



Custom LCD Display systems with image enhancement and image rotation hardware make her viewing experience a pleasure.

# ALTERA

*“Orchid’s custom solution was not only compact, and low latency, it was also 80% less costly than our computer-based system using generic image processing boards. Orchid’s design was uniquely efficient.”*

- Imaging Products  
Research Manager

## High Definition Video Image Rotation

Image rotation of high definition video presents unique logic design demands. Video standards such as 720P and 1080P at frame rates of thirty or sixty frames per second present pixel rates above 100MHz. Low latency image rotation logic must perform rapid data transfer while maintaining sync with multiple video sources. Orchid multi-format image rotation logic performs image rotation from landscape to portrait display modes. HD video rates of 720 and 1080P are supported. Custom image controls such as white balance, gamma adjust, and lut lookups are provided.

## High Definition SDI Video Input

High definition SDI video is input and decoded by an Altera Cyclone IV FPGA. HD SDI input video synchronization and image lock is performed on-the-fly. Dual RAM buffer systems allow single frame image latency between input and rotated output images.

## MIPI Display Video Output

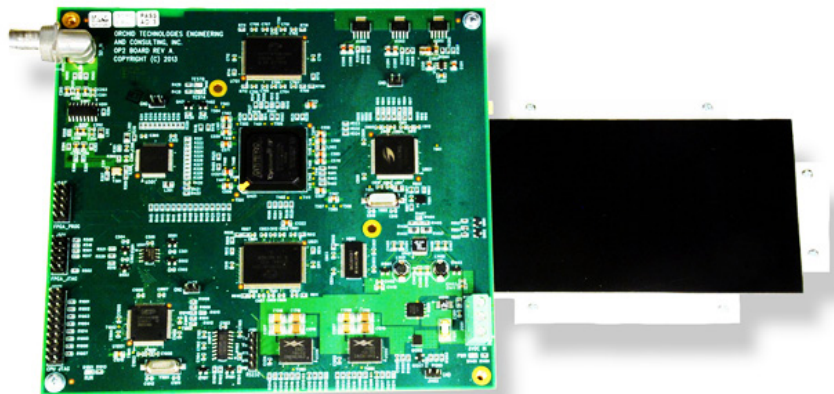
Four lane MIPI display video output is produced by Orchid’s image rotation hardware. Taking HD SDI Video input in landscape mode, our video rotation system provides 90 degree, single frame latency image rotation with output in multi-lane MIPI format. Portrait mode LCD displays are initialized and image information is presented to the display in its native mode.

## Backlight and Initialization Control

Custom hardware performs backlight and initialization control. MIPI display initialization is accomplished under software control. A simple monitor interface provides user input to control start-up, image conversion, and display output features.

## Orchid Technologies: Custom Display Design

The development of custom electronic products for our OEM clients is Orchid’s entire business. The design of custom LCD Display systems with rapid design cycles, demanding technical requirements, and unforgiving schedules sets us apart. Call Orchid Technologies today!



ORCHID TECHNOLOGIES  
ENGINEERING & CONSULTING, INC.

**Custom Engineering From Concept to Production**

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