The MONITOR Model 8011 CRT Display is a direct-writing, alphanumeric/graphic computer output display. Characters, dots, vectors or conics may be displayed. Gamma correction and delay time cancellation are provided so that special circuits are not required in the appropriate generators. The tube is protected from phosphor burns as a result of failure in the deflection circuitry or absence of input signal. Up to 1000 characters may be displayed at a refresh rate of 60 Hz; the writing rate for vectors and graphics is 500,000 inches/second. A complete line of character, vector, circle, ellipse and arc generators is available from MONITOR to work with this unit.

**DESIGN FEATURES**

- **LARGE DISPLAY AREA**
  
  (10" x 12")

- **BONDED FACEPLATE**

- **GAMMA CORRECTION**

- **ZERO DIFFERENTIAL DELAY INTERFACE FOR FAITHFUL REPRODUCTION OF CHARACTERS, VECTORS, AND CONICS.**

- **ALL SILICON SOLID STATE CIRCUITRY**

- **PHOSPHOR PROTECTION**

- **PINCUSHION CORRECTION**

- **LOW POWER CONSUMPTION**
  
  (250 WATTS TYPICAL)
A1 through A4 are wideband amplifiers used for positioning and writing. All amplifiers are dc coupled and have 75 ohm inputs. Self-contained adjustments are available to set up each channel. A5 is the phosphor protection amplifier whose output inhibits the z-axis amplifier A6, should there be no deflection signal at the outputs of A1 - A4. A6 is the z-axis amplifier with gamma correction which is dc coupled and accepts an analog signal. A delay line is added in series with the input to match the delay of the x and y amplifiers.

### SPECIFICATIONS

**CATHODE-RAY TUBE**
- **SIZE AND TYPE**: 21" with P31 phosphor and bonded faceplate.
- **DISPLAY AREA**: 13" x 14"
- **LINEARITY**: ±1%
- **PINCUSIONING**: ±2%
- **LIGHT OUTPUT**: 50 foot-lamberts
- **WRITING SPEED**: 500,000 inches/second
- **LINE WIDTH**: 0.020"

**Z-AXIS**
- **INPUT SENSITIVITY**: ±3 v for full intensity
- **INPUT IMPEDANCE**: 75 ohm termination is standard.
- **RISE TIME**: 50 nsec
- **GAMMA CORRECTION**: Light output is linear with respect to input voltage. Zero differential delay of the z-axis with respect to the X and Y signals.
- **DELAY TIME**:

**MAJOR DEFLECTION**
- **INPUT SENSITIVITY**: 5 v p-p for 12" deflection.
- **INPUT IMPEDANCE**: 75 ohm termination is standard.
- **LARGE SIGNAL RESPONSE**: 20 kHz.
- **SMALL SIGNAL RESPONSE**: 500 kHz @ -3db.
- **X-Y PHASE SHIFT**: Less than 1 line separation @ 15 kHz.
- **SETTLING TIME**: 3.0 microseconds plus 1.5 microseconds per inch of deflection to settle within 1 spot size.

**MINOR DEFLECTION**
- **INPUT SENSITIVITY**: 5 v p-p for 0.5 inch deflection.
- **INPUT IMPEDANCE**: 75 ohm (termination)
- **FREQUENCY RESPONSE**: 1 MHz @ -3db.
- **X-Y DIFFERENTIAL PHASE SHIFT**: Less than 1 line separation @ 1 MHz.

**INPUTS**: (BNC Connectors, rear)
1. X-input Major Deflection
2. X-input Minor Deflection
3. Y-input Major Deflection
4. Y-input Minor Deflection
5. Z-input

**OPERATOR CONTROLS**: (Front)
- On/off
- Focus
- Intensity

**SERVICE ADJUSTMENTS**: (Rear)
- X-input deflection sensitivity
- X-input D.C. level
- Y-input deflection sensitivity
- Y-input D.C. level
- Z-axis D.C. level

**POWER REQUIREMENTS**: 115 v ± 10%, 60 Hz, 250 watts

**ENVIRONMENT**:
- **MOUNTING**: Standard 19" relay rack with slides and cover. 24½" H x 19" W x 27½" D. Quick Access type. 27" H x 22" W x 36¾" D.

**OTHER OPTIONS**: Higher performance
- Custom configurations
- Daisy chain operation
- Ruggedized units
- MIL or NASA Specifications