The 5th Gen. Full HD In/Out Video Display Processor with Embedded Memory and CVBS Output

**MDIN-325/325A**

- **MDIN-325/325A** is a highly integrated single chip implementation of deinterlacing, format conversion, video enhancement and graphic OSD.
- **MDIN-325/325A** receives any format of interlaced scan video up to 1080i and progressive scan video up to full-HD, and performs deinterlacing and format conversion to produce any desired format of interlaced or progressive scan video up to full-HD with excellent signal quality preservation.
- **MDIN-325/325A** provides high quality edge preserving deinterlacing with the 5th generation motion adaptive 3-D deinterlacing algorithm and performs proper processing for various speed motion and film video sources. And especially it has 3-D NR, PIP/POP, 4Ch. D1 in/out and frame rate conversion functions.
- **MDIN-325/325A** provides a versatile 2-D graphics engine with bitmap and character mode.
- **MDIN-325/325A**’s high quality deinterlacing, format converting, video enhancement and OSD capability are suitable for digital display applications such as digital video recorder(DVR), IP camera, set-top-box, DVD player, Blu-ray player, TV box, AV receiver and scan converter system.
## Main Features

- Two digital video input ports for up to 10-bit precision interlaced or progressive scan video up to Full HD
- Analog RGB/component, digital video output and CVBS video output
- Pixel-by-pixel level motion adaptive 3-D deinterlacing
- Advanced multi-directional edge preserving deinterlacing
- Deinterlacing with various speed motion and still image detection and processing
- MPEG noise(block noise and mosquito noise) reduction
- 3-D noise reduction filter (MDIN-325A only)
- 4-channel D1 video processing with 3-D deinterlacing & noise reduction (MDIN-325A only)
- Cross-color-suppression (CCS) for 2-D comb-filter video decoder
- Automatic chroma upsampling error (cue) detection and correction
- Independent horizontal and vertical scaling with anti-aliasing interpolation filter
- Horizontal peaking filter and color enhancement processing for crisper picture quality
- Programmable brightness, contrast, hue, saturation control with adaptive contrast enhancement
- 2 layer OSD with 4 sprites per layer (bitmap and character mode)
- Cost and size effective embedded frame memory
- Serial(PCI) host bus interface
- 144-pin FBGA packages (12mm x 12mm)

## Specifications

### Video Input

- Digital format with up to 10-bit precision
- Input resolution: Full HD support
- Interlaced video up to 1920x1080i (1920x1152i)
- Progressive video up to 1920x1080p (1920x1152p)

### Video Output

- Digital and analog format with triple 10-bit DACs
- Output resolution: Full HD support
- Interlaced video up to 1920x1080i (1920x1152i)
- Progressive video up to 1920x1080p (1920x1152p)

### Video Enhancement

- High order programmable horizontal peaking filter
- Filter for color component enhancement
- LTI and CTI for edge enhancement
- Independent color control (ICC)
- Dynamic contrast enhancement (DCE)

### Display Functions

- CSC for brightness, contrast, hue, saturation
- Programmable output sync generation
- Lock-to-input sync mode or free-run mode
- Video overlay on background video
- PIP and POP display (MDIN-325A only)

### Frame Rate Conversion

- Frame rate conversion from 3-250Hz to 3-250Hz
- Conversion ratio: x1/31 ~ x31
- Uses double frame buffer

### Deinterlacing

- Motion adaptive 3-D deinterlacing on a per-pixel basis
- Advanced multi-directional edge preserving
- Various speed motion and still image detection
- Motion boundary preserving
- Film mode support for 3:2 and 2:2 pull-down
- Bad-edit/subtitle detection and adaptation

### Noise Reduction and Cross Color Suppression

- High quality 3-D noise reduction with motion detection (MDIN-325A only)
- MPEG noise (block noise and mosquito noise) reduction
- Cross-color-suppression for 2-D comb-filtered input (CCS)
- Automatic chroma upsampling error (cue) detection and correction

### Format Conversion

- Independent horizontal and vertical scaling with anti-aliasing interpolation filter
- 8(H) x 4(V) taps for luma, 4(H) x 4(V) taps for chroma
- Format conversion from one format to another format with an arbitrary scaling ratio
- Scaling ratio: x1/15 ~ unlimited
- Non-uniform scaling for panorama mode
- Programmable size & position zoom in/out

### Electrical and Mechanical Characteristics

- 1.2, 1.8V & 3.3V supply voltage
- Low power consumption
- 144-pin FBGA package (12mm x 12mm/0.8mm pitch)

---

**East Bldg., 6th Floor, IT Venture Tower, 135, Jungdae-ro, Songpa-Gu, Seoul, Korea 05717**

**TEL:** +82-2-2142-4000  **FAX:** +82-2-2142-4099  **http://www.mitinc.co.kr**  **E-mail:** sales@mitinc.co.kr