DSX Revision 3.01 Software
Operation Guide
4/1/84

Since its release in October 1982, the Oberheim DSX Digital Polyphonic Sequencer has established itself as the premier music programming peripheral. As the cornerstone of the Oberheim Music System, the DSX has changed the way music is recorded and performed around the world.

After many months of programming and testing, new computer software for the DSX is available. The DSX software revision 3.01 adds many new features and improves the operation and reliability of any DSX.

This document assumes that the reader is already familiar with the DSX. Consequently, only changes in the DSX operation are discussed here. For more information about the DSX, read the DSX Owner's Manual.

NEW FEATURES:

1. PUNCH IN

Any track (except track 0) can now be edited by punching in and out and playing new notes, much like a tape recorder but with a few twists. This works as following:

1) While in PLAY, if RECORD is pressed, the currently selected track will begin erasing what was there and recording whatever new notes are played (like punching in on a tape recorder).

2) Once in RECORD, if RECORD is pressed again, the selected track is punched out and the sequencer continues to play. Any notes remaining on the track after punching out remain intact (like punching out on a tape recorder).

3) Once in RECORD, if STOP is pressed, or if the sequencer is stopped by external clock or sync pulses, the selected track is punched out and the sequencer stops. Any notes remaining on the track after punching out remain intact.

4) Once in RECORD, if PLAY is pressed, the selected track is punched out. Any remaining notes are erased and a new end time is recorded for the selected track. This is useful for making a track end sooner than was previously recorded.

5) If FAST PLAYTRACKS is on (see SELECT OPTIONS, below), punching in will cause the current track to immediately start erasing notes, and notes that were sustaining will be cut short (just like a multitrack tape recorder). If FAST PLAYTRACKS is off, the current track will erase new notes, but notes already playing at the punch in point will continue to sustain until the notes reach their release time. This allows for punch ins to overlap because new notes can be recorded while the existing notes continue.

6) If a sequence is in LOOP, and a track is punched in and out before the end of the sequence, the sequence will loop as normal and will play the new notes that were punched in. If the track has not been punched out by the end of the sequence, the track will remain in record and the sequence will not loop until finished recording. This allows for extending the end time of a track if desired.

7) If Track 0 is being played back while recording, the track will automatically punch out at the end of track 0, and if LOOP is on, the track will start playing back. This is quite useful because the track can be punched in and out repeatedly without stopping.

THINGS TO KEEP IN MIND WHEN USING PUNCH IN:

1) If no track has been selected, the RECORD switch is ignored.

2) Only the track currently selected will be recorded over when punching in.

3) Only one punch in is allowed each time a sequence plays or loops.

4) If memory protect is on, punch in is ignored.

5) If memory runs out after punching in, the display will read NO MEMORY LEFT! and it will punch out at that point. All remaining notes will remain intact. It is necessary to have enough memory for the current track AND the new notes you plan to play.

6) If a sequence is looped after punching out, and alot of notes were recorded, the DSX may hesitate slightly before looping the sequence. This is normal due to the large amount of memory management required after punching in. This delay will not occur when playing the sequence back again. If the DSX is being clocked from a DMX, the DSX will immediately catch back up and play in time with the DMX after the slight delay.

2. SELECT OPTIONS

A new "page" has been added to the SELECT MODE button and is called SELECT OPTIONS. It is accessed by pressing the MODE button three times. These options allow you to turn on or off many of the new features of the DSX. These options remain in memory when power is turned off. There are 12 option functions addressed from the 0-9 buttons, the SPEED buttons, and the EDIT MODE switch. The current status of each switch is shown on the switch LEDs, or when DISPLAY is pressed. The options are:

(0) CV OUTPUTS ON/OFF

This switch turns on or off the CV and GATE outputs while the DSX is in STOP mode. When the CVs are on, the eight CV outputs will output exactly what the eight voices of the OB-8 are playing. When the CVs are off, they will do nothing while in STOP mode. This switch will not affect any CVs that are playing from a sequence. In older software revisions, This feature used to be selected with the TRANSPOSE and DISPLAY buttons.

(1) COUNT DOWN ON/OFF

This switch turns on or off the four beat count down before recording. When it is off, record is entered right away without a count off. When it is on, the DSX will count four metronome clicks before recording. This feature also enables a countdown while clocked to an external source, such as a DMX.

(2) CLIK IN PLAY ON/OFF

This switch turns the metronome on or off while in PLAY mode. The metronome is always on while in RECORD mode, but will be on in PLAY only if this switch is on.

(3) EXT CLOCK IN ON/OFF

This switch enables or disables the EXTERNAL CLOCK input of the DSX. When the switch is on, the DSX will only play if a clock signal is present at the clock input. When it is off, the DSX will play from its internal clock, regardless of whether or not anything is plugged into the external clock jack. When something is first plugged into the external clock jack, the external clock mode is automatically enabled, and the count down is automatically turned off. When the external clock is unplugged, the external clock mode is automatically disabled, and the count down is turned back on. This is so that these functions stay consistant with previous software versions, and to simplify the operation of the sequencer.

(4) SYNC-TO-TAPE ON/OFF

This switch enables or disables the SYNC TO TAPE function. The EXTERNAL CLOCK and the SYNC TO TAPE cannot be on at the same time, and the EXTERNAL CLOCK takes priority. Like the external clock, when a jack is first plugged into the SYNC TO TAPE input, the SYNC TO TAPE is turned on and the count down is turned off. When the jack is unplugged, the SYNC TO TAPE is turned off and the count down is turned on.

(5) FAST TRK SEL ON/OFF

When FAST TRACK SELECT is off, the DSX functions the same as its previous software versions, e.g. when a playtrack is turned off while playing, any notes that were sustaining will continue to sustain until they reach their release time. When FAST TRACK SELECT is on, a playtrack will cut off immediately when turned off. This feature can be used in conjuction with PUNCH IN to alter sustain times for individual notes and to allow overlapping punch ins (see "PUNCH IN", above).

(6) FAST TRNSPOS ON/OFF

When FAST TRANSPOSE is off, the DSX functions the same as its previous software versions, e.g. when a transpose key is selected while playing, only new notes will be transposed, and sustaining notes will remain in the old key. When FAST TRANSPOSE is on, all notes will transpose immediately when a new transposition is selected.

(7) PRGM CHANGES ON/OFF

When PROGRAM CHANGES is on, The DSX will function the same as its previous software versions, e.g. when a program change has been recorded onto track 0, it will be played back. When PROGRAM CHANGES is off, program changes will still be recorded into track 0, but they will <u>not</u> be played back. The end time and the programmed tempo of track 0 will still be played back.

(8) REMOTE START ON/OFF

When REMOTE START is on and external clock or sync to tape is on, the DSX will jump into play automatically if an external clock or sync pulse is present, and stop automatically if the clock or sync pulse stops. When REMOTE START is off, the DSX will only play or stop when the front panel switches are pressed. When sync to tape is used with this feature, synchronizing the DSX to a sync tone is greatly simplified, although it is possible for noise on the tape track to cause false triggers when no sync tone is present. Once the sync leader tone has been detected, the DSX will remain in STOP until the timing pulses start.

(9) PUNCH FOOTSW ON/OFF

This option enables punching in and out with the footswitch. When PUNCH FOOTSWITCH is off, the footswitch operates in its original manner, e.g. press once to play, once to stop. When PUNCH FOOTSWITCH is on, pressing the footswitch in STOP mode puts you in PLAY, pressing it while in PLAY punches into RECORD and pressing it while in RECORD punches out to PLAY. A record track must be selected in order to punch in or out. The footswitch can be used to punch in while clocked by an external source. See PUNCH IN, above.

(SPEEDS) SYNC OFFSET

It is possible to make the DSX play ahead of the timing source (internal clock, external clock, or sync to tape). Pressing both SPEED buttons while in SELECT OPTIONS mode displays "x/384 NOTE AHEAD". The DSX can be set to play from 0 to 9/384th notes early. 1/384th note is the speed of the Oberheim System timing clock, frequently described as 96 pulses per quarter note. At a tempo of 125 Beats per Minute, one clock pulse equals 5 milliseconds; at 25 BPM a clock pulse is 25ms.; at 250 BPM a clock pulse is 2.5ms. This is an "advanced" feature, and is best used by "feel" so that the timing of a sequence sounds right. For example, if a brass sound is used on the synthesizer and it has a fairly slow attack, it may be desired to put the DSX "ahead" of the beat so that the attack of each note can start BEFORE the beat.

In RECORD, the sync offset is ignored so that recordings are made properly. Also, there is no offset on the CLOCK OUT and SYNC OUTputs of the DSX.

(EDIT MODE) CVS TO OB-8 MIDI

Pressing the EDIT MODE button while in Select Options mode allows you to select CVs to be "echoed" to the OB-8's MIDI OUTput. The display reads "CVS TO OB-8 MIDI". Any combination of individual CVs can be selected to be echoed to the OB-8 MIDI, by pressing the 1-8 buttons. This allows you to control additional MIDI synthesizers from the DSX through the OB-8 MIDI output. Any CVs that are selected will be sent out of the OB-8 MIDI OUT, and none of the notes being played by the OB-8 will be sent to the MIDI OUT. Now, any tracks assigned to CVs will be played by the synthesizer hooked to the OB-8 MIDI OUT.

All CV notes will still appear at the appropriate CV and GATE OUTputs of the DSX. If NO CVs are selected to be echoed, the MIDI OUT will echo the VOICES being played by the OB-8.

If OMNI MODE on the OB-8 is ON, the selected CVs will appear on the selected MIDI channel of OB-8's MIDI OUT. If OMNI MODE is OFF, then the CVs will appear on one of two MIDI channels depending upon the Split Point of the OB-8. All CVs playing above the OB-8's Split Point will appear on the selected MIDI channel. All CVs playing below the the Split Point will appear on the selected MIDI channel plus 1.

In this way, the DSX can control many synthesizers independently: The OB-8 can play two independent parts in Split Mode, a second OB-8 connected to the first OB-8's MIDI OUT can play the selected CVs that occur above the Split Point, a third OB-8 can be connected to play the CVs below the Split Point, in addition to monophonic synthesizers connected to the CV and GATE outputs of the DSX.

EXAMPLE OF USING TWO OB-8s CONTROLLED FROM ONE DSX:

Connect the Master OB-8 (synth A) to the DSX. Connect the MIDI OUT of synth A to the MIDI IN of the Slave OB-8 (synth B). Any notes played on synth A will be played on synth B (if not, go to "CVS TO OB-8 MIDI" as described above and turn all 8 CVs OFF). Place both synths in OMNI ON (switch C lit on PAGE 2). Select a record track, assign it to VOICES 1-8, and record something on synth A while listening to synth B. After recording, reassign this track to CVs 1-8. Go to option "CVS TO OB-8 MIDI" and turn on 1-8. Press PLAY. The track that was recorded should now only play on synth B. Select a new track and assign it to VOICES 1-8. Record on synth A. Play back both tracks. The first will be played only by synth B, and the second track will only be played by synth A.

Note that this function will only work on DSXs connected to OB-8s with the MIDI option installed and revision B4 or above OB-8 software. For more information, see the OB-8 MIDI interface addendum.

3. COPYING TRACKS

Any track can now be copied to any other track by using EDIT MODE 5. While in STOP and MERGE is off, press the EDIT MODE button. Now press the 5 button (this used to be "COPY VOICES TO CVS"). The display will read "COPY A TRACK" while 5 is being held, and then "COPY FROM TRK *" when 5 is released. Select a track (0-9) from the currently selected sequence. When the numbered switch is pressed, the "*" will be replaced by the track number selected. When the switch is released, the display will read "TO SEQ *". Select the destination sequence and the "*" will be replaced by the sequence number. When the sequence number has been released, the display will read "TO SEQ n TRACK *", n being the selected sequence. Select a destination track and the "*" will be replaced by the track number, and the track will be copied. The old destination track will no longer exist, since the new track was copied over it.

STOP or EDIT can be pressed at any time in order to abort the copy. If track 0 has been selected to be copied, it can only be copied to another track 0. If track 1-9 has been selected to be copied, it can be copied to any track but track 0. If there is not enough room in memory to copy a track, the display will read 'NO MEMORY LEFT!'.

TRANSPOSING COPIES

If a key on the 08-8 is pressed while holding the destination track number (the last number pressed), the track will be transposed up by the interval from the bottom of the keyboard to the key being held when it is copied. It is possible to copy a track to itself in order to transpose it. This transposition is now permanent for the copied track. This is useful for copying bass lines to be played in octaves, etc.

4. APPENDING TRACKS

Any track can be appended (connected) to any other track by using EDIT MODE 6. The display will read "APPEND A TRACK" until the 6 is released, afterwhich the operation is identical to copying tracks. The display will read "APPEND FROM TRK*". Select a track using the 0-9 buttons and the "*" will be replaced by the track number. When the number is released, the display will read "TO SEQ *". Select the destination sequence using the 0-9 buttons and the "*" will be replaced by the sequence number. Release the number, and the display will read "TO SEQ n TRK *". Select the destination track using the 0-9 buttons: the "*" will be replaced by the track number, and the append will be executed.

If the destination track is empty, the track will be appended starting at the beginning of the sequence (this is the same as copying). If the source track is empty, nothing will happen. If track 0 is selected to be appended, it can only be appended to another track 0, and if tracks 1-9 are selected to be appended, they can only be appended to tracks 1-9.

A track can be appended to itself to make it twice as long.

TRANSPOSING APPENDS

If a key on the 08-8 is pressed while holding the destination track number, the appended part of the track will be transposed up by the interval from the bottom of the keyboard while being appended.

5. COPYING SEQUENCES

Any sequence can be copied to another sequence by using EDIT MODE 7. The display will read "COPY A SEQUENCE" while the 7 is being held down, and then "COPY SEQ n TO *" when it is released. The 'n' will display the current sequnce number. Select the destination sequence: the "*" will be replaced by the destination sequence number, and the copy will be executed. Any data in the destination sequence will be erased, since the new sequence is copied over it. Because of the large amount of memory being processed, the execution may take several seconds.

TRANSPOSING COPIED SEQUENCES

If a key on the OB-8 is pressed before releasing the sequence number, the sequence will be transposed by that key. It is possible to copy a sequence to itself in order to transpose it.

RUNNING OUT OF MEMORY WHILE COPYING A SEQUENCE

If there is not enough room in memory to copy any tracks of a sequence, the display will read "OUT OF MEMORY!" and will not alter anything. If there is room to copy some of the sequence's tracks, the display will read "COPY THRU TRK *", the "*" being the last track of the sequence that was copied. All of the remaining tracks will still contain their previous data.

6. COPYING MERGES

Any merge can be copied to another merge by using EDIT MODE 8. The display will read "COPY A MERGE" while the 8 is being held down, and then "COPY MERGE n TO *" when it is released. The "n" will display the current merge number. Select the destination merge and the "*" will be replaced by the destination merge number. If there is not enough room in memory to copy the merge, the display will read "OUT OF MEMORY!" and will not alter anything.

7. REASSIGNING VOICES OR CVS

The voice assignments for a track can now be changed AFTER a track has been recorded. The procedure is the same as selecting voices before: After selecting the desired sequence and record track, "SELECT VOICES" or "SELECT EXT CVS" as desired. The difference is that now the voice assignments can be changed at any time and the track will play on the newly assigned voices or CVs.

Any number of CVs can be assigned to a track but recording can only take place on one CV. If a track assigned to more than 1 CV is recorded on, it will only record to the lowest numbered CV monophonically. The recommended method for recording polyphonically to CVs is to record the track assigned to VOICES and then change the voice assignments to the desired CVs.

It is possible to reassign a track with fewer voices than it was recorded with. If there are more notes to be played than voices assigned, the extra notes will not be heard.

8. PLAY MODE FROM "SELECT PLAY TRACKS"

PLAY can now be entered from the SELECT PLAYTRACKS mode by pressing the PLAY button. The DSX will stay in select playtracks while playing. NOTE: The DSX will only Auto-Start from STOP.

9. PLAYING SUCCESSIVE MERGES

A new merge can now be selected while playing a merge. If the 0-9 buttons are pressed while a merge is playing, the newly selected merge will play after the current merge is through. If a new merge is selected and PLAY is pressed before the old merge is finished, the new merge will begin right away. This operation is identical to changing sequences while playing.

10. DISPLAYING PLAY TRACKS WHILE PLAYING A MERGE

Play tracks can now be displayed while playing a merge. If the SEQUENCE button is pressed while playing a merge, the current playtracks will come up on the 0-9 leds, just as when playing a sequence. If the merge has been programmed to turn on or off certain playtracks at different parts of the merge, the lights will show which tracks are on or off at any given time. The current tracks being played can be altered by pressing the 0-9 buttons. Any changes will not affect the programming of the merge, and when the next part of the merge is played, the playtracks for the new part will be recalled and displayed. The length of each sequence in a merge is determined by the length of the tracks that are currently on, so that if all recorded tracks in a part of a merge are turned off, the merge will immediately advance to the next part.

11. LOADING INDIVIDUAL SEQUENCES AND MERGES FROM TAPE

Individual sequences and merges can now be loaded into the DSX from cassette tape. Enter CASSETTE MODE. To load in a single sequence, press the sequence number before pressing cassette PLAY. Press PLAY and play in the cassette all the way through. The sequence selected will be loaded into memory, and all other sequences and merges will remain untouched. Any old data in the selected sequence location will be erased even if the new data loads improperly. If there is not enough room in memory, the DSX will load in as many tracks as possible and then display "OUT OF MEMORY!".

To load in an individual merge, follow the same procedure as above, but press the MERGE button and then the merge number before pressing PLAY. Remember that a merge does not contain any notes, but only of list of sequences to be played. Therefore, all sequences used in a merge must be loaded into memory in order to make the merge play properly.

NOTE: Selective loading of sequences and merges can only be made from Revision 3.01 cassettes. To convert an old tape to 3.01, load the old tape into memory, and then re-save it again. The tape will have the same data, but it will now be a Rev 3.01 cassette.

12. IMPROVED RECOVERY OF BAD CASSETTE TAPES

The new cassette format includes an ID for each track, which enables loading individual sequences and merges, and also allows cassettes with bad sections to be loaded in, so that any good tracks can be recovered. After a bad cassette has been loaded in, the display will read "ERROR IN DATA" but most of the data in memory will be valid. Whichever tracks had the errors on the cassette will no longer exist, but all others will be intact.

LOADING OLDER REVISION CASSETTES

The Revision 3.01 DSX software will read tapes made on any DSX, but older (before revision 3.01) DSXs cannot read the new cassettes. Older DSXs must be updated to revision 3.01 before the new tapes can be loaded in.

13. POWER ON STATUS

The DSX will now turn on in whatever state it was in when power was turned off. Whatever sequence, merge, or track had been selected, whatever quantize, metronome, or tempo setting when power was turned off, all of these settings will remain the same when power is turned back on.

14. OPERATING THE DSX WITHOUT A SYNTHESIZER

The DSX can now be operated without being connected to the OB-8. The message "CONNECT SYNTH" no longer exists. Instead, the message "* OBERHEIM DSX *" will read "! OBERHEIM DSX !" when the synth is disconnected. All functions will operate as normal, although recording notes is naturally impossible without a synthesizer being connected to the computer interface. This feature is useful if it is desired to play just the CV and GATEs without having to connect the OB-8.

CHANGES OF OPERATION:

1. CV OUTPUTS ON/OFF used to be switched when pressing DISPLAY while holding TRANSPOSE. This is now switched on the new "SELECT OPTIONS" page (see "NEW FEATURES").

2. The AUTO START feature of the External Clock used to be turned on or off by using a stereo or mono clock cable. This is now switched on and off from the new "SELECT OPTIONS" page (see "NEW FEATURES"). This feature is used to make the DSX jump into play when the DMX or DX is started, and has now been expanded to allow automatic starting from a Sync-to-Tape tone as well.

3. The 5 scrolling help display messages have been eliminated to make room for new features. Pressing DISPLAY while in stop now always shows the number of notes left in memory. Previously, the available notes could only be displayed when in "record ready" (RECORD led flashing). The 5 messages that are gone were accessed when DISPLAY was pressed while in STOP, MERGE, MERGE EDIT, SELECT SEQUENCE, and SELECT RECORD TRACK. Multiple choice functions such as selecting the Quantize or Click value will still display the possible choices by pressing DISPLAY.

4. The DSX will now only recall the tempo of a sequence in a merge if playtrack 0 for that sequence is turned on. This has no effect when clocking externally.

5. Edit mode 5 (COPY VOICE TO CVS) no longer exists. The CV assignments (SELECT EXT CVS) now allow multiple CVs to be selected at one time. Since voice assignments can now be changed after a track has been recorded (see below), copying a voice track to CVs can be accomplished by reassigning the voices to CVs with the SEQUENCE button.

6. The DSX will no longer automatically turn on all playtracks when a new sequence has been selected while in play. The playtracks will remain in their previously selected state.

7. If a track is recorded in real time while being clocked from the DMX, and the DMX is in song mode so the end of the song sets the end of the track, the DSX will end exactly on the beat. Previously, the DSX would be behind by one clock pulse if this method was used.

8. The SPEED buttons will no longer change the tempo at one constant speed while in stop. They will change the tempo up or down once each 1.2 seconds until it has changed the tempo four times, after which the tempo will change seven times a second. This makes it much easier to get from one tempo to another.

9. The DSX will no longer skip playing a note whose start time was before the end time of the previous note assigned to the same voice. This problem would usually occur when recording a monophonic track to a CV using a quantized mode. While recording in quantize mode, if a note is played late it is automatically moved forward to make it in time. If this note's start time is now before the previous note's release time, the previous note's release time will be changed to be one clock before the new note's start time. Now, the new note will not be silenced by the previous note.