This module consists of a 4x3 computer controlled video switch, a 3 channel x 5 deep multiplier array, and a divider/buffer output stage.

Data from the computer is decoded and can be applied to any of the 15 multiplier cells via software encoding. Synchronous HI 1 reference ramps occupy 2 input channels with bias voltage plus any external oscillator signals available on the remaining 3.

The image is software positioned within a truncated pyramid.

![Divider Circuitry](image)

The computer can manipulate the image on any of the X, Y, or Z axis.

A manual control panel consisting of 15 pots & ADC is provided for manual control. Pot values are stored in tables & software can be arranged to replicate effects from the manual control panel as well as software generated effects, e.g., roll/rolltumblers etc.
ITT MODEL KM-906 COLOR CRT DISPLAY

19" CRT
ACCELERATING POTENTIAL 18 KV.
MAGNETIC DEFLECTION
FOCUS - HV ELECTROSTATIC
RESOLUTION 15 LINES/CM.
DRIFT LESS THAN 0.5 CM/8 HRS.
FULL SCALE LIMITS - 10" X 10"

HORIZONTAL / VERTICAL - INPUTS - IDENTICAL
INPUT - ± 10 V P-P (±5 V)
SENSITIVITY 1.0 in/volt
MAX. SPOT VELOCITY - 1 cm/μsec
STEP FUNCTION RESPONSE - FULL SCALE DEFLECTION - STABILIZING TO 0.9 MM IN 25 μSEC

INPUT PEDESTAL - 900 Ω
BANDWIDTH DC - 10 MHz
* SWTPC 6800
  12 K RAM
  5 Amp Power Supply
  C A B I N E T - R A C K M O U N T E D O N E X T E N S I O N S L I D E S
  T V T
  K E Y B O A R D

* PERCOM LFD 400 minifloppy disc controller package
  with minidos plus x prom, editor, assemblers
  support SA 400 minifloppy disc drive.

* COMPUTER & DISC DRIVE w/ RELATED POWER SUPPLIES
  housed in 19" short rack (29" high) - FANNED.
The CLC 6100 is a broadcast quality switcher which has many features available only in much higher priced units. Though there are only two busses it is possible to preview and/or preset a mix or effect without disturbing the program output. The special mix-wipe function provides a combination mix and wipe which normally requires at least three busses. The automatic preview output continually monitors the buss that is not being used for program.

All drives required for special effects are generated within the unit. No external drives are necessary, greatly simplifying system hook-up.

When wiping and/or mixing from color to monochrome, full color burst is maintained throughout the transition.

The mechanical fader handles usually seen in a switcher are replaced by push buttons, which add greatly to the convenience and smoothness of operation. There are two modes – automatic and manual. The operation is digitally controlled and it is possible to switch between modes rapidly and unobtrusively even in the middle of a transition. Effects-into-mix and mix-into-effects re-entries are accomplished with control logic. No delay lines are used.

Light emitting diodes on the panel indicate the status of the switching matrix in a very convenient format. The switcher automatically adds sync to a non composite signal on any input.

An external key input is provided.

- Vertical Interval Switching
- Six inputs: composite or non composite color or monochrome synchronous or non synchronous
- Automatic sync add, on all inputs
- External sync input necessary only if video inputs are non composite
- No external drives necessary
- No mechanical fader handles
- Automatic or manual push button fader operation
- Automatic preview on unused buss
- Preview mix, wipe or key without disturbing program buss
- 11 wipes including circle
- External Key
- Special mix-wipe function permits mixing within a wipe
- LED push-button tally indicators
- Four program outputs: two preview outputs
- Camera tally outputs
- No delay lines

- Built-in 3 input audio mixer
- Rack mount ears
- Remote front panel
FIELD VIDEO BROADCAST SYNC GENERATOR

6 DRIVES
BARS
BLACK

3 BLACK BURST CAMERA DRIVES - SCF ADJUSTABLE, FRONT PANEL
A - 31.8180 MHz ECL DRIVE, JL OUTPUT.
CRYSTAL OUTEN.

4 - PULSE DISTRIBUTION AMPLIFIERS - RHL PDA 41
- LINE TILT < 0.25%, HUM > 70 DB.

2 - VIDEO DISTRIBUTION AMPLIFIERS - RHL VDA 41
- GAIN ± 0.1b
  DIFF. GAIN < 1%
  DIFF. PHASE < 1°

POWER SUPPLIES INC. 19" RACK MOUNTS, AVAILABLE.

MODEL 553A
AMERICAN DATA CORP. SWITCHER WITH CHROMA KEYER.
(AIRPAY/Huntsville, Alabama.

10 INPUTS - 7 COMPOSITE
  1 BLACK
  2 Downstream Program inputs for Non-Syn Comp.
  or NON COMP VIDE0

SOFT WIPEs
DIGITAL EFFECTS GENERATOR - CIRCLE, SQ, DIAMOND, DIAM H+U, DIAM H+U VERT.
SELE, OR MATTE KEY - 1ST OR EXT.
COLORIZER.

TALLY.
ISOLATION INPUTS 36 DB TO 4.43 MHz CROSS TALK 52 dB V INP PIC 4.43 MHz
HUM 48 dB, DIFF GAIN < 1%, -10, 90 DB, DIFF PHASE 10°, -10, 90 DB.

AMERICAN DATA CORP
MODEL 830 CHROMA KEYER.

INPUTS - RGB NON-COMP VIDEO
INTERNAL DELAY COMPENSATION 1/2 MILLISECONDS DAC

VERY CLEAN.

REQUIRES EXT. SYSTEM SYNCHRONIZING.
Production EQPT.

Cross Point Lat. Corp. Model CTC 6102A Switcher - Colorizer included. See CPL brochure.

Cameras

2 - Phillips Black & White Plumbicon Studio Camera Chros EL9020, EL8025 with CCU, remote console controllers.

Taylor-Hobson Zoom Lenses - Variotal Controls

1 - Panasonic WV-380P/KT High Resolution B&W Graphics Camera CCU.

Miscellaneous

Sola Basic Transformer - 15 Amp + output @ 118 V - 95-130 V Swig.

Miscellaneous Delay Lines, etc.
SPECIFICATIONS

Input Video
Output Impedance
Number of Outputs
Crosstalk
Frequency Response
Differential Phase
Differential Gain
Hum and Noise
Camera Tally Provisions
Power Requirements
Pulse Requirement
Mechanical Dimensions
Electronics/Control
Power Supply
Customer Connections

Input Video
Output Impedance
Number of Outputs
Crosstalk
Frequency Response
Differential Phase
Differential Gain
Hum and Noise
Camera Tally Provisions

1.0 p-p Composite Bridging
75Ω, source terminated
Two each, program and preview, 1.0 V p-p nominal
52 dB below 1.0 V p-p@3.58/443 MHz
±25 dB to 6 MHz
1%@3.58/4.43 MHz maximum, 10 to 90% APL
1%@3.58/4.43 MHz maximum, 10 to 90% APL
52 dB below 1.0 p-p output
Ground external circuit not to exceed +24 VDC at 300 mA
105-125 or 200-240 VAC 50-60 Hz
Sync, Blanking, Subcarrier, V-Drive

48.3 cm Wide by 17.8 cm High
by 14 cm Deep (19" x 7" x 5.5")
External, 48.3 cm Wide by 4.5 cm High
by 22.8 cm Deep (19" x 1.75" x 9")
Video/Pulse - BNC

Specifications subject to change without notice.
Software- quantizer control

The quantizer is controlled by manipulating a series of control voltages which define the upper and lower luminance limits of each slice. These voltages are generated by a 32 channel DAC/sample+hold which is refreshed 30 or 60 times a second.

The refresh occurs in the vertical interval and is transparent to the remainder of the software, as the processor is interrupted by a vertical blanking pulse on the maskable int input.

The entire system is locked to V sync, with all sweeps + changes occurring immediately after the DAC refresh.

The background program is responsible for creating a table of position and width values (1 byte ea.) for each slice. It also sets up a value for sweep rate and bias (manual sweep). Another table defines the colorizer characteristics for each slice (color, brightness etc...).

After each interrupt, the DAC is refreshed and any changes to the colorizer int are made. The interrupt (foreground) routine then creates a new table of values for the next DAC refresh. Each control voltage is made up from:

- position
- width
- bias
- value of 'global' sweep counter
- 'local'
- all 8-bit values

\[ V_L = \text{pos} + \text{bias} + (\text{global}) + (\text{local}) \]
\[ V_H = V_L + \text{wid} \]

( ) - optional - disabled by flags - switches on a controller
MONITORS:

2 - 9" Black & White - Shiba Electric Model VM 903

1 - 19" Rack containing 2 9" Electrohome Model EVM 9R2 Black & White, with
Underscan,
Int./Ext. Sync
Norm/Fast H. Lock.

Conrad CYA 17 Color Monitor

Tektronix 525 Waveform Monitor

Tektronix 526 Vector Scope
16 CHANNEL COMPUTER CONTROLLED QUANTIZERS

INCLUDES:
INPUT SECTION - Sync Stripper, Video Amp, Blankin Insection, Master Power Supply
QUANTIZER UNIT -
COMPUTER INTERFACE -
CONTROLLERS (2) -
* SEE SYSTEM DESCRIPTION

3D SCAN MODULATOR

4X3 MATRIX VIDEO SWITCH, COMPUTER CONTROLLED
5X3 MULTIPLIER ARRAY
DIVIDER, BUFFERED X/Y OUTPUT STAGE
POWER SUPPLY

* SEE SYSTEM DESCRIPTION

LEXCO Model CEC810 NTSC COLOR ENCODER

MEETS ALL NTSC III AND STANDARDS FOR RGB ENCODERS
GENERATES INVERSION COLOR BARS FOR ALIGNMENT OF BURST PHASE AMPLITUDE
I/Q QUADRATURE + Gain, Chrominance - Luminance Ratio, Sync Set Up
Green Tie Switch for White & Black Balance Alignment

Sync Inputs - Sync, Blanking & B-G
Dual 1V P-P Outputs

FREQUENCIES: ±5 dB at 7 MHz down 3 dB @ 10 MHz (no notch filter or Aperture)
DIFF. GAIN: ±10% (10 - 90 APL)
DIFF. PHASE: ±10° (10 - 90 APL)
APERTURE CORRECTION: ±100 B 2.9 MHz Max.
Notch Filter: 120 dB at 3.58 MHz
The next step is to update the sweep counters. These are currently 1 byte values but will be changed to 2-byte for slower sweeps.
A signed sweep rate value is added to the sweep counter...

Calling sequence:
1. **RFRSHA (RFRSHB)** - refreshes 1/2 DAC - called alternately
2. changes to col. int if required
3. **Sweep**
4. **COMPIL** create new table for DACs
5. scan keyboard/controller - keyboard → queue for foreground
   - controller changes tables immediately
Our latest toy is a control panel for the quantizer. The controls are scanned by the 8085 in the interrupt routine to allow easy change of parameters. The present controller handles position, width, luminance, color, sweep - bios and consists of a number of switches (12) connected to a parallel input port. Each button increments or decrements an element in the table - pushing both simultaneously zeroes the given element (e.g. position).

All software was written in M6800 machine language. The interrupt routines consume about 20% of the available processing time - during development we were splitting the remaining 80% between the background control program and a debug monitor on another terminal (the amazing 27 byte task handler strikes again). Until our other micro(s) come up, we may run a vector graphics generator along with the control program - this would display on the ITT 'scope and refresh at TV field rate (or possibly frame rate if time requires).

Mar 31/79

John
Quantizer - block diagram

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