ISIS® Software for
PHOENIX XT and MENTOR

User Manual
MIDI

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1. Introduction

The MIDI protocol allows macros programmed in ISIS®, faders, or flashkeys to trigger external events, and vice versa. A macro can trigger keyboard notes, control changes, or program changes on a MIDI keyboard, sampler, or other device; and similarly, ISIS® macros can be triggered by MIDI notes commands, or by timecode, or faders modulated by other MIDI commands. A macro can be a complex series of commands, or simply «GO», but by using MIDI, the timing of the macro will be consistently accurate for every performance.
MIDI can be used in this way to time lighting and sound effects to happen simultaneously, or with a certain phrase in a piece of music. The whole process is automated and therefore accurate and not subject to operator error.
The MIDI input and output functions must be configured for each particular installation or show, and MIDI commands and ISIS® macros assigned to each other as required.

1.1 MIDI IN/ OUT Configuration

As with all other peripherals, MIDI input and output must be enabled and configured for the show. Disabling it prevents macros being accidentally triggered by external devices.
MIDI input and output are configured separately as the communication does not always need to be bidirectional. The lighting desk can be used to trigger a device such as a sampler by MIDI note on commands, or lighting macros can be triggered by note on commands or timecode. It is quite likely that not all the options are required for a show, so if output is required but not input, the input can be disabled to prevent external devices from triggering macros.

1.1.1 MIDI In Configuration

To enable ISIS® macros to be triggered by an external MIDI device, the MIDI input must be enabled and configured. This is all done in a single dialogue box, although there are several options to configure.

MENU F7 ↓ to MIDI Config → ENTER

To enter the MIDI In configuration dialogue press <MENU> <F7 SETUP>
Use the arrow and <ENTER> keys to navigate the dialogue box in the usual way.
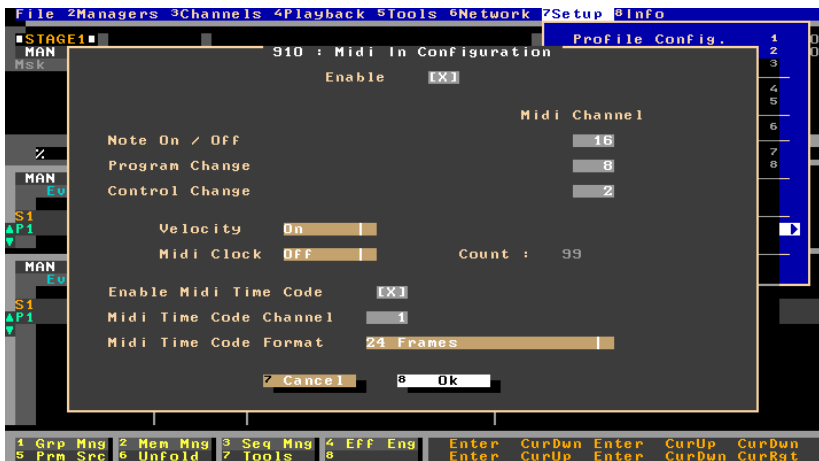
To enable the MIDI input, put a cross in the ENABLE checkbox by pressing <ENTER>.

Next, select the MIDI channels that are to be used by the external triggers. There are 16 MIDI channels, and four different ways of triggering macros from the external device: MIDI note on / off commands, Program Change commands, Control Change commands and Timecode. Each method can use a different MIDI channel. By careful use of MIDI channels both in programming ISIS® and the external device, all the notes can be used at any time, but the macro is only triggered during a particular piece of music when the note is assigned to the same MIDI channel as the ISIS® MIDI In configuration The same theory also applies to Program Change commands and Control Change commands.
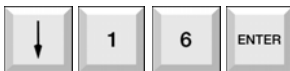
Move the cursor to the Note on/off MIDI channel column and enter a MIDI channel number from 1 to 16. Macros will only be triggered when the assigned not on/off command is sent on channel 16.

Move the cursor to the Program Change MIDI channel column and enter a MIDI channel number from 1 to 16. Macros will only be triggered when the Program change command is sent on channel 8.

Move the cursor to the Control Change MIDI channel column and enter a MIDI channel number from 1 to 16. Macros will only be triggered when the Control Change commands are sent on channel 2.

Velocity is an optional setting for note on commands. Velocity refers to the force with which a keyboard note is struck, so if the velocity is set to approximately 50% (64 because MIDI note velocity is on a scale of 0 to 127), the assigned macro will only be triggered when the note is struck hard and not during quiet pieces of music, or by accidental brushing of the keys.

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Macros can also be triggered by MIDI timecode. This is useful when the macro needs to be executed at a specific point in a pre-recorded piece of music. Timecode is measured in hours, minutes, seconds, and frames per second (usually 24). This allows a lighting change to be timed with the music to an accuracy of 1/24th second.

The timecode is counted with the music sequence, and the macro assigned an exact timecode header, such as 0 hours, 2 minutes, 37 seconds and 15 frames. The macro is triggered only when the music has played for 2 minutes, 37 seconds and 15 frames if played from the beginning. This «Time stamp» is continuously recorded with the music, so even if the sequencer, minidisk, or other MIDI source device is fast forwarded or rewound; the macro is still triggered at the exact point in the music according to the timecode header.

Place a cross in the Enable MIDI time code checkbox by pressing <ENTER>,

then move the cursor down and enter a MIDI channel number that the timecode will be sent on.
Move the cursor down again and press <ENTER>

for the Timecode format option list. 24 frames per second is the usual format, but there are occasions when other formats are used. Be sure to select the timecode format that matches the MIDI source device. The timecode header is programmed elsewhere.

When the MIDI In configuration is complete, press <F8 OK> to exit the dialogue box.

The next section describes the MIDI out configuration. If this is not required, turn straight to the section «Programming MIDI input»

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1.1.2 MIDI Out Configuration
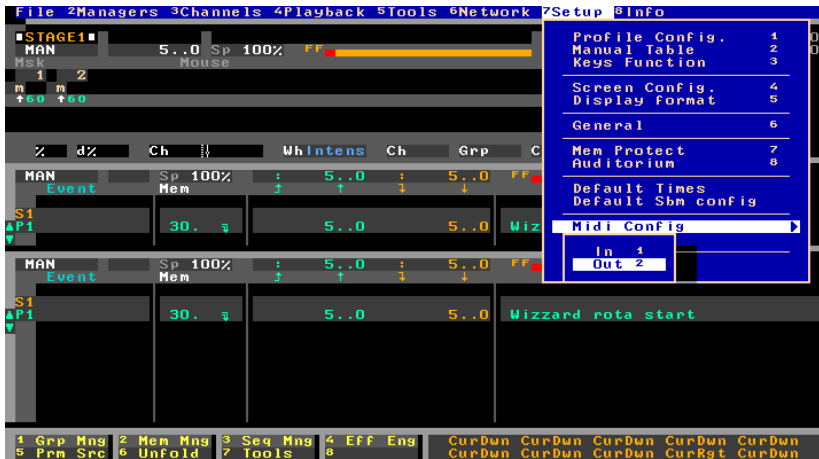
To enter the MIDI In configuration dialogue press

 to MIDI Config

To enter the MIDI In configuration dialogue press <MENU> <F7 SETUP>
Use the arrow and <ENTER> keys to navigate the dialogue box in the usual way.

To enable ISIS® macros to trigger an external MIDI device, the MIDI output must be enabled and configured. This is all done in a single dialogue box, although there are several options to configure.

To enable the MIDI output, put a cross in the ENABLE checkbox by pressing <ENTER>.

Next, select the MIDI channels that are to be used by the external device.
There are 16 MIDI channels, and three different parameters that can be changed by ISIS® macros: MIDI note on / off commands, Program Change commands and Control Change commands. Each method can use a different MIDI channel. By careful use of MIDI channels both in programming ISIS® and the external device macros will only affect the external MIDI device on the specified channels.

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Move the cursor to the Note on/off MIDI channel column and enter a MIDI channel number from 1 to 16. In this example macros will only trigger the MIDI note when the external device uses channel 3.

[↓] [5] [ENTER]

Move the cursor to the Program Change MIDI channel column and enter a MIDI channel number from 1 to 16. In this example macros will only trigger the MIDI program change when the external device uses channel 5.

[↓] [1] [1] [ENTER]

Move the cursor to the Control Change MIDI channel column and enter a MIDI channel number from 1 to 16. In this example macros will only trigger the MIDI Control Change when the external device uses channel 11.

[↓] [ENTER] [↓] [ENTER]

Velocity is an optional setting for note on commands. Velocity refers to the force with which a keyboard note is struck, so if the velocity is set to approximately 50% (64 because MIDI note velocity is on a scale of 0 to 127), the macro can have different effects depending upon the programming of the external device. For example, the same keyboard key can be used to trigger two different sampled sounds: one at high velocity and one at low velocity. Therefore if the same MIDI note is being used for two (or more) different sounds, the velocity must be set in the MIDI out dialogue to ensure that the correct sounds are played.

[F8]

When the MIDI Out configuration is complete, press <F8 OK> to exit the dialogue box.

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1.2 Programming MIDI Input

The MIDI input can be used by ISIS® in six different ways:
1.   A MIDI Note On command can trigger a submaster flashkey.
2.   A MIDI Note On command can trigger an ISIS® macro.
3.   A MIDI Note Off command can trigger an ISIS® macro.
4.   A MIDI Program Change can trigger an ISIS® macro.
5.   A MIDI Control Change can trigger an ISIS® macro.
6.   A MIDI Timecode header can trigger an ISIS® macro.

So an external device is able to control many functions of the lighting desk by programming macros and operating faders and flashkeys.

Midi

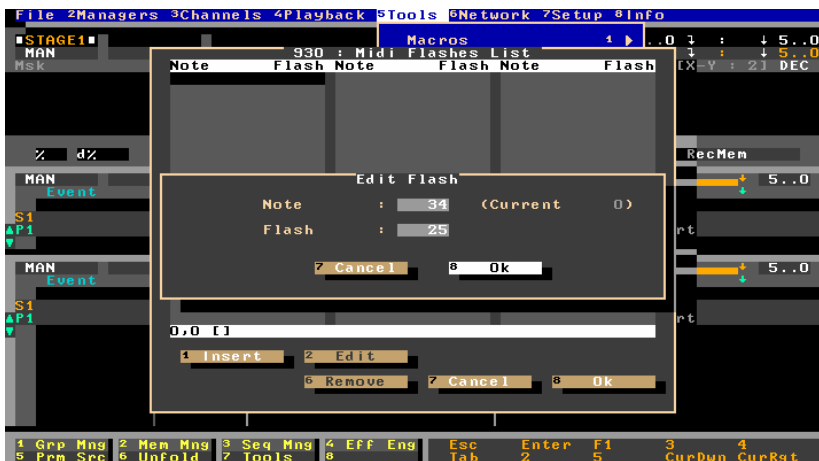## 1.2.1 To program a MIDI Note to trigger a submaster flashkey:

Through the menu, select the MIDI Input FLASHES dialogue and assign a MIDI note number to a submaster flashkey. Each time that the note is played on the channel specified in the MIDI input setup dialogue, the flashkey will be remotely operated.

Press <MENU> <F5 TOOLS> <F5 MIDI> <F1 IN> <F1 FLASHES>

In the dialogue box, press <F1 INSERT>.

In the dialogue box, press <F1 INSERT>.

Enter a MIDI note number then move the cursor to the «flash» field.

Enter a flashkey number and press <F8 OK> to exit the dialogue.

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F1 OR F8

Press <F1 INSERT> again to assign another note to another flashkey, or <F8 OK> to exit the dialogue.

or

The selected flashkey will be «virtually pressed» each time that the selected note is played on the external device on the channel specified in the MIDI Input setup dialogue.

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1.2.2 To program MIDI Notes to trigger ISIS® macros:

Through the menu, select the MIDI input NOTES dialogue. Each note can be assigned two different macros: one that is triggered with the note On command and one that is triggered with the note Off command. Either On or Off commands can have a macro assigned independently of each other, or the note can have both commands assigned to two different macros.
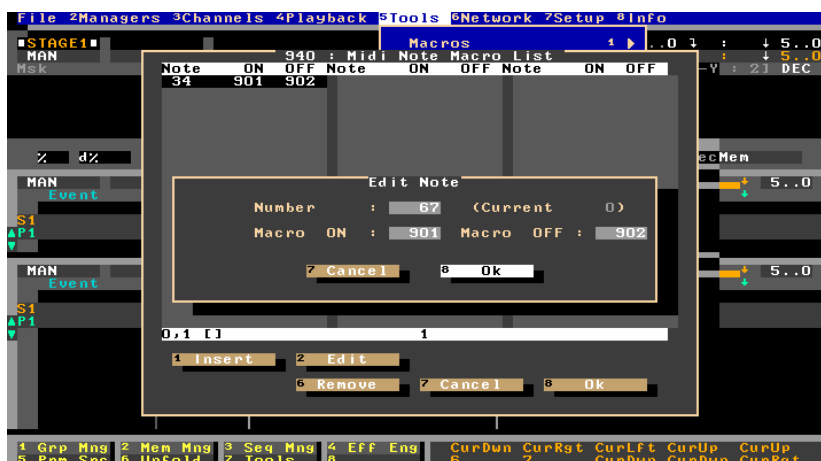
Macros assigned to MIDI commands may still be replayed by other methods: keys assignment, external lines, or from the keypad, and they can be edited in the normal way whenever necessary.
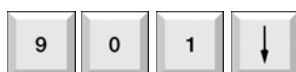
Press <MENU> <F5 TOOLS> <F5 MIDI> <F1 IN> <F2 NOTES>

In the dialogue box, press <F1 INSERT>.

Enter a MIDI note number,

move the cursor to the «Macro ON» field and enter a macro number.

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If required, move the cursor to the «Macro OFF» field and enter another macro number.
Press <F8 OK> to exit the dialogue.

OR

Press <F1 INSERT> again to assign another note command to another macro, or <F8 OK> to exit the dialogue.

The selected macros are triggered each time that the selected note is played on the same MIDI channel as specified in the MIDI input setup dialogue.

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1.2.3 To program MIDI Program Changes to trigger ISIS® macros:

Through the menu, select the MIDI Input PROGRAM CHANGE dialogue. ISIS® macros can be triggered by Program Changes on the remote device by assigning macros to Program Change numbers.
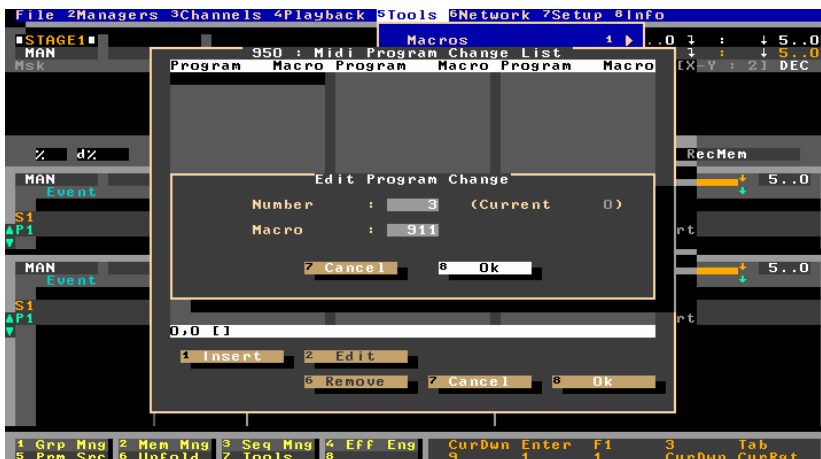
Macros assigned to MIDI commands may still be replayed by other methods: keys assignment, external lines, or from the keypad, and they can be edited in the normal way whenever necessary.

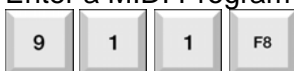Press <MENU> <F5 TOOLS> <F5 MIDI> <F1 IN> <F3 PROGRAM CHANGE>

In the dialogue box, press <F1 INSERT>.

Enter a MIDI Program number, move the cursor to the «Macro» field

and enter a macro number. Press <F8 OK> to exit the dialogue.

 OR

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Press <F1 INSERT> again to assign another note command to another macro, or <F8 OK> to exit the dialogue.

The selected macro is triggered each time that the selected note is played on the same MIDI channel as specified in the MIDI input setup dialogue.

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1.2.4 To program MIDI Control Changes to modulate faders:

Through the menu, select the MIDI Input CONTROL CHANGE dialogue. ISIS® faders can be moved by Control Changes on the remote device by assigning the faders to Control Change numbers. The faders can still be used manually at any time.

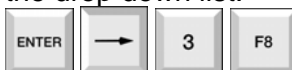Press <MENU> <F5 TOOLS> <F5 MIDI> <F1 IN> <F4 CONTROL CHANGE>

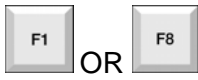In the dialogue box, press <F1 INSERT>.

Enter a MIDI Control number, move the cursor to the «Fader» field and press <ENTER> for the drop down list.

Use the arrow and <ENTER> keys to select a fader type and move the cursor to the «Nr» field. Enter the number of the fader type: e.g. 3 for submaster 3.
Press <F8 OK> to exit the dialogue.

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F1 OR F8

Press <F1 INSERT> again to assign another control command to another fader, or <F8 OK> to exit the dialogue.

The selected fader is moved each time the remote device issues the selected Control Change command on the MIDI channel specified in the MIDI input dialogue.

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1.2.5 To program MIDI Timecode to trigger ISIS® macros:

Through the menu, select the MIDI input TIMECODE dialogue. ISIS® macros can be triggered when the sequence on the remote device reaches a specified timecode header. This ensures that the macro is always triggered at exactly the same point each time the music sequence is played.
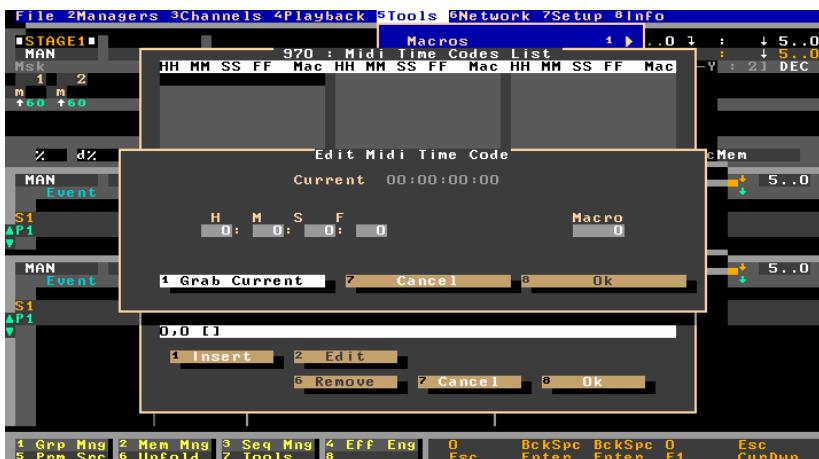The macros can still be triggered by other methods: from the keypad, by keys assignment or external lines.

Press <MENU> <F5 TOOLS> <F5 MIDI> <F1 IN> <F5 TIMECODE>

In the dialogue box, press <F1 INSERT>.

A timecode header (specific point in a MIDI file) can be entered manually with the arrow keys and keypad, or can be pasted in directly from the source device.
Use the arrow keys to navigate the dialogue and manually enter the timecode header in the format
Hours:Minutes:Seconds:Frames

or use the «Grab Current» function.

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F1

Playbacks the MIDI file on the remote device and pause it at the desired point. Press <F1 GRAB CURRENT>.

The timecode is taken from the current point of the paused MIDI file and pasted directly into the ISIS® MIDI time code dialogue box.

F8

Press the down arrow key to move the cursor to the «Macro» field and enter a macro number. Press <F8 OK> to exit the dialogue box.

F1 OR F8

Press <F1 INSERT> again to assign another timecode header to another macro, or <F8 OK> to exit the dialogue.

The selected macro is triggered each time the specified timecode header is reached by the remote MIDI replay device on the MIDI channel specified in the MIDI input configuration dialogue.

1.3 Programming MIDI Output

The ISIS® MIDI output can be used in two different ways:
1.   A submaster flashkey can trigger a MIDI Note On command.
2.   A fader on the lighting desk can trigger a MIDI Control Change.

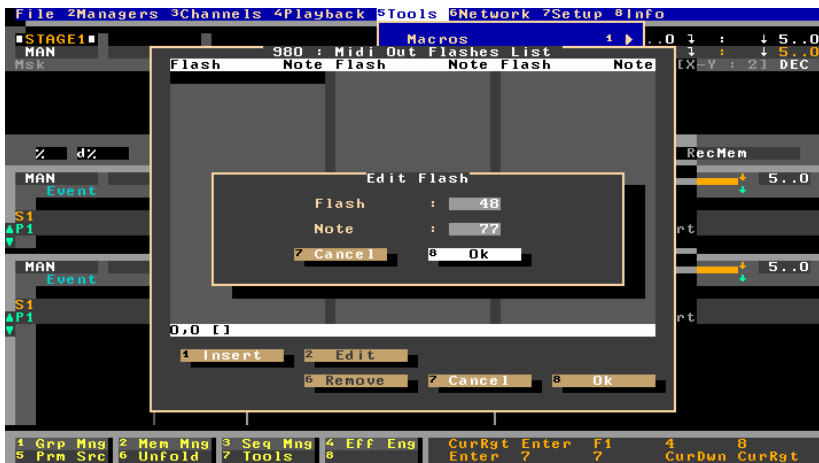### 1.3.1 To program a flashkey to trigger a MIDI note:

Through the menu, select the MIDI Output FLASHES dialogue and assign a submaster flashkey to a MIDI note number. Each time that the flash key is pressed, the MIDI note is played on the remote device. This method can be used as a way of replaying sampled sounds at the same time as a starting a chaser or effect - or any other combination if the flashkey is part of a macro which is part of an event...

Press <MENU> <F5 TOOLS> <F5 MIDI> <F2 OUT> <F1 FLASHES>

In the dialogue box, press <F1 INSERT>.

Enter a flashkey number, move the cursor to the «note» field and enter a MIDI note number. Press <F8 OK> to exit the dialogue.

Press <F1 INSERT> again to assign another note to another flashkey, or <F8 OK> to exit the dialogue.

The selected MIDI note is played each time the selected flashkey is pressed.

Midi

1.3.2 To program a fader to trigger a MIDI control change:

Through the menu, select the MIDI Output CONTROL CHANGE dialogue and assign a submaster fader to a MIDI Control number. Each time that the fader is moved, the corresponding MIDI control is also changed on the remote device. This method can be used as a way of changing the volume or pitch modulation of the remote device.

Press <MENU> <F5 TOOLS> <F5 MIDI> <F2 OUT> <F2 CONTROL CHANGE>

In the dialogue box, press <F1 INSERT>.

In the «Fader» field press <ENTER> for the drop down list. Use the arrow and <ENTER> keys to select a fader type and move the cursor to the «Nr» field. Enter the number of the fader type: e.g. 3 for submaster 3.

Move the cursor to the «Control Nr» field and enter a MIDI control number.
Press <F8 OK> to exit the dialogue.

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F1 OR F8

Press <F1 INSERT> again to assign another control command to another fader, or <F8 OK> to exit the dialogue.

Each time the selected fader is moved, a control change command is issued to the remote device on the MIDI channel specified in the MIDI output configuration dialogue.

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