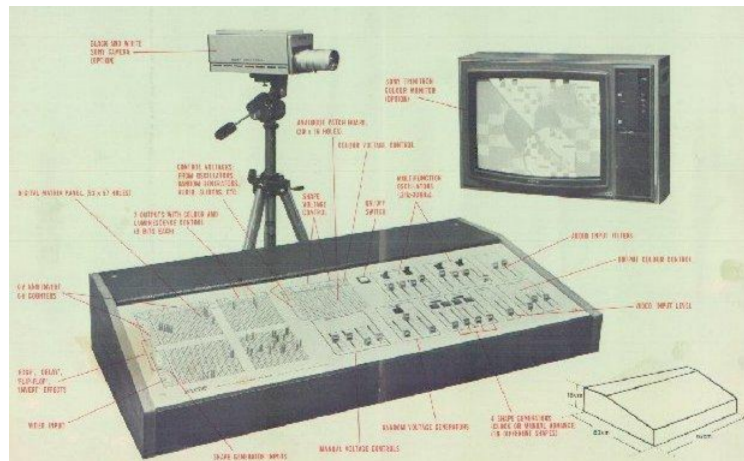


## EMS Spectron Video Synthesiser



- SPECTRON is a compact, highly innovative, complete video synthesizer. It combines great flexibility with proven design while still maintaining low cost. There are no compromises as to the treatment or composition of video signals.
- SPECTRON is an EMS product. EMS established and maintain a world lead in the design and manufacture of portable electronic music synthesizers. Many of the design concepts of these audio devices are incorporated in the video one. For instance, the portability, matrix patch panels and pins rather than clumsy patch cords, voltage control of analogue signals and a full complement of separate device treatments within the unit.
- SPECTRON is designed for any video graphics application. Whether it is fabric design, perception studies, T.V. special effects or video abstract art. Combined with a colour TV projector it makes the ultimate light show for groups and discotheques.
- SPECTRON can be supplied with a specially adapted colour monitor (for best colour reproduction) and with a black and white video camera. By itself, it is suitable for use with any colour TV monitor to which it is connected via the aerial socket.
- SPECTRON will produce its own shapes and colours or it can be used to modify a video input signal such as from a video tape recorder or video camera. Both methods may be used at the same time so that an existing video signal can be colourised and patternised and then combined with a moving or static electronically generated image. An audio signal can be used in many ways to change the electronic images.
- SPECTRON is divided into two main parts. The major digital portion which allows many logic operated combinations of basic pattern image sources and the smaller analogue part which is for the voltage control of comparator levels, shape generators, brightness and colour of tile output signal, as well as for controlling audio signal input.

### ABRIDGED TECHNICAL SPECIFICATION

- **IMAGE SOURCES**
  - X and Y COUNTERS: These produce vertical and horizontal stripes in binary width multiples (0-9).
  - SLOW COUNTER: Gives six binary square waves which change state frame flyback. (.2Hz - 6Hz).
  - 4 SHAPE GENERATOR OUTPUTS: Each one of sixteen basic shapes. The shape selection may be advanced manually or allowed to cycle round at controllable rates. (Each shape may be made to move and change by using appropriate voltage control inputs on the analogue control matrix).
  - VIDEO COMPARATOR: Divides the grey scale of a monochrome input signal into seven levels, each of which may be individually patternised or colourised. (Comparator level spacing is voltage controllable).
- **IMAGE MODIFIERS**
  - 4 OVERLAY GATES: Allow the areas of one image to cut those of another.
  - 4 INVERTERS: produce an active area that is the background of a signal fed into their input.
  - EDGE GENERATOR: Produces a border around an image. Four outputs give narrow or wide edge effects at leading or trailing borders, (e.g. to produce just the outline of the original image, or to create an illusion of depth when combined with the image itself).
  - DELAY: To delay the signal at its input by approximately one micro-second, causing a shift to the right of the screen of about 1 cm. (May be used in conjunction with the rest of the patchboard to produce double images, edge effects and echo oscillation)
  - 2 FLIP FLOPS: Divide the spatial frequency (horizontal) of an image. The two flip flops trigger on opposite edges.
  - INVERT X, INVERT Y (Nine inputs of each): Grounding an invert X input reverses the phase of the appropriate X output. By patching dynamic signals into the invert input, many complex checker patterns may be obtained.
- **OUTPUTS**
  - OUTPUT A and OUTPUT B each with 4 bits for luminance, 3 bits for each bias red and blue.
  - COLOUR SWAP allows a changing over of the two colour axes (C1 and C2) on both output channels.
  - 'TO A.C.M.' outputs (2) allow filtered versions of the video signals themselves to be fed across to the analogue control matrix and used as voltage control sources.
- **VOLTAGE CONTROL SOURCES**
  - 2 Oscillators with both Square and sine outputs.
  - 2 Random voltages.
  - 3 Audio inputs (Bass envelope, Treble envelope and Signal).
  - 2 'From D.S.M.' inputs (Low or high frequency filtering).
  - 4 Voltage Control slider inputs.
  - 1 External Input.

- VOLTAGE CONTROL INPUTS
    - 2 Shape Generators to control various functions.
    - 1 Video Input with controls of Luminance, red or blue bias which affects the whole of the final picture. Comparator Level Spacing input.
  
  - PANEL CONTROLS
    - 4 Voltage Control Sliders.
    - 2 Oscillators: Range 0.2Hz - 30KHz. High/low range, coarse/fine control of frequency, deviation, level and mode. Audio input control of level and frequency split (500Hz - 5KHz).
    - Random Generated control of Rate 0.1Hz- 100KHz, slew level and mode - recycle last 16 events/continuous.
    - 2 Independent Shape Generators each with two outputs with control of clock rate (0-10Hz), Shape Select, advance and shape number indicator.
    - Video input - Comparator level spacing control.
    - Video output with control of luminance and red and blue bias.
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- ELECTRICAL SPECIFICATIONS
    - Normally the basic system is P.A.L., but modifications may be made to convert to N.T.S.C.
    - Sync Input (2-4v -Ve pulses). Sync required:
    - Horizontal drive, vertical drive, mixed syncs, mixed blanking, PAL switch (optional), burst gate and subcarrier (2V p.p.)
    - All the above signals are provided by an internal sync generator that may be linked across to the sync socket by a small jumper lead provided.
    - Colour Separation Outputs Red, green and blue (0.7v with blanking to drive 75 Ohm bandwidth > 5Mcs.)
    - Composite Output 1v p.p. (0.7v video, 0.3v syncs).
    - U.H.F. Output Approximately 600 Mcs. Suitable to connect to any commercial colour receiver aerial socket. Modulator may be used independently of rest of synthesizer.
    - Mains Input 240/110v at approximately 250VA
    - Isolated Mains Output 240V at 150VA max. Suited to drive our custom R-G-B monitor.
    - Video Input 1v p.p. composite monochrome. 6 pin din socket on back suits Sony camera connections and provides horizontal and vertical drives.
    - Monitor Output Synch multiway connector on back provides all required signals to drive our custom R-G-B monitor.
    - Audio Input Approximately 1v (line level).
    - External Control Input ca. 5v
    - External Digital Input Normal TTL levels, 2 inputs suitable for connection to character generators, chroma key switch outputs, etc.
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