



K2500 Operating System Version 2.8x (Live Mode) Release Notes

Introducing Live Mode

Live Mode lets you do more than ever with your K2500, by turning the instrument into a powerful effects processor for both internal and external sounds. With Live Mode, you can use the K2500's incredible V.A.S.T. capabilities to modify any signal in real-time through the sampling input. This means that you can plug instruments, microphones, or even an audio device such as a CD player directly into your K2500, then work magic with any of the V.A.S.T. algorithms. The modified signal will be available at the K2500's audio outputs.

What You'll Need

First of all, you'll need a K2500; Live Mode will not be available for the K2000. Since Live Mode takes advantage of the way that the K2500 accesses its internal memory (which is different from the way that the K2000 does it), this feature is only available for K2500 series instruments.

Secondly, your K2500 must have a sampling option, since Live Mode is actually a new sample mode. You'll use the digital or analog inputs of the sampling option to access Live Mode, and set input levels and parameters on the Sample page. Contact your Kurzweil dealer if you need the Sampling upgrade.

Also, when you are using Live Mode you'll need to have 1 MB of available sample RAM. This is all the available sample RAM that Live Mode requires, by the way, so there is no advantage to allotting more memory for this feature.

Installing Version 2.8

Important Note: Back up your RAM objects before performing this installation. All RAM will be erased by the Hard Reset at the end of the installation.

The complete procedure for installing the operating system and objects is included in Chapter 2 of the *K2500 Performance Guide*. For your convenience, here's a summary of the procedure:

1. Start the K2500
2. Press and release the Exit key while the "Please wait..." message is displayed. This brings up the K2500 Boot Loader.
3. Load the operating system floppy, then use "Install System" from the K2500 Boot Loader to install the new operating system.
4. Replace the operating system disk (after you've installed it) with the factory objects disk, then use the Boot Loader's "Install Objects" option to install the correct objects for your configuration.

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Object file versions and K2500 ROM configurations for V2.8 are as follows:

OBJ350.K25	for Base ROM
OBJP360.K25	for Base + Piano option
OBJO370.K25	for Base + Piano + Orchestral option
OBJC380.K25	for Base + Piano + Contemporary option
OBJF390.K25	for Base + Piano + Orchestral + Contemporary option

The Object files that accompany Version 2.8 software add two new keymaps, "197 LiveInputL" and 198 "LiveInputR", to your K2500. If you have previously used these locations for your own keymaps, you must move them before using Live Mode. (When you are using Live Mode, the K2500 also creates samples at locations 197 and 198.)

5. When the installation is finished, choose "Hard Reset" followed by "Run System" from the Boot Loader.

While you won't normally need to reinstall the operating system or objects, you should still put the disks in a safe place, just in case you may need them again.

Using Live Mode

The easiest way to use Live Mode is to use one of the programs provided with the objects for this release. Some of the programs are optimized for certain applications (e.g., guitar cabinet simulations), while others are meant to be used as templates. Complete descriptions of the Live Mode programs are at the end of this document.

Creating a Live Mode Program

1. **Press the Sample soft button to bring up the SampleMode page.**

2. **Set the "Src" parameter for the source you are using.**

For example, if you have plugged a microphone into the K2500's HiZ sampling input, choose "Ext". Be careful if you choose "Int", since you can inadvertently create a feedback loop.

3. **Set the "Mode" parameter to "LiveIn".**

Two samples will automatically be created: "197 Live Input L-C 4" and "198 Live Input R-C 4". The soft buttons on this page will be disabled when you set "Mode" to "LiveIn".

4. **Edit a program to use one or both of the LiveInput keymaps (197 and 198).**

For a stereo program (i.e., using both of the LiveInput keymaps) you must first set "Stereo" to "On" on the EditProg:KEYMAP page.

5. **Edit the program's parameters (e.g., algorithms) for the effect(s) you want to use.**

6. **Play C4, then input the audio source that you want to run through Live Mode.**

Hint: Set "VelTrk" on the EditProg F4 AMP page to 0 dB; otherwise the velocity with which you strike C4 will affect your output. For alternative ways of triggering the sound (e.g., with assignable controller buttons or pedals), edit the Control Setup.

You should now hear your V.A.S.T.ed audio source through the K2500 mix outputs.

Live Mode Programs

Prg. #	Program Name	Controller Assignments
750	LM Notched Pan	PWheel>Reverse FX, Data>Pan LFO Rate, B> Notch Freq, C>Width
751	LM Talking MW	Data>Dist, MW>Filter Freq, B> Tremolo Rate
752	LM Synth Sliders	PWheel>Reverse FX, MW>LFO Depth, Data>Attk Rate, B>Release Rate, C> LFO Rate, D+Keytracking>Filter Freq., E> Resonance, F>Flange Level, G>Delay Feedback, H>Flange Delay Wet/Dry
753	LM Hi Resonance	Data> Filter Freq., B>LFO Rate, C>Resonance
754	LM Amp Mod Osc	Data>Amp Mod Depth, B>Osc Pitch, C>Wrap LFO Rate, MW>Reverse FX, G>Flange Level
755	LM Notch/Shaper	Data> Filter, Shaper, MW>LFO Rate
756	LM Twin Peaks	Data, MW>Filter Freq., B>Width, C>Separation
757	LM Air Filter	Data> Filter Freq., MW>Resonance, B>Separation LFO Rate
758	LM Parametric	Data> Filter Freq., MW>EQ Peak Width, B>Para EQ Amp
759	LiveMode Default	Stereo Default, Slider H controls the Digitech Effect Wet/Dry Mix

Live Mode also includes two Live Mode Keymaps at 197 and 198 (Left and Right respectively).

Usage Notes

To use the programs, you must hold down a key (C4, unless you're going for a special effect) for the inputs to run through V.A.S.T. An alternative way to trigger the sound is to edit the Control Setup found in the MIDI XMIT page. For example, using Panel Switch 2 (Psw 2), changing the switch type to Note Toggle, and using C4 as the destination. This allows you to turn the program on/off via a button press and also keeps sound sustaining while the button is on. This obviously only works for owners of the keyboards, not racks, but the idea transfers to any MIDI controller. Keep in mind, that if you change the live mode program, you need to restrike a key (or Button) for the signal to go through that program.

You can also edit the live mode keymap to ignore release if you only want to use the keyboard to activate Live Mode.

You cannot sample and use live mode together, the two functions use the same components.

Some ideas for using Live Mode

If you've ever used an old-fashioned mono analog synthesizer with an audio input (anything from a Moog Rogue to an ARP 2500 or Serge Modular), you know how much fun it can be to pass a musical signal through the synth and modify it in real time with the filters, envelopes, modulators, etc. Live Mode brings that concept to digital synthesis, and lets you use all of the power of the K2500 on any kind of input signal.

For starters, you can simply hook up a CD player to the K2500's sampling input, get a bunch of your favorite CDs, and start fooling around. (A turntable works well too.) Here are some ideas for going further:

Pitch changing

Unlike an analog synthesizer, the K2500 makes it possible to alter the pitch of the incoming signal in real time. But the K2500 is not a conventional pitch shifter, so if you are used to working with such a device you will have to alter your thinking a little.

For example, when you bend the pitch down from the unity pitch (C4), using a V.A.S.T. function, it slows the playback of the incoming signal, but it doesn't change the rate at which the signal is coming in—your CD is still spinning, and putting out a constant audio signal. So as you lower the pitch, the playback lags behind, and when you return the pitch to normal, the playback snaps back to the present—which means some of your audio literally disappears into the ether. If you bend the pitch down and hold it there for a while, eventually the buffer fills up and updates itself, and you will hear it snap forward in time, although the data playing will continue to be slowed down. Again, some of the audio disappears.

Changing the pitch upwards is perhaps even more interesting. As you raise the pitch, the K2500 tries to play data that hasn't arrived yet. Instead, in the current version, playback begins from a few seconds back (the data is held in the buffer), playing sped-up audio from the past. As with lowered pitch, when the raised pitch returns to unity, playback snaps back to the present. Again, when holding a note above unity pitch, you will eventually hear a repeat of a few seconds of time, as the sample buffer loops before being able to update itself.

These details aside, all kinds of wonderful pitch effects are achievable. Here's an example.

- Start with Program 759 **LiveMode Default**.
- Go to the **PITCH** page.
- Assign **LFO1** to **Src1**, with a depth of **-200ct**.
- In order to keep the playback from constantly crossing above unity, set the **Coarse** parameter to **-2ST**.

Or try these settings:

- **Src1:MWheel**
- **Depth:-1200c**
- **Src2:LFO1**
- On the **LFO** page, set **MnRate:.50Hz**, **MxRate:20.00**, and **RateCt:Data**.
- **DptCtl:MWheel**
- **MinDpt:0ct**
- **MaxDpt:1200ct**

Sometimes you can hear the snaps back and forth when the LFOs and the buffers get out of sync. You might be able to smooth out the rough spots by making another layer with no pitch alterations, and crossfading between the layers:

- Duplicate the layer
- Clear all the settings on the **PITCH** page
- Go to the **OUTPUT** page and assign **Crossfade: Mwheel** on both layers.
- On layer 1, set **XFadeSense** to **Rvrs**; on layer 2, set **XFadeSense** to **Norm**.

Now at the Mod Wheel extremes, you will hear only one layer or the other, while in the middle, you will hear a combination of the pitch-modulated signal and the unmodulated signal. By experimenting with FUNs, you can get more precise crossfades.

The program **752 LM Synth Sliders** includes this kind of crossfade, tied to the Pitch Wheel, to implement a 3-layer crossfade. Moving the Pitch Wheel up fades to a layer which is bending the pitch up. The surprise is that moving the Pitch Wheel down bends the pitch down, then up again, crossfading to a layer that is playing back in reverse! Yes, reverse playback works with Live Mode: on the **KEYMAP** page, set **PlayBackMode** to **Reverse**.

Arpeggiator

You can also do controlled pitch shifting on incoming audio using the arpeggiator. By constantly sending new note starts, it is possible to bend the pitch without losing the tempo of the incoming signal.

It can work in both directions, although when you are shifting signals up in pitch, you're "borrowing" the audio from a few seconds previous.

- Go to **Setup** Mode and select **97 Control Setup**.
- Press **Edit**, and on the **CH/PRG** page, set the program to **759 LiveMode Default**.
- With the Program highlighted, press **Edit** and go to the **AMPENV** page.
- To make the crossfading less choppy, you want short attack and release segments: set **Att1** to **0.06/100%** and **Rel1** to **0.10/0%**.
- Press **Exit** and save the Program to some new location.
- Now go to the **ARPEG** page and set **Active:On**.
- Set the **Duration** to, say, **99%**.
- For this example, set **Order:Simultaneous** and **Beats:1/32**.
- Tempo should already be 120BPM.

Now play C4 and you will hear the live signal at the correct pitch. Play G3 and you will hear the signal pitched down a fourth. You can use the ribbon or similar controller to bend the pitch smoothly. Going above unity pitch will cause a jump back into the past.

Experiment with the Tempo, the Beats setting, the Duration value, and the AMPENV parameters to get useful variations on the program. Remember that because we set the Order to Simultaneous, you can play several notes at once. And finally, try setting **Glissando:On**.

Sustained Notes and Loops

If the incoming signal is a single, sustained pitch, like a saxophone note, then you can consider the Live Mode keymap to be playing a normal, looped sound. In this case, the fact that an upward bend jumps back a few seconds is no big deal because the sound hasn't changed much during that time.

With this technique, melodies or chords can be played based on a segment of a live performance. Keep in mind that, unless your incoming signal is a C, notes and chords played on the K2500 keyboard will be transposed relative to the incoming pitch. Also remember that a rhythm pitched an octave down will play at half the speed, while one pitched an octave up will play twice as fast. Fifths produce a 3-against-2 pattern. To keep some sort of relative sync with the live signal, you may want to experiment with re-triggering the notes, perhaps using the arpeggiator, at some appropriate tempo.

If the passage you want to play is long, and the input signal isn't so long—say, the sax player needs to take a breath—you may run into a problem as the K2500 tries to play the buffer where the audio was interrupted. If the input signal is mono, you might be able to overcome this by using a delay line to “hold” the signal. The delay line could be part of V.A.S.T., or it could be an external device, but either way its output is sent back to the K2500 through the unused Live Mode input channel.

Chord Progressions

Record a few bars of block chords—all notes under C4—into the sequencer, using a simple quarter-note or half-note pattern. What sound you use doesn't matter. Now replace the Program on the recorded track with the LiveMode Default Program. Play back the sequence (you will probably want it to loop), and at the same time play single notes from an external instrument into the K2500, in the same rhythm as your recorded chords. If you change the notes on the instrument, the chords will transpose. If you play intervals or chords, you're on your own as to the consequences!

Feedback

Live Mode gives you the ability to feed back a live signal into itself, similar to pointing a microphone at the speaker it's sending audio to. Before you hook anything up, turn the volume down very low (but not necessarily off, but very, very low).

Now go to the **Sample** page and choose **Internal** as the **Source**. Go to a multi-layer ROM Program of your choice, and go to the **Import** page. Import Layer 1 from LiveMode Default.

Play one note, then a few. As you play more notes, the noise will build up. You'll have a better time controlling the feedback loop if you have a healthy delay, with no dry path around it, in the loop. Perhaps add a little modulation of the loop to provide some pitch shifting, a big reverb, and a compressor to keep from blowing your ears out. Inject a little something from the synthesizer to get things started—and you are instantly transported to an alien dimension.

For more complexity, split the incoming signal and run it through multiple V.A.S.T. layers in parallel—you can use up to 32, each one processing, panning, and routing the signal differently. You can crosslink the inputs and outputs (right into left, left into right) to create a double feedback loop for even more fun.

Your ideas?

If you have Internet access, please join our mailing list and exchange ideas with other Live Mode fans. We will also be putting information about Live Mode on our Website: www.youngchang.com.