

## Installing MPU-401 Compatible Cards in Windows 95

These notes are designed to help you install the following Roland MIDI cards and configure them in Windows 95:

- LAPC-1
  - MPU-401, MPU-IPC-T, MPU-401AT
  - SCC-1
- I. First, we will look at computers and peripherals and how they work together. See *“Typical Hardware Setup”*.
  - II. Second, we will prepare the MIDI card for installation. See *“Changing Hardware Settings”*.
  - III. Third, we will install the Windows 95 drivers. See *“Installing Windows 95 Drivers”*.
  - IV. Finally, we will test the MIDI configuration to make sure it is working properly. See *“Testing the MIDI Card”*.

### I. Typical Hardware Setup

IBM-compatible computers can be expanded to accept many different devices such as a mouse, modem, printer, sound card, or MIDI card. Your computer uses *interrupts* (also called IRQ's) and *port addresses* (or I/O addresses) to distinguish between these different devices. Since this guide is not intended to explain the concepts of IBM computers in detail, we will not jump into the particular definitions of IRQ's and addresses. Just remember that the IRQ and port address numbers must be unique for EVERY device in your computer.

When two different devices in your computer are set to the same interrupt or address, a *conflict* results. A conflict is the most common problem encountered when installing a new device. This may result in your computer crashing, reporting an error message, or playing MIDI in an unusual manner. In order to avoid conflicts, it is important to be familiar with the interrupt and address settings of the various devices in your computer. Here are some typical devices and their settings :

| <u>Device</u>              | <u>IRQ</u> | <u>Port Address</u> |
|----------------------------|------------|---------------------|
| MIDI card                  | 2/9        | 330-331             |
| COM 2 (Mouse or Modem)     | 3          | 2F8                 |
| COM 1 (Mouse or Modem)     | 4          | 3F8                 |
| Sound card                 | 5          | 220-22F             |
| Floppy drive controller    | 6          | 3F0-3F7             |
| LPT1 (Printer)             | 7          | 378-37F             |
| Reserved for system use    | 8          | 070-071             |
| Video card                 | 2/9        | 3D0-3DF             |
| Reserved for system use    | 13         | 0F0-0FF             |
| Hard disk controller       | 14         | 1F0-1F7             |
| SCSI card (scanners, etc.) | 15         | 330-33F             |

**Note:** All port addresses are written using Hexadecimal notation.

As you can see, there are many devices and settings in your computer to examine before installation. All Roland MIDI cards are set to interrupt 2/9 and address 330 when shipped from the factory. The notation of interrupt 2/9 means that interrupts 2 and 9 are *redirected* IRQ's. This means anything set on IRQ 2 also shares IRQ 9. Notice that video cards and MIDI cards typically have the same interrupt settings of 2/9. Although this is usually OK, some computers may have problems with these two devices sharing the same interrupt.

COM 1 and COM 2 refer to the 9 and 25-pin serial port connectors on the back of your computer. A mouse may be attached to one of these ports. If not, you probably have a *PS/2* style mouse that uses a round 8-pin connector. A PS/2 style mouse typically uses IRQ 12, leaving your serial ports available for other devices. A Fax/Modem will also use one of the available serial ports. This is true whether it is connected to the computer internally or externally.

**Note:** *Due to the fact that IBM computers and devices are manufactured by many different companies, default settings may vary. Contact your computer or device manufacturer for more information.*

## II. Changing Hardware Settings

To change an IRQ or port address setting of a Roland MIDI card, you must change jumpers or switches on the card itself.

### **Possible IRQ and Port Address Settings**

The following is a list of Roland MIDI cards with possible settings for each. The settings in **bold** are the defaults.

#### SCC-1 and LAPC-1

IRQ: **2/9**, 3, 4, 5, 6, 7

Port Address: **330**, 332, 334, 336

#### MPU-401

IRQ: **2/9**

Port Address: **330**

#### MPU-IPC-T

IRQ: **2/9**, 3, 4, 5, 6, 7

Port Address: 220, 230, 240, 250, 320, **330**, 340, 350

#### MPU-401AT

IRQ: **2/9**, 3, 4, 5, 6, 7

Port Address: 300, 320, **330**, 332, 334, 336

**Jumper and Switch settings for IRQ and Port Address**

Below are the jumper and switch settings used to change the IRQ and port address for Roland MIDI cards. The settings that are shaded are the factory defaults.

**Note:** The default settings for Roland cards are usually the least likely to conflict with other cards. Therefore it is recommended that you do not change these settings unless you are sure you have a conflict with another device.

**LAPC-1**

IRQ: There is a set of jumpers labeled J01 through J06 on the LAPC-1. With the connectors of the card facing down and to the right, these jumpers are located near the bottom-center of the LAPC-1. Look at the chart below and move the jumper to the appropriate set of pins to select the IRQ you want to use.

| IRQ         | 2/9 | 3   | 4   | 5   | 6   | 7   |
|-------------|-----|-----|-----|-----|-----|-----|
| Jumper Name | J01 | J02 | J03 | J04 | J05 | J06 |
|             |     |     |     |     |     |     |

Port Address: There are two jumpers on the LAPC-1 used to change the address, labeled J07 and J08. These jumpers are located to the left of the IRQ jumpers on the card (see above). Move the jumper to the desired location using this chart:

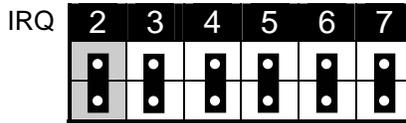
|   | 330 |     | 332 |     | 334 |     | 336 |     |
|---|-----|-----|-----|-----|-----|-----|-----|-----|
|   | J07 | J08 | J07 | J08 | J07 | J08 | J07 | J08 |
| 1 |     |     |     |     |     |     |     |     |
| 0 |     |     |     |     |     |     |     |     |

**MPU-401**

The original MPU-401 card was hard-wired from the factory to IRQ 2/9 and port address 330H. If you wish to change these settings, contact an authorized Roland Service Center.

**MPU-IPC-T**

IRQ: The jumpers used to change the interrupt are labeled on the card as 2/9, 3, 4, 5, 6, and 7. Position the card with the connectors facing down and to the right. The interrupt jumpers are located near the bottom-center. Move the jumper to the desired position to select the IRQ.

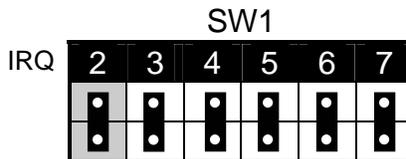


Port Address: There are several jumpers labeled A04 through A09 on the MPU-IPC-T used to change port address. With the connectors of the card facing down and to the right, these jumpers are located near the top-center of the MPU-IPC-T. You will find a 0 and 1 position for each of the jumpers. To set a jumper to the 1 position, install it on the middle pin and the top pin (labeled 1). To set a jumper to the 0 position, install it on the middle pin and the bottom pin (labeled 0). Move the jumpers to the desired locations for A04 through A09 using this chart:

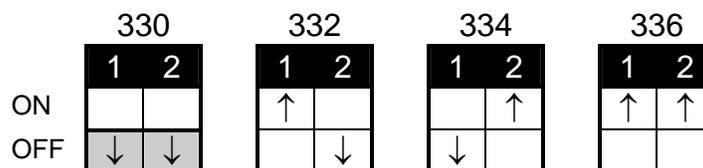
| Address | Switch Name |     |     |     |     |     |
|---------|-------------|-----|-----|-----|-----|-----|
|         | A04         | A05 | A06 | A07 | A08 | A09 |
| 220     | 0           | 1   | 0   | 0   | 0   | 1   |
| 230     | 1           | 1   | 0   | 0   | 0   | 1   |
| 240     | 0           | 0   | 1   | 0   | 0   | 1   |
| 250     | 1           | 0   | 1   | 0   | 0   | 1   |
| 320     | 0           | 1   | 0   | 0   | 1   | 1   |
| 330     | 1           | 1   | 0   | 0   | 1   | 1   |
| 340     | 0           | 0   | 1   | 0   | 1   | 1   |
| 350     | 1           | 0   | 1   | 0   | 1   | 1   |

**SCC-1**

IRQ: With the connectors of the card facing down and to the right, the jumpers used to change interrupts are located near the bottom-center. IRQ's are labeled on the card as 2/9, 3, 4, 5, 6, and 7. Move the jumper to the appropriate set of pins to select the interrupt you want to use.

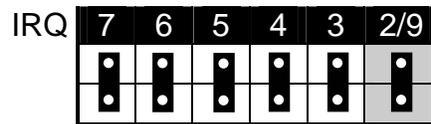


Port Address: There are two switches on the SW2 block labeled 1 and 2 which are used to select the port address. With the connectors of the card facing down and to the right, these switches are located near the top-center of the card on the right. You will find an OFF and ON position for each of the switches. Move the switch to the desired location using this chart:

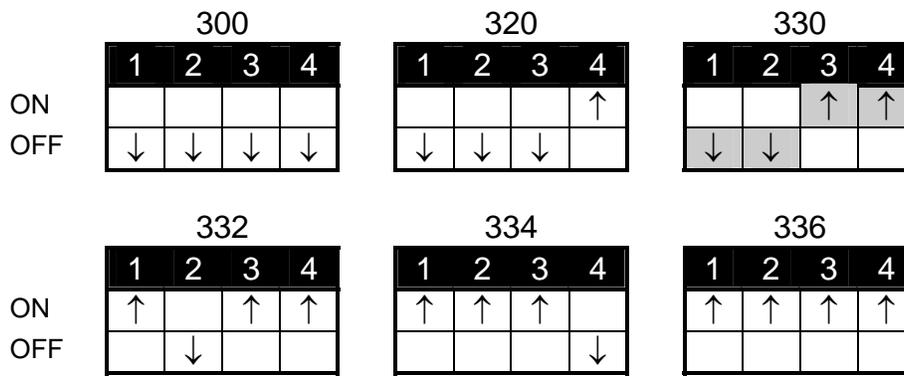


**MPU-401AT**

IRQ: There is a set of jumpers labeled SW1 on the MPU-401AT card. With the connectors of the card facing down and to the right, the SW1 jumpers are located near the bottom left of the MPU-401AT. Move the jumper to the desired location using this chart to select an interrupt:



Port Address: There is a set of switches labeled SW2 to the right of the SW1 interrupt jumpers on the MPU-401AT. You will find an OFF and ON position for each of the switches. Move the switches to the desired locations using this chart to select the address:



**MIDI Card Installation**

*Note: Since computers vary dramatically by manufacturer and type, it is a good idea to consult your computer manufacturer before installation. If you are not comfortable installing the card, please consult a local computer technician.*

*MPU-401AT Note:* If you are using an MPU-401AT with a daughterboard, you will need to attach the daughterboard to the card. The MPU-401AT has a connector labeled CN1. This connector will attach to the equivalent connector on the daughterboard. Two of the four plastic spacers on the daughterboard will fit into holes on the MPU-401AT.

Now that the card is set to the appropriate IRQ and port address settings, it must be physically installed in the computer. Remove the cover of your computer - this will typically require a screwdriver and/or key. Slide the card into an available slot in the PC. Be careful not to drop anything like a screwdriver or other tool in your computer. Use a screw to fasten the card firmly in your computer. Replace the computer's cover.

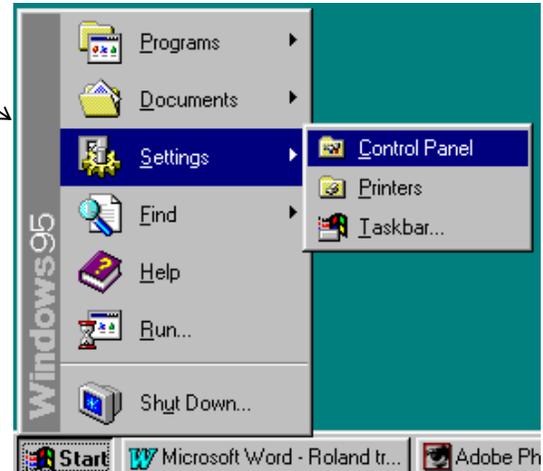
**III. Installing Windows 95 Drivers**

There are three parts to this process:

1. First, we will install the Windows driver.
2. Second, we will tell Windows which interrupt and address settings you have chosen.
3. Third, we will select the new MIDI card as the primary Windows MIDI device.

### Installing the Windows Driver

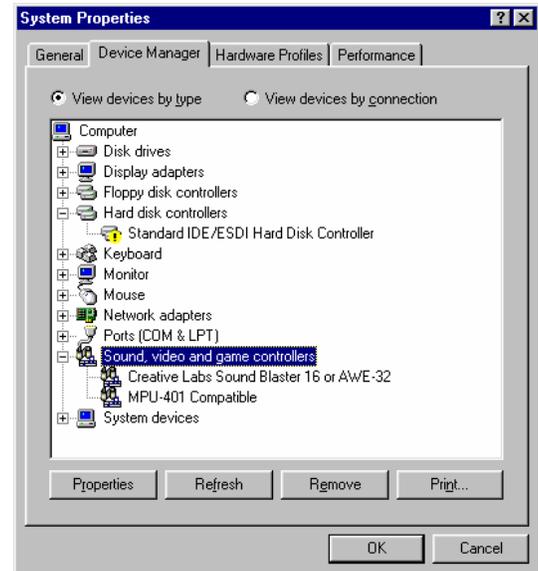
- 1) From the Start Menu, select Settings and open the Control Panel.
- 2) In the Control Panel, double-click on Add New Hardware.
- 3) To begin installing your hardware, click Next.
- 4) Since you do not want Windows to search for your hardware, click No, followed by Next.
- 5) For hardware type, scroll down through the list and select Sound, video and game controllers.
- 6) For Manufacturer on the left, choose Microsoft. For Models on the right, choose MPU-401 Compatible. Click Next.
- 7) Windows will indicate the default interrupt and address settings for the card. If the card you installed is not at these default settings, you will need to change them in Windows. Finish the steps below and then go to the "Setting the Interrupt and Address in Windows" section.
- 8) You may need to insert a Windows disk at this point. Afterwards, click Finish to end the installation.
- 9) At this point you will be asked to shut down the computer. After doing so, restart it.



### Setting the Interrupt and Address in Windows

If your MIDI card is not at the default settings, or if Windows is not recognizing the card, follow these steps to change the settings in Windows. Otherwise, go to the “Selecting the MIDI Card as the Primary Windows MIDI Device” section below.

- 1) From the Start Menu, select Settings and open the Control Panel.
- 2) In the Control Panel, double-click on the System icon.
- 3) Click on the Device Manager tab at the top of the System Properties window.
- 4) Double-click on Sound, video and game controllers.
- 5) Your sound cards will be displayed. Double-click on MPU-401 Compatible.
- 6) Click on the Resources tab at the top of the Properties window.
- 7) Clear the check mark from the Use automatic settings box, if necessary.
- 8) To change the port address, click on Input/Output Range. To change the interrupt, click on Interrupt Request. Then click the Change Setting button.
- 9) The screen you will be shown displays the value for the parameter you have selected. Click the up and down arrows to choose from the available values, making sure that no devices are conflicting in the Device Conflict box at the bottom.
- 10) Click OK, and change the other settings as necessary.
- 11) Click OK again and restart Windows when requested.



### Selecting the MIDI Card as the Primary Windows MIDI Device

- 1) Open the Control Panel.
- 2) Double-click on the Multimedia icon.
- 3) Click the MIDI tab at the top of the window.
- 4) Click the dot to the left of Single Instrument.
- 5) Click on MIDI for MPU-401 Compatible in the white box under Single Instrument.
- 6) Click OK at the bottom of the window.



#### IV. Testing the MIDI Card

At this point we will test the MIDI card to make sure it is installed and configured properly. We will be using the Media Player program included with Windows. If you are using an external MIDI device, it should be turned on and waiting to receive MIDI data. Connect its MIDI input to your new card's MIDI output.

- 1) From the Start Menu, select Programs, then Accessories, and Multimedia, followed by Media Player.
- 2) Under the Device menu, select MIDI Sequencer.
- 3) A window to open a file will be displayed. If you upgraded from Windows 3.1, you should be able to find the CANYON.MID file in the Windows directory. Otherwise, you will need to locate and open a MIDI file of your own.
- 4) To make sure the correct MIDI device has been chosen, select Properties under the Device menu.
- 5) Under Single Instrument, click on the MIDI device you wish to test (the MPU-401 Compatible).
- 6) Click OK at the bottom of the window.
- 7) In the Media Player, click the Play button (the button on the far left that looks like a sideways triangle) and the MIDI file will begin playing.



If you are not getting any output, check the following:

- Is your output device (speakers, headphones, etc.) attached to the correct connector?
- Are the speakers or headphones working properly? Try connecting them to another audio device to test them.
- If the signal is going through a mixer or an amplifier, are the volume levels turned up?
- If you are controlling an external MIDI device, are the MIDI connections correct? Can it be verified that the device is receiving MIDI data?

If the sound you are getting is still not right, or you are not getting any output at all, then you may have an interrupt or address conflict. Determine some other available settings for the card that you can use. Change the jumpers or switches on the card, and change the corresponding values in Windows to reflect the updates. Then try testing the card again.