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1. General

Before you invested in *Midi-Connections Scan* you had to spend ages typing music into your computer, just to edit it. Often, once entered this way, your music needed to be transposed or arranged again. This program will relieve you from this agonizing chore.

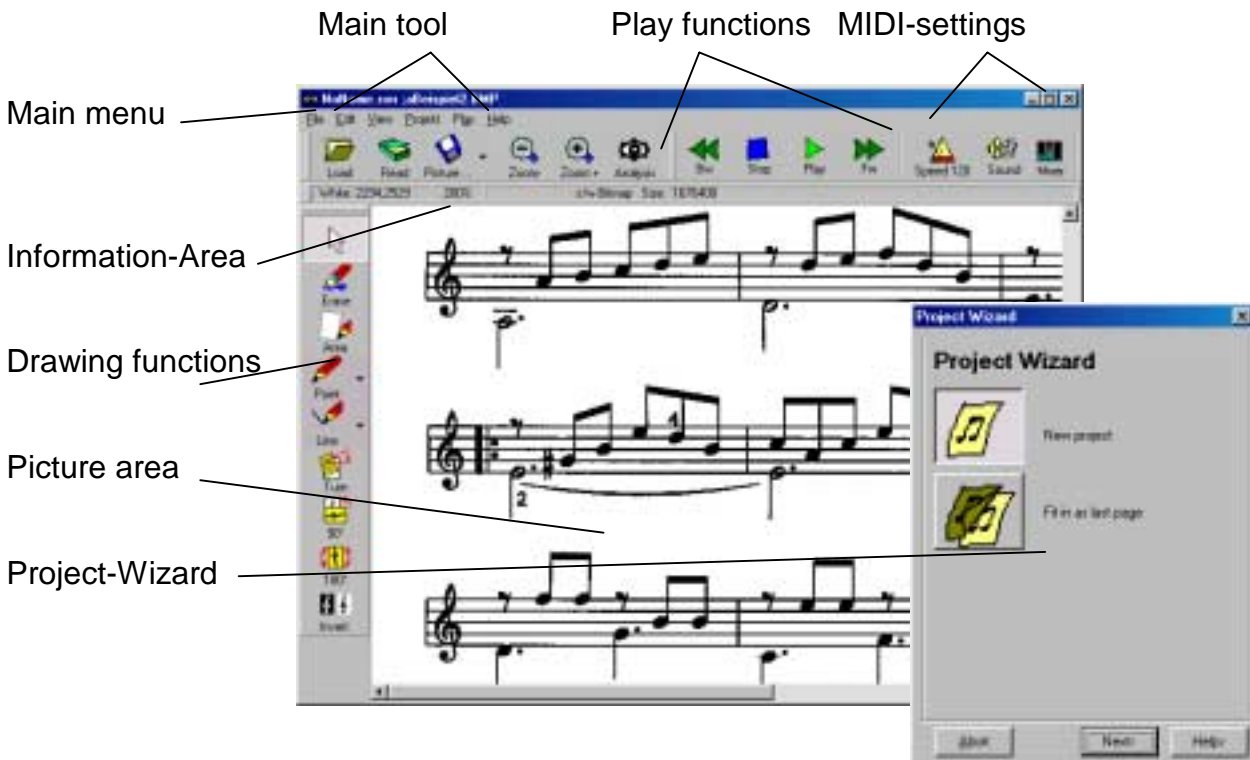
The program has been created so that it's possible to change music quickly and safely into computerised material without having to wait for ages. The program supports the Standard-MIDI-format and its native TSN (Tape Song) format. With Standard-MIDI-format data can be used with any notation or sequencer program. The TSN format can only be used with **MIDI-Connections Pro 4.0** and **Light 4.0**. You will receive Light 4.0 free with this program.

Read this manual carefully and try out the examples. You will find this the easiest way to learn this program in shortest possible time. Chapter 2. *Installation* can be disregarded if you have already installed the program. **Don't forget chapter 2.6 Registration!**

In Chapter 13.2 **how it's done!** You will find a checklist that shows you how to achieve the best results with little effort.

Here is a general description and guide of the important parts.

1.1. General idea of the program



1.2. Start picture

Main menu: Each menu point is either turned on or off, depending on the work-mode. This means you can only chose the functions that can be carried out. (Example: If nothing has been loaded and edited, nothing can be stored, and so the



storage button is not active)

Main tool: In the main tool you will find the most important commands for the scan-procedure. First, a picture must be loaded. After that, the analyse-expert opens automatically. If you want to edit the picture, the dialog must first be closed. If you want to start the scan-procedure, press the ,analysis'-button to start the analysis. The picture can be changed in size (+ or -) With the zoom-buttons. As soon as a picture's been analysed it can be saved.

Play functions: When the music has been loaded and analysed, it can be played. Just like a cassette player you can use the buttons play, stop, forwards and backwards. But take notice of the MIDI-arrangements!

MIDI-settings: You can listen to the music provided the following conditions are met: The installed soundcard and its driver, the connected speakers and the settings in the scan-program are set-up correctly. The chapter, "How to play your music" goes into the settings procedure for the scan-program.

Information area: In the sections you are shown different information about the picture or the current work process.

Drawing functions: With the drawing functions you can cover up or delete unwanted parts of the picture to remove problems right from the start.

Picture area: The loaded picture is shown here.

Project- and analysis-expert: The project- and analysis-expert guides you through the project-management and the procedure that analyses music. Depending on the work steps, you can make use of the help-windows on the different pages.

1.3. Help on Internet

Our homepage www.midi-connections.com provides the latest information on our products. Tips, tricks and frequently asked questions are also listed. Feel free to contact us with your questions and suggestions.

1.4. Copyright

No part of the program or manual may be reproduced or transmitted in any way or form without the written permission of CAS.

Theft of software is a crime!

1.5. Liability

CAS shall not be liable for any direct, consequential or incidental loss or damage caused by the use of this program or incorrect instructions given in this manual.

1.6. The MIDI-Connections Scan Crew

The team who developed MIDI-Connections Scan consists of the following people.

Software (design & programming):	Eduardo Tognazza Norbert Zwicker
Design (packaging & advertisement):	Mario Baroncelli
Documentation, help:	Norbert Zwicker
Translation	Laura Harré
Symbol library:	Carola Nadler

Our special thanks goes out to

Delphi-Component Toolbar And Installation-Software InnoSetup www.jordanr.dhs.org	Jorden Russell (USA)
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Script Maker for InnoSetup www.tafweb.com	TafWeb Software (GB)
--	----------------------

Article - Learning Assembler with Delphi ianhodger@compuserve.com	Ian Hodger
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2. Installation

2.1. Package Contents

Manual

On CD:

- MIDI-Connections Scan
- MIDI-Connections Light
- Demo MIDI-Connections PRO (only in German)

2.2. System requirements

The following specifications enable the efficient use of the program.

- PC with Win95 / 98 or NT installed
- 32 MB RAM (working memory)
- 5 MB free hard disc space (+ 4MB for MC-Light)
- Soundcard with a correctly installed Device-Driver, so you can listen to your music

There must be enough free space on the hard disc for the scanned pictures. An A4 paper at 600 dpi needs about 4MB hard disc-storage space! If you want to keep your pictures on the hard disc, we recommend the storage in TIF-format with the Hufmann compression (as in chapter 6.2). The processor dictates the speed of the analysing-procedure. With a Pentium 133 or faster at 600 dpi the analysing-procedure needs about 1 to 3 minutes. With a Pentium 450 this procedure needs about 30 seconds. If you choose a lower resolution (i.e.400 dpi) the procedure is finished two to three times quicker. The accuracy will rapidly drop at low resolutions, so you shouldn't use less than 400 dpi.

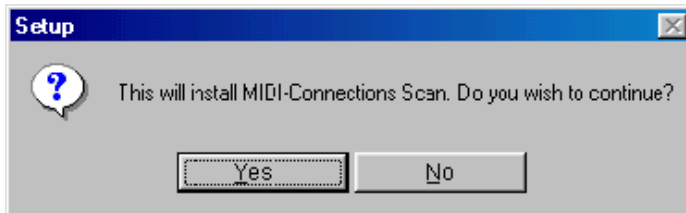
2.3. Pay attention to the Read me-data

In the file Readme.wri you'll find the last changes and important information.

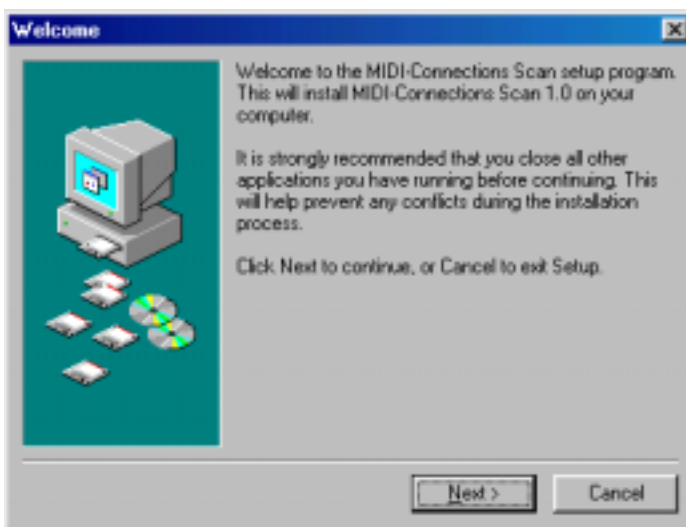
2.4. Start set-up

MIDI-Connections Scan (also, known as MC-Scan[®]) is a 32-bit program and needs WIN-95, WIN-98 or a later version. Put the CD into the CD-drive. Either the installation will be started automatically or you can start the installation with a double-click on the file Setup.exe.

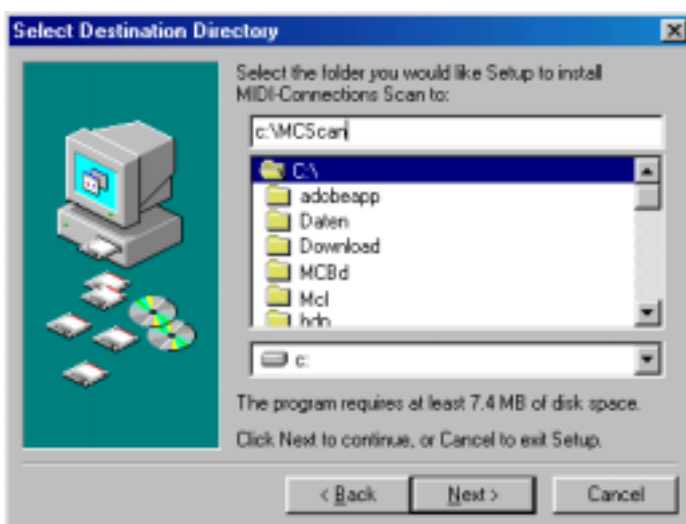
2.4.1. How to install the program



Now follow the instructions of the installation program.



2.4.2. Where to install



Chose a folder to install the program. We recommend c:\MCSca[n].

Important: If you've installed the program in an unsuitable place by mistake, the program cannot be changed **manually**. As the uninstall-program would be inoperative!

If you can't install to your chosen folder, uninstall the program and start the installation again.

2.4.3. What has been installed?

A file with the following data has been installed:

MCScan.exe	: Scan-program
MCScan.sdb	: symbol database
User.sdb	: user database
MCScan.ddb	: symbol definition
MCScanSave.dll	: export module
MCHelp.hlp	: help data
Readme.wri	: latest information
s_scan_*.dll	: (d,gb,f,nl search module)
bmp_lib2.dll	: program module
mm_lib.dll	: program module
borIndmm.dll	: program module
Bild_*.bmp	: example picture 1 to 3
MCScan.cnf	: program adjustment
Uninstall.exe	: uninstall-program
Light.lbr	: GM-library
coffee	: animation

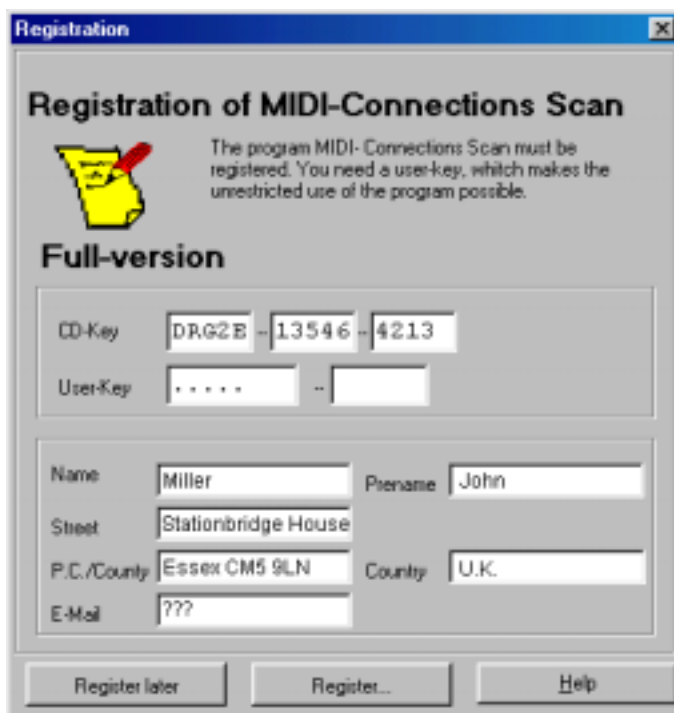
The program will also be installed in the Windows-registration.

2.5. Uninstall

After a successful installation the program group ,connects' is created. In this program group you'll find the uninstalling program ,unscan.exe'. Through a simple click the uninstalling procedure can be started.

2.6. Registration

The first time you start the program, you'll see the registration-dialog. For full use, the program must be registered.



The image shows a Windows-style registration dialog box titled "Registration". The main heading is "Registration of MIDI-Connections Scan". Below the heading is a small icon of a yellow notepad with a red pencil. To the right of the icon, the text reads: "The program MIDI- Connections Scan must be registered. You need a user-key, which makes the unrestricted use of the program possible." Below this text, the word "Full-version" is displayed. The dialog contains several input fields: "CD-Key" with the value "DRG2E-13546-4213", "User-Key" with five asterisks, "Name" with "Miller", "Pname" with "John", "Street" with "Stationbridge House", "P.C./County" with "Essex CM5 9LN", "Country" with "U.K.", and "E-Mail" with "???". At the bottom of the dialog are three buttons: "Register later", "Register...", and "Help".

Installation

With the installation CD you'll receive a CD-key. Keep the CD and the CD-key in a safe place. If you have to re-install you will need to use the key again.

Demo mode

If the program is installed without a CD-key, it runs in a demo-mode. Edited songs cannot be saved.

CD mode

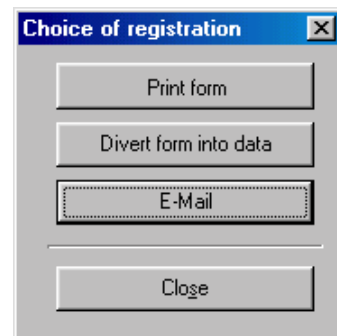
For 30 days the program runs as a full version. During this period the program must be registered to maintain full version status.

Full version

When you receive the user-key it must be entered in the registration dialog. The program then becomes a full version.

How to register

- You have three different methods of registration:
- Print the form and send it to us by post or fax.
- Store the form as a text file (*.txt); fill in the details in your word processor program then print and post/fax.
- Send us an E-mail with the registration information.



2.7. Installation of MC-Light

On the CD you'll find two sub-folders with a full version of MIDI-Connections Light Version 4.0 and a demo version of MIDI-Connections PRO 4.0. If you want to install these programs, you must start Windows Explorer and open the corresponding folders. Start the installation-set-up with a double-click.

3. How to scan music

3.1. Preparing the printed music

Before a page can be edited by MC-Scan, it must be scanned in with a scanner. MC-Scan only edits Windows*.BMP and TIF (Huffman) data. BMP stands for bitmap. The pattern is changed into a picture consisting only of black and white dots. MC-Scan now searches for visible music notes in this field of dots.

The better the page is scanned, the better the resulting analysis of MC-Scan will be.



Important: The page has to be read as a black/white picture. Use a resolution of 400, or better still **600 dots** per inch (dpi).

3.2. Load the picture

A picture can be loaded directly from the scanner or from a previously scanned file.

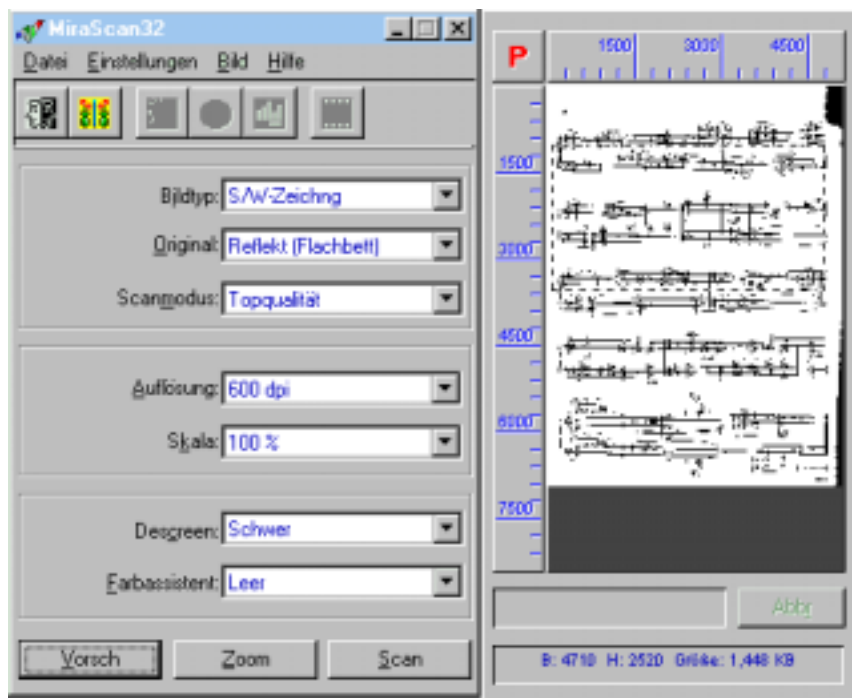
3.2.1. Directly from the scanner

Lay your music onto the scanner and click on the 'read' button. Windows will use the device settings program (TWAIN) that you received during the installation of your scanner.



Adjustments:

This diagram shows a typical TWAIN settings program. There are many different versions of TWAIN, but they all work on a similar way. Important adjustments are the colour settings and the resolution. The colour setting has to be b/w (black/white). For the resolution we recommend 600 dpi (dots per inch) for the best results.



3.2.2. Load the prepared picture

After you have pressed the 'load'-button or chosen the menu 'data/load', the dialog 'load picture' appears.



If the preview has been chosen, the music pictures can be seen before they're loaded. The size and the colour type are shown in the picture information section. With a double-click on the file name or through a click on the 'open' button, the music picture is loaded.

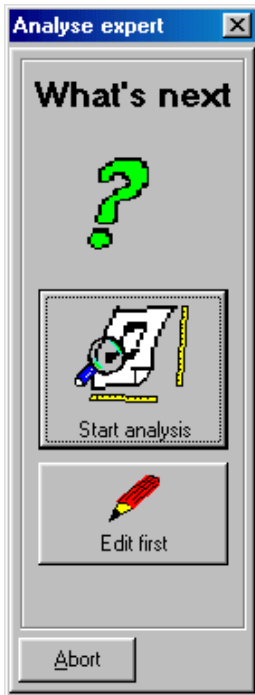
So that you don't have to make all sorts of adjustments on the first scan, we will show you an easy example.

Please load the file **,example 1.bmp'**. When you start the program for the first time, this file will automatically be opened.

example1.bmp



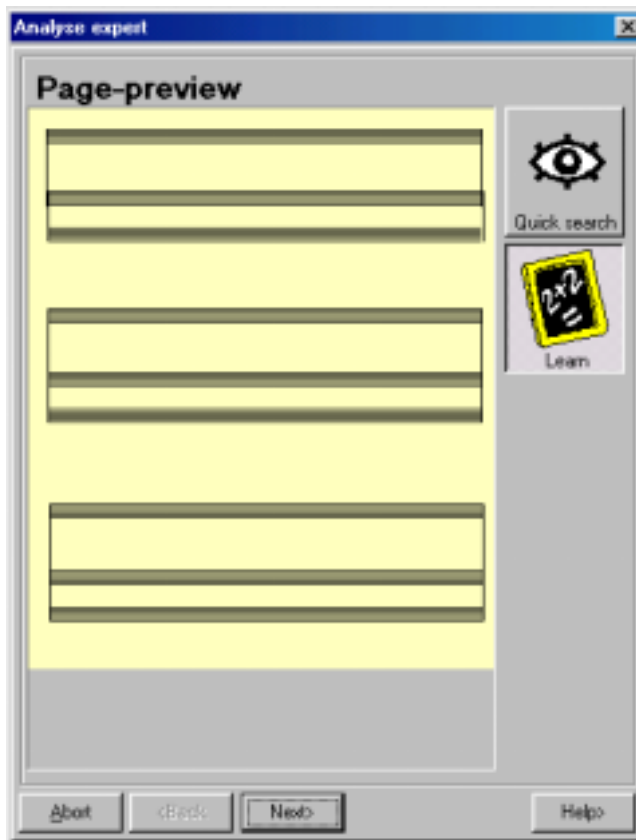
3.3. The analyse expert



The most important resource to analyse the music is the analyse-expert.

Procedure: After you've loaded a picture, the start-up-picture of the analyse-expert appears. If you want to edit the picture graphically, the button 'edit first' must be chosen. The analysing procedure is now interrupted.

3.4. Quick search



If you have chosen 'Quick search', pressing 'Next' will start the analysis. You can now observe how the program checks through all the staves and tries to find then understand all the information.

If you have loaded the *example1.bmp*, no problems will occur. If your scanned BMP (bitmap) has been loaded, please read chapter 7.

3.4.1. Help in the analyse expert

Before you press the 'Next button', choose the 'help' button, to see the expert's opinion. You can close the help anytime by pressing the 'help' button.

3.5. How does this work?

You might be asking yourself how the scan-program finds the notes and other symbols? There are different ways this "tricky task" is solved. For the "curious of mind" here's a little insight into the techniques of analysing.

Searching staves

First the staves must be identified. This should not be a problem, but text, pictures or irregularities that intrude on the lines can cause difficulties. If such non-musical events cause problems, they can be erased with drawing tools.

Controlling horizontals

The program and the symbol database look for staves that are scanned in horizontally. The program corrects small angular deviations but if the page has been scanned in too obliquely, it is recommended you turn the picture closer to horizontal. The program will then turn fine tune the stave horizontally.

Searching the arrangement

The next step is to search the staves that are parts of the arrangement. If the staves are not connected on the left edge or the left edge has breaks between the staves, they will be recognised as a continuation of the previous stave, as opposed to being simultaneous parts of the arrangement i.e. treble and bass staves. The drawing functions help here. Draw a connecting line with the line tool (chapter 6. Edit notepaper) to show that joined staves are to be played simultaneously.

Searching symbols

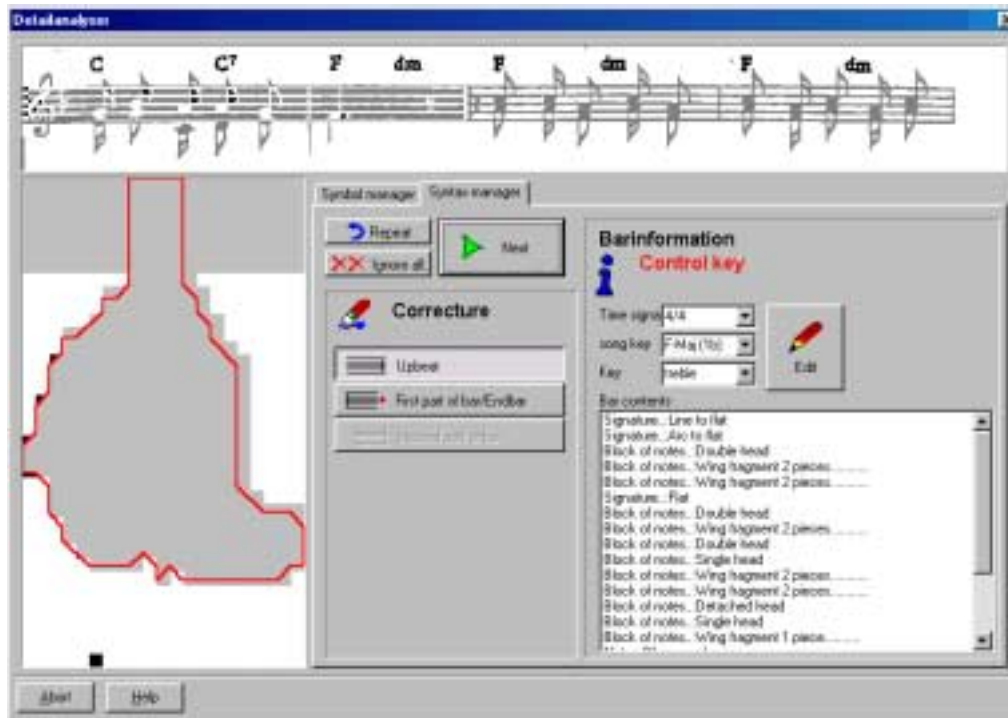
The staves and their arrangement are now understood. Next the notes, accidentals, breaks, etc can be recognised. We just call the notation "symbols". Depending on the thickness of the staff lines and symbols, whole symbols may become split up. The programs task is to recognise symbols or parts of symbols and put them together properly.

Recognising symbols

To accomplish this, the program has a database with thousands of symbols. Each symbol that's found on the page is run through the database, to search for a similar symbol. If the search ends without finding a match, you can use the learning function. Simply choose from a list of symbols the actual meaning of the unrecognised symbol, and then save this in a separate user database. Stored symbols are then recognised in all future scan-procedures.

3.6. Start 'Quick search'

After starting the quick search, the detail analyser will open. You'll see how all bars, and all symbols that appear in them are analysed. In the enlargement all unrecognised symbols appear.



Type of bar and control of key

For accuracy the first bar of each voice is listed in the dialog and questioned (to check the type of bar and the key). Please control the type of bar and key as well as the notation clef.



With 'next' the analysing procedure is carried on.



If the bar type, key or notation clef have been recognised falsely, please edit the details and confirm with the 'edit' button.

3.7. Your first attempts

First of all try scanning in uncomplicated music with your scanner and analysing it with MC-Scan. Our instructions will also show you how to handle more difficult patterns (chapter 6 and 7).

4. Playing your music

4.1. How to play a song

After a page has been scanned, the play functions will be turned on. You start by pressing the ,play' button, like you do on a Walkman. If your music pattern has more than one page, you can only hear the current page!

If you have started the play-procedure, but you can't hear anything, please read the section ,4.4 MIDI-settings'.



4.2. Play functions

The individual play functions are

Bw : The play marker is moved backwards a bar towards the start of the song.

Stop: Stops the song.

Play: Starts the song. If the marker has been moved with << or >> first, the music will start at the chosen position.

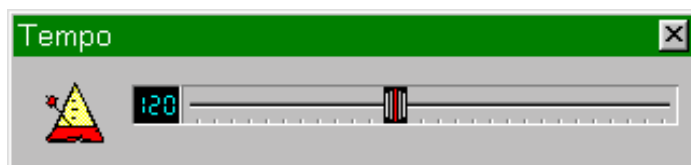
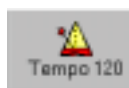


Fw: The play marker is moved forwards a bar towards the end of the song.

In the information area the current position of the marker is shown.

4.3. Tempo

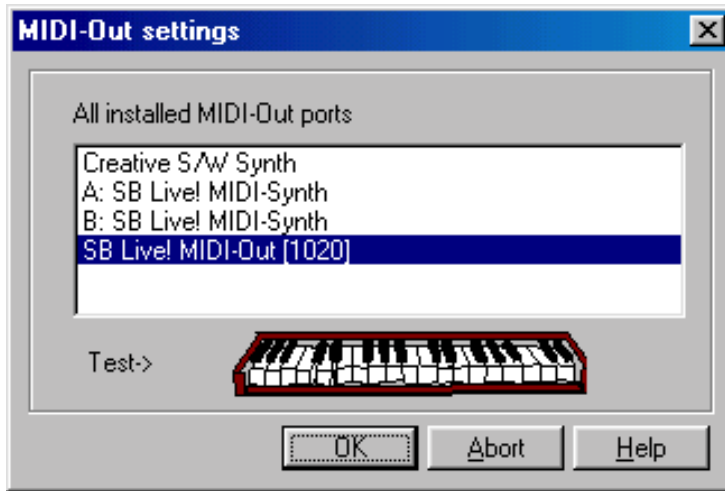
By pressing the tempo head, a small dialog will appear with a tempo regulator. By adjusting this you can edit the tempo. You can close the dialog by pressing the metronome picture on the left.



4.4. MIDI-settings



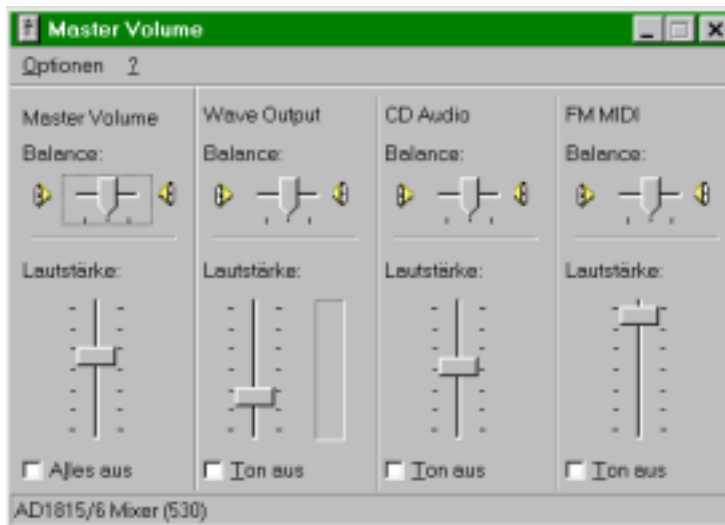
Open the dialog to choose the MIDI-Out tool. A multimedia PC has usually got two possibilities to offer you. The soundcard of the PC has built in sounds that we call the internal MIDI-Out tool. If an external MIDI device is attached to the joystick port, we're talking about an external MIDI-Out tool.



The MIDI-Out dialog shows a PC with an internal Yamaha-synthesis and an external Roland MPU-401 driver. In this example the external tool has been chosen.

4.4.1. Playing on the soundcard

If you've chosen the internal sound and attached the speakers or headphones to your PC, you should be able to hear the scanned music after pressing the 'play' button.



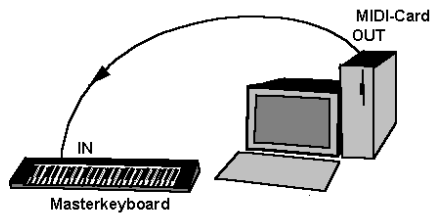
If you can't hear anything or only very quietly, open the Master Volume in the task list of windows (double-click on the loudspeaker).

The FM-MIDI-synthesizer must be turned on and the volume turned up (see 'sound on'). If the FM-MIDI-area is missing, please control with the options. If you still can't hear anything, the hardware adjustment of windows needs to be set (this is beyond the remit of this publication – seek advice from your PC

supplier or repair service).

4.4.2. Playing on an external tool (keyboard)

If the MIDI data is to be played on an external keyboard, the MIDI-Out plug of the soundcard must be connected with the MIDI-In plug of the keyboard. The keyboard must be configured to the mode 'receive MIDI data'. Should problems occur, please read the keyboard handbook.



Example of a connected keyboard.

4.5. Not working?

There are some situations where play functions don't operate or are inactive:

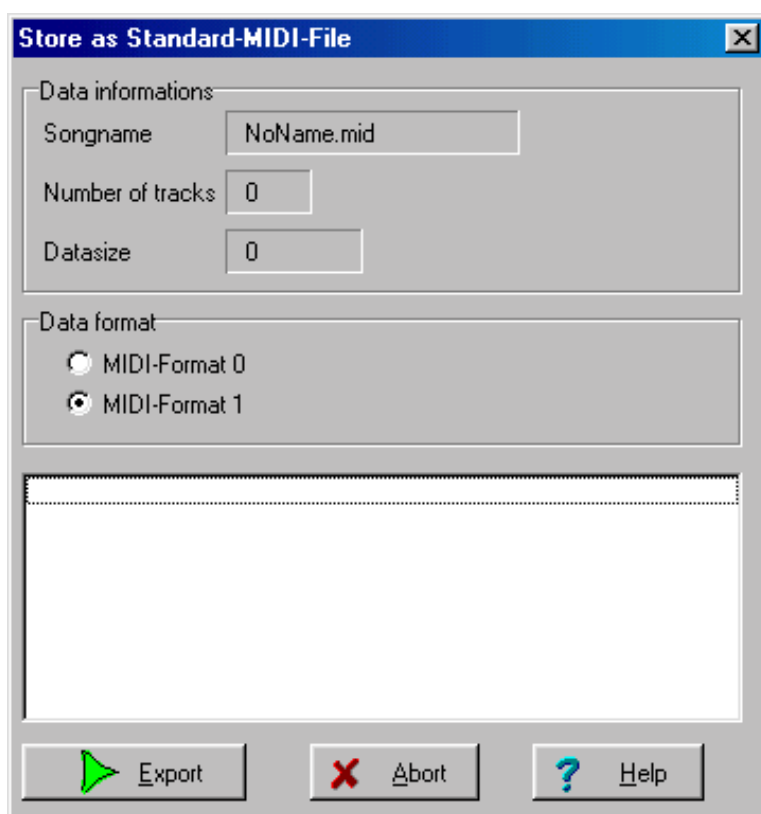
- 1) If no scanned picture is loaded.
- 2) If you have no MIDI-Out tool (port) at your disposal (see chapter 4.4 MIDI-arrangements).
- 3) You may have a more serious problem. PC's with incorrectly installed or wrongly configured hardware (soundcard-driver) must be adjusted by a specialist. The MC-Scan program (and all other MIDI programs) need correctly installed hardware to be able to work!

5. How to save your music

The idea of scanning in a pattern is usually to convert the printed score into data for editing on a computer. With a notation program, such as MIDI Connections Light, the music can be edited. Often one transposes, erases or edits. MC-Scan can save the scanned and analysed music in the Standard- MIDI-Format or as a *.tsn data. Standard-MIDI-Format can be read by all common notation and sequencer programs. Data in *.tsn format can only be read by MIDI-Connections Light or PRO from version 4.0 upwards.

5.1. Save as a Standard-MIDI-file

Choose the button ,store'. In the dialog **store under** you'll find the list and the name of the MIDI-data. After pressing the ,OK' button the **Standard-MIDI-File** dialog will open.



The *data-information* will change while exporting the music.

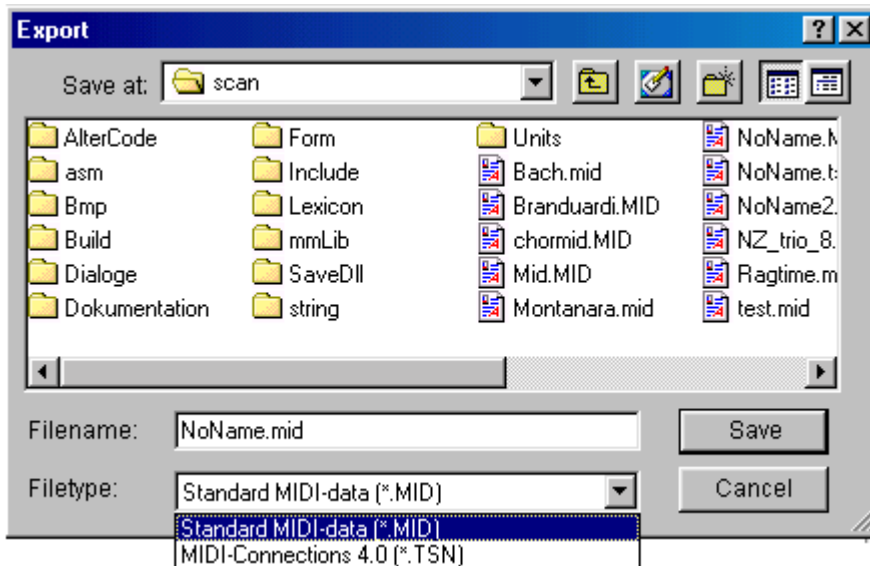
The *data format* stands for default on *MIDI-format 1*. Most of the notation- and sequencer programs understand format 0 and 1. If you want to save to a floppy disk for playback on a keyboard, you should select Format 0. Pay attention to the manual. If an arrangement has been read in, each voice gets a different MIDI-channel (up to 16 voices). Now the MIDI-data can also be stored in format 0, without mixing the tracks. The differences between format 0 and 1 are actually very small. In format 1 all the

tracks are stored after each other. That means first the whole first track (i.e.melody), then the second track (i.e. piano)... In format 0 all tracks are stored at the same time. Each music-note can be brought back to separate tracks by sorting the notes according to their MIDI channel. This only works up to 16 tracks, because there are only 16 channels available to General MIDI.

After you have pressed *start export*, the data is stored. Please close the dialog now. The MIDI-data can now be edited in a notation program. Why not use the MIDI-Connections Light program that you received with your Scan-program?

5.2. Store as a MIDI-Connections file (*.tsn)

In *.tsn format (tape song) all symbols that have been recognised by the Scan program can given further treatment. With the Light-version of the sequencer and the notation-program MIDI-Connections 4.0 found on the CD-ROM program (along with a demo of the Pro version). In the Light-version you can edit music notes, transpose and print individual tracks. The PRO version makes a complete score of an arrangement with all symbols and text. Arrangements and individual voices can be transposed and printed.



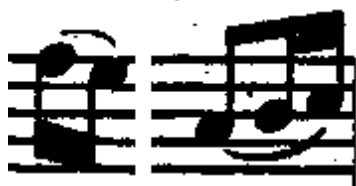
Choose the file format with file type.

6. How to edit your sheet of music

So that you can post-edit your sheets of music quickly and safely, you should cover over the areas, which don't have any bearing on your music editing. Often there are texts on the top and bottom of the paper that distracts you. These can be page numbers, titles, sub-titles, pictures and comments. The program searches the page for usable material and can at best be distracted by these areas. With the function ,erase' and ,erase area' these problems can quickly be removed.

6.1. When is a post-edition necessary?

Beams stick together



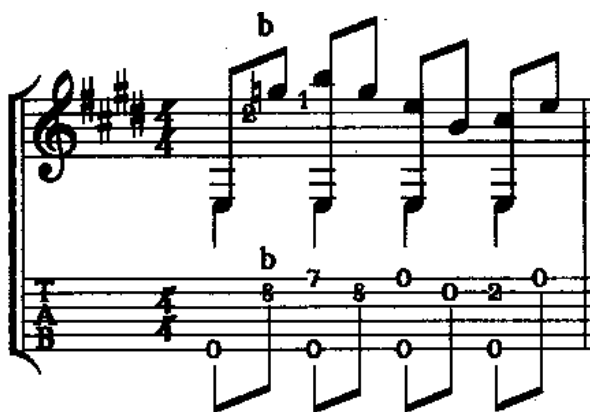
These two examples both come from the same original. The Scan program has the problem of very fat printed notes here. In the left example the program can't recognise there are two beams due to the space in between falls on very few pixels. The beam is too fat for an 8th note. In the right example you can see a space in between the beams, but this is insufficient for the program can't separate the two different elements from each other. The quickest way to correct would be to draw a white line between the beams.

Clinging symbols

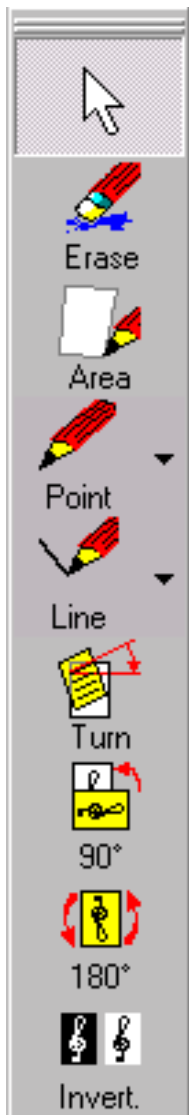


If the symbols cling together, the problem can be solved easily and quickly by drawing a white line. The two flats and the natural sign plus the beam should be separated.

Notes with texts, pictures or Tab's



If a sheet of music is written with an additional tabulator for guitar, the entire tablature must be covered with the ,erase area' function.



6.1.1. Erase

The mouse changes shape to a square. Make the effective area larger or smaller to reach a suitable sized eraser for the proportions of the area on the paper.

6.1.2. Erase area

Draw a rectangle from top left to bottom right by pressing the mouse button all the time. The area in this rectangle will be erased.

6.1.3. Draw dots

Dots can be drawn in white or black. Choose the colour by clicking on the triangle in the right button area.

6.1.4. Draw lines

The same way as the dots, the line colour can also be chosen.

6.1.5. Tilt picture

For patterns in an oblong format the picture must first be tilted. The function can be clicked several times (270°).

6.1.6. Turn picture

As an addition to the tilting-function, a turning-function through 180° .

6.1.7. Invert picture

If the colours of a picture have been falsely interpreted by the Scan, this mishap can be corrected.

6.2. Undo

To cancel a revision by the drawing functions ,erase', ,erase area', ,draw dots' and ,draw lines' all have an undo-function. The menu ,edit/undo' cancels the last drawing-function. The undo-function remembers up to 8 of latest drawing-functions. (See: project/options>arrangements)

6.3. Save sheet of music

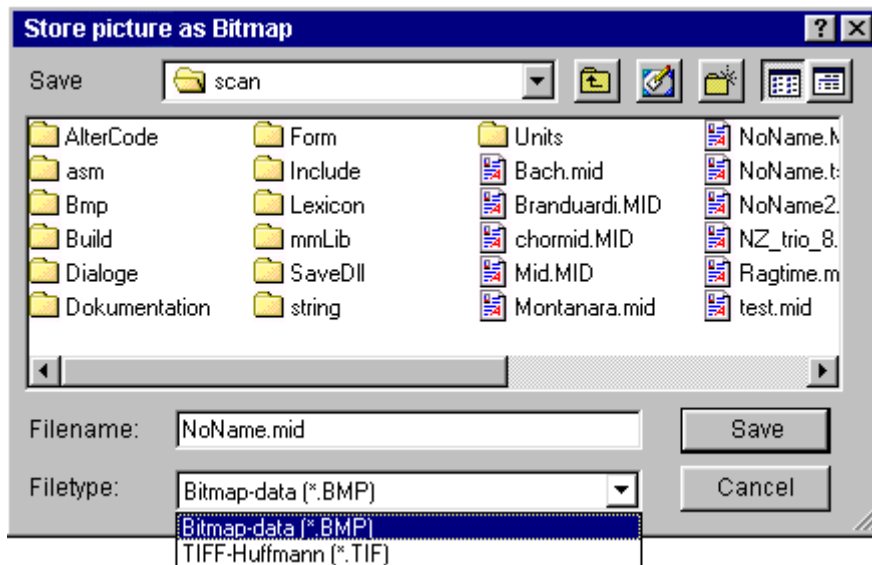
If you want to save scanned in sheets for further revisions, you can choose from two picture-formats.

6.3.1. Bitmap format

The Windows-bitmap-format needs about 4 MB for a b/w A4 sheet with a 600 dpi resolution. This format can be read by all graphic or text programs. It causes few problems, but uses a lot of space. We recommend the *.BMP type of data.

6.3.2. Compressed TIFF format

In the TIFF format there's different sub-types. TIFF is not just TIFF. An uncompressed TIFF-data needs the same amount of space as a BMP-data. That's why we've only built in a compressed TIFF-type.



The Huffmann compression is exactly right for b/w pictures. A b/w picture can be compressed up to 95% without any loss whatsoever. (Compression degree depends on the allocation of black dots.) Disadvantage: Only programs that use this type of compression can open the data.

Choose which type of data you would like to use for storing your 'music pictures'.

7. The Scan-Program can learn

The main part of the program is a library where a few thousand symbols are already stored (about 20,000 symbols). Although this sounds like a lot, the library only takes up a little space on the hard disk. These pre-stored symbols often aren't enough to analyse special notation correctly. This is why a personal user library can be installed. If music is scanned in and the program can't recognise certain symbols or pieces, the program can learn them. The analyse expert stops at these symbols and asks what they mean

Just like in real life, the library can be taught incorrectly. If, for example, a quarter note is stored as a half note, this will cause problems in future analysing procedures.

Only the user library can be 'taught badly' because you can't change the information in the programs own library.

7.1. Example of learning

Please load the examle2.bmp. In this example two symbols are not recognised by the program. Depending on the exactness adjustment unknown symbols are first cut up and checked, otherwise the program asks: „What does this symbol mean?“.

What is a symbol?

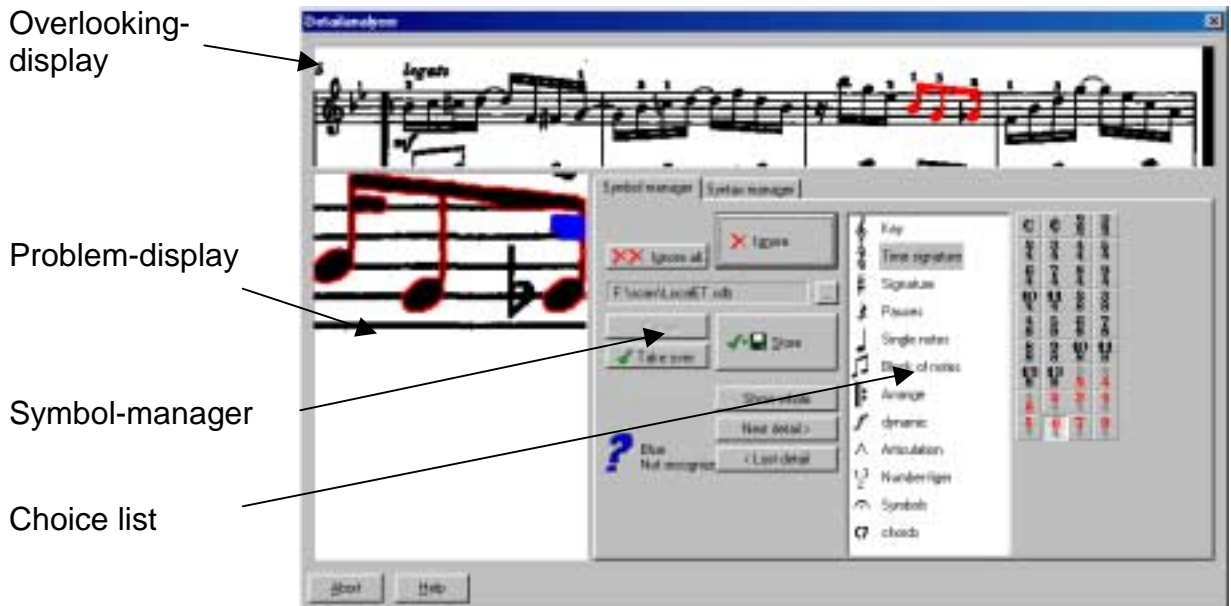
The definition of a symbol is easy: lots of black dots in or by a stave. As soon as the 'stack' is larger than a given size, it could have a meaning. You can't say exactly, what a stack of dots is. A dot could be a dot of a repeat symbol, or it could be placed after a note or maybe above a note as a staccato symbol. In music, the meaning of the symbols is decisive.

Where are problems caused?

When symbols or forms of symbols are unknown to the program, it can't recognise them. Problems are also caused when symbols 'touch together'. This can occur by small writing or bad shapes. The program tries to separate symbol clumps but it may create incorrect parts. In these cases you can help the program by editing.

7.2. The problem-display

In the last phase of the analysing procedure the analyse-expert turns on a side with a problem-display. On this side the problems found during analysis are displayed. The user can now intervene by editing each problem.



Overlooking-display

The problematic symbol is marked red. Also pay attention to the small symbols.

Problem-display

On the problem-display you see an enlargement of the problematic symbol. The symbol is cut up into its main graphical components by the program. Here's an explanation:

A symbol in notation is often recognised as a whole symbol. A quarter note or a treble clef for example are whole symbols. Other symbols are set together out of a lot of little pieces. An example on the display shows 8th/16th notes. They assembled as a single symbol even though each element has been recognized separately. These assembled symbols are not stored as whole notes, but as individual pieces. We call these pieces **details**. In the symbol-manager the program runs through these details and searches for the correct name for the detail or symbol in the choice list.

The colours green and blue indicate which details have been recognized (green) and which ones are still unknown (blue).

Symbol-manager

In the symbol-manager an unknown symbol can be 'dealt with'.

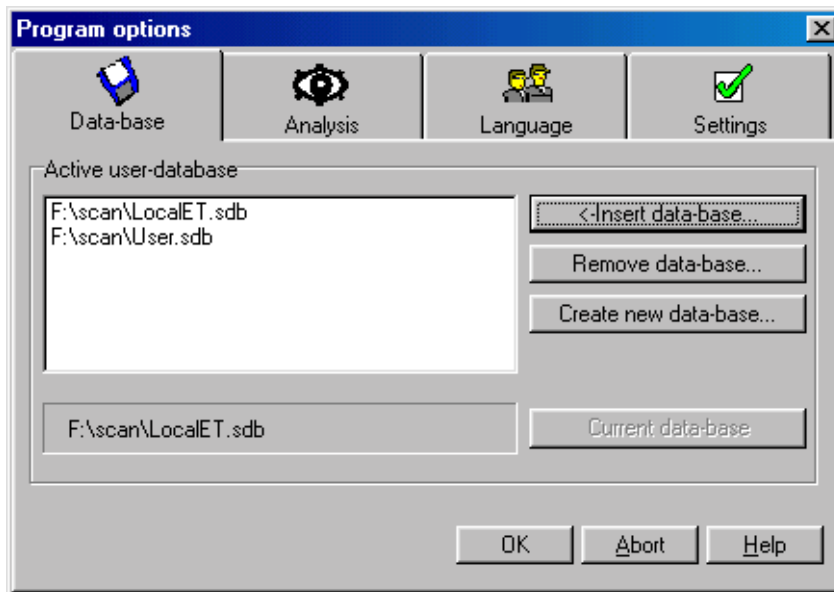
Choice lists

The choice of symbols is set up in 14 groups. All clefs or parts of clefs are stored in the group 'clef'. Click through the groups to receive an overall view of the symbols. The program can tell the difference between 213 symbols or parts of symbols.

7.3. The learning procedure

7.3.1. Personal database

! A personal database for the storage of unknown symbols has to be installed.



For a new installation the database ,user.sdb' is installed. But you can also install your own database (see: chapter 11 arrangements).

7.3.2. Ignore symbols

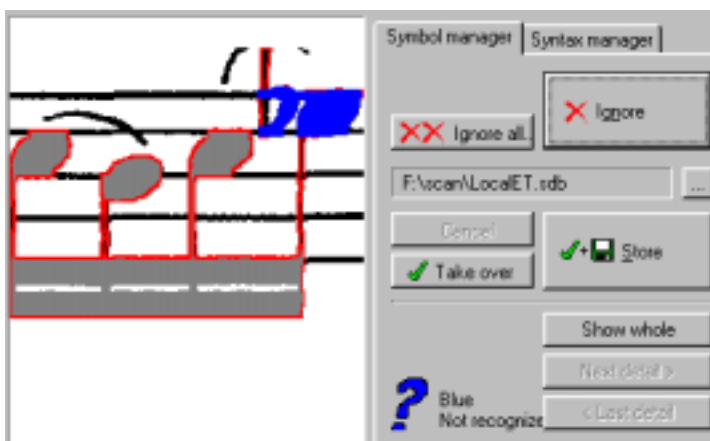


If a symbol that you don't want to store appears on the problem-display, you have to press the ,ignore'-button. The program will then go to the next problematic symbol. If you want to ignore all further unknown symbols, press the button ,ignore all'. The syntax-manager will still appear for corrections in a change of time or key.

7.3.3. Determine symbols

Before a symbol can be stored, two things have to be defined.

1. What shall be stored?
 - A whole symbol (show whole)
 - Only as part of a symbol (next detail)
2. What kind of symbol it is



If all of the symbol is to be stored, press the button ,whole symbol'. If only part of the symbol (i.e. an individual note head) is to be stored, you can jump to the unknown detail with the buttons ,next detail>' or ,<last detail'.

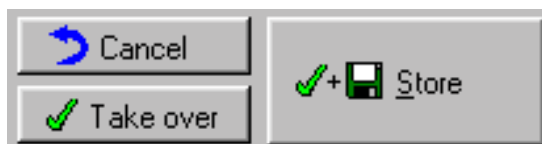
When you're jumping from detail to detail, recognized parts are marked with a green tick and the text 'green recognized'. The

symbol (i.e. note head) is shown in the symbol lists).

If a symbol has not been recognized, a blue question mark and the text, blue unknown' will appear. This detail has to be ,explained' to the program.

Choose the symbol group and the symbol in the choice list. Now you have a place in the database and the symbol can be stored.

If a whole symbol is to be stored, the button ,show whole' must be pressed. Now you must define the symbol group to ,store' or ,take over' the symbol.



7.3.4. Store or take over symbols

When should a symbol be store and when taken over? What's the difference?

7.3.4.1. Store symbol

As soon as you have chosen the symbol (or part) in the choice list and defined it, you can store. The symbol is written into the actual user database. If the same or a similar symbol appears in further scan procedures, it will be recognized.

Important: Only store symbols, which are in ,good condition'. Symbols you can hardly recognize yourself, will cause a computer quite a few difficulties. In a case like this, only overtake the symbol.

7.3.4.2. Overtake symbol

As mentioned, symbols, which are hard to recognize or twisted should only be overtaken. For the actual scan procedure, the program will know what kind of symbol it should be. In any future procedures this over taken information will not be used. Your user database will not get corrupted with ,bad' symbols, and the symbol will be correctly recognized during the actual analysing procedure.

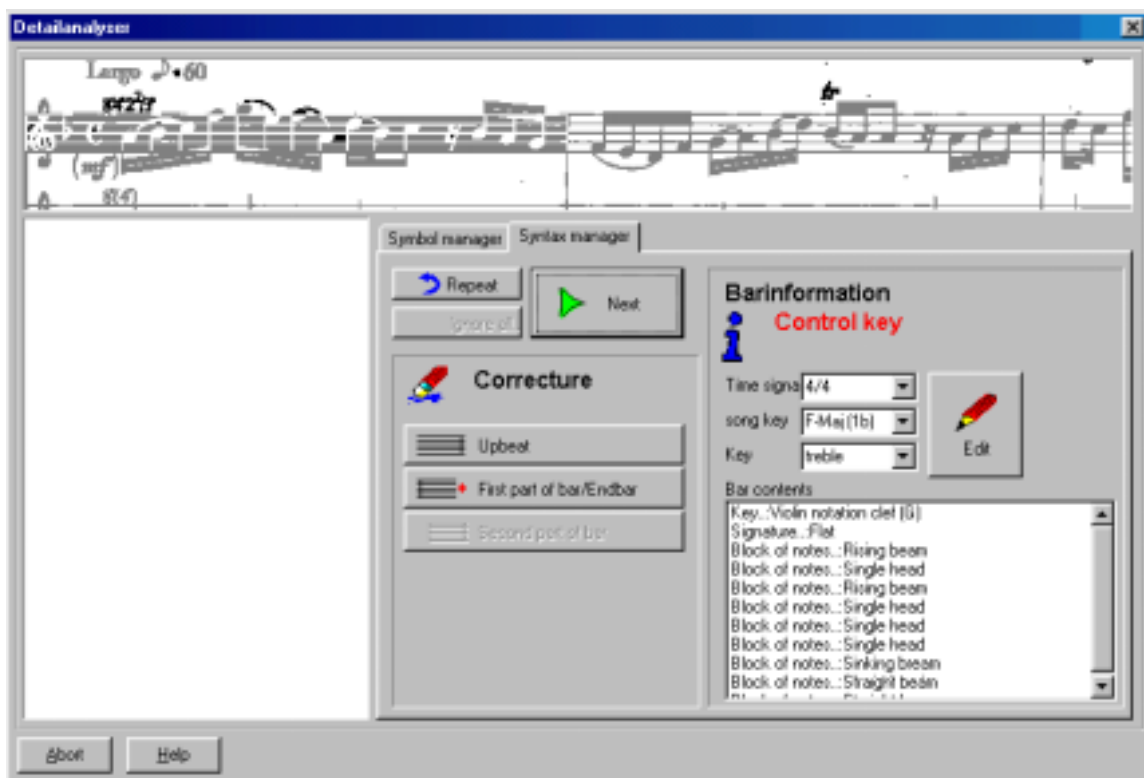
7.3.4.3. Cancel

The cancel button makes it possible to erase the last stored symbols from your user database.

8. Intervention in the Syntax

In the written language there are clear rules on how something is to be written. Also these rules change in the same way there are spelling differences in different countries (like English. /American.).

Similar, but much worse, is the musical writing. Each musical epoch brings its own habits into the music. Until computers were invented, personal music was written by hand. Each music writer could write musically difficult situations in his own way. All these peculiarities make the reading of this music more difficult. There are rules that note durations that pass the end of a line should not be written. But in many songbooks these rules are ignored. In such situations, it is hard for the program to tell the difference between irregularities in the pattern and unknown symbols.



In the Syntax manager problems like this can often be removed.

8.1. Correction possibilities

As well as the type of time, key and the clefs you can also administer different time situations.

Examples:



If there are not enough notes in the first bar to match the type of time signature, the program suggests an up beat. An up beat is also suggested, if a note or a pause has not been seen.



In this example the repeat-symbol has been placed in the middle of the time. The writer didn't see any need in having two 'exits'. For the programs analysis they are two uncompleted bars.

Repeat

For the first question you have to choose the correction ,first part of bar‘ and then the button ,>next‘. If the first part of the bar and the following bar make a complete bar together, the program will continue the analysis without any further questions.

All correction possibilities:

Up-beat:

Can only be chosen for the first bar of the song. If a page consists of several examples that start with an up beat, the songs have to be analysed separately.

First part of bar/end bar:

As shown in the example, bars that have been separated are tied together with this correction. With this function, bars that have been written over the end of the line will also be tied together. Often the end bar of a song is left uncompleted (last pauses are often not written).

Second part of bar:

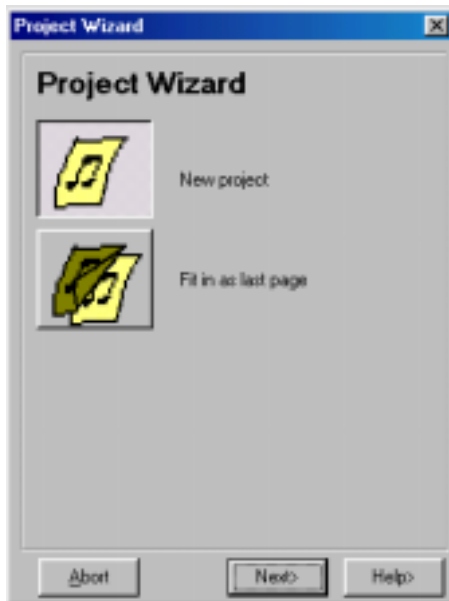
This function must rarely be chosen. If the ,first part of bar‘ has already been chosen, the program can deal with the ,second part of bar‘ itself. Only if the two lengths of time added together don't make the right time, will it be questioned.

8.2. Repeat

If a symbol has been missed in the haste, a bar analysis can be repeated. All in the bar newly stored and unknown symbols are questioned again. Only the actual bar can be repeated!

9. Note-example

9.1. Project Wizard



As soon as a picture has been scanned in or loaded the second time, the project Wizard opens. The pre-adjustment erases the last scanned and analysed project and makes a new project. For songs that only take up one page, you only have to press the ,next>' button.

If your music takes up several pages, you have to choose ,keep as last page'.

9.2. Keep as last page

Normally music is scanned and analysed after each other, from the first to the last page. The next new page should always be fitted in at the end of the project.

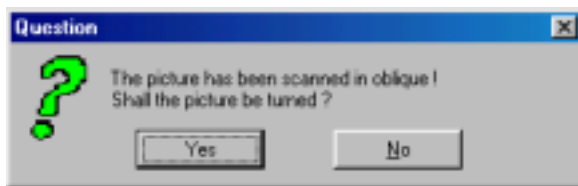
9.3. Example3.bmp

This is an example of the procedure with different causes of problems.

- The oblique scanned pattern is turned.
- After the quick search the unknown type of time is edited with help of the Syntax manager.
- The accidental which is sticking to a note head is graphically separated
- An unknown number is stored, taken over or ignored.

Study
Fernando Sor (1778-1839)

Load the example3.bmp and start the analysis. The program will welcome you with the following dialog:



The pattern has been laid in the scanner too obliquely. The program has found the staves, but wants to turn the picture to receive an optimal analysis.

Answer ,yes'.

After turning and the search for the staves the page preview will appear. In the page preview you can control if all the staves have been found over the whole length.



First choose the quick search and then start the analysis with ,next>'.

After the search for the notes the Syntax-manager will appear. If the time value from the start of the line to the first barline is too short for a whole bar, the text ,time value too short' will appear. In this case the text is of no importance!

Much more important is the control of the type of bar, the type of key and the clef. Now you can see that the type of bar has not been recognized correctly. The program suggests a 4/4th time, but the song has been written in a 6/8th time. The program has not recognized the

numbers 6 and 8! Open up the type of time choice and choose 6/8th.

! **Important:** After editing the type of time, key or clef, you have to press the **edit button!**

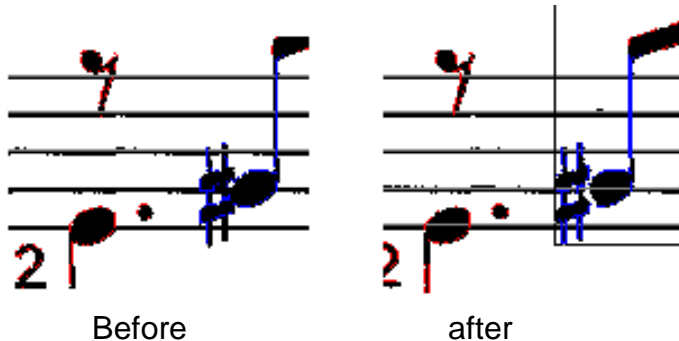
By editing the type of time no symbol has been stored. You will come to this procedure later. To continue the analysis, press the ,next'-button. The program works itself through the symbols and the unknown symbols soon display in the problem-display. It doesn't question them, because we're in the mode ,quick search'.

The analysis ends with a statistic.

105	found symbols
94	recognized symbols
11	ignored
0	Time faults

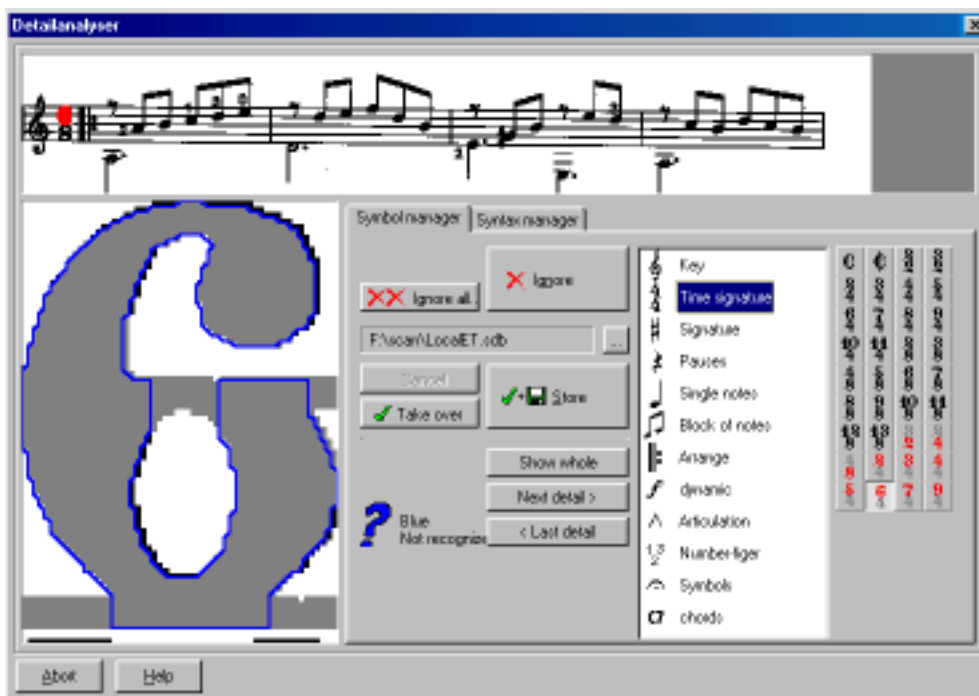
Note-example

Even though there were no time faults, an accidental and a note head have not been recognized in time three. These symbols are stuck together and make themselves unrecognisable for the program. Enlarge the view and move the scrollbar along until you can see the „stuck together“ symbols. Choose the drawing function dots with the colour white. Separate the two symbols by drawing a bow between them with the mouse.



Now the analysis can be started again.

Please choose the ‚learn‘ mode and then the ‚next->‘ button.



The first time the symbol-manager stops at the time signature number (number 6). Now the symbol family and the actual symbol have to be chosen. In the example it's the ‚type of time‘ so use the button with a red six at the top. Because parts of symbols can be stored, you have to let the program know that symbol parts can be ignored with the button ‚show whole‘. To store activate the button ‚store‘.

The procedure for the denominator of the type of time is exactly the same.

- Choose symbol family
- Choose symbol
- Show whole
- Store

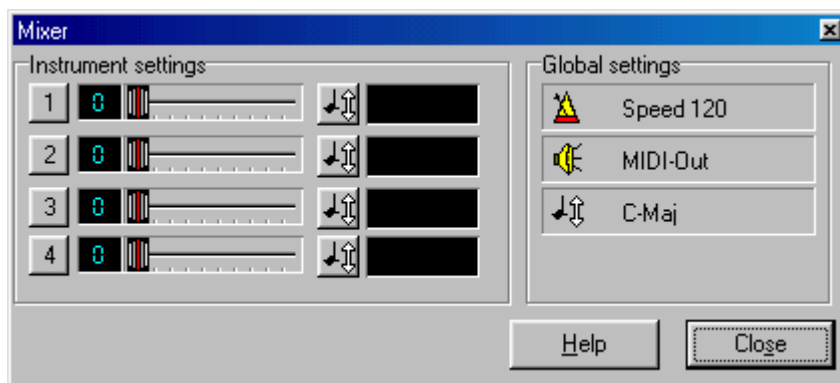
The Syntax-manager then lets you control the type of time.

The program will now question you about finger numbers and other rather meaningless (for this exercise) symbols. Depending on how you prefer, the symbols are stored, taken over or ignored. The G-clef, that has accidentally been removed, can easily be ignored.

Listen to the result!

10.Mixer

The program can use scores of up to four voices. With the MIDI-mixer the loudness of the tracks can be regulated or individual tracks transposed.



10.1. Adjust volume

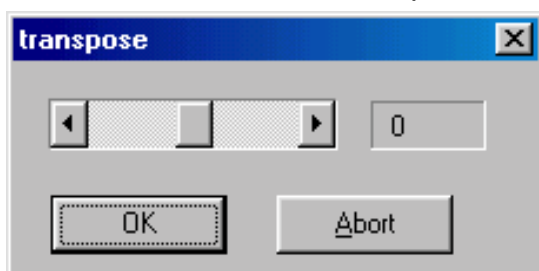


In the instrument section adjustments of volume for each recognised track can be edited with the sliding regulator. The LED-indicator shows you the actual volume in MIDI-units (0-127). As soon as you touch the LED-indicator with the mouse, you can change the volume with the left and right mouse key. Left = minus and right = plus one volume-unit. If you press a key longer, the program counts the volume automatically in the corresponding direction.

10.2. Transpose voices



Voices can also be transposed individually. Through clicking on the transpose button the dialog 'transpose' appears. Choose how many half note steps the score voice should be transposed with the sliding regulator. If it has been wrongly transposed, this function can always be repeated.



10.3. Transpose everything

In the section global adjustments all tracks can be transposed with each other.

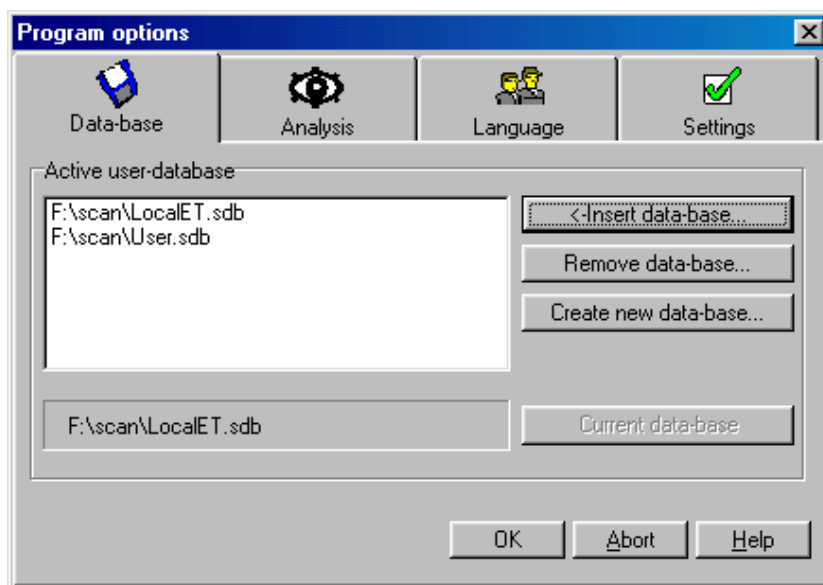
11. Adjustments

Different adjustments for the program such as language, user database or analyse-exactness are administered in the option dialog under the menu projects.

11.1. Options

All adjustments in the dialog options are stored in a configuration file. The program notes the adjustments for the next time the program is started.

For PC-hackers: To get back to the default settings, erase the file *MCScan.cfd*.



11.1.1. Database adjustments

As mentioned in chapter ,7.3.1 own database' the program works, to analyse music, with databases. The program has its own basis database with about 20'000 symbols already programmed. Because there are special musical symbols a user database is installed where you can save your special symbols. This does not change the program database in any way. You can also install more databases, but the symbols are only stored in the ,actual database'.

Fit in database...

With this function an existing database can be inserted.

Important: Databases can only be made in the SCAN program. The database is not based on any common database type.

Remove database...

An inserted database can be removed from the list at any time. A removed list is not erased. You can always re-insert the database. To remove a database from the hard disk, you have to erase the file in Windows Explorer.

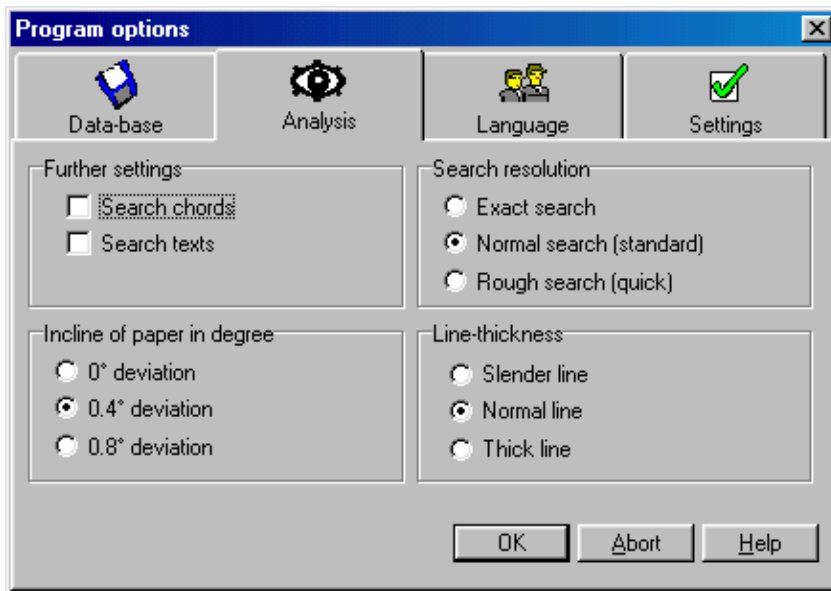
Make new database...

You have the opportunity of making up to 5 databases and inserting them in the list. Give each database a unique name that is not yet current in your objective register.

Important: Never change the name of an active database in Windows Explorer. Otherwise the program will not find the database again. To change a name of a database, it must be removed first.

Actual database

Unknown symbols found by the analyse expert are stored in the actual database. Only a user-database can be an actual one. You can choose which database is the actual one.



11.1.2. Analyse adjustments

On this page you can stipulate various adjustments that have influence over the note searches.

Obliqueness of the page in degree

How oblique is it allowed to be? The program can recognize oblique music, but the more oblique, more faults happen. That's why music should be scanned as straight as possible. The standard maximum obliqueness is fixed on 0.4 degrees. As soon as a page goes over this angle, you will be asked for the page to be turned.

Search resolution

Should every tiny dot be questioned? Each little black dot, that's found on the page, is a potential notation symbol. You can set the tolerance to what size dot on a symbol is to be questioned.

Line thickness

Music is printed with different line thickness. Some music pictures are very fine others seem fat. If the program has problems deleting the stave lines, you usually get better results if you adjust the line thickness to suit the scanned music.

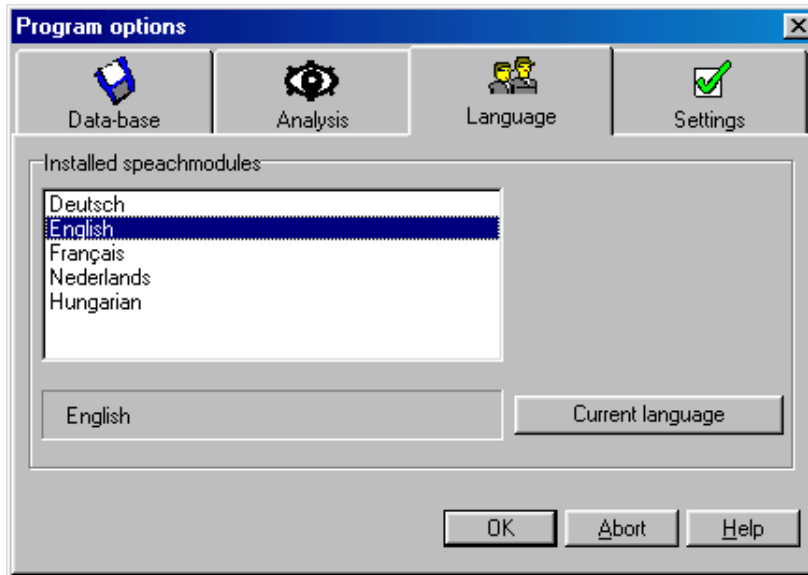
Further adjustments

Do you want to include chords and texts in the search? The activation of this function is not necessarily recommended because text is often written in different styles.

Options

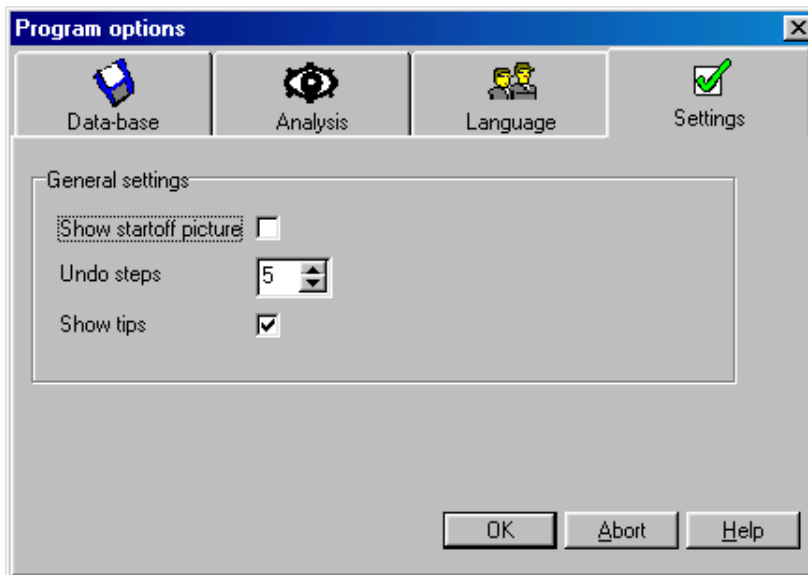
11.1.3. Language

With the language-adjustments you can choose between the installed languages. Click on the language you wish in the language module list and then on the button 'actual language'. The program will change to the chosen language without restarting up again.



On our homepage www.midi-connections.com we will continually publish new language modules.

11.1.4. Further adjustments



At last something easy! The programs splash screen can be turned on or off. A further adjustment is the number of undo steps for the graphic functions. You can choose between 1 and 8 steps.

Now your sheet of music can play the song as it is written on the sheet music you scanned. Obviously this arrangement can only consist of the notes printed on the music and will sound as good (or as bad) as the arrangement is printed. Unlike commercially available MIDI files, there will be no drum track because this is not included in most printed arrangements.

As MIDI Scan can recognise up to four staves, the maximum amount of individual instrument tracks is four. Most sheet music is provided as a piano arrangement with two staves, one for treble, and one for bass. In this case MIDI Scan provides a MIDI file with two tracks, one for each staff. As the default instrument sound is piano, the MIDI file will play just the same as a pianist following the music exactly would play the piece.

To make your own arrangement of the scanned sheet music, or perhaps add a drum track, you will need to load the saved MIDI file into a sequencer program. As MIDI Connections Light is included in the MIDI Scan pack, the following instructions apply to this program, but you can load and edit in any MIDI file sequencer program.

A description on how to print your edited music follows, but just to get the “feel” of the MIDI connections Light program, we offer the following guide:

Make sure the MIDI Scan program has been closed. If MIDI Connections Light has not yet been installed from the CD-ROM, please install now. Once installed start the program and select “Tape” mode. Click “file”, then “import MIDI file”. Use the directory box to navigate to the folder you saved your scanned MIDI file in. Choose the file and press OK. A MIDI File import dialog box will appear. Ignore the options for now; simply press the Go button.

Your scanned music will now appear in the MIDI Connections program as long grey stripes. The number of these stripes (tracks) depends on how many staves were in the scanned music – one track for each scanned staff.

Press the green start button and you will hear your music played.

At this stage there are many different ways you can alter the way your music plays and sounds. You can transpose by clicking on the menu item “Edit” and then “Global Transpose”. Choose the amount of semitones you wish to transpose and this will be done in a fraction of a second. Then you can hear your song in the new key, and of course, print the music in the new key. Just imagine how long this would take to do by hand?

Double click on the oblong to the right of track 2, a “Track properties” box appears. In here you can change the instrument sound, volume, name, MIDI channel, and the staff layout for printing that particular track.

Move the mouse cursor over to the right and a keyboard icon follows the pointer. Click the Right Hand mouse button to open up the parts toolbox. Using these tools you can view the tracks as musical notes, cut the track, copy parts, alter length, print etc. but more of that later.

Now that you have had a quick look at MIDI Connections Light it's time to get to know the program in more detail. The following section shows you how to print your edited music and guides you through the many editing tools available in this simple but powerful program.

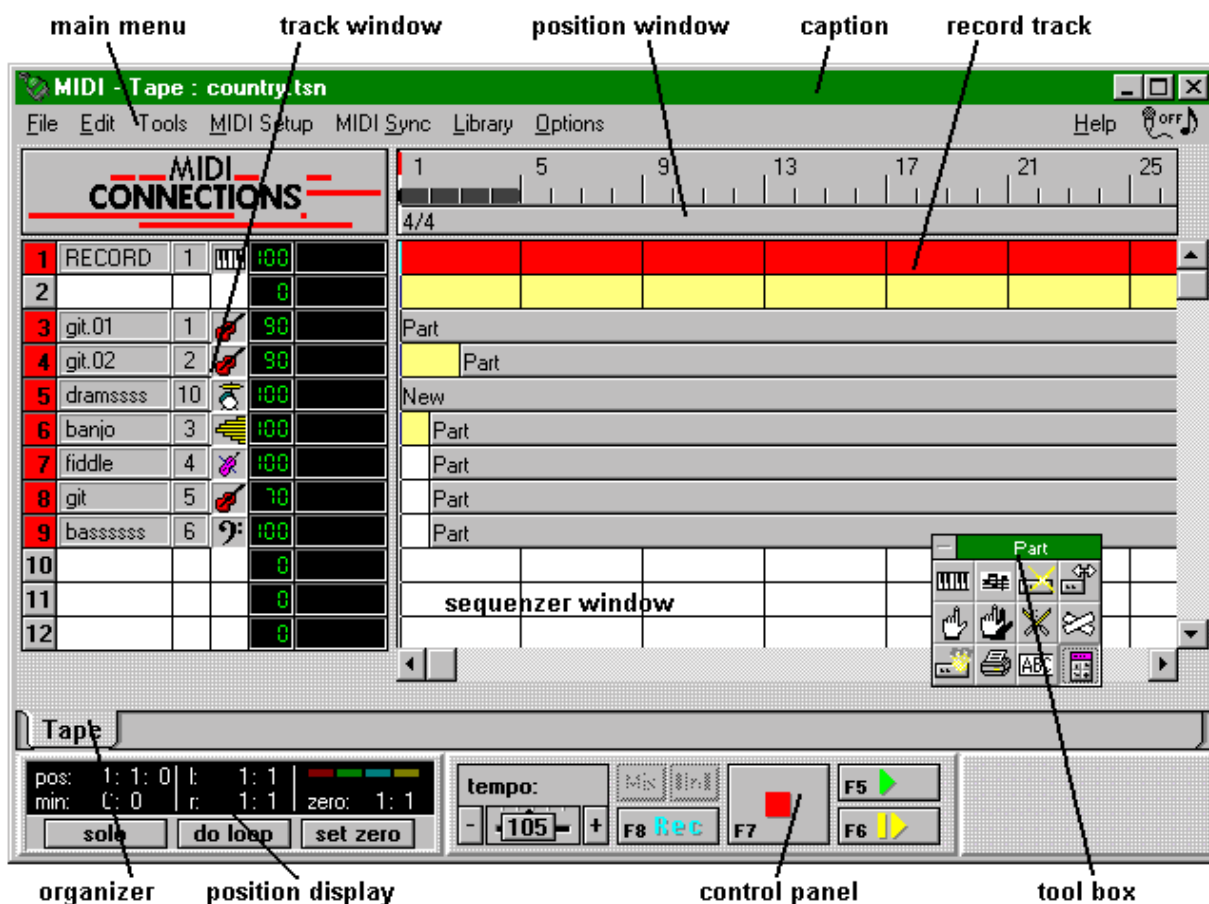
12. Print notes with MC-Light

! Before you start MIDI-Connections **Light** or **PRO** program, you have to close the scan program. Because both programs use the MIDI driver of Windows and Windows only allows one access, only one program can be used at one time. That's why a scanned notation page must be first saved as a .MID or .TSN file

We have not written a complete manual for our sequencer and notation programs. This chapter will only explain the main steps from the loading to the printing of a song.

12.1. The components of the main window

Start the program and choose the MIDI Tape button. As the name suggests, MIDI-Tape is similar to a tape recorder. It offers the capability of recording up to 20 tracks. However, the features in MIDI-Tape offer many more possibilities than the humble



tape recorder. This chapter will introduce all of them to you. When we developed this software, we focused our attention on an easy-to-operate system. Thanks to the graphical user interface you always see what you are doing. Software like MIDI-Tape is called a sequence program in MIDI terminology.

12.2. The tracks

12.2.1. Activate a track

A track is only ready for use if it's activated. Let's activate track 5. Move the mouse cursor on track 5, and double-click the left mouse button.

The dialogue box Track type opens. Select Drum Grid for drum- and percussion tracks if you intend to enter the drum hits with the mouse. In any other case select Key Grid. If you're going to record a drum track from your synthesiser/drum computer, you'll have to select Key Grid as well.

The basic adjustments for this track are made in the following dialogue box, Track properties.

12.2.2. Track properties

This dialogue box allows either to make basic adjustments in new tracks or to alter these adjustments in existing tracks.

A very nice feature is that these properties can be changed while a song is being played. Simply double-click the track name with the left mouse button to open this box.

Track name: Enter a logical name in this edit box. The name should increase the general view of the used tracks.

Track number: Cannot be altered. This is for information only.

Volume: Adjusts this track's main volume. Volume change events within the track are not affected.

MIDI channel: Simply press a channel number with the left mouse button to select the number. Only channel numbers enabled in Library for this device will be selectable in this dialogue.

Notation Clef: You have the choice: Treble- or Bass Clef or Split. In the first place the selected clef is used for the keygrid's notation, but it is also used when printing. Nevertheless, the print facility offers an opportunity to alter the key for printing only.

Most instruments' notation is in the Treble Clef, the Bass of course in the Bass Clef.

Instruments with a big range, e.g. the Piano, are usually using the Split notation, which is a combination of the two other keys.

Instrument: MIDI-Connections offers an extremely easy and flexible Library for your MIDI-equipment. This Library enables the use of more than 16 MIDI-channels, if you have multiple MIDI-ports installed.

If you press the instruments button, a dialogue box will let you choose the desired instrument from your General MIDI instrument set.

12.2.3. Direct Selection of Instruments and Channels



By clicking the channel number in the track header you can immediately select a MIDI channel. In the channel selection box you can make further selections. If you click on the instrument symbol the dialogue for selecting an instrument is opened.

This second direct select function will make assigning instruments much easier when

The parts

duplicate assignments occur in songs. Opening the track header dialogue with a double click remains the same. MIDI channel and instrument assignment can still be selected from the track header.

12.2.4. Track toolbox



Move the mouse cursor into the track window and press the right mouse button. This will cause a popup toolbox to appear. Now you must choose from the variety of track commands to make the toolbox disappear.

Choosing the last option of the toolbox will turn itself in to a permanent toolbox. This allows fast access to the variety of track commands. Simply double click its top left corner to close the permanent toolbox. The toolbox can also be rolled up and rolled down again by double clicking the list caption.

The functions

Track properties: Opens the track properties dialogue box, where you can change the tracks properties. If the track is still empty, you have the chance to change the track type (key grid or drum grid). You have already learned about that box in the preceding paragraph.

Transpose track: Every note in the selected track will be played and notated at the chosen key higher or lower. The signature of the displayed or printed notes won't be affected. The scroll bar transposes in half-note steps up or down.

Delete track: Deletes an entire track with all the parts included, if the following verification is affirmed. Note: the track cannot be restored after this operation.

Print track: We'll get to this later on in the paragraph printing.

LED display: Changes to the real time LED display. The LED's deflect with each MIDI-note event during playback of a song. For volume adjustment, click the volume number with the mouse -left: decrements -right: increments by one volume unit.

Mixer display: Changes to the mixer display. In this mode the volume of each track may be changed during playback. Simply slide the scrollers to the desired volume. For fine adjustment click the volume number with the mouse.

-Left: decrements

-Right: increments by one volume unit.

Instrument display: Changes to instrument display. Each track now also shows the full instrument name. Permanent track toolbox; choosing this option will turn the popup toolbox in to a permanent toolbox. This allows fast access to the variety of track commands. Simply double click its top left corner to close the permanent toolbox.

12.3. The parts



After activating a track you must insert parts defining the songs structure into the track. To do so, you can copy or move an existing part on to the track, or you can insert a new empty part. After a part has been established, there are several ways to fill that part with notes and other MIDI-events. You can insert notes with the mouse, or record from your MIDI-keyboard.

To initiate any actions to manipulate a part, press the right mouse button within the sequence window. A popup toolbox will appear. Every edit mode for parts has its own distinguishing mouse cursor, like a pointing hand to move a part and so on.

All cursor actions will be explained in the next chapter.

12.3.1. Part toolbox

Move the mouse cursor in to the sequence window and press the right mouse button. This will cause a popup toolbox to appear. Now you must choose from the variety of part commands to make the toolbox disappear.

Open as key grid: Choose this option to open parts in key grid mode. The mouse cursor shows the keys of a piano. Then simply double-click the desired part to edit.

Open as notation viewer: Choose this option to open parts as notation-editor. The mouse cursor shows staves and notes. Then simply double-click the desired part to edit.

Insert new part: The mouse cursor turns to a horizontal arrow pointing to the left. Press the left mouse button at the desired part begin and drag the mouse to the right. Release the button at the part's end. A name can be entered in the following dialogue box.

Change part length: The mouse cursor turns to a horizontal arrow pointing left and right. Only the end of a part can be shifted. Press the left mouse button over the part's end and drag the mouse to the left/right. Release the button at the new end.

Note: If a part contains notes, the notes in the shortened area won't be played any more. They remain in the part and reappear when the part is lengthened again.

Move part: The mouse cursor changes to a pointing hand, indicating that you may move a part now. Simply press the left mouse button on the desired part and drag it to its new destination. A part can be moved within its track or can be moved onto another track.

Copy part: The mouse cursor changes to a shaded pointing hand. This indicates that you may copy a part now. Simply press the left mouse button on the desired part and drag it to its new destination. A part can be copied within its track or can be copied onto another track.

Divide part: Working with parts larger than 20 bars uses significant calculation time when entering the notation editor and reduces clarity of the songs structure. Therefore you can divide parts, to receive convenient part sizes. The mouse cursor changes to a pair of scissors. Simply click the part to cut it apart.

Glue parts: To combine two parts use this option. The mouse cursor changes to a band-aid. Simply click the junction of the two parts to glue.

Delete part: The mouse cursor becomes an X. When you click on a part it will be deleted if the verification is affirmed.

Print part: See paragraph printing.

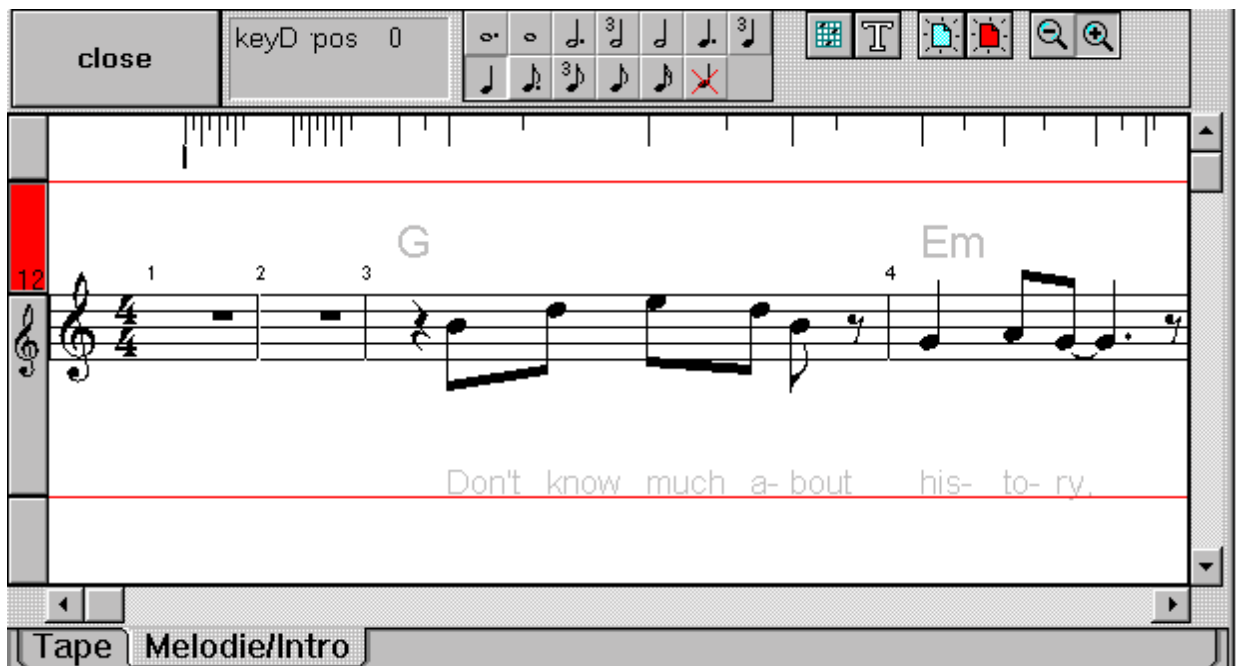
Part name: The part's name can be entered / changed.

Permanent part toolbox: choosing this option will turn the popup toolbox in to a permanent toolbox. This allows fast access to the variety of part commands. Simply double click its top left corner to close the permanent toolbox.

12.4. Notations-Editor

12.4.1. The components of the notation editor

Mouse position note values chords lyrics screen refresh zoom



The picture above shows you the main screen of the notation editor.

- Mouse position** Depending on the mouse position this display shows you the height of the note and its time position in tickers.
- Note values** The actual value is shown.
- Chords** Switch over to chord editing mode. An additional edit window will appear.
- Lyrics** Switch over to lyrics editing mode. An additional edit window will appear.
- Screen refresh** Pressing this button will cause the notation editor to update its screen.
- Recalculate and refresh** This will cause MIDI-Connections to recalculate the note and symbol distances and then will refresh the screen. The recalculation may take a few seconds in long parts.
- Snap grid** This shows you the current snap grid. All elements you add in the notation editor will snap to positions on this grid.
- Snapped position** When you move the mouse within the notation editor a black line below the snap grid shows you where the editor would snap new elements.
- Margin lines** The margin lines represent the actual margin between staves. To edit these margins, refer to *page set-up*.

12.4.2. Editing notes

After entering the notation editor, the actual edit mode is set to *edit notes*. Within the margin lines the current mouse position is displayed in the toolbar. The note value button shows the current value, which will be applied to the new notes.

Insert a note

If you want to insert a new note to the score, move the mouse approximately to the desired position. Now press the left mouse button and at the same time check the position and note pitch in the position display while moving to the correct spot. When you have reached the correct position, release the left mouse button and the note will be added to your notation.

Change a note value

If a note has the wrong note value, for instance after recording real time, you **don't** have to delete the note and then insert the correct one. You can replace the old note with a note of the current note value. Simply insert the note as described above at exactly the position, where the faulty note is.

Delete a note

To delete a note there are two possibilities:

- a) Choose the cross within the note value toolbox. Then the editor is in delete mode. Now click within the vicinity of the note to delete and it will be done.
- b) If you try to insert a note at exactly the same position, where a note already is with exactly the same value, then the note will be erased. Confused?

Imagine you are inserting half notes, and you have inserted a note too high or too low in pitch. Now instead of changing to delete mode and erasing the faulty note, you can simply pretend to insert the same note again and it will be erased. This is similar to the method used in the drum grid.

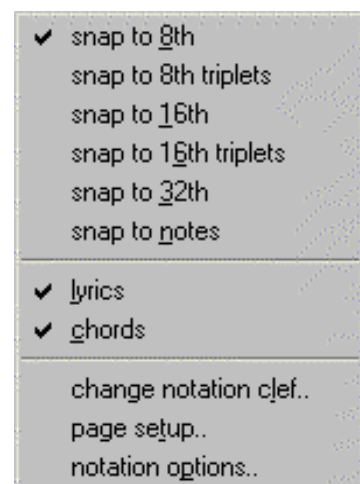
12.4.3. Changing the current snap grid

Press the right mouse button within the notation window, and a popup menu will appear. Following are the options and functions you can choose from.

To insert 16th notes the default snap grid is too inaccurate. Therefore you must change the snap grids resolution.

Now choose from the provided snap grid resolutions.

A special snap grid mode becomes active when you choose **snap to notes**. Then the notation editor snaps all insert operations to existing notes. This is useful when inserting lyrics. Every syllable may then be easily synchronized with the existing notes.



12.4.4. Moving Notes

A new function is the moving of notes. Simply press the **Shift** key and click on the note with the left mouse button.

Here is how it works:

- 1) Press the **Shift** key.
- 2) **Click the left mouse button** on one of the notes.

3) **Move** the note to the new place.

4) Release the left mouse button.

12.4.5. Notation clef and split key

Another function that is included in the right mouse key menu is the setting of the notation clef and the split key.

In the dialog box, which appears, you can alter the notation clef for the whole track. Choose between **treble** and **bass** clef for single line tracks. For piano tracks you choose **split clef**, as you can also adjust the key number, which is used to execute the split. The split key scroll bar is not used for treble and bass clefs.

12.4.6. Page set-up

To adjust the page margins and the spaces between the staves, see Capture **Band / Page set-up**.

12.4.7. Keyboard Shortcuts

Changing the Insert/Delete Mode

With the **Insert** and **Delete** keys (**Ins/Del**) you can switch between the 'insert note' and 'delete note' mode.

12.4.8. Moving Notes

By clicking on the mouse button while holding the **Shift** key you can drag a note to a new position. Here is how: Press the Shift key and click the left mouse button on a note. Hold the button pressed and drag the note to a new position. Release the mouse button.

12.5. The key grid editor

There are several ways to insert notes into a key grid: either by mouse or real time recording.

If the grid is opened freshly, the mouse cursor is a cross (+) within the grid's borders. The cross stands for the mode edit note. If the left mouse button is pressed somewhere inside the grid, it changes to an arrow, pointing to the left. Now the grid is ready to receive notes. Move the mouse to the right, while you keep the button down. As soon as you release the button, the cursor switches back to a cross. Right now you've inserted a note, which is drawn as a red rectangle in the grid.

12.5.1. Edit modes

When the right mouse button is pressed inside the grid, the popup menu with the available functions appears. It will vanish if one of the options is selected, or if you click anywhere outside the menu.

Edit note: In this mode, the mouse cursor is a cross in normal position. All actions are done with the left mouse button. An action always results in an activated note.

Insert note: Press the mouse button at the note's beginning. Keep the button down while you drag the mouse to the right until you reach the note's end.

Extend note: Press the mouse button inside an existing note. Keep the button down while you drag the mouse to the note's new end. If

a new note is dragged from the left into an existing one, the result will be one single note.

Shorten note: Shorten the note's end: Press the mouse button behind the end. Keep the button down while you drag the mouse to the left until you reach the new end. Shorten the note's beginning: Press the mouse button at the new beginning. Keep the button down and drag the mouse to the left until you've crossed the old beginning.

Join notes: Two notes at the same pitch will weld together. Press the mouse button inside the first note. Keep it down while you drag the mouse into the second note.

Delete note: Press the left mouse button while you drag the mouse from the right to the left over the entire note.

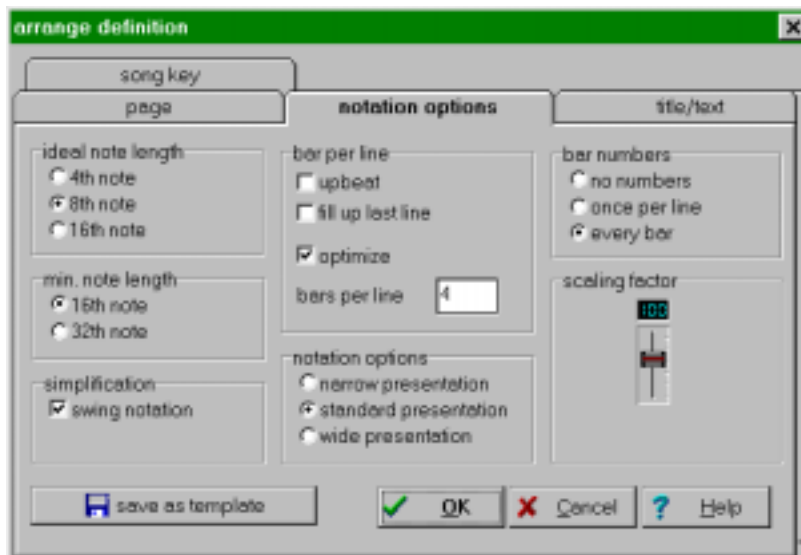
Note: If notes are created, they adopt the current attributes. As long as a note is activated, its attributes can be altered. All actions in the input mode have one thing in common: the note is still activated after you've created or altered it.

Move note: If you select Move Note in the popup menu, the mouse cursor becomes a pointing hand. Place it on the note to be shifted. Press the left mouse button and drag the note to its new position. Notes can be shifted horizontal (time) as well as vertical (pitch). In the second case you even hear the changing of the pitch.

Delete note: If you select delete note in the popup menu, the mouse cursor becomes an X. Each note you click on will be deleted immediately. This mode is opportune if you have to delete several notes, or if the note to be deleted is very close to the pattern's right border (as explained previously). In the second case it's sometimes impossible to catch the right edge of the note.

Velocity: If you select note attributes the mouse cursor becomes a square with a dot at its centre. Notes on which you click become activated (red) and a velocity scroller will appear, to edit the velocity of the note.

12.5.2. Overview of the Main Functions



Notation options:

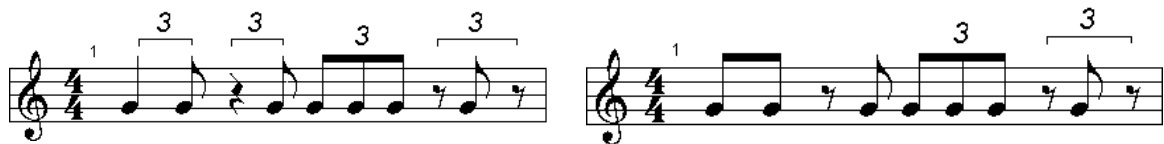
With the function 'notations options' you can adjust the 'ideal note length', 'minimum note length', 'notation size' and 'simplification' parameters. Without having to quantize the notes you can achieve a simpler note display.

In the example below the ideal note length was adjusted to 1/16th and then to 1/4th ideal note length.



With the option 'Swing Notation' you can avoid the dotted 1/8th and 1/16th notes as well as the 1/4th and 1/8th triplets in Swing, Shuffle and Blues modes. The display is adjusted to simple 1/8th notes. Exceptions are groups of triplets and 1/16th or 1/32nd notes at specific minimal note lengths.

Example of normal notation and below the same example with the Swing Notation enabled. The triplets in the second half of the bar were not changed.



Margins: After clicking this button you have the option to adjust the margins by using the mouse to drag the margin lines to the desired positions. After releasing the mouse button, the document is reformatted to the new settings.



Title and Comments: This button opens a dialogue in which you can set the title of the song and additional text to the left and right of the heading. Another function in this dialogue is the option to turn the page numbering on or off.



Page: The distances of the notation to the red limits are fixed in the dialog **Page options**.

You can adjust the margins, distances and height or width format here.

Save as presentation: If you need the margins and distances of a song for further songs, click the button **save as presentation**. Your alterations remain unchanged on restart.



Print Document: This will enable you to print individual pages of the complete document.

Zoom: This enables a higher display detail.

12.6. MIDI-Connections PRO

The PRO version of MIDI-Connections has more notation editing tools and printing functions than the Light version. With the PRO version any parts of a song can be put together and printed. Parts can be split up into individual voices and the graphics be adjusted. Please notice the demo version that comes with the program and the information on our internet-page www.midi-connections.com.

13. Tips and tricks

13.1. General tips and tricks

- Be careful to lay the page square in the scanner. To avoid analysing problems, the page must be scanned in straight.
- Notation lines on the BMP's (BitMaP = Windows picture data with the file extension *.BMP) should not be distorted. Lay the pattern down flat when you scan it.
- The scan resolution should be chosen as high as possible. A resolution of 600x600 dpi. is ideal. If the resolution is low such as 300x300 dpi. you need a good print with strong lines so the program can produce an exact recognition.
- The BMP must be a b/w (black/white) picture.
- The start and end of the staves must not be cut off. The scanned BMP must be identical to the music sheet.
- For an automatic analysis, pictures and larger text on the copy should be covered up or erased.
- Use the TIF picture format with the Hufmann compression. A black/white picture reduces up to 10x smaller without losing any quality. **The program only supports b/w TIF with Hufmann compression!!!!** or Windows b/w Bitmap (BMP).

13.2. How it's done!

Here's a checklist on how to achieve the best results in analysing music.

- a) **Read in the pattern** (directly from the scanner or from a prepared data, see chapter 3.)
- b) The first run should be a **quick search** (control type of time / type of key / clef on each track, see chapter 3.4.)
- c) **Control** the symbols with a blue outlining. If they're stuck together, you should separate them with the drawing functions. (See chapter 6.1.)
- d) Analyse in the **Learn mode**. (Store or take over the unknown symbols, see chapter 7.)
- e) Listen to the song and repeat if necessary point c) and d). If the song is ready for further use, it will be **stored** as *.mid or *.tsn song (see chapter 5.).

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