

**Lucitron inc**



*Off the air TV; wide viewing angle*

## **MODEL 34V-131 FLATSCREEN® PANEL -- A SUPERSIZE TV/COMPUTER DISPLAY**

- \* SuperSize -- 4 square feet, 35 inches diagonal
- \* Thin -- only 8 inches deep
- \* Flat
- \* Bright -- 35 foot-lamberts (area)
- \* Wide viewing angle -- like a poster
- \* Excellent gray scale
- \* High intrinsic contrast -- >100:1
- \* For use wherever groups of people must interact with electronic data and each other

1918 Raymond Drive, Northbrook, Illinois 60062 (312)564-8383

# The FLATSCREEN® panel

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The Model 34V-131 FLAT-SCREEN® panel provides four square feet of real-time TV or computer-output monochrome display with wide viewing angle and gray scale. The 35-inch-diagonal panel face is window-glass flat. The panel proper is 5 inches thick; in its enclosure, the overall thickness is 8 inches.

FLATSCREEN® panels make use of Lucitron's patented Gas-Electron-Phosphor technology. The anode glow of a cold-cathode discharge in low-pressure helium is scanned. Electrons are extracted from this scanned glow. The resulting electron beam is modulated and then accelerated to 3 kV to excite conventional CRT phosphors. Through the use of gas priming, only a small number of drive circuits are required -- far fewer

than are needed in conventional matrix displays.

A FLATSCREEN® panel can be thought of as a new kind of multi-beam, matrix-addressed CRT -- SuperSize, thin, flat, directly viewed, with all the picture "punch" of a CRT, instead of the washed-out appearance of a projector. Future FLATSCREEN® panels will have full color, higher luminance and contrast, and will be thinner and lighter than this developmental model.

The 34V-131 is normally mounted on top of the cabinet containing its drive circuitry and power supplies, but it can be located as far as 20 feet away from this cabinet.

## Additional Notes

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Future FLATSCREEN® panels will be only 3 inches thick and will weigh about 6.5 pounds/square foot of viewing area; a 35-inch FLATSCREEN® panel will weigh about 26 pounds (not including mounting bracketry or bezel).

We expect to run at phosphor voltages up to about 10 kV and to be able to achieve highlight luminances well in excess of 200 foot-lamberts.

Lucitron is working on full-color and larger-size displays. Experimental results, on 96x100-pel, 8-inch-diagonal panels (16.7 pels/inch), have indicated that even higher resolutions and luminances can be attained. Note that the quoted resolutions are the numbers of truly discrete dots which are produced, not the number of just-distinguishable picture elements at limiting contrast, which is what is usually quoted for conventional CRTs.

The visible vertical "bars" in the present display are due to the internal spacers which make possible such a large viewing area with a totally flat front. These bars will be masked in future panels by a pattern of a dark vertical stripe between each column of pels. This will also increase picture contrast.

The size of the electronics package will be greatly reduced. At present, the drive circuitry occupies only 1.3 ft<sup>3</sup>. (If this were distributed behind the panel, it would add only 2 inches to the overall depth.) The balance of the electronics-cabinet volume is laboratory-type linear power supplies and unused space. This bulk will be greatly reduced, and overall power consumption also reduced, once we incorporate fixed-output switching power supplies. At a power density of 0.5 W/in<sup>3</sup>, 500 watts of power supplies would require only 0.6 ft<sup>3</sup>.

# Model 34V-131 FLATSCREEN<sup>®</sup>

## Specifications

- Viewing area:** 21 x 28 inches (35 inches diagonal, 4 ft<sup>2</sup> area).
- Resolution:** 256 rows x 352 columns; 90,112 pels. Pel spacing: 12.5 pels/inch (0.040-square active spots on 0.080-in. centers).
- Overall panel size:** 40 in. wide, 29.6 high, 6.2 deep (including mounting frame and appendages. Future panels will be only 3 inches deep). Including external bezel: 43 wide, 34.5 high, 8 deep (not including mounting feet or lifting bracket).
- Panel weight:** Approximately 200 pounds, including mounting framework. (Future panels will be *much* lighter.)
- Luminance:** 35 foot-lamberts area highlight luminance (140 foot-lamberts spot luminance).
- Color:** White; rare-earth P45 phosphor. Other phosphors can be supplied.
- Intrinsic contrast:** >100:1 (in the absence of ambient light).
- Gray scale:** Incoming signals are converted to 8-bit samples, then displayed as analog light output.
- Signal input:** RS-170: composite video, positive-going, 1 V peak-to-peak. If the signal source is a digitally addressed store, *e. g.*, a computer frame buffer, an additional dot clock should be supplied to synchronize the 34V-131's 1-line stored with the source's store. This clock is TTL level: nominal 5 V.
- Viewing angle:** About 160°, limited primarily by the distortion of off-axis viewing. The viewing surface is completely flat and the phosphor is a lambertian source, that is, its luminance is independent of viewing angle.
- Phosphor voltage:** 3 kV. (Future panels will operate at higher voltage and luminance.)
- Panel power consumption:** 165 W with panel fully illuminated (panel only, not including drive circuitry).
- Drive circuits:** 50 active leads, 79 leads total.
- Overall power input:** 110 V, 60 Hz, about 500 W.

LUCITRON<sup>®</sup> and FLATSCREEN<sup>®</sup> Reg. U.S. Pat. and TM. Off.  
U S and foreign patents pending.

## Some Applications

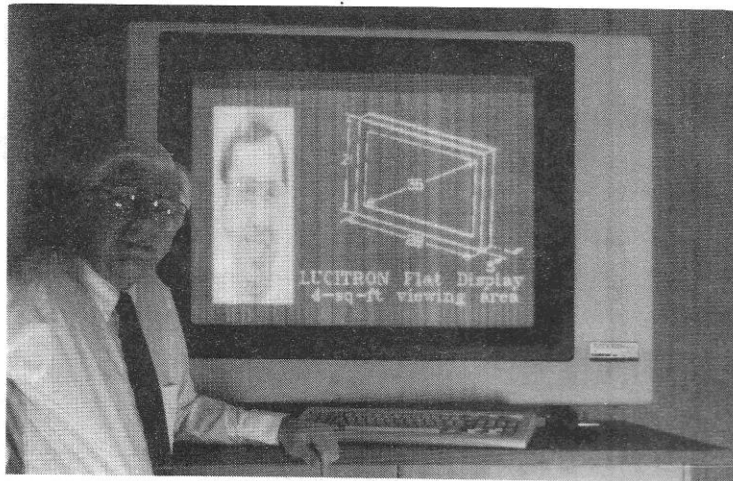
Command and Control  
Combat Information Centers  
Air Traffic Control  
Status Boards  
Simulation  
Training and Education  
Medical Imagery

Management Information Systems  
Teleconferencing  
CAD/CAM  
Electronic Signs  
Airports  
Stock Exchanges and Brokerages  
Trade Shows

## About Lucitron

Lucitron was founded in 1978 to perfect the Gas-Electron-Phosphor display invented at Zenith Radio Corporation by Lucitron's founders -- Joseph Markin, Dr. Alan Sobel, and Michael DeJule. Lucitron subsequently purchased patents and knowhow from Zenith.

The 34V-131 FLATSCREEN<sup>®</sup> panel is the first in what will be a series of large, high-performance, flat-panel displays for military and civilian uses. Work is in progress on full-color displays of even higher luminance and resolution.



*Image generated by a personal computer.*

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