

# Chapter 19

## Audio Outputs

### Audio Configurations

There are several ways to get audio output from the K2600. The most common configuration is a pair of mono or stereo 1/4-inch cables connecting the Mix outputs of the K2600 to inputs on a mixer or keyboard amp. The Mix outputs carry the sum of all the signals routed to the separate analog outputs (A–D), including effects. Another common configuration is to use one or more of the separate analog outputs. Connecting to one of the separate outputs does not remove the corresponding portion of the signal from the MIX outputs (for example, if you connect cables to the A pair, you'll get the Output A signal at both the A outputs and the Mix outputs).

The audio output routing of the K2600 depends primarily on two parameters:

- The Pair parameter on the OUTPUT page in the Program Editor; this routes the signal from programs to Inputs A–D in KDFX
- The Output parameters (A–D) on the OUTPUT page in the Studio Editor; this routes the KDFX output to the physical audio outputs (optionally bypassing KDFX, or adding effects from the KDFX Aux bus)

In other words, individual programs route the audio signal from the K2600's sound engine into the effects processor (KDFX), while the studios assigned to those programs route the signal from KDFX to the jacks on the rear panel.

Of course, there are other options: you can set the value of the Outpair parameter (on the CHANNELS page in MIDI mode) to **KDFX-A**, **KDFX-B**, **KDFX-C**, or **KDFX-D**. If you set Outpair for Channel 1 to **KDFX-A**, for example, then every program on Channel 1 sends its audio signal from the sound engine to Input A of KDFX—overriding the program's routing.

You can also use the Out parameter on the CH/PRG page in the Setup Editor in the same way, forcing each zone of a setup to send its output to a particular KDFX input, overriding the settings of the programs in each zone.



***Note:** we recommend that you make the cable connection to the K2600 (or any instrument) after you've made your other audio connections, since this reduces the chance of creating static electricity that can cause an audible "pop" (and, in extreme cases, cause equipment damage).*

## Audio Routing: Programs to KDFX

1. In any mode (typically Program mode), highlight a program name with the cursor, then press **Edit** to enter the Program Editor. Note how many layers there are in the program.
2. Press one of the **more** soft buttons until you see OUTPUT at the bottom of the display. Press the corresponding soft button to view the OUTPUT page for the current layer.
3. Set the value of the Pair parameter as desired. This value determines which KDFX input (A–D) gets the output from the current program layer.
4. Repeat this process for each layer in the program (or, if you’re editing a setup, for every layer of every program in the setup).

## Audio Routing: KDFX to Audio Outputs

Every program that uses KDFX has a studio assigned to it. The studio defines the KDFX parameters for the program to which it’s assigned.

1. In the Program Editor, press one of the **more** soft buttons until you see KDFX at the bottom of the display. Press the corresponding soft button to view the KDFX page for the current layer.
2. Highlight the Studio parameter, then press **Edit** to enter the Studio Editor.
3. Press the **OUTPUT** soft button to view the OUTPUT page for the current studio. Note that it controls all layers of the program.
4. Set the values for each of the four Output parameters. These parameters represent the four pairs of analog outputs; the parameters’ values specify which KDFX output bus gets routed to each of the analog outputs.

## Using the Optional Digital Outputs

Digital audio output is available for K2600s that have either the sampling option or the digital I/O option. Each option gives you different possibilities for digital output configuration.

The sampling option provides 16-bit stereo digital output, via coaxial (XLR) or optical output jacks that are supplied with the sampling option. The output is routed through the sampler’s analog-to-digital converter (ADC). The stereo digital out carries either the K2600’s analog Mix output, or an external analog signal converted to digital. You can choose either SPDIF or AES/EBU format for the output. You can set the output sample rate at 48, 44.1, 32, or 29.6 KHz, or you can slave the K2600 to an external clock via one of the stereo digital inputs. These inputs also enable you to sample digital signals, as described on page 14-8.

The digital I/O option provides 16- or 20-bit eight-channel digital output in Kurzweil’s proprietary KDS format, via a serial port supplied with the digital I/O option. You’ll need to connect a Kurzweil DMTi or other KDS-compatible device to the serial port. The digital I/O option also provides direct stereo digital output (optical or coaxial).

With the digital I/O option, the output sample rate is fixed at 48 KHz. The digital I/O option also provides eight channels of KDS-format digital input, which you can route into VAST programs. See *Playback Mode* on page 6-26.

If your K2600 has both the sampling option and the digital I/O option, you can route the signal to the stereo digital outputs either through the sampler, or directly.

## K2600 With Sampling Option Only

1. Go to the SampleMode page (in Program, Setup, Quick Access, or Master mode, press the **Sample** soft button).
2. Set the value of the Input parameter to **Digital**. This enables the Format parameter.
3. Set Format as needed. **SPDIF** is the most common setting; you may want to use **AES/EBU** in professional environments.
4. Set Input to **Analog** to enable the Src and Rate parameters.
5. Set Src as needed. Use **Int** to send the K2600's analog Mix output to the digital outs (via the sampler), or use **Ext** to convert an external analog signal—received at either of the Analog inputs—to digital before sending it to the digital outs.
6. If the K2600 is going to be the master (the device controlling the output sample rate), set the Rate parameter as desired. This results in a constant output sample rate. If you want an external master to control the K2600's output sample rate, set Input back to **Digital**, and connect the master device to one of the stereo digital inputs. Set the value of Cable accordingly: **Coaxial** for the XLR input, or **Optical** for the optical input. Now the K2600 adjusts its output sample rate according to the clock signal received at the stereo digital in.

If you're using a Coaxial cable and are going from the Kurzweil's XLR out to an RCA in, be sure the cable is wired as described in *Cables and Input Jacks* on page 14-1.

## K2600 With Digital I/O Option Only

The K2600's audio output goes to both the stereo digital outs (XLR and optical) and the eight-channel KDS outs (it goes to the analog outs as well). The stereo output is a copy of the signal routed to analog out A—so if you want the full K2600 output at the stereo digital outs, you'll need to make sure that the current studio routes all of its output to out A (on the OUTPUT page in the Studio Editor, set the value of the Output A parameter to **Mix**). The eight-channel output is a copy of the signal routed to analog outs A (Left and Right) through D (Left and Right).

The output sample rate is fixed at 48KHz. In any situation requiring different sample rates, you'll need to use a sample rate converter (like the DMTi). When you need a clock signal to synchronize two or more instruments, there are two options:

- Make the K2600 the master; it can't be slaved to an external clock signal. Use a sample rate converter, if necessary, to match the sample rates of your other instruments.
- Make another instrument the master. The K2600 won't respond to the clock signal. Use a sample rate converter, if necessary, to match the K2600's output rate to the master's rate.

When you need to slave one or more instruments or devices to an external master clock, the K2600 is necessarily the master, because it can't be slaved to an external clock. If you need to use sample rates other than 48KHz, you'll need to use the DMTi or another sample-rate converter to convert the K2600's output to the desired rate.

When you have the digital I/O option, the Effects-mode page includes an additional parameter—DigOut—which enables you to switch the digital output's word length to 16 bits or 20 bits. Most devices support 16-bit, and many support 20-bit.

You may also want to adjust the value of the Dither parameter on the Effects-mode page, to adjust the digital noise floor.

#### **K2600 with Sampling Option and Digital I/O Option**

When your K2600 has both the sampling and digital I/O options, you have both eight-channel direct digital output, and stereo digital output, with two options for the stereo output. These options are defined by an additional parameter—**Out**—that appears on the SampleMode page when Input is set to **Digital**. Set the Out parameter to **A/D**, and the K2600 routes its analog Mix output through the sampler before sending it to the stereo digital outs. This converts the signal to analog and back to digital before it reaches the stereo outs. Set Out to **Direct (Dir)**, and the K2600 sends the signal from analog out A to the stereo digital outs, without the extra conversion. The eight-channel KDS output is always direct.