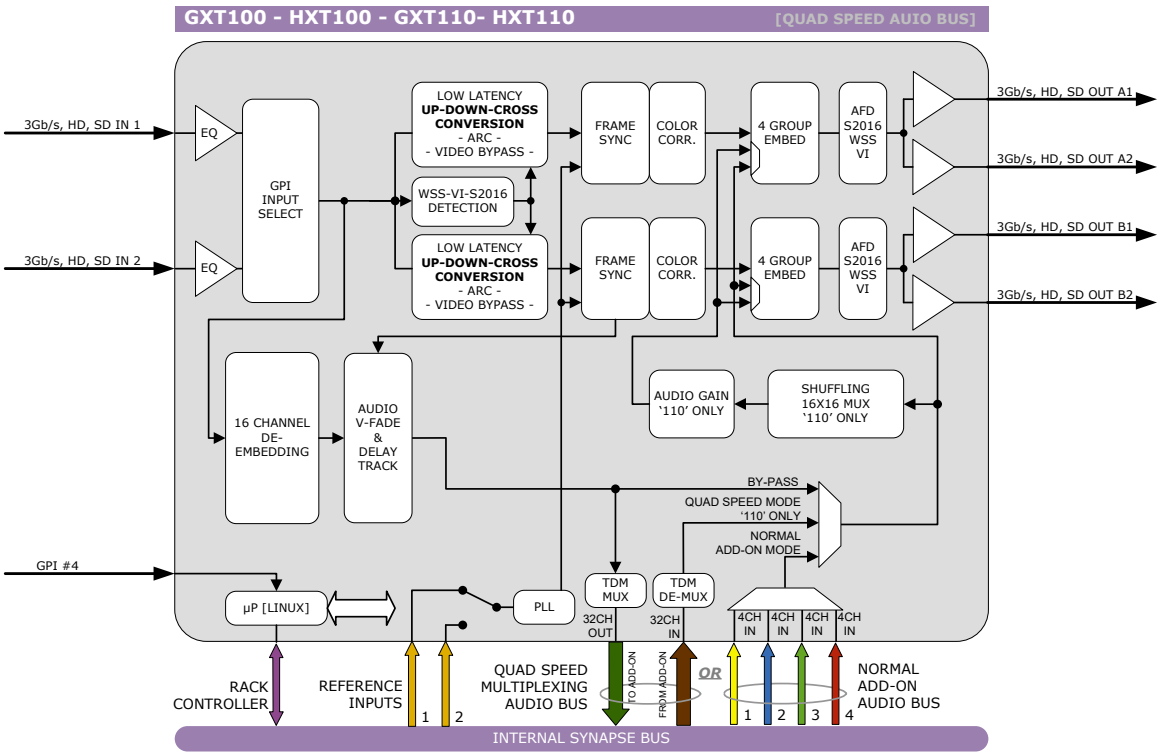
Synapse

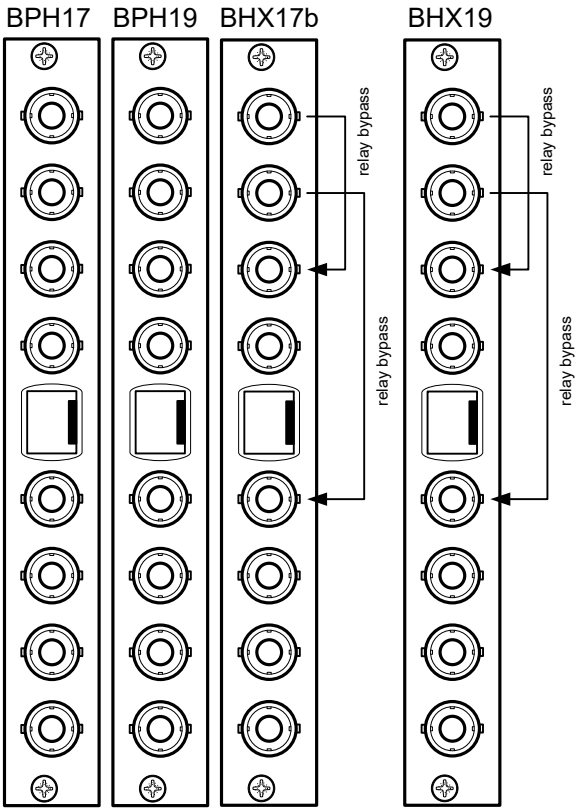
GXT100/110
HXT100/110

Dual 3Gb/s, HD and SD input, frame synchronizer, up/down/cross converter, embedder, de-embedder and optional cross input audio shufller

A Synapse® product

Block schematic & I/O panel





3Gb/s, HD, SD-SDI IN A
3Gb/s, HD, SD-SDI IN B
3Gb/s, HD, SD-SDI OUT A1
3Gb/s, HD, SD-SDI OUTPUT A2
GPI INPUT (BPH17) ETHERNET (BPH19)
3Gb/s, HD, SD-SDI OUT B1
3Gb/s, HD, SD-SDI OUTPUT B2

Features

The GXT-HXT100/110 are frame synchronizers and 16 channel embedders and de-embedders combined with ultra high-quality up/down/cross converter. The dual input capability can be used as an emergency bypass switch. The optimized scaling and filter algorithms ensure crisp broadcast ready pictures from a native HD source, by use of a 64 tap FIR filters. This card is designed as a transmission output module that enables simultaneous feeding of HD, SD (with embedded audio). Add-on cards can be used as audio in and output cards. All products can be up- or down graded with a software key.

- 3Gb/s, HD, SD SDI input (auto selecting)
- Low latency conversion process
  - 3Gb/s, HD outputs
  - SD outputs (simultaneous anamorphic widescreen and pan-scan)
- Up-conversion from 720p or 1080i to 1080p (equal frame-rate)
- Down conversion (including 1080p to SD-SDI)
- Cross conversion 720p to 1080i and vice versa
- Dual input backup function
  - Automatic by input carrier detection
  - Manual by direct control (ACP)
  - GPI
- 2 Frame synchronizers for the 3Gb/s, HD and SD domain with individual output timing control
- Color correction in 3Gb/s, HD and SD domain (RGB and total gain, RGB and total black)
- H+V sharpness control in SD domain for crisp down converted picture quality
- 4 GPI inputs for ARC and Shuffle triggers
- Transparent for 16 channels of embedded audio both HD and SD path
- Embedded domain audio shuffling (GXT-HXT110 models only)
- Quad speed audio bus compatible
- Embedding through synapse bus
- De-embedding to Synapse bus with transparent input to output handling
- Video proc-amp (Y and C control)
- Hue control
- Compatible with:
  - 270 Mbit/s (SMPTE 259M) 50 and 59.94Hz
  - 1485 Mbit/s (SMPTE 292M) 50 and 59.94Hz
  - 2970 Mbit/s (SMPTE 424M) 50 and 59.94Hz (GXT100/110 only)
- AFD insertion in HD domain
- AFD, WSS, WSS-ext and VI insertion in SD domain
- I/O Delay measurement for both output domain
- Reporting of chosen input
- CRC status information for both inputs
- Locks to Bi-level, Tri-level syncs and SDI input
- OP47 to WST cross conversion and vice versa
- Timecode cross conversion
- 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)
- 16 channel embedder in both HD and SD domain

Complementary cards:

- DAC20, DAS24, DIO48, ADC20, ADC24, DIO24

Conversion abilities

The G-HXT100/110 can handle the following conversions:

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

* = GXT100/110 model only

Applications

- OB van output card with 16 channel embedding (in combination with 2 x DIO48)
- 2x1 HD protection switch with SD monitoring output
- Dual domain (HD & SD) production down converter with individual timing adjustment

Ordering information

Module:

- **GXT110:** Dual Single 3Gb/s, HD and SD input, frame synchronizer, up/down/cross converter with embedder and de-embedder with audio shuffler proc-amp
- **HXT110:** Dual Single HD and SD input, frame synchronizer, up/down/cross converter with embedder and de-embedder with audio shuffler proc-amp*
- **GXT100:** Dual Single 3Gb/s, HD and SD input, frame synchronizer, up/down/cross converter with embedder and de-embedder
- **HXT100:** Dual Single HD and SD input, frame synchronizer, up/down/cross converter with embedder and de-embedder*

Standard I/O:

- **BPH17_GXTxxx**: I/O panel for G-HXT100-110 with GPI connection
- **BPH19_GXTxxx**: I/O panel for G-HXT100-110 with ethernet connection

Relay bypass I/O:

- **BHX17b_GXTxxx:** I/O panel for G-HXT100-110 with GPI connection with relay bypass
- **BHX19_GXTxxx:** I/O panel for G-HXT100-110 with ethernet connection with relay bypass

Specifications

Video Inputs

Standard	SD,HD and 3Gb/s SDI: SMPTE 292M, SMPTE 259M, SMPTE424
Equalization	Typical maximum equalized length of Belden 1694A cable: 70m at 2.97Gb/s, 140m at 1.485Gb/s, and 350m at 270Mb/s
Number of inputs	2 (auto or manual selection)
Return Loss	> 15dB up to 3GHz

HD Serial Video Outputs

Standard	SD,HD and 3Gb/s SDI: SMPTE 292M, SMPTE 259M, SMPTE424
Number of Outputs	2
Signal Level	800mV nominal
DC Offset	0V ±0.5V
Rise and Fall Time	200ps nominal for HD, 750ps nominal for SD
Overshoot	< 10% of amplitude
Return Loss	> 15dB up to 1.0Gb/s, > 10dB up to 1.5Gb/s

SD Serial Video outputs

Standard	625/50 or 525/59.94 SMPTE 259M-C (270Mb/s) with SMPTE 272M embedded audio
Number of Outputs	2
Signal Level	800mV nominal
DC Offset	0V ±0.5V
Rise/Fall Time	135ps nominal
Overshoot	< 10% of amplitude
Return Loss	> 15dB up to 1.5GHz (typ) > 10dB up to 3GHz (typ)
Wideband Jitter	< 0.2UI
Video Delay	Minimum of 56 SD lines, maximum 1F +56 lines

Processing Delay

Minimum delay 50Hz	20ms
Minimum delay 60Hz	16ms
Delay when locked to 50Hz ref	Between 20 and 60ms
Delay when locked to 60Hz ref	Between 16 and 48ms

Reference Input through RRC

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

Miscellaneous

Weight	Approx. 250g
Operating Temperature	0 °C to +50 °C
Dimensions	137 x 296 x 20 mm (HxWxD)

Electrical

Voltage	+24V to +30V
Power	<11 Watts