THE WERSI OAS TECHNOLOGY UPGRADE PROJECT
Part 3 – Installing and Testing the Hardware

The Upgrade Equipment

Three items of hardware are required for the upgrade.

1. A second processor to run the additional new generation software. This can either be a PC or a Mac or a laptop. The following general and high end specifications are suggested.

Computing Component	General	High End
Processor	Intel i5/i7 – 2 Cores	Intel i5/i7 – 4 Cores +
Hard Drive	7200 rpm or SSD 50 GB - 500 GB Capacity	SSD 500 GB - 1 TB Capacity
RAM	8 GB – 16 GB	16 GB – 32 GB

The general specification will adequately support sample players like Kontakt and most of the Hauptwerk sample sets. However if you wish to install a number of large Hauptwerk sample sets and run these at the highest quality level, then the high end specification provides the necessary increases in RAM, hard drive capacity and CPU cores.

2. A MIDI/Audio interface unit. This receives MIDI data from the MIDI Out connector of the organ and feeds this to the Mac. It also receives stereo audio from the Mac and feeds this back to the Audio Inputs of the organ.

3. A widescreen monitor to display menus, software and sheet music. This is installed in place of the organ's music rest. The monitor can be touchscreen if required.

If the monitor is not touchscreen enabled, then a mouse or trackpad is required for selection.

A standard computer keyboard is required for system configuration but not for normal playing operation. A CD-ROM drive is also required for installing CD based applications software.

The following hardware has been chosen for the author's upgrade.

■ An Apple Mac mini with the following specification

> ➤ Processor – 3.0GHz Intel i7 dual-core
> ➤ Memory – 16 GB of RAM
> ➤ Storage – 1 TB of SSD

■ A Steinberg UR22 MIDI/Audio interface unit.

This provides MIDI to USB conversion for the MIDI signals from the organ to the Mac, and USB to stereo analogue conversion for the audio signals from the Mac to the organ. It receives its power from the Mac's USB cable.

■ An Acer 23" T232HL touchscreen display is used for the monitor. A wireless Apple trackpad provides alternative mouse and touchscreen equivalent functionality. The trackpad is installed on the right hand cheek of the organ console.

Acer Display and Trackpad Installed on the Organ

The location of the Mac and UR22 units is down to user preference, but the author has decided to mount the Mac under the console at the rear of the organ, and the UR22 inside the console in the space behind the amplifier/motherboard enclosure at the back of the organ. This arrangement provides easy access to the Mac for switch on/off, and a convenient way of connecting the UR22 unit to the organ's MIDI Out/Audio In sockets. The mains cable inside the console that feeds into the organ's power supply unit can also be used to provide power to the monitor and the Mac.

Connecting up the Upgrade Hardware

Just four cables are required to connect up the hardware components.

Audio Cables

These connect the audio output sockets of the UR22 unit to the Wersi audio input sockets. You will need two of these cables each terminated with a right angled mono 6.35mm jack plug. The angled plugs are necessary because of the limited space at the back of the amplifier.

MIDI Cable

This connects the MIDI output socket of the organ to the MIDI input socket of the UR22 unit. You will need a standard MIDI cable terminated at each end with a 5 pin plug.

USB Cable

This connects the USB socket of the UR22 unit to the USB socket on the Mac. This cable carries two signals, the MIDI data to the Mac and the stereo audio back from the Mac. The UR22 unit requires a particular type of cable that has the standard oblong USB connector at the Mac end and a square USB connector at the UR22 end.

Power Supply for the Display Monitor and the Mac

If you wish utilise the organ's mains supply to power the display monitor and the Mac you will need to interrupt this supply before it enters the instrument's power supply unit. A safe way to do this would be to use a mains distribution box. Remove the mains connector to the power supply and connect it instead to the input of the distribution box.

You will then need to connect three power cables from the distribution box, one back to the instrument's power supply, one to the monitor and a third to the Mac. The fourth connector on the distribution box is not required.

The type of cables used for this purpose will depend on the display you are using and the particular computer you have chosen. Suitable connectors for both the Acer display and the organ's power supply are shown on the left, and those for the Mac mini on the right.

Wiring up the Upgrade Components

Use the cables described above to wire up the upgrade components according to the following wiring diagram.

Wersi MIDI Connectors

Wersi Audio Inputs
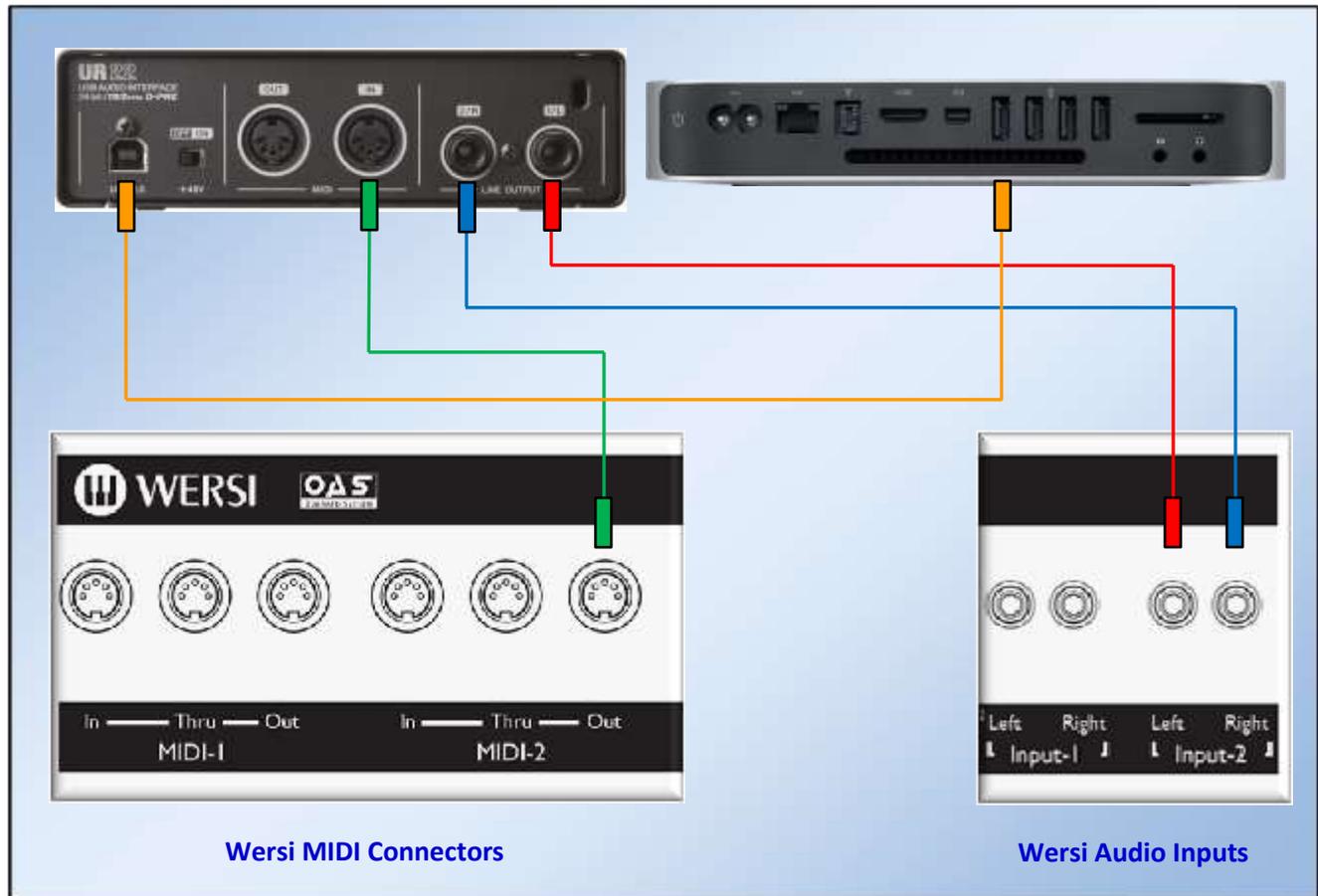
UR22 and Mac Connections

Testing the Upgrade Hardware

Installing the Driver Software

Audio/MIDI interface units like the Steinberg UR22 will typically require the installation of an applications package called a *Driver*. This implements the required interface between the UR22 and the computer's audio processing software, and is usually provided on an accompanying CD. The driver can also be downloaded from the Steinberg web site at:-

http://www.steinberg.net/en/support/downloads_hardware/yamaha_steinberg_usb_driver.html

It is recommended that this web site be checked anyway before installation to ensure that you have the latest version of the driver. Follow the driver installation instructions to set up the audio and MIDI interface menus on your second processor.

Testing the Audio Interface

This is straightforward. Simply play any sound file on the second processor and you should hear the audio emanating from the Wersi organ speakers. The volume can be adjusted either by the volume slider or the gain control for your chosen Audio1 or Audio2 input on the Input Mixer.

Testing the MIDI Interface

First we need to load one of the external MIDI sounds into a selector. Choose any selector and ensure that it is activated. The easiest way to load an external MIDI sound is by selecting the **Quickload** option on the main OAS menu.

Click on the **Sounds** button, select either **EXTERN 1** or **EXTERN 2** (depending on which MIDI output you are using) from the Sound Devices list, and choose a sound from the right hand sounds list.

The example below shows the sound *Extern Midi 2-003* selected from the *EXTERN 2* MIDI output.
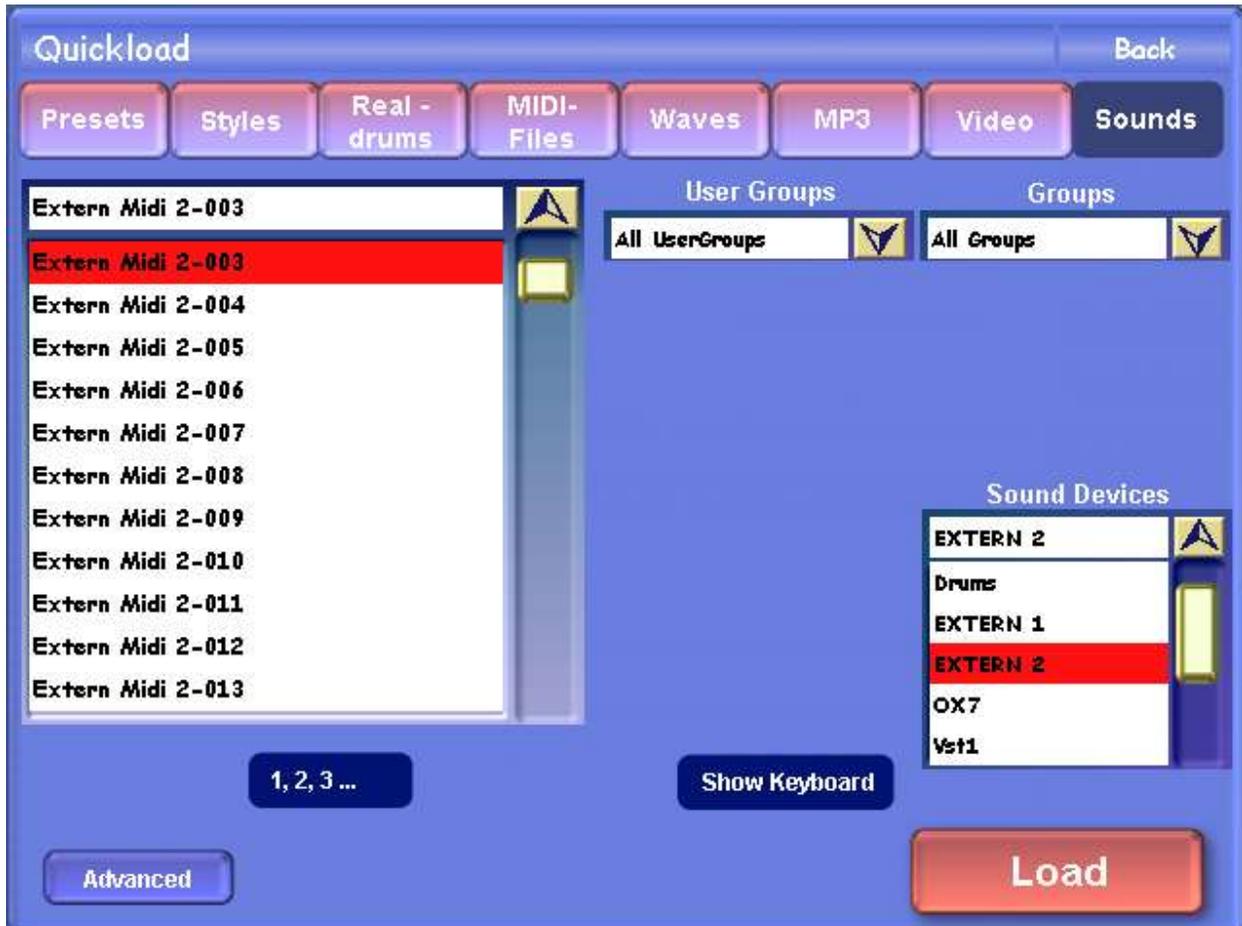
Now click on the **Load** button to load the selected sound into your chosen selector.

The following screen shot shows the sound *Extern Midi 2-003* loaded into Selector 1 of the upper manual.

The procedure for testing the MIDI connection between the organ and the second processor will depend on the type of processor you are using and also the audio/ MIDI interface unit you have chosen. The following instructions are for the UR22 unit connected to an Apple Mac.

On the Mac select the **Launchpad** icon to display all the applications icons.
Select the **Other** icon to show a further set of icons and select the **Audio MIDI Setup** icon.

Now select the **Window** icon from the top of the main screen and the **Show MIDI Studio** option from the pull down list.

The *MIDI Studio* panel will now appear and you should see an entry for the Steinberg UR22 unit.

To test the MIDI connection, select the **Test Setup** option from the MIDI Studio toolbar.

Now press some keys on the manual corresponding to the selector you have activated. If the connection is working correctly you will see the upwards arrow at the bottom of the Steinberg UR22 entry light up in synchronism with the keys being pressed. This indicates that a MIDI signal is being received by the processor.

The following screen shot shows this procedure in action.
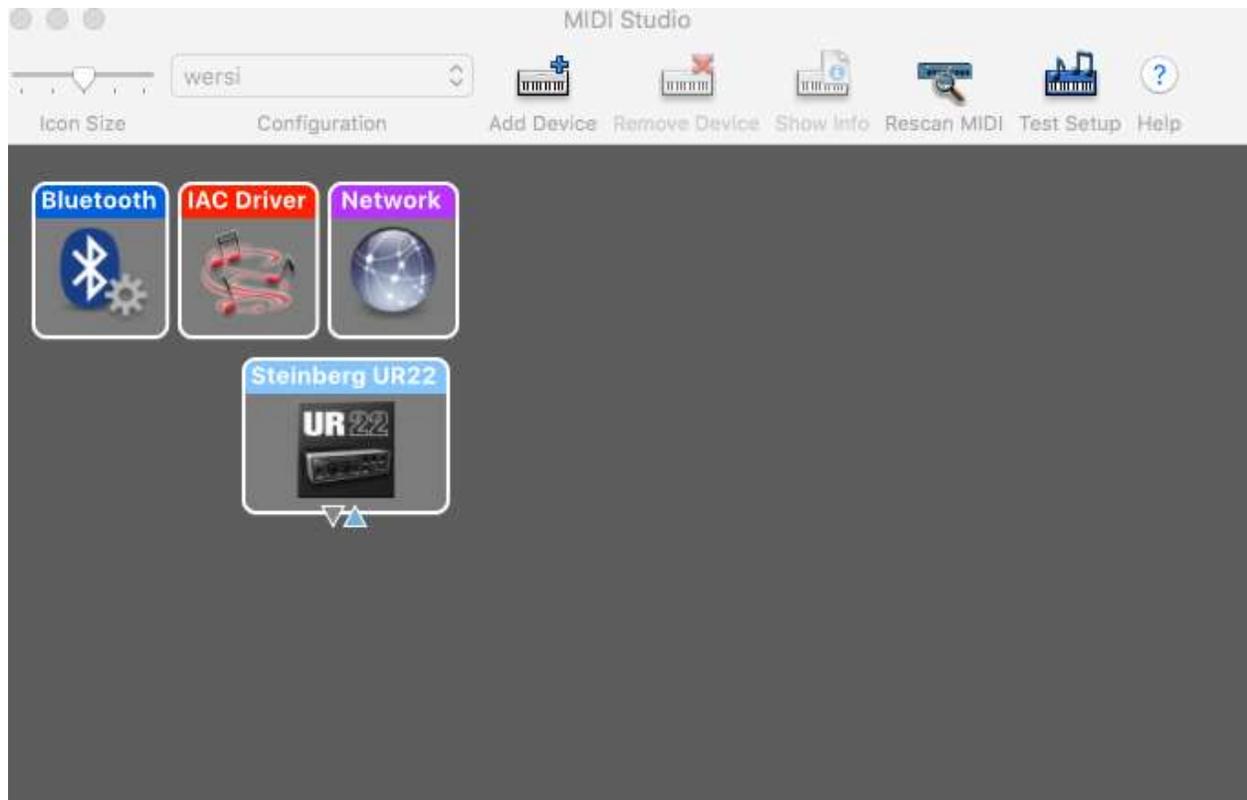
This completes the testing of the upgrade hardware.

Coming Next
Part 4 of this series will cover the installation and integration of the Kontakt sampler software.

Jeff Ormerod - September 2016