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POWER USER

SQ01 AUDIO/MIDI Sequencing
VOICE EDITOR FOR S90
File Utility/OPT
S90 TOOLS

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choose sounds with a great “Search” feature from the front panel or you can select sounds via the SQ01 software’s Tone Generator list. This is accomplished using MSB/LSB² bank select commands. MIDI has a convention that allows each manufacturer to address internal banks of sounds via these special type “Control Change” messages. Each of the Voice banks of the S90 is identified by a set of numbers (MSB/LSB), then each individual sound is selected by a Program Change event (between 1-128)³.

Voice location	MSB/LSB bank
PRE1	063/000
PRE2	063/001
PRE3	063/002
USER	063/008
PRE_DR	063/032
USER_DR	063/040
GM	000/000
GM_DR	127/000

These same messages are used by software in addressing and recalling sounds. From within the SQ01, for example, you can use the Tone Generator function to select the various Banks and Voices within the S90. Similar to the S90’s own “Category Search”, the software will let you choose from the following 3 Categories:

Category 1 (MSB)

- GM Normal Voice (000)
- S90 Voice & Drum Voice (063)
- GM Drum Kit (127)

Category 2 (LSB)

- Preset 1 (000)
- Preset 2 (001)
- Preset 3 (002)
- User (008)
- Preset Drum (032)
- User Drum (040)

Category 3 (PC)

The actual Voice list/ Program Change...

When you are ready to begin song creation take a few moments and plan the first few tracks. You can always change your mind at a later time and re-voice the MIX.

² Most Significant Byte/Least Significant Byte are two Control Change messages used in combination to define a “Bank” of Voices within a tone generator.

³ The number of sounds in a bank can vary but never exceeds 128.

To select sounds via the front panel

Here are the general steps in selecting and searching for your own sounds in a MIX from the front panel of the S90:

- To select MIX press the [SEQ/PLAY] button followed by [F6] MIX
- Select the [F3] VOICE screen to see an overview of your 16-PARTS. The [F6] button now links you to the PLG synth board Parts, if you have any PLG150 series boards in the available slots.



- To search for a particular kind of Voice using the front panel of the S90: use the Category Search function to select the kind of voice you need:

- Acoustic Piano
- Keyboard
- Organ
- Guitar/Plucked
- Bass
- Strings
- Brass
- Reed/Pipe
- Synth Lead
- Synth Pad/Choir
- Synth Comp
- Chromatic percussion
- Drums/Percussion
- Sound effects
- Musical effects.

To select sound via the software:

You must set up the SQ01 to ‘see’ the S90 as the selected Tone Generator. From the Setup pull-down select TONE GENERATOR... Here you can select the DEVICE/CH driver assignments for each PORT and the MIDI channel within that PORT. You can connect all 16 channels of PORT 1 to the S90 in the Tone Generator list. Now when you click OK and open a new SONG and go to the main SQ01 screen if you select a MIDI track you can click on the TONE GENERATOR and VOICE boxes to select sounds using the convenient Tone Generator list.

Use the TONE GENERATOR/VOICE function to select the sounds by Category 1 (MSB), Category 2 (LSB), and Category 3 (Program Change).

Although you can select the VOICE for the tracks of the sequencer, you will still want to edit your MIX from the front panel of the S90.

You can edit the different parameters on each 'Part' to get the MIX to behave the way you want. The significance of a MIX's Part parameters is that you do not have to change the original S90 Voice permanently - your Part edits affect the Voice in this MIX only. No Voice mode parameters are permanently changed when you edit a PART. So you can feel free to customize the sound as much as you wish for each MIX setup. Parameters available are:

Volume
 Pan
 Reverb Send
 Chorus Send
 Variation Send
 Dry Level
 Envelope: Attack, Decay, Sustain, Release
 Pitch Bend Range up
 Pitch Bend Range down
 Portamento: ON/OFF, Finger mode
 Filter Cutoff
 Filter Resonance
 Note Shift
 Note Limit High
 Note Limit Low
 Velocity Range
 Velocity Sensitivity: Depth and Offset
 Arpeggiator
 Controller assignments

When a Voice is activated in a multi-timbral MIX as a PART, the above parameters will be reset to a default condition. This is why a Voice will sound different when you move it into a MIX. You are hearing the affect of these parameters being reset. Also the intricate routing of the sound to the Dual Insertion Effect is not present. You will need to make the decisions to customize the Voice in the 'mix' with the other sounds. When in Voice mode you have access to 3 processors: The Dual Insertion Effect, the Reverb and the Chorus processors. Although you get an additional processor when you go to MIX mode, called the Variation Effect, all the sounds must now access the same processors and you must program what each processor is assigned to do. It would be impossible for every Voice to maintain its unique effects scenario from Voice mode - that would require some 48 effect processors! The Reverb, Chorus Effects become SYSTEM effects - much like the rack mount effects in a studio, they are accessed via a set of auxiliary sends. And much like a real recording studio, there is usually one reverb chamber for all the tracks but each track has its own send amount. The Variation effect is added and can be accessed as an addition System or configured to work like an Insert. The Dual Insertion Effect (that's the

powerful one that gives Voice mode Voice's their personality and can be manipulated via MIDI controllers) can be activated on a single PART of your MIX. These are the decisions you will be making as you mold your MIX into shape. It is the overall sound that you are targeting.

In addition, there are COMMON parameters that will apply to all the Parts together, including a 5-band EQ.

If you want to memorize the entire MIX assignments in the S90 you can "PUT" the MIX to one of fifty Templates.

PUT a MIX to a TEMPLATE:

- Press [F5] TEMPLATE
- Rename the MIX TEMPLATE with the name of the song for easy reference.
- Press the SF5 PUT to store the MIX in the S90 Flash ROM. This will remain after power down and will be backed up in an ALL data file type. (Templates will remain until they are overwritten - you don't initialize them you just write over them.)



There are several methods of recalling the Voices that you select for your MIX. If you are using an external sequencer you can insert Bank Select and Program messages on each track in the song itself. There may be several methods for embedding the Bank and Program Change messages, please consult the owner's manual of your software. If you are going to use a SmartMedia card in a direct play scenario, you can either embed the message in the sequence data or you can have the CHAIN function recall the entire MIX prior to playing the song automatically. The real time read from SmartMedia Card Chain function of the S90 has 100 steps into which you can program the unit to recall a MIX as an event. Therefore just prior to starting playback from the card it will recall all the settings you made in your MIX, not just which Voice is selected but how loud it is in reference to other tracks, where it is panned, what Voice is receiving on which MIDI channel, what effects are active and how much of each channel is routed to them, etc., etc., etc.

Voice Editor for S90

There are plug-in editors to the software that will allow you to create your own custom S90 Voices. This Voice Editor will work with the S90 while the S90 is in VOICE mode. Remember the edits you do to a PART are really OFFSETS to the actual Voice mode data. You are non-destructively altering it for the current MIX. Therefore, to create a new VOICE, this Voice Editor works when the S90 is in VOICE mode⁴. The core technology in the S90 is AWM2. This is 'Advanced Wave Memory 2', a proprietary Yamaha method of digital sample storage. Each S90 AWM2 Voice can contain up to 4 complete multi-samples, called Elements. The S90 provides you with some 1347 of these as your basic building blocks. An Element can be a complex entity itself - for example, you will find complete multi-sampled instruments that are a single Element. The waveform called "Piano1 St" (0001) is a complete stereo instrument yet it is just a single building block in an S90 Voice. The waveform called "GrandSwSt 1" (1346) is a stereo multi-sample that is also a 3-way velocity swap. AWM2 Elements are very complex indeed - up to 4 make up a Voice. A Voice can be a layer/split combination sound. That's right, you do not have to create a piano/bass split as a Performance. You can actually create a Voice that is a split. Each Element within a Voice can be independently controlled by the player/programmer as to how it responds to playing style and where and how it is mapped to the keyboard. It should be mentioned here that an Element only uses polyphony when it is sounding. So just because a Voice has 4 Elements does not necessarily reduce the polyphony to 16 notes. It depends on how the Elements are mapped to the keyboard. If they are key-zoned, you get polyphony back - it they are velocity limited, you get the polyphony back. There are 2 basic levels of editing a Voice, the COMMON level, which affects all Elements within the Voice, and then there is the Element level, where each element's response can be set individually.

Use the Voice Editor for S90, found in the SQ01 software under the PLUG IN pull down, to edit the AWM2 Voices in the S90. If you have a PLG Series hardware plug-in technology in slots you can use a separate editor for each technology (more on this, later). The Voice

⁴ The Plug-in Board Editors for PLG150 Series boards will allow you to edit and customize the respective USER BOARD bank while you are in a multi-timbral MIX.

Editor for S90 is just that, a "Voice" editor. It will help you when you wish to create new sounds with your S90. There are hundreds of waveforms (elements) to choose from and the graphical nature of the editor makes it extremely easy to get around and create new sounds.

When you launch the Voice Editor for S90 (found under the Plug-in pull down in SQ01 or you can open it as a stand-alone editor - Windows/Mac) you can "get" the current data from the S90 User Normal, User Drum and Plug-in Voice banks. This is recommended so that you have a backup of the original data (not that you could ever lose it) but this will give you a file to see how it all works. You will see two MIDI connector icons on the tool bar. Click on the one for RECEIVE - simply place your mouse pointer over the icon and it will identify itself. This will open a dialog box that will let you receive data from the S90 into Normal, User Drum, Plug-in or All groupings. Select the "USER NORMAL + DRUM" type. This will create your first Voice Editor for S90 Library file and will get all the USER Voices currently in the S90 - Name and Save this so that you are in no danger of losing any data by accident and you have a file to study. It will also come in handy when you set about creating your own 128 USER Voices and 16 USER Drum Kit Voices.⁵

In general, the Voice Editor for S90 boots up in a Detailed Category view showing you the Name, Category and number of the sound. You can right click (Windows) on the name to change the view to a list of all the names with less detail. When you double click on a Voice name, it will launch into edit and it will send that Voice information to the S90. Be aware that the S90 will switch to USER Voice location 001 (A01) and use the edit buffer of this location. All edits made in the software will be immediately updated in the S90 edit buffer. You can store banks in the Voice Editor for S90 and then send it as a whole to the S90 via a bulk dump. As you explore the Editor look for the little [DETAIL] buttons located throughout the software for more in depth parameters. You can select Elements (ELEM) by double clicking them. You can mute them to isolate and dissect them. There is even a little keyboard to test sounds.

⁵ As you get to know the S90 you will eventually want to assemble **only** your favorite sounds in the USER Voice and Kit areas. Why have sounds you are never going to use in your User areas? The Voice Editor is the easiest way to assemble your favorite Voices into one bank.

You will find the Voice Editor for S90 invaluable when you are in the process of assembling versions of your favorite Voices into internal User Banks. You can customize 128 Voices to exist in your S90's internal User bank. Additionally, the PLG series boards each will have native sounds that can be molded into S90 Voices. Each PLG150 series board has 64 User S90 Voice locations that will house your favorites.

Make it a habit when using the Voice Editor for S90 to do all the editing in the software. If you make a change to the front panel of the S90 it will not be reflected in the software and will not get saved there. If, however, you make a change in the software it will, of course, be reflected in both places.

Files created by this Voice Editor for S90 can be ported to or saved to a SmartMedia card and loaded directly into the S90. So even when you are away from your computer you can have a backup of your entire library on SmartMedia card.

The VOICE EDITOR file type for the S90 are ".w4e" and ".w5e"⁶. These files can be opened by the Voice Editor and can be opened by the S90 from SmartMedia Card, as well. What kind of Voice data does this back up?



USER VOICES (Normal)
 USER DRUM kits
 USER NORMAL + USER DRUM
 PLG1USR (PLG150 board slot 1)
 PLG2USR (PLG150 board slot 2)
 PLG3USR (PLG150 board slot 3)
 ALL PLG_USR
 ALL

Auto Arranger

Built in to SQ01 is a 'QY'⁷ type Style player that lets the user quickly put together musical compositions by writing in chord changes and defining the parts that play back. You will find the Auto Arranger under the VIEW pull down

⁶ The .w5e file is a ghost file. It remains hidden from view when viewing the files from the S90 but you should always keep the .w4e and w5e files together as a set when you copy them or move them.

⁷ QY is line of Yamaha sequencers that have chord intelligent Pattern Styles that can be used in song construction

when it is properly installed. The software will send program change messages to PARTS 9-16 of your mix to recall the appropriate sounds to play the style file data. The Chord/Style feature will let you create music using the Yamaha QY method of song creation. The Chord/Style feature allows the programmer to put together an 8-piece backing band by combining pre-recorded MIDI tracks in many different styles via the software's Chord and Style tracks. The SQ01 comes with folders of different musical style data.

This backing band feature uses the S90's GM bank. Originally intended for use with an XG tone generator, this Auto Arranger has Verse (Main A) and Chorus (Main B) sections, intro/endings, and fill ins in a variety of styles ranging from techno to foxtrots, waltzes to hip-hop. If you have a project and need to put together some professional tracks quickly, this reference library cannot be beat. In order to use the Auto Arranger feature make sure you have installed this component from the Tools CDROM – it is found in the PLUGIN folder as "AA". Here is how you can make this feature work for you.

When you pull down the EDIT menu and select Create Style you can audition different categories of music and different sections (main A, main B, Intro, fill in, etc). If you select Create Chord you can input data on this track at any measure, beat or clock pulse (960ppqn). For example, let's say you want to use the style maker to put together your basic groove. Select a drum pattern from the various styles. When you click on MONITOR you can audition the drum pattern. The drums and percussion on parts 9 and 10 will play with an appropriate drum kit. If you enter a chord quality on the Chord track a bass (trk 11), 2 chord parts (trks 12&13), a pad part (trk 14), and 2 phrase parts (trks 15&16) will join the drums with appropriate parts for the style you selected. The instruments are automatically recalled via embedded program changes. The Auto Arranger configures the instrumentation automatically. You can enter your own sounds after you construct your 'chart'. You can continue to enter chords and style changes in those tracks until your backing track takes complete shape. Do not worry if all section transitions are not as smooth as you would like, you can fix all the little details once you transfer the composition to linear tracks via a process called Expand Backing. Use the Arranger to make a "rough sketch" of your song, then expand the tracks to linear tracks

where you can event edit and smooth out any rough transitions, etc. Once you have done this you can go in and re-record any parts that are not to your liking or that you want to change entirely. You can change the instrumentation to any sound in the S90.

Auto Arranger also has a cool feature that is sometimes fun to play with. This is where you play a melody line on a linear track, and you have AUTO ARRANGER analyze that melody line – you can give it a key or not. You can then give it some stylistic commands like Jazzy-16th note based, or Simple-8th note shuffle, Tasty-R&B, etc., and have it offer you possible chord progressions/musical vamps. You can then select between several different alternative progressions/substitutions or edit them the way you feel. It is like working with a collaborator (except you have final veto) and a versatile rhythm section. Later you can convert this data to linear tracks and edit any of the parts you wish to keep.

Optional PLG Boards and their EDITORS

Many of the PLG Plug-in Boards come with their own proprietary Voice Editors. Currently many of them are being converted to comply with the OPT (Open Plug-in Technology) specification which will allow them to be used from within the SQ01 sequencer or any OPT compatible software program. (All the Editors have standalone versions that will run on Windows and Mac). As the situation stands when this article is being written (9/02) the AN Expert Editor (PLG150-AN), the DX Simulator (PLG150-DX), the Plug-in Board Editor for PLG150-DR, and the Plug-in Board Editor for PLG150-PC can already address the boards while they are part of an S90 MIX. You can address the boards by selecting a specific "PART number" to communicate with the slot that the board is placed. When configuring the SETUP dialog boxes of these different Editors you will be allowed to select a "PART" to communicate to the Board. The way it works is as follows:

- PLG150 Board in slot 1, PART=16;
- PLG150 Board in slot 2, PART=15;
- PLG150 Board in slot 3, PART=14;

This "PART" refers to a special communication bus between the software and the S90 not the internal S90 PARTS. If for example you have a PLG150-AN board in slot 1, the Software when directed to "PART 16" will look to find the AN Board and be able to establish two-way communication and will be able to bulk sounds directly to that boards user bank (036/002). You can select any MIDI channel you wish (as

required) this PART setting only refers to the software setup.

Of course, the XG Editor (PLG100-XG), can be run while in multi-timbral, multi-channel mode – this is the only way that this particular PLG board functions. The PLG100-XG will always occupy PARTS 17-32 of a multi-timbral MIX. The PLG100-XG has no individual VOICE mode, per say. As the only "multi-part" board it must be placed in PLG SLOT 3 and you do not address it in VOICE mode at all. It is never recognized via the PLG 3 button. You can only address the PLG100-XG multi-part board through the multi-part mode: the MIX. The PLG100-XG board will follow the XG protocol for setup and re-initialization. There is a separate XG Editor that will allow you to control the PLG100-XG.

FILE UTILITY

Also found in the PLUGIN folder when you install the Tools for S90 is the FILE UTILITY (FU). This allows you to drag-and-drop files from your computer directly to SmartMedia as long as the card is in the S90 Card slot. When you open this useful utility you configure the MIDI communication Device and Channel as before. If you are using USB you must select the driver for communication to take place. Once you have configured this it will remain at this setting. If it ever changes it means you have not established communication with the S90. Navigate to the MIDI IN/OUT page: UTILITY/ F5 MIDI/ SF4 OTHER and set appropriately for the system and drivers you are using (MIDI or USB). Once you have this working you can create your song data in your computer and save the data as a SMF (.mid) type 0. Then you can drag-and-drop this file to the SmartMedia card where you can assemble your songs and MIX data into convenient sets for loading and updating on the fly. You can also archive your Voice data files on your computer, easily moving data back and forth between your computer and your SmartMedia card via the S90.

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