



Synapse

2GF-2HF-2SF100/110

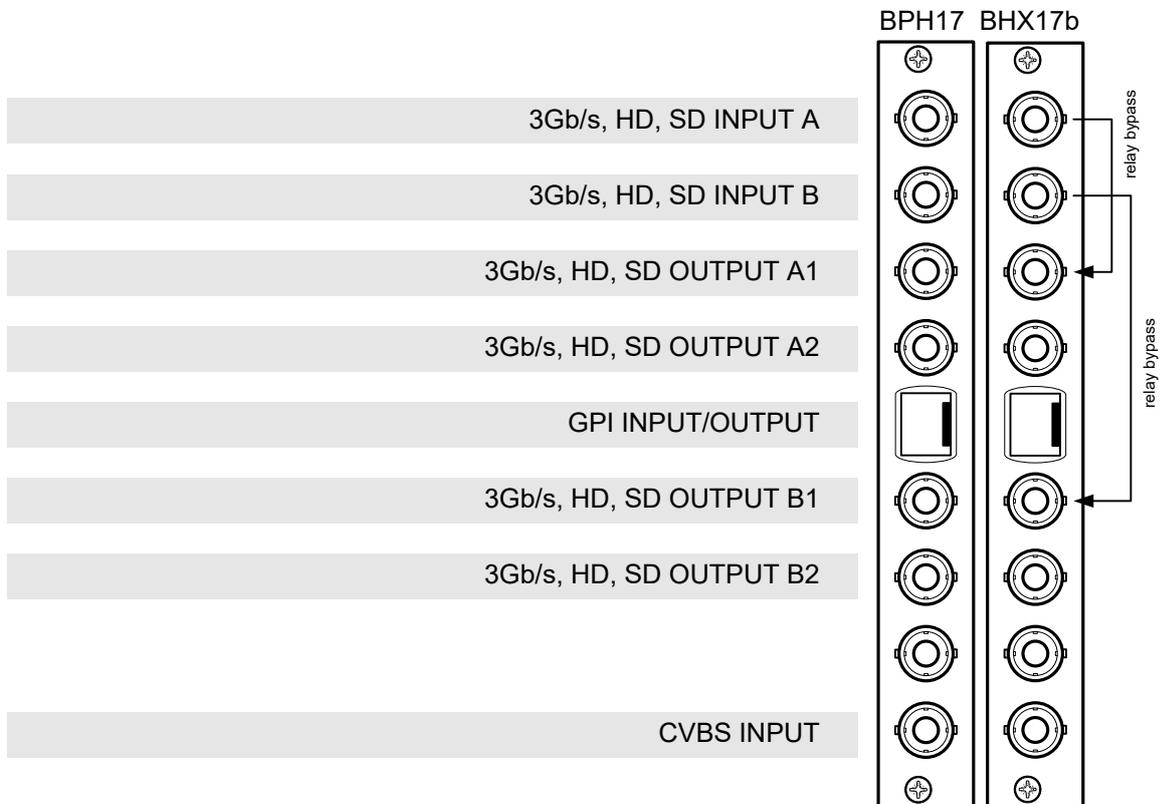
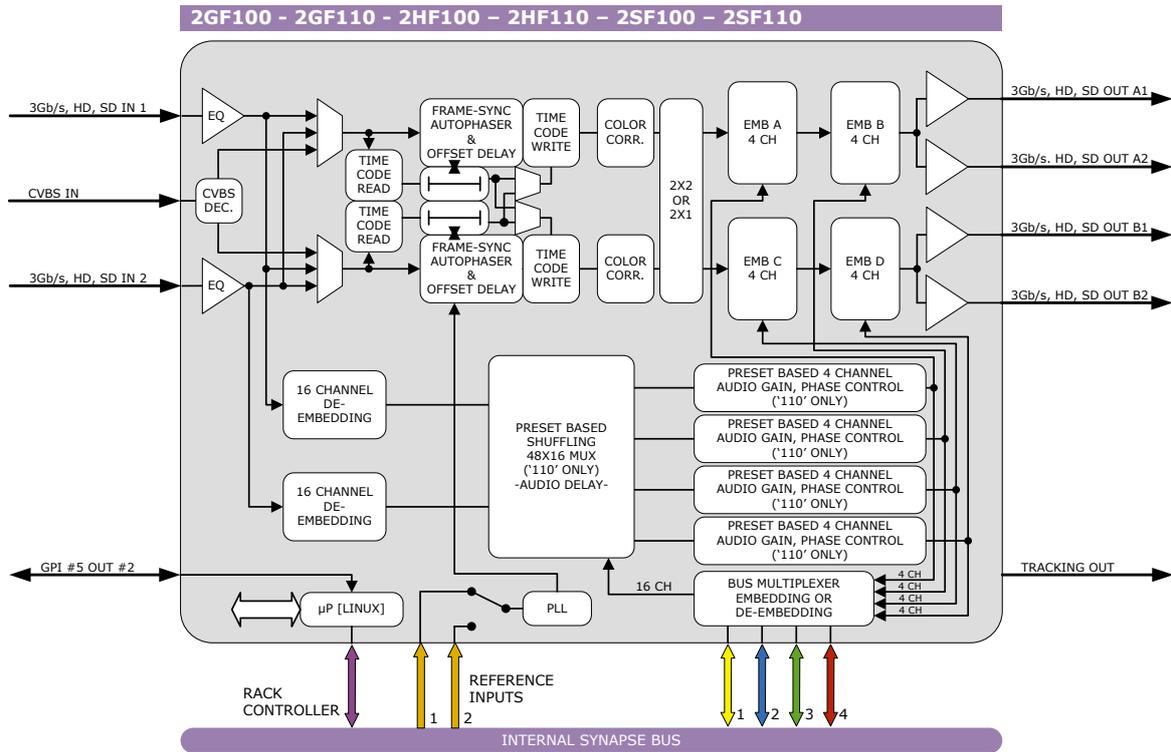
Dual channel 3Gb/s, HD, SD frame synchronizer
with optional audio shuffler

A Synapse® product



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Block schematic & I/O panel



Features

The 2GF100/110, 2HF100/110 and 2SF100/110 are dual channel frame synchronizers with backup inputs and 8 channel audio transparency and color correcting capabilities. The powerful matrix multiplexer can feed audio from the embedded domain into the Synapse bus to an ADD-ON card like the DIO48. This matrix multiplexer also allows for audio to be inserted from the ADD-ON bus into the embedded domain of the 2GF-2HF-2SF100/110. The 2GF110, 2HF110 and 2SF110 add a full audio shuffler and audio proc-amp with gain and phase control. A nice new feature is the option to swap time-code data from channel one to channel two or vice versa where the delay timing of the time-code is copied from the source channel.

The 2GF100/110 is compatible with 270Mb/s, 1.5Gb/s and 3Gb/s for full 1080p/50 or 1080p/59.94 use. The 2HF100/110 is compatible with SD-SDI (270Mb/s) and HD-SDI (1.5Gb/s) and can be future upgraded to 3Gb/s compatibility. The 2SF100/110 is limited to 270Mb/s only but can also be upgraded to HD or even 3Gb/s.

- 3 inputs: 2 SDI and 1 composite.
- Configurable output function
 - Straight (1=1, 2=2)
 - Crossed (2=1, 1=2)
 - A only
 - B only
- Compatible with the following input formats (auto selecting) (1080p only for 2GF100/110). Please mind that the format and the framerate on both inputs have to be the same:

○ 1080p/59.94	○ 720p/59.94
○ 1080p/50	○ 720p50
○ 1080i/59.94	○ 720p30
○ 1080i/50	○ 720p25
○ 1080p/29.97	○ 720p24
○ 1080p25	○ SD525
○ 1080p24	○ SD625
○ 1035i/59.94	
- 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 delay offset (per channel)	
▪ 1080i60	▪ 1080p24
▪ 1080i50	▪ 1035i60
▪ 1080p30	▪ 1080p60
▪ 1080p25	▪ 1080p50
○ 60 Frames delay offset (per channel)	
▪ 720p60	▪ 720p25
▪ 720p50	▪ 720p24
▪ 720p30	
○ 125 Frames delay offset (per channel)	
▪ SD525	▪
▪ SD625	
- 5 GPI inputs assignable to different preset banks
 - Input selection
 - Output mode
 - Audio shuffling, gain and phase (110 only)
- ARC triggers by VI, WSS, WSSext and S2016 (AFD)
- Individual color corrector for video path A and B
- Time code swapping between the two video paths.
- Transparent for 8 channels of embedded audio per channel
- Embedded domain **cross input** audio shuffling, gain and phase control (2GF/2HF/2SF110 only)
- Embedding and de-embedding through synapse bus
- Video proc-amp (Y and C control) and Color corrector (RGB and total gain and black)
- Hue control for NTSC inputs
- Locks to Bi-level, Tri-level syncs or SDI input
- Full control and status monitoring through the front panel of the SFR04/SFR08/SFR18 frame and the Ethernet port (ACP)

Complementary cards:

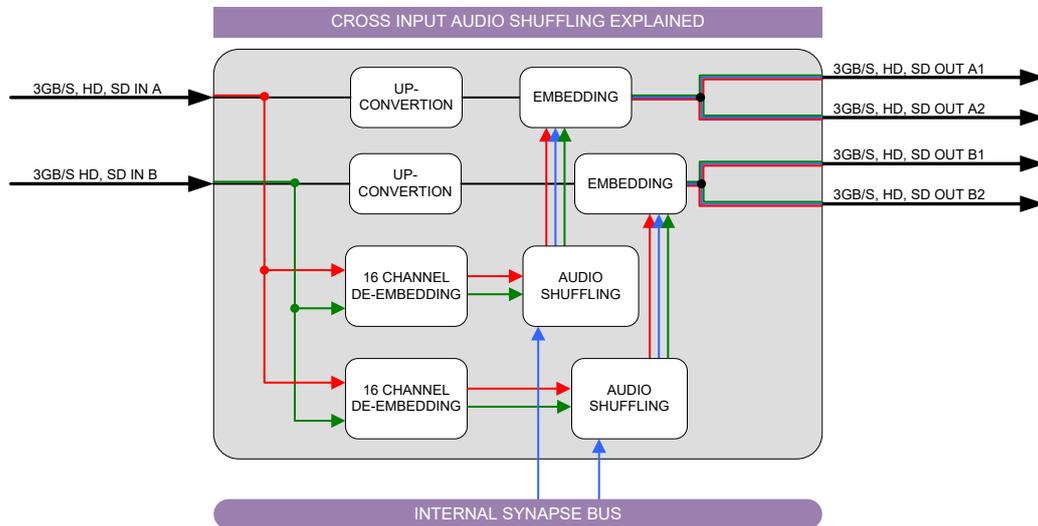
- DAC20, DAC24, DAS24, DIO48, ADC20, ADC24, DIO24, DLA44, DLA43

Applications

- Transmission output frame synchronizer with backup input.

2GF110, 2HF110 and 2SF110 only:

- Combining embedded audio channels of 2 inputs into 1 (see image below)



Ordering information

Module:

- **2GF100:** Dual channel 3Gb/s, HD, SD frame synchronizer
- **2GF110:** Dual channel 3Gb/s, HD, SD frame synchronizer with audio shuffler proc amp
- **2HF100:** Dual channel HD, SD frame synchronizer converter*
- **2HF110:** Dual channel HD, SD frame synchronizer with audio shuffler proc amp*
- **2SF100:** Dual channel SD frame synchronizer converter**
- **2SF110:** Dual channel SD frame synchronizer with audio shuffler proc amp**

Standard I/O:

- **BPH17_2GFxxx:** I/O-panel for 2GF-2HF-2SF100/110

Relay bypass I/O:

- **BHX17b_2GFxxx:** I/O-panel for 2GF-2HF-2SF100/110 with relay bypass and RJ45 GPI/O

Specifications

Serial video input

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

Serial video output

Number of outputs	4
Connector	BNC
Signal level	800mV nominal
DC offset	0V \pm 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

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. 450g
Operating temperature	0 °C to +40 °C
Dimensions	137 x 296 x 20 mm (HxWxD)

Electrical

Voltage	+24V to +30V
Power	<17 Watts