



## GXG100/110 - HXH100/110

3Gb/s, HD, SD up/down/cross converter/synchronizer  
with optional audio shuffler

A Synapse® product

*Synapse*

MASTER  
Card

3 TRIPLE RATE  
Gb/s, HD, SD



AFD ready  
S2016

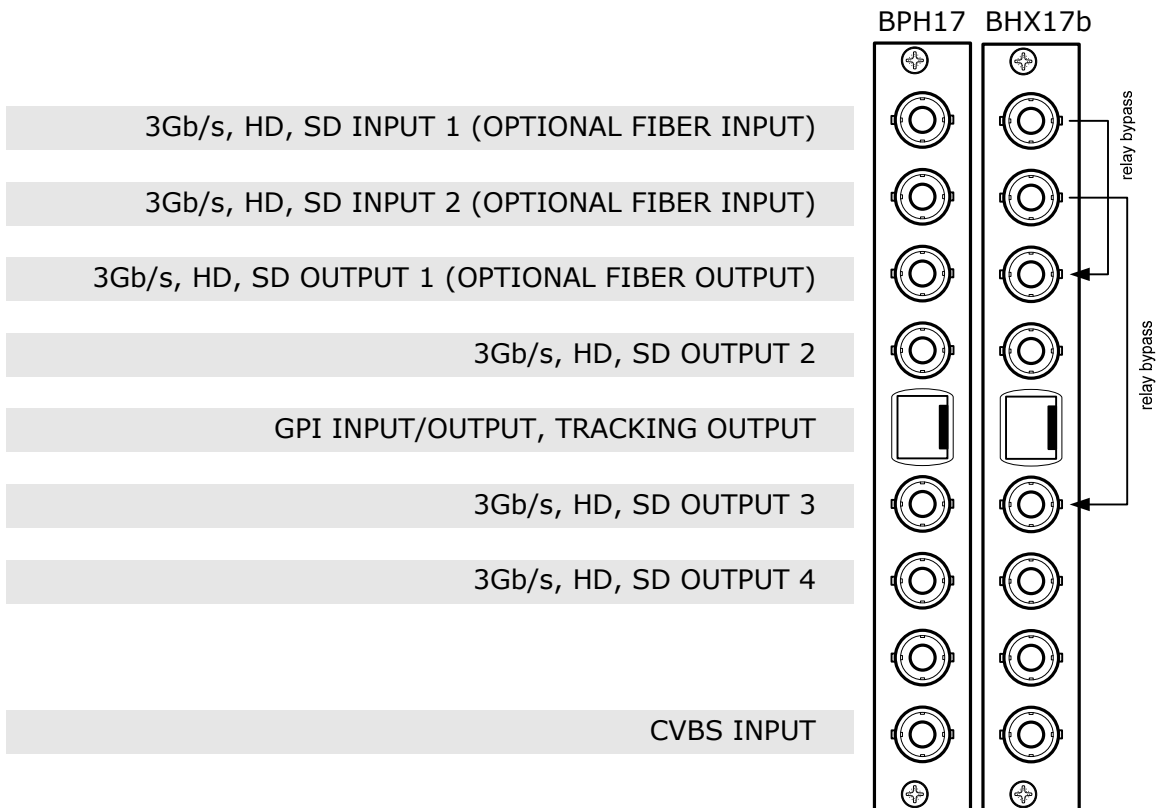
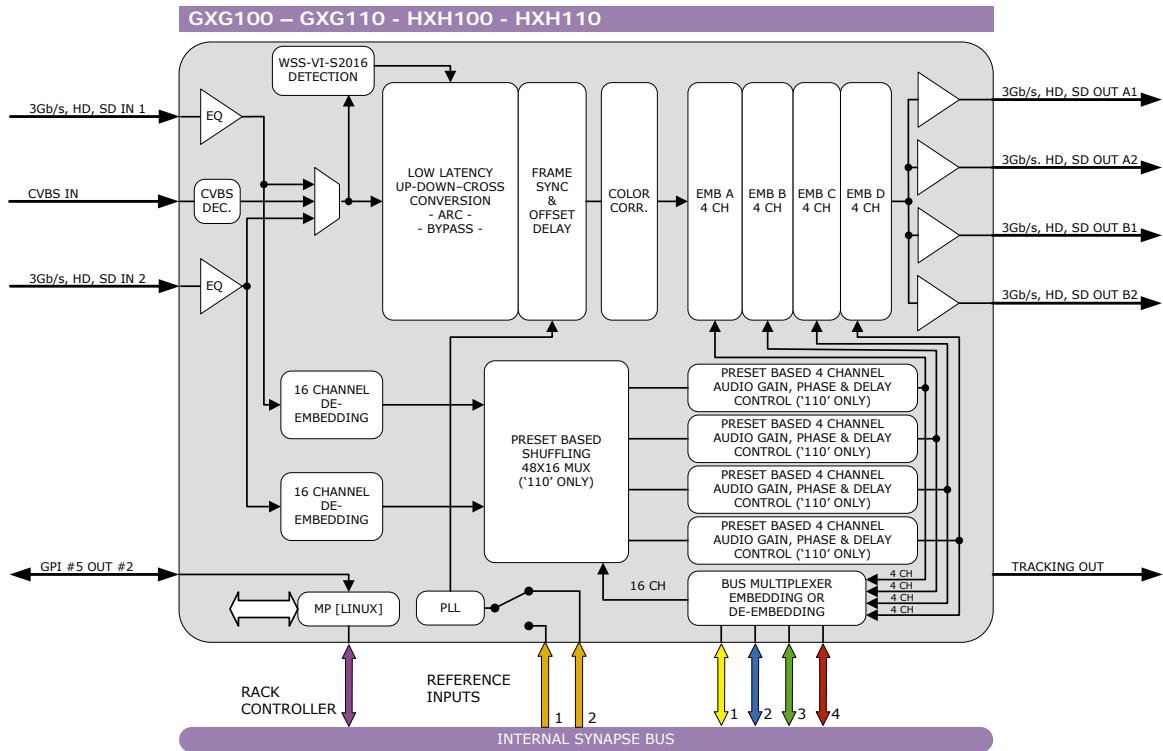
Upgradable to  
3Gb/s

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Block schematic & I/O panel



## Features

The GXG100/110 and HXH100/110 are *low latency* up, down, cross converters with 16 channel audio transparency. The powerful audio matrix multiplexer can transport audio from the embedded domain to the Synapse bus and vice versa.

The GXG110 or HXH110 add a full audio shuffler and audio proc-amp with gain and phase control.

The GXG100/110 are compatible with 270Mb/s, 1.5Gb/s and 3Gb/s for full 1080p/50 or 1080p/59.94 use. The HXH100/110 are compatible with SD-SDI (270Mb/s) and HD-SDI (1.5Gb/s) and can be future upgraded to 3Gb/s compatibility

- 3 inputs: 2 SDI and 1 composite.
- Configurable output function (Straight, Crosses, A only or B only)
- Low latency conversion process (as low as 1 field in controlled timing environment)
- Compatible with the following input and output formats (auto selecting). One standard can be chosen for both outputs simultaneously:
  - 1080p/59.94 (2GU only)
  - 1080p/50 (2GU only)
  - 1080i/59.94
  - 1080i/50
  - 1080p/23.98
  - 1080psf/23.98
  - 720p/59.94
  - 720p/50
  - 720p/23.98
  - SD525
  - SD625
- Two individual conversion paths. The inputs can be different standards SD or HD and unlocked to the single output format.
- Frame sync with output phase control in Frames, Lines and pixels with respect to reference. Delay setting are stored per output format for a constant latency operation.
- 30 frames (1080i/p), 60 frames (720p) or 125 frames (SD) delay offset per channel
- ARC modes contain:
  - Anamorphic
  - Center Cut
  - V-Zoom
  - LBox-16:9
  - LBox-14:9
  - PBox-4:3
  - PBox-14:9
  - Variable H and V (50–200%)
- 16 Free individual programmable presets banks for:
  - Up/down/cross converter ARC A and B
  - Transparent ARC A and B
  - VI/WSS/S2016 insertion A and B
  - Embedder shuffling/Gain/Phase (-110 only)
- 5 GPI inputs assignable to various preset banks
- ARC triggers by VI, WSS, WSSext and S2016 (AFD)
- Transparent for 16 channels of embedded audio
- Embedded domain cross input audio shuffling, gain and phase control (GXG-HXH110 only)
- Embedding and de-embedding through synapse bus
- Video proc-amp (Y and C control)
- Color corrector (RGB and total gain, RGB and total black)
- Hue control for NTSC inputs
- Locks to Tri-level, Bi-level or SDI input
- OP47 to WST cross conversion and vice versa
- Timecode cross conversion
- Auxiliary timecode input, allowing for 2 separate timecodes
- CC-608 to CC-708 conversion and vice versa
- 6 Line Vertical Ancillary Blanking transparency in transparent mode
- Full control and status monitoring through the front panel of the SFR04/SFR08/SFR18 frame and the Ethernet port (ACP)

Complementary cards:

- DAC20, DAC24, DAS24, DIO48, ADC20, ADC24, DIO24, DLA44, DLA43

## Conversion abilities

The GXG-HXH100/110 cards are able to convert the following video formats:

CONVERSION		Output										
		1080psf23.97	1080p23.97	1080p50*	1080p59.94*	1080i59.94	1080i50	720p59.94	720p50	720p23.98	480i59.94(525)	576i50(625)
SDI	1080psf23.97	x	x		x	x		x		x	x	
	1080p23.97		x		x	x		x		x	x	
	1080p50*			x			x		x			x
	1080p59.94*	x	x		x	x		x		x	x	
	1080i59.94	x	x		x	x		x		x	x	
	1080i50			x			x		x			x
	720p59.94	x	x		x	x		x			x	
	720p50			x			x		x			x
	720p23.98	x	x		x	x		x		x	x	
	480i59.94(525)	x	x			x		x		x	x	
CVBS	576i50(625)			x			x		x			x
	480i59.94(NTSC)	x	x			x		x		x	x	
	576i50(PAL)			x			x		x			x

\* = GXG models only

## Applications

- Truck input up converter/synchronizer
- Infra structure up/down/cross conversion

## Ordering information

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**Module:**

- **GXG100:** 3Gb/s, HD, SD-SDI up/down/cross converter
- **GXG110:** 3Gb/s, HD, SD-SDI up/down/cross converter with audio shuffler proc-amp
- **HXH100:** HD, SD-SDI up/down/cross converter\*
- **HXH110:** HD, SD-SDI up/down/cross converter with audio shuffler proc-amp\*

**Standard I/O:**

- **BPH17\_GXGxxx:** I/O-panel for GXG-HXH100/110

**Relay bypass I/O:**

- **BHX17b\_GXGxxx:** I/O-panel for GXG-HXH100/110 with relay bypass

**Fiber outputs:**

- **BPH17T\_FC/PC\_GXGxxx:** I/O panel for GXG-HXH100/110 with one fiber transmitter on FC/PC
- **BPH17T\_SC\_GXGxxx:** I/O panel for GXG-HXH100/110 0 with one fiber transmitter on SC

**Fiber inputs:**

- **BPH17R2\_FC/PC\_GXGxxx:** I/O panel for GXG-HXH100/110 with two fiber receivers on FC/PC
- **BPH17R2\_SC\_GXGxxx:** I/O panel for GXG-HXH100/110 with two fiber receivers on SC

For other fiber options please contact AXON

\* Upgradeable to 3Gb/s

## Specifications

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### Serial Video Input

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<b>Standard</b>	SD,HD and 3Gb/s SDI: SMPTE 292M, SMPTE 259M, SMPTE424
<b>Number of Inputs</b>	2
<b>Connector</b>	BNC
<b>Equalization</b>	Typical maximum equalized length of Belden 1694A cable: 90m at 2.97Gb/s, 120m at 1.485Gb/s, and 250m at 270Mb/s
<b>Return Loss</b>	> 15dB up to 1.5GHz

### CVBS Video Input

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<b>Standard</b>	PAL (ITU624-4), NTSC (SMPTE 170M)
<b>Encoding</b>	12 bits
<b>Number of Inputs</b>	1
<b>Impedance</b>	75 Ohms
<b>Return Loss</b>	> 35dB up to 10MHz
<b>Frequency Response</b>	< $\pm 0.25$ dB (100KHz to 4.2MHz)
<b>Differential Gain</b>	< $\pm 0.5$ % typical
<b>Differential Phase</b>	< $\pm 0.2^\circ$ typical
<b>Noise Floor</b>	< -57dB RMS (black video, 15KHz to 5MHz)
<b>C/L Gain</b>	< $\pm 0.5$ %
<b>C/L Delay</b>	< $\pm 9$ ns

### Serial Video Output

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<b>Number of Outputs</b>	4
<b>Connector</b>	BNC
<b>Signal Level</b>	800mV nominal
<b>DC Offset</b>	0V $\pm 0.5$ V
<b>Rise/Fall Time</b>	135ps nominal
<b>Overshoot</b>	< 10% of amplitude
<b>Return Loss</b>	> 15dB up to 1.5GHz (typ.) > 10dB up to 3GHz (typ.)
<b>Wideband Jitter</b>	< 0.2UI

### Reference Input through RRC

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<b>Number of Inputs</b>	2 on SFR18, 2 on SFR08 and 1 on SFR04
<b>Tri-level</b>	SMPTE274M, SMPTE296M 600 mVp-p nominal, 75 Ohms terminated through loop
<b>Bi-level</b>	PAL Black Burst ITU624-4/SMPTE318, Composite NTSC SMPTE 170M 1Vp-p nominal, 75 Ohms terminated through loop

### Miscellaneous

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<b>Weight</b>	Approx. 450g
<b>Operating Temperature</b>	0 °C to +40 °C
<b>Dimensions</b>	137 x 296 x 20 mm (HxWxD)

### Electrical

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<b>Voltage</b>	+24V to +30V
<b>Power</b>	<17 Watts