

## EZrotate™ Video Rotation Unit



- Video rotation for 90, 180, and 270 degrees**
- Video Flip [Left / Right, Top / Bottom]**
- I/O resolutions up to UXGA**
- Small footprint (2" x 8.5" x 10.5")**
- EZrotate™ configuration utility supports user-defined:**
  - ✓ **input timing and rotate area of interest**
  - ✓ **output vertical and horizontal timing, (within constraints)**
  - ✓ **angle of rotation, flip definition**
- Inputs: DVI-I standard (TMDS and Analog RGB)**
- Outputs: DVI-I standard (TMDS and Analog RGB)**
- (other I/O formats optional)**

**EZrotate™ Configuration Utility:** This utility is supplied with each unit, and installs on Windows XP platforms. Connection is made to the EZrotate™ via an RS-232 connector. The utility uses a 2-step process to set up the EZrotate™ for your application.

| Step | Function | Sets up....  |
|------|----------|--|
| 1    | Input    | the input capture timing and electrical definitions, as well as the area of interest to be rotated/flipped |
| 2    | Output   | the output timing and electrical definitions, within the constraints defined below.                        |

*For additional video features, such as re-sizing, and video mixing, we recommend that you use the EZrotate™ in conjunction with our VA and EZblend™ video products.*

**Output Timing Constraints:** The EZrotate™ unit relies on two (2) frame buffers to support random access of pixel data for programmable image rotation. Because of this architecture, the output frame rate must equal the input frame rate. To ensure this, the output clock is the same as the input sampling clock, and total frame clock cycles are equal. Several examples of allowable output timing follow:

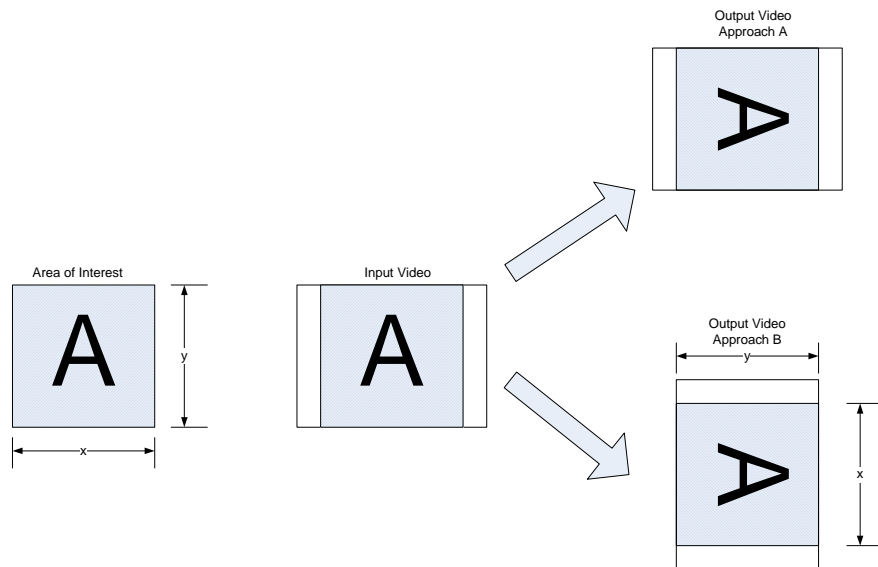
Input Timing:

Sampling clock = 108 MHz, 1340 (total pixels per line) x 1040 (total lines per frame)

1. Acceptable Output timing:  
1340 (total pixels per line) x 1040 (total lines per frame) @ 108MHz pixel clock
2. Acceptable Output timing:  
1040 (total pixels per line) x 1340 (total lines per frame) @ 108MHz pixel clock
3. Acceptable Output timing:  
800 (total pixels per line) x 1742 (total lines per frame) @ 108MHz pixel clock

**Area of Interest (AOI) Size Constraints:** The following applies for 90 and 270 degree rotations:

|             |    |                              |
|-------------|----|------------------------------|
| Input AOI x | <= | Input Total Pixels per Line  |
| Input AOI y | <= | Output Total Lines per Frame |
| Input AOI x | <= | Input Total Lines per Frame  |
| Input AOI y | <= | Output Total Pixels per Line |



## EZrotate™ Specifications

### Input / Output Specifications (Subject to change without notice)

|                                |  |
|--------------------------------|--|
| Video Type                     | Standard: Analog RGB (0.7 Volt levels), TMDS           |
| Pixel Rate                     | Up to 162 MPixels / sec                                |
| Total Clocks per Line          | Up to 2048   |
| Total Lines per frame          | Up to 2048   |
| AOI X                          | Up to 1600 clocks                                      |
| AOI Y                          | Up to 1600 lines                                       |
| Sync Type                      | HV, Composite Sync, or Sync-on-Green                   |
| Phase Adjustments (input only) | Sample clock can be adjusted to ensure center sampling |
| Connectors                     | DVI-I (optional DVI-D / RGB breakout cables available) |

### Electro Mechanical

|             |  |
|-------------|--|
| Input Power | IEC Connector, 100-240 VAC, 47-63 Hz, less than 40 Watts |
| Control     | RS-232   |
| Size        | 8.5" W x 10.5"D x 2"H                                    |
| Weight      | Less than 5 lbs.   |

### Warranty

One year

### Functional

|                        |  |
|------------------------|--|
| Specialty Feature      | 90, 180, 270 degree AOI video rotate, top/bottom, left/right video flip<br>Programmable border colors, programmable brightness and contrast settings |
| Color processing depth | 8 bits per color   |

### Included documentation and software

Users Guide, EZrotate™ Configure software and manual

To find out if the EZrotate™ family is right for your application, please contact our application specialists at Extension 5164.