

SYSTEM-100M

SYSTEM SYNTHESIZERS



This voltage controlled synthesizer is a musical instrument which contains elements that can be connected together, much like building blocks, to build or create almost any sound imaginable. As with most professional systems, the System 100M puts these synthesizer elements into separate modules so that you can build a system which meets your own particular needs.

All major control and audio inputs for each module have their own input mixers which greatly simplifies patches where multiple inputs are needed. This also means that all patch cord signal levels are high for a much better signal-to-noise ratio. All module inputs and outputs are compatible so that any output may be connected with any other and with most equipment found in the recording studio. Keyboard control voltage, gate and trigger are internally connected so that normally patch cords are not needed for these. All modules are the same size and weight: 104(W) x 230(H) x 200(D)mm, 1.6kg.

A Flexible System for Today's Creative Musician
The System 100M is sold as separate units so that you can build up a system to match your own particular needs. The keyboards include 6-conductor cords for power, internal CV, GATE, and TRIGGER connections to the system. The racks (190 and 191) contain the power supply, power switch, and voltage regulators for the modules and keyboard. Module mounting screws and a patch cord set (PCS-2) are included.

SYSTEM RACKS

190 3 MODULE SYSTEM RACK



Rear panel: 8-pin DIN connectors to supply power to modules; 6-pin DIN plug for expanding the system so that one keyboard may be used to control any number of additional rack systems. Available for 100V, 117V, 220V, 240V, @50/60Hz. Simulated wood ends.

• Dimensions: 349(W) x 314(H) x 192(D)mm • Weight: 5.6kg (without modules); 190B Base for 190 is also available.

191J 5 MODULE SYSTEM RACK



This handsome sturdy rack is capable of holding five modules and is equipped with 33 jacks for easy, fast patching. Except for its added width and weight, this rack is exactly the same as the Model 190.

• Dimensions: 558(W) x 314(H) x 192(D)mm • Weight: 6.9kg (without modules).

KEYBOARD CONTROLLERS

184

4 CV COMPUPHONIC KEYBOARD CONTROLLER

Polyphonic keyboard with independent 4 CV and 4 GATE control.

By adding the 184 to the SYSTEM 100M or SYSTEM 700 system synthesizer, polyphonic music with an extremely rich timber can be easily reproduced. The 184 is a 4-voice keyboard controller with 4 CV's, 4 GATEs, and 49 keys (C-scale). It also has an auto arpeggio function and selectable assign mode (monophonic/polyphonic). Parallel connection is easy with standard jacks and mini-jacks on the rear panel. A convenient bender lever is provided for easy control of polyphonic portamento.

- Keyboard: 49 keys (C-scale)
- Dimensions: 938(W) x 108(H) x 263(D)mm (36.9" x 4.3" x 10.4")
- Weight: 8.5kg (18.7 lbs.)



181

49-KEY KEYBOARD CONTROLLER

An expanded version of the 180. Added features are a portamento on/off switch and a bender lever. Also included are a mini-jack and a standard phone jack output so that the bender may be used for controlling other functions.

- Dimensions: 846(W) x 100(H) x 236(D)mm
- Weight: 6.5kg.



180

32-KEY KEYBOARD CONTROLLER

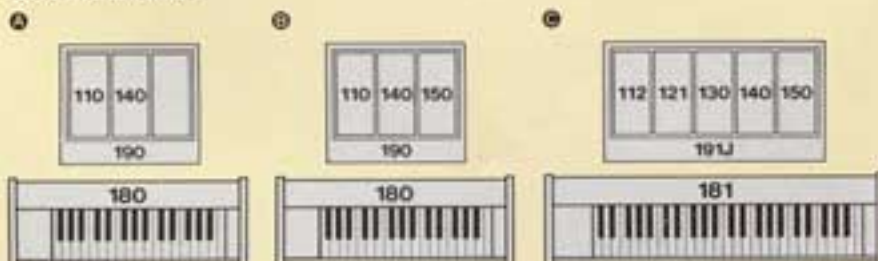
A 1V/oct. low key priority keyboard with three sets of outputs for easing the compatibility with other synthesizer systems: Mini-jacks, standard phone jacks and a 6-pin DIN plug. Outputs include control voltage, gate, and trigger. The control panel on the left contains a TUNING control, a three position TRANSPOSE switch, and a PORTAMENTO control. The ends are simulated wood to match System 100M racks.

- Dimensions: 589(W) x 100(H) x 236(D)mm
- Weight: 4.7kg



Typical module combinations

Basic combinations



Expanded combinations



SYNTHESIZER MODULES



110 VCO-VCF-VCA

BASIC SYNTHESIZER MODULE

This module contains the three main synthesizer elements, and when combined with a Model 140 module, provides all that is needed for the production of one synthesizer voice. This arrangement is particularly convenient in a computer controlled system where the generation of each voice in a composition can be assigned primarily to one module. The connections for signal flow from the VCO, through the VCF to the VCA are made internally to save patching time. Another internal connection allows a single envelope generator input to control both the VCF and VCA. All internal connections are made with switching jacks so that they can be broken, if desired.

- VCO • Output: 10Vp-p, 1k Ω • Input: 50k Ω
- Frequency: 1Hz-30kHz • Control Sens: 1V/oct.
- VCF • Cutoff Frequency: 25Hz-20kHz • Slope: -24dB/oct. • Control Sens: 1V/oct. • VCA
- Nominal gain: 1, Linear • Frequency Response: 3Hz-50kHz S/N: 70dB • High Output: 15Vp-p Max, 1k Ω • Low Output: 1.5Vp-p Max, 3.3k Ω



112 2VCO

DUAL VCO MODULE

This module consists of two independent VCO's in one package with expanded features. Both include three separate variable control inputs, strong and weak sync mode for phase locking, and simultaneous manual and external control of pulse width.

- VCO • Output: 10Vp-p, 1k Ω • Input: 50k Ω
- Frequency: 1Hz-30kHz • Control Sens: 1V/oct.



121 2VCF

DUAL VCF MODULE

Two independent voltage controlled low pass filters in one package. Each VCF includes the added feature of a built-in fixed high pass filter with a switch for turning the high pass function off or selecting one of three cutoff points.

Each VCF also includes three audio and three control inputs, and LED's for following signal flow. The green LED's light when a signal appears at the outputs, the red LED's light, for overdrive (distort) condition.

- VCF • Cutoff Frequency: 25Hz-20kHz • Slope: -24dB/oct. • Freq. Response: 10Hz-20kHz • Control Sens: 1V/oct. • Fixed High Pass Filter Cutoff Points: off, 1kHz, 2kHz 5kHz



130 2VCA

DUAL VCA MODULE

Two independent VCA's in one package, each with a selector switch for linear or exponential control response; also three audio three control inputs.

- VCA • Nominal Gain: 1 • Frequency Response: 3Hz-50kHz; S/N: 70dB • High Output: 15Vp-p Max, 1k Ω • Low Output: 1.5Vp-p Max, 3.3k Ω • Linear Response: 10%/1V • Exponential Response: 10dB/1V



131 OUTPUT MIXER

A four channel stereo mixer with panning on each channel. This mixer can be used in four track recording or to coordinate multiple synthesizer outputs. Includes stereo headphone output with completely independent level control. Convenient tuning oscillator with separate level control: 220Hz, 440Hz, 880 Hz. Mixer program outputs include left and right stereo outputs and separate mono output. Program outputs include both miniature Jacks and 1/4" phone jacks for convenient connection to other parts of the synthesizer or to other studio equipment. Each program output also includes a red LED to show overload or distort condition.

- Jacks: 4 Signal Input (15Vp-p, Impedance: Greater than 50k Ω) Output (Stereo, Monaural, 0.775V rms, Impedance less than 1k Ω) • Frequency Response: 3Hz x 4kHz • S/N: Better than 75dB • Crosstalk: Better than 75dB



132 DUAL CV/AUDIO MIXER & VOLTAGE PROCESSOR

Each mixer is a four channel mixer with simultaneous inverted and non-inverted outputs. They can be used for summing control voltages and/or for mixing audio signals. Both include built-in positive and negative voltage sources. A red LED shows overload condition.

The module also includes a separate variable positive voltage source and a separate variable negative voltage source.

- Jacks 4 Signal Input (Max. ± 10 Vp-p, Impedance Better than 50k Ω) 2 Output (Max. ± 10 Vp-p, Impedance 1k Ω) • Frequency Response: DC-40kHz • S/N: Better than 90dB • Voltage Sources: 2 Level Volume: (0-+10V, 0--10V) • 2 Output jacks (Impedance 1k Ω)



140 2ENV-LFO

LFO + DUAL ENVELOPE GENERATOR MODULE

This module and the Model 110 module provide the minimum basic elements necessary to produce a single synthesizer voice. Or, used with Models 112, 121, and 130, provides enough elements for two voices.

ADSR'S: Can be triggered from internal gate or gate + trigger, from an external gate, or manually with the front panel pushbutton. Both envelope generators provide inverted and normal outputs.

LFO: Voltage controlled low frequency oscillator with built-in delay for delayed vibrato effects.

KYBD TRIG switch allows phase locking of LFO output to keyboard trigger pulse.

- ENV GEN • Attack: 1.5ms-7.5s • Decay: 4ms-15s
- Sustain: 0-±10V • Release: 4ms-15s • Out: 1kΩ
- Gate/Trig Input: 50kΩ, 3V Min. • LFO • Frequency: 0.05Hz-30Hz • Control Sens: 1V/oct.
- Output 10Vp-p, 1kΩ • Delay Time: 0-7s



150 RING-NOISE S/H LFO

RING MODULATOR/NOISE GENERATOR/SAMPLE & HOLD/LFO

Ring Modulator: The most common function of the ring modulator is to combine two VCO outputs to produce metallic clanging sounds. **Sample & Hold:** The sample and hold can be used for sampling an input waveform for producing control voltage patterns based on that waveform. The musical result is patterns of notes such as arpeggios, random notes, etc.

Noise Generator: White and pink noise for sound effects and non-pitched musical instrument sounds.

- Ring • Frequency: 20Hz-20kHz • Output: 1kΩ
- Input: 50kΩ, X + Y = 20Vp-p • Input Rejection: 60dB
- S/H • Clock: 0.2Hz-25Hz • S/H Out: 0-10Vp-p Max, 1kΩ
- Signal Input: 10Vp-p Max, 50kΩ
- Noise • White/Pink: 12Vp-p, 1kΩ • LFO • Frequency: 0.05Hz-30Hz • Control Sens: 1V/oct.
- Output: 10Vp-p, 1kΩ • Delay Time 0-7s



172 PHASE SHIFTER/AUDIO DELAY/GATE DELAY

The phase shifter and audio delay can be used for producing spatial effects. Both include convenient effect ON/OFF switches. Both can be controlled from an external control voltage source so that two units may be used together for stereo effects, or may be used as a part of the sound synthesis process itself. The built-in control LFO has both normal and inverted outputs. The gate delay can be used where it is desirable to provide a delayed output from a pulse source, or it can be used as a pulse shaper. The gate delay also has a built-in high gain amplifier with a THRESHOLD control so that low level pulses recorded on tape can be amplified and shaped into a form which will trigger synthesizer functions.



182 ANALOG SEQUENCER

A two channel, eight step analog sequencer for producing control voltage changes in sequence to produce such things as melodic patterns, patterned tone color changes, etc. In series mode, voltage sequences of up to 16 steps may be programmed. In parallel mode, two independent voltages can be preset for each of up to eight steps, or one of the channel outputs can be used to control the sequencer clock so that the timing between each step in the sequence can be different. Several sequencers may be used in series for longer sequences, or in parallel for more channels of simultaneous output.

- Tempo Control: 7sec-3ms (0.14Hz-33Hz) • Portamento: 0-10sec Channel 1 only
- Gate Time: 10%-90%
- CV Out: 0-3V/0-10V • Gate Out: +14V, Impedance less than 2kΩ
- Tempo CV Input: 0-10V, Impedance 120kΩ
- Trig. In: +5-15V more than 1ms, Impedance 50kΩ
- End Pulse Out: +14V 10ms, Impedance less than 3.3kΩ

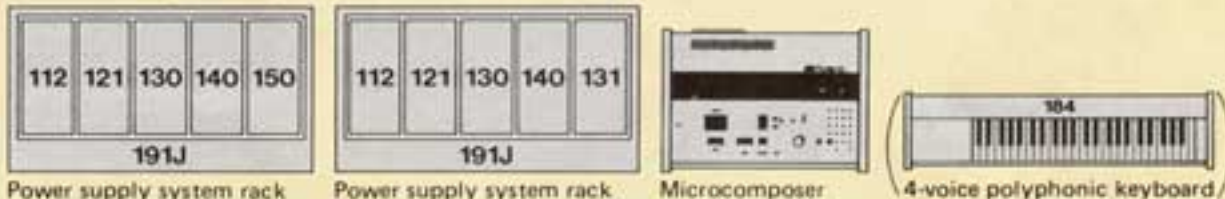


MC-4 and SYSTEM-100M combinations

- It is extremely convenient to use the MC-4 and Keyboard 181 or 184 together.
- We recommend use of PCS-10 and PCS-14 patch cords.

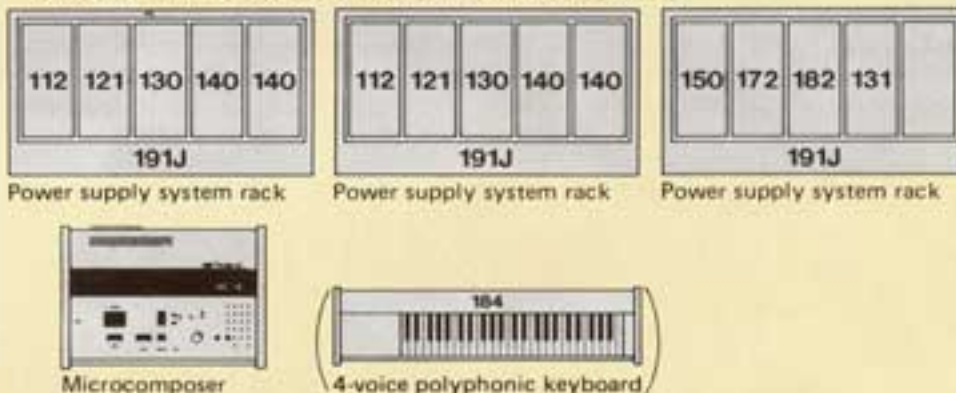
SYSTEM 1: Basic combination

- This arrangement provides a four-voice polyphonic effect.



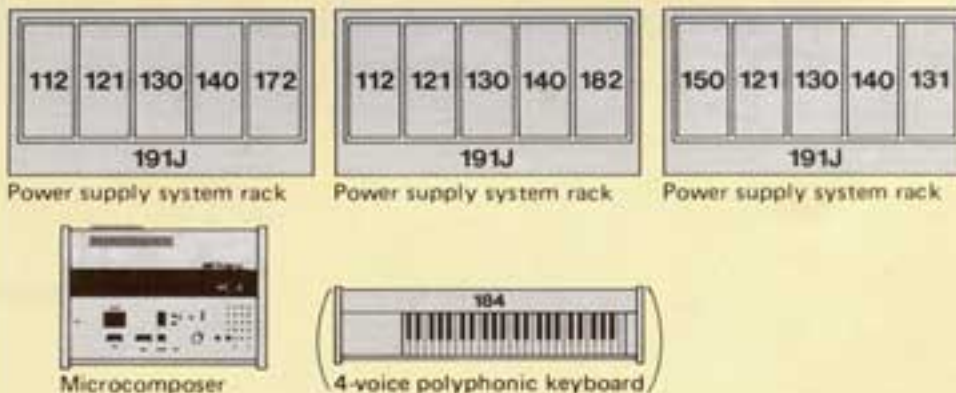
SYSTEM 2: With envelope generators for more delicate nuances

- This arrangement offers a number of additional features, such as audio delay, phase shifting, gate delay and analog sequencing.



SYSTEM 3: Allows MC-4's MPX to be used for percussion effect (4-Voice section plus 2 percussion sounds)

- A 4-channel (or larger) audio mixer is required.



SYSTEM 4: Lets you synthesize a symphony

- The MC-4's CV-2 provides dynamic control, making this arrangement suitable for live performances.

