



## 2GF-2HF-2SF100/110

**Dual channel 3Gb/s, HD, SD frame synchronizer  
with optional audio shuffler  
A Synapse® product**

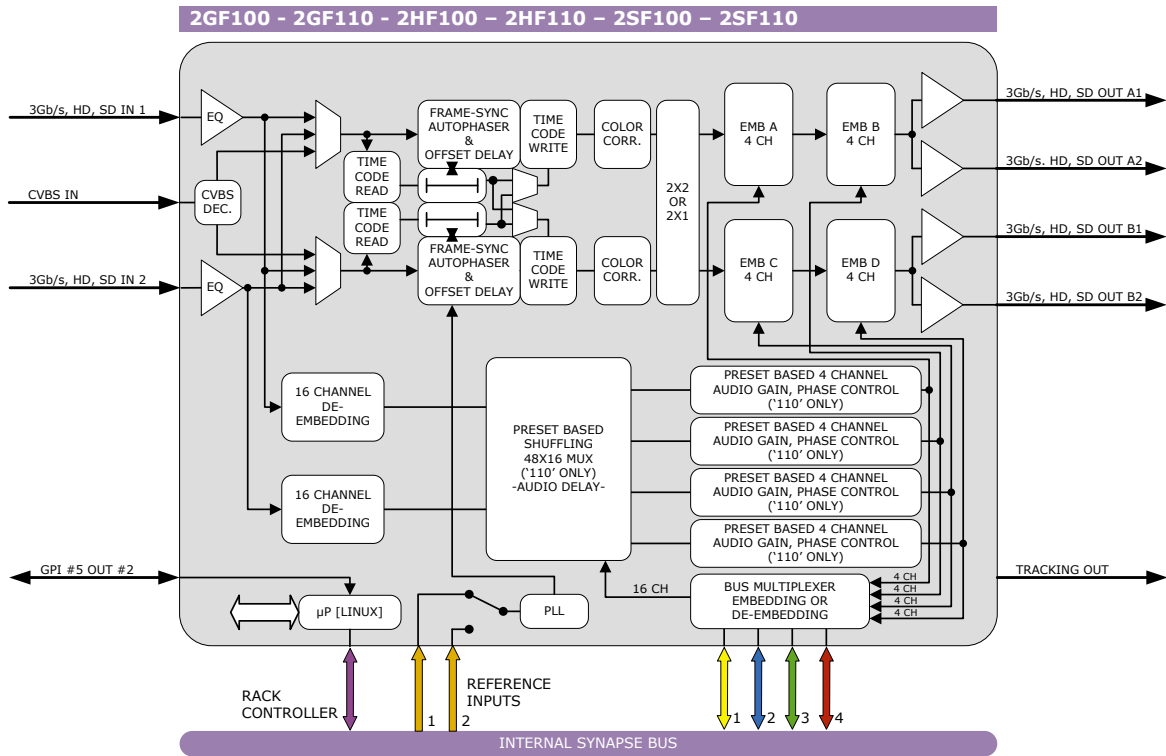
*Synapse*



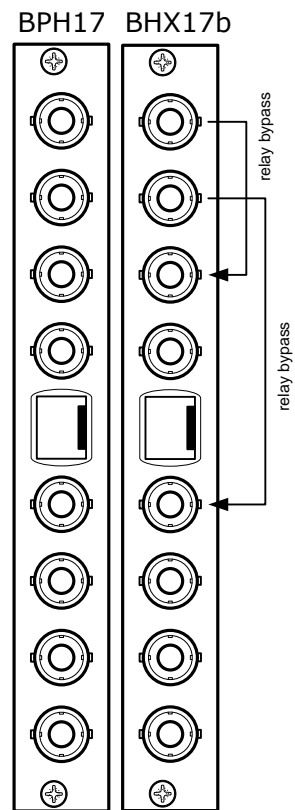
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Block schematic & I/O panel



- 3Gb/s, HD, SD INPUT A (OPTIONAL FIBER INPUT)
- 3Gb/s, HD, SD INPUT B (OPTIONAL FIBER INPUT)
- 3Gb/s, HD, SD OUTPUT A1 (OPTIONAL FIBER OUTPUT)
- 3Gb/s, HD, SD OUTPUT A2
- GPI INPUT/OUTPUT
- 3Gb/s, HD, SD OUTPUT B1 (OPTIONAL FIBER OUTPUT)
- 3Gb/s, HD, SD OUTPUT B2
- CVBS INPUT



## 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:
 

<ul style="list-style-type: none"> <li>▪ 1080p/59.94</li> <li>▪ 1080p/50</li> <li>▪ 1080i/59.94</li> <li>▪ 1080i/50</li> <li>▪ 1080p/29.97</li> <li>▪ 1080p25</li> <li>▪ 1080p24</li> <li>▪ 1035i/59.94</li> </ul>	<ul style="list-style-type: none"> <li>▪ 720p/59.94</li> <li>▪ 720p50</li> <li>▪ 720p30</li> <li>▪ 720p25</li> <li>▪ 720p24</li> <li>▪ SD525</li> <li>▪ SD625</li> </ul>
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- 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.
 

<ul style="list-style-type: none"> <li>▪ 30 Frames delay offset (per channel)               <ul style="list-style-type: none"> <li>▪ 1080i60</li> <li>▪ 1080i50</li> <li>▪ 1080p30</li> <li>▪ 1080p25</li> </ul> </li> <li>▪ 60 Frames delay offset (per channel)               <ul style="list-style-type: none"> <li>▪ 720p60</li> <li>▪ 720p50</li> <li>▪ 720p30</li> </ul> </li> <li>▪ 125 Frames delay offset (per channel)               <ul style="list-style-type: none"> <li>▪ SD525</li> <li>▪ SD625</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▪ 1080p24</li> <li>▪ 1035i60</li> <li>▪ 1080p60</li> <li>▪ 1080p50</li> <li>▪ 720p25</li> <li>▪ 720p24</li> </ul>
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- 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:

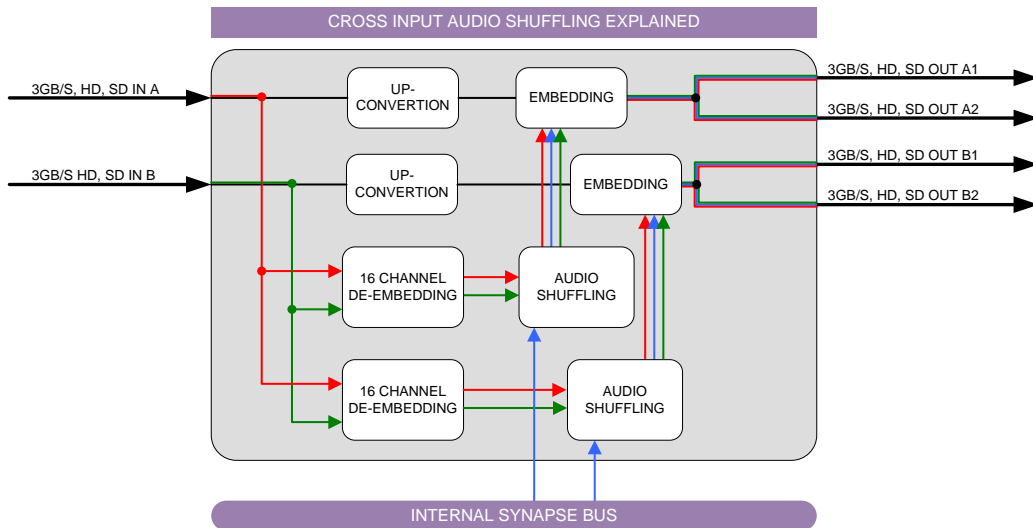
- DAC20, DAC24, DAS24, DIO48, ADC20, ADC24, DIO24, DLA44, DLA43

## 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

### Fiber outputs:

- **BPH17T\_FC/PC\_2GFxxx:** I/O-panel for 2GF-2HF-2SF100/110 with two fiber transmitters on FC/PC
- **BPH17T\_SC\_2GFxxx:** I/O-panel for 2GF-2HF-2SF100/110 with two fiber transmitters on SC

### Fiber inputs:

- **BPH17R\_FC/PC\_2GFxxx:** I/O-panel for 2GF-2HF-2SF100/110 with two fiber receivers on FC/PC
- **BPH17R\_SC\_2GFxxx:** I/O-panel for 2GF-2HF-2SF100/110 with two fiber receivers on SC

For other fiber options contact AXON

\* Upgradeable to 3Gb/s

\*\* Upgradeable to HD or HD + 3Gb/s

## Specifications

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### Serial video input

<b>Standard</b>	3Gb/s, HD and SD SDI:, SMPTE424, SMPTE 292M, SMPTE 259M
<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

### Serial video output

<b>Number of outputs</b>	4
<b>Connector</b>	BNC
<b>Signal level</b>	800mV nominal
<b>DC offset</b>	0V $\pm$ 0.5V
<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

<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

<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

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