

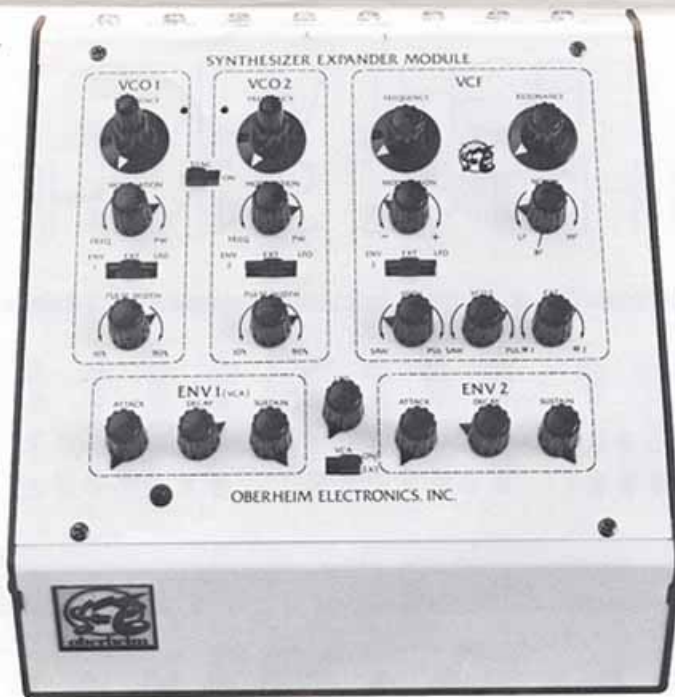


Oberheim

The Oberheim Two, Four, Six and Eight Voice Synthesizers are based on a semi-modular design that is unique within the industry. The basic building block of the design is the Synthesizer Expander Module (SEM). A complete synthesizer in and of itself, it contains: Two Voltage Controlled Oscillators (VCO'S), a four mode, two pole, Voltage Controlled Filter (VCF), Voltage Controlled Amplifier (VCA), Low Frequency Oscillator (LFO), and two Attack, Decay, Sustain (ADS) Envelope Generators. Being modular, the Oberheim synthesizers may be purchased in various configurations dependent upon personal preference or budget. Only the most popular configurations are shown here. When a unit is ordered with fewer voices, i.e. a Two Voice/Four Voice, blank panels will be installed in place of the modules. Other modules available as options are: The Polyphonic Synthesizer Programmer, (a memory device for storing patches/programs for the Four, Six and Eight Voice models) and a Mini Sequencer; (a 2 x 8 sequencer with self contained clock, sample-and-hold and noise generator).

SYNTHESIZER EXPANDER MODULE

The Oberheim Synthesizer Expander Module is a precision electronic music system with a variety of uses. It combines the most often needed circuitry of an electronic music synthesizer in one compact, versatile module. Two voltage controlled oscillators are configured with a four-mode voltage controlled filter, two envelope generators, a low frequency oscillator, and a voltage controlled amplifier. The Synthesizer Expander Module can be used in the following applications: With a Pitch Follower to allow other than keyboard musicians to play the synthesizer; With a keyboard to form a small electronic music synthesizer; To expand the capability of existing synthesizers at low cost; With systems employing a digital sequencer to allow both the main synthesizer and the sequencer to be played simultaneously; With polyphonic keyboards to form multi-voice polyphonic synthesizer systems; As a precision laboratory signal generation and processing device. The various circuits on



the Synthesizer Expander Module can be interconnected by potentiometers and switches on the unit's front panel. These interconnections allow many useful synthesizer "patches" to be quickly and easily generated. A multitude of circuit input and output points are available on connectors internal to the unit. Desired patches not possible with front panel controls can often be accomplished by simple wire connections at these internal points. In addition, these internal points can be brought out to external connector jacks and connected to other equipment in a variety of useful ways. The Expander Module is packaged in a rugged metal case and is self-powered. Oscillator stability is unsurpassed. Due to the unique "piggy-back" printed circuit board construction technique used, the unit is virtually wire free, which enhances reliability and serviceability. Dimensions: 9½" wide, 6½" high, 9½" deep Weight: 6 lbs.

TWO VOICE POLYPHONIC SYNTHESIZER



The Oberheim Two Voice Polyphonic Synthesizer brings true polyphonic operation and modular expansion capability to the compact synthesizer field. Fully loaded, this versatile Synthesizer contains two Synthesizer Expander Modules, each of which is electronically a complete synthesizer, an eight position, two voice Quantized Mini-Sequencer with Sample/Hold, and a true two voice polyphonic, 37 note digital keyboard. This powerful combination of precision electronic music modules allows the synthesizer user to control two completely independent synthesizer voices. For instance, the upper and lower voices from the keyboard can separately be directed to the two Expander Modules for playing two separate musical lines from the keyboard. Or, the Sequencer program can drive one Expander Module while the user plays the second Expander Module from the keyboard. Or, the Sample/Hold can drive one Expander Module while the Sequencer drives the second. □ The secret to the Synthesizer's flexibility is the Synthesizer Expander Module. Despite its small size (7½" by 9" panel size) the Expander Module is a complete basic synthesizer. All the essential circuitry necessary for a complete synthesizer voice is included: two voltage controlled oscillators (VCO's), a voltage con-

trolled filter (VCF), two envelope generators, a low frequency oscillator (LFO) and a voltage controlled amplifier (VCA). In addition, numerous "patches" can be implemented by using the pots and switches contained on the Expander Module's front panel. □ The two voice digital keyboard can be operated in either the polyphonic or monophonic mode. When operated polyphonically, two separate and independent sets of control signals are available to drive the Expander Modules. In the monophonic mode, both sets of signals operate when a single key is pressed. This one key depression can then drive four oscillators, two filters and four envelope generators, thereby making monophonic synthesizer sounds previously available only to users of large studio synthesizers. □ Two Voice Keyboard Electronics include a three position switch which enables you to select left voice first, right voice first or unison. Also included is Portamento for the left and right voice, a two octave Transpose switch and a Pitch Bend Pot with center detent which covers a two octave range. □ The Mini-Sequencer adds greatly to the Two Voice Synthesizer's capability. Basically, it consists of a dual output, eight position quantized analog sequencer, combined with a sample/hold circuit and voltage controlled clock. The two separate control voltage outputs from the Sequencer can be

used to generate two separate melodic lines through two Expander Modules, or one control voltage output can produce the melodic line while the second drives the voltage controlled clock to produce the desired rhythm. The Sample/Hold circuit is an integral part of the Mini-Sequencer. This circuit samples an internal noise generator (the output of which is available as an audio input to the Expander Modules) and includes controls for Range and Lag. □ An Output Module is included which contains a two input mixer with master gain control for mixing together the outputs of the two Expander Modules, and a headphone amplifier and 600 ohm line driver circuit. □ For the synthesizer buyer on a budget, the Two Voice Polyphonic Synthesizer can be purchased in its minimum configuration of one Expander Module and the two voice keyboard. Then, at a later date, the unit can be expanded by the addition of a second Expander Module and the Mini-Sequencer. □ Internally, the Synthesizer is of rigid, all-metal construction. The various modules are mounted on sloping panels which, along with the keyboard, mount on a robust, ½" aluminum plate. The entire assembly is then packaged in a portable, vinyl covered case. Outside case dimensions are 26" wide, 10" high, 19" deep. Weight is 45 lbs.

FOUR VOICE POLYPHONIC SYNTHESIZER



The Oberheim Four Voice Polyphonic Synthesizer with Polyphonic Synthesizer Programmer ushers in a new era in performance/studio synthesizers. It is the first commercially available synthesizer on which four notes can be played simultaneously, plus have the facility to store up to 16 different Programs (Patches) of your own design. Using versatile Synthesizer Expander Modules as its major elements, it is actually four complete synthesizers controlled by a single keyboard. Each Expander Module is a complete synthesizer voice, including voltage controlled oscillators, filter, amplifier and envelope generators. The 49-note keyboard utilizes advanced technology to generate independent control signals for each Expander Module. A variety of keyboard controls are provided to enhance polyphonic "playability". An output mixer allows a stereo "pan" to be generated, producing an unusually live sound. The result is a portable, live performance or studio synthesizer far surpassing in capability other instruments in its price range, and in many cases exceeding in capability large, expensive studio synthesizers. □ The special polyphonic keyboard is unique in the synthesizer field. It uses special circuitry to search the keyboard at high speed to detect when a note has been played. Upon detection of a note depression, control signals are directed to an Expander Module as determined by the keyboard logic and the settings of the keyboard switches. Numerous playing options are provided by these switches. The "Reset-Continuous" switch is used to select whether successive notes are always assigned to Expander Modules in ascending numerical order (1,2,3,4)

or whether a note is assigned to the Expander Module following in sequence the last Expander Module assigned. The "Split" switch effectively splits the keyboard in two equal parts and the "1-3, 2-2, 3-1" switch assigns the lower and upper halves of the keyboard to different independent combinations of Expander Modules. The "Unison" switch places the keyboard in the monophonic mode, with each single key depression driving all four Expander Modules. The "Portamento" switch causes a portamento to occur on all four voices, with the rate controlled by a pot. □ The concept of a synthesizer "voice" is basic to the mechanization of a polyphonic synthesizer. That is to say, it is not enough to have four oscillators only to produce four part polyphony, but rather four complete voltage controlled synthesizer systems are needed, each one including not only oscillators, but also a filter, two envelope generators and a voltage controlled amplifier. In the Four Voice Polyphonic Synthesizer, this task is accomplished by the Synthesizer Expander Module. Despite its small size (7½" x 9" panel size), the Expander Module is a complete basic synthesizer. It includes two voltage controlled oscillators (VCO'S), a voltage controlled filter (VCF), two envelope generators, a low frequency oscillator (LFO) and a voltage controlled amplifier (VCA). The precision and stability of the Expander Module is unsurpassed, a quality that is absolutely essential in a polyphonic situation where as many as eight or sixteen (in the case of the Eight Voice) oscillators must stay in tune with each other. □ A four channel Output Module is provided with the Synthesizer which consists of a four input mixer with a Level control and Pan

control on each channel, a Master gain control, left and right channel 600 ohm line outputs and a pair of stereo headphone amplifier outputs. With the aid of the Pan pots, a stereo "spread" of the four Expander Module outputs can be produced, which results in a most effective "live" sound. □ Expansion capability has been provided for in the Synthesizer. Although only four Expander Modules can be physically accommodated in the Synthesizer case, the keyboard electronics and the Programmer can be expanded to eight voices with the extra voices' output signals brought out to a connector. When upgrading to an Eight Voice an Eight Voice extension unit and interfacing cables are provided. The additional circuitry required for the expansion is added to the keyboard and Programmer electronics via stackable printed circuit cards. A jack is provided for a Master Filter Pedal. Additionally, a cassette interface is available allowing complete groups of sixteen programs to be dumped on a standard audio cassette, using a standard cassette recorder and later be loaded back into the Programmer. □ Extra care has been taken in the construction of the Four Voice Polyphonic Synthesizer to ensure trouble-free performance. All circuitry is modular and easily removable. All modules and the keyboard attach to panels which are rigidly held in place by a ½" aluminum plate. The complete assembly then mounts in a rugged vinyl covered wooden case. Outside case dimensions are 42" wide, x 13.5" high x 19" deep. The unit weighs 79 pounds.

Oberheim

EIGHT VOICE POLYPHONIC SYNTHESIZER



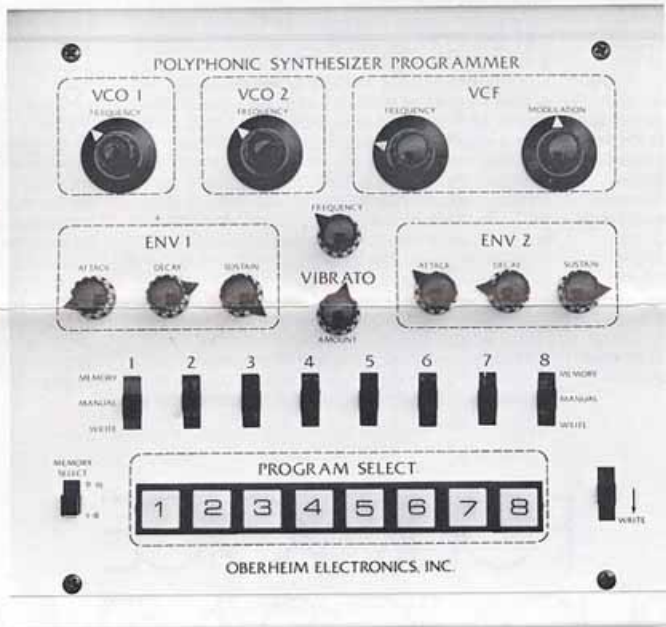
The Oberheim Eight Voice Polyphonic Synthesizer with Digital Programmer is undoubtedly the ultimate live performance/studio keyboard system available. The flexibility of expression available to the creative musician/composer by having eight complete synthesizer voices controlled by a single keyboard is almost unimaginable. The full, powerful richness of having sixteen oscillators sound in unison is awesome and unique to the Oberheim Eight Voice. The Eight Voice is basically two Four Voice Synthesizers with common keyboard, keyboard electronics and Programmer. Where you have four complete synthesizer voices with the Four Voice

you now have eight, each includes two voltage controlled oscillators (VCO's), a voltage controlled filter (VCF), two envelope generators, a low frequency oscillator (LFO) and a voltage controlled amplifier (VCA). Additional keyboard and Programmer logic is added to enable Eight Voice Polyphony and Programming/Memory for the Extra-Voices. The keyboard assignment "Mode" switches now affect all eight voices, i.e., the "Reset-Continuous" switch selects Expander Modules in ascending numerical order (1,2,3,4,5,6,7,8). The 1-3, 2-2, 3-1 switch now assigns the upper and lower halves of the keyboard thusly, 2-6, 4-4, 6-2. The Unison switch

places all eight Expander Modules in the monophonic mode. The Portamento switch causes portamento to occur on all eight voices. The four additional Synthesizer Expander Modules and the extra stereo output module are housed in their own case, similar to the Four Voice except keyboard, keyboard-electronics and Programmer are not included since they are provided for with the Four Voice main frame. The outside dimensions of the add-on unit are 42" wide x 13.5" high x 10.5" deep. The unit weighs 45 pounds.

POLYPHONIC SYNTHESIZER PROGRAMMER

The Oberheim Polyphonic Synthesizer Programmer (PSP-1) allows the musician to create his "own" sounds, store them in a digital memory and recall them with the touch of a finger. Sixteen totally different presets can be programmed and stored, ready for recall on stage or in the studio. No longer does the multi-keyboardist need several synthesizers on stage patched differently, nor is he required to change patches under the pressure of live performance. Also, he can be assured of getting the same sound he got in the studio, because it will be there in the digital memory of the Programmer. As a matter of fact, many of his keyboards are no longer needed. The burdens of carrying, freighting, packing, unpacking, setting up, tuning, mixing, patching and providing hard cases for four or more keyboards are now over with the Oberheim Four Voice Polyphonic Synthesizer and Polyphonic Synthesizer Programmer combination. The Programmer fits in a blank module location in the Four Voice Synthesizer next to the keyboard where it can be easily controlled by the



player. The most crucial parameter settings are made at the Programmer control panel. Oscillator pitch, filter frequency and modulation, vibrato rate and depth, and envelope generator parameters (attack, decay, sustain) can all be set and stored separately for each Expander Module. All the normal polyphonic keyboard functions such as Pitch Bend, Portamento, Master Filter Tune, and Keyboard Split are unaffected by the presence of the Programmer. Additionally, a cassette interface is available allowing complete groups of sixteen programs to be dumped on a standard audio cassette, using a standard cassette recorder and later be loaded back into the Programmer. The end result is you can build a library of patches, cataloged and stored on standard audio cassettes. One more point worthy of mention is that your programs are not lost when power is turned off. Battery backup power is provided by standard batteries in the Programmer and will last as long as normal shelf life of the battery itself, typically 2 to 3 years. The rest is up to you.

OPTIONS AND ACCESSORIES

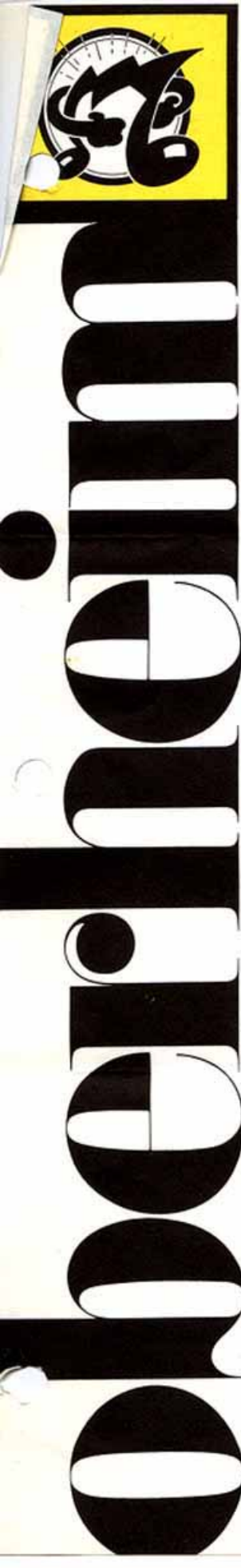


The Oberheim **Mini-Sequencer** is a quantized dual output, eight position analog sequencer with sample/hold and voltage controlled clock. Eight dual concentric pots are provided for generating two separate control voltage sequences. These two outputs can be used to drive two separate synthesizer voices to obtain two melodic lines, or one of the control voltage outputs can be used to drive the voltage controlled clock, in order to generate a desired rhythm. A rotary switch is provided for setting the sequence length from one up to eight steps, and each sequence position is indicated by an LED indicator. A sample/hold circuit is an integral part of the Mini-Sequencer. This circuit samples an internal noise source and produces a random control voltage sequence. The sample rate is determined by the voltage controlled clock. The range which the random samples cover can be controlled by the Range pot and a Lag pot is provided to produce a portamento effect between samples. The noise generator output is available as an audio signal source. The voltage controlled clock controls both the sequence rate and the sample/hold rate. This rate is controllable over a range of from one clock every 10 seconds to 40 clocks per second, either by front panel control or by means of a control voltage. A "Run-Stop-Step" switch is provided to allow the sequence action to be started, stopped, or stepped through one position (or one random sample) at a time. The Mini-Sequencer is packaged as a module one-half the size of the Synthesizer Expander Module (panel size of 4 1/2" x 7 1/2"). It weighs 3 lbs.

The **Synthesizer Expander Module** is shown here as an add on / option to our existing synthesizer systems. The Synthesizer Expander Module is identical to that shown earlier in this brochure except that case and power supply are excluded.

The DS-2A **Digital Sequencer** stores melodic / rhythmic sequences, which are played on the synthesizer keyboard, in its memory and plays them back automatically. Sequences as long as 144 notes can be recorded and then played back at tempos up to 16 times faster or slower than load tempo. The moment you finish loading playback is instantaneous. The DS-2A provides for different combinations of number of different sequences which can be stored and length of each sequence. You can load: One sequence of up to 144 notes; or one sequence of up to 96 notes, and one sequence of up to 48 notes; or three sequences with up to 48 notes each. Each note in a sequence can have a duration of about 1/20 of a second up to eight seconds. Keyboards with up to 61 notes can be accommodated. In addition, a digital display is supplied which tells you the sequence number and note number at all times. You can transpose with the DS-2A as well. Three separate transposition alternatives, in addition to the original load key, are available, using potentiometers which you can set and forget, or change during play, over a four octave range. The DS-2A has a single step feature which increases its flexibility. In the single step mode one note in a sequence can be loaded or played back at a time. The unit is compatible with Oberheim Arp or Moog synthesizers. Dimensions are: 17" wide, 11" high, 11" deep. Weight is 6 lbs.

The Oberheim **Polyphonic Synthesizer Programmer** (PSP-1) allows the musician to create his "own" sounds, store them in a digital memory and recall them with the touch of a finger. Sixteen totally different presets can be programmed and stored, ready for recall on stage or in the studio. The Programmer fits in a blank module location in the Four Voice Synthesizer next to the keyboard where it can be easily controlled by the player. The most crucial parameter settings are made at the Programmer control panel. Oscillator pitch, filter frequency and modulation, vibrato rate and depth, and envelope generator parameters (attack, decay, sustain) can all be set and stored separately for each Expander Module. All the normal polyphonic keyboard functions such as Pitch Bend, Portamento, Master Filter Tune, and Keyboard Split are unaffected by the presence of the Programmer. One more point worthy of mention is that your programs are not lost when power is turned off. Battery backup power is provided by standard batteries in the Programmer and will last as long as normal shelf life of the battery itself, typically 2 to 3 years.



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SUGGESTED RETAIL PRICE LIST

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SYNTHESIZERS

Eight Voice Polyphonic Synthesizer complete with eight Synthesizer Expander Modules (SEM-1)	\$7,790
Four Voice Polyphonic Synthesizer complete with four SEM-1	\$4,295
Four Voice Polyphonic Synthesizer with three SEM-1	\$3,795
Four Voice Polyphonic Synthesizer with two SEM-1	\$3,295
Eight Voice Add-on Unit with four SEM-1 (includes modification to Four Voice keyboard)	\$3,495
Two Voice Polyphonic Synthesizer complete with two SEM-1 and one Mini-Sequencer	\$2,195
Two Voice Polyphonic Synthesizer with two SEM-1	\$1,845
Two Voice Polyphonic Synthesizer with one SEM-1	\$1,345

SYNTHESIZER ACCESSORIES/OPTIONS

Polyphonic Synthesizer Programmer – Four Voice	\$1,395
Polyphonic Synthesizer Programmer – Six Voice	\$1,895
Polyphonic Synthesizer Programmer – Eight Voice	\$2,395
Synthesizer Expander Module (SEM-1) complete with case and power supply	\$ 695
Synthesizer Expander Module as an add-on to the Two or Four Voice Synthesizers (without case and power supply)	\$ 500
Digital Sequencer with display (DS-2A)	\$1,295
Mini Sequencer complete with power supply and case	\$ 495
Mini Sequencer as an add-on to the Two or Four Voice Synthesizers	\$ 350

SOUND MODIFICATION PRODUCTS

Phasor	\$ 100
VCF	\$ 120