



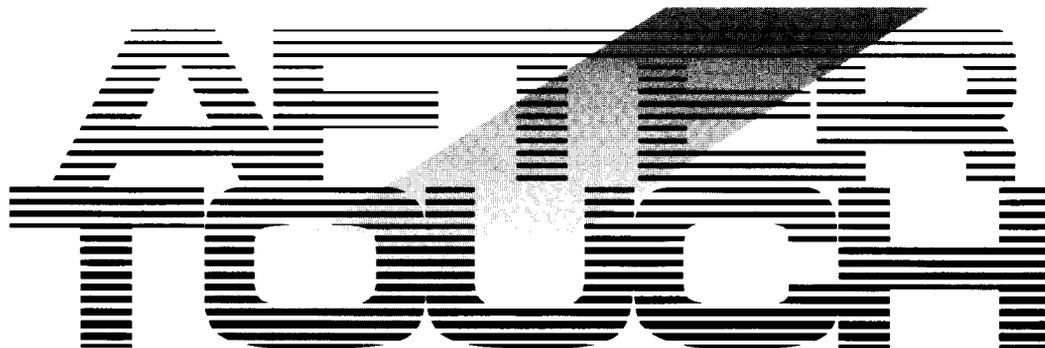
THE OFFICIAL PUBLICATION OF THE YAMAHA USERS GROUP

TX16W Digital Wave Filtering Sampler



NOVEMBER 1987

 YAMAHA®



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From The Editor

THIS WILL BE the last From The Editor column for a while. For the last number of months, I have been devoting the majority of the column to information that is of continuing importance for AfterTouch readers. Beginning next month, we will simply use this space to reprint and update this information, so that all of you will know how to get the information or service you need in the most efficient way. In the meantime, here is this month's installment.

Back Issues: Previous issues of AfterTouch are sent out free of charge—all you have to do is ask. However, if a request for back issues is combined with a subscription request or other material, chances are good that it will not be fulfilled. All requests for AfterTouch subscriptions go to our Mailing List input service. After the addresses are entered, the postcards and letters are normally kept on file (in keeping with various postal regulations).

To be absolutely sure that you receive any available back issues that you want, make back issue requests separately, and include the indication "ATTN: Back Issues" on the envelope. Please do not send back issue requests on the attached subscription postcard.

Also, request back issues by issue number (issue #12) or date (September 1986) only. If you write and ask for "All issues that contain information on the DX27," it will be very difficult for us to fulfill your request. Don't worry, though: We plan to publish a complete index for the first three calendar years (issues 1-27) of AfterTouch in our January 1988 issue. If you are not sure what you want, wait and use the index to order back issues.

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(By the way, if you received *this* issue in the mail, you are already on our permanent mailing list, so you don't need to send in another card.)

Also, don't limit yourself to just sending in your address: Let us know what you want to read, and what *you* have to offer (see page 19 for details). We look forward to your input.

To receive AFTERTOUCH every month, absolutely free, just put your name and address on the enclosed card and mail it to us.

DX7

SAXO- PHONE. A New DX7 Voice By Michael Cloos.

SINE	34	0	0	14	OFF	1
WAVE	SPEED	DELAY	PMD	AMD	SYNC	PMS

R1	R2	R3	R4
99	99	99	99
L1	L2	L3	L4
50	50	50	50

PITCH ENVELOPE

C3
KEY TRANSPOSE
ON
OSC. SYNC

POLY	2	0	OFF	OFF	0
POLY/MONO	RANGE	STEP	MODE	GLISSANDO	TIME
	PITCH BEND		PORTAMENTO		

(CONTROLLER)	RANGE	PITCH	AMPLITUDE	EG BIAS
MOD WHEEL	0	OFF	OFF	OFF
FOOT CONTROL	0	OFF	OFF	OFF
BREATH CONTROL	0	OFF	OFF	OFF
AFTERTOUCH	0	OFF	OFF	OFF

FREQUENCY	DETUNE	AMS		
0.50	0	1		
ENVELOPE DATA				
R1	R2	R3	R4	RS
90	52	25	54	1
L1	L2	L3	L4	
99	99	99	0	
KEYBOARD SCALING				
CURVE	BREAKPOINT	DEPTH		
L	-L	F#4	L	0
R	-L		R	99
OP#	OUTPUT LEVEL	VELOCITY		
6	85	0		

FREQUENCY	DETUNE	AMS		
0.50	0	0		
ENVELOPE DATA				
R1	R2	R3	R4	RS
65	48	50	62	0
L1	L2	L3	L4	
81	95	88	0	
KEYBOARD SCALING				
CURVE	BREAKPOINT	DEPTH		
L	-L	A-1	L	0
R	-L		R	0
OP#	OUTPUT LEVEL	VELOCITY		
5	88	0		

FREQUENCY	DETUNE	AMS		
0.50	0	0		
ENVELOPE DATA				
R1	R2	R3	R4	RS
70	34	32	28	5
L1	L2	L3	L4	
80	91	92	0	
KEYBOARD SCALING				
CURVE	BREAKPOINT	DEPTH		
L	-L	C3	L	0
R	+L		R	10
OP#	OUTPUT LEVEL	VELOCITY		
2	93	0		

FREQUENCY	DETUNE	AMS		
0.50	0	2		
ENVELOPE DATA				
R1	R2	R3	R4	RS
94	99	53	50	0
L1	L2	L3	L4	
86	88	89	0	
KEYBOARD SCALING				
CURVE	BREAKPOINT	DEPTH		
L	-L	A-1	L	0
R	-L		R	0
OP#	OUTPUT LEVEL	VELOCITY		
3	78	0		

FREQUENCY	DETUNE	AMS		
0.50	0	0		
ENVELOPE DATA				
R1	R2	R3	R4	RS
67	57	39	46	0
L1	L2	L3	L4	
97	99	98	0	
KEYBOARD SCALING				
CURVE	BREAKPOINT	DEPTH		
L	-L	A-1	L	0
R	-L		R	0
OP#	OUTPUT LEVEL	VELOCITY		
4	67	0		

FREQUENCY	DETUNE	AMS		
0.50	0	0		
ENVELOPE DATA				
R1	R2	R3	R4	RS
60	99	40	60	2
L1	L2	L3	L4	
99	99	99	0	
KEYBOARD SCALING				
CURVE	BREAKPOINT	DEPTH		
L	-L	A-1	L	0
R	-L		R	0
OP#	OUTPUT LEVEL	VELOCITY		
1	99	0		

ALGORITHM #18

Notes:
There don't seem to be many programmers offering sax voices; this patch is offered as a starting point to get others going.

RX5

A New RX5
Voice Edit By
Justin Guevara.

Notes:
This voice edit is like the
Roland TR808 bass sound
used in rap songs.

Voice Name: HummingBass		Origin: Int-Tom 4	
JOB #	PARAMETER	RANGE	NEW VALUE
02	Pitch	-3600 ~ 2400	+0200 cent
03/1	Attack Rate	1 ~ 99	95
03/2	Decay 1 Rate	1 ~ 99	20
03/3	Decay 1 Level	1 ~ 60	40
03/4	Decay 2 Rate	1 ~ 99	44
03/5	Release Rate	1 ~ 99	60
03/6	Gate Time	100 ~ 6500	6500 ms
04/1	Bend Rate	-60 ~ 60	01
04/2	Bend Range	1 ~ 60	-01
05	Inst Level	0 ~ 31	30
06	Sound Loop	OFF / ON	ON

RX5

A New RX5
Voice Edit By
Justin Guevara.

Notes:
This voice edit is a low, short
bass; it works very well with
Multi Voice (using steps
of -200).

Voice Name: Punchy Bass		Origin: Crt-CgaLO	
JOB #	PARAMETER	RANGE	NEW VALUE
02	Pitch	-3600 ~ 2400	-0200 cent
03/1	Attack Rate	1 ~ 99	99
03/2	Decay 1 Rate	1 ~ 99	20
03/3	Decay 1 Level	1 ~ 60	10
03/4	Decay 2 Rate	1 ~ 99	01
03/5	Release Rate	1 ~ 99	01
03/6	Gate Time	100 ~ 6500	6500 ms
04/1	Bend Rate	-60 ~ 60	15
04/2	Bend Range	1 ~ 60	-60
05	Inst Level	0 ~ 31	28
06	Sound Loop	OFF / ON	ON

RX5

A New RX5
Voice Edit By
Justin Guevara.

Notes:
This voice edit is very effective
with Multi Voice (using steps
of -200).

Voice Name: Disco Laser		Origin: Crt-CgaLO	
JOB #	PARAMETER	RANGE	NEW VALUE
02	Pitch	-3600 ~ 2400	+2400 cent
03/1	Attack Rate	1 ~ 99	99
03/2	Decay 1 Rate	1 ~ 99	30
03/3	Decay 1 Level	1 ~ 60	01
03/4	Decay 2 Rate	1 ~ 99	01
03/5	Release Rate	1 ~ 99	30
03/6	Gate Time	100 ~ 6500	6500 ms
04/1	Bend Rate	-60 ~ 60	08
04/2	Bend Range	1 ~ 60	-60
05	Inst Level	0 ~ 31	30
06	Sound Loop	OFF / ON	ON

RX5

A New RX5
Voice Edit By
Justin Guevara.

Notes:
This voice edit is a long-
lasting, laser-type snare.

Voice Name: Wind Snare		Origin: Crt-SD 3	
JOB #	PARAMETER	RANGE	NEW VALUE
02	Pitch	-3600 ~ 2400	+2400 cent
03/1	Attack Rate	1 ~ 99	63
03/2	Decay 1 Rate	1 ~ 99	01
03/3	Decay 1 Level	1 ~ 60	60
03/4	Decay 2 Rate	1 ~ 99	16
03/5	Release Rate	1 ~ 99	99
03/6	Gate Time	100 ~ 6500	6500 ms
04/1	Bend Rate	-60 ~ 60	11
04/2	Bend Range	1 ~ 60	-60
05	Inst Level	0 ~ 31	30
06	Sound Loop	OFF / ON	ON

Inst#	#1	#2	#3	#4	#5	#6	#7	#8
Notes	4	4	0	0	0	0	0	0
MIDI#	1	1	3	4	5	6	7	8
LimitH	68	68	68	68	68	68	68	68
LimitL	C-2							
Bank#	1	1	3	3	3	3	3	3
Voice#	28	28	1	1	1	1	1	1
Detune	0	0	0	0	0	0	0	0
Octave	0	0	0	0	0	0	0	0
Level	127	127	127	127	127	127	127	127
Stereo	LR							
LFO	ON	OFF	ON	ON	ON	ON	ON	ON
Porta	0	0	0	0	0	0	0	0
Bender	2	2	2	2	2	2	2	2
Mode	POLY							
PMD	FOOT	FOOT	WHEL	WHEL	WHEL	WHEL	WHEL	WHEL

Figure 3.

Configuration to the first FB-01. Before you send the Configuration to the second FB-01, turn the LFO off on instrument #1; then send it.

Next, you should set up a voice like the one shown in Figure 2 ("PercPf" with the indicated modifications). Insert this voice in both FB-01s under our current configuration and try it out. You should hear a flange-type effect even without using a controller. By adjusting your controller, you should be able to stop the detuning or maximize the effect, depending on the position of the controller.

Each voice you wish to use in this way will have to be changed to a setup similar to that of the "PercPf" shown in Figure 2. However, some voices may not sound as good with these pitch modulation and detuning settings, so you may want to adjust each voice differently.

...

Another Method For Creating An A/B Balance Control For The DX7 II

By Robert A. Cravotta

In a recent issue, Eugene Beer offered a tip on how to set up an A/B balance control for the DX7 II in Voice mode (AfterTouch, August 1987, page 17). I have an easier way of doing

this without setting up any Performance parameters or editing any voices you may already be using. Follow these steps:

- 1) Select the Voice mode desired (Dual or Split).
- 2) Choose the two voices you wish to hear together.
- 3) Press the Edit button.

CSI will be set to control A/B balance automatically at this point, and you can change the balance all you want. If you want to change the pair of voices, simply press the lit Voice Mode button to escape from Edit mode, choose the next two voices you wish to pair, and press the Edit button again.

I find this to be much easier than Eugene Beer's method: No cable is required for MIDI hookups, no MIDI control parameters need to be changed, and no edits are required for any voice to do this. It always works, and is available at any time with any Voice combination—just by pushing a few buttons.

...

Using The CX5M With The QX7 Or QX21 Sequencer

By Dave Hoffman

I have found several uses for the CX5M music computer in conjunction with a QX7 or QX21 sequencer. For example, I use the extensive functions of the CX5M for recording sequences, and then transfer the completed sequence information from the CX5M to the QX for playback. This frees the CX5M for other uses.

Here is how it works: Do your sequence recording and editing with the CX5M, using either of the Music Composer Program cartridges (YRM101 or YRM501) or the MIDI Recorder Program cartridge (YRM301). Do as little track merging as possible, in order to preserve your control over individual tracks. Once your song is finished, you can transfer the information to the QX via MIDI. Connect the MIDI OUT of the CX to the MIDI IN of the QX, set the QX to RECORD, and play the information in from the CX5M. Be sure to set the clock of the CX to Internal, and set the clock of the QX

Continued on page 19

TX16W

An Introduction To Yamaha's New Digital Wave Filtering Sampler.

THE NEW YAMAHA TX16W digital wave filtering sampler is a rack-mount module that combines ease of use and flexibility with a number of exciting new features, including the extensive Digital Filter system.

The 16-note polyphony of the TX16W can handle up to 16 different voices at once, each with its own MIDI channel, Digital Filter, and LFO. Each Voice contains 32 split points to assure smooth, continuous sound in all ranges.

The TX16W has full 12-bit sampling resolution. It comes equipped with 1.5 Megabytes of sampling memory. This can be expanded with one or more EM-1 Memory Expansion Boards. When the maximum of three Expansion Boards is installed, the Wave memory of the TX16W increases to a full 6 Megabytes.

The TX16W is a stereo sampler, with a stereo sampling rate of 33.3 kHz. Monophonic sampling is provided at three different rates: 16.7 kHz, 33.3 kHz, and 50.0 kHz. At the slowest mono sampling rate (16.7 kHz), sampling times of up to 16.3 seconds are available.

The TX16W has a disk-based operating system, and also uses its on-board 3.5" micro floppy disk drive for data storage. There is also an RS422 interface for high-speed data transfer with personal computers.

Other special features include Key and Velocity cross-fade functions for unparalleled voice-blending capabilities, an Alternate Assign function that plays a different voice with each successive key depression, extensive and

flexible MIDI implementation, and a complete on-board editing system. The back panel includes two mixed (stereo) audio outputs plus eight individual outs.

Basic Operations

The TX16W's basic operations center around a number of types of internal memory. These memory types are as follows:

32 Performances: Each of these is a combination of up to 16 Voices, each receiving its own MIDI channel, and each with its own settings for audio output, volume, detune, and transpose.

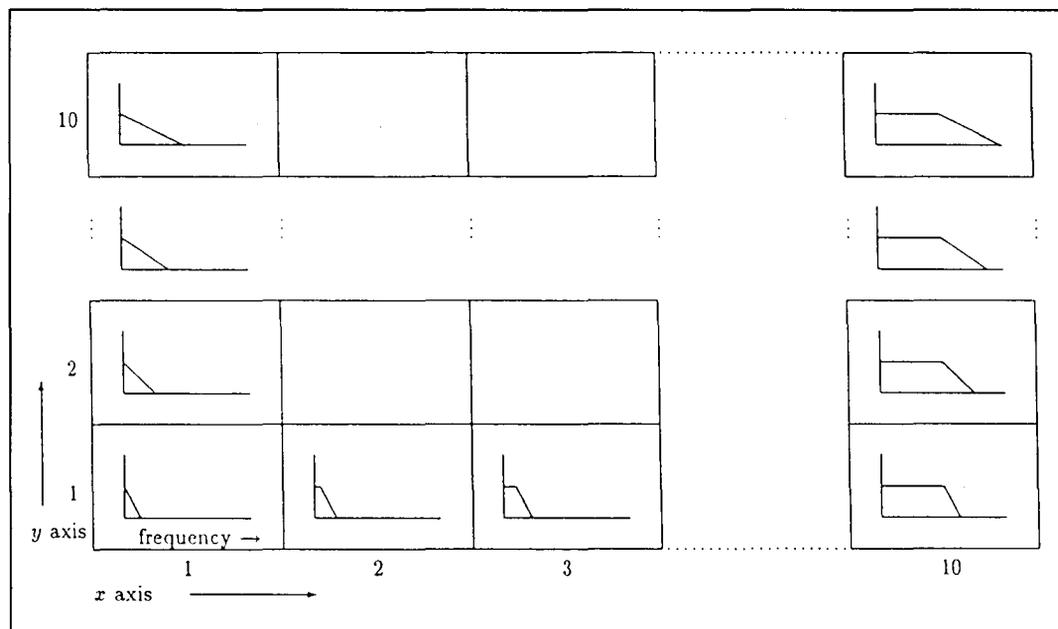
32 Voices: Each of these consists of a "keyboard layout" of up to 32 slots, with a Timbre number and a fade setting for each slot.

64 Timbres: Each of these consists of a Wave number (1-64) and a Filter number (1-32), plus settings for Tuning, Touch Response Curve, Amplitude EG, Pitch EG, Amplitude Modulation Sensitivity, Pitch Modulation Sensitivity, Touch Bias Sensitivity, Pitch Bend, and individual LFO.

32 Filters: Each of these consists of a Filter Table number (1-16) and settings for EG, LFO, Key Scaling, LFO Modulating Sensitivity, and Bias Sensitivity.

64 Waves: Each of these is a digitally-recorded audio sample with a looping point.

This diagram shows a TX16W Filter Table for a basic Low-Pass filter.





TX16W digital wave filtering sampler.

Using the TX16W, you can sample a sound; trim, loop, and store it as a Wave; create a Timbre by adding a Filter to a Wave and giving it an LFO and an EG; arrange up to 32 of these Timbres across the keyboard to make a Voice; and combine up to 16 Voices in a Performance.

Filters

The filters in the TX16W are Realtime Digital Filters, for noise-free processing of the signal while it is still in digital form. These digital filters are supplied on disk as "Filter Tables" consisting of a 10 by 10 matrix of filter shapes. (The user cannot create Filter Tables.) For example, the Filter Table shown in the accompanying diagram is a basic Low-Pass filter, with the Cutoff Frequency as the x-axis and the Slope as the y-axis. One of the axes of the Filter Table can be modified in real time by the EG, LFO, or MIDI controllers. This is referred to as the dynamic axis. The position of the other axis is fixed. Several types of filter are included on the system disk supplied with the TX16W.

Software Support

Two companies have announced development of waveform editing software for the TX16W digital wave filtering sampler; one program is designed for the Apple Macintosh computer, and the other is designed for the IBM PC.

For the Apple Macintosh, Digidesign announces a version of its Sound Designer program for the TX16W. Sound Designer features on-screen display of up to three waveforms, a loop window for precise loop placement, crossfade looping for smooth loops, Digital mixing and merging of sounds, three-dimensional frequency analysis, digital equalization, Macintosh cut and paste functions for precise editing, waveform drawing, and an on-screen MIDI keyboard. For further information, write to: Digidesign, 1360 Willow Road, Suite 101, Menlo Park, CA 94025; or call 415-327-8811.

For the IBM PC, Bacchus Software announces its TX16W Graphic Waveform Editing System. This program features multiple overlapping windows, icons, and pop-up menus—a fully developed, windowed environment that provides a user interface that is both easy to understand and highly sophisticated. For further information, write to: Bacchus Software Systems, 2210 Wilshire Blvd., #330, Santa Monica, CA 90403; or call 213-820-9145.

* * * *

The TX16W comes with two convenient pull-out menus under its front panel for handy reference. The front panel provides easy access to all important functions. There is also a folding strut that keeps the unit at a comfortable operating angle when not rack-mounted. The suggested list price of the TX16W is \$2895.00.

QX5/RX5

Use The RX5 And QX5 Together To Humanize Your Drum And Percussion Parts. By Brad Vinikow.

THE YAMAHA RX5 digital rhythm programmer and the Yamaha QX5 digital sequence recorder are fine examples of two of today's state-of-the-art MIDI devices—the sequencer and the drum machine. These devices offer the electronic musician unparalleled capabilities in terms of both live performance and compositional applications. It's not unusual to hear a live band “enhanced” through the use of sequencers and drum machines. This provides the musician with an extra pair of hands to make sure all the parts are covered—or to free up a little energy to concentrate on interacting with the audience. As compositional tools, the sequencer and the drum machine offer the ability to create, edit, and hear music in a fraction of the time it might take with other methods, thus enhancing the overall creative process.

Individually, the RX5 and QX5 are powerful and versatile tools. However, the integrated “workstation” approach described in this article allows a musician to take advantage of each machine's individual strengths. For example, a drum machine is best suited for relatively short patterns that are linked together to form a song. A pattern may be created quickly and spontaneously while it continuously loops. On the other hand, a sequencer provides a broader perspective for composition. In other words, you typically approach the song in its entirety when sequencing, instead of programming short repeating segments. Additionally, a sequencer's sophisticated editing capabilities often provide greater flexibility when compared to those of a drum machine.

If you've ever felt that drum machines were too repetitious or too sterile, or that they forced you to approach writing in non-musical terms, then take a few minutes to read this article and

try the examples. You will discover a whole new approach to creating warmer, more authentic drum and percussion parts. Don't let the length of this article put you off—the process is very straightforward. It just takes quite a bit of space to describe the sequence of buttons that need to be pushed. After you get the hang of it, though, you'll find it's not only easy to do, but also makes a real difference in your music.

The Best Of Both Worlds

When writing with a drum machine, you might typically create several 2, 4, or 8 bar patterns, and string them together into a song. To get some variation and help the song build, you may copy a pattern into other locations, and add other instruments to these successive patterns. However, by doing this, you may find one particular drum fill happening consistently throughout the song. A drummer usually plays with more variety in terms of the fills and overall groove. It's these little differences that make the music interesting and unpredictable.

How do you approach writing with a sequencer? You probably think in terms of the entire song, writing complete sections at a time. This broader perspective often means more variety in phrases, as well as ideas that stretch longer than 2, 4, or 8 bars.

Obviously, each method has its advantages and disadvantages. The technique described here involves using each machine for what it does best. A drum machine provides the short repetitive parts that happen consistently throughout the song. For example, the kick, snare and perhaps some hi-hat. These parts generally set the “pocket,” so you want them right on the beat. The drum machine generally plays with a straight ahead and more mechanical feel anyway, so take advantage of it.

On the other hand, let the sequencer provide all the “extras,” including tom fills, cymbal crashes, percussion, and bass. Since the sequencer allows you to think in terms of the entire song, these parts will differ from verse to verse and from chorus to chorus. This adds warmth and randomness that will help humanize the Tracks.

The QX5 was selected for this application because of its extensive editing capabilities and its ability to manipulate several different channels of MIDI data. The RX5 also provides a number of unique and very usable features. Specifically,

RX5 digital rhythm programmer.



the MIDI Pitch mode allows you to access up to 16 different sounds simultaneously and “play” them across 5 octaves of pitch from a MIDI keyboard (such as the DX7 II).

So, the best of both worlds is to create simple, minimal, basic patterns in the RX5, and then to create sequences of tuned percussion in the QX5 that lay on top of these patterns. The combination of preprogrammed patterns plus “live” tuned sequences produces warmer, more realistic drum and percussion parts.

Getting Started—Recording The Basic RX5 Pattern

Let’s get started with the basic groove by creating a simple beat in a blank pattern on the RX5. First, select the Pattern mode by pressing the PATTERN/SONG button until the red PTN LED is lit. Next, use the +1/-1 buttons to select a blank pattern (when you see a pattern number without a “w” next to it in the LCD, you know the pattern is blank).

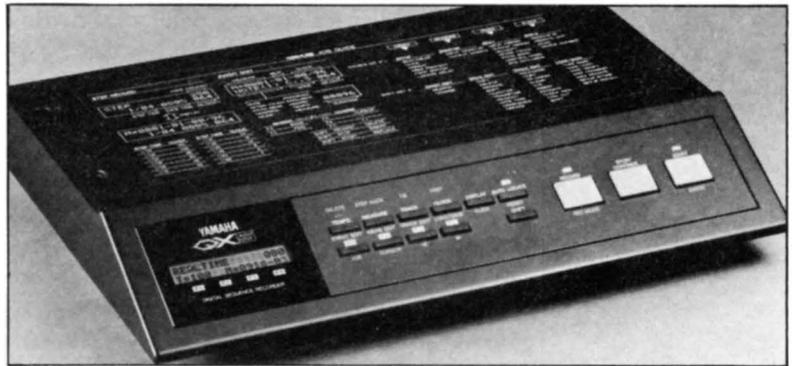
Press REAL TIME WRITE, then set the desired time signature and number of bars, using the ACCENT 2 (cursor) button and the numeric keypad. For this example, try a time signature of 4/4 with a total of 4 measures in the pattern. When you are ready, press START. Set the click volume and the tempo using the appropriate front panel sliders (CLICK and TEMPO).

Remember, keep the pattern simple—maybe 3 measures with kick on beat one and snare on beats two and four (bars 1-3), plus 1 blank measure (bar 4). Eventually, bar 4 will contain fills in this example. When you are satisfied with your basic pattern, press STOP. Now that we have set up this basic groove, it is time to start using the RX5 and the QX5 together.

Setting Up The RX5

Before recording the sequence, we need to set up the RX5 so it will respond properly to MIDI control. For this application, we will set the RX5 to respond to MIDI channels 10 through 16, which will leave the lower numbered channels for other devices such as synthesizers or tone generators. Follow these steps:

- 1) Press MIDI.
- 2) Call up JOB 01 (“Ch Message”).



QX5 digital sequence recorder.

- 3) Press the +1 button to set MIDI “Ch Message” ON.
- 4) Call up JOB 04 (“Note Number Assign”).
- 5) Press “2” to select the MIDI “Pitch” mode.
- 6) Call up JOB 02 (“Receive Ch”).
- 7) Use the ACCENT 2 (cursor) button to position the cursor over the “1” in the display.
- 8) Press the -1 key. The “1” will be replaced by the symbol “*”—this means that MIDI channel 1 is disabled.
- 9) Use the ACCENT 2 (cursor) button to position the cursor over the “2” in the display.
- 10) Press the -1 key. The “2” will be replaced by the symbol “*”—this means that MIDI channel 2 is disabled.
- 11) Continue this two-step process for the numbers “3” through “9” in the display, until the display reads as follows:

..... 10 11 12 13 14 15 16

This means that the RX5 is in the MIDI Pitch mode, and will respond to incoming notes only on MIDI channels 10-16.

Finally, select external MIDI synchronization on the RX5 as follows: Press SYNC, and then use the +1/-1 buttons until the display shows “MIDI” as the selected CLOCK source.

When all of this is set on the RX5, press the PATTERN button to select the Pattern Play mode again.

Setting Up The DX7 II

In this system, the DX7 II (any of the models—FD, D, or S) is the master keyboard. It is an

QX5/RX5

Continued

ideal controller for creating sequenced rhythm parts in the QX5: Its keyboard has exactly 61 notes (5 octaves—which is the same as the tunable range on the RX5), and it is velocity sensitive (so you can play with dynamics). It also has a special Immediate Program Change function, which we'll cover a little later. For now, turn the DX's volume slider all the way down, so you won't hear its internal patches when you use it to "play" the RX5 sounds.

Now make the following MIDI connections: Connect the MIDI OUT of the DX7 II to the MIDI IN of the QX5, and connect the MIDI OUT of the QX5 to the MIDI IN of the RX5.

Before recording the first Track into the QX5, you will need to set the MIDI transmit channel of the DX7 II to 10. To do this, follow these steps:

- 1) Press EDIT.
- 2) Press the MIDI 1 button (button #31) until you reach the "Channel messages" display.
- 3) Position the cursor next to the "Trns ch" parameter.
- 4) Use the +1/-1 buttons or the data entry slider to set the "Trns ch" value to 10.
- 5) Return to one of the Play modes.

Once you are back in a Play mode, you can use the immediate Program Change function mentioned earlier. This allows you to send any MIDI Program Change (from 001 to 128) directly from the front panel, without affecting the currently selected voice on the DX7 II. In this case, sending a Program Change to the RX5 while it's in the MIDI Pitch mode will allow you to select a specific sound on that MIDI channel. If this Program Change is recorded into the QX5 as part of the sequence, the RX5 will always assign the desired voice on each MIDI channel when connected to the QX5 for playback.

To send an Immediate Program Change from the DX7 II, simply press and hold the current Play mode button (either Single, Dual, Split, or Performance), and then type in the three digits that make up the desired Program Change number (use number buttons 1 through 9 for digits 1-9, and use button 10 for zero).

Try this example. Say you are in Performance Play and want to send Program Change #58, which will call up the "Crt-EBassL" voice on the RX5. Do the following:

- 1) Press and hold PERFORMANCE.
- 2) While holding PERFORMANCE, press these buttons in order: button 10, button 5, and button 8. The display will say "Sending program change No. 058."

As soon as you press button 8, a MIDI Program Change message (program #58) is sent from the DX's MIDI OUT. This selects the "Crt-EBassL" voice on the RX5. Since the RX5 has a total of 64 sounds (counting Internal, Copy, and Cartridge voices), it will respond to Program Change numbers 1-64.

Setting Up The QX5

Now it's time to get the QX5 ready. First, enable Track 1 (where all recording takes place in the QX5) as follows: Press Track, then press F1 until the "*" symbol in place of the first "." in the first line of the display.

Next, set the tempo on the QX5 as follows: Press TEMPO; then use F3 (-1/decrement) and F4 (+1/increment) to decrease or increase the tempo setting displayed. Remember, this is the tempo at which the RX5 will play as well.

Before you can record, you need to turn the QX5 Memory Protect function off. Do so as follows: Press TEMPO twice very quickly; the display should read: "BEAT/MEASURE." Now press F1 (JOB) three times; if "MEM.PROTECT" is ON, press F3 (-1/decrement) to turn it OFF.

Finally, set the Echo mode function. This allows you to hear the parts played by the RX5 as you play them from the DX7 II and record them into the QX5. Do as follows: Press CLOCK twice very quickly; the top line of the display should read: "REMOTE IN." Now press F1 (JOB) twice; the top line of the display should read: "ECHO." Now press F3 and F4 (decrement/increment) until the bottom line of the display reads: "DIRECT." Finally, press TEMPO to exit this mode.

Recording The Sequence Into The QX5

At last, we are ready to record our percussion part into the sequencer. Press the RECORD button. If the display says "PUNCH IN" or "STEP" in the upper left corner, press and hold SHIFT and tap the RECORD button until the upper left corner reads "REALTIME." This

selects the Realtime Write mode, since you want to record the parts directly as you play them.

With the LED above RECORD lit and the display reading "REALTIME," simply press START. Wait for the 8-beat count-off, then begin playing a bass line on the DX7 II keyboard. You'll hear the low electric bass sound in the RX5 ("Crt-EBassL") playing your line as the data is being recorded in the QX5. When you are finished, press STOP on the QX5.

If you want to record another part, you must first move this part to a different Track (because all recording takes place on Track 1). Use the Track Exchange function to do this: Press and hold SHIFT, and then press Track. Press F2 (cursor) to move the blinking cursor to the right side of the display; then press F4 (increment/+ 1) several times to select the Track or Macro you want to exchange. Try Track 8: This will put the bass line on Track 8, and leave Track 1 blank.

If you want to hear the bass while you are recording the next part, you must enable Track 8 for playback. Do as follows: Press Track. Next, press and hold SHIFT, and then press F4. (In this Track mode, buttons F1 through F4 will enable/disable Tracks 1 through 4 for playback; with SHIFT held down, F1 through F4 will enable/disable Tracks 5 through 8 for playback).

You are now ready to record the next part. How about some tom fills? Follow these steps (referring to the appropriate sections above for the proper button sequence).

- 1) Set the DX7 II to transmit on MIDI channel 11.
- 2) Send a MIDI Program Change #7 (007). This selects the "Int-Tom 1" voice on the RX5. Because the RX5 plays this voice in pitch when controlled by the DX7 II, you need only 1 Track for tom fills. Remember, you left bar 4 of the basic pattern blank specifically for fills.
- 3) Press RECORD and START on the QX5, and begin playing the tom part.
- 4) When you are satisfied with the part, use the QX5 Track Exchange function to move the toms to Track 7.
- 5) Enable Track 7 for playback to hear the toms.

Continue in this way until you build a complete drum and percussion sequence. Experiment with all the RX5 voices in different ranges on the DX7 II keyboard. For example, the Crash cymbal sounds good between C3 and C5. (Keep in mind that a drummer usually has several cymbals, including a small splash cymbal for certain effects.)

Additional Hints

After recording several parts on different Tracks, you can then begin to take advantage of the QX5's powerful editing capabilities. For instance, you might want to Quantize a Track. This corrects any timing errors. If you are looking for a more human feel, slow the tempo of the QX5 way down during recording. Then leave the Track unquantized and play it back at your regular performance tempo (use the Tempo Memory function on the QX5 to make this process easier).

The Clock Move function lets you shift a Track forward or backward in time in relation to the other parts. For example, try moving the bass part 5 clocks ahead of the kick drum. This helps "push" the groove, which is desirable in certain types of music.

The Velocity function lets you balance each instrument's relative volume. This means you can leave all of the RX5 instrument sliders at the same level on the front panel. In other words, you won't have to "fix it in the mix"!

When you are satisfied with all of the parts, use the Track Down function to merge all of the drum and percussion Tracks to Track 8. Then erase Tracks 1 through 7 using the Clear function. This frees up these seven Tracks for other music data (you are going to put some music over all of this, aren't you?).

* * * *

As you can see (and hear), the possibilities are endless. The RX5/QX5 workstation provides a tremendous amount of power and flexibility for a variety of musical applications. Hopefully, the techniques described here will provide you with some new creative directions. As you become more comfortable with these ideas, they will trigger other new directions. Remember, the deeper you get into these machines, the more you will discover to explore.

TX802

Using The TX802 As Part Of Your MIDI Setup, Part 1. By Michael A. Huisman.

THIS ARTICLE IS the first part of a two-part discussion of Yamaha's newest multi-timbral FM tone generator, the TX802, and how it can best be used in a MIDI setup. In this installment, we are going to outline three basic applications for the TX802 in two different system setups. These applications are only suggestions on how to use the TX802, but they will give us a chance to explore some of the possibilities of the TX802 together.

System 1: Using the TX802 with a DX7 II FD

The combination of a TX802 with a DX7 II FD might seem like a very simple choice for our first applications; and, to be quite honest, it is. By investigating this system, we will be able to show the TX802 in its simplest form, as a tone expander for a keyboard synthesizer. Even though this is a straightforward use, the concepts outlined in this scenario carry over easily into more advanced applications. Also, the DX7 II FD and the TX802 are a great combination.

When using the TX802 with a DX7 II FD, some MIDI connections and settings are necessary. If you have both of these instruments at your disposal, please perform the steps outlined below. If you don't have them, just follow along—we will be discussing many of the musical features of the TX802 as we go.

Start by connecting the MIDI OUT port of the DX7 II to the MIDI IN port of the TX802. Next, you need to set the necessary MIDI parameters on both instruments. To set the TX802 so that Performance memories can be selected via MIDI, do the following:

- 1) Press the TX802's SYSTEM SETUP button once.
- 2) Now press Parameter Select button 3 ("prfm") until the display reads "Perform select channel by program change."

- 3) Use the +1/-1 keys to set the value to "1" (if the value displayed is something other than 1).

To set the DX7 II to transmit MIDI Program Change messages, do the following:

- 1) Press the EDIT button, then press the MIDI #1 button (button #31) repeatedly until you reach the "Channel messages" display.
- 2) Move the cursor to select the "Trns ch" parameter, and use the +1/-1 keys to set the value to "1" (if the value displayed is something other than 1).
- 3) Now press MIDI #1 button (button #3) two more times to access the "MIDI" display.
- 4) Move the cursor to select the "PC trans mode" parameter, and use the +1/-1 keys to set the value to "normal" (if the value displayed is not already normal).

The choice of MIDI channel 1 in the steps above is based on the assumption that the Performance memories in your TX802 are set to receive on MIDI channel 1 (as are the factory-supplied Performances). If you have changed the factory Performances, please adjust the MIDI channel to suit your needs.

Application 1: Playing the TX802 Live; selecting TX802 Performances via MIDI. It is possible to select TX802 Performances via MIDI Program Change messages received at its MIDI IN jack. When the TX802 recognizes a MIDI Program Change message, it checks to see if the message is on the channel that you set earlier. If the channel of the message does match that of the value you set earlier, a new Performance memory will be selected.

DX7 II FD digital FM synthesizer.





TX802 FM digital tone generator.

Given the setup outlined above, you should be able to select Performance memories of the TX802 remotely via MIDI simply by pressing any of the number buttons on the DX7 II FD from any of its Play modes.

We can also set the TX802 to select new voices within a Performance memory remotely via MIDI. The changes involved are very simple. Start by setting the TX802 so that Performance memories are selected over a MIDI channel other than channel 1. Do the following:

- 1) Press button #3 until the display reads "Perform select channel by program change."
- 2) Use the +1/-1 keys to set the value to 16. You have now set this parameter to operate on MIDI channel 16.

Now, when we send MIDI Program Change messages to the TX802 from the DX7 II FD (which is still transmitting on MIDI channel 1), the Performance memory does not change—but the voices that make up the Performance do change.

To change Performance memories once again via MIDI, just change the MIDI transmit channel of the DX7 II FD to 16 (to match the change made above on the TX802), and the TX802 will once again select Performances memories remotely via MIDI. Whenever the MIDI receive channels for the voices in a TX802 Performance differ from the MIDI channel selected in the "Perform select channel by program change" parameter, you have independent control of voice selection and Performance selection. If you are controlling a TX802 from a sequencer or other device capable of multi-MIDI channel transmission, you can use one MIDI channel for selecting Performances, while the instrument receive channels can be used for

voice changes within a Performance.

Application 2: Enhancing the stereo imaging of the DX7 II FD. The DX7 II FD features some very useful (and striking) stereo capabilities and effects: stereo panning by MIDI note number, by key velocity, by LFO control, and via the special Pan envelope. (By the way, more information about the stereo capabilities of the DX7 II FD is available in the DX7 II FD owners manual, the new DX7 II supplemental booklets, and in past issues of *AfterTouch*.)

The TX802 does not implement the stereo panning features that the DX7 II FD has, but it does implement one that the DX7 II FD does not have. Let's look at one possible scenario. You are in the studio recording tracks for a demo. The tune requires a simple chording pad during the verses, and the changes spelled out by the songwriter require tight, close-in voicings. The close-in voicings eliminate using stereo panning by note number; and, since the sound is a pad, panning by velocity also is difficult. You could control panning with a slow LFO (which is a great effect), but you're having difficulty getting each new chord change to stand up in the mix.

By using the Alternate Key Assign mode of the TX802, and placing the output of each alternately-assigned instrument to a different output (using outputs I and II), you can cause new notes to appear alternately at outputs I and II. Now, if we combine the outputs of the TX802 and the DX7 II, we end up with a very nice pad sound that demands more listener attention: The stereo imaging changes in an aperiodic manner—it changes with each new chord note played.

To hear an example of this, play the stock DX7 II FD Performance called "Synthbrass Ensemble" (Internal Performance 24 of the fac-

tory-supplied Performances) with the stock TX802 Performance memory called "Analog Spread" (Internal Performance 49 of the factory-supplied Performances).

To hear another example with more percussive sounds, play the stock DX7 II FD Performance called "Stereo Vibraphone" (Internal Performance 31 of the factory-supplied Performances) with the stock TX802 Performance memory called "Magic Marimba" (Internal Performance 27 of the factory-supplied Performances).

Make sure that the PAN light is lit on the DX7 II FD front panel (simply press the PAN button from within Performance Play mode until the light comes on). Also, make sure that you are running two audio cables from both the DX7 II FD and the TX802, and that each output is panned fully to the left or right (this is necessary for stereo audio Performances).

System 2: Using the TX802 with a QX sequencer

Many times we find ourselves swooning over the latest in synthesizer/sampler technology and comparing notes with other players and songwriters, trying to decide who has come up with the latest and greatest in techno-babble slang. Well, once all the talking is over and you've taken a large enough byte of bits of this and that (Why is 1K, supposedly 1000, really 1024 bytes? Do you suppose I can use this new "digital exchange ratge" at my bank?), we need to get down to making music. After all, if all we wanted to do was listen to great music, we could spend our hard-earned cash at a stereo store.

Since we are all driven to making and performing music, we also need the most performance for our dollars. With many of us writing and recording new music in our spare rooms, closet and bedroom space is also an important factor. (By the way, does anybody really know how much gear I need to have before I can honestly claim to have a "MIDI studio"?) Multi-timbral tone generators give us great sonic value for the money, and they usually don't take up much space (the success of units such as the FB-01 and the TX81Z from Yamaha clearly illustrate this point).

In the case of the TX802, we have the latest in high-quality, 16-bit, 6-operator FM digital synthesis, with the added hook that it can output more than one or two sounds simulta-

neously. In fact, we can have up to eight different sounds at once! So how does the aspiring songwriter/"MIDI studio owner" use the TX802? Why, multi-timbrally of course!

The TX802's sixteen notes of available polyphony are distributed in twos across eight instruments ($8 \times 2 = 16$). These tone generating instruments may be linked together to create instruments with more than two notes of polyphony. Here is one example of what this could mean: One instrument (using 2 of the available 16 notes) can be designated for a bass sound; eight more notes (by linking four instruments together) can be used for a brass comping sound; another instrument (using 2 notes—there are still four left) can be used for a bell sound to double the vocals during the chorus; and the last four available notes can be used for additional percussion sounds that your drum machine may not have (electronic toms for RX11 owners, for example).

By recording each of these sounds on a separate MIDI channel on a QX5 sequencer or similar device, one has access to a multitude of sounds simultaneously during the song creation/arranging process. The complete MIDI band is now a smaller unit than previously imagined. Are you writing a piece for a string quartet? You can use a single TX802 with a sequencer to create and actually hear the song with human ears and feel it with a human heart, instead of imagining how things might sound by using just the space between your ears. Do you want to experiment with an idea? Don't we all feel safer trying something new when no one else is looking (or listening)? How about a more spirited, more confident performance from that string quartet the first time they play the piece? The odds for this are much better once you have the piece completely figured out ahead of time. Performances are always more fun than rehearsals, right?

In part 2 of this article (in next month's issue of *AfterTouch*), we are going to investigate more advanced ideas on how to use the TX802, and also give some hints on memory management and storage. In the meantime, if you already have a TX802, try out the instrument with everything you own; the odds are pretty good that you'll like how it fits in your system. Whether or not you have a TX802, stop by your local Yamaha dealer to hear the latest demonstrations, so you can hear how the TX802 works and sounds with other instruments.

Hot Tips

Continued from page 9

to MIDI (so that the two machines will sync up).

A total of three different songs can be stored in the QX for easy access in live playing situations. Song 1 is recorded onto Track 1, and then stored to the temporary buffer using the QX's Temporary Buffer Exchange function. Song 2 is then recorded onto Track 1, and Exchanged over to Track 2. Finally, Song 3 is recorded onto Track 1. This is the result: Song 1 is in the temporary buffer, Song 2 is on Track 2, and Song 3 is on Track 1.

With the CX5M freed from sequencer playback duties, it can be used as a multi-timbral tone generator (a use that is unavailable when using the MIDI Recorder Program cartridge), or as an RX editor for your drum machine.

You can also use the QX and CX in tandem to expand your sequencing memory. Have one se-

quencer playing the information and the other simply counting measures, until the first sequencer is almost out of memory. At this point, have the first sequencer start counting measures (which requires very little memory), while the second sequencer continues with the remainder of the sequence information. Of course, both sequencers would need to use the same clock (either one of the sequencer's clocks, or one from a drum machine).

Another way to expand memory is to use each sequencer for different parts or for different MIDI channels that play through the entire song. Using this technique, I have added parts that would have been impossible before. It is especially helpful for parts that contain a lot of Pitch Bend, Mod Wheel, or Aftertouch data, since all of these types of data eat up memory rapidly.

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