

## VPJ-700

January 1989



Liquid crystal panels: Three polysilicon TFT active-matrix panels with integrated driver circuits

Display: Full color

Pixels: 70,400 (320 wide x 220 high)

Projection range: Screen size up to 100 inches

Contrast: 100:1 or better

Brightness: Equivalent to 100 lm

Resolution: 230 TV lines horizontal /  
220 TV lines vertical

Lamp: High-brightness halogen lamp;  
AC100V, 300W

Dimensions: (W) 420 x (D) 266 x (H) 125 mm

Weight: Approximately 7.6 kg

Power consumption: 350 W

### Product Features

Epson developed the technology for the world's first compact, full-color liquid crystal video projector, and then released to market in 1989 the first Epson brand projector, the VPJ-700, using the same revolutionary technology. The projector used liquid crystal panels instead of a traditional 3-gun CRT to present a picture, thus showing the world a new application for liquid crystal displays.

Perfected by using polysilicon TFT technology to integrate the driver circuits onto a glass substrate and by using independently developed optical technology, the VPJ-700 was a compact, lightweight, projection optical system that synthesized colors by combining red, green, and blue beams of light. The body of the projector was successfully reduced to the size of a stereo tuner. This downsizing was achieved in a number of ways: by scaling down the liquid crystal panels and by using dichroic cross-prisms to reduce the size of the projection optics, and by using a small but powerful halogen lamp that was both easy to replace and inexpensive.

Images were reproduced in vivid color and in sharp detail by the three, 1.27-inch, high-pixel-density liquid crystal panels, each of which contained 70,400 pixels. The size of the screen could easily be adjusted upward to 100 inches simply by moving the projector farther from the screen. The projector also employed some innovative design features that made it easy to optimize the picture. For example, it did not require adjustments to bring the RGB colors back into alignment whenever the projection distance changed because the colors are combined inside the optics instead of on-screen. The video projector also provided controls for adjusting brightness, tone and color depth. Moreover, unlike CRT-type projectors, this product had the attractive feature of not being susceptible to the effects of the earth's magnetism, which caused the picture jitter.

Provided with a video input connector, separate Y/C (also known as S-video) signal input connector, and analog RGB input connector, the projector could also be connected to a variety of other devices. The projector had an electronic focus, and focus adjustments could be performed with the touch of a button.

### Background

Epson released the Seiko Quartz LC V.F.A. 06LC, the world's first quartz watch with a six-digit liquid crystal display, in 1973, and soon thereafter began promoting the development of an active-matrix liquid crystal display capable of displaying moving pictures. Epson subsequently released a succession of groundbreaking, world-first products, including monochrome television watches and pocket-sized color televisions. It was during this time that sales of serious AV equipment such as VTRs and video cameras increased rapidly. It was also at this time that Epson began eyeing one type of AV product—projectors—as a new application for liquid crystal displays, thus spawning the projector development effort. Three years later, in January 1989, the VPJ-700 liquid crystal video projector came into the world as a new proposition for the application of liquid crystal displays.

### Impact

With the release of the VPJ-700, Epson became a company to watch in the visual instruments field, where it was combining liquid crystal panel technology with optics to develop new products. Then, in March 1989, the Visual Instruments Operations Division was established, with liquid crystal televisions and liquid crystal projectors its core products. Epson used its liquid crystal projectors to develop an entirely new market that the company continues to lead: data projectors as multimedia presentation tools.