points in realtime, clicking on the 'Range Start/Get', 'Range End/Get' gadgets. Use the 'Channel' gadget to choose which audio channel is recorded. Use the 'Clock' gadget to choose the clock rate for recording.

Now in the 'File (Out)' window click on the 'Name/?' gadget to open the file requester and enter a file name. In the 'Format' gadget select a file format. The 'Sample Point Data' gadget is updated automatically (note that most file formats support more than one data format... you can change the data format as long as the new value is legal for that file format). Use the 'Clock' gadget to set the clock value that is written in the file header (this doesn't affect the recording clock... use the 'Clock' gadget in the 'CDAudio (In)' window to affect the recording clock).

In the 'I/O Mapping' window click on the 'Execute' gadget to start recording.

1.411 Convert a file format

How to convert a file format.

In the 'Control' window, 'Environment' gadget, select the I/O Mapper environment.

Now, in the 'I/O Mappings' window, 'Mappings' gadget, select 'File:File'.

In the 'File (In)' window, click on the 'Name/?' gadget to open the file requester. Now choose the file you want to convert. If the file is recognized the 'Format', 'Data' and 'Clock' gadgets ('File (In)' window) show the file parameters (this happens only if the 'Analyze File Type' gadget is checked).

Now in the 'File (Out)' window click on the 'Name/?' gadget to open the file requester and enter a file name. In the 'Format' gadget select a file format. The 'Sample Point Data' gadget is updated automatically (note that most file formats support more than one data format... you can change the data format as long as

the new value is legal for that file format). Use the 'Clock' gadget to set the clock value that is written in the file header (this doesn't affect the recording clock). In the 'I/O Mapping' window click on the 'Execute' gadget to start mapping.

1.412 Use the DSP

How to use the DSP.

In the 'Control' window, 'Environment' gadget, select the Signal Processor environment.

In the 'DSP' window click on the 'Source/?' gadget to open the file requester. Now choose the file you want to process. If you want to process only a section of the recording click on the 'Source/Range/Set' gadget to open the Locator tool and select a range. In the 'Operate On' gadget specify if you want to process the whole recording or only a range.

Now in the 'Operators' gadget select a DSP operator. If the operator opens a window use it to set its user configurable parameters.

To operate the effect in real-time (most allow it) find the 'Output' gadget and select 'Analog'. Press the 'Execute' gadget to start processing.

To send the processed signal to a file set the 'Output' gadget to 'File' then click the 'Destination/?' gadget to select a file name. Press the 'Execute' gadget to start processing.

1.413 Build a Relative Edit List.

How to build a Relative Edit List.

The Relative Edit List is used to join different audio fragments positioning them in sequence.

In the 'Control' window, 'Environment' gadget, select the Edit List Managers environment.

In the 'ELM' window, 'Edit Mode' gadget, select 'Relative'.

In the 'Rel List Item' window click on the 'File/?' gadget to open the file requester. Now choose a recording. The Locator tool should open: select an interesting range.

Now, in the 'Rel List Item' use the 'Repeat' gadget to set the number of repetitions for your range.

Add it to the edit list clicking on the 'Append' gadget, in the 'Relative Edit List Manager' window.

Repeat the procedure with another range from the same or another recording. Note that if you use different recordings they must share the same signal clock.

See the 'Relative Edit List Manager' window documentation for other editing options.

At any time you can click on the 'Play' gadget to listen the list. Then click on the 'Make' gadget to generate a real file.

1.414 Generate a FIR filter

How to generate a FIR filter.

FIR filter coefficients tables for AL16 DSP are contained in ASCII files. AL16 has the capability to generate these files under the user control. We'll try to build a simple low-pass filter with that tool.

In the 'Control' window, 'Environment' gadget, select the Filter Design environment.

In the 'Windowing' window, set the 'Freq. Shift' gadget to '0' to choose the low-pass filter option. Set the 'CutOff Rel. Freq.' gadget to 125 to position the cutoff frequency at 1/8 of signal clock. We want the filter removing (attenuating) frequencies above 1/8 of the signal clock, in this example.

(Note that we work with relative frequencies. If you want the cutoff point positioned at an absolute frequency you have to build a different filter for any different signal clock you use. For example, if you need a low-pass filter with cutoff at 8KHz you'll have to build one for 48KHz clock, another for 44.1 clock, another for 28.6KHz, ...)

Now set the 'Taps' gadget (filter length) to '127'. Press the 'Execute' gadget. The impulse and frequency response windows open and display their graphs. In the 'Frequency Response' window you should see (from left to right):

- a zone where the filter allows the signal to pass with little attenuation (passband).
- a zone where the filter starts attenuating the signal (transition band), around the cutoff point
- a zone where the filter strongly attenuates the signal (stopband).

Try moving the cutoff point with the 'CutOff Rel. Freq.' gadget (press the 'Execute' gadget to update the graphs).

Select the various types of windows in the 'Windows' gadget and press 'Execute' each time to check how they affect filter response.

Try reducing the number of taps. A shorter filter allows faster DSP processing at the cost of frequency response regularity. Also note how odd numbers and even numbers affect filter responses differently (usually odd ones give better results).

Set the 'Taps' gadget to '11', 'Windows' gadget to 'Rectangle'. Put a text comment such as "Low-Pass 11-Taps Rectangle" then click on 'Save' gadget.

Now you can use the saved file with the FIR Filter DSP operator. You can also load the saved file in your favorite text-editor and modify it.

1.415 Write a FIR filter

How to write a FIR filter.

FIR filter coefficients tables for AL16 DSP are contained in ASCII files. AL16 has the capability to generate these files under the user control. We'll try to build a simple filter with a text-editor instead of using the AL16 tool.

In the 'Control' window, 'Environment' gadget, select the Signal Processor environment.

In the 'DSP' window, 'Operators' gadget select 'FIR Filter'.

Now load your favorite text editor and type the following lines:

```
; This is my new filter
0.1
0.2
0.3
0.2
0.1
```

The first line is a comment (';' must be present in the first column). Then we have a filter coefficient for each line. Each coefficient is a floating-point number in the [-1.0,1.0] interval. This example filter has five coefficients.

Save the filter to a file (RAM:MyFilter) but don't quit the editor.

Back to AudioLab16.

In the 'FIR Filter' window click on 'Coefficients File/?' gadget and select RAM:MyFilter. The 'Taps' gadget should display '5'. Set 'Show Response/Impulse' and 'Show Response/Frequency' gadgets on checked position (response graphs for RAM:MyFilter should be displayed).

Now, in the text-editor, you can experiment modifying the coefficients values (keep them in the [-1.0,1.0] range). AudioLab16 monitors the coefficients file and, every time you hit the save key in your text-editor, response graphs are updated. Note that the name of the file you save must match the name present in the 'Coefficients File' gadget, 'FIR Filter' window.

Instead of writing a coefficient file from scratch you may load a filter generated by AudioLab16 and modify it.

1.416 How to trigger playback

How to trigger playback.

AudioLab16 allows to select and play recordings (16bit files) from a user compiled list. Selection and play/stop commands can be sent via Arexx, MIDI or keyboard.

When playing material direct-from-disk a certain amount of delay, between the playback request and the effective playback start, is introduced. This delay is caused by the disk swapper prefetching the first data page from disk to ram buffers.

To allow triggering with zero delay AudioLab16 require the user to follow this scheme:

- send a program selection command (the disk swapper prefetches data)
- send a play command (playback starts with zero delay)
- send a stop command (optional).

AudioLab16 will not execute a play command if it isn't preceded by a selection command. Sending a selection command while previous program is still playing is not possible: you must send a stop command first, then the selection command.

In the 'Control' window, 'Environment' gadget, select the Triggers environment.

In the 'Programs' window, set the 'Current Program' gadget to '0' the click on 'Current Program/?' gadget to select a recording. Now set the 'Current Program' gadget to '1' and select another recording. Continue this procedure if you need to.

AREXX Triggering.

In the 'Triggers' window, 'Triggers' gadget select 'AREXX'. In the 'Triggers' window press 'Execute' to enter triggering mode.

Arexx port name is "AL16TRIGGER.1".

To select a program send a PRG_CHNG N command where N is the program number.

Example:

```
/* Select program number 1 */  
ADDRESS AL16TRIGGER.1 PRG_CHNG 1
```

To start playback send a NOTE_ON command.

Example:

```
/* Start selected program */  
ADDRESS AL16TRIGGER.1 NOTE_ON
```

To stop playback send a NOTE_OFF command.

Example:

```
/* Stop selected program */  
ADDRESS AL16TRIGGER.1 NOTE_OFF
```

MIDI Triggering.

In the 'Triggers' window, 'Triggers' gadget select 'MIDI'. In the 'MIDI' window, 'In Mode' select a receive mode. If you choose 'Poly' you should also assign a MIDI channel to AudioLab16 via the 'In Channel' gadget. In the 'Triggers' window press 'Execute' to enter triggering mode.

To select a program send a MIDI PROGRAM CHANGE message, specifying the program number.

To start playback send a MIDI NOTE ON message.

To stop playback send a MIDI NOTE OFF message.

Keyboard Triggering

In the 'Triggers' window, 'Triggers' gadget select 'Keyboard'. In the 'Keyboard' window click on 'Get Programs' to automatically assign program numbers to function keys (you can do it manually using the 'Function Keys' slider gadgets). In the 'Triggers' window press 'Execute' to enter triggering mode.

NOTE: the 'Keyboard' window must be selected (AL16 automatically selects it when you press 'Execute') to send keyboard triggering commands.

To select a program hit the associated function key.

To play a program hit the space bar

To stop a program hit the 'Esc' key.

1.417 How to record from Parallel

How to record from Parallel.

The most important step is setting the correct external source level due to the very limited dynamic range of 8bit devices. AL16 provides a color-coded tool to help you obtaining the best results.

Setting the external source level.

In the 'Control' window, 'Environment' gadget, select the I/O Mapper environment.

Now, in the 'I/O Mappings' window, 'Mappings' gadget, select 'Parallel:VU'.

In the 'Parallel (In)' window, 'Clock' gadget, select the desired sampling clock.

In the 'Parallel:VU' window, 'Clock' gadget, set the clock ratio depending on you CPU speed.

Press the 'Execute' gadget.

Now look the 'VU (Out)' window. Increase the external source level until the scrolling graph turns black (black means that the level is too high and causes distortion). Decrease the source level until the scrolling graph turns white (white means that the level is below the distortion threshold but, using only 8 bits, it will

suffer audible quantization noise). Finding a good setting is a matter of raising the graph white as much as possible, avoiding to turn it black. Intermediate color peaks are acceptable: they mean the level just touched the distortion zone, exiting immediately.

Click the left mouse button to quit the operation.

Recording.

In the 'I/O Mappings' window, 'Mappings' gadget, select 'Parallel:File'.

Now in the 'File (Out)' window click on the 'Name/?' gadget to open the file requester and enter a file name. In the 'Format' gadget select a file format.

In the 'Parallel:File' window select the recording mode. You should use 'Direct To Disk' if your system is fast enough for current Parallel clock, otherwise use 'Buffer In Ram'.

Click on the 'Execute' button to start the operation. When using the 'Direct To Disk' mode a window shows 'elapsed time' and 'remaining time' for current output medium.

Click the left mouse button to quit the operation.

1.418 Data Exchange

Data Exchange.

Using AudioLab16 you should be able to exchange 16bit formatted audio files with the following hard disk recording software:

Program		Platform	Format
- Audioshop	(Opcode Systems)	MAC	AIFF
- Cubase Audio	(Steinberg)	MAC	AIFF
- Deck II	(OSC)	MAC	AIFF
- Digital Performer	(Mark Of The Unicorn)	MAC	AIFF
- Digitrax	(Alaska Software)	MAC	AIFF
- Logic Audio	(Emagic)	MAC	AIFF
- Pro Tools	(Digidesign)	MAC	AIFF
- Session 8 Mac	(Digidesign)	MAC	AIFF
- SoftSplice	(Digital Expressions)	MAC	AIFF
- Sonic System	(Sonic Solutions)	MAC	AIFF
- Sound Designer II	(Digidesign)	MAC	AIFF/WAV
- SoundEdit16	(Macromedia)	MAC	AIFF/WAV
- Studio Vision	(Opcode Systems)	MAC	AIFF
- Cubase Audio PC	(Steinberg)	PC	AIFF
- FastEddie	(Digital Audio Labs)	PC	WAV
- MicroSound	(Micro Technology)	PC	WAV
- SADiE Disk Editor	(Studio Audio and Video)	PC	WAV
- SAW	(I.Q.S.)	PC	WAV
- Session 8 PC	(Digidesign)	PC	WAV
- SSHDR1 HDRecorder	(Soundscape Digital T.)	PC	WAV
- Techno Lab	(Digital Manager)	PC	WAV/raw16
- The EdDitor Plus	(Digital Audio Labs)	PC	WAV
- Quad	(Turtle Beach)	PC	WAV

- Wave for Windows (Turtle Beach) PC WAV

This list is:

- not complete
- unofficial.

1.419 CDRoms

CDROMs.

These fine drives should allow 16bit recording with AudioLab16:

- Plextor Quad-Speed PX-45CS
- Pioneer DR-U124X
- Sony CDU-561
- Sony CDU-8002
- Sony CDU-8003A
- Sony CDU55S
- Sony CDU76S
- Matshushita CR-8004

Please note that some drives are available under different labels (i.e. Apple uses Sony and Matshushita drives and they work fine).

This list is:

- not complete
- unofficial.

1.420 Trouble Shooting

Trouble Shooting.

P1: The program doesn't start.

S1: If you don't see any message on screen (such as 'Low Memory.')

be sure to have a complete installation of the required OS version.

Try also removing from s:user-startup and WBStartup any utility that is not part of the official OS distribution (a utility for adding sounds to system events was reported to prevent AL16 from booting).

P2: Can't get on-line help.

S2: You need:

- the amigaguide.library in your LIBS: directory
- the AL16.guide file in the directory containing the AL16 executable.

P3: The windows are not well positioned on screen.

S3: If you are running the program for the first time AL16 doesn't know your preferred settings. Please, rearrange any window as you like, then quit the program. During shut-down you are

offered the option of saving program's status: do it. The next time you'll launch the program, any window will position according to your preferred settings.

P4: My CD-ROM drive allows digital transfer of audio tracks but it isn't CD300(+) compatible (doesn't work with AL16).

S4: Currently you should use a program that supports your drive (PD software for most CD-ROM models has been developed) to transfer the audio material to a 16bit file on your disk. Then you can access that file with AL16. The sample point data format for CDAudio tracks is 'PCM16 Lin Signed LSBMSB'.

NOTE: the program that you use for transfer may change the sample point data format before writing to disk.

P5: The file requesters don't work properly.

S5: This problem showed only when using an old (beta) version of the asl.library. Upgrade your asl.library.

P6: AL16 recognizes an formatted audio file but plays it low pitched (one octave lower than normal) and slowly (duration is doubled).

S6: The file is probably a two-channel (stereo) interleaved recording. AL16 recognizes the data section but incorrectly assumes that it's a single-channel file.

Possible causes are:

- an incorrect or corrupted file header
- a file type supported only in mono-mode (currently true for 8bit files and raw files).

Convert the file to a 16bit format (AIFF/MAESTRO/MAUD) and use the (De)Interleaver tool to extract one channel at a time.

P7: AL16 slows down concurrent applications.

S7: Check the 'Task Priority' gadget in the 'Other Prefs' window.

P8: Playback is irregular (backward and forward jumps are audible).

S8: Probably your HD is too slow. Try playing at lower clocks: if it works you need a faster HD. If you are performing a realtime processing (such as a DSP operation or mixing) check if the Ksmp/s value is lower the signal clock. If it happens then your CPU is too slow (the HD may be OK). Also be sure that your current screenmode doesn't slowdown access to chip-ram (800x600 on ECS machines, for example).

You should install AmigaOS 3.1 or higher. That version allows you to set the size of the FFS blocks. Larger blocks mean faster seeking operations (such as Locator drawing, non-linear playback,...).

Disk caching utilities usually enhance AudioLab16 performances on machines with slow HDs.

P9: Triggering via keyboard doesn't produce reactions, other triggering methods work fine.

S9: Someone deselected the 'Keyboard' window. Select the window clicking on it.

P10: Triggering via keyboard causes playback of an undesired recording.

S10:Check the 'Keyboard' window for keys->programs mapping. Use the 'Get Programs' gadget to automatically rebuild the mapping list.

P11:The operation 'X' doesn't work.

S11:If an operation involving a signal doesn't work, try using it with the lowest signal clock possible. If it works then your system is probably too slow for the original signal clock.

Starting from the lowest clock try increasing it in successive steps until the operation stops working. This way you can find the clock limit for your current setup.

1.421 Author

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