

(201) 539-1040

alfred mayer, president



ionic industries incorporated

128 James Street • Morristown, N. J. 07960

Pauline Oliveras
Department of Music
University of California
La Jolla, Cal 92037

10/24/72

Dear Pauline:-

WHAT A SHOCK IT WAS to learn you're a former accordion player. One NEVER knows where this will catch up with you! In fact, 25 years ago I devised the FIRST free bass system in the field; no takers in the US. We did sell them in Italy. Today, it seems the only thing for an accordionist to do. I feel today he should stop playing the accordion and get into organ or something like that.

Talking of changes, I was shocked to hear Bob Ericson say he's turned off on synthesizers; ditto you. I know you're giving a soldering course out there; are you going to use this on guitars or violins? I would like to get by to see your School after all I've heard about it. I always get SO near but never there. Spent the War in Riverside and NEVER got San Diego (heard it was too crowded then; it was also a sailor town).

I'm enclosing my book, as promised. We're out fighting all sorts of things and ideas these days and what we're saying strikes people as controversial; to me, it's all logical. The enclosed article appeared in the LA Times and is now being reproduced around the country (I'm getting mail and telephone calls). Steve Allen has read this and invited me to the Coast to be on his program.

I was very excited by the number of people that showed up in LA to look over our gear. I believe the interest was really great. This turnout and enthusiasm just would never happen in the East. It's two Worlds.

Again it was pleasant chattering. Last time I was there you were in Japan; this time I had no time to spare. NEXT time, we must meet!

As ever,

ALFRED MAYER

A Machine to Play Now, Learn Later

BY MICHAEL SEILER
Times Staff Writer

Roll over Beethoven and tell Tchaikovsky the news.

Alfred Mayer—Juilliard grad, organ maker, and classical arranger—has got this . . . this . . . ah . . . synthesizer and modulator that will revolutionize, absolutely revolutionize the teaching of music to the kiddies.

Not to mention make a better noise for TV stations, movie soundtrackers, rock 'n' roll bands and lovers of electronic whirrs and whirrings everywhere.

According to Alfred Mayer.

Mayer was based last week in a room at the Century Plaza with the Performer by Ionic shining in all its color-coded glory atop the dressing table.

The Performer is the brand name for Mayer's synthesizer and modulator. Ionic is the name of the Morristown, N.J., company of which Mayer is president. That much is reasonably clear.

A Guitar to Full Orchestra

The Performer is a keyboard, a control board, a little 'ol computer and a TV screen.

The keyboard is what you play on, though apparently, you can cheat a bit and slip a prerecorded cassette into the Performer somewhere.

The control board is what you control upon. It has all sorts of yellow, black and red buttons and switches marked x-axis, y-axis, fuzz, wah-wah, portamento, vibrato, etc.

The computer generally computes and makes all this possible.

The TV screen (actually, an oscillator) shows you, visually, what you've been playing, controlling and computing.

The final result can sound like anything from a single acoustical guitar to a full orchestra, depending on which buttons you push and when, Mayer said.

It's perfectly clear now, isn't it?

If not, maybe Mayer's pitch will help.

"We're astonishing the music teachers," said Mayer, who travels around the country, selling the Performer to universities and school systems. "The child in kindergarten, instead of wasting years learning to play, can get involved instantly."

High on Kiddie Potential

Same thing with adults, he said. "A lot of people would like to be in music but they don't want to study and learn how. They just want to play instantly. And that's what we're talking about—playing now, learning later."

Mayer is especially high on the kiddie potential of his synthesizer.

He's discovered in his travels that music departments in the public schools have hit upon hard times.

Public school systems are "doing away with music departments," said Mayer, who taught music at Brooklyn College for 15 years.

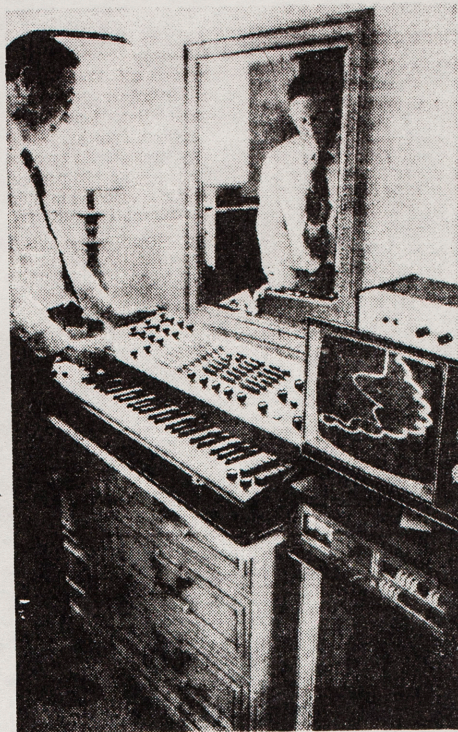
"The teachers say it's money, I say it's results," he said.

Or the lack thereof.

"They (music teachers) are turning off even the really talented kids because they're saying you've got to be able to read music."

The magic of his Performer, said Mayer, is that

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THE SOUND OF MUSIC—Alfred Mayer demonstrates the Performer, which, he predicts, will reduce an entire orchestra into a small group. Times photo by Harry Chase

MUSIC MACHINE

Continued from First Page

the kids get hooked on the visual images of sound and eventually will want to learn to pound out the scales on the piano, rather than being forced to by a culture-cultivating mother.

First, the child learns what music is all about by listening to the computer and cassette-fed stuff that comes out of the system, Mayer said.

"At that point, we're interesting him in music, like a kindergarten art class where he smears the paint around."

'Positive Experience'

From there, a child, now sufficiently motivated, can go on to learn the scales and play the Performer much like a regular organ or piano, he said.

"What we're really looking for the children to do is have a positive experience."

But what price, these positive vibrations?

"I would suspect that in a while, they (children) wouldn't know what a violin sounds like," Mayer said.

Mayer, who has a \$1,900 product to push, is making no value judgments.

"We can't decide whether it's good or bad, it's what's happening now," he said.

Going to Change

Mostly it's rock that is plugged in and juiced up at the moment, but Mayer figures that is going to change—if only because of the numbers.

"I don't think we can support large orchestras as we did in the past," said Mayer, who used to make a living arranging a few little things by Milhaud, Bartok and Khachaturian.

"I'm really looking for the restructuring of the

orchestra into smaller groups," he said.

And that will lead to "more musicians, spread around the country, making better incomes like physicians."

So maybe, in a few years, there will be six guys and six synthesizers and one gigantic oscillator screen at the Hollywood Bowl. And they will call it the Los Angeles Philharmonic.

In the meantime, there's a lot that the Performer can do for the current crops of serious musicians and electronic noisemakers, according to Mayer.

For instance, the composer with "his favorite arpeggio. He pushes a button and it (the Performer) plays his favorite arpeggio wherever he wants it in a composition," Mayer said.

Or: "These electronic things you hear on TV and in commercials. They spend months layering them together, and we can do it in minutes."

Of all these wonders, the only thing Mayer demonstrated that made much sense last week was "Oh! Susannah."

He played it (or, rather, the computer, played it) forward and backward.

It sounded the same both ways.

Los Angeles Times

VIEW

★

PART IV MONDAY, OCTOBER 9, 1972

PERFORM NOW LEARN LATER

We accomplish instantly by:

1. Eliminating all skills and development
2. Avoiding knowledge with the (complexities)

performer by ionic

SYNTHESIZER & MODULATOR

YOU CAN NOW REACH THE
98%
OF THE POPULATION
NOT INVOLVED IN MUSIC!

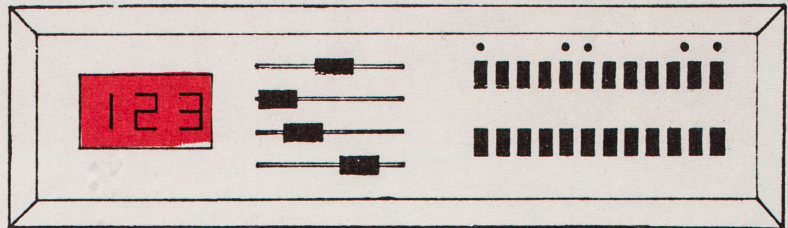
Send in \$2.00 for the Perform Now/
Learn Later tape recording.

IONIC INDUSTRIES INCORPORATED (201) 539-1040
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COOL
MAN
COOL

DIGIONIC SEQUENCER



Plays automatic bass,
amongst other things **\$599.00**

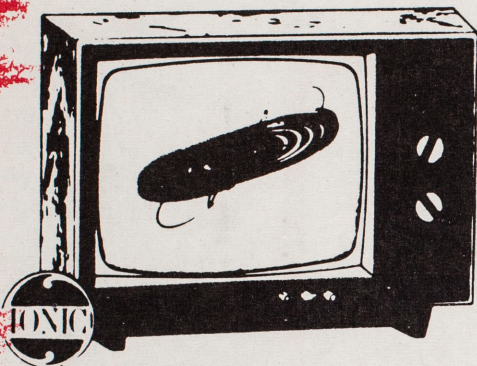
Feed a Bach Two Part Invention into Digionic and while it performs and repeats the tones, a kindergartner can experiment with the creative and interpretive aspects of music. The mechanical, linear tones can be tackled at a later time. CHANGE PRIORITIES! It's logical but wasn't possible prior to Digionic.

If you think they loved AUTOMATIC RHYTHM, wait till they try AUTOMATIC BASS. Play it one time through on the keyboard and Digionic remembers it. From then on, it will automatically repeat, reverse, develop, transpose, store, speed up, slow down, edit and whatever you command it to do, by pressing a few buttons!

In addition, Digionic will create three simultaneous envelopes up to 146 points on each trigger (musically, this means getting as near to a real embouchure electronically as has ever been possible!).

Further, SEE all this sound on IONICAMERA!

ionicamera*



**CONVERTS SOUND
TO PICTURES**
\$395.00

If you're not certain as to the merits of synthesizers that are now hitting the market, use this as a criterion:

ORGANS play polyphonically but are LIMITED in range from the top note to the lowest tone and by the stops on the manual.

SYNTHESIZERS, worth their salt, are virtually INFINITE in varieties. Their only compromise is that the keys are monophonic.

The PERFORMER is the first synthesizer whose self-revealing, color-coded switches all but say, "TRY ME!". Add our PERFORM NOW manual and instant realization and success are immediate. Other firsts are:

QUADROPHONIC SOUND

AUTOMATIC PANNING (Completely variable, completely pre set)
PRE SETS (Portamento, Wah, Fuzz, Tremolo and Repeat on each channel)

ONE PIECE CONSTRUCTION including four legs; no folding; no set ups.

COMPARE AND YOU MUST BUY A PERFORMER

ionic industries inc.

128 james street morristown, new jersey 07960

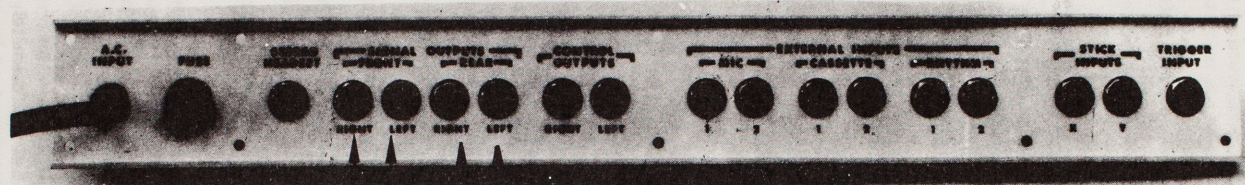
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alfred mayer, president



WHY SETTLE FOR 1/2

The back panel of the Performer shows how much more we have than any of our competitors. Sixteen inputs and outputs translates into more accommodations for guitars, organs, tapes, radios, rhythm devices, sequencers or whatever you have; all the outputs indicates the possibilities of more speakers, amps, recorders, cameras, lights and anything you care to feed signals into. Getting down to specifics, these exclusive features boil down to:



QUAD SOUND (compared to our mono competitors, we have two synthesizers in one!)

AUTOMATIC PANNING/PRE SET Spatial sound completely variable; doppler effect with no moving parts

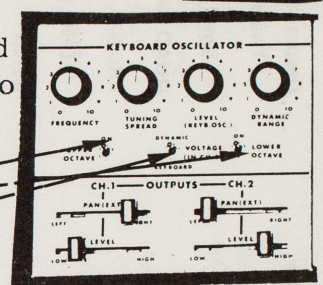
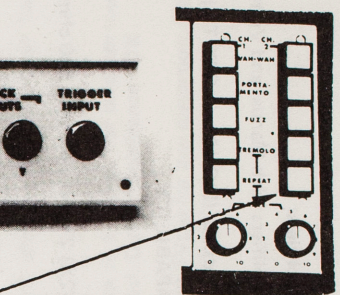
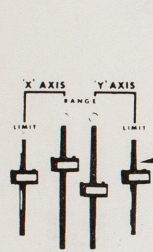
PRE SET CONTROLS

X + Y SLIDE CONTROLS

OCTAVE COUPLER ON KEYBOARD

TOUCH SENSITIVE CONTROL

INDICATOR LIGHTS



All of this adds up to faster performance, quicker understanding. Rather than confuse you with numerous sizes, Ionic offers one model only; we will soon announce expansion possibilities of a modular nature.

In addition, DIGIONIC is the first musical computer on the market; not only does it work on our units, it's a very desirable add-on for all our competitor's units. Currently, we have the sole digital device in the field. IONICAMERA is the first entry with a visual aspect of sound. Other developments in our plans will keep Ionic well ahead of the pack.

As a **Low Pass Filter** (Response knob at 0 — 'Low Pass Position') Cut off rate 12dB for first octave and 18dB per octave thereafter

As a **Resonator** (Response knob about halfway — 'Hi-Q Position') Max. stable Q factor: 20

As a **Sine Wave Oscillator** (Response knob to about 7 or more) Low distortion sine wave output over whole frequency range.

Voltage Control sensitivity: 0.2V/octave.

Envelope Shaper and Trapezoid Output:

Max. Repetition Rate: 60Hz

Attack Time: variable from 2mS to 1 second
On Time: variable from 0 to 2.5 seconds
Decay Time: variable from 3mS to 15 seconds
Off Time: variable from 10mS to 5 seconds

Decay sensitivity is 0.4V/octave — i.e. an increase of 0.4V will double the Decay Time.

Trapezoid Output Voltage Range: from -3V (ON) to +3V (OFF)

Reverberation Unit:

Folded Line type with wide bandwidth and good signal to noise ratio.
Frequency response: 80Hz - 6000 Hz
Delay time: 30-35 in sec, up to 2 sec nom. decay
Amplitude is preset in the unit for optimum performance.
Mix control adjusts from no reverb to full reverb.

Input Amplifiers:

Microphone Inputs (MIC jack sockets)

Sensitivity: (2X) 5mVAC into 600 ohms

In fact the input characteristics are flexible enough to provide satisfactory results with most devices, even if the impedance is considerably higher than 600 ohms (e.g. crystal microphones). Low impedance microphones and pick-ups, however, should be fitted with transformers and/or preamplifiers.

High Level Inputs Cassette and Rhythm

Sensitivity: (2X) max. 1.8VAC (r.m.s.) or +2.5VDC into 50K ohms

These are the normal inputs from a tape recorder or radio. Since they are directly coupled they can also be used for a DC control input. There is no objection to one channel being used for a signal and the other for a control, since they are separate circuits.

The three inputs to each channel must be used separately — e.g. if Channel 1 MIC input is busy the cassette or rhythm input to Channel 1 cannot also be used. But different kinds of input can be applied to each channel;

General Note on Arrangement of Jack Sockets: The jack sockets are arranged so that Channel 1 (or in one case L for Left) is in its correct position viewed from the FRONT. For this reason they may at first seem to be the wrong way round when viewed from the BACK.

Output Amplifiers:

Two amplifiers with Manual and Voltage Control of gain

Signal Outputs (SIGNAL OUTPUTS jack sockets)

QUAD CAPABILITY

FRONT

Level (2X) 2V p-p max. into 600 ohms

REAR

Level (2X) .4V p-p into 600 ohms

These outputs are marked L and R (instead of 1 and 2); they are under control of the pan slide controls on the left cheek block of the keyboard. These are the usual outputs for tape recorders and amplifiers. They should be connected to high level inputs and never to an input with built-in compensation for a non-linear device such as microphone or tape head input.

For stereo when only two speakers are available, use the two front outputs. To utilize the rear outputs, two additional speakers and an amplifier are required to create a matrix-type quad reproduction of the audio.

AUTO PAN

.6 Hz-20 Hz

The push pull knob on the lower right of the main control panel will create an automatic panning from left to right when pulled out. When pushed IN, the audio is normal. The rate of the pan is controlled by turning the dial of the knob, clock-wise to increase the rate and vice versa to slow it down. At the extreme speed it can cause a repeat and a vibrato to sound. Acting much like an additional envelope, it is completely variable. Adding two speakers to each of the channels will create a vibrato much like a well-known doppler effect.

High Level Signal Outputs (HEADPHONES (STEREO) jack socket)

Level: (2X) 10V p-p max. into 50 ohms

These outputs go to a stereo jack socket. Do not use a 2-way jack in this socket or one side of the high level output will be short-circuited.

The tip of the jack is connected to the left channel, the ring to the right channel, and the main body to ground.

This is a non-panning output, and although intended principally for headphones it can be used wherever an especially high level output is required. The outputs to the internal speakers are also non-panning, and for this reason the PAN controls are marked (EXT.).

DC Outputs (CONTROL OUTPUTS jack sockets)

Level: Depends on the setting of the device from which a control is being taken. It is approximately the same as the figures given for each device. The optimum load for this output is 10K ohms, and it should not be less than 2K ohms.

X and Y AXIS CONTROLS (Red)

Manually operated slide controls with two slides and two limiters of the span. Controls of the three oscillators filter and two output amps on either or both the axis. There are also input jack terminals in the rear for these same devices. Range (2X) X+X +2 VDC

PRE SET PANEL (Right hand keyboard cheek block) Optional**REPEAT, TREMOLO**

Rate 3-10 Hz

WAH

Duration 100 mSec (Nominal)

PORTAMENTO, FUZZ

Separate controls for left and right channels. First two items are actually additional low frequency oscillators; the second item WAH serves as additional envelopes and may be used independently or combined with the variable envelope of the unit.

SWITCH PANEL

102 switches of push-push variety located on the panel above the keyboard. Basically, divided into two sections, the yellow switches are MODIFICATIONS of the sources; the red switches are controls of same. These devices create rapid and instant connections of all the devices.

KEYBOARD**Introduction**

The keyboard contains an oscillator producing tones on the well tempered scale. It also produces control voltages which control any of the devices in the synthesizer.

The keyboard consists of 49 piano-sized keys (C to C) with electronics producing the following controls:

1. A control voltage proportional to the highest note pressed. The keyboard retains or remembers the last voltage produced.
2. A second control voltage proportional to the velocity with which a key is struck. As in 1, the last voltage is remembered.
3. A sawtooth signal (and a square wave, one octave lower) from the keyboard's oscillator. The pitch and loudness of same are controlled by the key struck.
4. A trigger signal for the envelope shaper.

Controls

Frequency — This shifts the tuning of the keyboard oscillator to give a total range covering 30 to 2000 Hz.

Tuning Spread — This trims the tuning of the internal oscillator over a narrow range allowing one to 'stretch the octaves'. This control should normally be set halfway.

Trimpot Level — This control sets the level of the internal oscillator. As it duplicates the function of the input channel level control it should normally be set near maximum, accessible only from inside. (Preset to optimum value.)

Dynamic Range — The dynamic range control determines the variations of loudness of the internal oscillator in response to key velocity. At minimum, the signal output will be independent of key velocity. At maximum the loudness will vary by more than 40db depending on the players' touch.

SELECTOR SWITCHES

UPPER OCTAVE: Will sound the ramp wave when in the ON position

VOLTAGE 1: In the DOWN POSITION the voltage is controlled by the keyboard in a well tempered fashion; in the UP POSITION it is dynamic or touch sensitive to the proportion of the finger velocity.

LOWER OCTAVE: Will sound a square wave in the ON position one octave lower than the UPPER OCTAVE switch.

OPERATION

KEYBOARD TUNING: Set the keyboard oscillator UPPER OCTAVE switch UP; on the control panel, press E5 (KB OSC/OUTPUT 1). Press A6 (OSC1/OUTPUT 2). Turn the silver dial plus C (sine wave) to about 5. Turn the A dial (OSC 1) to a point where this pitch coincides with the keyboard pitch. Press the red switch A 11 (OSC 1/OUTPUT 1) and start sounding an octave on the keyboard. To achieve an octave work the M (Tuning dial) to a point where you achieve an octave. If your ear cannot assure you of the exact tuning, compare with the octave on the keyboard oscillator or check with a scope or Ionicamera.

LEVEL (PLAYING TECHNIQUE): The keyboard oscillator level signal is proportional to the finger velocity striking the key. The level established will be maintained until another level is established by the striking of another key.

ENVELOPE USE WITH KEYBOARD: Since the pitch established by the key is remembered, it will continue to sound. By adding the envelope to the keyboard control, setting the timing dial on the envelope to MANUAL, the oscillators will only sound when the key is pressed (as when one presses the MANUAL TRIGGER). In reality, the keyboard is a series of triggers.

Specification**Power supply**

+12v + 5% and -9v +5% at 500 mA.

Keyboard (pitch) voltage

+1.5v +7% Output is 1V per octave. Middle F gives 0 volts. Impedance 100

Dynamic Voltage

±1.5v with approx. 30% over range for very hard or very soft playing. Impedance 100

Signal

Maximum of 10v p-p. For medium touch, or with dynamic range control, at min., output is .5v p-p. Output impedance 4.7K

Ext. input 1Vp-p for low distortion. Max. dynamics modulator gain, (i.e. for heaviest touch) is +15dB above this input.

performer Specifications *General Description: Material and Manufacture*

SYNTHESIZER & MODULATOR

GENERAL

The Performer by Ionic (PBI) Synthesizer and Modulator is a self-contained package consisting of sound sources, (coded in silver), modifications of these sources (coded in yellow), amplifiers for bringing signals and controls (coded in red) in from, and leading them out to external equipment. The unit operates on 117V A.C.

The Performer may be used as:

1. A COMPLETE UNIT IN ITSELF; using its own self-contained speakers, no other external equipment is necessary.
2. AS A LIVE PERFORMANCE INSTRUMENT: As a sound source in itself and a modifier of externally fed signals. For a greater reproduction of the extremities of the sound spectrum and for sufficient power to match other instruments, external amplifiers and speakers would prove very attractive. Its feature, the Quad sound capability demands external speakers and amplifiers.
3. AS A SOUNDS EFFECT DEVICE: Hardly an effect known can not be made on this equipment with far greater ease than has been done conventionally in the past. Theatrical or broadcasting presentations will demand this sort of a device for all future development.
4. AS THE CENTER OF AN ELECTRONIC MUSIC LAB: As the main sound source, the addition of tape recorders, rhythm, radio, phono, electronic instruments, microphones etc. can all add up to a fairly competent, efficient studio for a total price of less than the sound source cost a mere two years ago. Updated technology now brings the lab price and understanding to everyone's doorstep. Composers on any level can now dream and compose with this equipment without longing for gear beyond their financial grasp.

5. AS A TEACHING AID: All fundamentals of music and acoustics can be easily demonstrated on the Performer. Music students can now learn more about traditional manifestations through this compact piece of technology. The tuning and pitch manifestations, for example, far surpass any known musical instrument. The Performer is the most outstanding means of commencing the musical experience known. By eliminating all physical development (fingers, embouchure etc.) and by avoiding all complicated explanations through color coding, the Performer now will enable anyone regardless of age, ability or background to achieve instantly.

The circuitry of the Performer is complete solid state and integrated circuits. All components are mounted on modular, removable cards and can be easily removed for replacement.

The cabinetry is of wood covered with a lustrous, vinyl covering to withstand the abuse of transportation. The panel is mounted on a brushed aluminum sheet with silk screened points of reference; this, in turn is epoxy coated to protect the screening and sheen from wear. A sturdy cover protects the unit in transit and houses four legs for mounting the Performer when in the field.

KEYBOARD (see notes)

DETAILED SPECIFICATIONS

Input: 105-115V, AC 60 Hz. Connection by a three pin plug.
Fuse: 1A (S₁₀ -Bl₀) access on rear panel.

Oscillator 1:

Max. Output Levels: sine — 3V p-p
ramp — 4V p-p

Frequency Range: (dial only) — greater than
1Hz—10KHz

Dial relationship is 1.5 octaves +2% per major division, and the actual dial calibration, when properly set up, is as follows (the extreme positions may be outside the tolerance):

DIAL NO.	0	1	2	3	4	5
FREQ (Hz)	(0.6)	1.7	4.1	11.6	32.7	92.5

DIAL NO.	6	7	8	9	10
FREQ (Hz)	261.6	740	2,093	5,920	(16,750)

Voltage control sensitivity = 0.32V/octave. External voltages through input channel give 0.16V/octave since input channels have a voltage gain of 2.

General Note on Control Voltages: Specifications give ranges for manual control of v.c. parameters. The ranges can be extended by additional control voltages.

Oscillator 2:

Max. Output Levels: square/pulse output — 4V p-p
triangle output — 3V p-p
ramp positions of triangle — 6V p-p

All other details are the same as Oscillator 1.

Oscillator 3:

Max. Output Levels: square/pulse output — 4V p-p
triangle output — 3V p-p
ramp positions of triangle — 6V p-p

Frequency Range: (dial only) greater than 0.025Hz
(40 secs per cycle) to 500 Hz

Calibration of dial as follows (extreme low frequency varies slightly from example to example):

DIAL NO.	0	1	2	3	4	5
FREQ (Hz)	(0.015)	0.043	0.122	0.344	0.975	2.76
PERIOD (Secs)	(65)	23.2	8.2	2.9	1.02	0.36

DIAL NO.	6	7	8	9	10
FREQ (Hz)	7.82	22.2	62.5	177	500
PERIOD (Secs)	0.128	0.045	0.016	0.0056	0.002

Voltage Control sensitivity: 0.26V/octave

Noise Generator:

Max. Output Level: 3V p-p

Ring Modulator:

Max. Input Levels for undistorted output: 1.5V p-p

Max. Output Level with 1.5V on both inputs: 6V p-p

Above this level there will be some breakthrough of spurious overtones. Breakthrough with 1.5V p-p to one input only is 5mV p-p (-60dB)

Filter/Oscillator

Frequency Range in all functions: (knob control only)
greater than 5Hz to 10KHz

everyone can get involved

non technical no skills all ages

performer
by ionic

Instant

Automatic

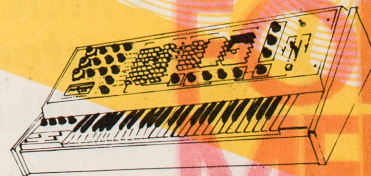
all arts all sciences

PERFORMS!

no requisites no talent no math no development

Everyone

**instant realization of
ELECTRONIC MUSIC**



Technology catches up to music

ionic

the performer by ionic

SYNTHESIZER & MODULATOR

FEATURES

PORTABLE/SELF CONTAINED UNIT

One piece equipment; no assembly. Leg mounts, if needed. Self-contained speakers and amps.

SUITABLE FOR LIVE PERFORMANCE OR STUDIOS

NOW WITHIN GRASP OF AMATEURS AND PROFESSIONALS

SUITABLE FOR HOMES, SCHOOLS OR BANDS

AGES: Can be fathomed at pre school or graduate levels. Color coding and graphic slides and automatic devices enable everyone to become a participant.

SOUND EFFECTS GENERATOR: Can produce any known sound

MORE THAN MUSIC: No longer limited to audio. Embraces all creative arts and the sciences.

FINISH: A strong vinyl covering in black and orange will protect the unit in transit from the elements. Washable.

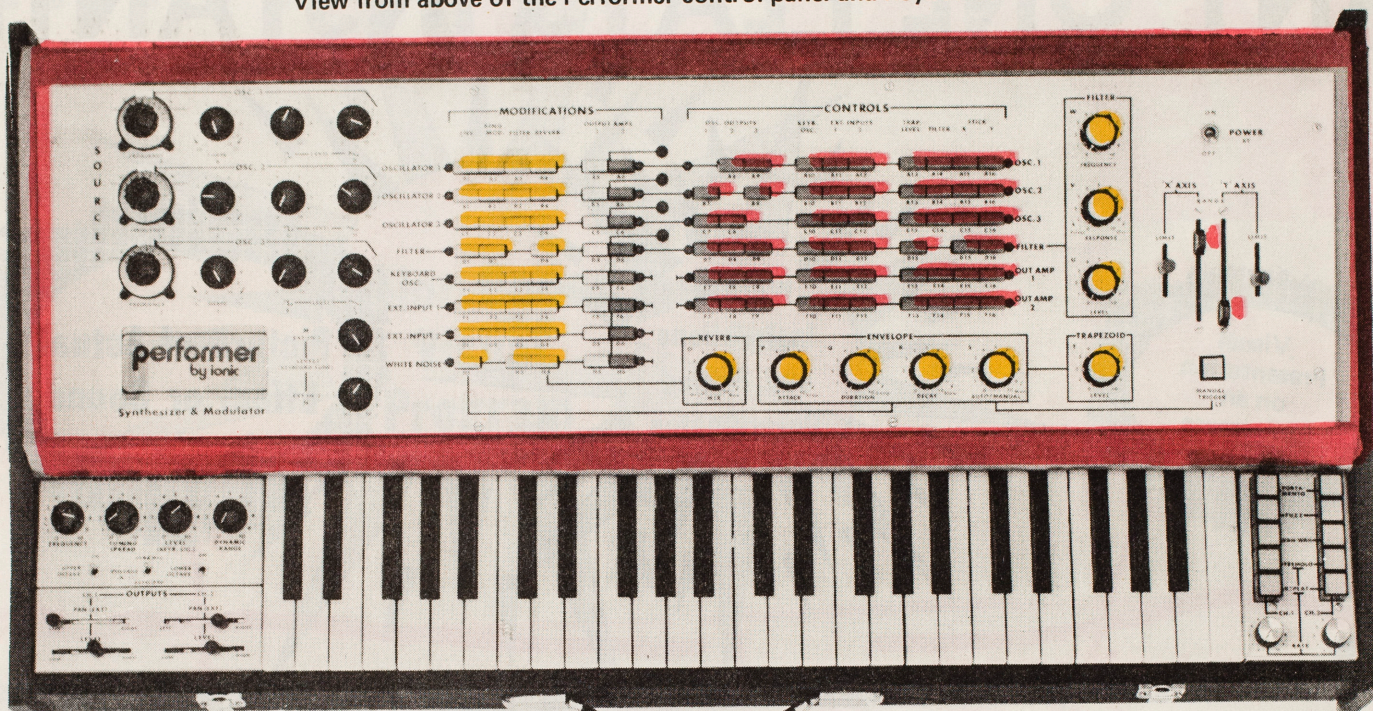
See inside fold for detailed SPECIFICATIONS



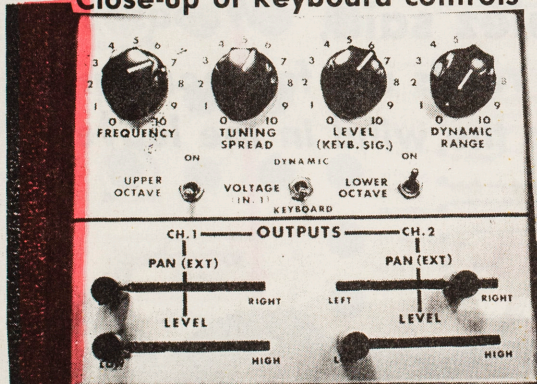
**"We must work towards a society
in which scientific knowledge is
incorporated in tools and components
within the reach of all . . ."**

A quotation from Ivan Illich sounds like an apt description of THE PERFORMER BY IONIC. In fact, all our products, past and present, exemplify this motif. Our competitors can shout all they want about their super-colossal complexities. Our credo is as stated; if there will be any further developments in gaining more understanding in smaller and simpler packaging, you can be certain that Ionic will be in the forefront of this endeavor and crusade!

View from above of the Performer control panel and keyboard.



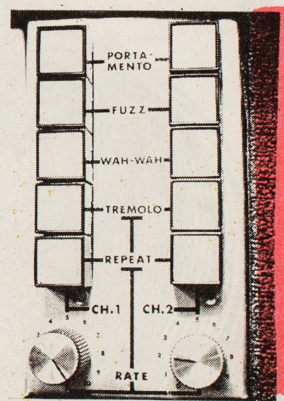
Close-up of keyboard controls



Oscillator sounds where played, octave below, solo or combined. Tunings may be well tempered, macro-tonal, micro-tonal and infinite varieties between and between. Touch sensitive.

COLOR-CODED SWITCHES IN FUNCTIONAL LOCATIONS

101 items for more rapid set-ups and understanding. Eliminates all patch cords and matrox pins. Coding is simply SOURCES (Black) MODIFICATIONS (Yellow) CONTROLS (Red) GRAPHIC SLIDES: Control of the X and Y axis to circumvent lack of keyboard knowledge. MANUAL TRIGGER: Button and light. IN-BUILT STEREO SPEAKERS AND AMPS EARPHONE JACK, STEREO NUMEROUS REAR TERMINALS FOR IN-PUTS AND OUTPUTS permitting modifications of instruments, voices, tapes and any sound source.

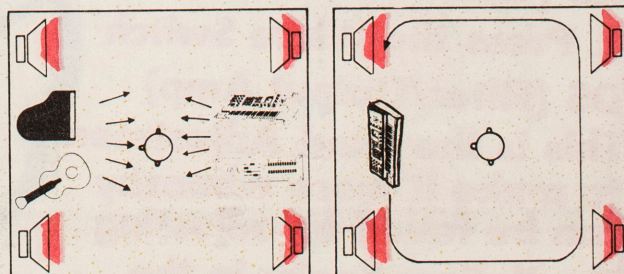


PRE SETS (Optional)

Fuzz, Wah Wah, Portamento, Vibrato and Repeat. Separate settings for each channel with separate rate knobs. Veritably additional hardware that frees oscillators for other functions.



View of Performer packed for traveling



QUADRAPHONIC SOUND

Spatial sound channeled through four speakers (two front, two rear) **AUTOMATIC PANNING** Sound moves at pre-determined rate, automatically; no set up; pull switch on or off

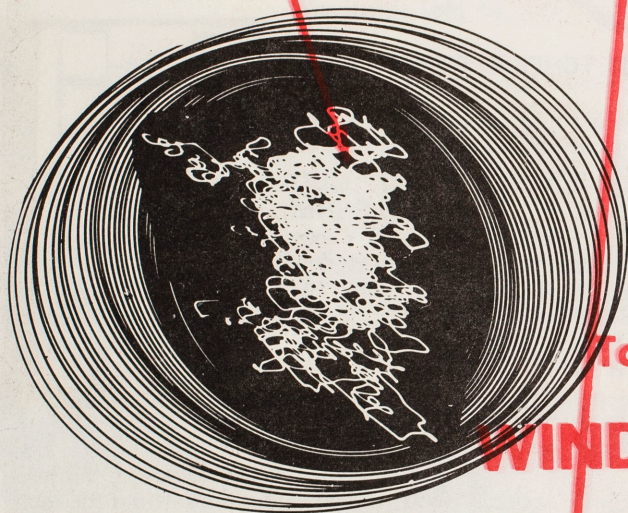
ANY ONE PLAYS INSTANTLY

Visual
Presentation
on an
Ionicamera

Worded
Instructions
and Plotted
Co-ordinates

Picture of Actual
Effect or Sound

ionicamera



Famed conductor, Pierre Boulez said, "Woods, strings and reeds are far more artificial than the wind in the leaves....."

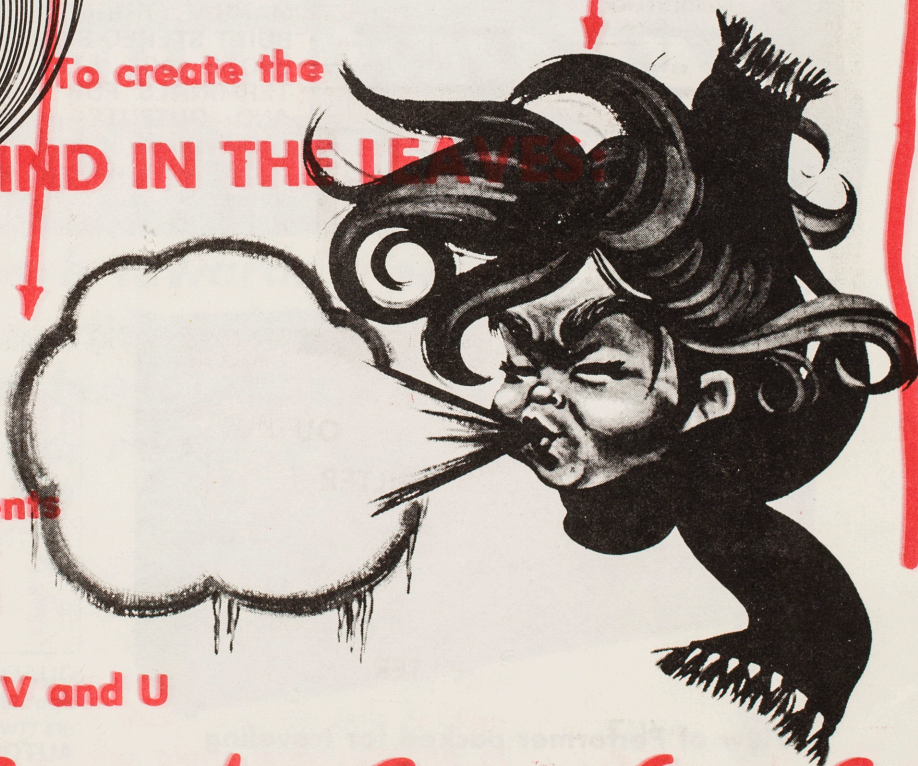
To create the

WIND IN THE LEAVES

1. Press the Yellow Switch
H3 (White Noise/Filter)

2. Press the White Switch
D5 (Filter/Output Amp)

This is the wind. Adjustments
to make it more whooshy
can be found by adjusting
the Yellow Knobs in the
FILTER PANEL marked W, V and U



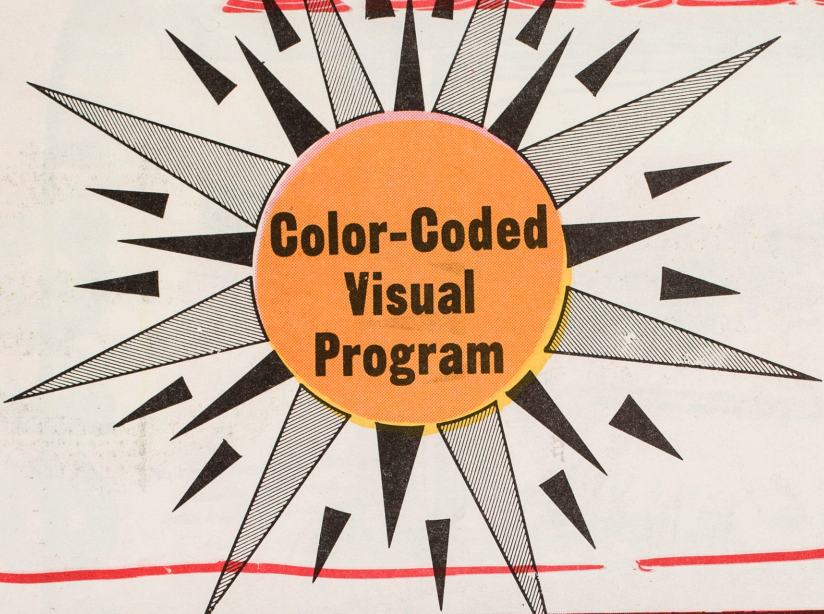
Actual Page Samples From Our Ea

WITH A

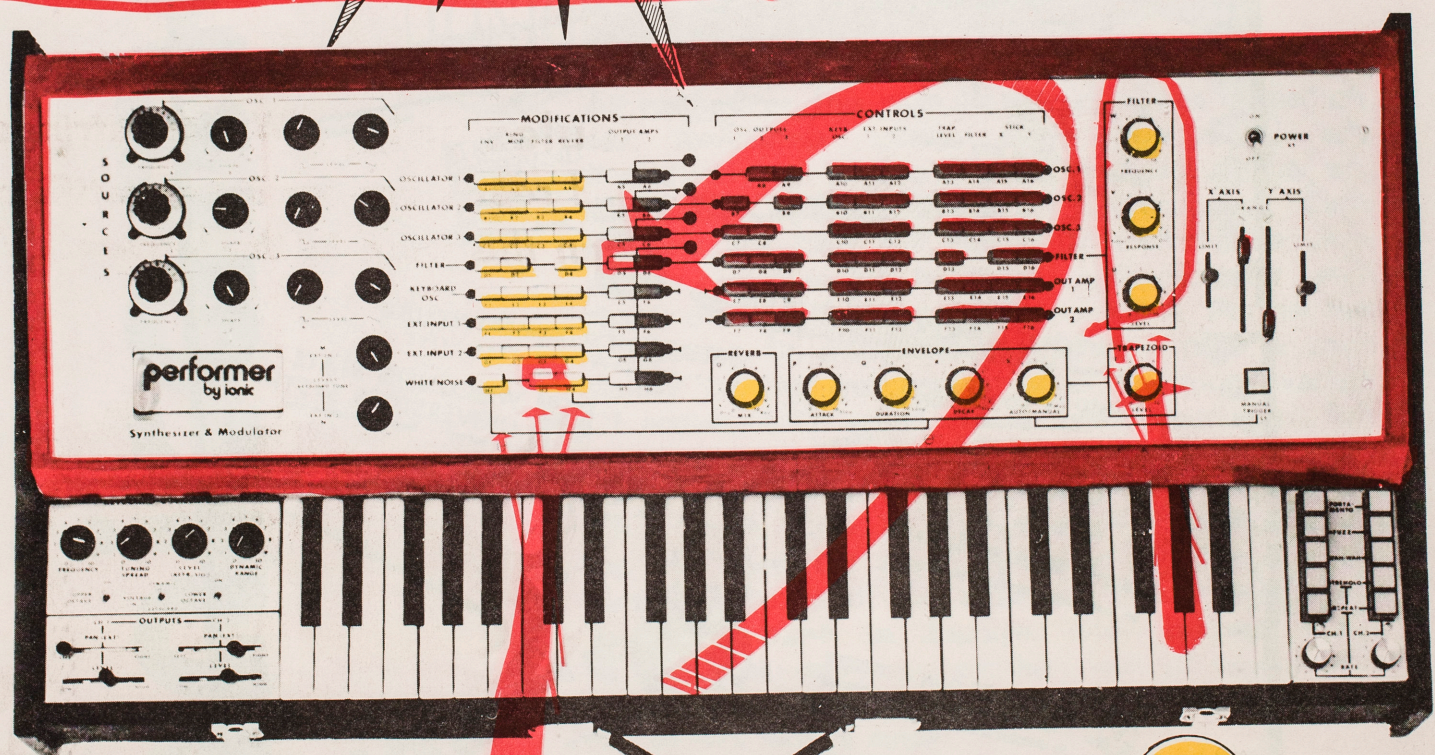
PERFORMER


ER

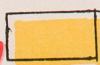
by ionic

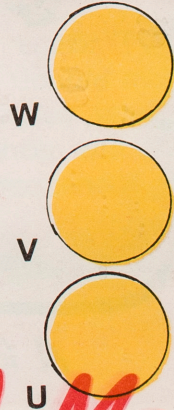


Color-Coded Visual Program

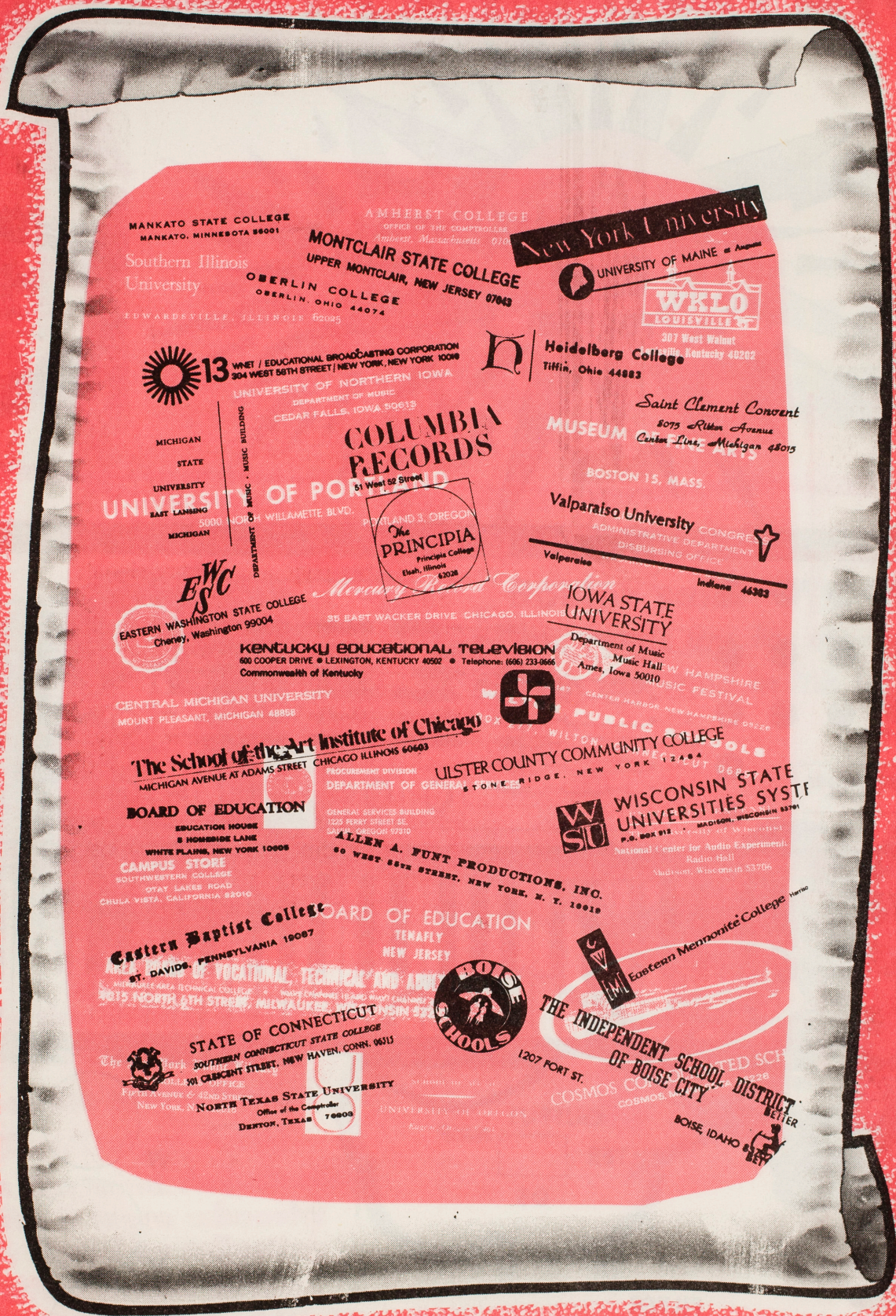


OUTPUT AMP
FILTER  D5

FILTER
WHITE NOISE  H3



14- To- Follow Color-Coded Manual

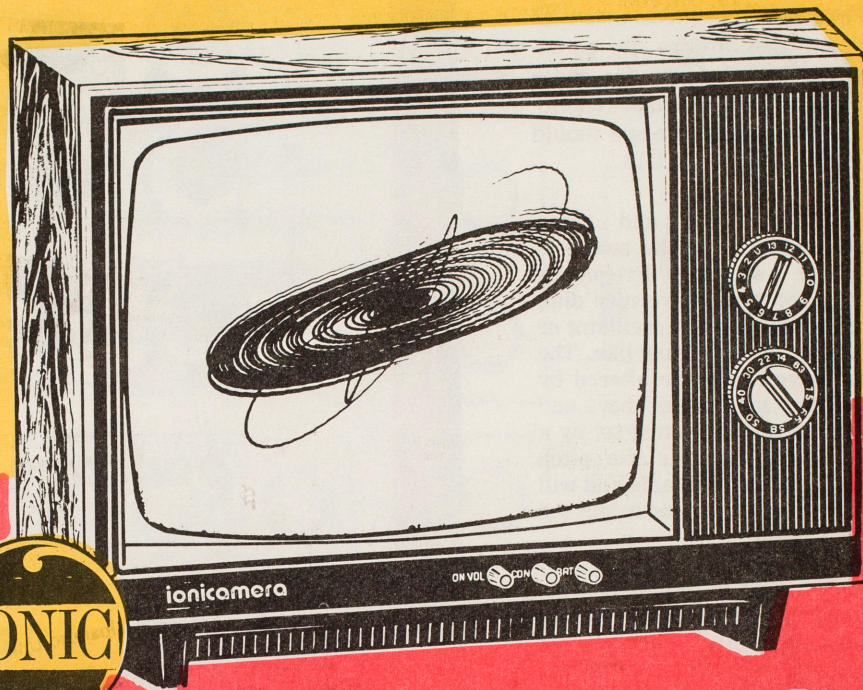


A Random List of Ionic Installations

*

ionicamera

see Sound!



All pictures on this page are display signals formed on our Ionicamera screen. Any audio signal can immediately be transformed into a visual display or abstraction. A whole new art is upon us now. Synthesizers are ideal for generating such signals; any picture displayed can be shaped with oscillator and shaper dials to any image you can imagine. Further the images can be made static (as on this page or constantly moving and undulating as the sound varies. Of course, ANY sound can be used: your voice, instruments, tapes, radio, etc. We propose that every child associates his every musical exploration with a visual image. Children exposed to this means of learning, can name the sound by seeing the display. As further evidence of the bolstering effect of sight to sound can easily be displayed when students learn to tune one source to another; lack of tuning will result in confused signals. On pitch is rewarded on the camera with a circle!

Ionicamera comes complete in a regular TV case. It will perform in a single mode, a double mode (X+Y axis) and as a conventional TV display screen. When used with the Digionic, the sequencer will control the series of pictures. They can be sequenced at various rates dependent on the setting.

\$395.00

Specification

PERFORMER BY IONIC

These are the traditional, technical means of specifications. All descriptions in parentheses atop a musical clef are for those readers of a musical bent. Though redundant, they add another perspective and should bring understanding.

OSCILLATOR 1:

Waveforms consist of sine and ramp spanning range of 1Hz to 20Hz; the sweep is continuous, without switching. Frequency settings are by a slow-motion, vernier dial.

(Timbre colorations of the first oscillator or voice are either flute-like or string-like. The flutey sound can have its timbre altered by the shaper dial. The pitch span is above and below hearing and is controlled and set by a vernier dial that will maintain the pitch wherever it is set; the pitch is stable and will not drift. The timbres can be mixed to suit the ear).

OSCILLATOR 2:

Same frequency range as oscillator one. Available waveforms are square and triangle; the shape control varies from asymmetrical (short pulse and sawtooth) through a symmetrical (square and triangle) to a mirror image opposite to the first setting.

(Same range of pitch as oscillator one. Timbres available are a clarinetish voice and a reed-like voice; by manipulating the shaper dial, voices can be altered to sound string-like or to create a reiteration or a glissando sweep).

OSCILLATOR 3:

Same waveforms as oscillator two but is a bass version of same; the frequency range is .015 Hz to 500 Hz. Slow transitions of voltage control can be made.

(A bass version of oscillator two with the same timbres. The three oscillators would be comparable to two violins and a cello, for an extended range. Since the frequencies are mostly sub sonic (only the upper portion is audible and reproducible) the low pitches can be used for a variety of marvelous, musical controls).

ENVELOPE GENERATOR

Four time controls: attack, duration, decay and manual-automatic timer. The automatic control can be set, repeating automatically at a wide range of speeds; the other mode is to press the manual trigger button. Either function will cause the trigger-button light to indicate the start and completion of every cycle. The repetition frequency of the generator also functions as a control, trapezoid waveform.

(The envelope is the electronic equivalent of embouchure; anything done by the lips can be simulated by the envelope. The attack would be similar to the attack of a tongue on a reed or mouthpiece; it has a great variety of hard and soft attacks. Duration is the amount of time the pitch is sounded; decay is the length of time the tone will diminish in volume. Any tone that is not sustained would thus have these three items of time; this can lend better understanding to an in-

strumentalist, as to what he is creating on a conventional instrument. This is an excellent means to demonstrate embouchure, before using a mouthpiece. The fourth dial is a timer and will either set off the envelope, automatically, at an established rate or manually, by using the manual trigger, a keyboard key etc.)

FILTER
A bandpass filter with a resonating point; it can be manually or voltage controlled. When sharpened beyond the resonating or "Q" point, the circuit becomes a pure, sine wave. Only one of the three functions can be used at any one time.

(The filter will eliminate many of the low harmonics. At a certain resonating point it will cause the harmonic series to sound. Music students can now gain first hand experience with this phenomenon. When turned to a point beyond this resonating, the filter becomes a lovely, clear flute-like sound. It's excellent for a portamento sound and has an extremely wide spectrum of pitch (above and below hearing).

REVERBERATION

This spring reverb unit has a volume control

TRAPEZOID: Provides another shape for control

WHITE NOISE: A set coloration (Not used much by traditional musicians as such; tones are fixed pitches ... noise is random; exciting departure).

RING MODULATOR: Has an output level control. Sine wave of oscillator 1 is permanently connected, allowing for the rapid addition of the second source.

(Adding any tone, voice or instrument to the flutey sound already in the RM will result in bell or chime-like resultant tones and effects.)

INPUT AMPLIFIERS: Voltage control of external sources and keyboard. Several rear terminals will accommodate a variety of sources (microphones, instruments, oscillators, tapes, recordings, radios etc). They can be mixed, combined and modulated and processed by the internal sources. Level controls for each channel appear on the

control panel. The dial for amplifier one serves a dual function of tuning the three oscillators into microtonal, macrotonal, well tempered temperaments, or anything else between these points.

OUTPUT AMPLIFIERS: The two output amplifiers have level controls and pan controls with slide pots on the left cheek block of the keyboard. They are voltage controllable and can further be controlled by:

AUTOMATIC PAN: By merely pulling out this knob, you can pan the amplifiers, automatically, by a rate determined on the dial setting.

(Amplifiers can switch the sound from left to right, automatically, creating a very, desirable, spatial effect. The rate knob will determine the amount of time each channel will be sounding).

KEYBOARD: 49 standard, piano-size keys with internal oscillator (ramp and a sub octave in square). Tuning set in a well-tempered mode with a fine-tuning adjustment

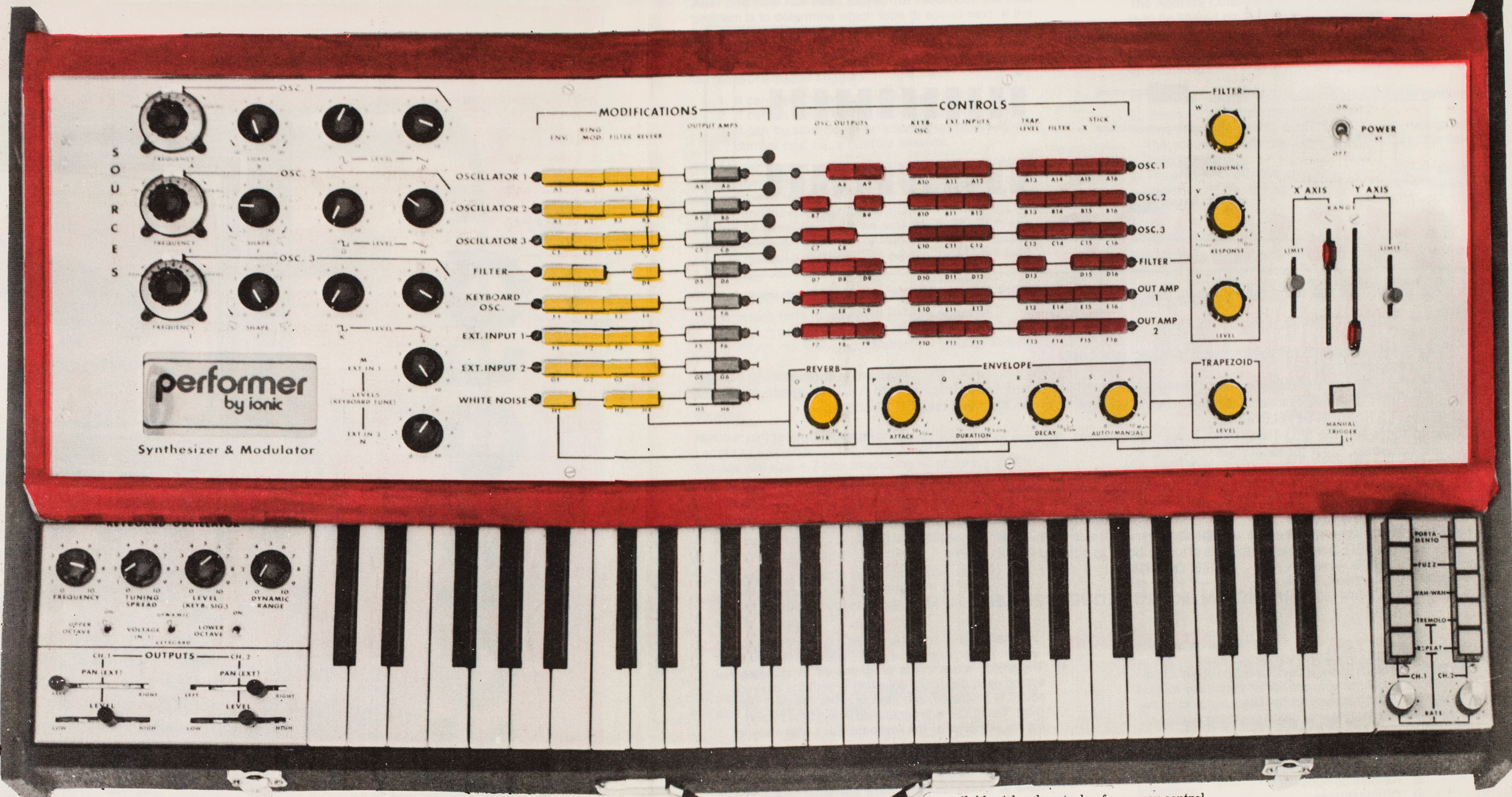
available. A level control, a frequency control and a control for amplitude (determined by the finger velocity) are on the left cheek block. Two switches determine the octave coupling and wave selection; a third switch will engage the internal oscillators in the touch sensitive mode to pitch.

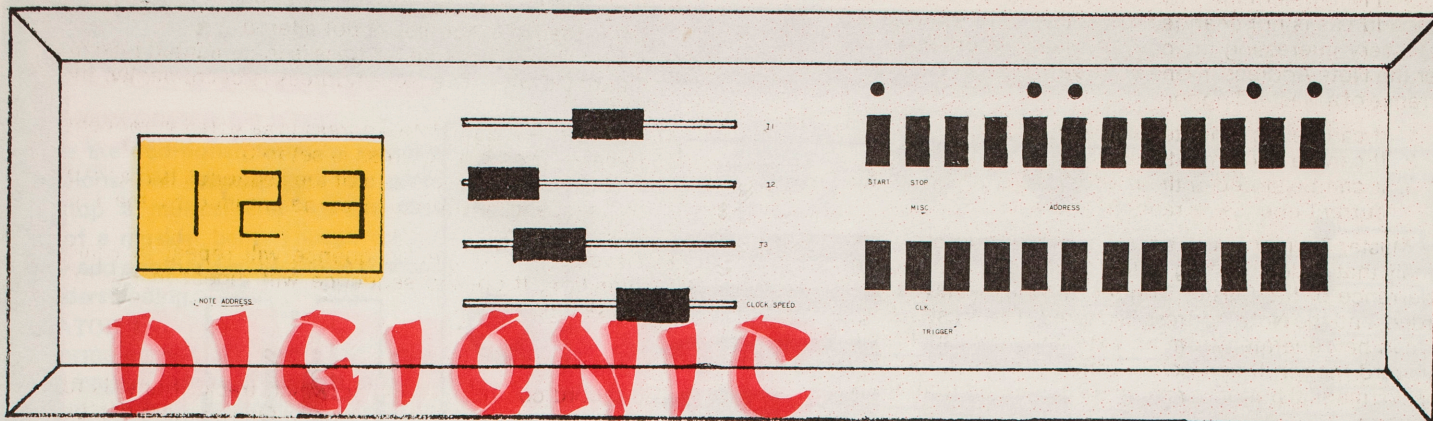
(The keyboard oscillator will sound in the well-tempered mode in either a string-like or clarinet-like timbre. The controls also enable the player to sound the key played, an octave lower or both. One knob will control the tonality of the entire keyboard and it is simple to transpose the keyboard from one key to another. Another control will enable a player to add the volume of each key (much as with a piano) by the speed of the finger attack. In the touch sensitive mode, the oscillators on the panel can randomly sound, on one key, the entire tonal spectrum determined by the speed of the fingers. It is possible to play in a well-tempered and random mode, simultaneously).

PRE SETS (Optional) Ten, ready-made settings (five for each channel) permit the performer to add modifications and controls,

immediately, without any adjustments and freeing the internal hardware for other uses. For example, the third oscillator will easily make a frequency modulation amplitude modulation. With pre sets, you can set either control in either or both channels, and still have the third oscillator free for other functions. The wah control is a veritable envelope (there are two) and one can, realistically, look at this addition as additional hardware.

(Pre sets will enable a player to add warmth and coloration to his tones, freeing up the voices for other uses. Vibrato and reiteration can be set on each channel at varying degrees and contrasts. The on-off function is much like that used, on a traditional instrument. Combining the wah sound with the envelope, is tantamount to rendering a more, complicated, interesting and unusual embouchure control than can be made by the envelope, solely. The portamento control is a novel sound unlike any traditional instrument. The tones will gliss or portament from one to another (much as in a style of vocalization) in a flute-like timbre).





For those of you not too technically inclined, here's a simple summation of what the DIGIONIC SEQUENCER boasts:

REAL TIME

The SEQ-1 plays directly off the keyboard; no need to set dials

LENGTHY SEQUENCES

As many as 146 tones in each sequence. They can be sounded forward, retrograde, forward AND retrograde. In addition, there are three channels (ie: tones, rhythms and variations in filter and reverb!) 3 voltages.

CONTROLLED RANDOM DEVELOPMENT

Feed in tones and the SEQ-1 will make many permutations. Achieve more than simple reiteration; the SEQ-1 almost composes. Great for serial rows.

DIGITAL DISPLAY

Numerals to indicate the point arrived at in the sequence (like a speedometer or digits on a tape recorder)

OPTIONS (Extras)

OFF-LINE TAPING ABILITY

A terminal for use with a cassette or tape recorder. Store and retain favorite sequences (like piano rolls). Feed back into the SEQ-1 and reset with little effort; a boon to editing techniques.

PRICE: Still \$495.00!!



Patents Pending

IONIC DIGITAL MUSIC SEQUENCER SEQ-1

SPECIFICATIONS

Introduction

The SEQ-1 is a digital storage device capable of providing a sequence of control voltages for an electronic music studio. The SEQ-1 incorporates the latest digital circuits to make possible features not found on conventional analog sequencers. Among them are:

- 1) Large storage
- 2) Real time programming
- 3) Random composition
- 4) Off line storage

The SEQ-1 can best be understood by comparison with a conventional analog sequencer.

- 1) As an analog sequencer has one or more rows of pots, so the SEQ-1 has rows of storage cells. The SEQ-1 has three rows of storage called tracks, each of which contains a voltage to represent a note, amplitude or any other control parameter of the synthesizer.
- 2) The analog sequencer has a circuit for selecting the next pot to play, usually a light which 'shifts' from one pot to the next. So also the SEQ-1 has a circuit to select the next storage cell to play. The SEQ-1 can select the next ascending, next descending, or any cell, at random. When the top or bottom of the sequence is reached the SEQ-1 can stop or repeat the sequence, up or down.
- 3) In an analog sequencer the timing (time between each note) is usually controlled by one of the rows of pots. In the SEQ-1 the timing can be controlled by one of the tracks or, alternatively, it can run from a variable clock, or be stepped by hand.

- 4) The analog sequencer is 'programmed' by manually setting each dial (pot), adjusting it until the desired sound is produced, and moving on to the next dial (pot). The SEQ-1 is programmed in real time by playing the sequence on the keyboard. Each time a key is depressed, tracks one and two will store two parameters, such as frequency and amplitude, of each note. The time between notes (Rhythm) is stored in track 3. Of course the SEQ-1 can be programmed note by note from three Local Pots provided on the control panel.
- 5) On an analog sequencer, when a new sequence is to be created, the old one is lost. To recreate it requires resetting all the dial (pots) to their old setting. The SEQ-1 provides (optionally) a signal which can be fed to any hi-fi tape recorder to save the current sequence. To recreate it at a later time, merely requires playing the tape back into the SEQ-1.

Theory of Operation

In very general terms the operation of the SEQ-1 will be explained. At the heart of the SEQ-1 is a digital memory. It has a capacity of 3x1034 bits of information grouped into words of 7 bits. Each group of 7 bits is called a storage cell, or note.

Three problems arise in the design of a sequencer.

The first problem is to determine which of the storage cells is to be played or recorded. The 'Note Address' determines which cell will be played or recorded on the next occurrence of the 'Master Trigger'.

EXPANSION POSSIBILITIES

Space has been provided for doubling and tripling the length, numerically, of the sequences. Call for pricing.

Aft: After one tone has been played (or recorded) the next
pro problem is to determine which tone to sound next. If the
No Note Address is not changed, the same tone will repeat
(nc (not a very interesting melody). A means is provided to
alte alter the Note Address in one of three ways, on each oc-
cui currence of a Master Trigger:

1. It can be incremented to the next cell,
2. It can be decremented to the previous cell, or
3. It can be stored with an address unrelated to the current one, *i.e.*, a random address.

Th The Master Trigger is the solution to the third problem,
na namely that of determining 'when' to play a note. On each
oc occurrence of the Master Trigger, a tone is played, re-
cc corded, and the Note Address is altered. The Master Trig-
ge ger can be generated from an external input, such as a
ke keyboard trigger. It can come from an internal, variable
cl clock or manual button, or it can be generated from track
3 3 storage.

T To summarize the three problems and their solutions:

- 1) Which note to play now — Note Address
- 2) Which note to play next — Note Address Alteration
- 3) When to play/record/alter — Master Trigger

Detailed Specifications of inputs, outputs, and controls

Storage:

Number of Tracks (channels) — 3
Length of sequence — 146 notes in each track
Storage cell size — 7 bits, producing an accuracy in volt-
age representation of .78%.

Inputs

- 1) Input 1, Input 2, Input 3 — The control voltages to be recorded in tracks 1, 2, and 3 respectively are derived from these terminals at the time of a Master Trigger.
- 2) Trigger In — An external trigger from the keyboard or other source is input to the SEQ-1 at this terminal. The trigger from this terminal can be selected as the Master Trigger.
- 3) Tape In — If the Off Line Tape option is installed, the input from the off line recorder is obtained from this terminal.
- 4) Start sequence trigger — trigger will start the sequence as if the start was pushed.

Outputs

- 1) Output 1, Output 2, Output 3 — The output from the cell currently addressed by the Note Address is available at these terminals from Track 1, Track 2, and Track 3 respectively.
- 2) Trigger Out — The Master Trigger is available at this terminal. It can be used as a trigger for the envelope on the synthesizer.
- 3) Tape Out — If the Off Line Tape option is installed, a signal containing the contents of the Memory is available at this terminal when the Save button is operated; it can then be recorded on a tape recorder.

Controls

Master Trigger Selection

The Master Trigger determines when to: a) play a tone, b) record a tone, and c) alter the note address. It is derived from various sources as selected by the following controls.

- 1) External — Trigger In Jack
- 2) Clock — an internal, variable clock
- 3) Track 3 — the contents of track 3 determine how long to wait before generating the next master trigger.
- 4) Single — each time this control is depressed.
- 5) Speed — controls the speed of the variable, internal clock.

Address Control

The Address Controls determine how the Note Address is to be altered on the next Master Trigger.

- 1) Off — the Note Address is not altered
- 2) Count Up — The Note Address is incremented by one
- 3) Count Down — The Note Address is decremented by one
- 4) Random — A new Note Address is selected at random
- 5) Reset — The Note Address is set to 0
- 6) End Stop — When the end of the sequence is reached the sequencer will repeat as determined by the following control.
- 8) Reverse — If off, the sequence will repeat in same direction. If on, the sequence will repeat in the reverse direction.

Record Controls

The record controls determine which track, if any, is to be recorded on each Master Trigger. One or more can be selected. If Timing and Track 3 are both selected, Timing takes preference.

- 1) Track 1 — Record the signal presented at Input 1, Input 2, or Input 3 or selected by the Local Pots: Local 1, Local 2, Local 3.
- 2) Track 2 —
- 3) Track 3 —
- 4) Timing — Record in Track 3 the time between successive Master Triggers. When Up, the control voltages determined by the Local Pots are recorded in the tracks selected by the above controls 1, 2, and 3. When Depressed, the control voltages present at the Inputs are recorded in the tracks selected by the above controls.
- 5) Track 1 External —
- 6) Track 2 External —
- 7) Track 3 External —
- 8) Local 1 — A source of local control voltages which can be selected by the above controls 5, 6, and 7.
- 9) Local 2 —
- 10) Local 3 —

Miscellaneous Controls

- 1) Start — Start the SEQ-1 playing a sequence
- 2) Stop — Stop the SEQ-1
- 3) Save — If the Off Line Tape option is installed, present the contents of Memory at the Tape Out Terminal.
- 4) Fetch — If the Off Line Tape option is installed, record Memory from data present at the Tape In terminal.

Indicators

- 1) Running — The SEQ-1 is playing a sequence
- 2) Tape On — If the Off Line Tape option is installed, Memory is currently being Saved or Fetched.

Physical Construction

The SEQ-1 is in an aluminum cabinet with a sloping front panel and wood end pieces. All controls and indicators are on the front panel; all Input/Output Terminals are on a rear panel. A bottom cover plate is removable for access to the electronics.

Options (Extras)

- 1) Real Time Off Line Recording — a signal is provided for a tape recorder much like the Save/Fetch signal except that it will be recorded in real time as the sequence is input from the Keyboard. It can later be played back into the sequencer and produce a sequence as if it were recorded in Memory.
- 2) Note Address Indicator — A numeric, digital readout will indicate the current note address.
- 3) Expansion Memory — Provision in the PC board for the addition of extra Tracks of Memory.

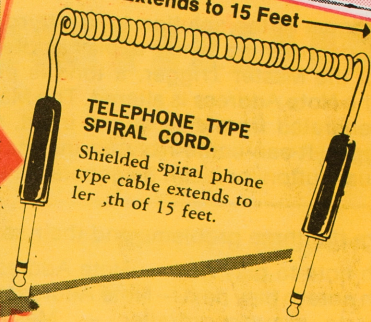
Digonic may be used to control the picture frames on Ionicamera. You can pre-program a complex arrangement of display patterns and run them off in any manner you may elect.

\$57.50



DT 100
Dynamic Stereo Earphone

Extends to 15 Feet



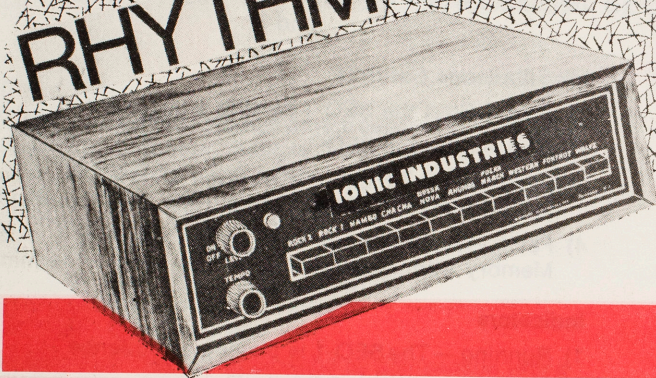
TELEPHONE TYPE
SPIRAL CORD.
Shielded spiral phone
type cable extends to
length of 15 feet.

\$2.45

\$2.25

\$1.99

RHYTHM



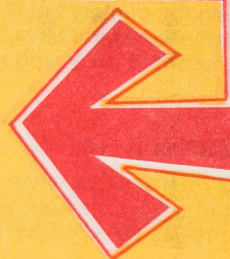
\$35.00

Model M-81

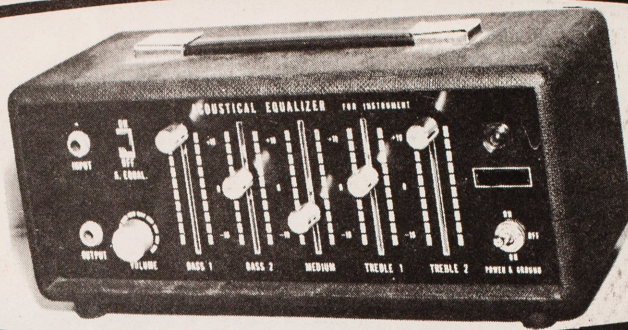
Add a little rhythm to your EM settings. By means of these rhythm machines from Ionic, have a number of pre set patterns that can be used as external inputs that can be readily modulated and altered between two channels, ring modulator, filter, reverb and hosts of treatments as shown with our patch sheet. Available in two models:

RM 10 (ten pre set rhythms as pictured including a start + stop pedal) \$99.00.

RM 12 (not illustrated 18 computer logic rhythms, sustain, tempo settings, volume control and including a start + stop pedal) \$199.00.



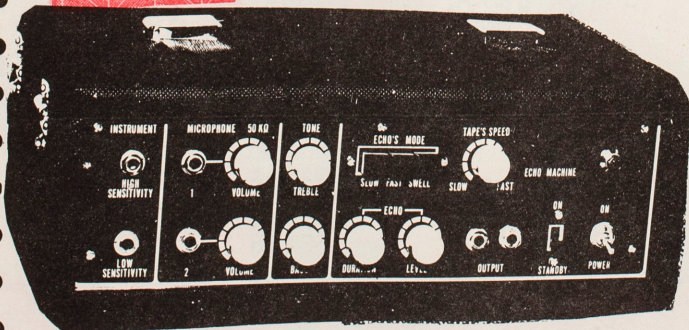
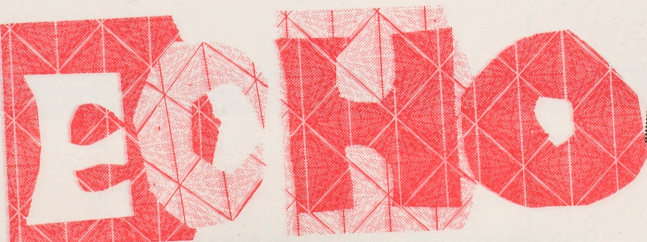
Filter Bank



We receive oodles of letters from owners for advice on getting synthetic instrumental sounds. Save yourself loads of grief and searching; make your Performer or whatever else you own into double or more the timbres. Get our new filter bank-equalizer. You can filter out or boost any of the sounds you're manipulating. With the "A-Equal" switch you can filter and boost any part of the audible spectrum or return immediately to what's set on your unit. This is a logical add-on for all owners.

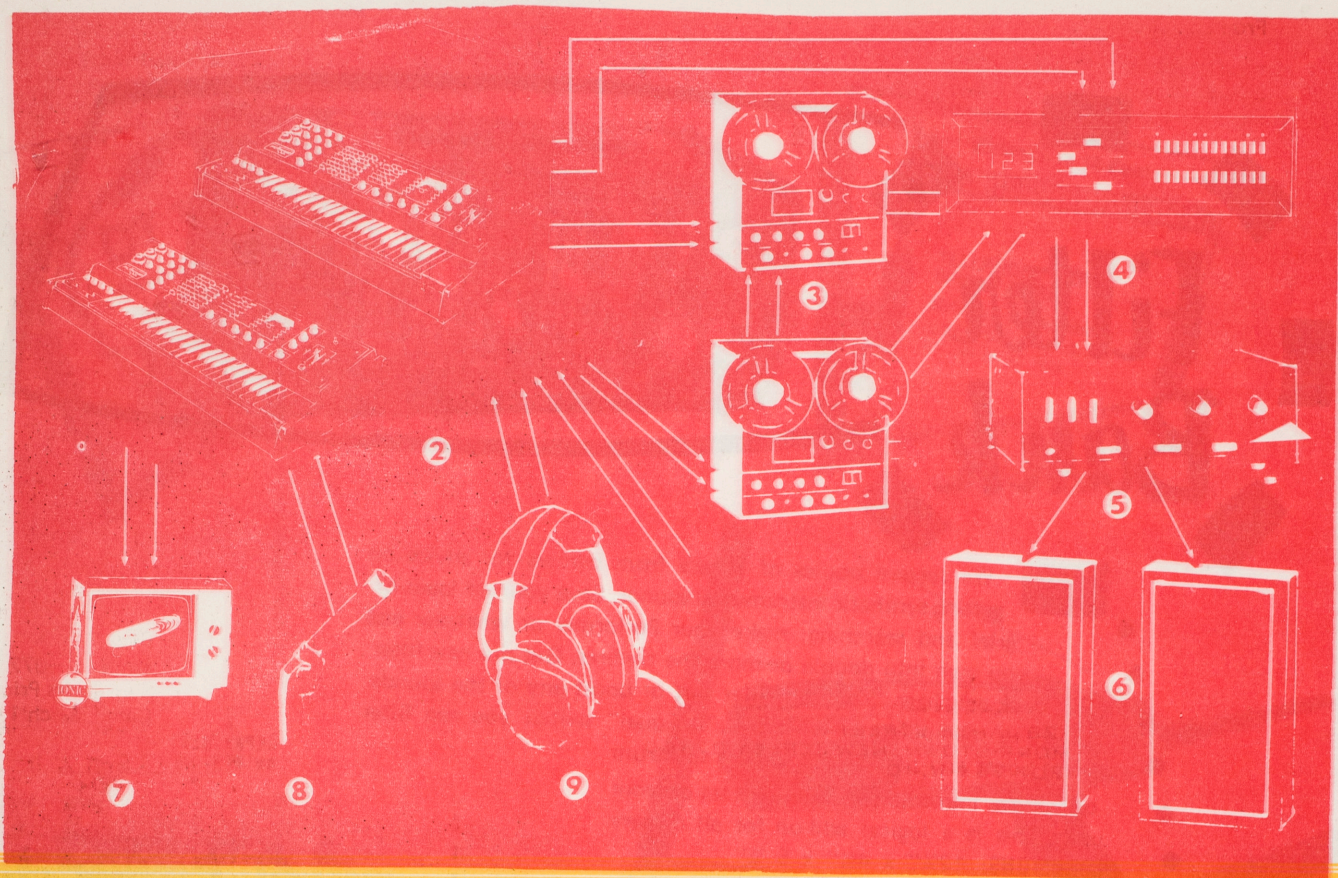
DIMENSIONS: 12 1/4" x 4 3/4" x 5 1/4"

CONTROLS: Terminals: Input, Output A-Equal On-Off, Volume Knob; 5 Graphic Slide Controls +10 (Bass, 2, Medium, Treble 1, 2 On-Off Power Switch/ Pilot Light



High Intensity + Low Intensity Inputs
Microphone Volume 1, 2
ECHO TONE: Treble, Bass
ECHO'S MODE: Slow, Fast, Swell
ECHO: Duration, Level
TAPE'S SPEED: Pot Slow to Fast
OUTPUTS: Two
PILOT LIGHT
STANDBY/ON SWITCH POWER: ON

With the various instant echo effects achievable with this unit, a monophonic scale can become polyphonic with properly-timed execution. Add the depth and color of the studio techniques to live performances. Instantly recorded, played back and erased; ecstatic exotic sounds and effects at your fingertips; child's play compared to older techniques.



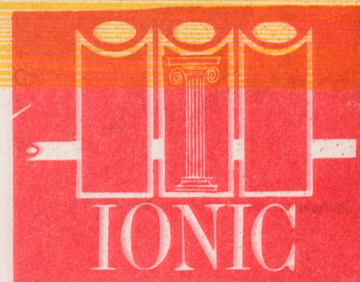
LARGER INSTALLATIONS

ITEM	Pkg. I	Pkg. II	Pkg. III	Pkg. IV	Illus. No.
Performer	1	1	3	6	2
Pre Set	1	1	3	6	
Digionic	1	1	2	4	4
Tape Terminal		1	1	2	
Ionicamera	1	1	2	4	7
Economy Amp	1				
Economy Speakers	2				
A/R Amp		1	2	4	5
A/R Speakers		2	4	8	6
Revox A77		1	2	4	3
Variable Speed		1	1	2	
Sel Sync		1	1	2	
Headphones	1	1	1	2	9
Microphones	1	1	1	2	8
Rhyth Magic 10	1				
Rhyth Magic 12		1	2	4	
TOTAL	\$2,431.50	3,817.50	8,466.50	16,784.00	
PKG. RATE	2,309.93	3,550.27	7,883.85	15,608.12	
SAVE	121.52	267.23	582.65	1,174.88	

Ionic also markets quad sound speakers, amplifiers, oscilloscopes, mixers and tape players. Audio visual equipment compatible with our other products is available on request. Space limits the full extent of our line. Send us your specific needs and installations and we will be of assistance.

IONIC INDUSTRIES INCORPORATED

128 James Street • Morristown, N. J. 07960 • (201) JEfferson 9-1040

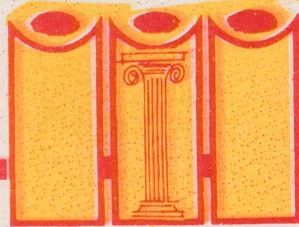


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 MORRISTOWN, NEW JERSEY 07960
 (201) 539-1040

Price List
 March 1, 1972
 Supersedes Price List
 Dated March 1, 1971

DEPARTMENT _____
 OR REQ. NO. _____

S
H
I
P
T
O

DATE OF ORDER	DATE REQUIRED	SHIP VIA	F. O. B. Morristown, New Jersey
TERMS Check in Advance . . . ¼ Deposit; Bal COD . . . P/O			Telephone

✓	QUANTITY	CATALOG NUMBER	DESCRIPTION	UNIT PRICE	TOTAL
		PBI	Performer by Ionic Synthesizer & Modulator	975.00	
		PS	Performer Pre Set	149.00	
		SEQ-1	Digionic Sequencer	495.00	
		S/T	Digionic Storage Terminal	145.00	
			Additional Memory (Prices on request)		
		VDA1	Ionicamera and TV Display	395.00	
		RM	Rhyth Magic 10 Rhythms	99.00	
		RM12	Rhyth Magic 12 Rhythms	109.00	
		A77	Revox Tape Recorder, Deck	648.00	
		V/S	Variable Speed, Revox	75.00	
		S/S	Self Sync Revox	125.00	
		A/R/A	A/R Amplifier, Stereo	265.00	
		A/R/S	A/R Speakers	250.00	
		M81	Microphone	35.00	
		DT100	Headsets, Stereo	57.50	
		SC	Spiral Cables Black: B, Red: R, Grey: G, White: W	2.45	
			in quantities of three	2.25	
			in quantities of twelve	1.99	
		SOP	Demonstration Tape, Performer	2.00	
		EMM	Electronic Music Manual	2.50	
		CCM	Color-Coding Manuscript Book	2.50	
		EMW	Electronic Music Workshops	150.00	
			Information on quad equipment	N/C	

Authorized Signature _____

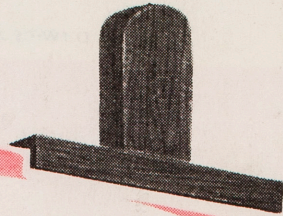
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128 james street morristown, new jersey 07960

(201) 539-1040



We are now so near to technological wonders and achievements, it is difficult for us to understand and respond with any certainty. In cultural circles, it is recent; the masses of fans are too overwhelmed to make a confident decision or opinion. Most of us, are licensed drivers to operate motor vehicles; by comparing advances made in Detroit, we can better evaluate what technology represents in the arts. In 1939, the Oldsmobile branch of GM introduced a revolution in driving: a small option, called Hydra Matic, now enabled one to operate an auto without any knowledge of shifting gears. Eliminating this complexity, now made it possible for anyone of limited skills to brave the highways, seated behind the wheel. Abandoning shift changes and clutches, reduced the operation of the car to merely starting and stopping, accelerating and steering. Anyone with the need or whim to become self mobile now found this a simple reality.

In music, the means of becoming involved, is of ancient origin; if one had the urge to emote, musically, the standard procedure was to become involved in a delayed process of servitude. A submission to discipline and a rigorous development of one's fingers, embouchure or vocal cords is a purely physical development that harkens back to the horse-and-buggy days, conceptually. A bit tortuous for the average soul, the bulk of students engaged in such a regimen was eliminated, during the developmental period. Impatience, discouragement, lack of funds, talent or time to achieve any degree of ability or satisfaction led to such a decision. Many of these drop outs were anxious to make music but were eliminated by the process. Statistics, of successful numbers achieving in music, cannot bear any public scrutiny. For each student who achieves, we've sacrificed hundreds and thousands, en route. It's a process of attrition, whereby we eliminate a great number of devotees, for one of the chosen few selected to perform and achieve. An elitist approach, we can't call this a means for a democratic society. No one has given much thought to the great hordes of people who have been eliminated, who care for music but are not willing to achieve, via the present modus operandi.

The PERFORMER BY IONIC synthesizer and modulator looms on the horizon as the automatic shift of music and art. We have eliminated all the explanations, all the preparations, all the limits as to age, sex, talent and ability. With a few simple directions, you immediately perform and achieve; no development is necessary. Press a couple indicated switches and the desired sound or effect is produced immediately, on the spot! Every one can now try his hand at making sounds, music and pictures. Have the fun of doing it now; after an initial fulfillment, you can decide whether you elect to become further involved. As the airlines exhort the public: play now, learn later. Instant success should encourage you to become further involved. If you're not enthralled by the experience, at least, you won't have the bitter expulsion of the traditional, musical explorations. You're still free to like music although not a participant. You've had a harmless and pleasant excursion.

What this represents is difficult to define. Pundits galore are concerned whether this will eliminate instrumentalists or create additional instrumentation for the orchestra, in a new, restructured basis. Who knows where this will lead? It can encourage and inspire students to become traditional musicians. An extension of music, we've now eliminated the outer perimeters; an infinity, synthesis has no bounds. The limits are, merely, those of the operator's imagination. This is technology catching up to music, at long last. Break the shackles of internment from the Eighteenth Century. Abandon a horse-and-buggy approach and roar into the Twentieth Century, musically, with the PERFORMER BY IONIC!

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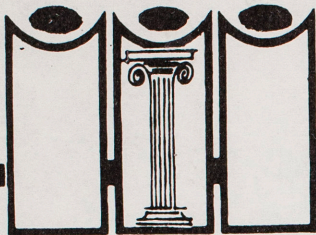
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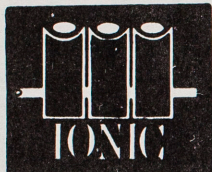
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		PBI	Performer by Ionic Synthesizer w/pre sets	1299 00	
		SEQ-1	Digionic Sequencer	599 00	
		S/T	Digionic Storage Terminal	145 00	
		VDA1	Ionicamera	395 00	
		FB	Ionic Filter Bank	125 00	
		EC-3	Ionic Echo Machine	325 00	
		RM	Rhyth Magic 10 Rhythms	99 00	
		RM12	Rhyth Magic 12 Rhythms w/sustain	199 00	
		CCM	Color Coding Manuscript Book	2 50	
		PN/	Perform Now -Electronic Music Manual	2 50	
		PN/LL	Perform Now /Learn Later Tape..Cassette..	2 00	
		SC	Spiral Cables Black B;Red R;Grey G;White W	2 45	
			in quantities of three 2.45 in quantities of 12	1 99	
		EMW	Electronic Music Workshops; all expenses +	150 00	

Amps, Speakers, Microphones, Mixers, Recorders, Quad; see March 1 '72 Listings; Specific catalogues on request. Custom installations of Ionicamera on special order.

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FEATURES:

Portable, self-contained, one piece unit; legs for mounting. Color coded controls by function and location for rapid, manipulation and understanding.

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PRE SETS (Optional) Portamento, Fuzz, Wah, Vibrato, Repeat for each channel.

SPECIFICATIONS:

SOURCES: 4 Oscillators .015-20K sine, ramp, square, triangle plus shapers; White Noise; 2 Input Amplifiers; Filter.

MODIFICATIONS: Envelope, Ring Modulator, Filter, Reverb.

CONTROLS: X+Y Slide Controls, 49 key Keyboard (touch sensitive) with KB Divider (Octave).

MISC: Two Amplifiers and speakers, 9 input terminals, 4 quad outputs, 2 outputs sans VC, stereo headset, pan controls.

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