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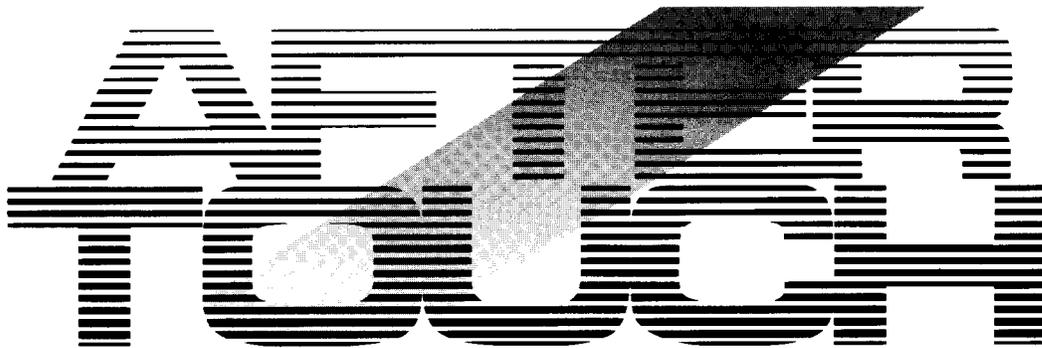
THE OFFICIAL PUBLICATION OF THE YAMAHA USERS GROUP

DX7s



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From The Editor

THIS TIME AROUND, we will use this column to pass along some standard information that continues to be important for AfterTouch readers. Before we get to that, however, let's start with a quick look at what you can expect to find in this issue and the next issue:

This Month: This issue contains introductory articles on two new Yamaha products—the DX7s digital FM synthesizer and the RX17 digital rhythm programmer. There are also overviews of two new CAV (Computer-Aided Voicing) programs for the TX81Z FM digital tone generator. One program is designed for the IBM PC, and the other is designed for the Apple Macintosh. In addition to all of this, there is information on a number of university Summer sessions that focus on the use of Yamaha X series instruments and YCAMS, plus more DX7 patches from AfterTouch readers.

Next Month: In the June 1987 issue, we will feature the return of the Evatone Sound & Data Disk! Our first set of Evatone Disks appeared in the May, June, and July 1986 issues of AfterTouch. The disk in next month's issue will contain musical performances that preview an exciting new Yamaha instrument. In addition, there will be an introductory article on a new Yamaha FM tone module, A set of edited RX5 voices, new reader DX7 patches, and an article that discusses the basics of the Micro Tuning capabilities found in the new generation of DX7 instruments (DX7 II FD, DX7 II D, and DX7s).

Back Issues: If a request for back issues is combined with a subscription request or other material, chances are it will not be fulfilled. All

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—TD

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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.

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RX17

Introducing Yamaha's Compact New Digital Rhythm Programmer. By Gardy Weber.

FIRST, THERE WAS the abacus; then came the slide rule; and then came the pocket calculator. Now there is the RX17 digital rhythm programmer, featuring utility in size and potential. The new RX17 is a compact package of essential features. It combines and improves upon elements of the RX21 and RX21L, taking the important functions of both and putting them in a single, portable machine. The RX17 is the pocket calculator for songwriters and drummers.

In previewing the RX17, we will describe both the unit's apparent and not-so apparent features. With its combination of utility and low price, the RX17 will undoubtedly be of great interest to musicians of modest means.

Instrument Sounds

The sounds on the RX17 are sampled voices, comparable in quality to those of the new RX5 digital rhythm programmer. The RX17 contains a total of 26 instrument sounds. Of those 26, 10

Drum and percussion sounds available on the RX17.

UPPER SET		LOWER SET	
BD	Bass Drum	TMBRN	Tambourine
SD	Snare Drum	RIM SHOT	Snare Drum rim shot
TOM1	High Tom-tom	CONGA Hm	High Conga (muted)
TOM2	Medium Tom-tom	CONGA Ho	High Conga (open)
TOM3	Low Tom-tom	CONGA L	Low Conga
HH OPEN	Hi-hat (open)	BONGO H	High Bongo
HH CLOSED	Hi-hat (closed)	BONGO L	Low Bongo
RIDE	Ride cymbal	AGOGO H	High Agogo
CRASH	Crash cymbal	AGOGO L	Low Agogo
COWBEL	Cowbell	WHISTLE	Whistle
CLAPS	Claps	SHAKER	Shaker
TIMBALE H	High Timbale	CUICA H	High Cuica
TIMBALE L	Low Timbale	CUICA L	Low Cuica

are drum set sounds, while the other 16 are Latin Percussion sounds. These offer an excellent combination to work out rhythmic ideas. On the front panel, the RX17 has thirteen instrument keys from which to enter instrument voices. Each key accesses two voices, one each from the upper and lower set of voices (see the accompanying diagram).

The polyphonic capacity of the RX17 is a maximum of eleven simultaneous sounds. If

Pairs of instrument sounds on the RX17 that cannot be played together.

CONGA Hm / CONGA Ho
CUICA H / CUICA L
SD / RIM SHOT
HH OPEN / HH CLOSED

more than that number are entered at any given instant, previously programmed sounds will be erased.

Instrument voices are made available through selection of the upper or lower sets of instrument voices via the Instrument Change function. Single instrument changes are also carried out in the Instrument Change mode. Using this function, all 26 sounds can be programmed into a single pattern. The two sounds of each key are not mutually exclusive. There are, however, a few pairs of instrument sounds that cannot be played at the same time (see the accompanying diagram).

The Instrument Change function is accessible during both Real Time Write and Step Write, thus allowing a quick and easy route to all of the instrument sounds. The writing operations can be resumed without interruption by moving back from Instrument Change into Real Time or Step Write.

Composing Capabilities

At first glance, the writing possibilities on the RX17 seem limited. Surprise! By searching beyond the initial LCD displays, it is possible to uncover a full range of composing tools in both the Pattern and Song modes.

Begin by pressing the PATTERN button to access Pattern mode. Seven functions appear (with further sub-functions within), as follows:

- 1) Select Pattern
- 2) Real Time Write
 - Pattern Length
 - Quantize
- 3) Step Write
 - Pattern Length
 - Quantize
- 4) Clear Pattern
- 5) Clear All Patterns
- 6) Copy Patterns
- 7) Remaining Pattern Memory

The RX17 has memory to hold 100 patterns (numbered 00-99). Preprogrammed patterns are shipped with the RX17 in pattern locations 50-99.

As with the RX21 and RX21L, pattern length is limited to one bar. All time signatures are entered based on sixteenth-note values. For example, 16/16 is equivalent to 4/4 time, and 12/16 is equivalent to 3/4 time. The range of pattern lengths is from 1/16 through 32/16.

Through Real Time mode or Step Write mode, a composer can quickly build a pattern—entering notes, deleting notes (using the Beat Clear function), deleting instrument voices, and adding accents. There is much more flexibility than originally meets the eye.

In the Song Mode, there are 10 memory locations available (numbered 0-9). Each song can contain a maximum of 999 steps, each of which can consist of a pattern number or another kind of data (on which more later). The RX17 is shipped with preprogrammed songs in memory locations 0-3. These preprogrammed songs, as well as the preprogrammed patterns, can be edited or erased; in addition, the original versions of all of these preprogrammed patterns and songs can be recalled from the unit's permanent memory.

In Song mode, six functions are displayed (along with further sub-functions), as follows:

- 1) Select Song
- 2) Edit Song
 - JOB 1: Set Initial Tempo
 - JOB 2: Search Part
 - JOB 3: Copy Part
 - JOB 4: Delete Part
 - JOB 5: Insert Part
- 3) Clear Song
- 4) Clear All Songs
- 5) Copy Song
- 6) Remaining Song Memory

In the Edit Song mode, six types of data may be entered in addition to pattern numbers. These are as follows: Repeats (Begin and End), gradual Tempo changes (Accelerando and Ritardando), and gradual Volume changes (Vol+ and Vol-). This data can be entered initially, along with the pattern numbers, or it may be inserted later, after all of the pattern numbers have been programmed. In either case, the method involved is straightforward, and conducive to the work of a composer.

Volume, Tempo, and Pan Functions

The parameters of Volume and Accent Level can also be manipulated on the RX17. The volume level of each instrument can be adjusted over a scale of 00-31, via the Level mode. Accent level is also programmed using the Level mode. Thus, the accent volume can be set prior to writing a pattern.

A slider on the front panel controls Master



RX17 digital rhythm programmer.

Volume. The other slider controls tempo settings. Tempo rates are displayed under the Tempo function. Tempo rates may also be entered numerically, through the +1/YES and -1/NO data entry buttons.

The RX17 outputs through stereo jacks on the instrument's back panel. In the stereo field, each instrument sound is placed within a 15-position scale from left to right. This positioning can be applied independently to each of the unit's 26 sounds.

MIDI

A current electronic instrument would be lacking if it did not incorporate a number of MIDI features, since MIDI usage today is almost universal. Happily, the RX17 is extensively MIDI-equipped. Using the MIDI mode button on the front panel, it is possible to access eight different functions, as follows:

- 1) MIDI Sync
- 2) Channel Message
- 3) Receive Message
- 4) Transmit Channel
- 5) Note Assign
- 6) Receive Bulk Data
- 7) Transmit Bulk Data
- 8) Echo Back

A significant feature of the RX17 is its ability to record MIDI key velocity information from a MIDI keyboard. Many nuances of volume may be recorded directly into the RX17 via a MIDI connection to a velocity-sensitive MIDI key-

board, such as the DX7 II FD/D or DX7s.

Each one of the unit's 26 instrument sounds can be assigned to a specific MIDI note number. By way of the MIDI Note Receive function, the RX17 receives (and records) the instrument sounds played (via the programmed MIDI note numbers), complete with key velocity. (For a list of the MIDI note numbers assigned to the RX17's instrument sounds when the unit is shipped from the factory, see the accompanying chart).

The RX17 can also control external MIDI devices through its MIDI Transmit feature. With a note assign range of five octaves, the RX17 can be used to advantage with most MIDI keyboards. For example, the RX17 could be used to play a melody on an external keyboard while also performing its own rhythm program.

Transmission of MIDI bulk data is possible between two RX17s, or between an RX17 and a device that is capable of storing MIDI data (such as the Yamaha MDF1 MIDI data filer or

the QX1 digital sequence recorder). All pattern and song information is transferred in this operation. When bulk data is received by an RX17, all current memory in the unit will be replaced by the information contained in the bulk data dump.

A pleasant MIDI surprise on the RX17 is the Echo Back function. Although the RX17 does not have a MIDI THRU port, this feature is possible via Echo Back. Once you activate Echo Back in the MIDI mode, the RX17's MIDI OUT port will act like a MIDI THRU port—any MIDI signals received by the RX17 will be transmitted without change.

Cassette Storage

An alternative method of storing patterns and songs, the Cassette function allows data transmission to and from cassette tapes. It is possible to build up a library of songs using this storage method. An entire library of cassettes could be used to store pattern, song, or performance information for future applications.

When the RX17's internal memory is approaching capacity, the information can be saved to tape via the Save function using a cassette recorder (and the cassette interface cable that comes with the RX17). Loading data from tape back into the RX17 is possible using the Load function. Please note that the Load operation erases the information currently in the RX17 with that being loaded from tape.

The cassette mode also contains a Verify feature: Immediately following a Save operation, the data can be checked for accuracy. This is a valuable safeguard against the possibility of losing several hours of composing and editing work.

. . . .

Unplug the RX17, pick it up, and put it in your pocket! Well, not exactly, but the RX17 is almost that light and compact. It contains a surprising amount of versatility for such a small package. The sound quality is excellent, and the composing features extensive. At a list price of \$375.00, the RX17 will not empty out your pocket at all. In fact, the fit may be too good to pass up.

This chart shows the MIDI key numbers assigned to the RX17's drum and percussion sounds when the instrument is shipped from the factory.

Note	Key #	Sound
A1	45	BD
C2	48	TOM3
D2	50	TOM2
D#2	51	RIM SHOT
E2	52	SD
F2	53	TOM1
F#2	54	CLAPS
G2	55	COWBEL
G#2	56	SHAKER
A2	57	HH CLOSED
B2	59	HH OPEN
C3	60	CRASH
D3	62	RIDE
E3	64	CONGA L
F3	65	CONGA Ho
F#3	66	CONGA Hm
G3	67	BONGO L
G#3	68	BONGO H
A3	69	TIMBALE L
A#3	70	TIMBALE H
B3	71	TMBRN
D4	74	AGOGO L
D#4	75	AGOGO H
E4	76	CUICA L
F4	77	CUICA H
F#4	78	WHISTLE



3 BOTTLES.
A New DX7
Voice By Brian
Silverman.

SQ	39	90	0	0	OFF	1
WAVE	SPEED	DELAY	FMD	AMD	SYNC	PMS

R1	R2	R3	R4	C3
99	99	99	99	
L1	L2	L3	L4	KEY TRANSPOSE
50	50	50	50	ON

PITCH ENVELOPE

OSC. SYNC

FUNCTIONS					
POLY	3	0	OFF	OFF	0
POLYMONO	RANGE	STEP	MODE	GLISSANDO	TIME
	PITCH BEND		PORTAMENTO		

(CONTROLLER)	RANGE	PITCH	AMPLITUDE	EG BIAS
MOD WHEEL	99	ON	OFF	OFF
FOOT CONTROL	0	OFF	OFF	OFF
BREATH CONTROL	0	OFF	OFF	OFF
AFTERTOUCH	35	ON	OFF	OFF

FREQUENCY	DETUNE	AMS		
5.00	0	0		
ENVELOPE DATA				
R1	R2	R3	R4	R5
99	56	0	18	1
L1	L2	L3	L4	
99	0	50	0	
KEYBOARD SCALING				
CURVE	BREAKPOINT	DEPTH		
L	+E	C3	L	0
R	-L		R	15
OP#	OUTPUT LEVEL	VELOCITY		
3	77	0		

FREQUENCY	DETUNE	AMS		
1.000Hz	0	0		
ENVELOPE DATA				
R1	R2	R3	R4	R5
99	53	94	15	2
L1	L2	L3	L4	
99	83	90	0	
KEYBOARD SCALING				
CURVE	BREAKPOINT	DEPTH		
L	-E	G4	L	63
R	-L		R	0
OP#	OUTPUT LEVEL	VELOCITY		
2	88	0		

FREQUENCY	DETUNE	AMS		
1.00	0	0		
ENVELOPE DATA				
R1	R2	R3	R4	R5
90	87	79	45	1
L1	L2	L3	L4	
93	98	90	0	
KEYBOARD SCALING				
CURVE	BREAKPOINT	DEPTH		
L	-L	A-1	L	0
R	-L		R	0
OP#	OUTPUT LEVEL	VELOCITY		
1	99	0		

FREQUENCY	DETUNE	AMS		
5.00	0	0		
ENVELOPE DATA				
R1	R2	R3	R4	R5
99	56	0	15	1
L1	L2	L3	L4	
99	0	50	0	
KEYBOARD SCALING				
CURVE	BREAKPOINT	DEPTH		
L	+E	G4	L	38
R	-L		R	35
OP#	OUTPUT LEVEL	VELOCITY		
6	77	3		

FREQUENCY	DETUNE	AMS		
2.042Hz	0	0		
ENVELOPE DATA				
R1	R2	R3	R4	R5
99	53	94	15	2
L1	L2	L3	L4	
90	83	90	0	
KEYBOARD SCALING				
CURVE	BREAKPOINT	DEPTH		
L	-E	G4	L	63
R	-L		R	0
OP#	OUTPUT LEVEL	VELOCITY		
5	88	2		

FREQUENCY	DETUNE	AMS		
1.00	0	0		
ENVELOPE DATA				
R1	R2	R3	R4	R5
90	29	20	45	1
L1	L2	L3	L4	
99	98	90	0	
KEYBOARD SCALING				
CURVE	BREAKPOINT	DEPTH		
L	-L	A-1	L	0
R	-L		R	0
OP#	OUTPUT LEVEL	VELOCITY		
4	99	0		

ALGORITHM #4

These DX7 voices can also be loaded into all the other Yamaha 6-operator FM digital synthesizers and tone generators, including the DX5, TX7, TX216, TX816, TF1, DX1, DX7s, and DX7 II FD/D.



POLY-BLIND.
A New DX7
Voice By Mike
Willemain.

SINE	32	0	0	0	ON	2	
WAVE	SPEED	DELAY	PMD	AMD	SYNC	PMS	
R1	99	R2	99	R3	99	R4	99
L1	50	L2	50	L3	50	L4	50
PITCH ENVELOPE							
						C2	
						KEY TRANSPOSE	
						ON	
						OSC. SYNC	

POLY	5	0	OFF	OFF	0
POLY/MONO	RANGE	STEP	MODE	GLISSANDO	TIME
PITCH BEND			PORTAMENTO		
(CONTROLLER)	RANGE	PITCH	AMPLITUDE	EG BIAS	
MOD WHEEL	99	ON	OFF	OFF	
FOOT CONTROL	0	OFF	OFF	OFF	
BREATH CONTROL	0	OFF	OFF	OFF	
AFTERTOUCH	78	ON	OFF	OFF	

FREQUENCY	1.00	DETUNE	+2	AMS	0
ENVELOPE DATA					
R1	80	R2	20	R3	60
R4	53	R5			
L1	98	L2	95	L3	95
L4	0				
KEYBOARD SCALING					
CURVE	BREAKPOINT	DEPTH			
L	-L	A-1	L	0	
R	-L		R	0	
OP#	OUTPUT LEVEL	VELOCITY			
6	83	0			

FREQUENCY	1.00	DETUNE	0	AMS	0
ENVELOPE DATA					
R1	80	R2	23	R3	60
R4	53	R5			
L1	98	L2	95	L3	95
L4	0				
KEYBOARD SCALING					
CURVE	BREAKPOINT	DEPTH			
L	-L	A-1	L	0	
R	-L		R	0	
OP#	OUTPUT LEVEL	VELOCITY			
5	86	6			

FREQUENCY	1.00	DETUNE	-2	AMS	0
ENVELOPE DATA					
R1	74	R2	23	R3	60
R4	53	R5			
L1	98	L2	95	L3	95
L4	0				
KEYBOARD SCALING					
CURVE	BREAKPOINT	DEPTH			
L	-L	A-1	L	0	
R	-L		R	0	
OP#	OUTPUT LEVEL	VELOCITY			
4	78	1			

FREQUENCY	1.00	DETUNE	+4	AMS	0
ENVELOPE DATA					
R1	74	R2	70	R3	20
R4	54	R5			
L1	99	L2	97	L3	95
L4	0				
KEYBOARD SCALING					
CURVE	BREAKPOINT	DEPTH			
L	-L	G1	L	0	
R	-L		R	5	
OP#	OUTPUT LEVEL	VELOCITY			
3	98	0			

FREQUENCY	1.00	DETUNE	-5	AMS	0
ENVELOPE DATA					
R1	74	R2	23	R3	60
R4	53	R5			
L1	98	L2	95	L3	95
L4	0				
KEYBOARD SCALING					
CURVE	BREAKPOINT	DEPTH			
L	-L	A-1	L	0	
R	-L		R	0	
OP#	OUTPUT LEVEL	VELOCITY			
2	80	1			

FREQUENCY	1.00	DETUNE	0	AMS	0
ENVELOPE DATA					
R1	74	R2	70	R3	20
R4	54	R5			
L1	99	L2	97	L3	95
L4	0				
KEYBOARD SCALING					
CURVE	BREAKPOINT	DEPTH			
L	-L	G1	L	0	
R	-L		R	5	
OP#	OUTPUT LEVEL	VELOCITY			
1	99	1			

ALGORITHM #2

Notes:

This is a good, general-purpose poly-synth patch, as well as a screaming lead patch (because of the timbre variation available via the velocity sensitivity). Vibrato can be introduced using either aftertouch or the mod wheel.



CHIME MIA. A New DX7 Voice By Mike Tucker.

SINE	9	0	15	0	ON	1
WAVE	SPEED	DELAY	PWD	AMD	SYNC	PMS

R1	R2	R3	R4	C3	
99	99	99	99		
L1	L2	L3	L4	KEY TRANSPOSE	
50	50	50	50	OFF	
PITCH ENVELOPE					OSC. SYNC

POLY	7	0	OFF	OFF	0
POLY/MONO	RANGE	STEP	MODE	GLISSANDO	TIME
PITCH BEND			PORTAMENTO		

(CONTROLLER)	RANGE	PITCH	AMPLITUDE	EG BIAS
MOD WHEEL	45	ON	OFF	OFF
FOOT CONTROL	0	OFF	OFF	OFF
BREATH CONTROL	0	OFF	OFF	OFF
AFTERTOUCH	0	OFF	OFF	OFF

FREQUENCY	2.00	DETUNE	+2	AMS	0
ENVELOPE DATA					
R1	R2	R3	R4	RS	2
98	91	0	28		
L1	L2	L3	L4		
99	0	0	0		
KEYBOARD SCALING					
CURVE	BREAKPOINT		DEPTH		
L	-L	A-1	L	0	
R	-L		R	0	
OP#	OUTPUT LEVEL	VELOCITY			
6	79	1			

FREQUENCY	323.6Hz	DETUNE	0	AMS	0
ENVELOPE DATA					
R1	R2	R3	R4	RS	2
76	78	71	70		
L1	L2	L3	L4		
99	0	0	0		
KEYBOARD SCALING					
CURVE	BREAKPOINT		DEPTH		
L	-L	A-1	L	0	
R	-L		R	0	
OP#	OUTPUT LEVEL	VELOCITY			
5	99	4			

FREQUENCY	7.00	DETUNE	-3	AMS	0
ENVELOPE DATA					
R1	R2	R3	R4	RS	2
98	12	71	28		
L1	L2	L3	L4		
99	0	32	0		
KEYBOARD SCALING					
CURVE	BREAKPOINT		DEPTH		
L	-L	A-1	L	0	
R	-L		R	5	
OP#	OUTPUT LEVEL	VELOCITY			
4	63	1			

FREQUENCY	3.50	DETUNE	+3	AMS	0
ENVELOPE DATA					
R1	R2	R3	R4	RS	3
98	12	71	28		
L1	L2	L3	L4		
99	0	32	0		
KEYBOARD SCALING					
CURVE	BREAKPOINT		DEPTH		
L	-L	A-1	L	0	
R	-L		R	0	
OP#	OUTPUT LEVEL	VELOCITY			
2	68	1			

FREQUENCY	1.00	DETUNE	+4	AMS	0
ENVELOPE DATA					
R1	R2	R3	R4	RS	2
95	33	71	25		
L1	L2	L3	L4		
99	0	32	0		
KEYBOARD SCALING					
CURVE	BREAKPOINT		DEPTH		
L	-L	A-1	L	0	
R	-L		R	0	
OP#	OUTPUT LEVEL	VELOCITY			
1	95	1			

FREQUENCY	1.00	DETUNE	-4	AMS	0
ENVELOPE DATA					
R1	R2	R3	R4	RS	3
95	33	71	25		
L1	L2	L3	L4		
99	0	32	0		
KEYBOARD SCALING					
CURVE	BREAKPOINT		DEPTH		
L	-L	A-1	L	0	
R	-L		R	0	
OP#	OUTPUT LEVEL	VELOCITY			
3	99	1			

ALGORITHM #2

Notes:

Play mainly in the middle register of the keyboard. If you play in octaves, a nice chorusing effect is created.

DX7s

**A First Look At
Yamaha's
Newest FM
Digital Syn-
thesizer. By
Tom Darter.**



DX7s FM digital synthesizer.

YAMAHA HAS JUST UNVEILED the newest member of its growing family of second-generation DX7 digital FM synthesizers—the DX7s. Like its older brothers, the DX7 II FD and the DX7 II D, the DX7s uses the industry standard DX7 6-operator, 32-algorithm voice as its starting point; but, also like its older brothers, it offers a number of important new features.

Like all members of the new DX7 generation, the DX7s has a faster DAC (Digital-to-Analog convertor) and a more powerful CPU (Central Processing Unit). The higher resolution and faster computation provided by these new components gives the DX7s a cleaner, clearer, warmer sound. Any patch created on a first generation DX7 will sound better when transferred to the new DX7s.

The DX7s, again following the lead of its older brothers, has an expanded memory that can hold 64 enhanced voices (as compared to 32 basic voices on the original DX7); in addition, the DX7s includes other new parameters that are stored in what is called Performance memory. The DX7s also contains MIDI implementation that is much more sophisticated than that of the original DX7.

Even though it offers significant advances over the original DX7, the new DX7s is compatible with its predecessor. All of your existing DX7 voices can be transferred into the DX7s with no difficulty—and the new parameters offered by the DX7s can be added to your existing voices with little difficulty. It's a simple matter to load voices into the instrument via cartridge or MIDI.

Just as importantly, the DX7s is compatible with all of its new siblings. All three of the new DX units feature the same basic package—the DX7s has a smaller LCD than its older brothers, but all three units feature backlit LCDs, so that the displayed information is much easier to read. Also, the Performance memory of the DX7s, although not as extensive as that of the DX7 II FD/D, is completely compatible with the Performance memory of its siblings—Performance created on one model can be transferred to another model with no difficulty.

New Voice Parameters

The original DX7 layout featured a two-layered programming system: Voice data, which was programmable for each of the 32 voice memory locations; and Function data, which was programmable but global (in other words, it operated the same way for each Voice memory). Following the lead of other 6-operation units like the TX7 and TX816, the new DX7s includes what used to be called “function data” as part of each Voice memory. As a matter of fact, these parameters are no longer called “function parameters” (as they were in the TX7 and TX816); instead, they are simply considered part of the expanded voice of the new generation of DX7s instruments. Parameters that used to be called “Function” parameters are now called “Voice Effect” parameters.

To make comparison to the original DX7 easier, let's look at the new Voice parameters of the DX7. Here are the new Voice parameters to be found on the DX7s:

- Fractional Scaling
- LFO Mode
- Pitch EG Range
- Pitch EG Velocity

In addition, the range of Amplitude Modulation Sensitivity (AMS) has been expanded from 0-3 to 0-7.

The Voice Effect data section of the new DX7s (involving parameters that used to be called Function data) includes the following new parameters:

- Key Mode
- Unison Detune
- Pitch Bend Mode
- Random Pitch
- Pitch Bias
- FC1 to CS1
- FC2 parameters
- MIDI Controller parameters

As you can see from the above list, the new

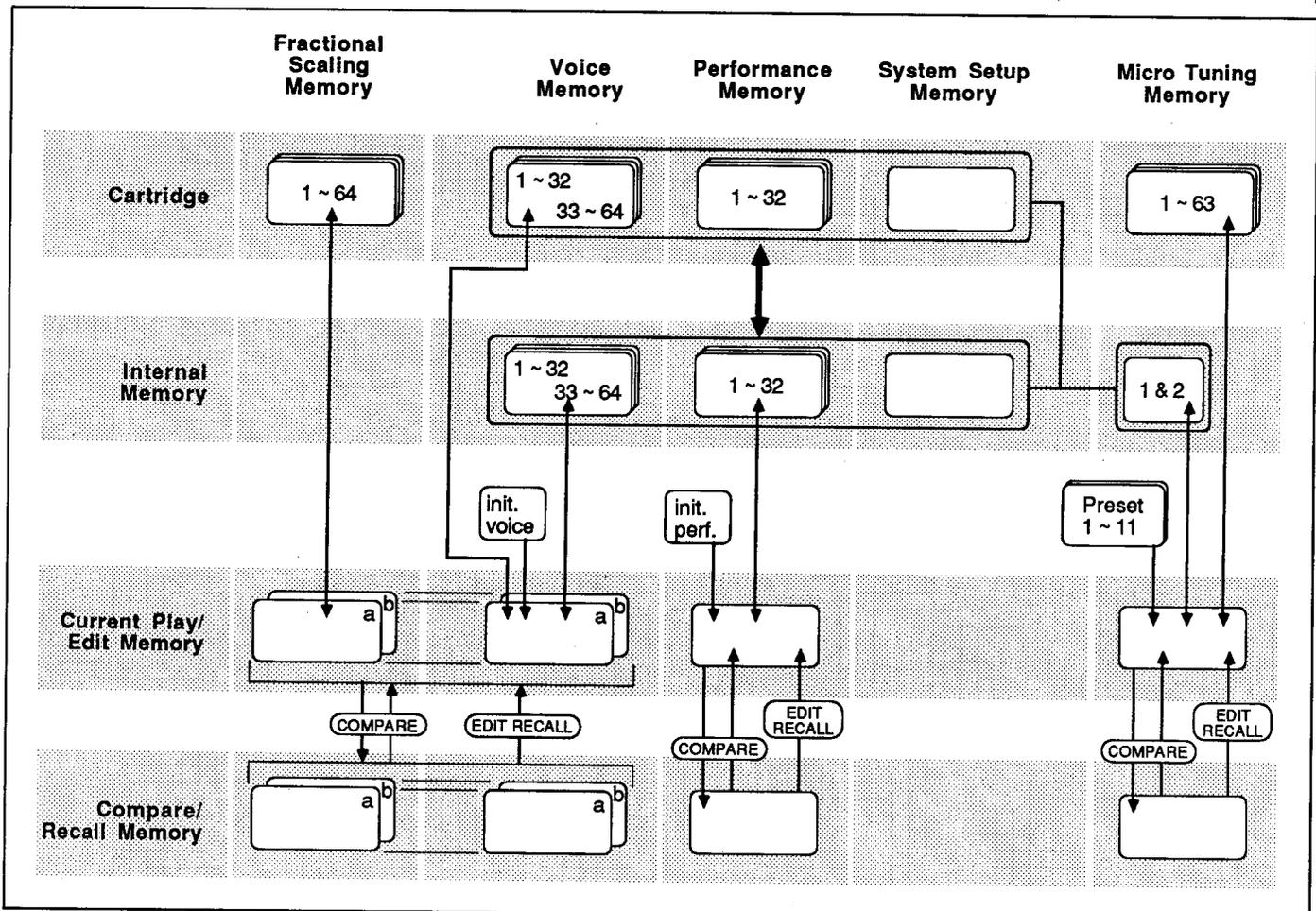
generation of DX instruments offers expanded performance controller connections. The DX7s features connections for two Foot Controllers and one MIDI controller, each of which can be programmed to perform a specific function for each Voice in the memory of the DX7s.

The original DX7 also featured two Foot-switch jacks—one connected to Sustain and the other connected to the various Function parameters involved with Portamento. The new DX7 generation has two Footswitch connections: FS1 is permanently assigned to Sustain, while FS2 is available to control a number of different effects. These features are programmed as part of the Performance Memory in the DX7s.

Performance Memory

The DX7s also features a limited implementation of the new Performance memory that is a major part of the new generation's operational system. Here are the performance parameters

Memory layout of the DX7s.



available on the DX7s:

- FS2 parameters
- CS1 parameters
- CS2 parameters
- Total Volume
- Forced Damp
- Micro Tuning
- Key Shift
- Performance Name
- Voice Number

Fractional Scaling

On the original DX7, Level Scaling allowed a change in level or timbre across the range of the keyboard. It offered a choice of level-scaling curves, plus variable depth.

The new DX7 generation (including the DX7s) provides an enhanced version of this parameter—Fractional Scaling. Using Fractional Scaling, the output level of each individual operator can be varied in 3-key groups for each operator, so that you can create virtually any level or timbre curve. (See the accompanying diagram.)

Micro Tuning

Recently, there has been a lot of discussion about alternate tuning capabilities, often called Micro Tuning. This unique feature is available on the DX7s.

Basically, Micro Tuning lets you tune each key on the keyboard individually. The tuning range can be within a few cents of the original pitch, or it can operate over a range of octaves. You can play Bach in the tuning of his era; or, you can tune the entire keyboard in reverse.

Real Time Parameter Changes

The number and type of controllers available on the new generation of DX instruments dramatically increases their flexibility in performance. In addition, a new capability of the FM technology itself provides unlimited freedom for expressive control.

Real Time Parameter Change is accessible from many of the controllers. There are more than 100 parameters in the basic FM voice that may be changed as part of a Performance. This means that you can actually change the voice and hear the effect while playing in real time.

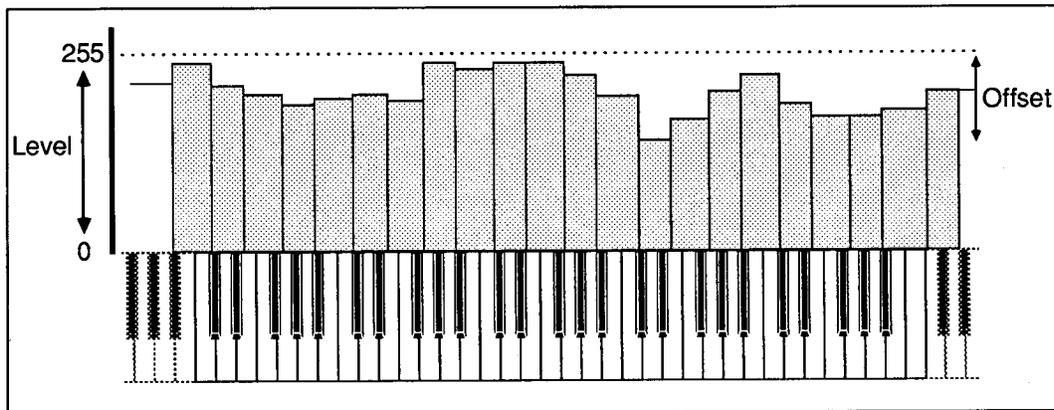
MIDI

Even though the DX7s has limited new features compared to its older brothers, it shares with them an expanded MIDI implementation that represents a major advance over the MIDI features of the original DX7. Here is a list of some of the basic programmable MIDI features on the DX7s:

- Transmit/Receive channel
- Omni mode
- Local on/off
- MIDI In control numbers
- Program Change transmission modes
- Exclusive on/off

Even though the new DX7s doesn't have the Dual/Split capability of its older brothers, it still offers significant musical advances over the original DX7. And, at a list price of \$1495.00, the DX7s gives electronic musicians access to the capabilities of the original DX7 at a substantially lower price.

Fractional Scaling in the DX7s allows you to adjust the output level of each operator for three-note groups.



FM Summer Sessions

WE HAVE RECENTLY RECEIVED information from four universities concerning Summer offerings that will focus on FM digital synthesis and YCAMS (Yamaha Computer-Aided Music Systems). Here is the rundown:

Stanford University

Stanford University's Department of Music will be offering two Summer Workshops in 1987. The first is entitled "Synthesis And Composition On Small Advanced Systems." The two-week course will be offered twice, from 6/22 to 7/3 and from 7/6 to 7/17. The course will include a detailed exploration of the theory and programming of the Yamaha X series of digital synthesizers, and will also include discussion of computer-based modular systems having MIDI connections into synthesis. Lectures (on frequency modulation theory, DX7 programming, relevant acoustics and psychoacoustics, and composition using small computers) are scheduled for weekday mornings, with afternoons reserved for "hands on" application sessions. The course is designed for composers and performers who have had some previous experience with X series synthesizers. Faculty will include John Chowning, Chris Chafe, and Perry Cook. Each session will be limited to 15 participants. The fee for the course is \$950.00.

The second Summer Workshop is entitled "Music Printing On Small Computers." This two-week course will be offered from 7/6 to 7/17. The workshop will concentrate on the use of the MS computerized music printing system, which has been developed at Stanford over a period of more than 10 years. In addition to the main instruction, lectures will be given on problems in real-time computer graphics and on the history and practice of music typography. This workshop is designed for those who wish to be able to present their music in copy that equals the quality of professional publication. Also, attention will be given to musical scholars who might wish to produce a body of musical examples of their dissertations. Small graphic systems similar to the IBM PC will be used. Each student should be able to produce several pages of high-quality hard copy during the session. This workshop, which will be taught by Leland Smith, will be limited to 8 participants. The fee for the course is \$950.00.

Applications and inquiries for both work-

shops should be sent to: CCRMA, Stanford University Department of Music, Stanford, CA 94305; or call 415-725-3572.

California State University

The CSU Summer Arts Institute '87 will present a month of intensive hands-on seminars collectively entitled "Electronic/Computer Music In Contemporary Media," which will be held at California State University San Luis Obispo from July 6th through August 1st. Allen Strange will direct the four one-week sessions, which will focus on various programming, compositional, and production aspects of state-of-the-art computer/electronic music. Integration of these courses with other arts programs in this summer's Arts Institute is designed to generate various interdisciplinary productions in film, video, computer graphics and animation, and dance with other participating Institute students and faculty. The scheduled guest artist/faculty will include Suzanne Ciani, Terry Fryer, Bo Tomlyn, Don Lewis, and Dan Wyman. Yamaha X series instruments will be featured prominently in the seminars. For course details, contact Professor Allen Strange, Department of Music, San Jose State University, San Jose, CA 95192; or call 408-277-2905. For fee/registration and information, write to: CSU Summer Arts Program, 400 Golden Shore Blvd., CSU Long Beach, Long Beach, CA 90802-4275; or call 213-590-5768.

University of Southern California

The USC "Seminar In Electronic Music, Computers, and MIDI," scheduled for July 15-19, will consist of five days of lectures, presentations, classes, exhibits, forums, and performances from distinguished USC faculty and industry professionals. The program will be geared to beginning, intermediate, and advanced applications. The multi-faceted seminar will feature hands-on experience with the latest in microcomputer systems, analog and digital electronic musical instruments, and software interfaces, along with surveys of electronic/computer musics and concepts, multitrack recording and mixing, noise reduction, sampling, re-synthesis, sequencing, synchronization, digital effects processors, electronic music orchestration techniques, alter-

Continued on page 19

Special Summer Courses On FM Synthesis And YCAMS. Compiled by Tom Darter.

TX81Z Voicing

An Overview Of The First TX81Z Voicing Program For The IBM PC. By H.E. Peeler.

Figure 1: The Voicing Editor screen of the TX81Z Graphic Editing System.

Figure 2: The Performance Editor screen of the TX81Z Graphic Editing System.

THE TX81Z GRAPHIC EDITING SYSTEM is a CAV (Computer-Aided Voicing) program written by Bacchus Software Systems for the IBM PC. (For more information on the TX81Z, see the introductory article in the February 1987 issue of AfterTouch.) The most unique thing about this program is that it offers sophisticated object-oriented, mouse-based graphics—features usually found only on graphic-based computers like the Apple Macintosh.

An icon (a small evocative picture) is used to represent each part of the program. Pointing and clicking the mouse on an icon opens a window. Both windows and icons can be moved

anywhere on the computer's display screen to suit your personal tastes.

Overview

The TX81Z Graphic Editing System offers the following important features:

- A Voice Editor to create and modify any voice.
- A Performance Editor to configure the TX81Z as up to eight independent instruments.
- An Effects Editor to control Pan, Single Note Chords, and Transposed Delay effects.
- Extensive data copy, swap, and undo functions.
- Complete Librarian functions, including copy and swap.
- Graphic control panels for complete remote control.
- Context-sensitive pop-up menus.

Since it connects the TX81Z to computer-based data storage, the Graphic Editing System allows you to save and recall an unlimited number of Voice banks on disk. Any voice, including the internal RAM/ROM voices, can be instantly auditioned or retrieved for editing.

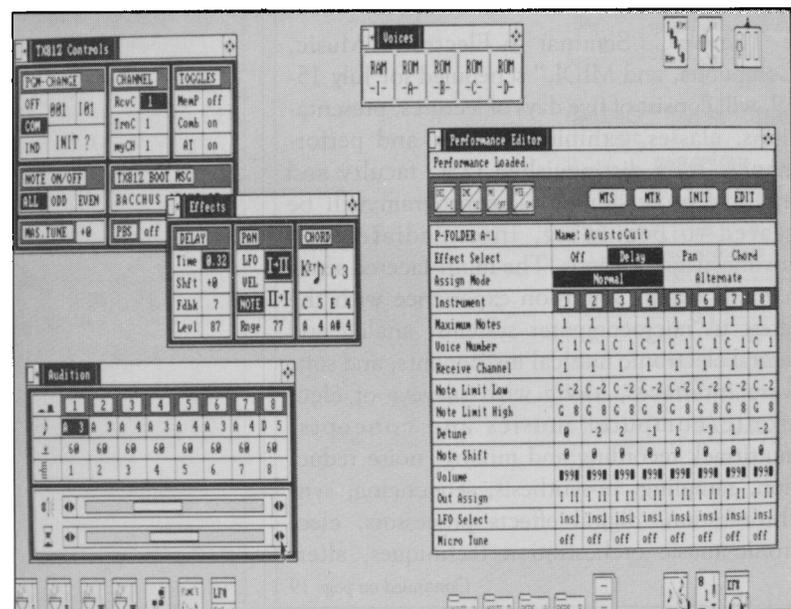
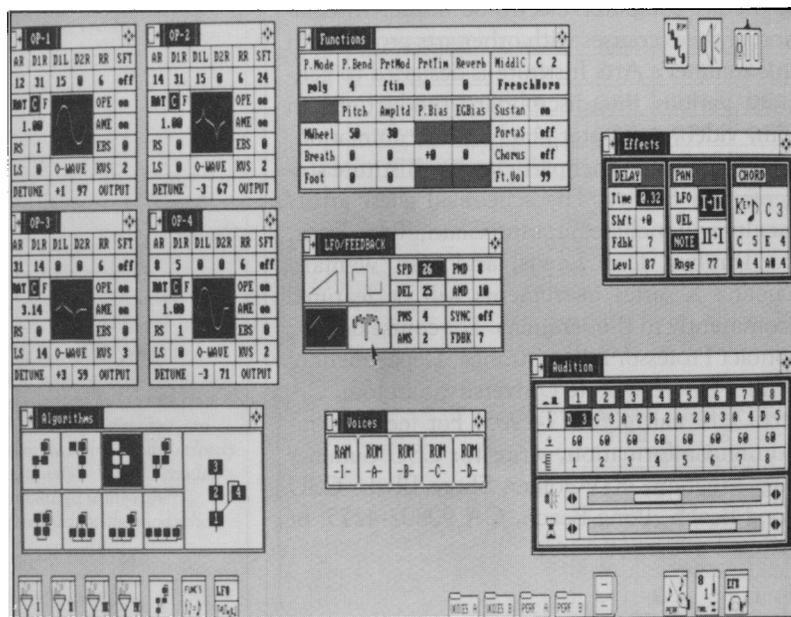
Obviously, the program also makes it possible for you to save and recall an unlimited number of Performance banks on disk, including all Effects, Program Change tables, System Setups, and user-defined Micro Tunings.

All windows are logically separated to provide maximum modularity during the editing process.

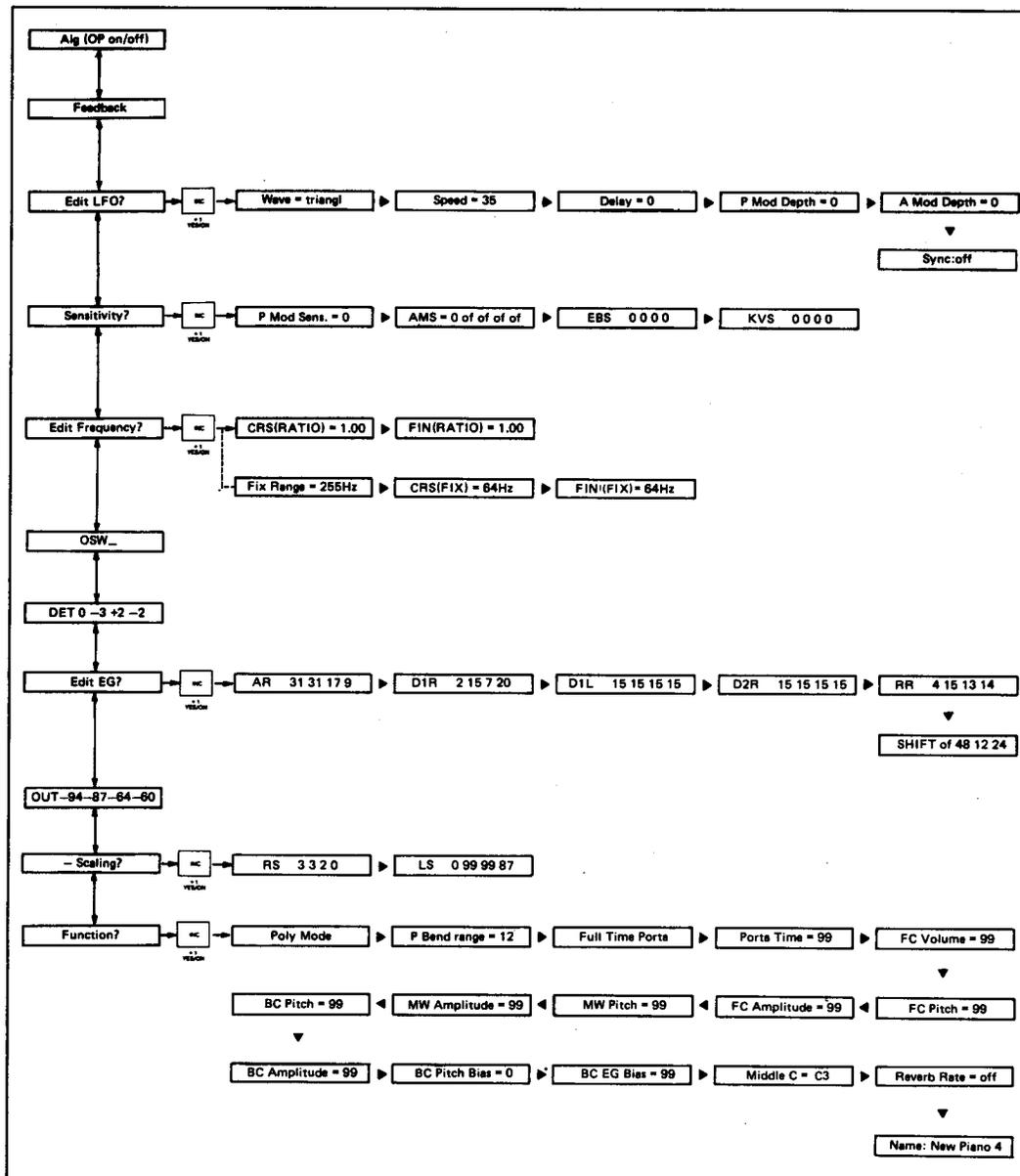
Voicing Editor

The Voicing Editor (see Figure 1) allows you to edit any voice parameter. Each operator is given its own window, with the oscillator wave shown graphically in the center. The Algorithm window shows all eight possible configurations simultaneously. The Function window and the LFO window contain all other voice parameters.

Parameter values are changed by clicking the mouse on either the left or the right side of the parameter selected. Clicking on the left side of the parameter decrements (lowers the value), while clicking on the right side of the parameter increments (raises the value). Clicking the mouse while holding down the "Alt" key on the keyboard allows you to change a value in larger



This chart shows the parameters available in the TX81Z's Single Edit mode.



increments. If a window presents several choices, as in the Algorithm window, simply click the mouse on the desired choice.

Performance Editor

The Performance Editor (see Figure 2) allows you to configure the TX81Z as up to eight independent instruments. You can select an Effect (Delay, Pan, or Chord), and then use the Effects Editor for precise adjustments. While building a Performance, any instrument voice can be muted, so that you can focus on a particular sound.

Also shown in Figure 2 is the Audition window. This window allows all changes to be

heard as they are made. Up to eight trigger notes can be sent. In Performance Mode, each note can trigger a separate instrument. You can also copy and swap instruments.

The TX81Z Graphic Editing System represents a major breakthrough in Computer-Aided Voicing programs for the IBM PC. It offers a refreshing, graphics-oriented environment as its basic interface with the TX81Z.

The suggested retail price of the TX81Z Graphic Editing System is \$199.95. For more information on the program, contact Bacchus Software Systems, 2210 Wilshire Blvd., #330, Santa Monica, CA 90403, or call 213-820-9145.

TX81Z Voicing

**An Overview
Of The First
TX81Z Voicing
Program For
The Apple
Macintosh. By
K.C.
Youngdale.**

THE TX81Z IS THE NEWEST PRODUCT in the evolution of Yamaha FM synthesis. It is perhaps the most sophisticated synthesizer module Yamaha has created. The TX81Z is a 4-operator FM digital tone generator that uses the same set of algorithms that are found in the DX21/27/100 synthesizers. But the similarities end quickly. The TX81Z has a whole new set of operator waveforms in addition to the standard sine wave. This makes it possible to create more complex tones with fewer operators. It is multi-timbral (able to play up to eight *different* sounds at once), it has special effects such as delay and panning, and it is capable of producing microtonal scales like the DX7 II FD/D. (For more information on the TX81Z, see the introductory article in the February 1987 issue of *AfterTouch*.) Given all of these new features, it is very important to keep track of all of the information involved; however, only the merest fraction of the relevant data can be seen on the TX81Z's LCD display at any one time.

The combination of MIDI instruments and MIDI software on a personal computer is recognized by many to be very useful. One great example of this usefulness is a new program designed to help in voicing and organizing the contents of the TX81Z from Digital Music Services (DMS) of Laguna Hills, California. The program is called TX81Z PRO, and is available for the Apple Macintosh, which is rapidly becoming the personal computer of choice for a large number of musicians working with MIDI and synthesizers.

Overview

The main purpose of TX81Z PRO is to edit, organize, save, load, and print the information in the TX81Z. These functions are accomplished using the standard Macintosh environment, with multiple windows and graphics.

One of the first things you will notice when running this program is the thin window on the left hand side of the screen (see the accompanying illustration). This window is called the Sidebar. The Sidebar has four sections: Voice, Performance, Micro Tuning, and Utility. Each icon in the Sidebar represents a window. Clicking the mouse button on these icons can be used to open and select windows. The icons in the Sidebar change to indicate if a window is open or selected. This is helpful, since you can open windows and keep track of them easily.

Windows

TX81Z PRO has two basic types of windows: data storage windows and editor windows. There are two kinds of data storage windows: bank windows and library windows. Bank windows provide several data storage locations (similar to the banks of voices in the TX81Z). Library windows are similar to bank windows, but they can hold much more data, and can be alphabetized and scanned for duplicate data. Editor windows let you edit the parameters of the selected data.

Bank Windows

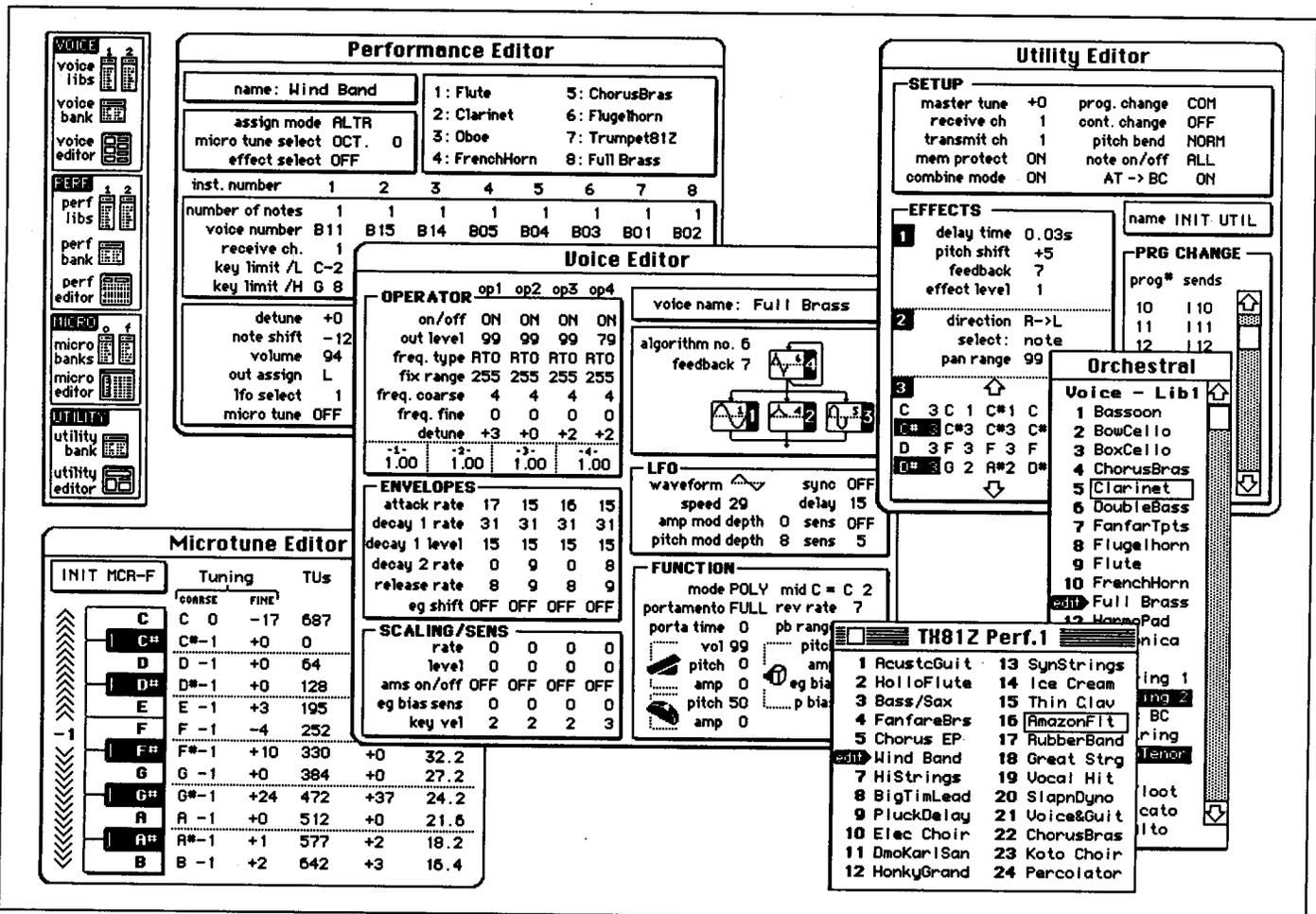
There are five bank windows. The Voice and Performance banks work just like the RAM Voice and Performance banks in the TX81Z (32 Voices in the Voice bank and 24 Performances in the Performance bank). There are two different Micro Tuning banks, one for each of the Micro Tuning types—octave and full. Each of these banks contains 16 tunings that can be instantly loaded into the TX81Z. The last bank is the Utility bank. Each of the 24 memories in the Utility bank contains a System Setup, the settings for the three Effects, and the Program Change table.

Library Windows

There are two Voice library windows and two Performance library windows. Each of these libraries can hold up to 200 memories. This lets you work with 400 Voices and 400 Performances in memory at once!

Organizing Banks & Libraries

Data in banks and libraries can be organized using the usual Macintosh copy and paste techniques. You can use the Shift key (or drag over the desired area) for multiple selections. Swapping two voices is easily accomplished by holding down the Command key and dragging one voice to the other voice's position. The most powerful organizing feature, however, is that libraries can be alphabetized or scanned for duplicate data. If there are any duplicate voices found, they are automatically removed from the library. This really helps when you wind up with lots of patches, and need to organize them later.



Editor Windows

There are four editing windows: the Voice Editor, the Performance Editor, the Microtune Editor, and the Utility Editor (see the accompanying illustration). Unlike the TX81Z's LCD, each editor allows you to see and change all of the parameters in a window.

The **Voice Editor** is organized into six sections: operator, envelope, scaling/sensitivity, algorithm, LFO, and function. In the algorithm section of this editor, the algorithm is displayed as a picture. The waveforms are graphically displayed to each operator. To change the waveform, all you need to do is click on the waveform and drag the mouse. This gives you a lot of information about the voice at a glance.

The **Performance Editor** is organized into four sections: global settings, voice names, basic voice settings, and voice output settings. One outstanding feature of this editor is the voice names section. This allows you to see all of the voice names that make up the Performance.

This lets you quickly identify the components of a Performance.

The **Microtune Editor** shows an entire octave of tunings at a time. The current octave is numerically displayed to the left of the keyboard graphic. In addition to the information that is in the TX81Z LCD, delta cents (deviation from standard equal temperament) is also displayed. To try out the micro tunings, the keys on the keyboard graphic can be clicked on to play the TX81Z.

The **Utility Editor** is used to edit three kinds of data: System Setup data, settings for the three Effects, and the Program Change table. This editor lets you change any of the TX81Z's Effects (delay, pan, and chord play), the Program Change table, and the System Setup information of the TX81Z.

Editing

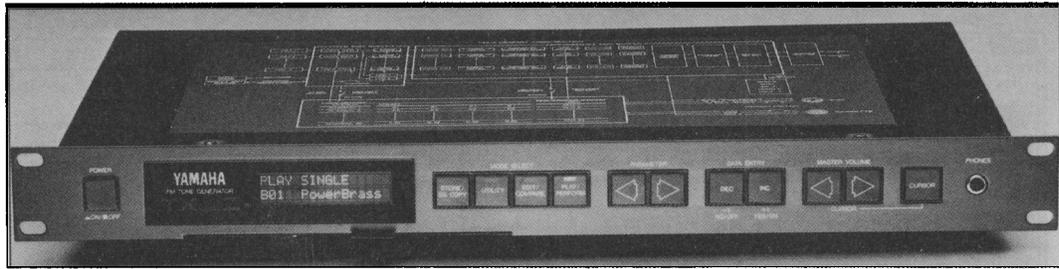
Editing is accomplished in the same manner in all of the editor windows. For instance, if you

This graphic shows some of TX81Z PRO's windows.

TX81Z Voicing

Continued

TX81Z FM digital tone generator.



want to edit a voice, you start by double-clicking on the voice you wish to edit (in either a bank or a library window). The "Edit" indicator will appear pointing to the voice name in the bank. All of these voice's parameters will then appear in the Voice Editor. You can change a parameter in the Voice Editor by clicking on it (the parameter will appear in bold type), and dragging the mouse button left or right to change the value.

As you move the mouse, you can instantly see the value change in the Voice Editor and in the TX81Z's LCD. In order to hear the changes, you can play the TX81Z from the Macintosh keyboard or from a MIDI keyboard. Either way, you can change parameters and play simultaneously. Optionally, you can change parameters by typing in the numeric value, or you can use the "+" and "-" keys to change the parameter by a small amount. Once you get the hang of it, you'll be changing parameters so fast that you'll wonder how you had the patience to do it the "old" way.

Storing Edited Data

To save your edited data, you have several options: 1) you can save over the original; 2) you can put the edited voice in any location in the bank; or 3) you can store it in a library. TX81Z PRO also has a unique auto-store feature that can save edited voices (and performances) automatically. For example, if you have edited a voice in the Voice Editor and then double-click on another voice to edit (without having saved the previous edit), the voice in the Voice Editor will always be stored at the end of the selected library. This is great for making lots of edits without having to worry about where to save your edited voices.

Printing

TX81Z PRO produces high quality printouts on both the ImageWriter and LaserWriter

printers. Examples of these can be found in TX81Z Voice and Performance printouts in the pages of AfterTouch. To print Voice data, simply highlight the voices you want to print and select "Print." You can also get a list of the names in a bank or library by selecting "Print Catalog."

Templates

Another special feature of TX81Z PRO is its ability to remember and recall the organization of the windows on the screen. These are called templates, and can save a great deal of time. For example, when you are working with performances you may wish to have the Performance Editor, bank, and libraries all visible at once on the screen. When working with voices you may wish to have a Voice bank and both libraries all displayed together. By storing the screen locations of the windows, you can switch rapidly from activity to activity with a single click. When the program is started, Template 1 is selected, so that you can have the desired windows appear in the desired places on the screen when you start. Of course, if you have one of those new big accessory screens for your Mac (like the E-Machines Big Picture), you can show *all* the windows at once!

TX81Z PRO was designed and written with the needs of the TX81Z owner in mind. It is simple to use, and adds a great deal of power, organization, and flexibility to the Yamaha TX81Z. Included with the program is a Voice Data Disk that has many example banks of Voices, Performances, Micro Tunings, and Utility data to get you started.

Obviously, the best way to evaluate a new software product is to try it out. Demo disks can be obtained from DMS for \$5.00. TX81Z PRO's suggested retail price is \$139.00. For more information about TX81Z PRO, contact Digital Music Services, 23010 Lake Forest Drive, Suite D334, Laguna Hills, CA 92653; or call 714-951-1159.

Summer Sessions

Continued from page 13

nate tuning systems, CAI and educational software, and electronic music for cinema and television. Representatives from a number of major synthesizer and computer manufacturers, together with USC and other field professionals, will be on hand during the five days to assist those enrolled. The Seminar is available for university credit at \$351.00, for non-credit full participation at \$200.00, and for more restricted auditor participation at a cost of \$50.00 per day. For further information, write to the School of Music, Ramo Hall 112, University of Southern California, Los Angeles, CA 90089-0851; or call 213-743-3958.

University of Chicago

The University of Chicago's Department of

Music will offer an "FM Synthesis/MIDI Seminar" from July 20-31. The focus of the seminar will be the Yamaha Computer-Assisted Music Systems (YCAMS), including the DX7 II D, TX81Z, QX5, RX5, DMP7, and CX5M II. Faculty and guest lecturers will include Easley Blackwood, Joel Chadabe, John Chowning, Jim Cooper, Terry Fryer, David Garibaldi, Gary Kendall, Howard Massey, Howard Sandroff, Curtis Smith, Morton Subotnick, Bo Tomlyn, Gerry Tschetter, Lachlan Westfall, and others. Seminar tuition (including all course material) is \$1195.00. For information and registration, write to: FM/MIDI Seminar, University of Chicago, Office of Continuing Education, 5835 South Kimbark Avenue, Chicago, IL 60637; or call 312-702-1722

LET US HEAR FROM YOU! We want AfterTouch to be an information network for all users of Yamaha professional musical products, so please join in. We're looking for many different kinds of material.

Have you created an incredible patch for the DX7, the DX100, or any of the other members of the Yamaha FM digital synthesizer family? How about a program for the CX5M music computer or a great pattern for the RX11? Send in your patches, programs, and patterns. If we use your material, we'll give you full credit plus \$25.00 for each item used.

Have you discovered a trick that increases the musical flexibility of one of the Yamaha AfterTouch products? Send it in to our "FinalTouch" column. If we use your hot tip, you'll receive full credit plus a check for \$25.00.

Have you developed a new approach to one of the Yamaha AfterTouch instruments, or have you discovered an important secret regarding their use? Put it on paper and send it to us. Don't worry about your writing style—just get the information down. If we decide to use your material as a full article in AfterTouch, we'll write it up, put your name on it, and send you a check for \$100.00. (An AfterTouch article always covers at least one magazine page—which translates to at least four double-spaced pages of typescript.)

By the way, we cannot assume liability for the safe return of unused ideas, patches, or manuscripts. We will only be able to return unused material if you enclose a self-addressed, stamped envelope with your submission.

If you just have a question regarding the use of Yamaha professional musical products, send it along too, and we'll do our best to answer it in the pages of AfterTouch. (We regret that we won't be able to answer questions through the mail, but we will use all of your questions to guide us in our choice of future topics.)

Finally, if you just want to get something off your chest, or if you'd like to establish direct contact with other Yamaha AfterTouch product users, send in something to our letters column, "Touch Response." We'll do our best to print names, addresses, and phone numbers of all those who are interested in starting up regional users groups.

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