

# 7710DCDA-HD

## HD Down Converter & Distribution Amplifier



The 7710DCDA-HD is a reclocking high definition serial digital video distribution amplifier and a high quality downconverter for 1.5Gb/s HDTV signals. It can also function as a monitoring distribution amplifier for standard definition 270Mb/s signals. It provides 4 reclocked DA outputs and 3 downconverted SDI or composite analog NTSC/PAL outputs (selectable). It accepts all the popular international SMPTE 292M video formats. When the 7710DCDA-HD downconverts 1080p/23.98sF input video to 525i/59.94 with a 3:2 pulldown, the 3:2 pulldown cadence can be free running or locked to embedded SMPTE 12M-2 time code.

The 7710DCDA-HD has color space conversion from ITU rec. 709 to ITU rec. 601, and will provide various downconverted formats such as 16:9 letterbox, 14:9 letterbox, 13:9 letterbox, 4:3 center crop, and 4:3 anamorphic squeeze. It supports Wide Screen Signaling (WSS) on the output to handle various aspect ratios of program material.

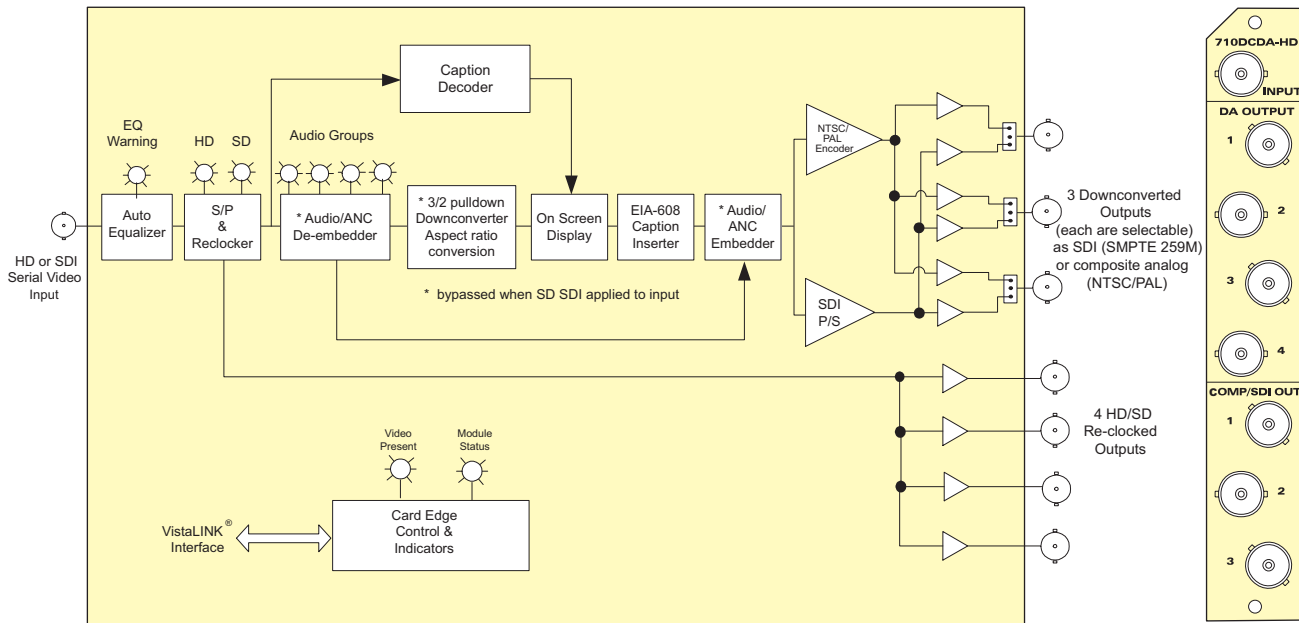
Full 10-bit processing is provided throughout the signal path to achieve excellent downconversion quality. The module allows for selectable horizontal and vertical filters to control picture sharpness. It also de-embeds two groups of audio, and re-embeds the audio on the SDI output in time with the video. All parameters may be controlled by use of the on-screen display menu.

The 7710DCDA-HD has a closed caption monitoring capability that decodes CEA-608 or CEA-708 captions that have been encoded into the VANC data space of an HD video input, or CEA-608 captions from an SD video input.

The 7710DCDA-HD provides card edge LEDs to indicate signal present and audio groups present. The 7710DCDA-HD occupies one card slot and can be housed in a 1RU frame which will hold up to 3 modules, a 3RU frame which will hold up to 15 modules, a 350FR portable frame which will hold up to 7 modules or a standalone enclosure that will hold 1 module.

### ►Features & Benefits

- Serial digital 1.5Gb/s HD input per SMPTE 292M
- Supports most international standards including 1080i/60, 1080i/59.94, 1080i/50, 1080p/24, 1080p/23.98, 1080p/24sF, 1080p/23.98sF, 720p/60, 720p/59.94, 480p/60, and 480p/59.94
- Will also accept 270Mb/s SD input per SMPTE 259M in a pass-through mode - auto senses HD or SD inputs
- 4 Reclocked DA outputs (HD if HD inputs applied, SD if SD inputs applied)
- 3 Selectable SDI or Composite Outputs (downconverted from HD if HD input applied, from reclocked SD if SD input applied)
- High quality HD ⇄ SD downconversion
- Supports 16:9 letterbox, 14:9 letterbox, 13:9 letterbox, 4:3 center crop, and 4:3 anamorphic squeeze aspect ratio conversions
- 1080p/23.98sF conversion to 525i/59.94 with 3:2 pulldown sequence
- HD to SD color space conversion (ITU rec. 709 to ITU rec. 601)
- On-screen display used to configure the operating modes
- De-embeds Audio from HD video and embeds into standard definition SDI video (2 groups)
- Moves ANC data (e.g. captioning, timecode) from HD video to standard definition SDI video
- Decodes and displays CEA-608 or CEA-708 captions from incoming video
- On-screen aspect ratio marker
- Support for Wide Screen Signaling (WSS) on output
- Card Edge LEDs for signal presence, equalization warning, audio groups present, module status
- VistaLINK® capable for remote monitoring, control and configuration capabilities via SNMP; using VistaLINK® PRO, CP-2116E or CP-2232E Control Panels. VistaLINK® is available when modules are used with the 3RU 7800FR frame and a 7700FC VistaLINK® Frame Controller module in slot 1 of the frame





## ► Specifications

### Serial Video Input:

|                     |  |
|---------------------|--|
| Standard:           | SMPTE 259M - Pass-through mode<br>SMPTE 292M (1.5Gb/s), SMPTE 260M,<br>SMPTE 274M, SMPTE 296M,<br>SMPTE 349M 1080i/60, 1080i/50,<br>1080p/30sF, 1080p/25sF, 1080p/24sF,<br>1035i/60, 720p/60, 480p/60 and the<br>1/1.001 divisor versions where<br>applicable software selectable or<br>autodetect |
| Connector:          | BNC per IEC 61169-8 Annex A  |
| Input Equalization: | Automatic to 100m @ 1.5Gb/s with<br>Belden 1694A or equivalent cable   |
| Return Loss:        | > 15dB up to 1.5GHz  |

### Reclocked Serial Video DA Outputs:

|                     |  |
|---------------------|--|
| Standard:           | Same as input (SMPTE 259M or<br>SMPTE 292M)  |
| Number of Outputs:  | 4 per card relocked                          |
| Connector:          | BNC per IEC 61169-8 Annex A                  |
| Signal Level:       | 800mV nominal                                |
| DC Offset:          | 0V ±0.5V                                     |
| Rise and Fall Time: | 200ps nominal for HD<br>750ps nominal for SD |
| Overshoot:          | < 10% of amplitude                           |
| Return Loss:        | > 15dB up to 1.0GHz<br>> 10dB up to 1.5GHz   |
| Jitter:             | < 0.2 UI                                     |

### Downconverted Serial Video Outputs:

|                     |                                      |
|---------------------|--------------------------------------|
| Standard:           | SMPTE 259M-C (270Mb/s)               |
| Number of Outputs:  | Up to 3 per card (jumper selectable) |
| Connector:          | BNC per IEC 61169-8 Annex A          |
| Signal Level:       | 800mV nominal                        |
| DC Offset:          | 0V ±0.5V                             |
| Rise and Fall Time: | 750ps nominal                        |
| Overshoot:          | < 10% of amplitude                   |
| Return Loss:        | > 15dB at 270Mb/s                    |
| Jitter:             | < 0.2 UI                             |

### Downconverted Composite Analog Video Outputs:

|                     |  |
|---------------------|--|
| Standards:          | Analog composite NTSC (SMPTE 170M)<br>or Analog composite PAL (ITU-R BT.470) |
| Number of Outputs:  | Up to 3 per card (jumper selectable)   |
| Connectors:         | BNC per IEC 61169-8 Annex A  |
| Signal Level:       | 1V p-p nominal   |
| DC Offset:          | 0V ±0.1V   |
| Return Loss:        | > 35dB up to 5MHz  |
| Frequency Response: | 0.2dB to 4MHz  |
| Differential Phase: | < 0.5° (< 0.3° typical)  |
| Differential Gain:  | < 0.8% (< 0.5% typical)  |
| SNR:                | > 78dB to 5MHz (shallow ramp)  |
| Impedance:          | 75Ω  |

### Input to Output Processing Delay:

|              |   |
|--------------|---|
| Video Delay: | Just less than 1 to 2 frames depending<br>on input video format, processing mode<br>and phase setting, ie: with 1080i/59.94<br>input the delay is < 1 Frame delay |
| Audio Delay: | Audio is delayed and re-embedded in<br>time with the output picture   |

### Electrical:

|          |  |
|----------|--|
| Voltage: | +12V DC  |
| Power:   | 10W  |
| EMI/RFI: | Complies with FCC Part 15, Class A<br>EU EMC Directive |

### Physical (number of slots):

|           |   |
|-----------|---|
| 350FR:    | 1 |
| 7700FR-C: | 1 |
| 7800FR:   | 1 |

## ► Ordering Information

|                    |   |
|--------------------|---|
| <b>7710DCDA-HD</b> | HD downconverter and Distribution Amplifier (4 HD relocked<br>1.5Gb/s, selectable 3 SD-SDI outputs or 3 composite analog outputs) |
|--------------------|---|

|                         |   |
|-------------------------|---|
| <b>Ordering Options</b> | Rear Plate must be specified at time of order<br>Eg: Model +3RU |
|-------------------------|---|

### Rear Plate Suffix

|             |  |
|-------------|--|
| <b>+3RU</b> | 3RU Rear Plate for use with 350FR, 7700FR-C or 7800FR Multiframe |
| <b>+1RU</b> | 1RU Rear Plate for use with 7701FR Multiframe                    |
| <b>+SA</b>  | Standalone Enclosure Rear Plate                                  |

### Accessories

|                   |                             |
|-------------------|-----------------------------|
| <b>7700FC</b>     | VistaLINK® Frame Controller |
| <b>CP-2116E-H</b> | Remote Control Panel        |
| <b>CP-2232E</b>   | Remote Control Panel        |

### Enclosures

|                 |  |
|-----------------|--|
| <b>350FR</b>    | 3RU Portable Multiframe which holds up to 7 single slot modules  |
| <b>7700FR-C</b> | 3RU Multiframe which holds up to 15 single slot modules          |
| <b>7800FR</b>   | 3RU Multiframe which holds up to 15 single slot modules          |
| <b>7801FR</b>   | 1RU Multiframe which holds up to 4 single or 2 dual slot modules |
| <b>7701FR</b>   | 1RU Multiframe which holds up to 3 single or dual slot modules   |
| <b>S7701FR</b>  | Standalone enclosure   |