

GREY MATTER RESPONSE E! ENHANCEMENT FOR THE YAMAHA DX7II/DX7S

By Mark Vail

E! for the DX7II/DX7S

Description: Internal enhancement board for Yamaha DX7II or DX7S.

Memory: 256 single-voiced user-programmable patch locations with function parameters stored, 128 performances. 32 tunings, 22,000-note sequencer capacity, 220,000 note disk storage on DX7IIFD.

Features: Eight-voice multi-timbral mode with dynamic voice allocation or programmable track polyphony. One-key 16-track autoaccompaniment and chording. 16-track MIDI sequencer, real-time and step-time recording, post-recording quantization, step editing, internal/external MIDI sync. individual track volume and velocity control. Real-time mixing in performance mode. Transmits and receives on all 16 MIDI channels simultaneously. 16-track MIDI channel mapping.

Dimensions: 71/4" x 31/4".

List Price: \$399.00.

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YOU MIGHT INFER FROM OUR FEAture on the American synthesizer industry (see page 42) that times have been better. The truth is, there's a thriving business going on—perhaps not in the production of synthesizers per se, but rather in the development of products that enhance other manufacturers' instruments. Sometimes (whether by luck or foresight), these specialists latch onto an item whose sales rocket into the stratosphere, taking the smaller company along for a profitable ride.

Such is the story of Grey Matter Response, who soared to these heights in early '86 with the first H, an add-on board for the original DX7 [see Keyboard Report, Apr. '86]. E! expanded the DX7's internal memory from 32 to 256 patches, and provided for storage of control functions, microtonal tuning, and enhanced MIDI implementation. Grey Matter upped the ante with an improved E! [see Keyboard Report, May '87] in time to pacify the DX7 owner who may have been drooling over the just-released DX7II.

Apparently, the Grey Matter people felt a stock DX7II or DX7S could be improved as well, so now they've jumped into the ring with a new E!. What, you may ask, can \$399 get you for your shiny black FM machine? Would you believe eight-voice polytimbral capability? Would you believe a four-layer performance mode? Would you believe one-key control of arpeggios, ostinato patterns, and multi-timbral chords? Would you believe a 16-track sequencer? Would you believe two cops in a rowboat?

Yes, E! has all of these, except for the cops and the boat. Put this in your pipe and your DX7II will never be the same, Chief. So what effect will E! have on your music? Well, 99, it depends on how smart you are and whether you can figure out how to use all these features.

Overview. Engine is E!'s 16-channel event processor and operating system, which controls all of the DX's MIDI and performance functions. Its capabilities include storage of 256 patches and 128 performances, 16-channel MIDI mapping, and two auto-accompaniment modes. To top it off, you can store any setup (auto-accompaniment, MIDI maps, sequences) as a Performance, so a single DX button can be programmed to load everything you need. It will even load a file on the DX7IIFD's disk automatically. The other main modules in E! are Octal and SE!quencer.

E! provides access to multi-timbral capabilities that are inherent in the DX7II's sound chip but aren't accessed by Yamaha's operating system. Octal mode provides eight-patch polytimbral, 16-note polyphony with dynamic voice allocation, stereo panning, volume and velocity control for each voice, and real-time mixedown. The mixdown screen allows you to move the DX's cursor to each track and then use the data slider for volume values ranging from 1 to 128.

SE!quencer. The specs of H's on-board sequencer are impressive: 16 tracks, internal storage for a total of 22,000 notes in 32 patterns and ten songs. The DX7IIF13's built-in disk drive allows you to store up to ten songs of up to 22,000 notes each on a 3.5" disk. MIDI Song Position Pointer is not supported by E!, so if you sync SE!quencer with an external drum machine or sequencer, you'll need to start both from the beginning each time you want to play a sequence.

E!'s sequencer reminds us somewhat of the sequencer found in Ensoniq's ESQ-1 and SQ-80. It even has the same dynamic voice allocation capability, a powerful feature that you won't find on too many synths, even the multi-timbral ones. However, where the Ensoniq sequencers have buttons specifically hard-wired for sequencer operation, SE!quencer depends on the DX's front panel controls for multiple functions, including the sequencer.

E!'s pattern status display informs you of the current track number, pattern number, and tempo value. When you're ready to record a new pattern, it's easiest to first define a destination for each track, whether it's an internal DX patch or a MIDI channel number with a patch number. A track can be assigned to any of eight DX patches or one of the 16 MIDI channels, but not both. Internal DX patches are assigned to Voices A through H, and these in turn can be assigned to more than one track. Be careful to assign a separate voice letter to a track if you want to change the patch on that track without affecting other tracks.

The mixer menu for the DX voices is accessible during playback in Performance mode, so you can change the relative volumes of the individual tracks. In SE!quencer, however, the pattern or song must be stopped to change track volumes in the mixer menu. While velocity response and level can be set for MIDI channels, there is no provision for MIDI volume control of external instruments. Individual track volume levels can be recorded throughout each pattern.

With your track assignments completed, you can enter record mode, where alternatives are song, pattern, or tempo. While we're contemplating our next move, let's talk about recording a tempo. A static tempo (ranging from 77 to 204 beats per minute) can be set for a pattern, but E! also lets you record a dynamic tempo track with the data slider for each pattern, a really nice feature. E! reminds you to center the data slider before starting, so that you won't have sudden changes in tempo. There are three ranges of tempo offset: narrow (-4 to +3), medium (-16 to +15), and wide (-64 to +63). You must choose which range you want during the lead-in, so be ready to set the tempo range. We don't understand why you can't make this

selection beforehand. If you don't like the results of your tempo track, you can either re-record it or erase it. Note that the final value of a tempo track will control the patterns which follow, unless a new tempo track is encountered.

Each track of a pattern can play up to 16 notes simultaneously, and a pattern can be from one to 64 bars long. The initialization of a new pattern includes choices of time signature, pattern number (corresponding to the 32 patch buttons on the front panel), and number of bars. Time signatures range from 1/2 to 16/16 (the numerator increments by ones, the denominator by twos). Unfortunately, a truncating function is not provided, so you're stuck with the total number of bars you choose at this time.

Probably the most important data screen in E! is the track assign menu. In Octal or SE!quencer, track assign is responsible for a specific track's patch (**DX or MIDI**), transposition value (-24 to +24), and velocity response and level. Velocity response choices include normal, POS1, POS2, and NEG. POS1 outputs a higher velocity than that actually played, compensating for the DX's inherently low maximum velocity output, while POS2 emphasizes the low and high velocities. NEG reverses the response, so that playing softly sounds loud and vice-versa. Using one voice with normal or a positive response and another with negative response, you can cross-fade between the two depending on how hard you hit the keys. Velocity level allows you to control the volume of an internal DX patch or an external MIDI device that responds to velocity information. Level settings range from 01 to 08 (an increase in value corresponds to a greater velocity output).

Performance modes featured by E! are: Normal, which is the original DX7II performance mode; Track Hi, in which all notes play the Track 1 voice, and the highest note also plays the Track 2 voice; FlotSplit, a floating split mode which attempts to separately follow your hands and assign Track 1 to your left hand and Track 2 to your right hand (more on this below); 8-Way Split, which has eight programmable keyboard split points (but no layering); Chords and Player (see below); and 4-Way layer. This last mode allows you to stack tracks 1 through 4, each of which can be either playing an internal sound or transmitting over MIDI. If only internal voices are used, a four-layer stack will be limited to four-note polyphony. In FlotSplit, if you move your left hand up to within a minor tenth of the highest right-hand note, the voice is switched to the upper sound. The internal logic of FlotSplit may seem confusing at first, but once you understand it, you can use it effectively in performance.

Chords and Player are auto-accompaniment performance modes, similar to functions normally found on home organs and consumer keyboards, which can be triggered by hitting a single key in the bottom octave of the DX's keyboard. Using Chords, you can arrange 16-track multi-timbral chords. In Player, you can create 16-track arpeggios and ostinato patterns. Both Chords and Player can send data over eight MIDI channels in addition to controlling the DX multi-timbrally. Each track of a Chord or Player pattern can feature its own volume and velocity response parameters, so the real-time control you gain is marvelous. For example, you can program the bass guitar track so it really gets rambunctious when you pound the control keys, but settles down as you hit the keys more softly. You can also program each key to have an alternate setting, which is triggered if the key is struck at the same time as a note below it. So you could have Player set up to play an arpeggio in a major key normally, and the alternate could be in minor. The chord types and accompaniment patterns are preset, however.

One thing that we noted while playing with Chords and Player is that you must play very cleanly. If you don't completely let up a note before hitting the next one, E! will read this as two notes and play the alternate selection I or the upper key. In Chords mode, if you change keys too quickly, you can end up with no chord playing at all.

Each time you enter the record mode in SE!quencer, you're asked if you want to initialize the pattern or song (depending on which function you're working on). If you've already initialized your memory work space, you can answer "no" to the request and continue. After you initialize the pattern, you must decide whether you want the click track to count down a lead-in prior to the start of recording. The lead-in can be from one to eight beats, and will remain part of the pattern until you irreversibly delete it. Note that the lead-in and the click track are performed by Track 16, so you must designate a voice for the click track. The first click of each measure is higher-pitched than the rest of the beats in the measure. Besides the audible click track, a single dot blinks in sync on the left LED readout.

Once you've recorded a new track, you can preview it, quantize it, erase the lead-in, strip controller data from the track, or keep (compile) the track. If you choose to preview the track, you'll hear only one repetition of what you played on that track (and the click track, unless you temporarily defeat the latter). The single-voice mode select button will toggle SE!quencer between record and play modes, so if you want to hear all tracks of a pattern, you can quickly switch to play mode for an audition. In this play mode, E! will loop the pattern until you stop it. You can also solo a single track in play mode.

Quantize values range from a quarternote to a 32nd-note triplet, and the process is note-length-coherent. Once you've quantized a track, you can preview it. If you don't want the quantized version, the original recording will be restored.

While we're talking about copying tracks, one really cool feature is that you can insert an offset value for the new track. The new track can be shifted from -64 to +63 clocks in relation to the original track—great for pre-echo, chorusing, or echo effects. You can also copy an entire pattern, but you can't copy a region of one track or pattern to another.

There are a number of editing functions missing from SE!quencer. It doesn't have an option to merge tracks. With 16 tracks to work with, this might not be critical, except that you also can't punch in to replace a small portion of a track. Another editing function which isn't provided is the ability to truncate or extend the length of a pattern after it's been initialized.

When you accept a freshly recorded track, E! compiles it into memory and automatically advances to the next track for recording. This can make the recording process quicker and easier. If you exit record mode to edit a just-recorded track, remember to check the display to make sure you're working on the right track.

Two edit modes are provided for working on a pattern: event edit and step record. Event edit allows you to step through a track from one event to another. E! displays the current position in bar, beat, and clock numbers; key-on events as note name, octave number, and hexadecimal values for velocity and duration; and controller data as to its type and hexadecimal value. The DX's key set buttons allow you to step forward or backward from event to event. You can either delete an event or edit its parameters, but you can't insert a new event. In the case of a note event, you can change the note name, its velocity, or its duration, but you can't change its starting time. You can change the value of a controller event, or change the controller number itself. Granted, changing a single controller event to an entirely different one isn't something you'd commonly do, but the capability is there if you want to get exotic. After you've made any changes, you can preview the track (from the beginning of the pattern) to check out your edit. If you don't like what you've done, you can choose not to keep the track, and the track will be restored as it was (sort of an "undo" command).

Step recording allows you to enter note data on a track at specific time locations. E! displays the bar, beat, and clock numbers, and step increments from one clock to note values of a 32-note triplet to a quarter-note can be adjusted with the data slider. Controller data won't be recorded in step record, but after-touch and velocity are stored along with note data.

Two alternatives are available for putting together a song: You can use a step editing mode to arrange the patterns of a song, or you can play the patterns in real time, and E! will record the order of the patterns. Each change of a pattern in the song equals a single step, and a song can have a total of 256 steps. E! counts each seven repeats of the same pattern as one step.

When editing a song, you work with the song status display, which tells you song, step, pattern, and repeat numbers. Steps can be deleted or inserted at any point in a song.

Voyeur. This is the MIDI monitor program. It displays all incoming MIDI data in its pure hexadecimal form on the DX's screen. The DX does not output any sound in this mode. There is no buffer to store any significant amount of incoming data, but hitting a button will freeze the display. When you hit it again, Voyeur jumps to the current MIDI data flowing into it. This feature could be enhanced with a buffer and controls to step forward or backward through the MIDI data. And be sure to have your MIDI reference guide to tell you what all those hex figures mean, as there is no data readout in English.

Expanded Microtonal Tuning. E! expands the DX's memory for microtonal tunings to 32 locations, and gives you a 12-tone compiler to make it easier to configure your own 12-note-per-octave tunings. You define the coarse and fine tuning value for each note of an octave, and E! retunes the same notes in each octave.

Alternative Storage for DX7IID and DX7S Owners. E! provides two MIDI data dump formats. One stores all data: patches, microtunings, performances, patterns, and songs. This format allows you to send data from one E!-equipped DX7II or DX7S to another. The second format consists only of sequencer files for external storage in a generic MIDI librarian program.

Installation. E! is installed from the underside of the DX7II or DX7S, not through the top, as on the old DX7. E! is shipped with installation directions, but Grey Matter recommends you have your instrument technician install the E! circuit board. The E! circuit board for the DX7II is slightly smaller than the version for the DX7 and is connected directly to the underside of the synthesizer's circuit board, where it is held firmly in place by two screws.

The owner's manual, unfortunately, is quite sketchy. Many basic procedures are simply not explained, and it's assumed throughout that you're completely familiar with programming your DX711.

Conclusions. Depending on how you use your DX711 or DX75, you may find H'sextra functions superfluous or a godsend. E! is geared toward the performing musician who could use a basic sequencer, auto-accompaniment functions, eight-voice multitimbral polyphony, expanded microtonal tuning storage, more internal patch and performance memory, and velocity cross-fading. The sequencer doesn't feature all the bells and whistles of some of the current software or dedicated sequencers, but it is good for writing demos and working on musical ideas while you're on the road, or if you don't own a sequencer yet and would like to have one **that also** adds power to your DX. Lots of great features at the touch of a few buttons - so when are the E! people going to break down and design a whole synthesizer from scratch?