

OB-8

MIDI

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OBERHEIM

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

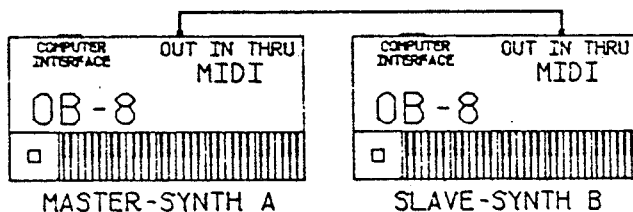
MIDI CONNECTORS are located on the rear panel of the OB-8 or, on the left end bell of an OB-8 with a MIDI retrofit. The MIDI IN connector receives MIDI information. The MIDI OUT connector transmits MIDI information from the synthesizer. Keyboard information, patch changes, and bend lever/modulation lever 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.

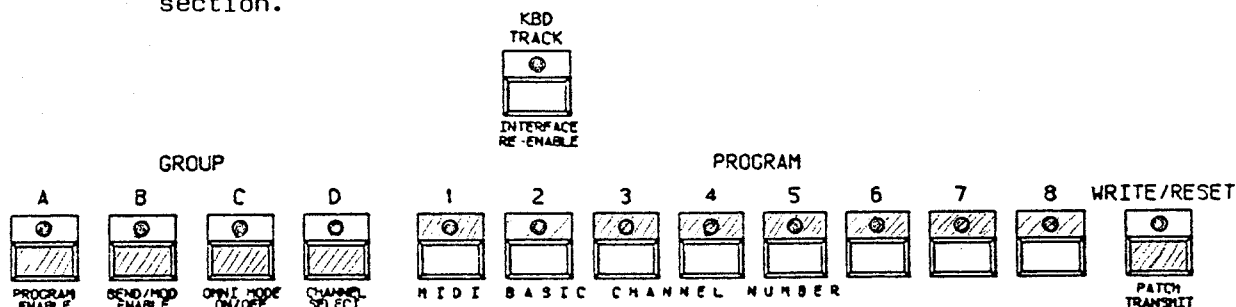
Using a cable with 5 pin male DIN connectors on each end, connect MIDI OUT on the master OB-8 to MIDI IN on the Slave OB-8. Turn power on and press auto tune. Notes played on the Master OB-8 will also be played by the Slave OB-8.



(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.

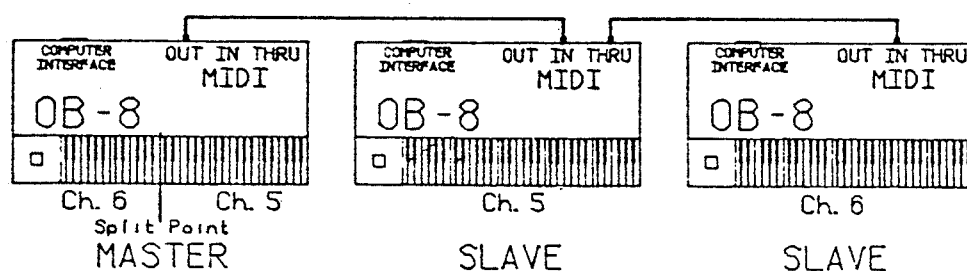
In PAGE 2 on both OB-8's, press the B switch. The B Led will light, indicating the ability to transmit and receive pitch bend/modulation information. When the Slave OB-8 receives pitch bend/modulation information, it uses that information based on the settings on it's own Performance/Modulation Panel. 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)

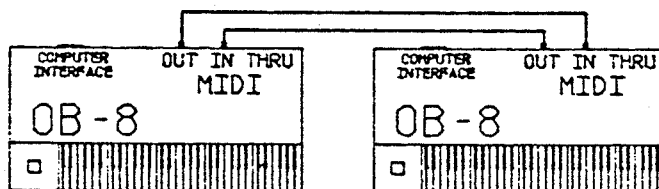
The hardware design of the OB-8 does not allow MIDI IN and the DSX COMPUTER INTERFACE to be used at the same time without possible MIDI errors. The OB-8 receives information from the DSX sequencer thru the 40 pin connector on the rear panel of the OB-8. Any time MIDI IN information is detected by the 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.

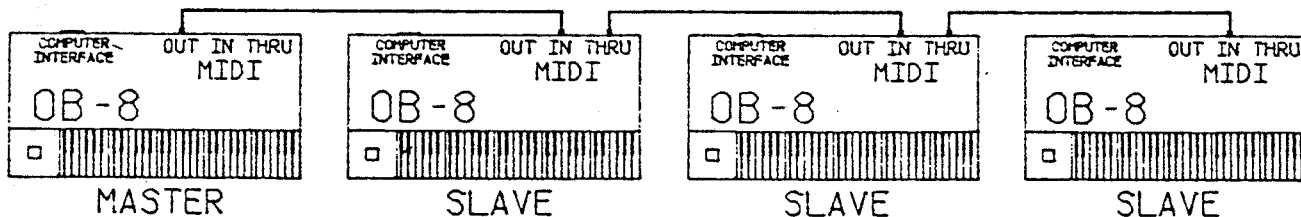


(Figure 4.)

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

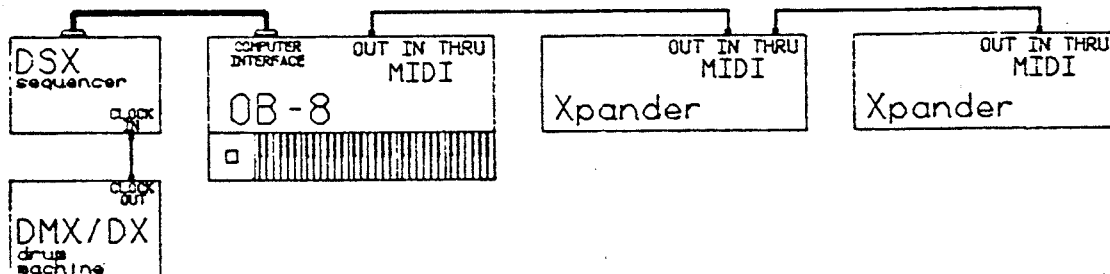


(Figure 5.)

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.

RECOGNIZED RECEIVE DATA - SYSTEM MESSAGES

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1111 0000  10H      System Exclusive . Oberheim I.D. no.
            Oddd dddd Device number : OB-8 = 01H
            01H      Command Byte 1 : Program data dump follows.
            Occc 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.
            Oddd dddd Device number . OB-8 = 01H
            00H      Command Byte 1 Program data dump Request.
            Occc 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)	:		:	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'	:
	:			:		:		:


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

MIDI SPREADSHEET

MIDI To From	KORG Poly 800	OBERHEIM OB-4	OBERHEIM Xpander	OEI Voyetra	Memory Moog	ROLAND JX-3P	ROLAND JP-6	ROLAND Juno-60*	ROLAND Juno 106	ROLAND MSQ-700	ROLAND TR-909	Prophet 600	SCI T-8	SCI Sixtrax	SCI Drumtrax	YAMAHA DX-7	YAMAHA DX-9	
KORG Poly 800	X	OK	NT	NT	OK	OK	OK	OK	NT	NT	NT	OK	NT	OK	NT	OK	OK	
OBERHEIM OB-4	OK	X	NT	NT	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	NT	OK	OK
OBERHEIM Xpander	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
OEI Voyetra	NT	NT	NT	X	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Memory Moog	NG	OK	NT	NT	X	OK	OK	OK	NT	NT	NT	OK	NT	NG	NT	OK	OK	
ROLAND JX-3P	NG	OK	NT	NT	OK	X	OK	OK	NT	NT	NT	NG	NT	NG	NT	OK	OK	
ROLAND JP-6	NG	OK	NT	NT	OK	OK	X	OK	OK	NT	NT	NG	NT	NG	NT	OK	OK	
Roland Juno-60*	NG	OK	NT	NT	OK	OK	OK	X	OK	NT	NT	OK	NT	NG	NT	OK	OK	
ROLAND Juno 106	NT	OK	NT	NT	NT	OK	OK	OK	X	NT	NT	OK	NT	NG	NT	OK	OK	
ROLAND MSQ-700	NT	NT	NT	NT	NT	NT	NT	NT	NT	X	NT	NT	NT	NT	NT	OK	OK	
ROLAND TR-909	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	X	NT	NT	NT	NT	OK	NT	
SCI Prophet 600	OK	OK	NT	NT	OK	OK	OK	OK	OK	NT	NT	X	NT	OK	NT	NT	OK	
SCI T-8	NT	OK	NT	NT	NT	NT	NT	NT	NT	NT	NT	OK	X	NT	OK	NT	NT	
SCI Sixtrax	NS	NS	NT	NT	OK	OK	OK	OK	OK	NT	NT	OK	NT	X	NT	OK	OK	
SCI Drumtrax	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	X	NT	NT	
YAMAHA DX-7	OK	OK	NT	NT	OK	OK	OK	OK	OK	NT	NT	OK	NT	NT	NT	X	OK	
YAMAHA DX-9	OK	OK	NT	NT	OK	OK	OK	OK	OK	NT	NT	OK	NT	NT	NT	OK	X	

CODES

NS = No sound at all from played ("To") Keybd.

NG = Abruptly cut-off voice envelope after key release.

NT = Not tested - presumed compatible.

OK = Tests compatible.

Note:
The played ("To" or receiving) keyboard in all tests was turned on last and the keyboard untouched. All tests were done in all modes accessible by these products.

How to use the MIDI Spreadsheet:

This spreadsheet, prepared by Tom White of Starsound Audio, is designed to help you determine how MIDI keyboards interact with each other.

The products in the From rows are sending MIDI OUT to the To column's product's MIDI IN. [Example: You're using a MemoryMoog (in the "From" row) to control a

Roland JX-3P (in the "To" column). The spreadsheet says that they are compatible (OK).]

From: ANNE GRAHAM-OBERHEIM-US
Subject: OB-8 MIDI IMPLEMENTATION—YOU GOOFED!

Text: In the MIDI Implementation Update Section of the Feb/March issue of the *BULLETIN* it says that "the OB-8 does not transmit or receive MIDI System Exclusive data." It should be noted, as can be seen on page 6 of the same issue, that the OB-8 *does* send and receive MIDI exclusive data. It will send and receive MIDI Program Data dumps and will also respond to requests for program data. It should also be noted that Parameter Changes can be made by altering patch data, as opposed to direct parameter manipulation.

Bye — Anne

Reply: This one gets the old "Boy is our face red" reply from the editorial staff for that issue. Thanks for setting the record straight!

•Roger