

BIG BRIAR CONTROLLERS

For
Electronic and
Computer Music

NEW
Dimensions
in
Hands-on
Control



WHAT ARE CONTROL SURFACES?

Music is the controlled movement of sound. In performing traditional music on acoustic instruments, musicians control the sound's movements primarily through rapid, precise, and complex movements of their hands, and, to a smaller extent, their lips and feet. We call the parts of musical instruments on which these movements are performed the control surfaces. The fingerboard of a violin, the valves of a flute, and the keyboard of a piano, are examples of control surfaces. They are all carefully designed and expertly crafted to respond smoothly, rapidly, and accurately to hand movements. Musical control of sound would be virtually impossible without them.

CONTROL SURFACES IN ELECTRONIC AND COMPUTER MUSIC

In electronic and computer music, as in traditional acoustic music, musicians require rapid, precise, multidimensional control over the movements of sound parameters. The ribbon controller and the pitch-bend/modulation wheel, two devices developed by Robert Moog over a decade ago, have been widely accepted by musicians. Their responsiveness to rapid hand movements has allowed musicians to conveniently exercise direct control over musical gestures such as pitch bending, modulation shaping, brightness contouring, and event timing.

WHAT IS BIG BRIAR, INC.?

Founded in 1978 by Robert Moog, Big Briar, Inc. specializes in designing and building electronic and computer music controllers, as well as musical instruments and systems using electronic and computer technology. Our staff is personally committed to designing and building the very highest quality electronic music equipment, and to ensuring that our customers receive the personal service

they need to use our equipment effectively. In addition to a fully equipped electronics laboratory and assembly shop, our facilities include woodworking and precision metalworking equipment so that we need not confine ourselves to using mass-produced mechanical components in our instruments. In order to maximize the reliability of Big Briar instruments, we design conservatively, build carefully, use high quality materials, and subject each completed instrument to a lengthy burn-in procedure.

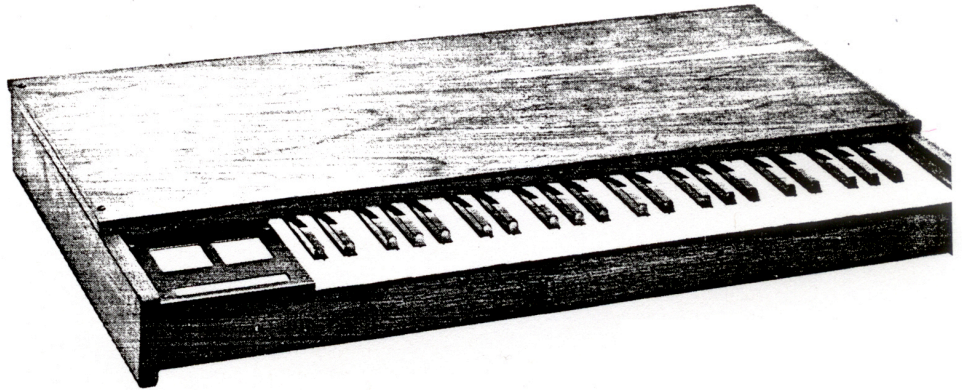
All Big Briar instruments carry a one year guarantee against defects in materials or workmanship. All instruments are shipped with both a user's manual and a fully-documented set of service instructions.

BIG BRIAR CONTROLLERS FOR ELECTRONIC AND COMPUTER MUSIC

To further the development of sensitive, musically useful control surfaces for electronic and computer music, Big Briar, Inc. now introduces a series of new devices which combine carefully designed and constructed control surfaces with technologically advanced electronic sensing and processing circuitry. These devices, or controllers, are designed to provide responsive, versatile, reliable man-machine interfaces for controlling a wide spectrum of musical material. The Big Briar line of controllers for electronic and computer music features thoroughly-engineered circuits and components which are assembled on order into a variety of configuration options. Big Briar controllers do not generate audio signals. Their outputs are control and gating signals that follow the movements of the musician's hands. Either digital outputs (for feeding directly to a computer) or analog outputs (for use with voltage-controlled synthesizers) are available as standard options on all Big Briar controllers. Great care is given to the design of the control surfaces themselves, so they feel as natural as possible to the musicians who use them.

The 100 SERIES Keyboard Controllers

- Unique multidimensional touch sensitivity on each key
- High quality wood action
- Fast, accurate digital scanning of all key parameters
- Digital output standard; analog outputs available as option



All '100 SERIES' keyboard controllers are high quality, standard-size C-C wood action keyboards. Digital scanning circuitry continuously detects the status of each key and formats the data for rapid delivery to a computer or digital programmer, or for conversion to high accuracy analog control signals. Keyboard and associated circuitry are housed in a hand-finished hardwood case that is designed for easy access to all subassemblies for servicing.

Four independent, continuously variable modes of touch sensitivity are available: X, Y, Z, and F. The X mode detects the left-to-right position of the finger on the front half of the key surface. The Y mode detects the front-to-back position of the finger on the front half of the key surface. The Z mode detects the up-down position of the key itself, and the F mode detects the force on the key when it is fully depressed. In addition, the key's downward velocity V is derived as the key is depressed. X and Y modes are implemented by a patented electrically sensitive key surface that utilizes the tiny electrical capacitance of the finger. F, V, and Z modes are implemented by electro-mechanical transducers inside the keyboard case.

In addition to the individual key touch sensors, several configurations of auxiliary touch-sensitive plates may be mounted on the left cheek block. Outputs from auxiliary plates are available to provide overall control to musician-selected sound parameters.

Digital connections to the '100 SERIES' keyboards include an eight-bit address output bus that tells which key is currently being observed, an eight-bit data output

bus that gives the values of the key's touch-sensitive parameters, a control input line on which the keyboard is signaled to advance to the next active key, and a control output line on which the keyboard signals that the data for that key is ready to be read. All digital connections are TTL and CMOS compatible, and may be easily interfaced with most computers and digital programmers.

An optional digital-to-analog converter (DAC) may be connected to the keyboard to provide eight channels of analog control signals for direct connection to modular or programmed analog synthesizers. Pitch outputs are one volt per octave and are accurate to one millivolt. Touch sensor outputs may be set to cover 0 to +5 volts or -5 to +5 volts, and have resolutions of 1% of their total ranges. Use of the DAC option does not affect the keyboard's main digital connections. As a result, analog and digital sound generators may be controlled simultaneously with any of the '100 SERIES' keyboard controllers.

Standard power supply requirements of each keyboard controller are a) +5 volts $\pm 5\%$ at 2 amperes, and b) ± 12 to 18 volts at 500 milliamperes. An optional built-in AC-operated supply permits power to be gotten directly from 100V, 120V, 220V, or 240V, 50 or 60 Hz. power lines.

Touch Sensitivity

- O - Keys are not touch sensitive.
- 1 - Keys have F, V, and Z touch sensitivity.
- 2 - Keys have X, Y, F, V, and Z touch sensitivity.

Number of Octaves

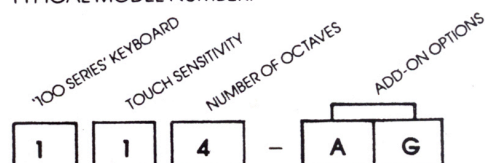
- 3 - Three octaves of keys, C-C.
- 4 - Four octaves of keys, C-C.
- 5 - Five octaves of keys, C-C.
- 6 - Six octaves of keys, C-C.

Add-on Options

- A - Line-operated power supply (100-240 50-60 Hz) is built into keyboard case.
- B - Eleven-channel digital-analog converter is provided. Eight of the channels deliver pitch, gate, F, V, and Z outputs from active keys. The remaining three channels are available to deliver up to three outputs from each of up to three customer-specified auxiliary cheek block touch sensors. This option is housed in its own enclosure which is connected to the keyboard with a two-meter cable.
- D - Same as option C, except that each of the eight active-key output channels also delivers X and Y outputs. This option should be ordered only when 'Touch Sensitivity Option 2' is present.
- G - Left cheek block touch surfaces include one 1 x 10 cm and two 4 x 4 cm plates, each with X and Y outputs.
- H - One 10 x 10 cm left cheek block touch surface, with X, Y, and F outputs, is provided.
- U - Nonstandard custom feature is incorporated in the keyboard.

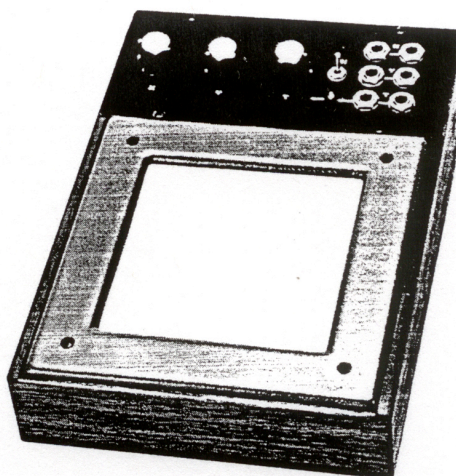
'100 SERIES' ORDERING OPTIONS

TYPICAL MODEL NUMBER:



The 300 SERIES Touch-Sensitive Plate

- Accurate relation between finger position and output signals
- Smooth surface
- Analog outputs standard; digital output available as option
- Digital output standard; analog outputs available as option



'300 SERIES' controllers use a patented electrically sensitive plate that responds to touch in two dimensions: left-to-right (X) and front-to-back (Y). In using the controller, the musician simply places a finger on the plate, then moves his finger around on the plate's surface. The X output of the controller is accurately proportional to the distance between the player's finger and the plate's left edge, while the Y output of the controller is accurately proportional to the distance between the player's finger and the plate's front edge. In addition, a gate signal is produced whenever the player's finger is on the plate. The plate surface is smooth and non-conductive, so that it is completely safe as well as easy to use.

Standard controls include X and Y attenuators and gate threshold adjust. Switches set the maximum X and Y outputs to either 0 to +5 volts or -5 to +5 volts, and determine whether or not the outputs will be held when the player's finger is lifted from the plate.

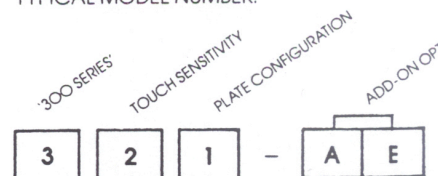
An auxiliary transducer whose output is proportional to the force of the player's finger on the plate (F) is available as an option. The maximum F output range is 0 to +5 volts. This option includes an F output attenuator control, and a selector that determines whether the F output will vary continuously while the player's finger is on the plate, or whether the maximum F value during the first 10 milliseconds that the plate is struck will be held until the player again strikes the plate. In this latter mode the auxiliary transducer acts as an impact sensor, thus enabling the plate to be played percussively.

In the digital output option, the digital connections to the '300 SERIES' controller include a two-bit address out bus that tells which touch sensor output is being measured, a ten-bit data out bus that gives the value of the measured output, a control in line on which the controller is signalled to advance to the next output, and a control out line on which the controller signals that the data for that output is ready to read. All digital connections are TTL and CMOS compatible, and may be easily interfaced with most computers and digital programmers.

Standard power supply requirements for each '300 SERIES' controller are ± 12 to volts at 50 milliamperes. An optional built-in AC-operated supply permits power to be gotten directly from 100V, 120V, 220 or 240V, 50 or 60 Hz power line.

'300 SERIES' ORDERING OPTIC

TYPICAL MODEL NUMBER:



Touch Sensitivity

- 1 - X and Y outputs are provided.
- 2 - X, Y, and F outputs are provided.

Plate Configuration

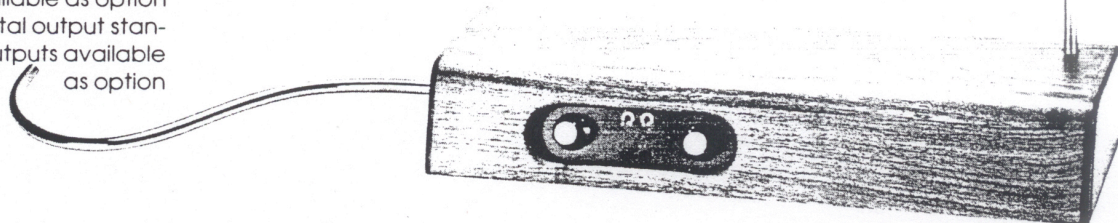
- 1 - One plate, approximately 10 x 10 cm square

Add-on Options

- A - Line-operated power supply (100-240 50-60 Hz) is built into controller case.
- E - Digital outputs are provided.
- U - Nonstandard custom feature is incorporated in the controller.

The 500 SERIES Theremin-Type Controller

- Two antennas respond to player's hand movements without being touched
- Unique control mode is theatrical as well as musical
- Analog outputs standard; digital output available as option
- Digital output standard; analog outputs available as option



The theremin is one of the earliest all-electronic musical instruments. It is certainly also one of the most novel and spectacular. The original theremins had two metal antennas: a straight vertical one that controlled pitch, and a curved horizontal loop that controlled volume. To play the instrument, the musician varied the distances between his hands and the antennas: bringing the right hand nearer the pitch antenna would raise the pitch, while bringing the left hand nearer the volume antenna would lower the volume of the tone.

The '500 SERIES' controller replicates the configuration of the original theremin, but does not include audio signal generating circuitry. Two control voltages are produced. The 'pitch' control voltage goes from 0 to +5 volts as the player's right hand is brought near the 'pitch' (vertical) antenna. The 'volume' control voltage goes from +5 to 0 volts as the player's left hand is brought near the 'volume' (horizontal loop) antenna. In addition, a gate signal goes on as the

right hand begins to approach the pitch antenna, thus making it convenient to squelch the tone when no musician is near the controller.

Panel features include two tuning controls that compensate for variations in the environment, 'power on' and 'standby' switches, and indicator lamps that tell when the controller is correctly tuned. The controller's circuitry is housed in a hand-finished hardwood enclosure that may either rest on a high table or attach to a standard microphone stand. The antennas are made of polished and gold-anodized aluminum, and may easily be unplugged from the circuitry enclosure.

In the digital output option, the digital connections to the '500 SERIES' controller include one address out line that tells which antenna output is being measured, a fourteen-bit data out bus that gives the value of the measured output, a control in line on which the controller is signalled to advance to the other output, and a control out line on which the controller

signals that the data for that output is ready to read. All digital connections are TTL and CMOS compatible, and may be easily interfaced with most computers and digital programmers.

Standard power supply requirements for each '500 SERIES' controller are ± 12 to 18 volts at 50 milliamperes. An optional built-in AC-operated supply permits power to be gotten directly from 100V, 120V, 220V, or 240V, 50 or 60 Hz power line.

'500 SERIES' ORDERING OPTIONS



Add-on Options

- A - Line-operated power supply (100-240V, 50-60 Hz) is built into controller enclosure.
- E - Digital outputs are provided.
- U - Nonstandard custom feature is incorporated in the controller.

for further information, contact

Specifications subject to change.



© 1982 by BIG BRIAR, INC.
Printed in U.S.A.

Big Briar, Inc.

P.O. Box 28748
Raleigh, NC 27604-0748

IN CONTINENTAL EUROPE ONLY, CONTACT:

Synton Electronics B.V.
Zandpad 46 Postbus 83
3620 AB Breukelen
Holland
Phone 03462-3499 Telex 40541 Syntoni

Big Briar

Custom electronic
music instrumentation

Electronic music
instrument design

SYNTON & BIG BRIAR PRICE LIST OCTOBER, 1983

SYNTON MODULAR ELECTRONIC MUSIC EQUIPMENT

MODEL	DESCRIPTION	PRICE
3001	BLANK PANEL	\$9.00
3003	KEYBOARD INTERFACE (1/2 width)	\$14.00
3004	QUAD ATTENUATOR	\$28.00
3005	ENVELOPE GENERATOR	\$74.00
3006	MULTIPLE	\$59.00
3010	V.C.ENVELOPE GENERATOR	\$94.00
3015	FOUR-INPUT MIXER	\$63.50
3017	MULTIMODE FILTER	\$100.00
3021	V.C.OSCILLATOR	\$129.00
3022	FREQUENCY DIVIDER (1/2 width)	\$35.00
3023	LOW FREQUENCY OSC. (1/2 width)	\$49.00
3024	LINE OUTPUT AMP. (1/2 width)	\$29.50
3025	MIC/LINE INPUT AMP. (1/2 width)	\$45.00
3209	DUAL V.C.AMPLIFIER	\$67.50
3211	RING MOD., NOISE SOURCE	\$92.00
3218	DUAL INVERTER, SLEW LIM.	\$55.50
3223	DUAL L.F.OSCILLATOR	\$83.50
3224	H.P. & L.P. V.C. FILTER	\$129.00
3233	SAMPLE-HOLD & L.F.O.	\$75.50
3235	ENV.FOL. & CPR.	\$75.50
KBM35	3-1/2 OCTAVE KEYBOARD	\$326.00
PS401	POWER SUPPLY	\$120.50
RM1	19" RACK (HOLDS 5 MODULES)	\$52.50
MC1	CABINET (HOLDS 4 RM1'S)	\$120.00
MC2	STUDIO CABINET (HOLDS 32 MODULES)	\$250.00
PC1	SET OF 20 PATCH CORDS 12" - 36"	\$35.00
DM1	SERIES 3000 OWNER'S MANUAL	\$2.50

SYNTOVOX VOCODERS

221	20-CHANNEL VOCODER	\$6018.00
222	10-CHANNEL VOCODER	\$815.00

PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE (over)

BIG BRIAR, INC. - LEICESTER, N. C. 28748

(704) 683-9085

BIG BRIAR TOUCH AND POSITION SENSITIVE CONTROLLERS

MODEL 331 Touch Plate: Produces X (left-to-right position), Y (front-to-back position) and A (finger area) continuously variable analog outputs, and one 'presence' gate output. Plate area is 4-1/2" x 4-1/2". Power required is +/- 15-25 volts, unregulated, at 50 ma.

- - - - - \$425.00

MODEL 500 Theremin-Type Controller: Produces two continuously-variable outputs, one of which is determined by the position of the player's left hand in the space surrounding the device, and the other is determined by the position of the player's right hand. In addition, a gate output when one of the continuously-variable outputs exceeds a player-set threshold, is provided. Power required is +/- 15-25 volts, unregulated, at 50 ma.

- - - - - \$350.00

* * * * *

Big Briar custom-designs and produces a wide range of one,- two,- and three-output touch surfaces, multiply-touch-sensitive keyboards, and position-sensitive controllers. Applications include music composition and performance, interactive sculpture, dance, computer graphics control, and psychological testing. Inquiries are answered with written proposals and quotations. We welcome the opportunity to collaborate with artists who wish to incorporate touch- and position-sensors in their work.