

NEW PAGE 2 FEATURES

The latest version of the Oberheim OB-8 has eight exciting new features not listed in the current Owner's Manual. All of these features are retrofitable to any previously manufactured OB-8 at your local Oberheim Service Center.

The new computer software is labeled A8. For a quick check to see which software is in your OB-8, enter PAGE 2 by pressing the CHORD/PAGE 2 button twice, and hold it down on the second push. While holding, press the SYNC button. While holding both of these buttons down, the software version will be displayed in the Programmer Section. If you currently have version A8 software, the GROUP A and the PROGRAM 8 lights will light up.

NOTE: If a cassette of patches from an OB-8 with old software is loaded into an OB-8 with A8 software, it is possible that some of the new features will be turned on in some of the programs. To eliminate them, simply edit them out of each patch and re-write it into memory.

The software version A8 contains the following new features:

- 1)-- LEGATO PORTAMENTO
- 2)-- EQUAL TIME LINEAR PORTAMENTO
- 3)-- EXPONENTIAL PORTAMENTO
- 4)-- INVERT LFO FREQUENCY MODULATION ON VCO 1
- 5)-- INVERT LFO PULSE WIDTH MODULATION ON VCO 1
- 6)-- VCF TRACKING OF THE BEND LEVER
- 7)-- REVERSABLE BEND LEVER
- 8)-- REVERSABLE MODULATION LEVER

1) LEGATO PORTAMENTO

This mode is turned on from PAGE 2 with the OSC 1 FULL switch and is stored in the patch. THIS MODE CAN BE TURNED ON ONLY WHILE IN UNISON MODE. Turning off UNISON will automatically turn this mode off. When legato portamento is on, the portamento (any kind) will be active only when the keyboard is played legato, e.g. without releasing the key while going from one note to another.

2) EQUAL TIME LINEAR PORTAMENTO

This mode is turned on from PAGE 2 with the OSC 2 HALF switch and is stored in the patch. BEND PORTAMENTO (the UNISON button on PAGE 2) AND EQUAL TIME PORTAMENTO CANNOT BE ON AT THE SAME TIME. When this mode is active, the glide time between any note is independant of the interval between the notes, e.g. it will take the same time to glide from C0 to C1

as it would from C0 to C6. The glide time is controlled by the portamento rate knob. The range of the glide time is smaller than with the regular portamento mode.

3) EXPONENTIAL PORTAMENTO

This mode is turned on from PAGE 2 with the OSC 2 FULL switch and is stored in the patch. BEND PORTAMENTO AND EXPONENTIAL PORTAMENTO CANNOT BE ON AT THE SAME TIME. EQUAL TIME LINEAR PORTAMENTO AND EXPONENTIAL PORTAMENTO CANNOT BE ON AT THE SAME TIME. This mode is essentially identical to the equal time portamento but the "shape" of the glide is exponential instead of linear. This means that the pitch will glide slower and slower as it gets closer to the destination note. This kind of portamento was used on the Oberheim Modular 2,4 & 8 voice synthesizers.

4) INVERT LFO FREQUENCY MODULATION ON VCO 1

This mode is turned on from PAGE 2 with the SYNC switch and is stored in the patch. With this mode on, the LFO modulation of VCO 1's frequency is out of phase by 180 degrees (phase opposition) with respect to the LFO frequency modulation on VCO 2 and the VCF.

5) INVERT LFO PULSE WIDTH MODULATION ON VCO 1

This mode is turned on from PAGE 2 with the F-ENV switch and is stored in the patch. With this mode on, the LFO modulation of VCO 1's pulse width is out of phase by 180 degrees (phase opposition) with respect to the LFO pulse width modulation on VCO 2 and the VOLUME MOD.

6) VCF TRACKED BY THE PITCH BEND LEVER

When VCF TRACK is on, the pitch bend lever controls the VCF frequency. In SPLIT or DOUBLE the VCF will only track the bend lever if it is assigned to it with the UPPER and LOWER buttons in the bend box.

7) REVERSABLE PITCH BEND LEVER

It is now possible to reverse the direction of the pitch bend lever. To do so, hold down the UPPER and AMOUNT buttons above and below the pitch bend lever while you turn the power on. To return the pitch bend to normal operation, repeat the procedure. This setting is not stored with the patch but will remain in its current mode even when the power is turned off. When it leaves the factory the OB-8 is set for the regular direction (the right one!).

8) REVERSABLE MODULATION LEVER

Same as for the pitch lever but you must use LOWER and OSC 2 ONLY (above and below the modulation lever) while you turn on the power.

As with any piece of equipment, the more you know about it, the better you will be able to use it. So experiment! You won't discover all of the capabilities of your new PAGE 2 controllers unless you do.

ADDITIONAL OB-8 SOFTWARE INFORMATION

There are also a few features of the OB-8 that have existed in earlier software versions, but have not been explained in the owner's manual. The following features are on all OB-8s having software version A6 or above. Under normal operation of the OB-8, these features would never be used, but they can be very useful if the unusual situation arises in which the OB-8 is not functioning properly.

1) TAPE STORAGE OF CALIBRATIONS

The OB-8 has a number of calibrations that are stored in its computer memory. Most of these are envelope time calibrations that are set at the factory so that the envelope generators in the OB-8 will be matched from voice to voice and between the upper and lower voices. These calibrations are unique to each OB-8 and are stored on tape automatically each time you save your programs. If for some reason your OB-8 gets out of calibration (due to memory drop), the calibrations on tape can be loaded back into the OB-8 by holding down all six buttons in the FILTER section (OSC 1 ON, OSC 2 HALF, OSC 2 FULL, NOISE, 4 POLE, and TRACK), then pressing PLAY and then playing in the tape (MEMORY PROTECT must be off in order to play in a cassette). The calibrations should only be loaded in if the OB-8 has lost its programs, or the envelope generators do not seem to be operating properly. It is important that these calibrations are loaded in only from a tape made from the same OB-8, otherwise the wrong calibrations will be loaded in.

2) MASTER RESET

If for some reason (memory drop, for example), the OB-8 seems to be functioning improperly (i.e. four voices out of tune with the other four, envelope generators are unmatched, transpose won't work), it is possible to reset the computer inside the OB-8 by pressing all 8 PROGRAM buttons and the

SPLIT button at the same time (use your elbow), WHILE MEMORY PROTECT IS OFF. The reason we made this a difficult procedure is so that it cannot be done accidentally, since all the envelope calibrations will be reset to zero. To then reload the envelope calibrations, follow the procedure listed above. When this reset is done, the envelopes should be matched closely enough for normal operation, but to match them more accurately, the calibrations must be loaded in from tape. If the reset is done with memory protect on, all of the OB-8 functions EXCEPT the envelope calibrations will be reset. This can be useful when it is desired to reset the arpeggiator transpositions, bend amount, bend direction, split transpositions, etc. without affecting any of the calibrations.

NOTE: These functions have been provided as a last resort when there seems to be no other way to correct a problem of envelope matching or transpositions not functioning. Since the consequences of these operations are not user repairable, contact your authorized service center or Oberheim Customer Service to determine whether or not these actions should be taken to solve a particular problem.

USING THE OB-8 MIDI INTERFACE

MIDI

MIDI is an acronym for Musical Instrument Digital Interface. It is a serial computer interface which enables synthesizers and computers to communicate. MIDI was designed to be a universal computer interface through which synthesizers and computers could communicate regardless of manufacturer. Any synthesizer or computer having a MIDI interface will connect to an OB-8.

MIDI CONNECTORS

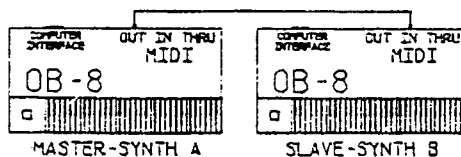
MIDI CONNECTORS are located on the rear panel of the OB-8 or, on the left end bell of an OB-8 with a MIDI retrofit. The MIDI IN connector receives MIDI information. The MIDI OUT connector transmits MIDI information from the synthesizer. Keyboard information, patch changes, and bend lever/modulation lever changes generated on an OB-8 will be sent to the MIDI OUT connector. The MIDI THRU connector is used to pass MIDI information which was generated by another synthesizer/computer. Information played on an OB-8 is not available at it's own MIDI THRU connector.

BASIC CONNECTION

The simplest application is to connect 2 OB-8's together. The Master OB-8 will be referred to as Synthesizer A and will, for the following demonstrations, be the controller. The second OB-8 will be referred to as Synthesizer B or the Slave, and will be controlled by the Master OB-8. We will use this configuration to explain MIDI operation and associated controls.

NOTE: WHEN CONNECTING COMPUTER BASED PRODUCTS TOGETHER, MAKE SURE POWER IS OFF ON BOTH UNITS.

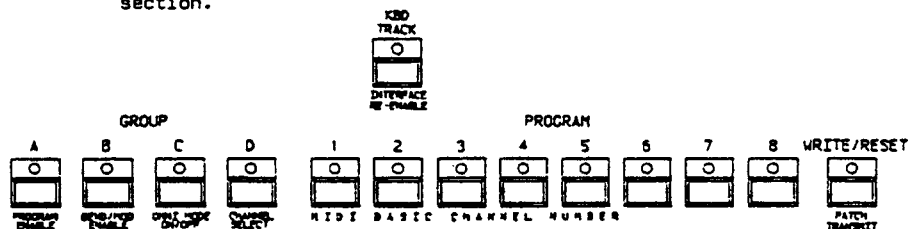
Using a cable with 5 pin male DIN connectors on each end, connect MIDI OUT on the master OB-8 to MIDI IN on the Slave OB-8. Turn power on and press auto tune. Notes played on the Master OB-8 will also be played by the Slave OB-8.



(Figure 1.)

MIDI SWITCHES AND FUNCTIONS

All MIDI SWITCHES are located in the PAGE 2 feature of the OB-8. Enter PAGE 2 by rapidly pressing the PAGE 2 switch twice. The Led for the PAGE 2 switch will light signifying that you are in PAGE 2. Most of the MIDI related switches are located in the programmer section.



(Figure 2.)

PROGRAM ENABLE / DISABLE -- SWITCH "A" (Page 2)

This switch enables and disables two patch related functions: patch select, and patch data transfer. When the OB-8 is powered up these functions are disabled.

SELECTING PATCHES -- In PAGE 2 on both OB-8's, press the A switch. The A Led will light, indicating the ability to transmit/receive program information. Selecting a patch program in PAGE 1 on the Master OB-8 will select the same patch program on the Slave OB-8. (EXCLUDING SPLITS & DOUBLES).

PATCH TRANSMIT -- "WRITE/RESET" SWITCH (Page 2)

The program enable switch also allows you to transfer patches from the Master OB-8 to the Slave OB-8. (NOTE: Memory Protect must be off on the Slave OB-8.) In PAGE 1 on the Master OB-8, select patch D-1. Now, enter Page 2 and press the WRITE button on the Master OB-8. After a short delay, the WRITE Led will light, indicating that the program Patch D-1 has been transferred from the memory of the Master OB-8 to memory location D-1 in the Slave OB-8. To play this patch on the Slave OB-8, you must return to PAGE 1 and re-select Patch D-1, or select a different patch on the Master OB-8 then select D-1. Now both OB-8's will play Patch D-1.

PITCH BEND AND MODULATION LEVER ENABLE / DISABLE -- "B" SWITCH (Page 2)

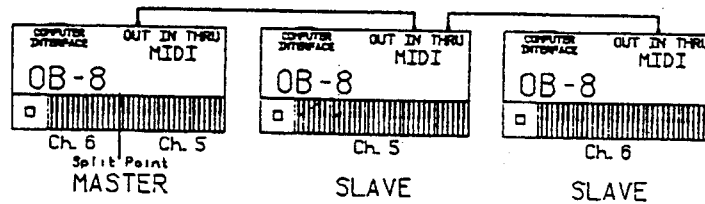
When the OB-8 is powered on, the pitch bend and modulation levers are not sent or received over MIDI (disabled). They must be enabled on both units each time power is turned on.

In PAGE 2 on both OB-8's, press the B switch. The B Led will light, indicating the ability to transmit and receive pitch bend/modulation information. When the Slave OB-8 receives pitch bend/modulation information, it uses that information based on the settings on it's own Performance/Modulation Panel. In other words, if the slave machine is set to bend a semi-tone, it will bend at that interval regardless of the bend setting of the master machine.

OMNI MODE ON / OFF -- "C" SWITCH (Page 2)

The power up or default condition is OMNI MODE on, C Led lit.

When OMNI MODE is on, the OB-8 receives on ALL MIDI channels and transmits all data on Basic Channel N only.
 When OMNI MODE is off, the OB-8 receives on MIDI Basic Channel N only. When OMNI MODE is off in the transmitting OB-8, it will transmit on two MIDI channels. Notes above the split-point are sent on Basic Channel N. Notes below split-point are sent on the Basic Channel plus one. Example: When power is turned on the Basic Channel is always channel 1. After OMNI MODE is turned OFF, the upper half of keyboard is sent on channel 1, and the lower is sent on channel 2. If the Basic Channel is changed to channel 5, the upper will be channel 5 and the lower will be channel 6.



(Figure 3.)

MIDI BASIC CHANNEL SELECT / DISPLAY -- "D" SWITCH (Page 2)

The power up or default MIDI Basic Channel is channel 1. To change the Basic Channel, PRESS & HOLD the D switch. The D Led the 1 led will light, indicating that the Basic Channel is channel 1. If you select 5, the 5 led will light, indicating that the Basic Channel is now channel 5.

NOTE: Do not attempt to change MIDI channels while notes are playing. This may cause a note to get "stuck" ON. If this happens, try the DSX RE-ENABLE / TURN OFF MIDI NOTES switch (see next section) or switch in & out of cassette mode or power OFF/ON to reset.

DSX RE-ENABLE / TURN OFF MIDI NOTES -- "TRACK" SWITCH (Page 2)

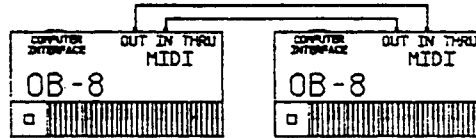
The hardware design of the OB-8 does not allow MIDI IN and the DSX COMPUTER INTERFACE to be used at the same time without possible MIDI errors. The OB-8 receives information from the DSX sequencer thru the 40 pin connector on the rear panel of the OB-8. Any time MIDI IN information is detected by the OB-8, the DSX interface is DISABLED and the DSX RE-ENABLE Led will light. While the DSX RE-ENABLE Led is on, the DSX cannot play the OB-8. Pressing the DSX RE-ENABLE switch causes the Led to go out and re-enables the parallel interface.

NOTE: The Yamaha synthesizers have a MIDI option called "active sense". They are ALWAYS transmitting MIDI data even if no notes are being played. Connecting a DX-7 to MIDI IN on an OB-8 will not allow you to use the DSX. The OB-8 will continually detect MIDI information and will keep the parallel interface disabled.

OTHER CONNECTION CONFIGURATIONS

MASTER <=> SLAVE

BY adding another MIDI cable, it is possible to use either OB-8 to control the other. Connect MIDI OUT on the Slave to MIDI IN on the Master. Now either OB-8 can be the Master or the Slave. Information received at the MIDI IN connectors is NOT available at the MIDI OUT connector of the same synthesizer. This prevents an endless loop situation from occurring which would be the MIDI version of acoustical feedback.

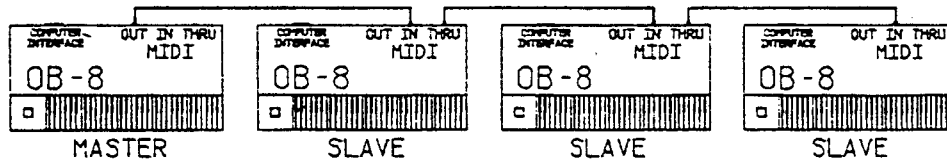


(Figure 4.)

SIMPLE CHAIN

It is possible to connect synthesizers together in a configuration known as a CHAIN. This allows one synthesizer to control many synthesizers. Connect them as follows:

SYNTH A MIDI OUT	to	SYNTH B MIDI IN
SYNTH B MIDI THRU	to	SYNTH C MIDI IN
SYNTH C MIDI THRU	to	SYNTH D MIDI IN

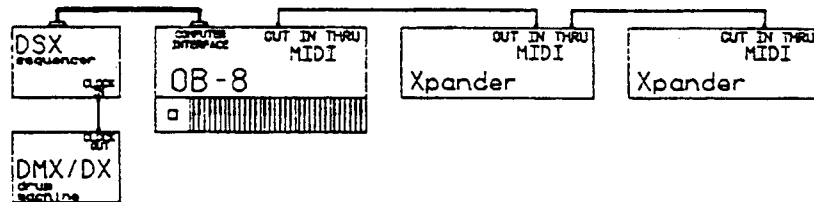


(Figure 5.)

If synthesizers B, C and D are in OMNI mode or are all on the same MIDI channel as synthesizer A, synthesizer A will control all synthesizers.

USING MIDI WITH THE DSX

The sequencing power of the DSX can be used with ANY synthesizer having a MIDI interface. With a DSX sequencer playing the Master OB-8, any synthesizer connected to the MIDI OUT connector of the Master OB-8 will DOUBLE the notes played by the OB-8. Also, you can use the OB-8 to merely pass the DSX information to the MIDI OUT connector causing any synthesizer with MIDI IN to be controlled by the DSX.



(Figure 6.)

Oberheim Electronics is excited about the future of MIDI and plans to include MIDI on future products. With MIDI on your OB-8 you now have a very special connection to future musical developments.

OB-8 MIDI IMPLEMENTATION

TRANSMITTED DATA - CHANNEL VOICE MESSAGES

Status	Data Bytes	Description
1000 xxxx	Okkk kkkk Ovvv vvvv	Note off. (See notes no. 1-2.) Ovvv vvvv=note off velocity: always 00H.
1001 xxxx	Okkk kkkk Ovvv vvvv	Note on. (see notes no. 1-2.) Ovvv vvvv=40H
1011 xxxx	Occc cccc Ovvv vvvv	Control Change. (if enabled). Occc cccc=Control number (01=mod lever). Ovvv vvvv = control value.(range 0-1EH).
1100 xxxx	Onnn nnnn	Program select. (if enabled). Onnn nnnn =0 through 77H.
1110 xxxx	Ovvv vvvv Ovvv vvvv	Pitch Bend change LSB (see note 3). Pitch Bend change MSB

TRANSMITTED DATA - SYSTEM MESSAGES

1111 0000	10H Oddd dddd 01H Occc cccc data F7H	System Exclusive . Oberheim I.D. no. Device number . 03-8 = 01H Command Byte 1 : Program data dump follows. Command Byte 2 : Program number. Program data. (see note 4) End of System Exclusive Status Byte.
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RECOGNIZED RECEIVE DATA - CHANNEL VOICE MESSAGES

Status	Data Bytes	Description
1000 xxxx	Okkk kkkk Ovvv vvvv	Note off. (See notes no. 1-2.) Ovvv vvvv=note off velocity: ignored
1001 xxxx	Okkk kkkk Ovvv vvvv	Note on. (see notes no. 1-2.) Ovvv vvvv=0: Note Off. Ovvv vvvv not=0, velocity ignored.
1011 xxxx	Occc cccc Ovvv vvvv	Control Change. (if enabled). Occc cccc=Control number (01=mod lever). Ovvv vvvv = control value.(0-1EH)
1100 xxxx	Onnn nnnn	Program select. (if enabled). Onnn nnnn =0 through 77H
1110 xxxx	Ovvv vvvv Ovvv vvvv	Pitch Bend change LSB (see note 3). Pitch Bend change MSB

RECOGNIZED RECEIVE DATA - SYSTEM MESSAGES

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1111 0000  10H      System Exclusive . Oberheim I.D. no.
            0ddd dddd Device number : 08-8 = 01H
            01H      Command Byte 1 : Program data dump follows.
            0ccc cccc Command Byte 2 Program Number
            data     data (see note 4 for data format)
            F7H      End of System Exclusive Status Byte.

1111 0000  10H      System Exclusive . Oberheim I.D. no.
            0ddd dddd Device number . 08-8 = 01H
            00H      Command Byte 1 Program data dump Request.
            0ccc cccc Command Byte 2 Program Number
            F7H      End of System Exclusive Status Byte.

1111 0110  -        System Common Message : Tune Request
    
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NOTES:

1. xxxx : Basic Channel number minus 1. i.e. 0000 is CH.1. and 0001 is CH.2. range : CH.1-8.
2. kkk kkkk = note number. Range 24H-60H
3. Sensitivity of the pitch bender is selected in the receiver. Center position (no pitch change) is 2000H, which is transmitted ExH-00H-40H. Maximum transmitted value is 7F40H. (The 6'lsb's are not looked at by the OB-8).
4. OBERHEIM OB-8 PROGRAM BIT MAP :

Sent as 4 bit nibbles, right justified, LS nibble sent first.

	: BIT 7 :	BIT 6 :	BIT 5 :	BIT 4 :	BIT 3 :	BIT 2 :	BIT 1 :	BIT 0 :
BYTE 0 :	VCF REL	(6 BITS)				LFO WAVE		
:	:	:	:	:	:	2	1	:
BYTE 1 :	VCA REL	(6 BITS)				UNISON		
:	:	:	:	:	:	0	:	:
BYTE 2 :	VCF DCY	(6 BITS)				FILTER	OSC 2	
:	:	:	:	:	:	FM	FM	:
BYTE 3 :	VCA DCY	(6 BITS)				OSC 2 WAVEFORM		
:	:	:	:	:	:	1	0	:
BYTE 4 :	VCF ATK	(6 BITS)				OSC 1 WAVEFORM		
:	:	:	:	:	:	1	0	:
BYTE 5 :	VCA ATK	(6 BITS)				OSC 2	OSC 1	
:	:	:	:	:	:	PWM	PWM	:

BYTE 6	:	VCF SUS	(6 BITS)	:	NOISE	:	4 POLE	:
:	:	:	:	:	:	:	:	:
BYTE 7	:	VCA SUS	(6 BITS)	:	OSC 2	:	OSC 2	:
:	:	:	:	:	ON	:	HALF	:
BYTE 8	:	VCF MOD	(6 BITS)	:	OSC 1	:	TRACK	:
:	:	:	:	:	ON	:	:	:
BYTE 9	:	VCF RES	(6 BITS)	:	PW1	:	VCO1	:
:	:	:	:	:	180'	:	180'	:
BYTE 10	:	VCO 1 PW	(6 BITS)	:	VCA	:	F-ENV	:
:	:	:	:	:	MOD	:	:	:
BYTE 11	:	LFO FREQ	(6 BITS)	:	SYNC	:	OSC 1	:
:	:	:	:	:	:	:	FM	:
BYTE 12	:	FM AMNT	(6 BITS)	:	5	:	4	:
:	:	:	:	:	VOLUME			:
BYTE 13	:	PWM AMNT	(6 BITS)	:	3	:	2	:
:	:	:	:	:		:		:
BYTE 14	:	PORT AMT	(6 BITS)	:	1	:	0	:
:	:	:	:	:		:		:
BYTE 15	:	VCO2 DETUNE	(6 BITS)	:	VCO 2 PW	:		:
:	:	:	:	:	5	:	4	:
BYTE 16	:	VCF FREQ	(6 BITS)	:	3	:	2	:
:	:	:	:	:		:		:
BYTE 17	:	VCO2 FREQ	(6 BITS)	:	1	:	0	:
:	:	:	:	:		:		:
BYTE 18	:	VCO1 FREQ	(6 BITS)	:	SPARE	:	LEGATO	:
:	:	:	:	:		:	PORT.	:
BYTE 19	:	RETRIG POINT	(6 BITS)	:	RETRIG	:	LFO WAVE:	:
:	:	:	:	:	2	:	1	:
BYTE 20	:	PEDAL SUSTAIN	(6 BITS)	:	0	:	PORT	:
:	:	:	:	:		:	BEND	:
BYTE 21	:	FM VIB RAISE	(6 BITS)	:	LFO	:	FM DLY	:
:	:	:	:	:	TRACK	:	INVERT.	:
BYTE 22	:	PWM VIB RAISE	(6 BITS)	:	PORT	:	PORT	:
:	:	:	:	:	QUANT	:	MATCH	:
BYTE 23	:	FM VIB DELAY	(6 BITS)	:	180'	:	90'	:
:	:	:	:	:		:		:

BYTE 24 :	PWM VIB DELAY(6 BITS)	:PWM DLY: PWM :
:	:	:INVERT.: QUANT :
BYTE 25 :	VOICE DETUNE (6 BITS)	: EXPO : CONST.:
:	:	: PORT. : PORT. :
BYTE 26 :	BEND AMOUNT (6 BITS)	:LFORATE: FM :
:	:	: DELAY : QUANT :

MODE

The OB-8 defaults to OMNI ON upon power up. If the OB-8 is a receiver, it will receive on all channels. If the OB-8 is the transmitter, it will transmit on one channel. (selectable)

The OB-8 may also be operated in OMNI OFF mode. If the OB-8 is a receiver, it will now receive ONLY on the selected Basic Channel. If the OB-8 is used as transmitter, it will now transmit the upper half of the keyboard on the Basic Channel, and the lower half will be transmitted on the Basic Channel + 1. Pitch bend, program select, etc. will be transmitted on both channels. The Channel Split Point is the same as the regular Split Point. (default is middle C.) THIS MODE IS INDEPENDENT OF SPLIT MODE.

The OB-8 is always in POLY MODE.

FRONT PANEL SELECTABLE FUNCTIONS (ON PAGE TWO OF FRONT PANEL)

NOTE: Functions must be enabled on source AND destination machines to work.

Switch	Function
A	Enable/Disable program change and program dump. Power-On default: disabled.
B	Enable/Disable Pitch bend and modulation controls. Default: disabled.
C	OMNI ON/OFF. Toggle OMNI status. Power-On default is OMNI ON (led is lit.) (see MODE)
D	Channel display/select. Press and hold down D button to display or select the Basic Channel.
WRITE	Dump current STORED program to MIDI. NOTE: SWITCH "A", "PROGRAM ENABLE", MUST BE ENABLED FOR A DUMP TO OCCUR.
TRACK	Sequencer Re-Enable / Turn off MIDI Notes.

IMPORTANT: The OB-8 cannot RECEIVE MIDI info and be run by the DSX sequencer simultaneously (due to hardware design.) So, to prevent MIDI data errors, the sequencer is DISABLED upon receiving any data from MIDI IN. This condition is displayed by the TRACK led on page 2. When you no longer wish to use the OB-8 as a receiver, and you want to use the DSX, disconnect MIDI IN and press the TRACK button. The led will go out, the sequencer will work normally, and any notes turned on by MIDI will be turned off.

Power-On default: TRACK light off, Sequencer Enabled.

OB-8 Revision B5 Software
Operation Guide
8/15/84

This revision of OB-8 software (version B5) has been made to improve the operation of the OB-8 with the DSX, as well as to add some new MIDI features. For a complete explanation of the OB-8's existing features, please refer to the OB-8 Owner's Manual and the OB-8 Revision B3 Software Operation Guide. To verify the software version number of an OB-8, press the PAGE 2 button twice and hold it down the second time it is pressed (the PAGE 2 led should now be lit). While holding down the PAGE 2 button, press and hold the SYNC button. While holding both switches down, the PROGRAMMER leds will display the OB-8's software version number. If the B led in the GROUP section and the 5 led in the PROGRAM section are now lit, the software version is B5. This version has all of the features of version B3, as well as the following NEW FEATURES:

1. The Sustain Footswitch on the OB-8 has now been added to the MIDI interface. This means that when two OB-8s are connected together through MIDI, the Sustain Footswitch on the MASTER OB-8 (the one using MIDI OUT) will also control the Sustain on the SLAVE OB-8 (the one using MIDI IN). This feature can also be used by other synthesizers that transmit and receive Sustain Footswitch information on MIDI.

2. When an OB-8 with MIDI is connected to a DSX Digital Sequencer, the MIDI output of the OB-8 will send out the notes played by the DSX through the MIDI output. This allows additional synthesizers with MIDI to play the same thing that the OB-8 is playing from the DSX. Now with version B5 (and a DSX with version 3.00 or above), it is possible to have the DSX control the OB-8 AND a synthesizer connected to the OB-8's MIDI OUT INDEPENDENTLY. By assigning the DSX's CV outputs to the OB-8 MIDI (see "DSX REVISION 3.00 INSTRUCTIONS"), the DSX will send whatever the DSX's CVs are playing to the OB-8's MIDI OUT without the OB-8 playing it. The notes that the OB-8 are playing will NOT be sent to the MIDI OUT, so that the two synthesizers can play completely independently. This also means that when this feature is used, and the DSX is not playing anything on the CVs, no notes will be sent to the OB-8's MIDI OUT regardless of what is being played on the OB-8.

3. The overall speed of operation on the OB-8 has been increased to allow the DSX to communicate with the OB-8 faster, resulting in increased accuracy of the timing of notes played by the DSX.

4. The range of vibrato lever has been changed for better compatibility.

OB-8 MIDI IMPLEMENTATION VERSION B-5

TRANSMITTED DATA - CHANNEL VOICE MESSAGES

Status	Data Bytes	Description
1000 xxxx	Okkk kkkk Ovvv vvvv	Note off. (See notes no. 1-2.) Ovvv vvvv = note off velocity: always 40H.
1001 xxxx	Okkk kkkk Ovvv vvvv	Note on. (see notes no. 1-2.) Ovvv vvvv = 40H
1011 xxxx	Occc cccc Ovvv v000	Control Change. (if enabled). Occc cccc = Control number (01=mod lever). Ovvv v000 = control value.(range 0-78H. Lowest 3 bits are ignored).
1011 xxxx	Occc cccc Ovvv vvvv	Control Change. (if enabled). Occc cccc = Control number (40H = Sustain footswitch) Ovvv vvvv = control value.(0 = off. 7FH = on.)
1100 xxxx	Onnn nnnn	Program select. (if enabled). Onnn nnnn = 0 through 77H.
1110 xxxx	Ovvv vvvv Ovvv vvvv	Pitch Bend change LSB (see note 3). Pitch Bend change MSB

TRANSMITTED DATA - SYSTEM MESSAGES

1111 0000	10H Oddd dddd 01H Occc cccc data F7H	System Exclusive . Oberheim I.D. no. Device number . OB-8 = 01H Command Byte 1 : Program data dump follows.. Command Byte 2 : Program number. Program data. (see note 4) End of System Exclusive Status Byte.
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RECOGNIZED RECEIVE DATA - CHANNEL VOICE MESSAGES

Status	Data Bytes	Description
1000 xxxx	Okkk(kkkk Ovvv vvvv	Note off. (See notes no. 1-2.) Ovvv vvvv = note off velocity: ignored
1001 xxxx	Okkk kkkk Ovvv vvvv	Note on. (see notes no. 1-2.) Ovvv vvvv = 0: Note Off. Ovvv vvvv not = 0, velocity ignored.
1011 xxxx	Occc cccc Ovvv v000	Control Change. (if enabled). Occc cccc = Control number (01=mod lever). Ovvv v000 = control value.(0-78H. Lower 3 bits are ignored.)
1100 xxxx	Onnn nnnn	Program select. (if enabled). Onnn nnnn = 0 through 77H
1110 xxxx	Ovvv vvvv Ovvv vvvv	Pitch Bend change LSB (see note 3). Pitch Bend change MSB

RECOGNIZED RECEIVE DATA - CHANNEL MODE MESSAGES

1011 xxxx	0111 1011 0000 0000	cccc cccc = 123 (7BH) : All notes off. vvvv vvvv = 0. The OB-8 turns off all notes that were turned on by MIDI.
1011 xxxx	0111 1100 0000 0000	cccc cccc = 124 (7CH) : OMNI mode off. vvvv vvvv = 0. The OB-8 turns OMNI mode off and turns off all notes that were turned on by MIDI.
1011 xxxx	0111 1101 0000 0000	cccc cccc = 125 (7DH) : OMNI mode on. vvvv vvvv = 0. The OB-8 turns OMNI mode on and turns off all notes that were turned on by MIDI.
1011 xxxx	0111 1110 0000 0000	cccc cccc = 126 (7EH) : MONO mode on. vvvv vvvv = 0. The OB-8 has no MONO mode. When this command is received the OB-8 switches to OMNI on / POLY mode and turns off all notes that were turned on by MIDI.
1011 xxxx	0111 1111 0000 0000	cccc cccc = 127 (7FH) : POLY mode on. vvvv vvvv = 0. The OB-8 is always in POLY so no mode change occurs. All notes are turned off that were turned on by MIDI.

RECOGNIZED RECEIVE DATA - SYSTEM MESSAGES

1111 0000	10H 0ddd dddd 01H 0ccc cccc data F7H	System Exclusive . Oberheim I.D. no. Device number : OB-8 = 01H Command Byte 1 : Program data dump follows. Command Byte 2 Program Number data (see note 4 for data format) End of System Exclusive Status Byte.
1111 0000	10H 0ddd dddd 00H 0ccc cccc F7H	System Exclusive . Oberheim I.D. no. Device number . OB-8 = 01H Command Byte 1 Program data dump Request. Command Byte 2 Program Number End of System Exclusive Status Byte.
1111 0110	-	System Common Message : Tune Request

NOTES:

1. xxxx : Basic Channel number minus 1. i.e. 0000 is CH.1. and 0001 is CH.2.
range : CH.1-8.
2. kkk kkkk = note number. Range 24H-60H
3. Sensitivity of the pitch bender is selected in the receiver. Center position (no pitch change) is 2000H, which is transmitted ExH-00H-40H. Maximum transmitted value is 7F40H. (The 6 lsb's are not looked at by the OB-8).
4. OBERHEIM OB-8 PROGRAM BIT MAP :

Sent as 4 bit nibbles, right justified, LS nibble sent first.

	: BIT 7 :	BIT 6 :	BIT 5 :	BIT 4 :	BIT 3 :	BIT 2 :	BIT 1 :	BIT 0 :
BYTE 0	:	VCF REL	(6 BITS)	:	LFO WAVE	:	2	1
	:			:		:		
BYTE 1	:	VCA REL	(6 BITS)	:	:UNISON	:	0	
	:			:		:		
BYTE 2	:	VCF DCY	(6 BITS)	:	:FILTER	: OSC 2	:	
	:			:	: FM	: FM	:	
BYTE 3	:	VCA DCY	(6 BITS)	:	:OSC 2 WAVEFORM	:	1	0
	:			:		:		
BYTE 4	:	VCF ATK	(6 BITS)	:	:OSC 1 WAVEFORM	:	1	0
	:			:		:		
BYTE 5	:	VCA ATK	(6 BITS)	:	: OSC 2	: OSC 1	:	
	:			:	: PWM	: PWM	:	
BYTE 6	:	VCF SUS	(6 BITS)	:	: NOISE	:4 POLE	:	
	:			:			:	
BYTE 7	:	VCA SUS	(6 BITS)	:	: OSC 2	: OSC 2	:	
	:			:	: ON	: HALF	:	
BYTE 8	:	VCF MOD	(6 BITS)	:	: OSC 1	: TRACK	:	
	:			:	: ON		:	
BYTE 9	:	VCF RES	(6 BITS)	:	: PW1	: VCO1	:	
	:			:	: 180'	: 180'	:	
BYTE 10	:	VCO 1 PW	(6 BITS)	:	: VCA	: F-ENV	:	
	:			:	: MOD		:	
BYTE 11	:	LFO FREQ	(6 BITS)	:	: SYNC	: OSC 1	:	
	:			:		: FM	:	

BYTE 12 :	FM AMNT (6 BITS)	:	5	:	4	:
:	:	:	VOLUME		:	:
BYTE 13 :	PWM AMNT (6 BITS)	:	3	:	2	:
:	:	:	:	:	:	:
BYTE 14 :	PORT AMT (6 BITS)	:	1	:	0	:
:	:	:	:	:	:	:
BYTE 15 :	VCO2 DETUNE (6 BITS)	:	VCO 2 PW	:	4	:
:	:	:	5	:	:	:
BYTE 16 :	VCF FREQ (6 BITS)	:	:	:	2	:
:	:	:	3	:	:	:
BYTE 17 :	VCO2 FREQ (6 BITS)	:	:	:	0	:
:	:	:	1	:	:	:
BYTE 18 :	VCO1 FREQ (6 BITS)	:	SPARE	:	LEGATO:	:
:	:	:	:	:	PORT.	:
BYTE 19 :	RETRIG POINT (6 BITS)	:	RETRIG	:	LFO WAVE:	:
:	:	:	2	:	1	:
BYTE 20 :	PEDAL SUSTAIN(6 BITS)	:	:	:	PORT	:
:	:	:	0	:	BEND	:
BYTE 21 :	FM VIB RAISE(6 BITS)	:	LFO	:	FM DLY	:
:	:	:	TRACK	:	INVERT.:	:
BYTE 22 :	PWM VIB RAISE(6 BITS)	:	PORT	:	PORT	:
:	:	:	QUANT	:	MATCH	:
BYTE 23 :	FM VIB DELAY(6 BITS)	:	180	:	90	:
:	:	:	:	:	:	:
BYTE 24 :	PWM VIB DELAY(6 BITS)	:	PWM DLY:	:	PWM	:
:	:	:	INVERT.:	:	QUANT	:
BYTE 25 :	VOICE DETUNE (6 BITS)	:	EXPO	:	CONST.:	:
:	:	:	PORT.	:	PORT.	:
BYTE 26 :	BEND AMOUNT (6 BITS)	:	LFORATE:	:	FM	:
:	:	:	DELAY	:	QUANT	:

MODES

The OB-8 defaults to OMNI ON upon power up. If the OB-8 is a receiver, it will receive on all channels. If the OB-8 is the transmitter, it will transmit on one channel. (selectable)

The OB-8 may also be operated in OMNI OFF mode. If the OB-8 is a receiver, it will now receive ONLY on the selected Basic Channel. If the OB-8 is used as transmitter, it will now transmit the upper half of the keyboard on the Basic Channel, and the lower half will be transmitted on the Basic Channel + 1. Pitch bend, program select, etc. will be transmitted on both channels. The Channel Split Point is the same as the regular Split Point. (default is middle C.) THIS MODE IS INDEPENDENT OF SPLIT MODE.

The OB-8 is always in POLY MODE.

FRONT PANEL SELECTABLE FUNCTIONS (ON PAGE TWO OF FRONT PANEL)

NOTE: Functions must be enabled on source AND destination machines to work.

Switch	Function
A	Enable/Disable program change and program dump. Power-On default: disabled.
B	Enable/Disable Pitch bend and modulation controls. Default: disabled.
C	OMNI ON/OFF. Toggle OMNI status. Power-On default is OMNI ON (led is lit.) (see MODES)
D	Channel display/select. Press and hold down D button to display or select the Basic Channel.
WRITE	Dump current STORED program to MIDI. NOTE: SWITCH "A", "PROGRAM ENABLE", MUST BE ENABLED FOR A DUMP TO OCCUR.
TRACK	Sequencer Re-Enable / Turn off MIDI Notes.

IMPORTANT: The OB-8 cannot RECEIVE MIDI info and be run by the DSX sequencer simultaneously (due to hardware design.) So, to prevent MIDI data errors, the sequencer is DISABLED upon receiving any data from MIDI IN. This condition is displayed by the TRACK led on page 2. When you no longer wish to use the OB-8 as a receiver, and you want to use the DSX, disconnect MIDI IN and press the TRACK button. The led will go out, the sequencer will work normally, and any notes turned on by MIDI will be turned off.

Power-On default: TRACK light off, Sequencer Enabled.