DMX MIDI / MEMORY EXPANSION

The DMX MIDI / MEMORY EXPANSION expands the system capability of your Oberheim DMX Drum Machine by adding MIDI input, MIDI output and increasing the total events to 7000.

HOW TO USE THIS MANUAL

This document is intended as a reference to the new features of the DMX and assumes that you have a working knowledge of the DMX. We suggest trying these features as you read them. If you have trouble understanding the following sections, please consult the DMX Owner's Manual. If an example in the manual doesn't work as described, please check the corresponding section in this addendum, as many functions have changed.

NEW FEATURES

The DMX Rev. 4 software provides new operational features. Some of these features are new; some were added with Rev. 3. To clarify all the features we will assume you do not have Rev. 3, but will note the changes in edit modes available in Rev. 3 but removed in Rev. 4.

Revision 3	**Revision 4**	**Revision 3**	**Revision 4**
0 AUTO START OFF	0 AUTO START OFF	14 BAR NUM ON	14 SET DRUM OUTS
0 AUTO START ON	0 AUTO START ON	14 BAR NUM OFF	
1 NO SYNC INPUT	1 MIDI CLOCK	15 DISP CLICK ON	15 SET EXT TRIGS
1 SYNC IN ON	1 DMX CLOCK	15 DISP CLICK OFF	
1 SYNC IN OFF	1 EXT CLOCK 24		
1 AUTO/SYNC ON	1 EXT CLOCK 48		
	1 EXT CLOCK 96		
2 SYNC OUT ON	2 CLOCK OUT 24	16 CLICK ON ONE	16 RCV CHAN 1...
2 SYNC OUT OFF	2 CLOCK OUT 48	16 STEADY CLICK	
	2 CLOCK OUT 96		
3 REC COUNT ON	3 REC COUNT ON	17 SET PGMD CLICK	17 XMIT CHAN 1...
3 REC COUNT OFF	3 REC COUNT OFF		
4 PLAY COUNT ON	4 PLAY COUNT ON	18 SET DRUM OUTS	18 OMNI MODE ON
4 PLAY COUNT OFF	4 PLAY COUNT OFF		18 OMNI MODE OFF
5 PLAY CLIK ON	5 PLAY CLIK ON	19 SET EXT TRIGS	19 XMIT TIME ON
5 PLAY CLIK OFF	5 PLAY CLIK OFF		19 XMIT TIME OFF
6 CNT SIGNATURE	6 CNT SIGNATURE	20 PLY SWING OFF	20 MIDI ECHO OFF
6 CNT 4 CLICKS	6 CNT 4 CLICKS	20 PLY SWING ON	20 MIDI ECHO ON
7 BEATS/MIN	7 BEATS/MIN	21 SET SWING/FLAM	21 MIDI SONG ON
7 FRAMES/BEAT	7 FRAMES/BEAT		21 MIDI SONG OFF
8 SONG LOOP ON	8 SONG LOOP ON	22 PLAY FLAM OFF	22 SET MIDI DRUM
8 SONG LOOP OFF	8 SONG LOOP OFF	22 PLAY FLAM ON	
9 VAMP ON	9 PROGRAM TEMPO	23 LONG FLAM ON	23 TRANSPOSE
9 VAMP OFF	9 MANUAL TEMPO	23 LONG FLAM OFF	
10 PROGRAM TEMPO	10 SONG TIME ON		
10 MANUAL TEMPO	10 SONG TIME OFF		
11 BEEP ON	11 BAR PLUS BEAT		
11 BEEP OFF	11 RUNNING STEP		
12 >REPEAT ON	12 CLICK ON ONE		
12 >REPEAT OFF	12 STEADY CLICK		
13 NORM RESPONSE	13 SET PGMD CLICK		
13 FAST RESPONSE			

EDIT PARAMETERS
Many parameters of the DMX may be set by the user. Access to these parameters is through the EDIT key, except while in Select Song mode where the EDIT key is used to create or display parts of Songs. Use the "<" and ">" keys to move between EDIT PARAMETERS, or type in the number of the parameter to be changed. Unless otherwise stated, the STEP key is used to change the parameters.

Revision 4 EDIT MODES

DISPLAY READS	PARAMETER DESCRIPTION
0 AUTO START OFF	When AUTO START is OFF, the DMX will not respond to any external clock signals until you press PLAY.
0 AUTO START ON	When Auto-Start is ON, external signals (EXTERNAL CLOCK, MIDI CLOCK, or SYNC-TO-TAPE) will cause the DMX to enter play mode automatically. **The DMX will ignore any external clock signals, including MIDI CLOCK, unless AUTO START is turned ON.** Because the DMX is always looking for a clock signal in this mode, any signal (even noise or static) that is present at the CLOCK IN or SYNC IN jacks will place the DMX in Play. This may cause occasional false starts. However, the DMX will not false start in SYNC-TO-TAPE Mode once it locks on to the leader tone present at SYNC IN. You can only Auto-Start from Select Sequence or Select Song modes. Auto-Starting the DMX from an external clock source cannot occur if the DMX is displaying TEMPO or QUANTIZE or any of these EDIT Modes, for example.
	TIMING SOURCES The DMX derives its timing from a number of sources, both internally and externally. The following Edit Parameters describe how the DMX can be used in a variety of interfacing situations.
	DMX as the Master
1 DMX CLOCK	When selected, the internal clock source of the DMX is used and the DMX can be used as a stand-alone instrument. If selected, this parameter is used in tandem with Edit Parameter 2 CLOCK OUT to select the rate of its clock output. The DMX will always output a MIDI CLOCK in this mode as well.
	DMX as a Slave
1 MIDI CLOCK	When selected, the clock source is received from MIDI IN at a rate of 24 clock pulses per 1/4 note. Unlike external Clock-pulses, the DMX clock rate of 24 clock pulses is standardized and makes the DMX's timing compatible with all MIDI instruments.
1 EXT CLOCK 24	External Clock 24. When selected, the clock source is received from EXT CLOCK IN at 24 clock-pulses per 1/4 note.
1 EXT CLOCK 48	External Clock 48. When selected, the clock source is received from EXT CLOCK IN at 48 clock-pulses per 1/4 note.
1 EXT CLOCK 96	External Clock 96. When selected, the clock source is received from EXT CLOCK IN at 96 clock-pulses per 1/4 note.

1 SYNC TO TAPE Enables the DMX to slave to its own sync tone recorded on multi-track tape. Sync-To-Tape can only be accessed when there is a plug in the SYNC-TO-TAPE IN jack. If SYNC-TO-TAPE IN is not connected, this option will not appear on the display.

When a plug is first inserted, Sync Mode is **automatically selected** although you may still change this by stepping through the other choices. The DMX will output Sync-To-Tape timing data whenever in RECORD or PLAY and will output a leader tone while in STOP or any other modes.

IMPORTANT NOTE:
The DMX has the ability to output timing pulses while it is being slaved, but please note that there is a limitation on this feature. The DMX cannot output a timing pulse that has a higher rate than the one that it is receiving. As an example, if the DMX is slaved at 48, it can only be set to output at 48 or 24, not 96. If the DMX is slaved to the MIDI CLOCK, it can only output MIDI CLOCK or a 24 clock-pulse.

Master Clock Rates
When used as a Master Clock source utilizing its EXT CLOCK OUT jack, the DMX clock rate can be changed to provide compatibility with other brands of drum machines or Sequencers without the need for conversion boxes. Be sure to select Edit Parameter 1 to DMX CLOCK.

2 CLOCK OUT 24 When selected, the Clock Output of the DMX is at 24 pulses per 1/4 note.

2 CLOCK OUT 48 When selected, the Clock Output of the DMX is at 48 pulses per 1/4 note.

2 CLOCK OUT 96 When selected, the Clock Output of the DMX is at 96 pulses per 1/4 note.

PLAY Mode / RECORD Mode Options

3 REC COUNT ON When selected ON, the DMX gives a countdown at the beginning of a Sequence in RECORD mode. The type of count-off used is selected in Edit Parameter 6: CNT SIGNATURE/CNT 4 CLICKS.

3 REC COUNT OFF When selected OFF, there is not a countdown at the beginning of a sequence in RECORD mode and the DMX will begin recording the Sequence immediately as the RECORD and PLAY keys are pressed, just as normal.

4 PLAY COUNT ON When selected ON, the DMX gives a countdown at the beginning of a Sequence in PLAY mode. The type of count-off used is selected in Edit Parameter 6: CNT SIGNATURE/CNT 4 CLICKS.

4 PLAY COUNT OFF When selected OFF, there is not a countdown at the beginning of a sequence in PLAY mode and the DMX will begin playing the Sequence immediately as the PLAY key is pressed, just as normal.

5 PLAY CLIK ON When ON, the metronome is enabled to the mixed output.

5 PLAY CLIK OFF When OFF, the metronome is disabled from the mixed output.

6 CNT SIGNATURE When selected, REC COUNT and PLAY COUNT will count-off at the programmed Time Signature of the Sequence. For example, if the current Signature is 7/8, the countdown will consist of seven eighth-note clicks.

6 CNT 4 CLICKS When selected, the countdown is four clicks at the current Click Value set with the SIGNATURE key. For example, if the current Click Value is 7/8, the countdown will consist of four eighth-note clicks.

SPECIAL PERFORMANCE OPTIONS

7 BEATS/MIN When selected, the Tempo of all Sequences will be displayed as the number of BEATS PER MINUTE, the normal Tempo mode of the DMX.

7 FRAMES/BEAT When selected, the Tempo of all Sequences will be displayed as the number of FRAMES PER BEAT (see TEMPO). This only affects the display and does not change the actual tempo of the Sequences.

FRAMES/BEAT is used when it is required that Tempo be displayed in frames for use in film or video production.

8 SONG LOOP ON When selected, any Song will repeat from the beginning after reaching its programmed end.

8 SONG LOOP OFF When selected, any Song will stop as normal when reaching its programmed end.

9 PROGRAM TEMPO When selected, the Tempo follows the programmed value for each Sequence.

9 MANUAL TEMPO When selected, the Tempo is under manual control. This means that whatever Tempo is selected affects **all** Sequences and Songs. This is useful for maintaining continuity in a Song with Sequences that were originally recorded at various Tempos. Note: the current Tempo is always remembered when recording a Sequence.

10 SONG TIME ON When selected ON, the Song Time is displayed. When in SELECT SONG mode, pressing TEMPO will display the Tempo of the Song's first Sequence and the total length of the Song expressed in minutes and seconds. When a Song is being played, pressing TEMPO will display the Tempo of the Sequence currently playing and the amount of **elapsed** time of the Song. An exclamation point ("!") will be displayed if the DMX's processor is rounding off the elapsed time to the nearest second.

10 SONG TIME OFF When selected OFF, the Song Time is not displayed. This is useful with long Songs. When calculating the time of a long Song, the DMX's response time will slow down.

11 BAR PLUS BEAT When selected, the display will show the current bar and flash a decimal point at the click value (a star is flashed on beat 1 of a measure).

11 RUNNING STEP When selected, the display will show the current beat transformed to the current Quantize value. Example: If the signature is 7/8 and Quantize is set to 1/16 notes, on beat 5 the display will read 10/16.

12 CLICK ON ONE When selected, there will always be a click on the first beat of the sequence. Sometimes this mode causes the click to be uneven. For example: One bar of 7/8 with a 1/4 note click.

12 STEADY CLICK When selected, the click will function like a traditional metronome and will not restart on the downbeat of each measure.

13 SET PGMD CLICK While in this edit parameter, holding down any combination of drums and then pressing RECORD will enable a single click through the Click output in PLAY Mode when that particular combination of drums occurs on the same beat. This allows the CLICK OUT to be used as a programmable trigger output.
The normal steady metronome click will still be given in Record Mode. The click can be disabled (turned off) by pressing RECORD while holding ERASE when in this mode. Note that this overrides all other click enables.

Click can be set to Normal by hitting RECORD while holding no drums while in the mode. This affects the rear panel CLICK OUT as well as the mixed metronome.

Note: The phrase "any combination of drums" means any combination of up to 8 drums with a limit of one drum per drum channel. Thus pressing BASS 1 and BASS 3 has the same effect as only pressing BASS 3. On all vertical columns of drum buttons, the lowest button has priority.

14 SET DRUM OUTS When in this edit mode, hitting a drum button while holding RECORD enables the output for that drum. Hitting a drum button while holding ERASE disables that drum. Hitting RECORD while holding ERASE enables all the drums. Note: This affects only the audio output of the DMX; the drums can still be recorded and erased as normal. Try using this with SET PGMD CLICK while driving an arpeggiator clock with the DMX.

15 SET EXT TRIGS Playing an external trigger while holding a drum button assigns that drum to that trigger. Playing a trigger while holding ERASE disables the trigger. Note: Since this particular Edit Parameter does not allow triggers to be played accurately in real time, only use this mode to set triggers, not to play them. If you plan to trigger the DMX's voices from MIDI, use Edit Parameter 22 SET MIDI DRUM for this purpose.

16 RCV CHAN 1 This selects the MIDI channel that the DMX receives on. If OMNI mode is ON, the DMX will receive on all channels. If a Master drum machine is transmitting on this same channel and/or OMNI mode is ON, the DMX will echo any drum events occurring on the Master. Example: If you have a "Song 1" programmed in both machines consisting of different parts, you may not want the slave to echo the master's part as well as play its own part. If OMNI Mode is OFF and the RECEIVE channel is different between the two machines, the MIDI Clock will synchronize the two machines and transmit START, STOP and Song CHANGE information without echoing the Master drum machine's part. Sequence changes are not transmitted.

17 XMIT CHAN 1 This selects the MIDI channel the DMX transmits on.

18 OMNI MODE ON When OMNI mode is ON, the DMX receives MIDI information on ALL 16 MIDI channels.

18 OMNI MODE OFF When OMNI mode is OFF, the DMX receives MIDI information only on the MIDI Channel set with Edit Parameter 16.

19 XMIT TIME ON When selected, the DMX will send MIDI Clock out at a rate of 24 pulses per 1/4 note.

19 XMIT TIME OFF When selected, the DMX does not transmit MIDI Clock.

20 MIDI ECHO OFF When selected, the DMX does not echo (re-transmit) MIDI IN data received to its MIDI OUT.

20 MIDI ECHO ON When selected, the DMX takes any incoming MIDI data that the DMX will accept and echoes (retransmits) it to its MIDI Output. Example: When the DMX responds to a compatible Start command, it then echoes it to MIDI Out. If an unacceptable command, such as a synthesizer's patch change is received, the DMX will not respond to it and also not echo it.

21 MIDI SONG ON When selected, the DMX will change Songs via MIDI command from the Master. The DMX must be in STOP for this command to be recognized. Note: Only the Song's **index number** is being received via MIDI. The actual contents of a particular Song are not received.

21 MIDI SONG OFF When selected, the DMX will not change Songs via MIDI command from the Master.

22 SET MIDI DRUM On MIDI drum machines, the drum buttons are transmitted as MIDI Notes. This function allows you to set a MIDI Note to a particular drum button from a MIDI synthesizer or sequencer, for example. Playing a note into the MIDI IN while holding a drum button sets the note to that drum. Playing a note into the MIDI IN while holding ERASE sets the note not to play any drum. A drum can be programmed to several notes, but a note can only be programmed to one drum. These MIDI notes must be in a 32-note range.

Pressing RECORD and COPY in this mode will reset the notes to default settings. Pressing RECORD and ERASE clears all settings. (See Figure 1 on page 15 for the DMX's default range and settings).

23 TRANSPOSE The range of MIDI Notes in the DMX covers a 32-note range and is set with this parameters. While in this mode, playing a note into MIDI IN while holding RECORD sets the note to be the lower limit of the 32-note range. The display will show the MIDI Note value of this note.

KEYPAD

Three digits need not always be entered to select a given Sequence or Song. Digits entered within one second of each other are assumed to be part o the same number. This means that Sequence 7 can be selected by typing only "7". Sequence 17 can be selected by typing "17". Sequence 117 can be selected by typing "117", if each digit is entered within one second of the previous one. "Leading zeroes" can be entered if desired, but are suppressed on the display.

It is possible to use the KEYPAD to switch between Sequences during PLAY. Suppose the DMX is playing Sequence 0. Typing "10" will cause the DMX to play Sequence 10 after completing Sequence 0. The display will read "SEQ 0/10" to show that Sequence 0 is currently playing and that Sequence 10 will be played next.

Switching between Songs during PLAY, or between a Song and a Sequence during PLAY is no longer an option.

RECORD

Holding RECORD while in Select Sequence or Select Song displays the percentage of memory available to record the current sequence. The percentage of memory available at a given time varies depending on the length of the Sequence to be recorded.

Holding RECORD and pressing TEMPO while in Select Sequence enters Cue Tempo (see TEMPO).

Holding RECORD and pressing PLAY while recording a Sequence "Punches Out" into PLAY Mode. Once you have "Punched Out" of a Sequence, and if you have not changed to another Sequence, you can "Punch In" to this same Sequence by again holding RECORD and pressing PLAY. You can punch in any time, but the DMX will not re-enter RECORD Mode again until the Sequence loops back to its beginning.

ERASE

While recording a Sequence, holding ERASE and any combination of drum buttons will erase those drums from the Sequence for the length of time that the buttons are held. This is useful when you want to erase certain wrong events from a Sequence without removing the entire occurrence of a particular drum. This replaces the "Erase-on-the-Fly" mode of the Revision 2 DMX. Holding ERASE and RECORD while recording a Sequence will erase **all** drums while the buttons are held. The enabled drums will not sound.

In STOP, holding ERASE while pressing RECORD once erases all notes from the Sequence, but retains its LENGTH, TEMPO and TIME SIGNATURE information. At this point you may reprogram this Sequence, or use this feature to program blank spaces into Songs. Erasing the Sequence a second time re-sets the Sequence to the standard default condition of 2 bars, 80 beats per minute, 4/4 time signature. This display will verify that this has happened by reading, "SEQ XXX DELETED" and will completely remove the Sequence from memory.

In Song Mode, a Song is erased by holding ERASE and pressing RECORD (as in Sequence Mode).

To ERASE EVERYTHING, hold ERASE and press both < > buttons. The display will show the message, "PRESS < > TO EMPTY". Again, press both < > buttons. This will clear all of memory, but will have no effect on the EDIT PARAMETERS.

FAILSAFE ERASE: Under certain circumstances, many computer-based products may lock up. In particular, if the messages, "INTERNAL ERROR X" or "PRESS < > TO EMPTY" appear on the display unexpectedly, the DMX has gotten lost. In this instance clearing memory will solve the lock up problem, but you will lose all your work too! If this condition ever happens, we **strongly advise** recording your memory on a cassette. Immediately enable CASSETTE MODE on the back panel and follow the directions in your DMX Owner's Manual. When your memory is safely on cassette, proceed as follows: Press any key and the DMX will attempt to proceed. If it locks up again, even turning the power off and on again may not help.

When all else fails, turn the power off. Then, while holding down the ERASE key, turn the power on again. This will clear all of the memory and reset the Edit Parameters to their default values. The memory protect switch is ignored.

TEMPO

Tempo can be displayed in Beats/Minute or Frames/Beat, selectable in Edit Parameter number 7. When in Frames/Beat mode, pressing TEMPO will display a reference calculation of how many frames of film equal one beat, the amount of frames being dependent on the Frames/Second amount.

Frames/Second can be changed over a range of 1 to 99 by pressing TEMPO and then pressing EDIT. This allows the Frames/Beat indication to be accurate for a wide variety of applications. 24 Frames/Second for film and 30 Frames/Second for non-drop frame television are standard in North America and Japan; 25 Frames/Second for film and television are standard in most of the rest of the world. Changing the Frames/Second does not change the Tempo, but only the way Tempo is displayed. As an example, if 24 Frames/Second is selected, a Sequence at a Tempo of 95 in 4/4 will have 15.1 Frames-per-Beat.

While the DMX is in STOP, TEMPO also displays the length of the current Sequence or Song in minutes and seconds.

While playing or recording, TEMPO also displays cumulative elapsed running time in minutes and seconds followed by an exclamation point ("!") if the running time is not exactly accurate. This inaccuracy occurs when the current Tempo is not equivalent to an even number of 1/192 beats per second. Even with the "!", it is close. Note that the cumulative running time will not be accurate when clocking from EXT CLOCK or SYNC IN.

Hitting TEMPO while holding RECORD in Stop mode enters Cue Tempo mode: Tempo may be set by pressing the STEP button or playing any external trigger in quarter notes at the desired speed. The Tempo of the Sequence will then be set to match that rate. While in Cue Tempo, the TEMPO key will exit to STOP, or the PLAY and RECORD keys may be used to enter Play or Record Mode.

LENGTH

In Sequence mode, Length is displayed in bars. To change the Length of the current Sequence, press LENGTH. Then, using the arrow buttons or the number keys, choose the new Length. The new Length will only be entered in memory if the LENGTH key is pressed again, exiting this mode. If any other key is pressed, the Length will not change.

In Song mode, Length is displayed in PARTS.

The maximum Length of a Sequence is 5000 bars.

The maximum Length of a Song is 254 parts.

Length-on-the-Fly Mode available in Revision 3 DMXs has been deleted. It is still possible to achieve uneven lengths by appending Sequences in different time signatures (see DMX Owner's Manual, "Appending Sequences").

SIGNATURE

The Time Signature can be changed whether a Sequence is empty or not. Changing the Time Signature of an empty Sequence will not change the number of bars of the Sequence, but it may change the actual length of the Sequence, depending on the new Time Signature. Thus if you change the Signature of an empty Sequence that is four bars long it will stay four bars long.

However, changing the Time Signature of a Sequence which **already contains some drum events** does not change what you have recorded, it only causes the length to be redefined in terms of the new Time Signature. For example, if a Sequence of 3 bars of 4/4 (12 quarter notes) is changed to 3/4, the length will be recalculated to become 4 bars of 3/4 (12 quarter notes). If the new signature makes the Sequence an uneven number of bars, pressing LENGTH will display the number of complete bars along with a "+" to indicate a partial bar.

Click value may be any of 1/2, 1/3, 1/4, 1/6, 1/8, 1/12, 1/16, 1/24, 1/32, 1/48, 1/64, 1/96 or 1/192 (real-time).

Beat value has the same range as click value.

Beats/Bar may be any value from 1 to 99.

QUANTIZE

The Quantize level can be set to any value given above for click value (1/192 = QUANTIZE OFF).

SWING

SWING may be used while in any Quantizing level from 1/2 to 1/48. The number of swing steps depends on the Quantize level. Larger quantizing steps allow more levels of swing.

Swing is automatically reset to 50% whenever the Quantize level is changed.

FLAMS

Flams (double hits) can be recorded when recording a Sequence, when Quantize is set to 1/96 or OFF (1/192). While in Record, holding the RECORD while hitting a key records a Flam.

The PLAY FLAM and LONG FLAM modes available in Revision 3 DMXs have been deleted.

STEP

The Step Mode advances through the current Sequence or Song by increments that are the same as the Quantize value. If the Quantize is off, this amounts to advancing by 1/192 note increments. Use either arrow key to advance to the next beat of the Sequence. Holding down an arrow will "fast forward" through the steps.

To Record or Erase in Step Mode, STEP must be entered from Record Sequence or Select Sequence. Entering STEP from a Song, for example, will not permit you to Record or Erase drums in Step Mode.

Pressing STEP enters Step mode and plays the first step. When a drum pad is pressed, that drum is recorded on that beat and the DMX will automatically advance to the next step. If you wish to enter more than one event on a particular beat, the automatic advance can be over-ridden by holding RECORD while entering any combination of drums.

Any drum or drums can be removed from a particular step by holding ERASE while pressing the desired buttons. Either arrow button advances to the next step. QUANTIZE can be entered and changed from Step Mode. Changing the Quantize value and pressing QUANTIZE again will leave you on the same step, but the display will reflect the new Quantize value.

RUNNING STEP MODE is now accessed in Edit Parameter 11.

The Digital Splicing feature available in Revision 3 DMXs has been deleted. However, individual events can still be erased from Step Mode.

COPY

Any Sequence may be copied or appended to any Sequence.

Any Song may be copied or appended to any Song using the same procedures used for Sequences.

SONG

Song Tempo: While stopped in Song Mode, TEMPO displays the length of the current Song in minutes and seconds. If Programmed Tempo is ON, the time for each Sequence in this Song is calculated at its programmed tempo. If Manual Tempo is on, the time of the Song is calculated at the current tempo.

Note: Changing the Tempo of a Song requires the DMXs processor to do lengthy calculations. For long Songs, this may slow the machine's response until the calculations are completed (see Edit Parameter 10 on how to turn SONG TIME off). Also, the Song Tempo may not be changed while in Manual Tempo, although the time display will be accurate.

Song Edit: Press EDIT while in Select Song mode to enter Song Edit mode, which is used to create new Songs as well as restructuring existing Songs. The arrow buttons step through the parts in either direction, looping around to the beginning after the last part.

Pressing the number keys on the keypad selects the Sequence to be inserted and automatically inserts it into the Song List.

To insert a new part, press EDIT while holding down RECORD. This will automatically insert Sequence 00 **before** the currently displayed part. At this point, entering any Sequence on the keypad will change Sequence 00 to the desired Sequence.

Holding ERASE and pressing EDIT deletes the current part.

To go immediately to a particular part of a Song, you may either step through the Song parts in Song Edit mode or by pressing LENGTH while in Song Edit Mode. The display will read, "SELECT PART XX". Entering a Part Number on the keypad and pressing LENGTH again will leave you in Song Edit mode at that particular Part Number. After finding the desired part, pressing PLAY will immediately put the DMX in PLAY mode, starting the present Song at the specified part.

The Record Song Mode (recording a Song-on-the-Fly) feature available in Revision 3 DMXs has been deleted.

When the DMX is in STOP, the EDIT key allows Song editing. While playing a Song, the EDIT key permits selecting EDIT PARAMETERS.

The maximum Song length is 254 parts.

CASSETTE INTERFACE

As the DMX was revised and improved over the last few years, the Cassette Interface function was also modified to handle the numerous changes in the DMX's data format. The term "Revision 3" is used to distinguish the newer DMX with 5000 note memory capacity from older 2000-note DMXs (Revision 2). The MIDI conversion, in so far as the Cassette data is concerned, is considered to be the "Revision 3" data format.

PLAY and CHECK Modes will function normally with Revision 2 cassettes, but individual Sequences and Songs can only be read from Revision 3 cassettes.

Converting Rev. 2 Data to Rev. 3 Data: When Revision 2 data is read successfully by the cassette interface, the display reads "REV 2 -> REV 3". The cassette interface always writes data to the tape in Revision 3 format, so Revision 2 cassette data can be converted to Revision 3 format by loading the Revision 2 tape into the DMX and the re-recording it onto cassette. This will allow you to read individual Sequences and Songs from the new data tape.

Load a Single Sequence From Cassette: Enter CASSETTE Mode and press the COPY button. The display will read "COPY FROM SEQ XXX" at which point you can enter the desired Sequence to be loaded from tape (much like copying a Sequence). Press COPY once more will change the display to read "START DATA TAPE". Start the tape and the DMX will load only the desired Sequence into the desired location.

Load a Single Song from Cassette by holding COPY, then pressing SONG. The DMX will display "COPY FROM SONG XX" at which point you can enter the desired Song to be loaded from tape. Press COPY again and the display will change to read "TO SONG XX" and you can enter the desired location in memory for the Song to go. Press COPY a third time and the display will change to read "START DATA TAPE". Proceed as above.

Note: Loading a Song loads only the list of Sequences contained within the Song, not the actual Sequence data.

Sending All Data Through MIDI: While in Cassette Mode, press the TEMPO button. The display will read "MIDI SEND ALL" and the entire contents of the DMX's memory will be transferred through MIDI OUT. If you have a compatible computer set-up, this is generally a more reliable and quicker way to store data than a cassette, although not particularly handy. Note: If you perform a MIDI SEND ALL while slaving to another drum machine you will lose the entire contents of the slave's memory, replacing it with the Master's memory.

MIDI transfer of a Single Sequence: Enter Cassette Mode and press the SIGNATURE button. The DMX will display "COPY FROM SEQ XXX" at which point you can enter the desired Sequence to be loaded into the Slave drum machine. Press SIGNATURE again, and the display will change to read "TO SEQ XXX" at which time you can enter the desired location in memory for that Sequence to go. Press SIGNATURE a third time and the DMX will immediately send the information through MIDI OUT.

MIDI Transfer of a Single Song: Enter Cassette Mode and while holding down SIGNATURE, press SONG. The DMX will display "COPY FROM SONG XX" at which point you can enter the desired Song to be transferred through MIDI to a slave drum machine. Press SIGNATURE again and the display will change to read "TO SONG XX" at which time you can enter the desired location in memory for the Song to go. Press SIGNATURE a third time and the DMX will immediately send the information through MIDI OUT.

Note: Loading a Song loads only the list of Sequences contained within the Song, not the actual Sequence data.

MIDI Receiving of Song, Sequence or All Data: The DMX will automatically receive and collate MIDI IN data. The DMX should not be in PLAY, RECORD or CASSETTE mode while receiving data.

Inverted cassette playback is still selected with the "0" key.

The STOP key now always cancels any cassette function in progress, but when the leader is detected, memory is cleared to make way for incoming data. MIDI ALL transfer cannot be cancelled once transferring has started.

When cassette data is done playing, either "DATA COMPLETE" or the count of errors detected is displayed. An error will usually result in a single Sequence or Song being lost but will occasionally have more far-reaching effects. Errors involving the ID of a given Song or Sequence results in immediate abortion and the message "BAD TAPE ID". The cassette interface will try to get as much as it can from the tape, but 10 errors aborts it immediately.

BACK PANEL

NEXT Footswitch

Pressing the NEXT Footswitch while playing a Song causes the DMX to "vamp" (in other words, continually loop) on the current Sequence until the footswitch is pressed again or until the footswitch is released, depending on the design of the footswitch. The message "VAMPING PART XX" will appear in Play Song mode except during the first beat of each part when the part and Sequence number is displayed.

Pressing the NEXT Footswitch while in Select Sequence or Select Song mode advances the current Sequence or Song number.

START Footswitch

While playing a Song, the START Footswitch will stop the Song in such a way that pressing the START Footswitch again will continue it from the beat where it left off. When paused, the drum keys may be played, and the STOP key may be used to return to Select Song mode, but all other keys are ignored.

When in Select Sequence or Select Song mode, the START Footswitch will play the Sequence or Song.

When in Play Sequence or Record Sequence, the START Footswitch returns to Select Sequence mode.

EXTERNAL TRIGGER Interface

Each of the eight External Trigger Inputs can be programmed to trigger any of the 24 drum sounds. While in the "SET EXT TRIGS" Edit Parameter, playing an external trigger while holding a drum key assigns that drum to that trigger. Note: CVs do not get reassigned.

GETTING USED TO OWNING A MIDI DRUM MACHINE

SYNCHRONIZING WITH THE MIDI CLOCK

Utilizing the MIDI Timing Clock provides an easy method of interconnecting MIDI Devices. For best results, turn off both units before connecting. Using a standard MIDI cable, connect the MIDI OUT jack on the Master to the MIDI IN jack of the unit to be the Slave.

DMX AS MASTER

To use the DMX as the Master, set Edit Parameter 11 to DMX CLOCK and select an appropriate clock rate in Edit Parameter 2 (See the Interface Guide on page 17). MIDI CLOCK will always be output at the standard 24 clock-pulses per 1/4 note.

DMX AS SLAVE

To slave the DMX to another MIDI timing source, set Edit Parameter 11 to MIDI CLOCK. You must also set Edit Parameter 0 to AUTO START ON for the DMX to respond to MIDI Clock.

AUTO START

If a slaved DMX has its Auto Start function turned ON, it will automatically enter the PLAY mode whenever a MIDI Start Command is recognized. The DMX will stop when a MIDI Stop command is received or the STOP button pressed, even if MIDI timing pulses continue. If Auto Start is turned OFF, PLAY or RECORD must be pressed on the DMX before starting the Master.

SONG SELECT

Selecting MIDI SONG ON (Edit Parameter 21) enables remote selection of Songs (not Sequences) via MIDI. The DMX transmits and receives Songs 00-99.

RECORDING AS MASTER

Press RECORD and PLAY as before. The slave units will start as soon as the Master DMX starts recording.

RECORDING AS SLAVE

Follow this procedure:

1. Turn Auto Start Off (Edit Parameter 0)

2. Place the DMX into Record Mode by pressing RECORD and PLAY

3. Start the Master clock source.

MIDI NOTES

The DMX can transmit and receive notes played via MIDI. Drum notes are the same as melodic notes. This means that the DMX can be played from a MIDI keyboard, MIDI drum pads or even another DMX or Oberheim MIDI DX. MIDI notes such as these can also be recorded and played back as well. Note that playing notes on synthesizers from MIDI drum machines usually does not work, because drum notes have a shorter duration than most synthesizers are capable of playing.

SETTINGS NOTES TO DRUMS

Since correlating drums with keys on a MIDI keyboard is a matter of personal taste, the DMX enables programming a MIDI note to any of the DMX drum buttons. This can be accomplished by using Edit Parameters 22 and 23.

Connect the MIDI OUT from a controller such as a MIDI keyboard or another DMX (or MIDI DX) to the MIDI IN of the DMX. All notes must be within a 2 1/2 octave range, starting at the transposition setting, so change the transposition setting if the notes are not within the desired range (Edit Parameter 23). While in this parameter mode, hold RECORD and press the note desired to be the bottom of the range. The MIDI Note Number will appear in the display.

Next, select Edit Parameter 22. Playing a note into the MIDI IN while holding a drum button sets the note to that drum. Playing a note into the MIDI IN while holding ERASE sets the note not to play any drums. Several notes can be assigned to a particular drum button but each note cannot be assigned to more than one drum. Pressing RECORD and ERASE clears all settings.

There is an informal standard arrangement used by other drum machines, which is incorporated within the DMX's default configuration shown in the keyboard diagram on page 15. The DMX can be reset to this configuration by pressing RECORD and COPY while in Edit Parameter 22.

When using the DMX to transmit drum buttons to another instrument, only the highest note programmed to that drum will be transmitted.

REALTIME MIDI RECORD

One additional feature of the DMX is the ability to transfer Sequences between **different brands** of drum machines. This is done by recording on the DMX while slaved to another drum machine. The second machine sends notes across MIDI as it plays them and the DMX simply records the notes that are received. To transfer Sequences, connect the two drum machines so that the DMX is the Slave unit.

Set the Edit Parameters on the DMX:

0 AUTO START OFF
1 MIDI CLOCK
3 RECORD COUNT OFF
16 RECEIVE CHANNEL should be the same as the master's transmit channel or...
18 OMNI MODE ON

Set the master drum machine to transmit MIDI timing. Make sure TEMPO, LENGTH and QUANTIZE settings of the Slave are appropriate for the Sequence to be recorded. Press RECORD and PLAY on the Slave unit, then start the Master.

Remember that the DMX will record the assigned MIDI Notes, which are not necessarily the same drums on both machines. Make sure that the drums of the Master machine are assigned to appropriate buttons on the Slave. See "Setting Notes to Drums" above.

Some other models of drum machines can also record from the DMX via MIDI. If the drum machine can read MIDI Notes from the DMX, it should be able to record them. For more information, refer to the Interface Guide as well as the owner's manuals of the other drum machines.

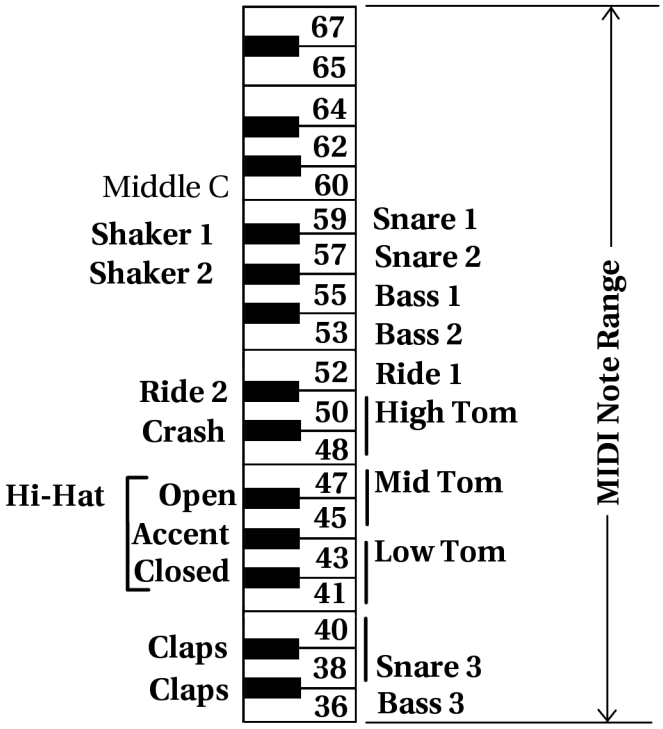

Figure 1 – Default MIDI Note Assignments

HOUSEKEEPING

The DMX now has several functions that act as general maintenance routines for the memory of your Sequences and Songs. They are described as follows:

DATA CHECK

One of the features of the DMX is a Data Check routine that runs automatically when the unit is turned on and when you exit the CASSETTE mode. Data Check examines each Song and Sequence to make sure that it is properly configured in memory.

Bad Sequences can appear in the DMX's memory in several ways. If there is illegal information in a Sequence, the Data Check routine will identify the Sequence and alternately flash the message "SEQUENCE XXX BAD" on the display followed by the message "ERASE DELETES". If an error is found in a Song, the message "SONG XX BAD" will appear on the display followed by the message "ERASE DELETES".

Press ERASE to delete the bad Sequence or Song. If any other button on the DMX's front panel is pressed, the Sequence or Song in question will not be deleted and will remain in memory as is. Data Check will then continue its routine and look for more bad Songs or Sequences, if any.
After checking all of the Songs and Sequences, the DMX will return to normal operation. Be careful when working with bad Songs or Sequences (the ones you declined to delete). In particular, any attempt to alter a bad Sequence by Recoding, Erasing, Copying, etc. will almost always cause the DMX to crash its memory or lock-up. See "IF YOUR DMX GETS LOST" below.

RAM CHECK

Besides the Data Check routine, the DMX will also check the RAM (Random Access Memory) circuits that contain your Sequences and Songs. RAM Check is run every time the DMX is turned on. This routine checks for bad data in memory when the unit is powered on. Random data of this type can result from a loss of the back-up battery's power to the memory, for example. If the back-up battery inside your DMX is low or dead, memory will get lost or scrambled and the RAM Check will detect this. The most common source of this problem is poor A.C. power to the DMX. Any power outages or spikes in the A.C. caused by air conditioners or even power amplifiers on the same house current will contribute to this problem.

If the data in memory is bad for any reason upon turning the DMX on, the DMX will "beep" and display "DATA MAY BE BAD" followed by a "PRESS < > TO CLEAR" prompt. Pressing both the "<" and ">" buttons will erase everything in memory and reset the Edit Parameters.

IF YOUR DMX GETS LOST

If error messages from the RAM Check appear on the display, the DMX has gotten lost or confused due to bad data in memory. In this extreme case, clearing memory will take care of the lock-up problem, but the side effect is that you will lose all of your memory in the process. This is why we strongly advise that you record your memory onto a cassette on a regular basis. If a back-up data cassette of your programs is not available, immediately enter CASSETTE MODE using the switch on the back panel of the DMX and make a data tape according to the procedure in your DMX Owner's Manual.

When your data is safely on cassette, proceed as follows:

1. Exit CASSETTE MODE.

2. Press any button on the DMX front panel. This will attempt to get the DMX to proceed in its normal operation.

3. If the DMX locks up again, the only alternative is to clear memory. Turn the machine off. Hold the ERASE button while turning the DMX back on. This "FAIL SAFE ERASE" mode will clear memory entirely and reset the Edit Parameters. You can now load data back in from the tape you made and use the DMX as before.

INTERFACE GUIDE

INSTRUMENT	EXTERNAL CLOCK **DMX MASTER**	EXTERNAL CLOCK **DMX SLAVE**	MIDI CLOCK **DMX MASTER OR SLAVE**
OBERHEIM			
Non-MIDI DX w/out Stretch	96	96	NO
Non-MIDI DX with Stretch	96, 48, 24	96, 48, 24	NO
MIDI DX with or w/o Stretch	96, 48, 24	96, 48, 24	YES
DMX	96	96	NO
DSX	96	96	NO
EMU			
Emulator II	24	24	NO
Drumulator	96	24	YES
FAIRLIGHT			
CMI (w/General Interface Card)	96	96	NO
KURZWEIL			
250	96	96	NO
LINN			
LinnDrum	48	96	NO
9000	48	48	YES
PPG			
Wave 2.3	NO	48	NO
ROLAND			
MSQ-700	NO	NO	YES
MSQ-100	NO	NO	YES
TR-909	NO	NO	YES
TR-707	NO	NO	YES
SEQUENTIAL			
SixTrak	96	NO	YES
DrumTracks	96	NO	YES
64 Sequencer	96	NO	NO
YAMAHA			
RX-15	96	96	YES
RX-11	96	96	YES
QX-1	NO	NO	YES
QX-7	NO	NO	YES