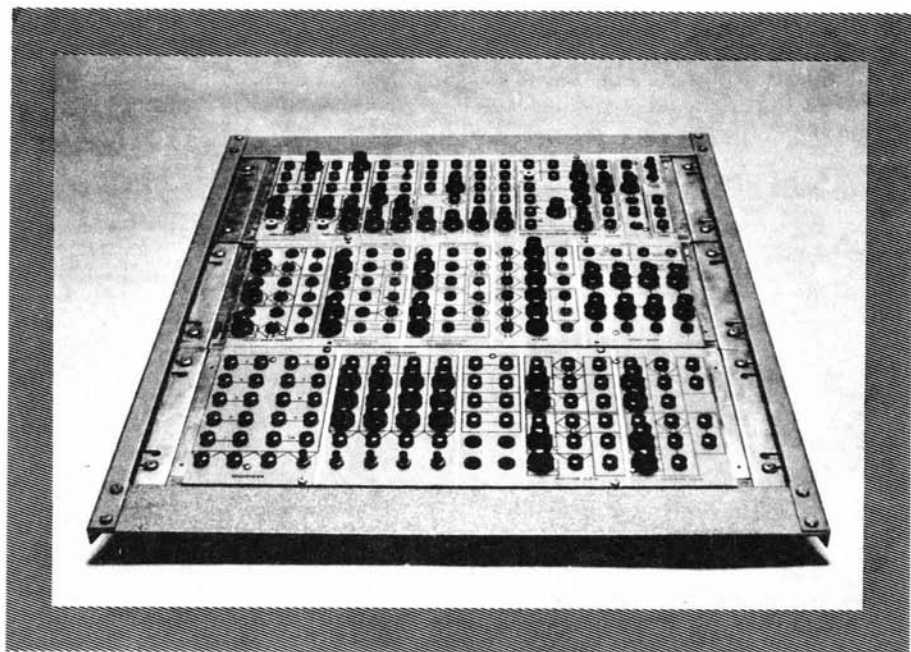


SERGE MODULAR MUSIC SYSTEMS



**THE AFFORDABLE STUDIO
MUSIC SYNTHESIZER**

A STUDIO-QUALITY SYNTHESIZER AVAILABLE ASSEMBLED OR IN KIT FORM

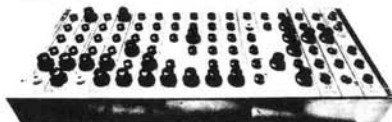
Previously available only custom assembled, SERGE modules in kit form are breaking the price barrier which has for so long prevented the individual musician from owning a studio-quality modular synthesizer.

HOW DOES IT COMPARE?

The SERGE MODULAR MUSIC SYSTEM compares favorably with the best of currently available studio systems. Modularity, accurate log/linear voltage control, direct coupling, input scaling, a single patchcord system, and dual-mode triggering are all standard. Unique to the SERGE system is the concept of patch-programmability in a module. Such modules can be patch-programmed to fulfill a wide variety of functions which in other systems can only be handled by separate fixed-function modules. This means that a relatively smaller SERGE system can be patch-programmed to simulate the range and functions available on much larger and more expensive traditional machine.

THE SERGE SYSTEM IS FULLY MODULAR

... and therefore it is expandable to suit your present and future requirements. Modules can be bought singly, or in groups fitting into our basic package, the PANEL-RACK. Each 16" by 7" PANEL-RACK can package up to 16 inches in length of the modules of your choice. Since most of our modules are from 2" to 5" wide, a PANEL-RACK will typically hold from 4 to 8 separate modules. A feeling for the exceptional functional density of the SERGE system can be had by noting that a complement of SERGE modules duplicating those found on a conventional commercial synthesizer can be fitted into a single PANEL-RACK.



EVOLUTION, NOT OBSOLESCENCE

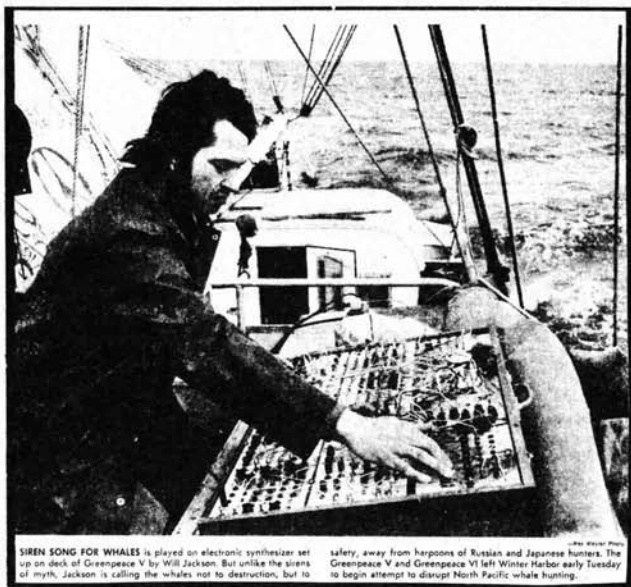
If you own a SERGE system you will be able to update, expand, or interface it with any other analog and digital equipment. This is in contrast with non-modular systems, which can evolve only by trading them in for next year's models.

OUR INTENTION

Our intention is to bring the affordable electronic instrument into personal studios and to provide a modular alternative for live performance uses of the synthesizer. Up to now the electronic music experience has been severely limited by the enormous cost involved. We hope that by offering versatile, high-quality modular functions at a cost people can afford, more will be able to share in the creative challenge of making music through electronics.

WHERE HAS IT PLAYED?

In four years of existence, the SERGE has played in commercial and educational studios, concert halls, art galleries, stadiums, clubs, on film locations, in caverns, the desert, New York's Central Park, Lincoln Center, the Sydney Opera House, Tokyo's International Trade Center, and in the streets and plazas of San Diego and San Francisco. It was also used to communicate with whales and dolphins aboard the SS Greenpeace V's Pacific anti-whaling expedition.



The Vancouver Sun
DECEMBER 11, 1973

SIREN SONG FOR WHALES is played on electronic synthesizer set up on deck of Greenpeace V by Will Jackson. But unlike the sirens of myth, Jackson is calling the whales not to destruction, but to

safety, away from harpoons of Russian and Japanese hunters. The Greenpeace V and Greenpeace VI left Winter Harbor early Tuesday to begin attempt to disrupt North Pacific whale hunting.

SOME ARTISTS

As part of TONTO (The Original New Timbral Orchestra), the SERGE has been heard in recent albums by Quincy Jones, Billy Preston, Stevie Wonder, Dave Mason, America, The Isley Brothers, Joan Baez, Mandrill, Ravi Shankar, Chris Rainbow, Bob Margouleff and Malcom Cecil.

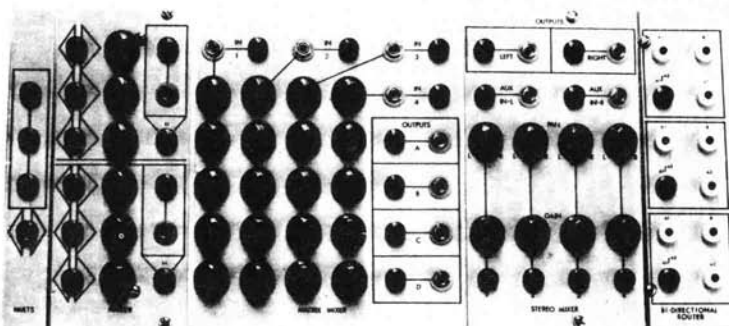
SOME INSTITUTIONS

Institutions that have resident SERGE systems include the Center for Musical Experimentation at UC San Diego, the Electronic Music Center at Mills College, the electronic music studios of Harvard University, Moorpark College, Australia's La Trobe University, Cal-State Dominguez Hills, and Virginia Commonwealth University.

FEATURES OF THE SERGE MODULAR MUSIC SYSTEM

- **ACCURATE LOG-LINEAR VOLTAGE CONTROL:** Nearly all voltage control functions of the SERGE modules are accurately log-linear. This means that a control voltage will be directly proportional to the logarithm of the effect it produces, whether the effect is a change in loudness, duration, frequency or resonance. Log-linearity is essential because of the fundamental facts of human perception: we perceive differences in amplitude, duration, and frequency as a function of the ratio rather than as a function of the absolute values of the differences involved. We hear an octave (a ratio of 2 to 1 between two pitches) whether the pitches are 200 and 100 Hz, or 2000 and 1000 Hz.
- **ALL TIMING AND FREQUENCY RANGES IN THE SYSTEM ARE WIDE RANGE:** The minimum range of any module in the SERGE system is at least 10,000 to 1, from the highest to lowest frequency, or shortest to longest duration. In many modules the ratio is more like 100,000 to 1, and in some cases as much as 1,000,000 to 1.
- **INPUT PROCESSING AT MANY VOLTAGE CONTROLLED INPUTS:** This allows a voltage to be scaled at an input with regards to both the depth or intensity of its effect as well as its polarity. This means that the performer can easily adjust the amount of the effect, and the duration in which it effects the parameter involved. For example: one volt at a VC input may be adjusted to change the pitch of an oscillator any interval from zero to more than one octave, either above or below the pitch set by the oscillator's initial frequency potentiometer.
- **PRE-SCALED INPUTS:** Experience has shown that it is also desirable to have pre-scaled control voltage inputs at 1 volt per octave, especially when using keyboard or computer control of modules. Most SERGE modules, such as the NEW TIMBRAL and PRECISION OSCILLATORS, the VCFQ, VCFX, and the KEYBOARD ENVELOPE GENERATOR, have 1-volt/octave inputs.
- **PATCH PROGRAMMABLE MODULES:** These modules are at the heart of the versatility of the SERGE system, able as they are to be used in a wide variety of ways not normally available in fixed-function synthesizer systems. Examples of this versatility can be appreciated in the catalog descriptions of modules such as the SMOOTH AND STEPPED GENERATOR, the UNIVERSAL EQUAL POWER AUDIO PROCESSOR, and various "SLEW" generators.
- **PATCH-AVAILABILITY OF SUB-FUNCTIONS:** In most systems, a number of sub-functions are used internally in a given module, and therefore are made unavailable for other, sometimes very interesting, uses. We have packaged a number of such functions as separate modules. Examples of such functions are the COMPARATOR and the WAVESHAPER. In a traditional system, a comparator is usually hidden within an oscillator to provide pulse-width modulation. In our system, where the COMPARATOR is available as a separate module, it can also be used for logic decisions (such as providing a pulse whenever a control or audio voltage reaches a certain level, or in comparing two separate voltages), or for audio processing (pulse-width modulation, stereo effects, and squaring up microphone outputs).

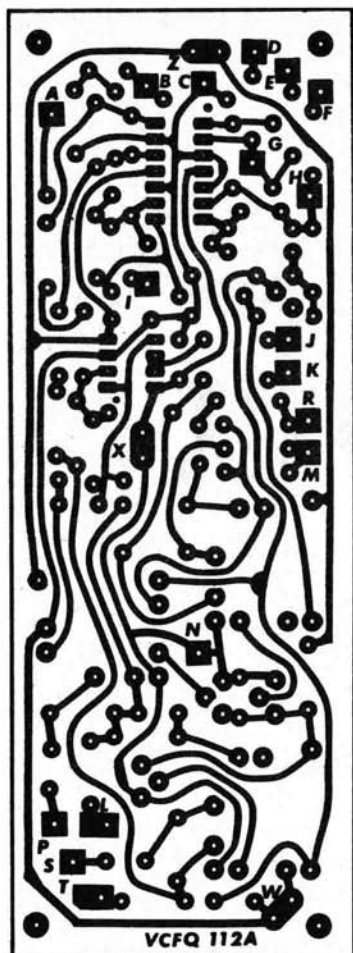
- A UNIQUE PACKAGING SYSTEM:** The SERGE system owes much of its versatility, portability and low cost to the way it is packaged. Nearly any configuration of modules can be grouped together into one or more standardized, low-cost PANEL-RACKS. All holes are pre-punched to accommodate the entire line of SERGE modules. Face-plate graphics printed on litho-grade adhesive paper are applied to the PANEL, and are then protected by a clear sheet of MYLAR. Jacks, potentiometers, switches, LED's, and stand-offs are inserted into the PANEL's pre-punched holes. The pre-tested printed circuit boards slide into a card edge rail behind its face-plate graphics. Wiring of the factory-assembled and tested circuit boards is simplified by the fact that the entire assembly opens up like a book to allow easy access to the panel-mounted components and to the corresponding circuit board wiring terminals.



- COMPATABILITY WITH OTHER SYNTHESIZERS:** SERGE system modules are electrically compatible with most synthesizers. The few exceptions that do exist can be handled quite simply with standard SERGE modules adapted for the purpose. In most cases, however, interfacing can be done by using adapters, special patchcords and/or patch-bays, or by replacing the standard SERGE system jacks. The SERGE therefore provides an exceptionally powerful and economic way of expanding an existing system. (We will gladly assist in handling special interface requirements.)
- EASE OF INCORPORATING BREAD-BOARD MODULES:** This is another benefit of the PANEL-RACK package. In most cases, a bread-board can be incorporated into a system without having to drill a single hole. Using standard, easily available Micro-Vectorboard® 6" wide, custom circuits will slide conveniently into the RACK. Custom face-plate graphics can be drawn and easily applied to the PANEL, and the end result is a custom module that can be integrated into the system with minimum effort.

NOTES CONCERNING OUR KITS

Our kits are designed to work the first moment power is applied, even when built by people new to electronic kit building. We have taken great care to achieve this result.



WE FURNISH PRE-ASSEMBLED, TESTED AND CALIBRATED CIRCUIT BOARDS--

Because of the precision and complexity of our modules, we ship factory-built, tested and calibrated circuit boards with our kits. Thus, to build a SERGE kit, the kit-builder merely mounts front-panel components such as jacks, switches, potentiometers, etc., and wires them up to square or oval solder pads on the circuit boards. As can be seen in the illustration, these pads are clearly labelled with letters and numbers to ease assembly. If assembly instructions are followed correctly, your kit module will work perfectly the moment power is applied. If not, troubleshooting is easily done on the open-faced assembly by a careful visual check of the wiring between panel-mounted components and circuit board.

CLEAR INSTRUCTIONS--

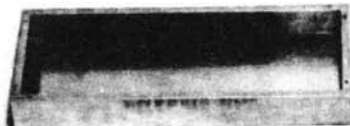
We provide detailed drawings showing the wiring, and we try to avoid lengthy instructions that can often lead to errors and omitted steps, etc. Also included is a list of simple tests you may make to insure that each module is performing according to specifications.

THE PHYSICAL LAY-OUT OF OUR KITS MAKES THEM SIMPLE TO BUILD--

Our PANEL-RACK opens up like a book in front of the kit-builder. This feature makes wiring of the circuit boards to the PANEL a simple task, since all wiring is up front where it can be seen and checked at a glance.

A MODULE MAY BE SENT FOR REPAIR WITHOUT DISABLING AN ENTIRE SYSTEM--

If a module still does not function after a thorough check of its wiring, its circuit board can easily be disconnected from the PANEL and sent to the factory for testing free of charge. Other modules sharing the same PANEL can thereby still be used while awaiting return shipment of your circuit board from the factory.



CHASSIS BOX



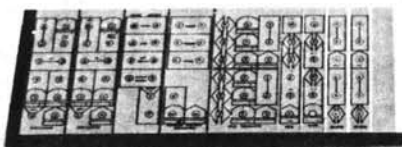
PATCHCORD KIT



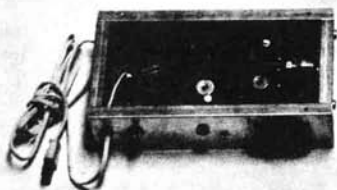
PC BOARD RACK



PARTS



PANEL



POWER SUPPLY



MANUALS

NOTES CONCERNING OUR FACTORY-ASSEMBLED SYSTEMS

We take extra care in construction to ensure that our systems will give years of trouble-free operation. The SERGE system has performed exceptionally well under even the most difficult conditions, such as hands-on educational application, and rigorous road and concert tour use.

- Every system we assemble at the factory undergoes five separate tests:
- 1) first visual check of all connections done by the system assembler;
 - 2) second check performed by a second technician;
 - 3) first complete electrical test;
 - 4) 48-hour "burn-in" with the entire system connected to its power supply;
 - 5) a final pre-shipment electrical test of all modules.

Serge Modular Music Systems

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