




# MODE D'EMPLOI

 SEQUENTIAL  
CIRCUITS INC

# **SEQUENTIAL CIRCUITS (SCI) MODEL 608 "SPLIT-8" INFORMATION**

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## **1.0 INTRODUCTION**

### **1.1 Copyright information and revision number**

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## **2.0 FEATURES AND CABINET**

### **2.1 Brief summary of features**

Relatively uncommon 8-voice polyphonic, bi-timbral analogue synthesizer with the ability to split or layer two patches ("double" mode). 64 patch memories. Patches may be "linked" in memory so that calling up one automatically calls up the second for a split or layer. Unison (monophonic, all 8 oscillators stacked) is possible, and programmable. Polyphonic portamento. MIDI, including system-exclusive. A user-friendly polyphonic analogue synth with a few nice features, acceptable sound, and more than bare-bones MIDI implementation.

### **2.2 Front panel:**

Two volume pots, master tune, data entry knob, modulation and pitch wheels, various buttons for mode (double, split) and program selection, 4 x 8 grid for programming (all parameters labelled on the grid, 4 buttons down the left and 8 along the bottom). Some other functions are also listed on the panel as a reminder of which buttons to press. Metal case with light blue graphics and lettering, lots of red LEDs, black wooden endpieces. Seems well-constructed, although on mine one of the rubber buttons has a tendency to pop out and the volume pots needed cleaning.

### **2.3 Back panel:**

Tape jacks (one doubles as footswitch input), MIDI in and out, separate A and B audio outs, mix audio out (A and B combined), power switch, fuse.

### **2.4 Keyboard**

61 notes, C to C, unweighted. No velocity or pressure sensitivity.

## **3.0 VOICE ARCHITECTURE AND PROGRAMMING**

### **3.1 Voice architecture:**

One VCO per voice, with on/off toggles for any combination of sawtooth, triangle and square waves. Variable pulse width for the square. Coarse (up to 4 octaves) and fine (to just under a semitone) tune. Programmable "poly mod" (0-15) which allows the audio output of one voice to feed another's VCF when they are layered in "double" mode. This gives 4-voice polyphony with no audio from the second voice's oscillators. One LFO, free-running (i.e. doesn't sync to key on), with programmable rate (0.25 to 20 Hz according to the manual, but see the specs below), depth, and waveform choice (triangle or square). Can be routed to any or all of filter cutoff, pitch, or pulse-width. Programmable chorus with fixed rate and frequency. Filter cutoff, resonance (to self-oscillation), keyboard track (0, half or full) and envelope amount (cannot be inverted). ADSR envelopes for VCA and the 24dB/octave VCF. Programmable polyphonic portamento rate. "Unison" mode (8 oscillators stacked; envelope triggers become "legato"; low-note priority) can be programmed. A program can be "linked" to another so that both are called up and assigned correctly in a split or layer. Note that this does not appear to work on my unit, however, which may be because the battery was dead (I have

not tried this since replacing the battery). In unison mode, delay of four oscillators relative to the other four can be programmed (0, 20, 40 or 80 ms). Programmable output level for each patch.

### **3.2 Performance features:**

Separate volume pots for channels A and B (i.e. the two patches in a split or layer). Programmable footswitch assignment to momentarily change patches, or change one of several patch parameters (filter cutoff, envelope amount or attack; VCA decay or release; voice volume [the momentary value of any of the preceding is user-defined]; chorus on/off, portamento on/off). Parameter value knob can be used to alter one parameter in real-time, although the value will "jump" to the knob's current setting as soon as it is moved and some parameters stair-step badly when treated this way. Pitch-bend wheel is not spring-loaded and is centre-detented. Oscillator tuning can be initiated from the front panel (takes 20 seconds or so).

### **3.3 MIDI implementation:**

OMNI mode, wheel controller reception/transmission and program change can be toggled on/off. All MIDI operation (in and out) can be disabled. Sysex dump can be initiated from the front panel and the unit can receive sysex patch dumps. Receive channel (1-16) can be set for each patch. Four voices can be assigned to one patch that is controlled only via MIDI (a sort of "local off"), with the other four playing a patch controlled only from the keyboard. In this case, wheel effects can be disabled for the MIDI-controlled patch. Recognizes pitch-bend and modulation wheel as well as note number, note on/off, program change, tune request and sysex dump andload (2240 bytes per dump). The sysex dumps are actually a long string of single program dumps, so loading single programs at a time works perfectly. Powers up in OMNI mode, with wheels disabled (send and receive).

Some MIDI functions are accessed through a special "MIDI Expand" mode. For the benefit of users who do not have a manual, this mode is detailed here. To enter MIDI Expand mode, hold down RECORD and press PROGRAM SELECT 5. All the LEDs for the PROGRAM SELECT buttons will now blink. Pressing one of the PROGRAM SELECT buttons now performs one of the following MIDI functions:

**1. OMNI mode ON.** Selects MIDI mode 1 (OMNI on/poly). Note that if the synthesizer is in SPLIT mode, the synth will receive MIDI data from the MIDI in port and pass it to both programs (as though the synth were in DOUBLE mode). This is the reverse of using button 3, below.

**2. Program dump.** Initiates a 2240 byte system exclusive data dump. The LED for PROGRAM SELECT 2 remains lit while this takes place (it takes a second or two).

**3. Mode 3 select.** Selects MIDI mode 3 (OMNI off/poly). Note that this is the reverse of using button 1, above.

**4. Not used.**

**5. Enable/disable program changes.** Toggles between the two settings. Transmission and reception of program changes via MIDI is disabled when the synthesizer is switched on.

**6. Enable/disable wheel changes.** Affects pitch-bend and modulation wheels. On power-up, MIDI for these is disabled (transmit and receive).

## 4.0 SUBJECTIVE OPINIONS

### 4.1 Subjective opinions:

I'm very fond of mine, but remember, this isn't a Prophet-5. Analogue fanatics mercilessly bash this and related SCI synths (the Six-Trak, Multi-Trak, and MAX) because of the synth chip that is used (the Curtis CEM 3394). It sounds a little thin, with somewhat harsh resonance on the filter. However, the sound is dramatically improved in "double" mode, especially if the two patches are detuned slightly relative to each other, and really grew on me as I played with it. It is capable of very nice pads, brassy and mono basses (eight oscillators at once!). The chorus, located on a separate circuit board from the main synthesis machinery, is not nearly as noisy as you might expect. Programmable footswitch assignment and separate volume pots for the two patches are nice features, as is the support for sysex dump and load. The programming interface is better than almost any other single-parameter-at-a-time synth I've used, although increment/decrement buttons would be handy. MIDI implementation is difficult to figure out without a manual, although some other non-obvious functions are listed on the front panel. The keyboard has a very light feel to it – not unpleasant, but nothing special. Overall, I would say that it provides convincing analogue sound with the potential for some lovely warmth, and the ability to produce tremendous bass sounds in "Unison" mode. For what it's worth, I wouldn't part with my Split-8 for anything.

### 4.2 Annoying features and bugs:

Sysex dump-request is possible, but the manual doesn't tell you what the request bytes are, nor does it give you a byte-map of the sysex data. Powers up in OMNI mode, with MIDI response to external wheel controllers disabled. Mod. wheel gives a large increase in a very short "throw" distance, either from the unit itself or via MIDI. Doesn't respond to "all notes off" message. Pitch-bend depth is not adjustable (+/- major third, although mine seems to be +4/-3 semitones from its own wheel). Only one VCO per voice unless in "double" mode (with 4-voice polyphony). No noise source or sample/hold. No LFO pre-delay or key-sync. No pitch envelope. Filter envelope cannot be inverted. Only one LFO. Stair-stepping precludes real-time filter cutoff knob twiddling.

The only obvious operating system bugs are in the envelope generators. A decay value of 10 (the range is 0 to 15) gives a very short decay, comparable to a setting of 1. This is true of both the VCA and VCF envelope generators. I do not know if this is common to all Split-8s, or is simply a flaw in mine. Also, the envelopes do not re-trigger correctly

under some circumstances. I haven't rigorously tested to determine exactly why and when this happens.

When sending MIDI program (system-exclusive) information to the Split-8, the programs are sent as a string of single-program dumps. The synthesizer will sporadically "lose" some programs if a short delay is not inserted between each program, presumably because it cannot handle MIDI data transmitted at the speed that modern computers can send it. Most sequencers and librarians will let you specify such a delay between packets of sysex information. I have found that a 50 millisecond delay is adequate. Shorter delays may also work; I didn't test rigorously.

### **4.3 Rumours and speculations:**

Built in Japan, this was one of the last synths marketed by SCI. It was released in 1985 at a list price of \$1199 (or \$1195) U.S., with an optional footswitch. I have read that a "handful" of Split-8s were sold, which may have been called "Pro-8"s in Japan and possibly also in the U.K. This and some other SCI synths (Six-Trak, MAX, Multi-Trak) were built in Japan around a synth chip that was reputedly originally designed by Curtis for video games (the "Bally/Sente synth on a chip"; in other words, the Curtis CEM 3394). The rumour is that a Japanese company built the Split-8, then bullied SCI into marketing it by threatening to sell it to Korg instead. (Another version of this story suggests that SCI was very happy with the product and requested only minor, cosmetic modifications, and decided to market the synth simply because they were worried about competition from Korg and other Japanese companies.) Regardless of the truth, SCI lost on this, because it was introduced two years after the Yamaha DX7 made everyone want to buy digital synths instead. Ironically, Yamaha later acquired SCI, then turned around and sold them to Korg anyway. I believe the Six-Trak was a more successful instrument; more people seem to own them and they command higher prices in the used market, as well as having wonderful sysex control of many parameters and 6-way multitimbral operation. It could be argued that Sequential made another marketing blunder by listing the Split-8 at \$300 more than the Six-Trak. According to Keyboard magazine, June 1985, John Bowen wrote the factory presets for the Split-8. The Split-8's model number is 608.

## **5.0 USERS AND INFORMATION**

### **5.1 Use in recorded music:**

An audio sampling CD entitled "Astral Ambience", produced by Martin Newcomb of the Museum of Synthesizer Technology, features a large list of vintage synthesizers, including the Split-8. The CD is reviewed in the June 1996 issue of Keyboard magazine, pp. 77-80. No explicit mention is made of the Split-8 samples, sadly. Contact The Museum of Synthesizer Technology, Box 36, Ware, Hertfordshire SG11 2AP, England, 44-1-279-771619; in the U.S., Big Fish Audio, 11003 Penrose St., Ste. C, Sun Valley, CA 91352, 1-800-717-3474 or 818-768-6115, fax 818-768-4117. List price is UKP 32.95, US \$69.95. Keyboard reviewed this CD very favourably.

### **5.2 Spare parts and manuals:**

The best source of spare parts and manuals for the Split-8 is Wine Country Productions, 1572 Park Crest Ct., #505, San Jose, CA 95118, U.S.A. (408) 265-2008; [www.winecountrysequential.com](http://www.winecountrysequential.com). Many SCI users complain about their high prices; however, they are a complete source of SCI parts and documentation. They also have Split-8 owner's manuals and cassette tapes of the original preset sounds. A very useful site for Curtis chips is found at Synthesis Technology, <http://www.why.net/users/paults>. Other electronics firms may have Curtis CEM3394 chips or other components.

### **5.3 User-supported www sites**

Benjamin Ward's homepage (<http://www.dircon.co.uk/jeb/Tomita/seqcirpics.htm>) This page contains a colour .jpg image from the magazine ads (see below, section 5.4, "literature"), a short comment about this Split-8, as well as other interesting information about synths and an Isao Tomita archive.

Chris Jones' SCI homepage (<http://128.146.71.22/sci.html>) A nice set of pages dedicated to later SCI instruments, mostly the Multi-Trak, Six-Trak and MAX. Contains a version of this document and two images (front and back panels), contributed by me. These images have found their way into several other web sites.

Analogue Heaven (<http://hyperreal.org/music/machines/Analogue-Heaven/>) Primarily a site for the AH mailing list, also contains a very useful searchable archive of the list and other discussions of analogue synthesizers. A good place for general information, discussions and current asking prices for analogue gear. The Split-8 is discussed occasionally.

Hyperreal/Music Machines (<http://hyperreal.org/machines/>) The parent site for Analogue Heaven. A very useful archive of synthesizer specifications, discussions and links. The Split-8 is not explicitly mentioned, other than possibly in a version of this document.

Synth.site (<http://www.sonicstate.com/synth/test.html>) This is among the best places to discover and discuss information on synthesizers of all kinds. I have contributed a review of the Split-8 that is less complete than this document, and a picture of the front panel.

The Virtual Synth Museum (<http://www.synthmuseum.com>) A very comprehensive resource for synthesizers of pre-1990 vintage, including quotations from various books, images and user-contributed reviews. A version of this document, another review of the Split-8 and at least one image reside there.

Mamma: (<http://www.mamma.com/>) A very useful "meta-search" site that queries multiple search engines (Altavista, Lycos, Webcrawler, others). Can also search usenet and other areas of the internet.

Harmony Central news archive (<http://harmony-central.mit.edu/cgi-bin/search-news.pl>) A searchable archive of some music-related usenet newsgroups. The Split-8 is occasionally mentioned.

The used gear list: (<http://www.synthcom.com/usedlist.html>) A wonderful, large list of asking prices for used musical gear, dynamically generated from postings in usenet newsgroups. The Split-8 is sometimes mentioned. Also contains a link to an ftp site where you can download the whole list.

#### **5.4 Literature:**

Advertisements of about a third of a page in size can be found in Keyboard magazine (e.g. July 1985, p. 60; Sept 1985, p. 62; see the next section for text). Owner's and service manuals exist, and are available from Wine Country. The Split-8 is in the price list at the end of Mark Vail's "Vintage Synthesizers" (Miller Freeman Books: San Francisco, 1993), although there's no mention of it elsewhere. There is also a capsule summary of the Split-8 in "The A-Z of Analogue Synthesizers", by Peter Forrest (Susurreal Publishing, Devon, England, 1994) which contains numerous inaccuracies. The more recent edition of this book may be more accurate.

#### **5.5 Advertising copy**

[From the Keyboard magazine advertisements:]

##### **SPLIT-EIGHT**

A fully programmable, eight voice synthesizer featuring a five octave keyboard and programmable keyboard split! Suggested retail: \$1199.00

[lovely picture of the Split-8's front panel]

Features include

- Programmable keyboard split for playing different sounds at each end of the keyboard
- Double Mode for layering one sound on top of another
- Eight complex multi-waveform voices featuring a VCO, a 4-pole lowpass filter, a VCA, 2 ADSR envelope generators and an LFO
- A powerful eight voice unison mode for full-bodied lead sounds
- 64 Pre-programmed sounds
- Easy programming of your own custom sounds
- Extensive MIDI implementation

We LISTEN to Musicians!

##### **SEQUENTIAL**

For a complete catalog, please send \$2.00 to Sequential, Inc., 3051 N. First St., San Jose, CA 95134. Price subject to change without notice.

[And from the original brochure:]

##### **SPLIT-EIGHT**



## Announcing The Split-Eight, Sequential's New 8-Voice Programmable Synthesizer!

[lovely picture of the Split-Eight's front panel]

The Split-Eight is a fully programmable eight-voice synthesizer featuring a full 5-octave keyboard and programmable keyboard split for \$1,195.00 suggested retail. And that's just the beginning! For instance, the Split-Eight offers a choice of four keyboard modes: Single, Unison, Double or Split. In Single Mode, the same sound is played across the length of the five-octave keyboard. The provides the user with eight full voices for traditional polyphonic playing. Unison mode assigns all eight voices to a single note, creating a very full, bold sound ideal for lead synth playing. Double mode lets the user layer different sounds on top of each other. In this way, two sounds are triggered by each key to create complex sounds utilizing the full programming capabilities of two independent oscillators, filters, and VCA's at one time. The exciting Split Mode is particularly useful in performance, because it lets the user play different sounds at each end of the keyboard (such as playing a bass sound with the left hand and a flute with the right)! The split point can be programmed. When in Split Mode, the instrument automatically assigns four voices to each side of the split point. The Split-Eight also features a programmable link feature which lets you call up Split or Double programs simultaneously. The fully programmable Split-Eight comes with 64 pre-programmed sounds, including a variety of original sounds and several impressive orchestral and keyboard timbres. All sounds can be easily modified or replaced with custom sounds. A built-in chorus provides programmable on/off chorusing.

### THE TECHNICAL STUFF

Each of the instrument's eight voices feature a multi-waveform VCO, a 4-pole lowpass filter, a VCA, two ADSR envelope generators and an LFO. The Split-Eight comes with 64 pre-programmed sounds. Creating custom sounds is easy! There is a graphic matrix which allows fast selection and easy editing of 31 different parameters. LEDs clearly indicate the selected program, and if the program is being edited, will also display the parameter value. The back panel contains individual outputs for channels A and B along with a 1/4" main output that gives you the chorus mix. Cassette In and Out, a multi-purpose footswitch, and MIDI Input and Output are also included. Sequential supports the Split-Eight with an extensive array of MIDI functions. Modes 1 and 3 (Omni and Poly) are available along with the ability to disengage MIDI. Each side of a split program may be assigned to a separate MIDI channel. This allows the user to control other MIDI keyboards independently with each side of the keyboard. Through MIDI, the Split-Eight can send and receive program change information, and transfer programs to and from a second Split-Eight. Other MIDI features include the ability to receive and send pitch bend and modulation information.

## SEQUENTIAL

## SPLIT-EIGHT SPECIFICATIONS

[even more lovely photo of the back panel]

### VOICES:

Split-Eight is an eight-voice polyphonic synthesizer. Each voice consists of:

One Voltage-Controlled Oscillator:

Waveshapes available are sawtooth, triangle, and variable pulse.

Tuning: 9-octave range.

One Voltage-Controlled Lowpass Filter:

24dB/octave slope.

One Voltage-Controlled Oscillator [sic]:

Waveshapes available: Square wave, Rate: 1-33 Hz.

Waveshapes available: Triangle, Rate: 1-12.5 Hz.

Two Envelope Generators (filter, amp):

Attack: 7 milliseconds - 11 seconds.

Decay: 7 milliseconds - 11 seconds.

Sustain: 0 to 10 Volts.

Release: 7 milliseconds - 14 seconds.

### PROGRAMMABILITY:

31 Parameters are available for programming.

### KEYBOARD:

Five octave (C to C).

Split Keyboard range: 2 octaves (C2 to C4).

Link, Split, Double.

### CHORUS:

Programmable On/Off.

### OUTPUTS:

Audio Output: 1/4" phone jack (mix).

Separate audio outputs for A and B (4 voices to each).

Tape Out: For saving programs to cassette.

One MIDI: 5 pin DIN.

### INPUTS:

One MIDI: 5 pin DIN.

Tape In: For loading programs from cassette.

Footswitch Jack: 1/4" phone.

### MIDI IMPLEMENTATION: (partial list)

MIDI Modes:

OMNI Mode.

POLY Mode

Separate MIDI channels for each side in Split Mode.

Channel Assignment:

Channels 01 through 16.  
Program Select Enable/Disable.  
Wheel Enable/Disable.  
Program Send/Receive:  
Send 1 program. [editor's note: it dumps ALL programs!]  
Local Off: (for Channel B)  
Allows separate control of Channel B over MIDI.

#### UNIQUE FEATURES:

- 1) Delay: when in unison, the triggering of half the voices can be delayed by 20, 40, or 80 milliseconds.
- 2) Poly Mode [sic]: When in Double Mode, this assigns the entire audio output of program B to the filter input of program A (replacing A's oscillator).

#### SEQUENTIAL

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#### 5.6 What's it worth?

Asking prices from usenet newsgroups were around \$150 U.S. in February 1996. One person posted a price of \$50 U.S. for a beat-up machine, for parts. I paid \$200 Canadian for a Split-8 and a Yamaha TX7 (Feb. 1996), which seems to have been a good deal. I know of another user who paid \$300 U.S. for a Split-8 and a Korg EX-800, and yet another who bought his Split-8 for \$250 U.S. The listed price in "Vintage Synthesizers" by Mark Vail is \$150 U.S. (published 1993). Knowing what I know now, I'd probably pay up to \$300 Canadian for one today, and feel happy afterwards. The Split-8, Six-Trak, Multi-Trak and MAX seem to have escaped the tremendous price inflation that has recently hit analogue synths of all kinds, making them an attractive alternative to their more expensive cousins.

Addendum: recently (Feb. 1997), usenet asking prices have increased to about \$350 U.S.

#### 5.7 Software and sounds

Surprisingly, the Split-8 is supported by Opcode's Galaxy universal librarian. To date, this is the only sysex librarian I am aware of that supports this synth. See Keyboard magazine, Dec. 1996, pp. 122-126 for a review of synth editor/librarians. No sequencers that I know of contain dump request macros for the Split-8.

Original factory presets are available on cassette from Wine Country (\$25, Keyboard magazine, Dec. 1996, p. 171).

### **5.8 What about the memory battery?**

The existing 3 volt nickel-sized lithium memory battery can be replaced with any equivalent lithium battery. I replaced mine (which was reading 0.1 volts) with a large 3.6 volt battery that had long, flexible axial leads, but probably any similar battery that you could shoehorn into the case would work fine.