

## Chapter 12

# Glossary

<b>Algorithm</b>	In the K2500, a preset configuration of programmable digital signal processing functions. Each of a program's layers uses its own algorithm, which determines the type of synthesis each layer uses to generate its sound.
<b>Aliasing</b>	A type of distortion that occurs in digitally sampled sounds when higher pitches (increased sample playback rates) introduce partials that were not present in the original sound. These partials may or may not be musically useful.
<b>Amplitude</b>	The intensity of a signal, perceived as loudness in the case of audio signals.
<b>Analog</b>	A term used widely in electronics-related fields to describe a method of representing information, in which the method of representation resembles the information itself. Analog synthesizers, for example, use gradual variations in electrical voltage to create and modify sounds. The oscillations in voltage are analogous to the waveforms of the sounds they generate. Compare Digital.
<b>Bandwidth</b>	In terms of sound generation, the range of frequencies within which a device functions. The human ear has a "bandwidth" of almost 20 KHz (it can distinguish sound at frequencies from 20 Hz to 20KHz). The K2500's 20KHz bandwidth enables it to produce sounds that span the entire range of humanly audible sound.
<b>Bank</b>	There are two types of banks in the K2500's memory: memory banks, which store and organize the programs and other objects you create, and Quick Access banks, where you can store programs and setups for one-button access while in Quick Access mode.
<b>Cent</b>	1/100th of a semitone. The standard increment for fine adjustment of pitch.
<b>Continuous control</b>	A device that converts motion into a range of 128 possible values that can modulate a sound source. The Mod Wheel, a standard volume pedal, and controllers like Breath and Aftertouch are continuous controls. Compare switch controls.
<b>Control Source</b>	Anything that can be used to modify some aspect of a program's sound. LFOs, envelopes, Mod Wheel messages (MIDI 01), and FUNs are just a few examples of the K2500's control sources.
<b>DSP</b>	Digital signal processing (see)
<b>DSP Functions</b>	The K2500's collection of digital signal processing functions are what give the Variable Architecture Synthesis system its flexibility. Within each layer's algorithm, you can select from a long list of DSP functions like filters, EQ, oscillators, and a few that are unique to the K2500. Each DSP function has a corresponding page that enables you to assign numerous control sources to define how the DSP functions affect the sound of the program you're editing.
<b>Default</b>	The starting condition of a system. The settings for the K2500's parameters are at their defaults when you unpack it, and they stay there until you change them. A hard reset will erase RAM and restore all parameters to their defaults.

- Dialog** A page that prompts you to enter information that the K2500 needs in order to execute an operation. Dialogs appear, for example, when you initiate a Save or Delete operation.
- Digital** A term used widely in electronics-related fields to describe a method of representing information as a series of binary digits (bits)—1s and 0s. Digital computers process these strings of 1s and 0s by converting them into an electrical signal that is always in one of two very definite states: “on” or “off.” This is much more precise than the analog method, therefore digital computers can operate at speeds unattainable by analog devices. Digital synthesizers like the K2500 are actually computers that process vast strings of digital information signals, eventually converting them (at the audio output) into the analog signals that flow into PAs and other audio systems. See also Analog.
- Digital Signal Processing** The term “Signal processing” refers to a vast range of functions, all of which have in common the fact that they act upon an electric current as it flows through a circuit or group of circuits. A simple form of signal processing is the distortion box used by many guitarists. *Digital* signal processing refers to similar processes that are performed by digital (see) circuitry as opposed to analog (see) circuitry. Many of the effects devices available today use digital signal processing techniques.
- Drum Program** The only difference between a drum program and an ordinary program is that a drum program can contain up to 32 layers instead of the usual maximum of three. Since each layer has its own keymap and algorithm (not to mention all the other control sources), this gives you enormous control over whatever sounds you assign to the layers in a drum program.
- Editor** The complete set of parameters used to modify a particular aspect of the K2500, for example, the currently selected Program, which is modified with the Program Editor. The Program Editor spans several display pages, which can be viewed by using the soft buttons (the ones labeled “<more>.”
- Envelope** An aperiodic modifier. In other words, a way to cause a sound to change over time without repeating the change (unlike periodic modifiers like LFOs, which repeat at regular intervals).
- File** A group of objects stored to a floppy or hard disk, or loaded into the K2500’s RAM from disk.
- Global** In this manual, used primarily in reference to control sources. A global control source affects all notes in a layer uniformly. If a layer uses a global control source, that control source begins to run as soon as the program containing it is selected. Its effect on each note will be completely in phase, regardless how many notes are being played. Compare Local.
- Hard Reset** Resets all parameter values to their defaults, and completely erases the contents of RAM. Press the Reset button in Master mode to do a hard reset. This is a quick way to restore the factory defaults to your K2500, but EVERYTHING in RAM (all the objects you’ve created) will be erased, so objects you wish to keep should be saved to disk or SyxEx dump. A hard reset should not be used to recover if your K2500 is hung up, except as a last resort. See Soft Reset.
- Keymap** A keymap is a collection of samples assigned to specific notes and attack velocities. Keymaps usually contain numerous sample roots pitch-shifted across a range of several notes. When you trigger a note, the keymap tells the K2500 what sound to play, at what pitch, and at what loudness.

<b>LFO</b>	Low frequency oscillator. An oscillator is an electrical signal that cycles regularly between a minimum and maximum amplitude. The simplest oscillating waveform is the sine wave, but an LFO waveform can have almost any shape. The number of times each second that an oscillator repeats itself is called its frequency, which is measured in Hertz (Hz). Anything up to 50 Hz is considered low-frequency in musical applications. Use an LFO whenever you want to generate a <i>periodic</i> (repeating) effect. Adjusting the rate of the LFO will change the repetition rate of the effect.
<b>Layer</b>	A layer consists of a keymap processed through an algorithm. Layers can be stacked together within a program. Each layer uses one of the K2500's 48 available voices. Each K2500 program can contain up to three layers—except drum channel programs, which can contain up to 32 layers.
<b>Leslie effect</b>	This classic vibrato effect was originally created by mounting a speaker in its cabinet so the speaker could be rotated at varying speeds. This applied a vibrato of varying rate to all sounds played through the rotating speaker.
<b>Local</b>	In this manual, used primarily in reference to control sources. A local control source affects each note in a layer independently. For example, if a local LFO is used as a control source, a separate LFO cycle will begin with each note start. The LFOs don't run in phase unless notes are started simultaneously. Compare Global.
<b>Memory banks</b>	The K2500's memory is divided into ten spaces where you can store any object you edit. These spaces are called banks. Each bank can hold up to 100 objects of each type, so we refer to them as the 100s bank, the 200s bank, and so on. The ID of an object determines which bank it's stored in. An object with an ID of 399, for example, would be stored in the 300s bank. ROM objects are stored in the Zeros and 100s banks. RAM objects can be stored in any bank.
<b>MIDI</b>	Musical Instrument Digital Interface. A specialized format for representing musical information in terms of standardized computer data, which enables electronic musical instruments to communicate with computers
<b>MIDI device</b>	Any device—keyboard, computer, wind instrument, etc.—which is capable of transmitting and receiving MIDI messages.
<b>MIDI Master</b>	A MIDI device that is configured to control one or more other MIDI devices. The MIDI Out port of the master is connected by cable to the MIDI In port(s) of the slave device(s).
<b>MIDI Slave</b>	A MIDI device that is configured to receive MIDI messages from a master device. The MIDI In port of the slave is connected by cable to the MIDI Out port of the master.
<b>Non-linear DSP Function</b>	Without getting technical, non-linear DSP functions like SHAPER and WRAP add waveforms to those already present in a sound, while linear DSP functions act upon the existing waveforms without adding new ones.
<b>Note State</b>	Any K2500 note is either on or off; this is its note state. Normally, any given note's Note State switches on when you strike the key for that note. It switches off when you release the key, and any sustain controls you may have applied to the note (Sustain or Sostenuato pedal, etc.). Also see the index entry for Note State.
<b>Object</b>	A chunk of information stored in the K2500's memory. Programs, setups, keymaps, and samples are all objects. There are several others as well. Also see the index entry for "Objects."

<b>Page</b>	A set of performance or programming parameters that appear as a group in the display. The entry level page for each mode appears when you select the mode. Most other pages are selected with the soft buttons, from within an editor.
<b>Parameter</b>	A programming feature. The name of the parameter describes the function it controls—transposition, for example. Each parameter has a value associated with it, which indicates the status of the parameter.
<b>Pixel</b>	A contraction of “picture element.” The K2500’s display consists of a screen with small square dots (the pixels). Each pixel lets light through or blocks it depending on whether it is receiving an electrical charge. The combination of light and dark dots creates a pattern that you recognize as text or graphics. The K2500’s display is 240-by-64 pixels, in other words, 64 horizontal rows, each containing 240 pixels, for a total of 15360 pixels.
<b>Program</b>	The K2500’s basic performance-level sound object. Programs can consist of up to 3 layers (32 layers for programs on the drum channel); each layer has its own keymap (set of samples) and sound-processing algorithm.
<b>Program Editor</b>	The set of parameters that lets you modify the sound of ROM or RAM programs. Enter the Program Editor by pressing the EDIT button while in Program mode, or any time the currently selected parameter has a program as its value.
<b>RAM</b>	Random Access Memory, one of the two basic types of computer memory. RAM can be both read from and written to. When you load samples into the K2500, or save a program you’ve created, you’re writing to RAM. Compare ROM.
<b>ROM</b>	Read Only Memory, one of the two basic types of computer memory. You can retrieve the information stored in ROM, but you can’t write (save) new information to it. The onboard sounds of your K2500 are stored in ROM.
<b>Sample</b>	A digital recording of a sound that can be assigned to a keymap as part of the process of building a program. Samples are stored in ROM (factory-installed) or in RAM (loaded from disk).
<b>SCSI</b>	Pronounced “scuzzy,” this acronym stands for Small Computer Systems Interface. It’s simply a standardized form of information exchange that allows any SCSI equipped device to communicate with any other SCSI device. Two or more SCSI devices—they can be computers, hard disks, printers, just about anything that sends or receives information in standardized form—are connected via special cables to their SCSI ports. This configuration is much faster than serial information exchange, the precursor to SCSI.
<b>SMDI</b>	Pronounced “smiddy,” this acronym stands for SCSI Musical Data Interchange. It’s a new format for data transfer, based on the SCSI format, which uses parallel input/output rather than serial, as used by MIDI and standard SCSI operations. This enables data to flow much faster. You can use SMDI to transfer samples to and from the K2500 using software packages from Passport and Opcode.
<b>SMF</b>	Standard MIDI File. MIDI Type 0 files are single track, while MIDI Type 1 files are multi-track. The K2500 can read and write Type 0 files and read Type 1 files.
<b>Semitone</b>	In “Western” music, the standard interval between the twelve notes in the scale. There are twelve semitones to an octave. The interval between C and C# is one semitone.

- Setup** A multi-timbral performance object. A setup consists of three zones, each of which can be assigned its own program, MIDI channel, and control assignments. These assignments control the K2500's operation while in Setup mode, as well as determining the Program Change numbers and controller messages the K2500 sends via MIDI.
- Soft Reset** Returns the K2500 to Program mode without affecting the contents of RAM. Press the +/-, 0, and CLEAR buttons to do a soft reset. If your K2500 is hung up for some reason, this will usually get take care of the problem. See Hard Reset.
- Switch control** A device that converts motion into discrete on/off signals. A switch control, like the Sustain pedal, is either on or off. Compare continuous control.
- Toggle** As a verb, to switch between (usually) two conditions using a device that makes the switch. As a noun, the device that makes the switch. For example, pressing the "View" soft button on the top level Program mode page toggles between small-type and large-type views of the current Program.
- Value** The current setting of a parameter. Each parameter has a range of available values, one of which you select while editing. The Transposition parameter on the Program mode page, for example, has a default value of 0. Change the value to change the parameter's effect on the current program.
- Variable Architecture Synthesis Technology (V. A. S. T.)** The term created by Kurzweil engineers to describe the multi-faceted capabilities of the K2500, combining sample playback (ROM and RAM), and waveform generation with a broad array of processing functions. This architecture provides preset algorithms created by Kurzweil sound engineers, which include filters, distortion, panning, EQ, waveform oscillators, waveform shaper, hard sync oscillators, amplitude modulation, gain, crossfade, and more. V. A. S. T. is a registered trademark of Young Chang Akki Co. Ltd.
- Zero Crossing** Any of a number points in the digital representation of a sound's waveform where the digital signal is neither positive or negative. When looping samples, starting the loop at one of these points will reduce or eliminate the click or change in timbre that can occur in sample loops.

