

# A-880 Manager



Version 3.2.2 for macOS  
Version 3.2.1 for Windows

## MANUAL

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MOUNTAIN UTILITIES



<https://mountainutilities.eu/>

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# 1. Overview

A-880 Manager is a utility by Mountain Utilities for setting up Roland's A-880 MIDI Patcher/Mixer. It is available for macOS and Windows. It is free, although donations are more than welcome.

## **A-880 firmware version:**

A-880 Manager was developed for an A-880 with firmware version 1.03. It is unknown to what extent it works with other versions.

You can determine the firmware version of an A-880 by holding its OUTPUT/NUMBER buttons 1, 2, 4 and 8 while switching the unit on via the POWER button. Each lit INPUT/BANK LED 1-8 then indicates a part of the version number: 0.01, 0.02, 0.04, 0.08, 0.16, 0.32, 0.64 and 1.28 respectively. Adding the values for the lit LEDs yields the version number; so e.g. for version 1.03 LEDs 1, 2, 3, 6 and 7 light up ( $0.01 + 0.02 + 0.04 + 0.32 + 0.64 = 1.03$ ).

## 2. Version history

### Version 3.2.2 (macOS 2021-12-08)

- *macOS edition:* The application no longer refuses to open the ‘MIDI devices’ dialog box when a MIDI I/O device doesn’t have a name, manufacturer, model or unique ID. Instead, the ‘MIDI devices’ dialog box now calls any undefined property ‘UNDEFINED’.

### Version 3.2.1 (2020-11-17)

*All editions:*

- The application has become more user-friendly concerning data errors in ‘.stp’ and ‘.mru’ configuration files:
  - On startup, when the application encounters a data error in a configuration file, the application now mentions the exact name of the offending file, and no longer refuses to start. Hence it is no longer necessary to delete corrupt configuration files manually.
  - On exit, the application reports any errors while saving configuration files.
- In this manual: the description of the ‘A-880 options’ dialog box mentions that ‘Automatically update A-880’ also affects the A-880 windows.

*macOS edition:*

- Configuration files are no longer saved with DOS/Windows newlines (CR+LF), but with Unix ones (LF).

*Windows edition:*

- The update check mechanism works again on Windows versions supporting TLS 1.2 but not TLS 1.3, i.e. Windows 7, Windows 8 and pre-TLS 1.3 Windows 10. (Windows XP and Vista (which don’t even support TLS 1.2) were not hit by this problem, and still work too.)

### Version 3.2.0 (2020-09-14)

*All editions:*

- The update check mechanism should now work again on any operating system capable of running the application, including Windows XP and all versions of macOS from Mac OS X 10.6 (Snow Leopard) onwards.
- Increased the application’s running speed by disabling some debugging safeguards. (From now on, this will apply to all Release Candidate and Release versions.)

*macOS edition:*

- The application is now 64-bit. This makes it compatible with macOS 10.15 (Catalina), which doesn’t run 32-bit applications.
- The application no longer uses the Carbon interface, but Cocoa. Again, this switch was required for compatibility with Catalina, since it doesn’t support Carbon (which is natural, since Carbon has always been restricted to 32 bits).

Due to the transition to Cocoa, the application is no longer plagued by the following Carbon-related bugs (which used to be listed in the ‘Known problems’ section of this manual):

- Scrollbars around grids no longer stay when they are no longer necessary.
- Numbers in editboxes no longer align to the left but to the right, and long numbers can no longer be partly hidden behind the left edges of editboxes.
- Tabbing into a multi-line editbox by pressing Tab or Shift+Tab no longer adds a spurious tab character in the editbox.
- The drop-down lists of certain comboboxes no longer limit the number of items displayed simultaneously to six.
- The drop-down lists of color comboboxes now contain colored rectangles.
- The ‘Custom’ items in the drop-down lists of color comboboxes no longer behave strangely.

- On the other hand, the application may now suffer from problems related to Cocoa.
- The application now handles incoming MIDI messages with timestamp 0 (=‘now’) correctly, in accordance with the Core MIDI specification. (For instance the IAC Driver generates these timestamps.)
- The application now handles incoming MIDI SysEx buffers larger than 256 bytes correctly.

*Windows edition:*

- The installer allows you to deselect non-essential files: the manual and the skin definitions.
- Skins: 39 alternative user interfaces, mainly color schemes.
- Full support for the ‘Per Monitor v2’ DPI awareness protocol introduced in Windows 10 Creators Update 1703: at high DPI settings all text characters look razor-sharp instead of blurry, and the resolution of each window automatically adapts to the monitor on which it is (mainly) being shown.
- Fixed the incorrect scaling of certain windows and dialog boxes if the operating system’s DPI setting isn’t its normal value of 96 DPI. (This problem was introduced in A-880 Manager 3.1.0.)
- To always show the *full* application title on the main window’s title bar, the width of the main window now takes the minimize, maximize and close buttons into account. This is especially relevant to Windows 10: its huge buttons previously caused the application title to be truncated.

### **Version 3.1.0 (Windows 2018-06-14; macOS 2019-01-10)**

*All editions:*

- The A-880 Manager update mechanism allows you to specify in which update types you are interested: alpha (development) versions, (‘public’) beta versions, release candidates and release versions.
- Since the Mountain Utilities website has changed from the HTTP protocol to HTTPS, all links to the Mountain Utilities website have changed to HTTPS too.

*macOS edition:*

- The application no longer refuses to run if a MIDI input or output device contains a ‘weird’ character in its name, manufacturer or model.

*Windows edition:*

- The exe file of the installer is no longer offered within a zip file, but directly.
- The installer automatically installs the edition of the application that matches the operating system: the 32-bit edition on 32-bit Windows, the 64-bit edition on 64-bit Windows. (Previously there was only a 32-bit edition, which was installed on 32- and 64-bit Windows alike.)
- Portable 32- and 64-bit editions are available. The 32-bit edition runs on 32- and 64-bit Windows, the 64-bit edition only on 64-bit Windows.

*Changes to this manual:*

- In accordance with Apple renaming OS X to macOS, all occurrences of ‘OS X’ have been replaced with ‘macOS’.
- CopperLan has been added to the list of MIDI pipes in §5. (Thanks to JAPP for bringing CopperLan to my attention.)

### **Version 3.0.0.1 (macOS: 2016-02-26)**

- *macOS edition:* Bug fix: Opening the ‘Roland System Exclusive message(s)’ dialog box (from the ‘System Exclusive messages’ window) no longer removes the ‘A-880 Manager’ pull-down menu from the menu bar.

### **Version 3.0.0 (2016-02-17)**

- First version also available for macOS.
- New: this manual.
- *Windows edition:* If a previous version of the application has been installed, the installer skips the dialog box in which you can set the destination folder and the dialog box in which you can

set the program group in the Windows menu. So if you wish to install to a different folder or program group, you must uninstall the previous version first.

- The new Restart operation terminates A-880 Manager and automatically starts a new instance of it. There is also a version of Restart that restarts A-880 Manager with its default setup.
- Maintenance of multiple application setups (such as window positions and the enabled/disabled states of MIDI devices) via setup (‘.stp’) files. See the Setup submenu: on macOS this is in the A-880 Manager pull-down menu, on Windows in the File pull-down menu of the main window. Note that opening a previously saved setup file involves restarting the application. You can also start the application with a setup file as a command line parameter: -s *setupfile* on macOS, /s *setupfile* on Windows.
- Maintenance of the application’s window positions via desktop (‘.dsk’) files; see View ⇒ Desktop in the main window. Unlike opening a setup file, opening a desktop file does *not* involve restarting the application.
- You can sanitize the lists of most-recently opened/saved files in the menus via two operations: ‘Remove absent files from list’ and ‘Clear list’.
- You can keep A-880 Manager’s main window on top of A-880 Manager’s other windows and other applications.
- The main window contains a toolbar with five buttons numbered from 1 to 5: these open the corresponding A-880s, just as the five items in the View → A-880 submenu do.
- In the ‘Window list’ dialog box you can make all windows visible in one operation.
- A grid updates its display immediately when you mouse-drag the ‘thumb’ in its horizontal or vertical scrollbar. (Previously grids updated only when you released the mouse button.)
- Many internal improvements to MIDI input and output communication. In particular, the input system for SysEx messages has been redesigned completely, one consequence being that the maximum SysEx message length is now fixed at 65536 bytes, hence it is no longer editable via the Input tab of the MIDI devices dialog box.
- The MIDI input messages window can display message times in various formats: (((days:)hours:)min:)sec.)ms.
- New: the ‘MIDI program changer’ window, from which you can send Program Change messages, optionally prefixed by Bank Select MSB/LSB messages.
- New: the ‘MIDI controllers’ window, in which you can receive and send Control Change messages.
- Many new facilities in the MIDI System Exclusive window.
- In the global A-880 options dialog box, the color pull-down boxes no longer offer system colors.
- New: labels clarifying the nature of all the text box rows in the A-880 I/O connection graphs.
- *Windows edition*: A-880 Manager no longer refuses to start if system.ini doesn’t exist in the Windows system folder.
- A-880 Manager uses the new Mountain Utilities web site at [mountainutilities.eu](http://mountainutilities.eu) in links and its update mechanism.
- The Donate item in the main window’s Help pull-down menu no longer opens a dialog box, but makes your web browser open the Donate page at the Mountain Utilities web site.

### **Version 2.0.0 (2012-05-11)**

- By popular demand, you can now edit up to five A-880s simultaneously. (If one A-880 is connected via another one, you should set their Control Channels to different values in order to send/receive their setups.)
- You can edit memory setups directly.
- Customizable colors for the Control Input edit box and the connection lines.
- Better handling of windows positioned on secondary monitors.
- LoopMIDI has been added to the list of known virtual MIDI ports (‘pipes’).  
As in previous versions, when you start A-880 Manager for the first time you must choose

to disable or enable all MIDI pipes in A-880 Manager, and this now includes all loopMIDI ports, or rather those ports that have 'loopMIDI' in their names — as suggested by loopMIDI. However, loopMIDI allows you to change these names completely — if you do so, A-880 Manager won't recognize them as MIDI pipes, so then you can only enable them manually. i.e. via the MIDI devices dialog box.

- Windows that were open when the previous session of A-880 Manager terminated reappear exactly where they were. (In previous versions of A-880 Manager, even a window on a secondary monitor always reappeared on the primary display, even when the secondary monitor was still available.)

This new behavior has one potentially problematic consequence: when you remove a monitor or reduce the screen resolution, windows may become invisible upon a restart of A-880 Manager. To remedy this, you can use the new 'Make fully visible' operation in the 'Window list' dialog box (accessible via the main window's View pull-down menu or the Alt+0 key combination).

### **Version 1.2.1 (2011-03-03)**

A few improvements to MIDI communication and the user interface.

### **Version 1.2.0 (2011-01-10)**

- Unicode support: in most text edit boxes in the program (e.g. for file names) you can now enter any 'international' characters. (Technical note: A-880 Manager now saves its ini file in UTF-8 format, starting with the three-byte UTF-8 BOM (byte order mark); however, it can still read the plain ASCII/ANSI ini files of previous versions of A-880 Manager.)
- As a consequence of its new Unicode support, A-880 Manager no longer runs under Windows 95, 98 or Me, because these operating systems do not support Unicode. (If you require a version of A-880 Manager that runs under these operating systems, please send a message to the contact address at the Mountain Utilities web site.)
- Some improvements to the user interface.

### **Version 1.0.2 (2009-11-02)**

All references to the Mountain Utilities web site have been updated from 'home.hetnet.nl' to 'home.kpn.nl'. Hence the automatic update mechanism will work again.

### **Version 1.0.1 (2009-08-06)**

- The package uses a different installer (Inno Setup instead of InstallShield). Consequently, the zip file's size has gone down from 4 MiB to 586 KiB! You may also note a few minor differences in the installation procedure.
- Facilities for automatic and manual checking whether an update of A-880 Manager is available from the Mountain Utilities web site.

### **Version 1.0.0 (2009-06-28)**

First published version.

### 3. Computer requirements

To run A-880 Manager, your computer must comply with the following requirements:

- Processor: Any Intel 80486- or Pentium-compatible CPU. Processor speed is relatively unimportant.
- Operating system:
  - macOS: Mac OS X 10.6 (Snow Leopard) or later.
  - Windows: as of version 1.2.0, A-880 Manager only runs under Windows operating systems that support Unicode, such as Windows 2000, XP, Vista, 7, 8 and 10.
- An SVGA-compatible graphical card and monitor:
  - The screen size should be at least  $800 \times 600$  pixels.
  - For best results, the color depth should be at least 16 bits. (At a depth of only 256 colors, some colors aren't rendered as intended.)
- A mouse.
- Free hard disk space: about 12 MiB on macOS and 12 MiB on Windows.
- RAM: when running, A-880 Manager normally occupies roughly 20 MiB on macOS and 6 MiB on Windows.



## 4. Installation of A-880 Manager

To install A-880 Manager on your computer, proceed as follows:

macOS:

1. Download [a880man-a.b.c.dmg](#) (where *a.b.c* stands for the actual version number) to your computer from the A-880 page at the Mountain Utilities web site (<https://mountainutilities.eu/a-880>).
2. Open the dmg file in Finder, and drag-and-drop the A-880 Manager icon on the Applications icon. If a previously installed version of A-880 Manager exists in the Applications folder, you are asked what you want to do: it's best to select Replace.
3. Right-click the dmg file's 'disc' icon on the right side of the desktop and run Eject from the local menu.

Windows:

On Windows, three editions are available: an installer, a 32-bit portable edition and a 64-bit portable edition:

Installer:

1. Download [a880man-a.b.c-install.exe](#) (where *a.b.c* stands for the actual version number) to your computer from the A-880 page at the Mountain Utilities web site (<https://mountainutilities.eu/a-880>).
2. Run [a880man-a.b.c-install.exe](#) and follow its instructions. The installer automatically installs the edition of the actual application ([A880Man.exe](#)) that matches the operating system: the 32-bit edition on a 32-bit Windows system, the 64-bit edition on a 64-bit Windows system.

Note: the installation includes an uninstaller. It can be run from the Windows Start Menu via Programs → Mountain Utilities → A-880 Manager, or via Settings → Control Panel → 'Add or Remove Programs' (Windows XP) or 'Programs and Features' (Windows Vista and later).

Note that when you install a new version of A-880 Manager, you do *not* have to uninstall any previously installed version first: the old version will be replaced with the new version automatically.

Portable (32- or 64-bit):

1. Download [a880man-a.b.c-xnn-portable.zip](#) (where *a.b.c* stands for the actual version number and *xnn* is 'x64' or 'x86') to your computer from the A-880 page at the Mountain Utilities web site (<https://mountainutilities.eu/a-880>). The 'x64' (64-bit) edition only runs on 64-bit Windows, the 'x86' (32-bit) edition on 32- and 64-bit Windows.
2. Unzip [a880man-a.b.c-xnn-portable.zip](#) completely (maintaining the zip file's tree structure) to any folder to which A-880 Manager itself ([A880Man.exe](#)) will have write-access (which is necessary for its configuration files). Crucially, in Windows Vista and later you should *not* unzip to a subfolder of `C:\Program Files` or `C:\Program Files (x86)`, since these folders are subject to Windows' UAC (User Access Control), which means that A-880 Manager would *not* have write-access.

### Running A-880 Manager itself

After installation, you can start A-880 Manager itself: [A-880 Manager.app](#) on macOS (from the Applications folder), [A880Man.exe](#) on Windows (e.g. via the Windows start menu).

If you have never run A-880 Manager (in any version) from the installed operating system before, the program notifies you that it can't find your configuration. This is normal: the program saves its configuration file ([a880man.ini](#) in macOS, [A880Man.ini](#) in Windows) whenever the

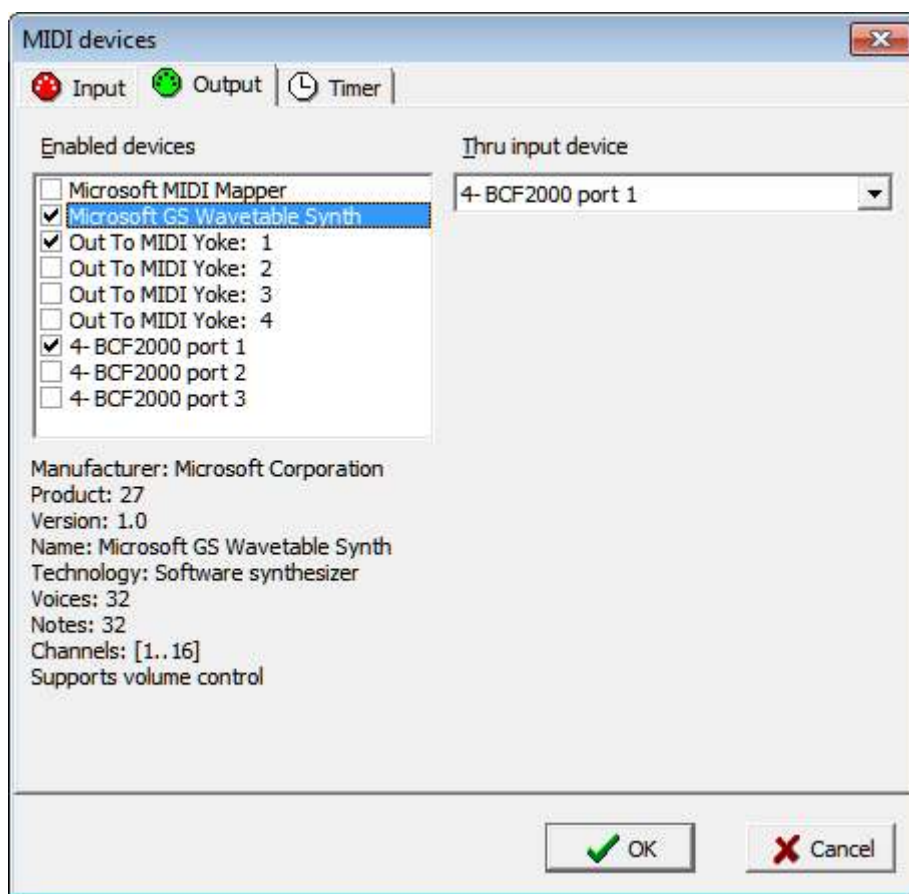
program *terminates*, so obviously this configuration file doesn't exist yet when you start the program for the very first time. The program also notifies you if the configuration file does exist but belongs to a previous version; all existing settings are retained.

## 5. MIDI setup

A-880 Manager can only communicate with MIDI input and output devices that are *enabled*.

When A-880 Manager is started for the first time, it enables all MIDI input and output devices, except that the Windows edition skips the MIDI Mapper and any software synthesizers. However, you are advised to fine-tune this default setup to suit your particular needs. For instance, if you want to run other programs using MIDI devices simultaneously, it may be a good idea to keep as many MIDI devices disabled as you can in A-880 Manager, in order to avoid MIDI device access conflicts.

From the main window's Options pull-down menu, 'MIDI devices' opens a dialog box in which you can select the MIDI devices to which A-880 Manager connects:



Tip (Windows only): In this dialog box you can also set up a 'soft MIDI thru' link, by connecting an enabled MIDI input to an enabled MIDI output device. Any MIDI message received by the MIDI input device is then immediately passed on to the MIDI output device. In fact, you can set up as many links as there are devices; the only restriction is that each device can have only one connection.

### MIDI pipes

Of particular interest is the enabling/disabling of 'MIDI pipes'. 'MIDI pipe' is my term for what is commonly known as a 'virtual MIDI device'. This is software that manifests itself as a virtual MIDI output port plus a virtual MIDI input port: the driver passes any MIDI data sent to the output port to

the input port. Hence, when a computer program sends data to the virtual MIDI output port, this data can be picked up at the corresponding input port by any other computer program. Thus, a MIDI pipe allows inter-program MIDI communication. If a MIDI pipe driver is ‘multi-client’, we can connect more than one program (up to a particular maximum) to the same virtual output or input port.

To my knowledge, the following free MIDI pipe drivers are available (please contact me if you know any others):

- **Hubi’s Loopback Device:** 4 multi-client pipes, but for Windows 9x only.
- **Sony/Sonic Foundry Virtual MIDI Router:** 4 single-client pipes. Windows 32-bit only.
- **Hurchalla Maple:** 12 single-client pipes. Windows 32-bit only.
- **LoopBe1:** only 1 multi-client pipe, so not very useful. (No, you can’t install more than one copy!) Windows 32-bit only.
- **LoopBe30:** 30 multi-client pipes, but the trial version only works for a brief period, and the full version is not free. Windows 32-bit only.
- **MIDI Yoke** (<http://www.midiox.com/>): the NT (/2000/XP/Vista/7/8(?)) version allows up to 16 multi-client pipes, so understandably this has been the most popular MIDI pipe driver for 32-bit Windows versions.
  - Problems:
    1. MIDI Yoke’s NT version, even though it is 32-bit, *can* be installed under 64-bit operating systems, but (reportedly) the pipes are only accessible to 32-bit DAWs, not to 64-bit DAWs.
    2. To work with MIDI Yoke correctly under Windows versions with UAC (User Access Control) you must apply a manual tweak:

The MIDI Yoke installer tries to create MIDI Yoke’s configuration file (MYOKENT.INI) in C:\Windows, but the operating system doesn’t allow this and actually creates it in C:\Users\Username\AppData\Local\VirtualStore\Windows. On the other hand, the MIDI Yoke configuration applet under Control Panel *does* have write access to C:\Windows and will create a second copy of MYOKENT.INI there when you change the settings. However, the latter file will never be seen by the *driver* (because the operating system keeps redirecting it to the copy in ...\VirtualStore\Windows); in other words, the driver ‘won’t listen to you.’

To fix this, you must manually remove MYOKENT.INI from C:\Users\Username\AppData\Local\VirtualStore\Windows or move it to C:\Windows, using administrator rights.
    3. As discussed below, the NT version of MIDI Yoke may slow down the termination of MIDI Tools.
- **CopperLan** (<http://www.copperlan.org/>): Available for macOS and Windows (32- and 64-bit). This is primarily a MIDI-over-Ethernet system, so it’s a bit of overkill if you only need local MIDI pipes. (CopperLan 1.4 for Windows installs *three* drivers, if I remember correctly!) It offers up to 32 virtual MIDI input ports and 32 virtual MIDI output ports; by default none of these are set up as ‘pipes’, but you can manually connect any output to any input (although the idiosyncratic user interface makes this much more difficult than it should be).

- **loopMIDI** (<https://www.tobias-erichsen.de/>):  
This allows you to create and destroy any number of MIDI pipes on the fly.  
Simple and effective, so probably the best choice on modern Windows versions (particularly 64-bit versions, given MIDI Yoke's problems on those).

If configured improperly, MIDI pipes can easily cause problematic MIDI signal paths. There are several dangers:

**Duplication:**

If there is first a *split* in the signal path, and then a *merge*, two or more copies of the same MIDI message arrive at the end of the signal path (i.e. the target MIDI device). This is time-consuming in all cases, but — even worse — it can mess up communication with certain MIDI devices.

**Feedback:**

In general, feedback involves the return of a sent MIDI message to the same MIDI hardware device or computer program that sent the message. Obviously this needlessly slows down operation, although it isn't necessarily disastrous. However, there may also be more sinister effects. For instance, feedback may interfere with A-880 Manager's communication with the device.

At the very least you should normally avoid enabling both the output port and the input port of the same MIDI pipe in the same program (e.g. A-880 Manager), because by definition anything you send to a MIDI pipe's *output* port (the pipe's starting point) is returned at the corresponding MIDI pipe's *input* port (the pipe's end point). So for instance, if you enable both 'Out To MIDI Yoke: 1' and 'In From MIDI Yoke: 1' in a program, then any MIDI data the program sends to 'Out To MIDI Yoke: 1' is returned to the program at 'In From MIDI Yoke: 1'. This type of feedback is usually undesired, except perhaps for monitoring purposes.

The most severe type of feedback occurs when the sender/recipient actually *re-sends* the returned MIDI message: this leads to an infinite loop, which may well grind the sender/recipient (and indeed the whole computer) to a virtual standstill.

In A-880 Manager this horror can happen if you enable the MIDI Thru feature in the MIDI devices dialog box for an input-output pair already exhibiting feedback. For instance, if you activate MIDI Thru from 'In From MIDI Yoke: 1' to 'Out To MIDI Yoke: 1' in A-880 Manager's MIDI devices dialog box, then any MIDI data sent to 'Out To MIDI Yoke: 1' not only comes back to A-880 Manager at 'In From MIDI Yoke: 1' (via MIDI Yoke's pipe 1), but is then automatically *re-sent* from 'In From MIDI Yoke: 1' to 'Out To MIDI Yoke: 1' via the MIDI Thru feature, in principle ad infinitum, although MIDI Yoke does perform some checks that spot and kill the infinite loop — but still...

**Close delay:**

This problem only occurs with MIDI Yoke NT (but *not* with MIDI Yoke for Windows 95/98/Me): closing any MIDI Yoke NT 1.75 *input* port causes a delay of 1 second. (Certain earlier versions even 3 seconds.)

Concerning A-880 Manager this is mainly relevant during program exit. In principle A-880 Manager terminates almost instantly upon exit, but when all the input ports of MIDI Yoke NT 1.75 are enabled, termination of A-880 Manager takes some 16 seconds longer than normal! Therefore you should disable as many MIDI Yoke NT input ports as possible in A-880 Manager's MIDI devices dialog box, i.e. any MIDI Yoke NT input ports that A-880 Manager itself doesn't use. (Note that you can still use any MIDI ports disabled in A-880 Manager in *other* programs!)

To help you avoid some of the serious problems discussed above, A-880 Manager takes the following steps:

- On *first* startup, if A-880 Manager detects any of the MIDI pipes listed above (excluding CopperLan, since by default its virtual ports aren't interconnected), it asks you if you want to enable the I/O devices of these pipes. It's best to answer *No* (to avoid feedback loops, and to avoid MIDI Yoke NT's close delays during A-880 Manager's exit procedure), unless some other program (e.g. MIDI-OX) is routing one of your MIDI devices through a MIDI pipe.
- On *every* startup, A-880 Manager optionally warns you if any MIDI Yoke NT input ports are enabled and thereby cause extra delays during termination of A-880 Manager. You can enable/disable this warning on the Input tab of the MIDI devices dialog box.

## 6. The main window

A-880 Manager's main window only consists of a pull-down menu, a toolbar and a statusbar:



The five buttons numbered from 1 to 5 open the corresponding A-880. (Thus, these buttons duplicate the actions of the A-880 submenu in the View pull-down menu.)

The statusbar contains two panels:

- The panel on the left says 'Modified' if there are any unsaved edits.
- The panel on the right displays the name of the last-opened/saved MIDI SysEx file.

The menu provides the following operations:

A-880 Manager (macOS)/File (Windows) → Restart:

Terminates A-880 Manager and starts a new instance of it. This is particularly useful after the MIDI device configuration has changed while A-880 Manager has been running, either because a MIDI device (often a USB-based one) has become invalid or because a new one has become available: restarting A-880 Manager updates A-880 Manager's device list to the new configuration.

A-880 Manager (macOS)/File (Windows) → Restart with default setup:

Functions like Restart (see above), with two differences:

- Since this operation is somewhat 'momentous', a dialog box requires you to confirm that you indeed want to do this.
- The default setup file A880Man.stp is deleted before the restart, so that all setup values (such as MIDI I/O device settings and window positions/sizes) are restored to their defaults. Consequently, A-880 Manager's new instance behaves as if you have never run the application before.

This operation may be useful when some setup problem has developed that you find yourself unable to fix quickly otherwise. However, the restoration of the default setup also has its drawbacks: for instance, you must configure all MIDI devices again.

Note: 'Restart with default setup' does not destroy the file lists in the application's menus (such as the Setup submenu — see below): these file lists are not stored in A880Man.stp but in A880Man.mru. If you want to clear these file lists, simply use their 'Clear list' operations, or (for a total clearance) remove A880Man.mru while the application isn't running.

A-880 Manager (macOS)/File (Windows) → Setup:

A submenu from which you can open and save setup ('.stp') files.

A setup file includes nearly all the application's customizable settings, including MIDI I/O device settings and window positions/sizes.

By opening a (previously saved) setup file you can quickly switch from one setup to another. However, opening a setup file involves restarting the application; thus you will lose transient data like unsaved recorded MIDI input messages. So if you only wish to change the window positions/sizes, it's simpler to use the desktop ('.dsk') file facility (see View → Desktop),

because this doesn't involve restarting the application.

**Tip:** you can force A-880 Manager to use a specific setup file via the command line, as follows:

macOS: `-s setupfile`

Windows: `/s setupfile`

A-880 Manager → Quit (macOS)/File → Exit (Windows):

Terminates A-880 Manager.

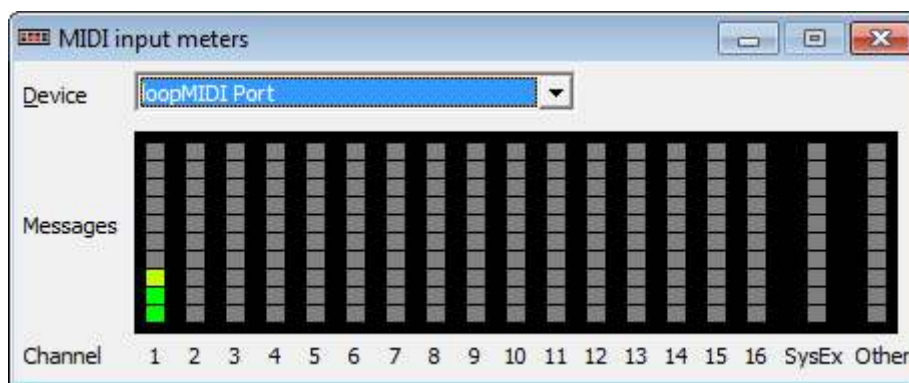
Note that on Windows the associated hotkey (Alt+X) works from almost *any* location in the program, not just from the main window. Of course you can also terminate A-880 Manager by clicking on the X icon on the main window's title bar: the same questions are asked. Pressing Alt+F4 also works, but (unlike Alt+X) only from the main window.

View → A-880 → 1/2/3/4/5:

Opens one of the five A-880 windows. See §7 for more information.

View → MIDI → Input meters:

Opens a window showing the messages received recently from the MIDI input devices, via (logarithmical) LEDs per MIDI channel:



This window can be useful for troubleshooting your MIDI connections.

'DISABLED' in front of the selected MIDI input device indicates that the device is disabled, so no MIDI messages can currently be received from that device. (You can enable devices in the MIDI devices dialog box.)

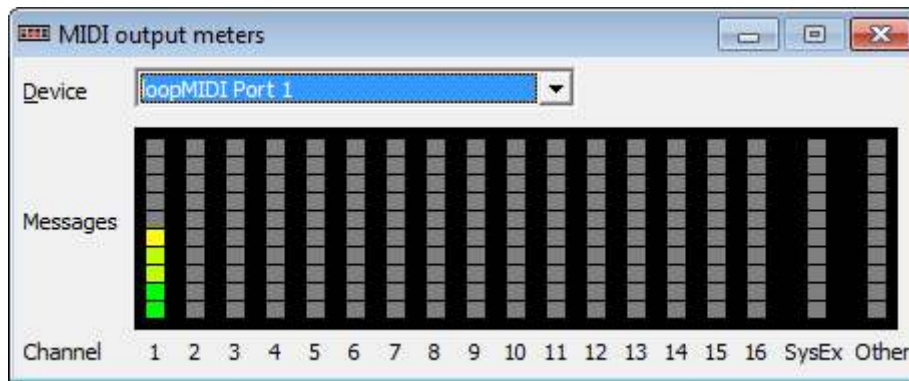
View → MIDI → Input messages:

Opens the MIDI input messages window. Here you can record and view messages from the MIDI input devices. See §8 for more information.

View → MIDI → Output meters:

Opens a window showing the messages sent recently to the MIDI output devices, via (logarithmical) LEDs per MIDI channel:

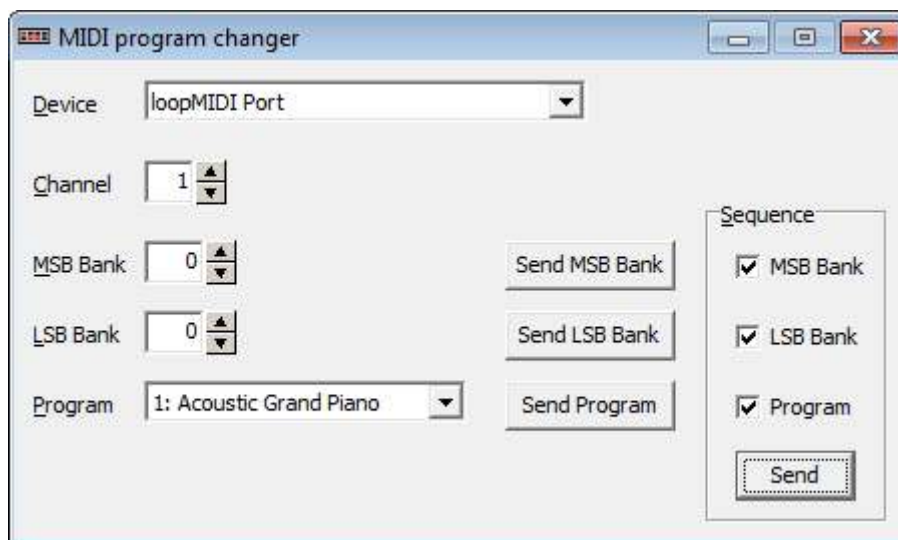




This window can be useful for troubleshooting your MIDI connections. 'DISABLED' in front of the selected MIDI output device indicates that the device is disabled, so no MIDI messages can currently be sent to that device. (You can enable devices in the MIDI devices dialog box.)

View → MIDI → Program changer:

Opens a window from which you can send MIDI Program Change messages prefixed by Bank Select MSB/LSB messages, in any combination:



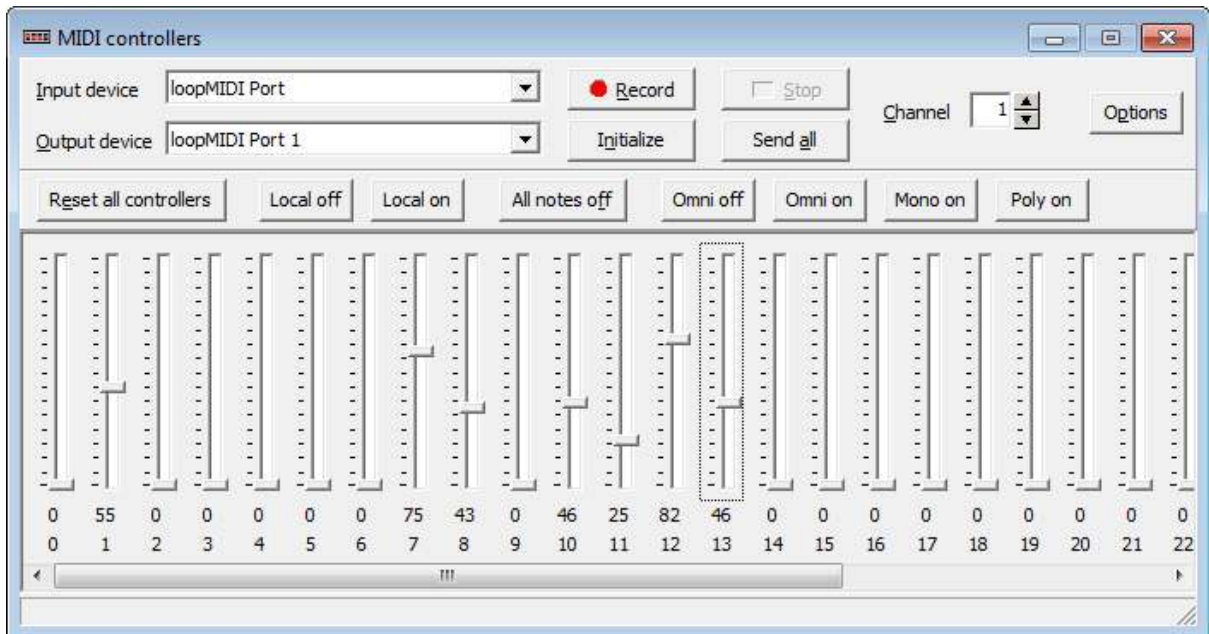
This window is very useful for testing devices that seem unwilling to change programs. You can also use this to switch an A-880 to a particular memory setup.

View → MIDI → System messages:

Opens a window from which you can send MIDI System messages. See §9 for more information.

View → MIDI → Controllers:

Opens a window in which you can receive and send MIDI Control Change messages:



View → MIDI → System Exclusive messages:

Opens a window in which you can perform many actions related to MIDI System Exclusive (SysEx) messages. See §10 for more information.

View → Desktop:

A submenu from which you can open and save desktop (‘.dsk’) files.

A desktop file contains the positions, sizes and states (hidden/visible/minimized) of all the windows in the application. Thus, a desktop file contains a subset of the data in a setup file: see A-880 Manager (macOS)/File (Windows) → Setup.

By opening a (previously saved) desktop file you can quickly switch from one desktop (i.e. layout) to another. Unlike opening a setup file, this does not involve restarting the application. By default the ‘Keep numbers’ option is off, so that opening or saving a file promotes the file name to position 1 in the list; when ‘Keep numbers’ is on, the list stays as it is, which can be useful when you’re continually switching between particular desktops.

View → Stay on top:

When this menu item is checked, A-880 Manager’s main window stays on top of any other windows belonging to A-880 Manager. On Windows, the main window also stays on top of other applications (except of course those that have the stay-on-top property too).

View → Skin (*Windows only*):

Opens a window in which you can select the ‘skin’ of the application; apart from the default skin (called ‘Windows’), there are 39 alternative skins. Most prominently, a skin defines the colors of all the visual elements of the application’s windows, but a skin may also change the font type and/or size, or the shape or size of buttons etc.

Some tips:

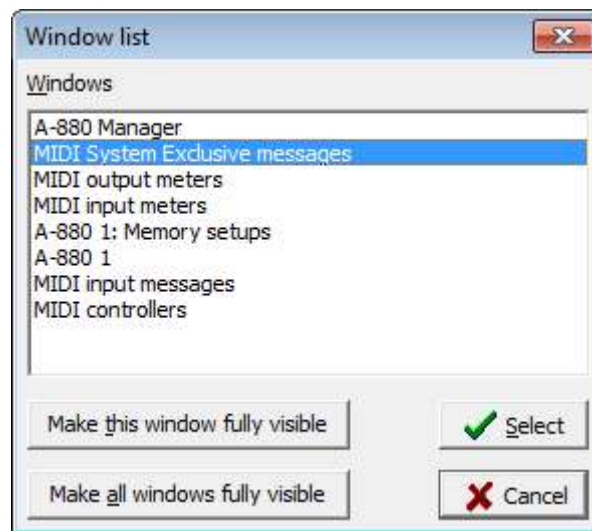
- The default ‘Windows’ skin isn’t really a skin: it’s simply the current interface of the Windows version you are running. So for instance if your computer is using an Aero theme on Windows 7, that’s what the ‘Windows’ skin will give you; but on Windows 10 it will amount to the standard Windows 10 look.
- The six ‘Windows 10 ...’ skins are available on any Windows version, so you can make your Windows XP or 7 look like Windows 10! (However, there are subtle differences

between these skins and the *actual* Windows 10 interface.)

Disclaimer: The 39 alternative skins were not developed by Mountain Utilities, but are part of the Delphi programming environment on which this Mountain Utilities application is built. So these skins are offered on a take-it-or-leave-it basis. Some of these skins may cause undesired visual effects, such as certain screen elements disappearing behind others. However, due to the sheer number of these skins it would be a huge task to fine-tune every window of every Mountain Utilities application for every skin. So be prepared for some unpleasant and perhaps confusing surprises. If you encounter a ‘really bad’ problem, feel free to report it in the application’s forum at the Mountain Utilities web site.

View → Window list:

Opens a dialog box that allows you to quickly navigate to any open window:



Note that the hotkey (Alt+0) for opening this dialog box works from almost *any* location in the program, not just the main window.

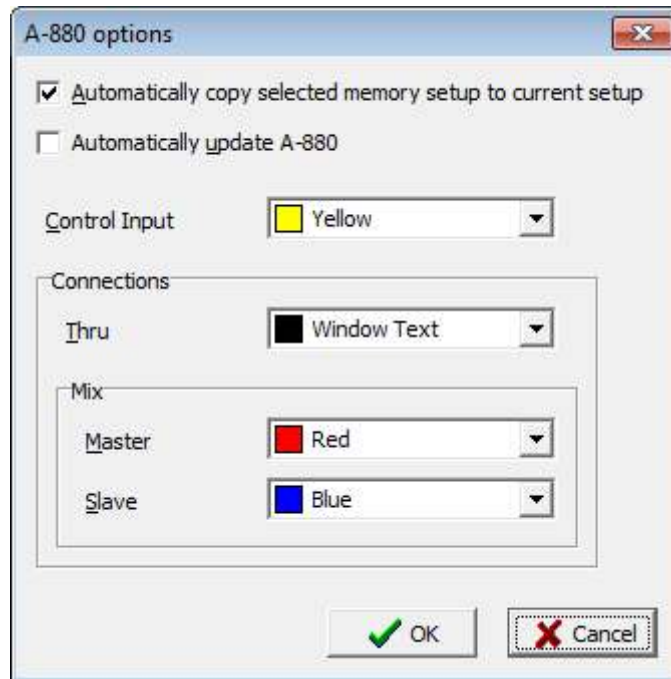
If the highlighted window is partially or completely outside the current monitor(s), you can move it into full view by pressing ‘Make this window fully visible’. ‘Make all windows fully visible’ performs this operation on *all* windows in the list.

Options → MIDI devices:

Opens a dialog box in which you can configure the MIDI devices that A-880 Manager monitors. See §5 for more information.

Options → A-880:

Opens a dialog box in which you can set several options pertaining to all five A-880s:



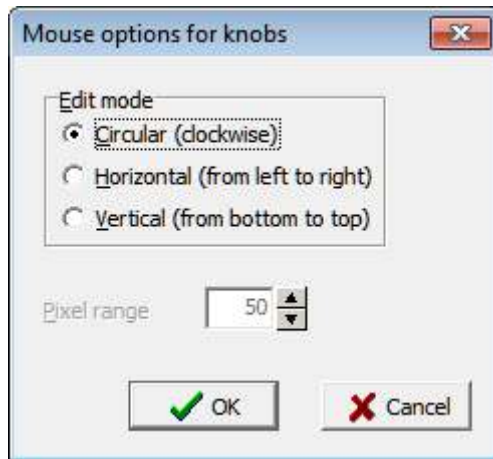
- ‘Automatically copy selected memory setup to current setup’:  
If this option is enabled, when you select (highlight) a memory setup in a ‘Memory setups’ window, the setup is automatically copied to the corresponding A-880 window.
- ‘Automatically update A-880’:  
If this option is enabled, the setup defined in an A-880 window is sent to the connected A-880 whenever the user performs any of the following operations:
  - Manually change the ‘Mixed input’ value or a ‘Source’ value.
  - Paste the setup via Edit → Paste or the Paste toolbutton.
  - Clear the setup via Edit → Clear or the Clear toolbutton.
  - Select (highlight) a setup in the corresponding ‘Memory setups’ window if ‘Automatically copy selected memory setup to current setup’ (see above) is enabled.
- The color boxes allow you to customize the colors of various elements in the A-880 windows. See §7 for more information.

Options → Hints:

Opens a dialog box in which you can set options affecting the hints that are displayed when you move the mouse cursor over buttons etc.:

Options → Mouse:

Opens a dialog box in which you can set the way in which the mouse turns the knobs in the options dialog box of the individual A-880s:



Help → Manual:

Opens this manual in the external application associated with the file extension 'pdf'.

A-880 Manager (macOS)/Help (Windows) → About A-880 Manager:

Opens a dialog box containing information on A-880 Manager, such as its version number and memory usage:

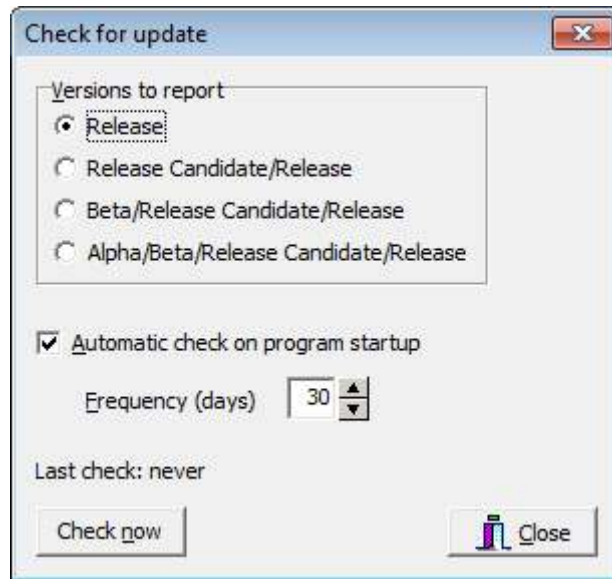


Help → Mountain Utilities web site:

Provided you're connected to the internet, your web browser opens the Mountain Utilities web site, where you can find up-to-date information about A-880 Manager and other Mountain Utilities applications and documents.

Help → Check for update:

Opens a dialog box in which you can set the frequency at which A-880 Manager automatically searches for updates at the Mountain Utilities web site, and which types of updates you are interested in:



If you set 'Versions to report' to 'Release', you will only be notified about Release versions. 'Release Candidate/Release' will also notify you about Release Candidate versions, etcetera.

When an update is available, the program asks you whether you wish to open the pertinent web page at the Mountain Utilities site. You can also check for updates manually, by pressing the 'Check now' button.

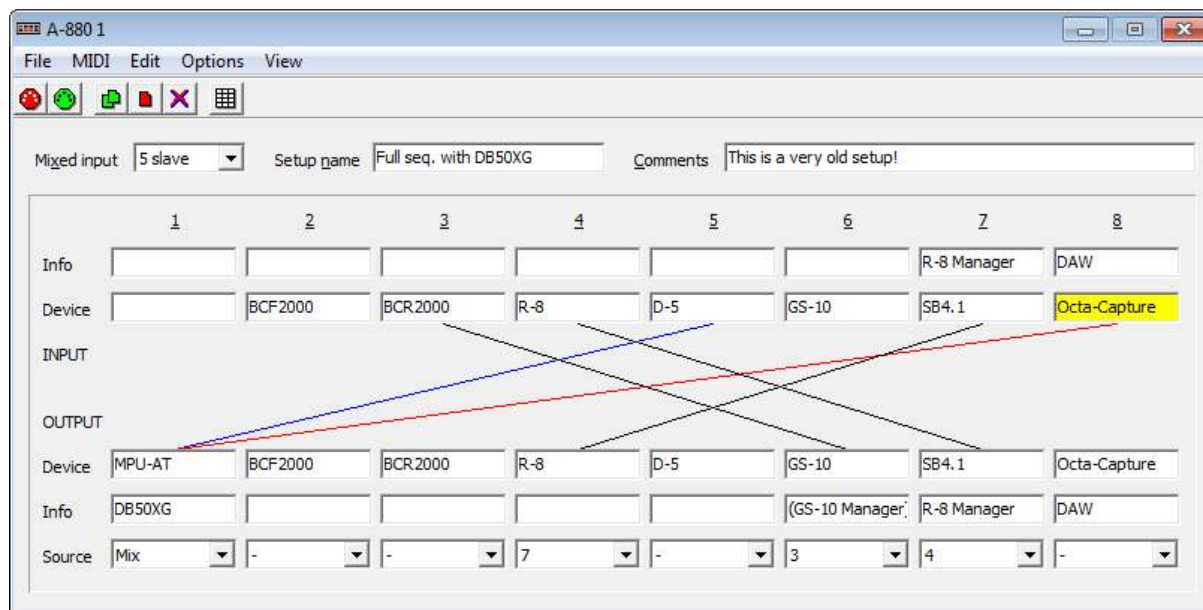
*Note: If your firewall catches the program's connection attempt and asks you whether you want to allow this, you can safely say yes: no information identifying you or your computer will be sent to the Mountain Utilities web site.*

Help → Donate:

Makes your web browser open the Donate page at the Mountain Utilities web site (<https://mountainutilities.eu/donate>), at which you can express your appreciation of A-880 Manager and support its further development by making a donation.

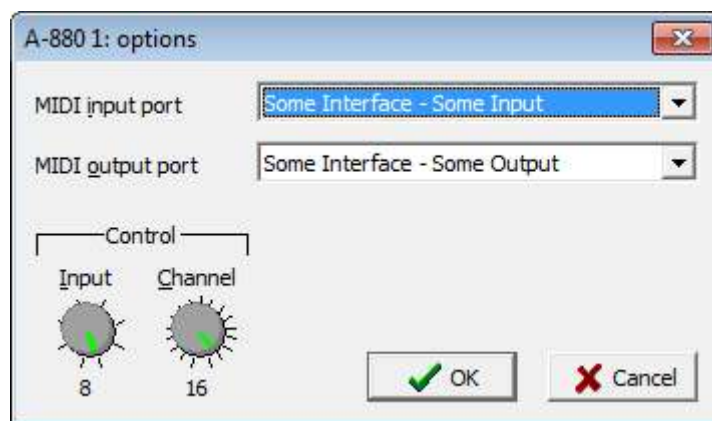
## 7. The A-880 windows

A-880 Manager allows you to work with up to five A-880s simultaneously. Each of these A-880s has its own window:



### Options:

As a first step in setting up this window, you should open the Options dialog box (via the Options pull-down menu → A-880) and make some fundamental settings:



- **MIDI input port:**  
This setting is only necessary for the Receive operation. It should be a MIDI interface port connected to an A-880 output receiving the A-880's *Mix* signal, *not* the *Thru* signal from the Control Input (or any other input).
- **MIDI output port:**  
This setting is necessary for the Receive and Send operations. It should be a MIDI interface port connected to the A-880 input defined as the A-880's Control Input.
- **Control Input:**  
This should match the number of the A-880 input that is defined as its Control Input.



- **Control Channel:**  
This should match the Control Channel of the A-880 itself.  
The Control Channel has two functions: it is contained in all A-880 System Exclusive data and request messages, and a Program Change message using this channel will make the A-880 select the memory setup corresponding to the indicated program number. Note that neither function works if Control Channel is set to Off.

Beware: A-880 Manager cannot change the Control Input or Control Channel settings of the A-880: you always have to set these manually on the A-880 itself. Please refer to the official A-880 manual for instructions.

Note: when you close the Options dialog box by pressing OK, A-880 Manager sends a System Exclusive message to the A-880, requesting its temporary setup, provided all conditions are met for doing so (e.g. Control Channel isn't Off).

### **Connections:**

After setting the appropriate values in the Options dialog box, you can start making connections in the A-880 window itself:

- The 'Mixed input' pull-down box determines two things:
  1. Which MIDI input (1-8) acts as 'Mix Input'. The signals arriving at this input are mixed with those arriving at the Control Input, generating the Mix signal.
  2. Whether Mix Input acts as master or slave. (Control Input takes on the opposite role.)
- The eight Source pull-down boxes determine which signal(s) each MIDI output receives: none, a Thru signal (i.e. a single MIDI input 1-8) or the Mix signal.

### **Color scheme:**

By default, the following color scheme is used:

- The background of the Control Input is yellow.
- A Thru connector is black.
- The connector from the Mix signal's master input is red.
- The connector from the Mix signal's slave input is blue.

You can customize these colors via the A-880 options dialog box, accessible via the Options pull-down-menu in the main window.

### **Labels:**

For your convenience, each MIDI input and each MIDI output has two text labels:

- 'Device':  
These labels are for naming the hardware devices to which the sockets are connected. These labels are global; that is: they do not change when you select a different setup (for instance by selecting one from the 'Memory setups' window).
- 'Info':  
Here you can put any text you like, such as the name of the computer program that is using the socket. These labels are local; that is: they belong to individual setups. So when you select a different setup, these labels change accordingly.

### **Receive:**

The Receive operation (accessible via the MIDI pull-down menu or from the toolbar) downloads the A-880's *temporary* (current) setup into the A-880 window.

Note that this operation requires a correct *bidirectional* connection (as described above in the discussion of the Options dialog box), for two reasons:

- The operation starts with a System Exclusive *request* from A-880 Manager to the A-880 for the temporary setup data. This request must arrive at the A-880's Control Input.



- Upon receiving the data request, the A-880 sends a System Exclusive data message to all its outputs that receive its *Mix* signal. Obviously this rather restricts the applicability of the Receive operation.

**Send:**

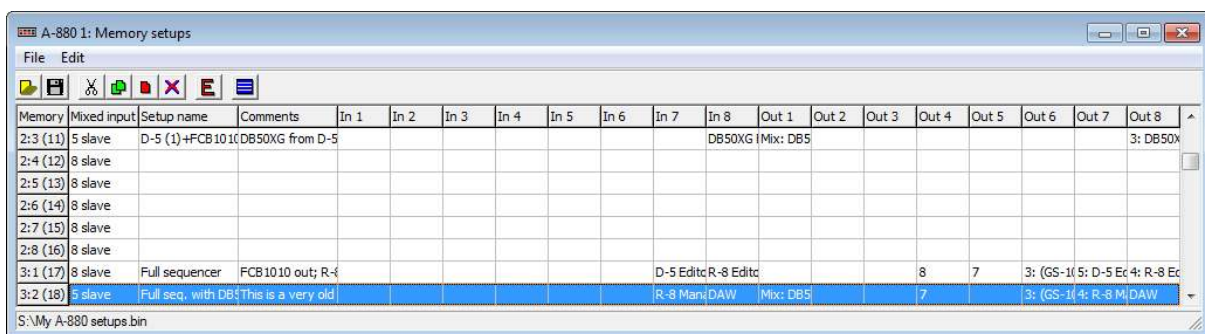
The Send operation (accessible via the MIDI pull-down menu or from the toolbar) uploads the setup defined in the A-880 window to the A-880’s *temporary* (current) setup.

If you want to put a setup into a *memory* setup on the A-880, you will additionally have to perform the ‘Write’ operation on the A-880 manually, as described in section 4 of the official manual.

**Memory setups window:**

Each of the five A-880 windows has its own Memory setups window.

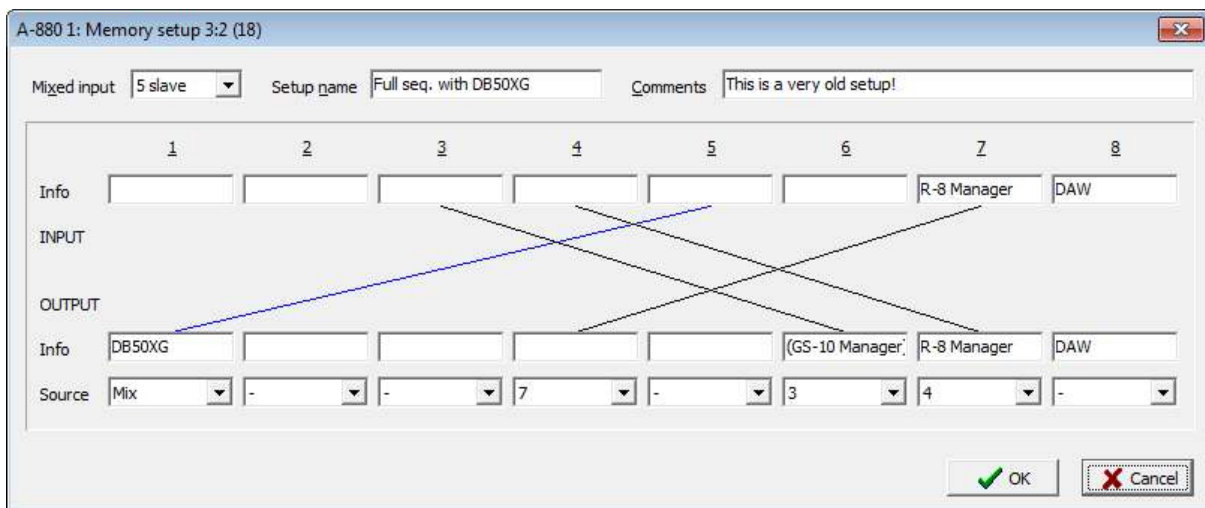
Via View → ‘Memory setups’ from an A-880 window’s menu you can open its ‘Memory setups’ window:



This window lists the A-880’s 64 memory setups, and you can manipulate these setups in various ways: open/save, copy, paste, edit, etc.

If ‘Automatically copy selected memory setup to current setup’ in the main window’s A-880 options dialog box (Options → A-880) is enabled, selecting any setup in the Memory setups window automatically copies that setup to the corresponding A-880 window, so that you can edit it there as the *temporary* setup.

However, you can also edit any memory setup directly from the Memory setups window: via Edit → Edit from the menu, the E on the toolbar or the Enter key you can open the ‘Memory setup’ dialog box:

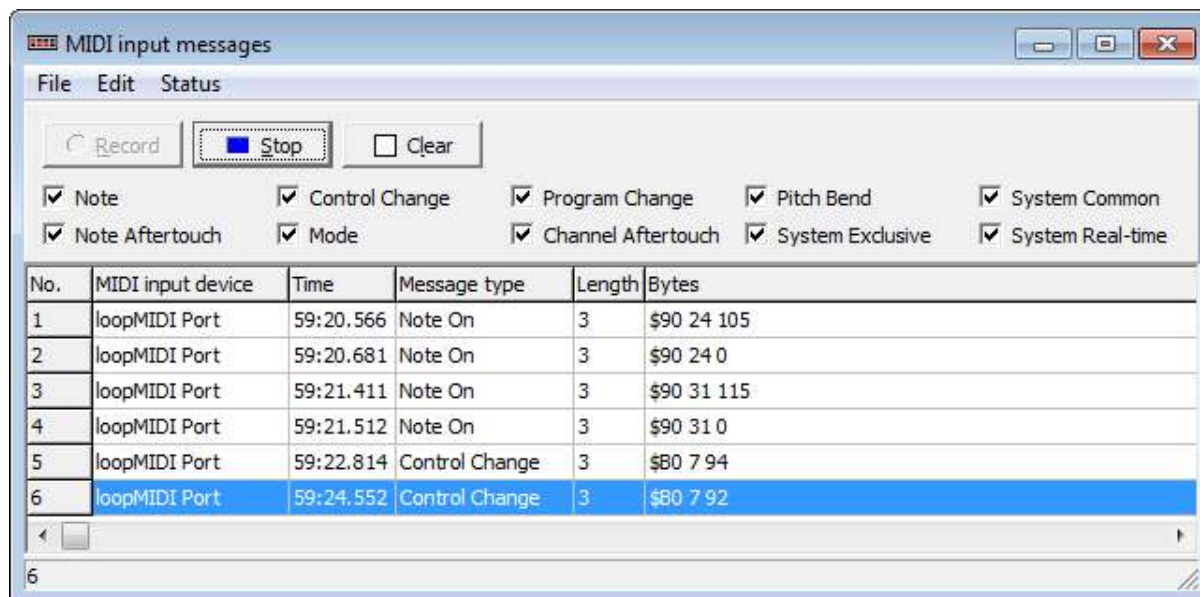


This dialog box strongly resembles the layout of the A-880 window. However, there are no Device labels here, since these are *global*, not part of individual setups. The location of the Control Input isn't part of individual setups either, which has several consequences:

- There is no yellow box indicating the Control Input.
- The Control Input's contribution to the Mix signal is unknown, so (depending on the master/slave status of the mixed input) either all red or all blue connectors are missing.

## 8. The MIDI input messages window

The MIDI input messages window is accessible from the main window's View pull-down menu (→ MIDI → Input messages).



The MIDI input messages window allows you to record and view MIDI messages sent to A-880 Manager from any of the currently *enabled* MIDI input devices, as defined in the MIDI devices dialog box (opened via the main window's Options pull-down menu). Thus, this window is very useful for advanced troubleshooting. You can also save recorded messages to files (in various formats).

All recorded MIDI messages are displayed in the table at the bottom of the window, one per row. The following columns exist:

- No.:  
The sequential number (index) of the message in the table.  
This number is for reference only. It has no further meaning: when you remove a message, the numbers of all subsequent messages simply decrease by one.
- MIDI input device:  
The MIDI input device from which the message was received.
- Time:  
The time at which the message was received, counted from the moment A-880 Manager was started. You can set this column's format in the Edit → Options dialog box (see below).
- Message type:  
The type of the message: Control Change, System Exclusive, etc.
- Length:  
The number of bytes in the message.

- Bytes:  
The bytes of the message. The formatting (hexadecimal, decimal etc.) can be set via the options dialog box, accessed via the Edit pull-down menu.

The menu provides the following operations:

File → Save MIDI file:

Saves the selected (highlighted) MIDI messages to a standard MIDI file ('SMF'). You can load this file in a sequencer program etc.

Two versions of this operation are available via a submenu:

1. 'Times relative to first-saved message':  
The original recording times are maintained, but for convenience a displacement is applied: all messages are saved with their times 'normalized' to the *first* message saved; so the first message saved itself always appears at time 0.
2. 'All times zero':  
All messages are saved with their times set to zero.

Technical notes:

- The MIDI file is in 'format 0', i.e. a single track.
- For convenience, the name of the program ('A-880 Manager') plus its version number is included as the track name. (It completely depends on the receiving program whether you can see this in any way.)
- The file includes a tempo specification of 120 BPM.  
Beware: It seems that when you import a MIDI file into an *existing* Sonar 7 project, Sonar ignores this file tempo of 120 BPM and wrongly interprets the message times according to the existing project's tempo. In the case of a file saved via 'Times relative to first-saved message', this may lead to unwanted stretching, so it's best to only import such a file into a Sonar project having a tempo of 120 BPM. (I haven't tested later Sonar versions yet.)
- MIDI 'running status' is automatically applied, i.e. where possible the status bytes of channel messages are removed.

File → Save binary file:

Saves the bytes of the selected (highlighted) MIDI messages to a binary file. Note that the recording times are *not* saved: you should save to a standard MIDI file for that (see 'Save MIDI file' above).

You can select 'bin', 'syx' or any other extension for the output file, but your choice does not affect the *content* of the output file in any way.

Beware: a *syx* output file is only valid (i.e. usable in a standard way by other programs) if it *only* contains *System Exclusive* MIDI messages. And since A-880 Manager specifically allows you to create a *syx* file containing only the recorded System Exclusive messages (see 'Save System Exclusive messages' below), the 'save binary file' operation is primarily intended to facilitate further processing by some specialistic computer program expecting a 'flat' sequence of MIDI messages. (Typically this is a program you write yourself!) Note that you can also save

MIDI message bytes to a *text* file (see below), which may or may not be easier for further processing.

File → Save text:

Saves the selected (highlighted) MIDI messages to a text file: the bytes of each message are output on a separate line. The bytes are written in the formats defined in the options dialog box (cf. Edit → Options), so exactly as they are currently being displayed in the Bytes column of the window's table.

You could process the output file in an external text editor, then convert them to a binary file: see 'Convert text file(s) to binary file(s)' below.

File → Save System Exclusive messages:

Saves any selected (highlighted) MIDI *System Exclusive* messages to a syx file.

File → Convert text file(s) to binary file(s):

Converts a text file containing lines of hexadecimal bytes (*without* '\$' prefixes) to a binary file. You can select 'bin', 'syx' or any other extension for the output file, but your choice does not affect the *content* of the output file in any way.

This is a somewhat obscure utility that could be applied to a text file created by a 'Save text' operation (see above), possibly edited afterwards via a normal text editor (such as Notepad). Specifically, you can thus convert a text file containing only MIDI System Exclusive messages to a legal syx file.

Edit → Copy to MIDI message clipboard:

Copies the selected (highlighted) MIDI messages to the MIDI messages clipboard. Note that MIDI 'running status' is automatically applied, i.e. where possible the status bytes of channel messages are removed.

Edit → Delete:

Removes the selected (highlighted) recorded MIDI messages.

Edit → Clear:

Removes all recorded MIDI messages.

Edit → Select all:

Selects all recorded MIDI messages.

Edit → Options:

Opens a dialog box in which you can set various options related to the MIDI input messages window:

- Buffer size:  
Sets the number of MIDI messages that can be recorded. The default is 65536; this is also the maximum. Note that lowering this setting removes any existing recorded messages beyond the new buffer size.
- Buffer overflow protocol:  
Determines what happens if the buffer is full (as determined by the 'buffer size' setting) when a MIDI message comes in:
  - Clear:

The whole table is cleared, and the incoming message is entered at number 1. This is the default setting.

- **Shift:**  
The existing message at number 1 is removed from the table, all other messages shift back one position, and the incoming message is added at the bottom.  
Beware: this setting can be very time-consuming.
- **Freeze:**  
The incoming message is ignored. However, the recording process itself isn't stopped automatically, so when you manually remove one or more recorded messages (e.g. via the Clear button), new messages will be recorded again.
- **Stop:**  
Recording stops automatically.
- **Scroll to new message:**  
Determines whether the message table automatically scrolls to any incoming MIDI message.  
'On' is the default, but may result in 'frantic' scrolling when MIDI input is heavy, which may also starve other parts of the program. For instance, the MIDI input and output meter windows may become unable to update their gauges at the required frequency, so that not all incoming messages are displayed. So if you want a quieter display, switch scrolling off.  
Note that the number of recorded MIDI messages is always shown on the status bar at the bottom of the window: this allows you to establish that messages are being recorded even when you have disabled scrolling.
- **Time format:**  
Determines the time format used in the Time column. Five formats are available: ms, sec.ms, min:sec.ms, hrs:min:sec.ms and days:hrs:min:sec.ms. So e.g. in the sec.msec format you could get '61.000', which would be '1:01.000' in the min:sec.msec format.
- **Byte formats:**  
Determines the ways in which MIDI message bytes are formatted: this affects both the window's Bytes column and the 'Save text' operation.  
Separate settings are available for 'status' and 'data' bytes in both System Exclusive and non-System Exclusive messages. A byte in a MIDI message is a status byte if it is in the range of \$80-\$FF (128-255), and a data byte if it is in the range of \$00-\$7F (0-127).

Status → Record:

Starts the recording process.

Status → Stop:

Stops the recording process.

The panel below the menu contains the following items:

Record/Stop/Clear buttons:

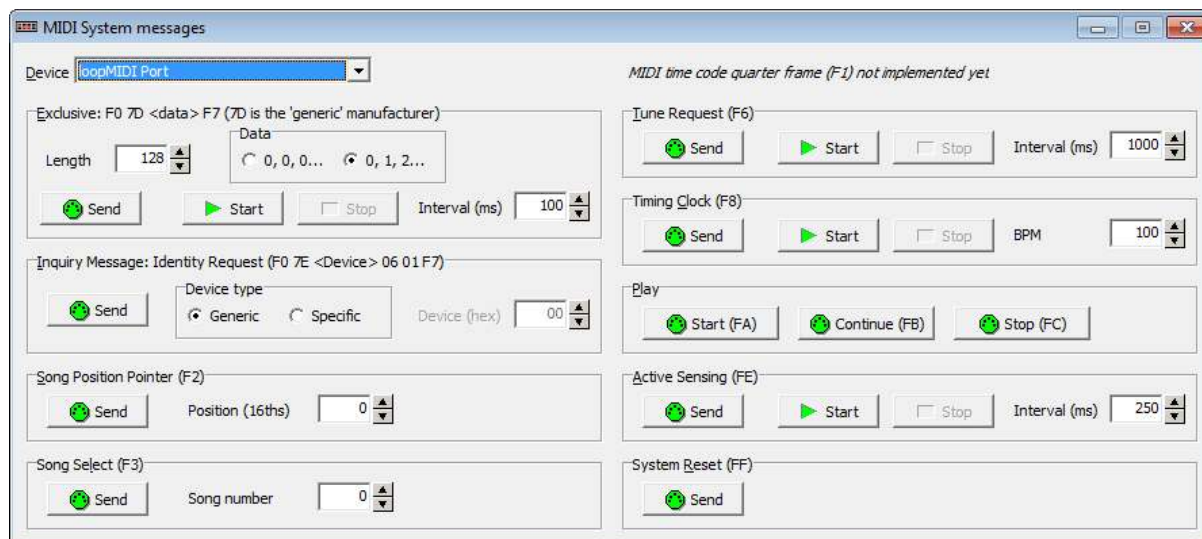
These buttons duplicate the corresponding menu items.

Note/Note aftertouch/etc.:

These checkboxes determine which incoming MIDI messages are recorded. Checked means 'yes'.

## 9. The MIDI System messages window

The MIDI System messages window is accessible from the main window's View pull-down menu (→ MIDI → 'System messages').



From this window you can send MIDI System Exclusive (SysEx), System Common and System Real-time messages – presumably mostly for testing purposes.

Some remarks:

### System Exclusive:

- Each SysEx message generated here contains 7Dh as Manufacturer, which indicates non-commercial, generic use. Thus, these messages are normally ignored by all receiving MIDI devices.  
The purpose of these messages is to test SysEx signal flow, in particular the behavior of devices (drivers, sound cards, devices with 'MIDI Merge' facilities, etc.) through which these messages pass. For instance, some devices handle SysEx messages beyond certain lengths incorrectly. (For instance, the Behringer BCF2000 and BCR2000 MIDI Controllers make garbage of any SysEx message longer than 1019 bytes sent from/to their MIDI IN/OUT sockets via their USB connections.)
- The 'Length' field indicates the *total* length of the SysEx message, i.e. F0 7D <data bytes> F7.
- The 'Data' field determines whether the data bytes are all 0, or increment by 1 from 0 to 127 (then start from 0 again).
- To generate your own SysEx messages, use the 'MIDI System Exclusive messages' window instead; see §10.

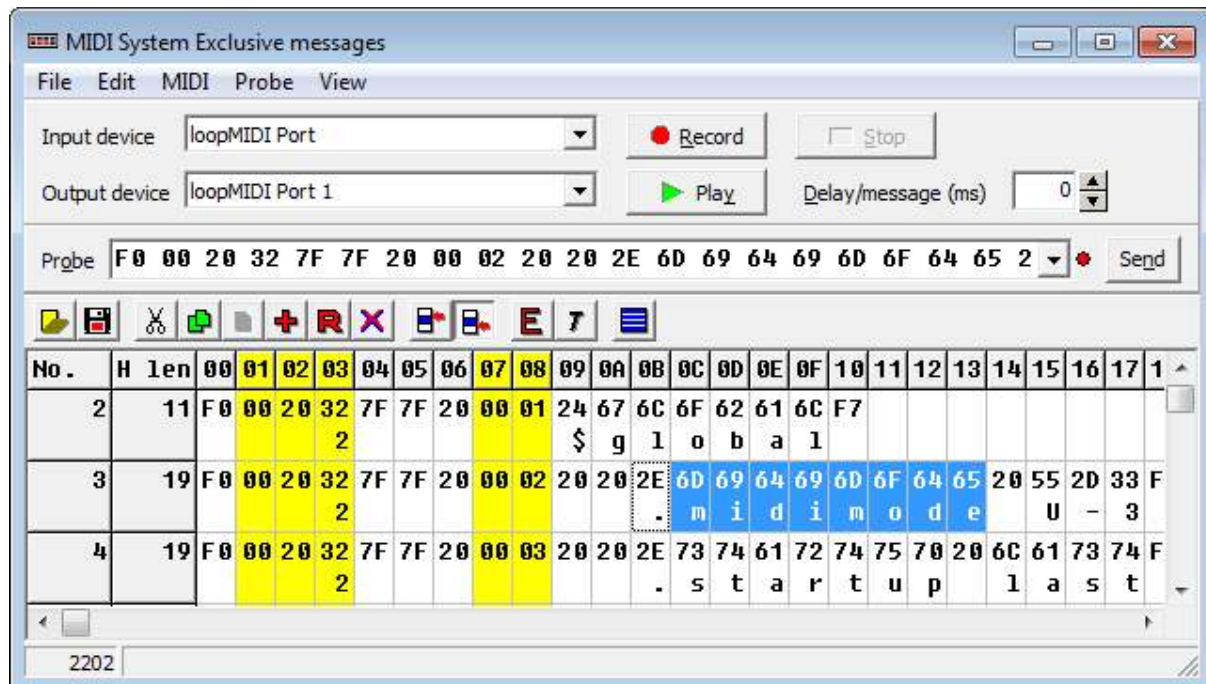
### Tune Request, Timing Clock, Active Sensing:

Beware: on Windows, the timing of the sequences of Tune Request, Timing Clock and Active Sensing messages (generated via the Start buttons) is not very accurate, because the 'simple' Windows timer is used. (I haven't yet checked how things are for macOS.)



## 10. The MIDI System Exclusive messages window

The MIDI System Exclusive messages window is accessible from the main window's View pull-down menu (→ MIDI → 'System Exclusive messages').



In this window you can create and edit SysEx messages, but also insert SysEx messages from syx files, save messages to syx files, and record and play SysEx messages.

Furthermore, you can extract the SysEx messages from a standard MIDI ('.mid') file and save them to syx files. One syx file is created for each MIDI track (in the mid file) containing one or more SysEx messages.

The window contains three panels:

1. The MIDI panel.

Here you can select the MIDI input and output devices.

When you press Record, incoming messages will be recorded into the grid below the toolbar.

When you press Play, the messages selected in the grid are played, with the pause between messages being determined by 'Delay/message (ms)'.

Note that 'Delay/message (ms)' is also applied when you press Send in the probe panel if the probe line contains more than one message.

2. The probe panel.

This panel contains an editbox in which you can type one or more SysEx messages as a sequence of bytes (in bare hexadecimal format, separated by spaces), which you can send to the selected MIDI output device.

You can also save and reopen the history list of the editbox to/from text ('.txt') files.

3. The toolbar.

This contains a number of buttons performing actions related to the grid below.

The grid below the toolbar contains a sequence of messages (recorded/opened/edited). You can edit the data in this grid in two ways: per byte or per message.

Both the probe panel and the grid allow you to correct the checksums of Roland DT1 and RQ1 messages, either automatically or on demand:

- If 'Auto-correct Roland checksum(s)' in the Edit pull-down menu has been ticked, the 'Edit byte(s)' and 'Edit message(s)' operations automatically correct any invalid Roland checksums resulting from your edits to the grid.
- If 'Auto-correct Roland checksum(s)' in the Probe pull-down menu has been ticked, the message(s) in the probe editbox are automatically corrected when you execute Send.
- When you execute 'Correct Roland checksum(s)' from the Edit pull-down menu, any invalid checksums in the selected messages in the grid get corrected.
- When you execute 'Correct Roland checksum(s)' from the Probe pull-down menu, any invalid checksums in the probe editbox get corrected.

From the View pull-down menu you can customize the window in several ways:

- You can hide any of the three panels (MIDI, probe, toolbar).
- You can include or exclude the horizontal and vertical grid lines, separately for the header and leader cells (gray in the screenshot above) and the (white) data cells. (However, on macOS the grid lines in the header and leader cells don't get hidden. This is probably due a bug in the programming library for macOS used by A-880 Manager, so at the moment I can't fix this easily.)
- You can display the message lengths in decimal or hexadecimal format.
- You can display the message bytes in various formats: decimal, hexadecimal (the default), binary and character (insofar as the bytes are in the ASCII range). Note that you can select as many formats simultaneously as you like: each format is displayed on a separate line.
- If 'Select row' is on, you can only select (and edit) whole lines (messages); if it is off, you can select (and edit) blocks of bytes. Note that in the latter case certain operations (like Play and 'Correct Roland checksum(s)') still use the *whole* message(s) of the selected bytes.
- You can highlight/unhighlight any column by right-clicking anywhere in the column or by executing View → 'Highlight selected column' from the menu. (Cf. the yellow columns in the image above.) You can even customize the highlight color.

## 11. Using the computer keyboard

A-880 Manager's user interface uses mostly standard widgets (buttons, checkboxes, pull-down boxes etc.). This means that it may sometimes be easier to use the keyboard instead of the mouse for particular operations.

For Windows, the following standard keystrokes are worth mentioning:

Control	Key(s)	Action
<i>Any</i>	Tab	Select the next control
	Shift+Tab	Select the previous control
Checkbox	Space	Toggle the setting on/off
Pull-down box	Left/Up arrow	Select the previous item
	Right/Down arrow	Select the next item
	Home	Select the first item
	End	Select the last item
	Alt+Up/Down arrow	Open/close the pull-down list

And here are some important keystrokes and mouse-clicks for the knobs in the options dialog box of the individual A-880s:

Key(s)/mouse click	Action
Left arrow	Decrease the value by 1
Right arrow	Increase the value by 1
Ctrl+Left arrow	Decrease the value by a 'big' amount
Ctrl+Right arrow	Increase the value by a 'big' amount
Home	Select the lowest value
End	Select the highest value
Alt+Enter	Open a dialog box in which you can type a new value (this only works for purely numerical knobs, i.e. knobs without items like 'Off')
Left click (caption/value)	Select the knob under the mouse
Left click (actual knob)	Set the value as indicated by the mouse position
Right click	Change the value by a 'big' amount in the direction of the mouse

## 12. Known problems

MIDI Thru (Windows only):

A-880 Manager's MIDI Thru feature only passes on *short* MIDI messages, i.e. any message *except* SysEx (System Exclusive).

This is because A-880 Manager achieves its MIDI Thru feature by simply calling the `midiConnect` function in Windows' `MMSYSTEM` library: basically Windows handles all Thru traffic behind A-880 Manager's back, but unfortunately `midiConnect` doesn't pass on SysEx messages.

I may try to find a work-around for this in a future version of A-880 Manager. In the meantime you should use MIDI-OX if you need to pass on SysEx messages via a MIDI Thru connection. (Apparently MIDI-OX doesn't use `midiConnect`, but handles all MIDI Thru traffic manually, which might actually be marginally slower than `midiConnect`, for non-SysEx messages that is...)

USB MIDI ports:

While A-880 Manager is running, connecting or disconnecting a MIDI device via its USB cable must be avoided, since it may lead to nasty error messages; instead, you must exit and restart A-880 Manager manually. I've been working on a fix, but I don't know if and when this will be made available.

Window widths:

If the screen dimensions are too small, big windows of *fixed* size can get cut off. Normally you're safe with a screen of  $1024 \times 768$  pixels, but you can run into problems when you decrease the screen size of a virtual machine running A-880 Manager.