7920
HD Downconverter

The 7920 module has an HD SDI input and four outputs that can be configured as two SDI and two composite outputs, or four SDI outputs. Whether it's providing digital feeds to production switchers and routers or analog monitoring, the 7920 is right at home.

The Downconversion process includes Picture Detail Enhancement and Anti-Alias Filtering, which make for a pristine SD output. The Aspect Ratio Conversion process offers Resizing and Repositioning with choices for: Letterbox, Anamorphic, Crop and Zoom. The 7920 automatically adjusts from HD to SD color space and gamma. Proc amp controls are provided in the form of Video, Chroma and Pedestal.
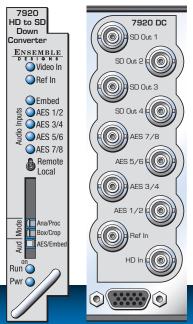
The 7920 can be configured locally or controlled and configured remotely with Avenue Touch Screens, Express Panels, or Avenue PC Software. Alarm generation, configurable user levels, module lock out, and customizable menus are just some of the tools included in the Avenue Control System.

Metadata

HD closed captioning is carried in data packets in the vertical interval ancillary data space. The 7920 properly translates between HD caption data and traditional SD captioning (line 21 or 23) so that closed captioning content is converted transparently between video standards and formats.

Automatic Aspect Ratio Conversion

The 7920 supports AFD (Active Format Description) to mark or identify the aspect ratio of the video content. These flags are generated at the output of the module, and they are read at the input. This allows the up and down conversion process to adapt automatically to material that is already in letterbox or pillarbox form in order to produce the most appropriate conversion.

Audio Options

When an audio sub module is installed, audio is automatically delayed as needed to compensate for the video processing in the 7920. For complete audio processing, choose from three different audio sub modules. Sub modules plug onto the 7920 board and do not take up a slot in the frame.

The 8415 is an eight-channel audio sub module with AES I/O that provides management of embedded audio in the processing path, or supports audio embedding and disembedding alongside the video processing elements. Embedded audio is safely bypassed around the video frame store with the lip sync preserved. Level adjustments and channel shuffling are accessed through the built-in audio mixer. The 9670 Automatic Gain Control option can be added to the 8415. All audio processing is performed at full 24 bit resolution.

The 7610 sub module option provides carriage of up to eight channels of embedded audio through the format conversion process. Embedded audio in the input signal is delayed to match the video delay and preserve lip sync. The delayed content is reinserted in the video output. No level adjustment or channel swapping is provided.

Features

- **Downconverter for 720p, 1080i, 1080sF and 1080p**
- **Proc Amp and Frame Sync**
- **16 bit processing**
- **Accepts asynchronous signals**
- **Reference input – output is timeable**
- **Automatically adjusts between SD/HD color space and gamma**
- **Anti-Alias Filter and Picture Detail Enhancement**
- **All processing performed in progressive**
- **Passes closed captioning**
- **Auto detection of input standard and frame rate**
- **3:2 pulldown**
- **Built-in test pattern and tone**
- **Audio Mux/Demux optional**
- **Audio Automatic Gain Control optional**
- **Add audio sub module for delay and processing**

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AVENUE™

Serial Digital Input

Number	One
Signal Type	HD Serial Digital 1.485 Gb/s, SMPTE 274M, 292M or 296M
Impedance	75 Ω, BNC
Return Loss	>15 dB
Max Cable Length	1.485 Gb/s 100 meters
Automatic Cable Input Equalization	

HD Standards Supported

1080i 50, 59.94 or 60 Hz, SMPTE 274M -4,5,6
720p 50, 59.94 or 60 Hz, SMPTE 296M -1,2,3
1080p 23.98, 24 or 25 Hz, SMPTE 274M -9,10,11
1080sF 23.98, 24 or 25 Hz, RP211 -14,15,16

Serial Digital Output

Number	Four max
Signal Type	SD Serial Digital 270 Mb/s, SMPTE 259M (Both 525 and 625 SD standards)
Impedance	75 Ω
Return Loss	>15 dB
Output DC	None (AC coupled)Delay Adjustable from 1 field to 1 frame

Reference Input

Number	Two: One external (modules BNC) One internal (frame master ref BNC)
Signal Type	PAL or NTSC composite video or Tri-Level Sync
Return Loss	>40 dB (applies to external ref input)

Analog Output

Number	Two max (BNCs shared with SD SDI outputs)
Signal Type	PAL or NTSC composite Standard matches SDI output
Impedance	75 Ω
Return Loss	>40 dB
Output DC	<50 mV
Bit Resolution	12 bit output reconstruction 8 x oversampling
Signal to Noise	>65 dB
Frequency Response	±0.1 dB, 0 to 5.5 MHz
K Factor	<1%
Differential Phase	<1 degree
Differential Gain	<1%

Conversion Directions

Downconversion from
1080i/59.94, 720p/59.94, 1080p/23.98, 1080sF/23.98 to 525 (NTSC) or
1080i/50, 720p/50, 1080p/25, 1080sF/25 to 625 (PAL)

AES/EBU Digital Inputs (with 8415 sub module option)

Number	Four (total of eight channels)
Signal Type	AES3id
Connector	Coaxial, 75 Ω
Bit Depth	20 and 24 bit
Sample Rate	30 kHz to 100 kHz (sample rate converted internally to 48 kHz)
Crosstalk	<144 dB
Dynamic Range	>144 dB
Reference Level	-18 or -20 dBFS (selectable)
AC-3, Dolby E	Supported when inputs are synchronous

Embedded Inputs

Number	Four AES Streams (from video input) Eight channels from any two of four groups Selectable to any of four groups
Channels	Eight
Bit Depth	20 and 24 bit

AES/EBU Digital Outputs

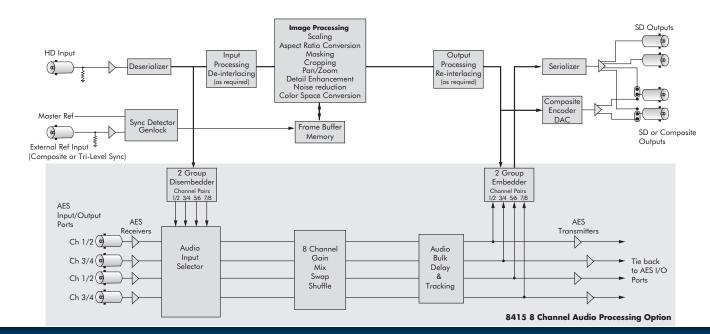|	
Number	Four (total of 8 channels)
Signal Type	AES3id
Connector	Coaxial, 75 Ω
Bit Depth	20 and 24 bit
Sample Rate	48 kHz, synchronous to Video output
Reference Level	-18 or -20 dBFS (selectable)

Embedded Output

Number	Four or two depending on configuration
Group Assign	Cascade or Replace any two of four groups
Channels	Eight
Bit Depth	24 bit

General Specifications

Power Consumption	10 watts
Temperature Range	0 to 40°C ambient (all specs met)
Relative Humidity	0 to 95%, noncondensing
Altitude	0 to 10,000 ft

8415 8 Channel Audio Processing Option