



## GDV080/090–HDV080/090

Monitoring distribution amplifier with down converted  
SD or analog video outputs and optional audio de-  
embedder

A Synapse® product

*Synapse*

MASTER  
Card

3 TRIPLE RATE  
GB/s, HD, SD

AFD ready  
S2016

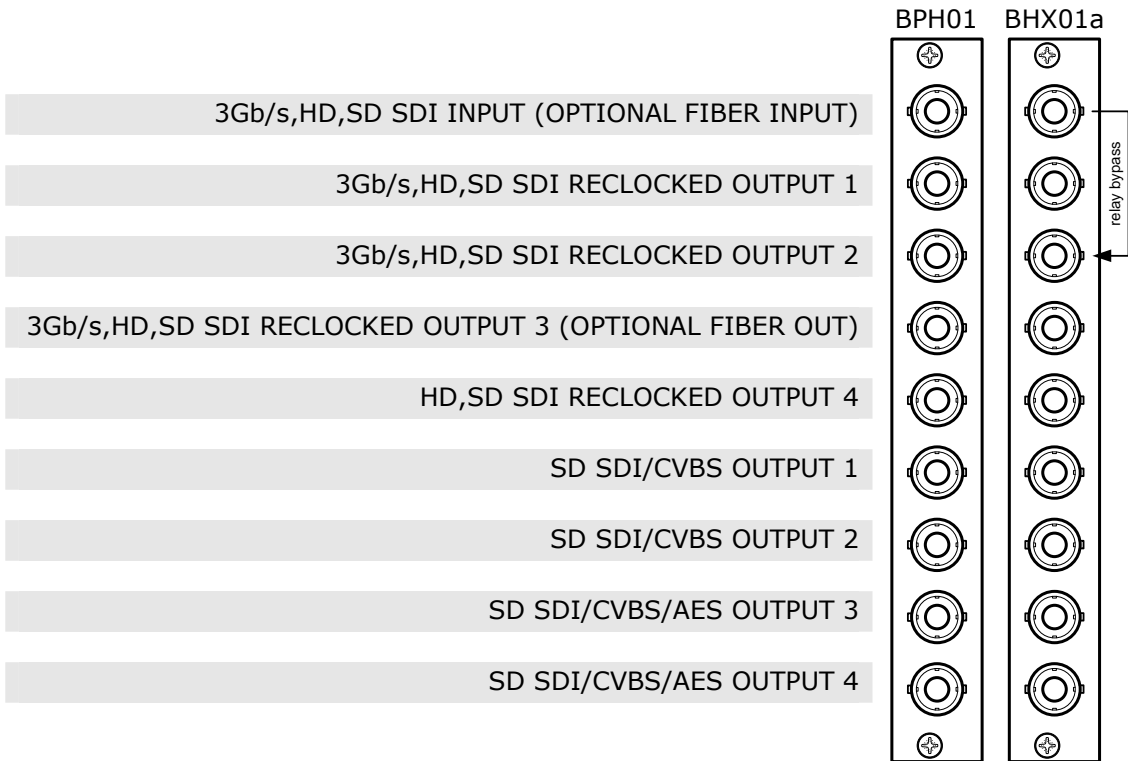
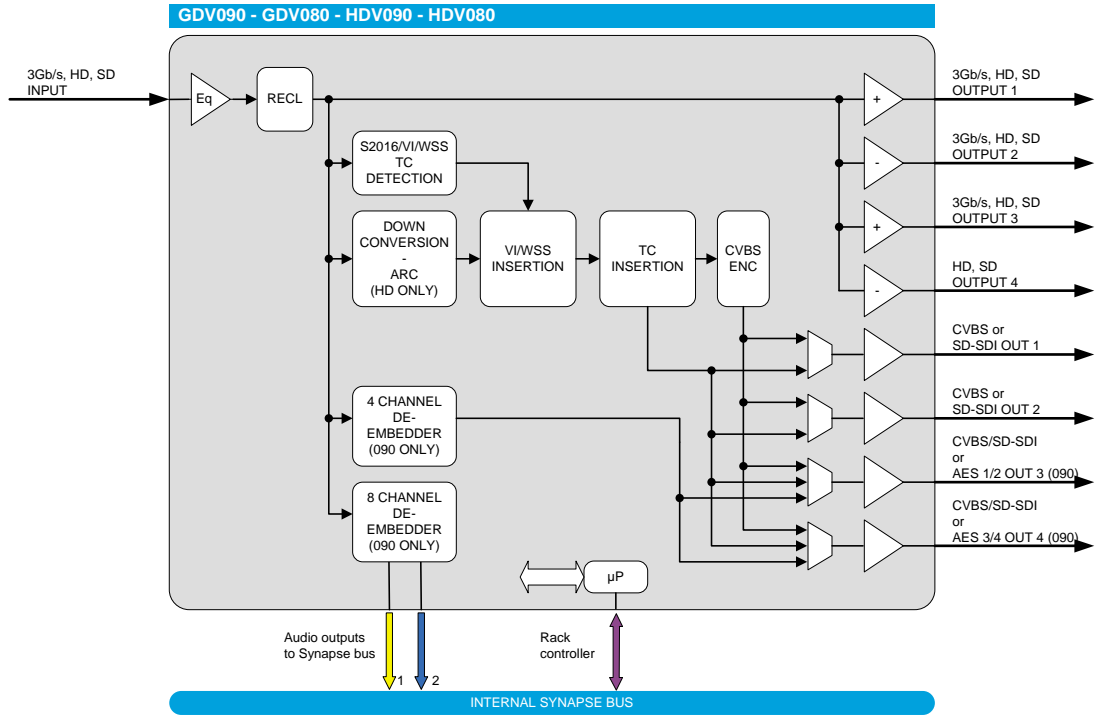
Upgradable to  
3Gb/s

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Block schematic & I/O panel



## Features

The G-HDV090/80 are 3Gb/s - HD - SD SDI distribution amplifiers with a built-in 3Gb/s, HD SDI to SD SDI or composite down converter. The G-HDV090 is capable of de-embedding 8 channels audio into 2 groups on the bus. The G-HDV090 is also capable of de-embedding 4 channels audio in two AES channels on the back panel. This card acts as a master-card. It is an audio extractor that outputs 2 x 4 channels ADD-ON audio signals via the local bus to two ADD-ON cards.

- 1 auto-detect 3Gb/HD/SD SDI input
- 4 reclocked HD/SD SDI outputs or 3 3Gb outputs
- 4 individually switchable down converted video outputs. User can choose from CVBS or SD SDI or AES audio (lowest 2 BNCs on G-HDV090 only)
- Supports 16:9 letterbox, 14:9 letterbox, 4:3 (anamorphic and centre crop)
- HD to SD color space conversion (ITU709 and ITU601)
- Reads S2016 and converts to WWS/VI preset based (3Gb/s and HD)
- Copies WSS/VI into SD output (SD)
- Reads ATC data and transports TC data from 3Gb/s, HD and SD to SD SDI
- 2 groups de-embedding on bus (G-HDV090)
- Selectable NTSC setup removal
- Y level adjustable for SMPTE
- Locks to SDI input
- Full control and status monitoring through the front panel of the SFR04/08/18 frame and the Ethernet port (ACP)
- Optional 1 fiber input (replacing 1 SDI input) on I/O panel

Complementary cards:

- DAC20, DAC24, DAS24, DIO48, DIO24

## Conversion abilities

The G-HDV080/090 can handle the following conversions:

CONVERSION		Output											
		1080p29.97	1080p25	1080p23.97	1035i59.97	1080i59.94	1080i50	720p59.94	720p50	720p29.97	720p25	720p23.98	480i59.94(525)
Input	1080p29.97											x	
	1080p25												x
	1080p23.97											x	
	1035i59.97											x	
	1080i59.94											x	
	1080i50												x
	720p59.94											x	
	720p50												x
	720p29.97											x	
	720p25												x
	720p23.98											x	
	480i59.94(525)											x	
	576i50(625)												x

## Applications

- Generic 3Gb/s, HD, SDI Distribution with preview output
- Pre-routing down converted DA or SD with monitoring output
- De-embedding of two groups on the bus (G-HDV090 only)
- De-embedding of two AES channels on back panel (G-HDV090 only)

## Ordering information

### Module:

- **GDV080:** 3G/HD/SD SDI Monitoring distribution amplifier with down converted SD or analog video outputs\*
- **GDV090:** 3G/HD/SD SDI Monitoring distribution amplifier with down converted SD or analog video outputs and digital audio outputs
- **HDV080:** HD/SD SDI Monitoring distribution amplifier with down converted SD or analog video outputs\*\*\*
- **HDV090:** HD/SD SDI Monitoring distribution amplifier with down converted SD or analog video outputs and digital audio outputs\*\*

### Standard I/O:

- **BPH01\_GDVxxx:** I/O panel for G-HDV080/090

### Relay bypass I/O:

- **BHX01a\_GDVxxx:** I/O panel for I/O panel for G-HDV080/090 with relay bypass

### Fiber outputs:

- **BPH01T\_FC/PC\_GDVxxx:** I/O panel for G-HDV080/090 with fiber transmitter on FC/PC
- **BPH01T\_SC\_GDVxxx:** I/O panel for G-HDV080/090 with fiber transmitter on SC

### Fiber inputs:

- **BPH01R\_FC/PC\_GDVxxx:** I/O panel for G-HDV080/090 with fiber receiver on FC/PC
- **BPH01R\_SC\_GDVxxx:** I/O panel for G-HDV080/090 with fiber receiver on SC

\* Upgradable with digital audio de-embedding

\*\* Upgradable to 3Gb/s

\*\*\* Upgradable to 3Gb/s and with digital audio de-embedding

## Specifications

### Serial video input

<b>Standard</b>	625/50 or 525/59.94 SMPTE 259M-C (270Mb/s) with SMPTE 272M embedded audio SMPTE 292M (1.5Gb/s), SMPTE 260M, SMPTE 274M, SMPTE 296M, SMPTE 349M 1080i/59.94, 1080i/50, 720p/59.94, 720p/50, 1080p/23.98
<b>Number of inputs</b>	1
<b>Equalization</b>	Automatic to 100m @ 1.5Gb/s with Belden 1694A or equivalent cable.

### Serial video output

<b>Standard</b>	625/50 or 525/59.94 SMPTE 259M-C (270Mb/s) with SMPTE 272M embedded audio SMPTE 292M (1.5Gb/s), SMPTE 260M, SMPTE 274M, SMPTE 296M, SMPTE 349M 1080i/59.94, 1080i/50, 720p/59.94, 720p/50, 1080p/23.98
<b>Signal level</b>	800mV nominal
<b>DC offset</b>	0V $\pm$ 0.5V
<b>Rise and fall time</b>	200ps nominal for HD, 750ps nominal for SD
<b>Overshoot</b>	< 10% of amplitude
<b>Return loss</b>	> 15dB up to 1.0Gb/s, > 10dB up to 1.5Gb/s
<b>Wideband jitter</b>	< 0.2UI (< 1UI by 10Hz HPF in SD)

### Down converted video outputs

<b>Number of outputs</b>	4
<b>Connector</b>	BNC
<b>Output type</b>	Analog video or SD SDI
<b>Delay</b>	4ms in 1080p/59.94, 1080p/50, 1080i/59.94, 1080i/50, 720p/59.94, 720p/50 30ms in p24 and p25 modes (external audio delay needed)

### Analog video output

<b>Standard</b>	PAL (ITU624-4) or NTSC (SMPTE 170M) and PAL-M
<b>Signal level</b>	1V nominal
<b>Impedance</b>	75 $\Omega$
<b>Return loss</b>	> 35dB to 10MHz
<b>Frequency response</b>	0.5dB to 4.5 MHz
<b>Differential gain</b>	< 0.6%
<b>Differential phase</b>	< 0.7 $^{\circ}$
<b>SNR</b>	> 75dB

### SD Serial video output

<b>Standard</b>	625/50 or 525/59.94 SMPTE 259M-C (270Mb/s)
<b>Signal level</b>	800mV nominal
<b>DC Offset</b>	0V $\pm$ 0.5V
<b>Rise/Fall time</b>	520ps nominal
<b>Overshoot</b>	< 10% of amplitude
<b>Return loss</b>	> 18dB up to 270MHz
<b>Jitter</b>	< 600ps 10Hz HPF