QSC's DSP-3 and DSP-4 Digital Signal Processors are compact modules offering two channels of independent DSP. They attach to the back of most QSC 2-channel DataPort-equipped amplifiers—without occupying any additional rack space.

While these two units are very similar and, in most cases, can both handle the many signal processing tasks put before them, they each have unique strengths that better suit one unit for a particular job over the other. The questions and their respective answers that follow seek to clarify these issues.

DSP-3 / DSP-4:
Choosing the Right Tool for the Job

Q: *Is the DSP-4 replacing the DSP-3?*

A: No. QSC will continue to manufacture the DSP-3. The DSP-4 has been added to the DSP line of products to increase the number of options available to the customer.

Q: *What is the difference between the DSP-3 and the DSP-4?*

A: You may have already noticed that the DSP-3 uses phoenix or Euro block inputs and outputs whereas the DSP-4 employs XLR inputs and outputs. Phoenix connectors are common and preferred in installed systems. Thus the DSP-3 fits well into the contractor market. The DSP-4 fits well where XLR connectors are preferred—such as portable live sound applications.

Another difference has to do with the DSP specifications. The DSP-3 uses a 24-bit CODEC for digital to analog and analog to digital conversion. This chip takes up less space and is less expensive than using separate digital to analog converters (DAC) and analog to digital converters (ADC). By contrast, the DSP-4 uses individual 24-bit D/A and A/D converters. While this approach is more expensive, it provides increased dynamic range or signal-to-noise ratio.

The depth of the DSP-4 is larger than that of the DSP-3 to accommodate the XLR connectors. All other dimensions are equal.

Q: *Can the DSP-4 be mounted directly to the back of most QSC DataPort-equipped amplifiers in the same way the DSP-3 can?*

A: Yes. The DSP-4 was designed to mount directly to the back of 2-channel CX, DCA, PL2 and ISA amplifiers. (Note: An external power is required when mounting to an ISA amplifier.)

Q: *I just bought a DSP-4; will configurations from my DSP-3 work on my DSP-4?*

A: Yes, the software used to create configurations is the same for all current QSC DSP products and the configurations you build for the DSP-3 will work on the DSP-4. In most cases, these configurations are also compatible with the DSP-30, though this unit's lack of a DataPort may restrict full compatibility.
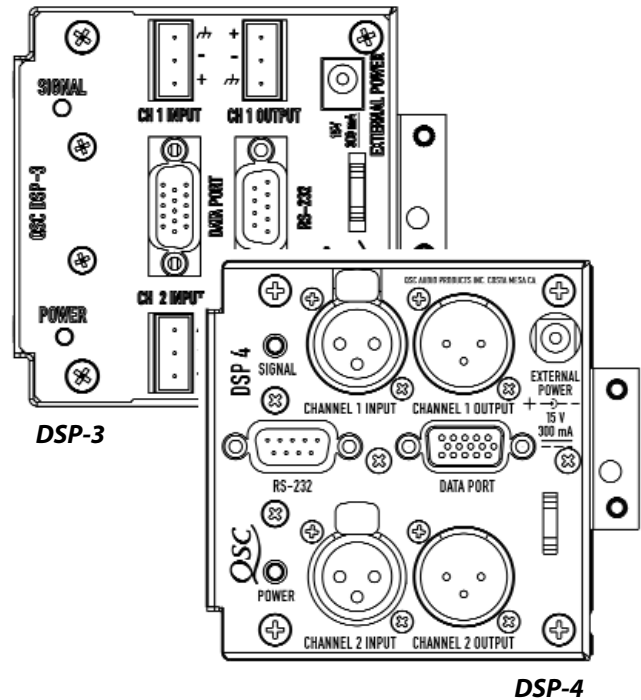
DSP-3

DSP-4

Q: *What software does the DSP-4 use?*

A: QSC DSP-Series digital processors use Signal Manager for PC/Windows. Currently, the latest version is V4.75, which is operational across all three models (DSP-3/30/4). Earlier versions of Signal Manager were specific to individual models. For additional information, please consult the QSC website (www.qscaudio.com).

Q: *Will the DSP-3 work in a pro-touring application?*

A: Yes. The DSP-3 is very functional in any application requiring one or two channels of processing. However, the DSP-4 expands functionality in pro-touring applications by providing the commonly used balanced XLR connector format along with improved signal-to-noise performance as a result of the individual A/D and D/A converters.

Q: *Will the DSP-4 fit onto the back of my Powerlight2 amplifier?*

A: Yes, the mounting format of the DSP-4 is the same as the DSP-3 with the exception that the DSP-4 chassis is a little deeper—so make sure to size your racks accordingly.

Q: *I'm having difficulties connecting a DSP-3 (or -4 or -30) processor to a PC. I've used several types of RS232 DB9 M/F cables but the software still reports that unit is not connected. I cannot locate a suitable cable - I've found lot of null-modem DB8M/M cable pin-outs, but none like this. Please send me a complete wiring diagram of this cable so I can make it and get this processor connected.*

A: The DSP-3, -4, and -30 do not use a null modem cable to connect to the PC. Instead, use a straight-through serial cable, which is quite common. This cable is often sold as a "serial extension cable", with a male connector at one end and a female connector at the other. You can purchase this serial cable off-the-shelf from any computer products store. The RS-232 pin-out is found in the appendix of the DSP Hardware Manual.

If you still encounter problems connecting to the DSP device using a standard serial cable, check that the correct COM port is selected in the Signal Manager application. Under the Tools menu, click Options and select the DSP tab. Ensure the correct COM port is selected.
Also, check that no other programs or utilities are using the COM port to which the DSP device is attached. For example, HotSync (for Palm Pilots) is often set to automatically start when the computer is booted up, and must be manually exited before the PC can communicate with the DSP unit through the same COM port. Laplink and HyperTerm are two more examples of applications which "take over" the COM ports, preventing Signal Manager from accessing the port which is connected to the DSP device.

One final thing to check: make sure the DSP unit is receiving power. The DSP device has a blue L.E.D. which illuminates to indicate the device is turned on. This may seem obvious, but power may have been disconnected. If the device is supposed to be receiving its power from a DataPort-connected QSC amplifier (such as a CX, PL2, or DCA amplifier), make sure the amplifier is turned ON (not off, or in Standby mode). If the device is using some other means of power (either an AC adapter for a DSP-3 and DSP-4, or a standard AC power cord for the DSP-30), make sure it is connected to a live AC circuit.