



# Synapse

GSU010

HSU010

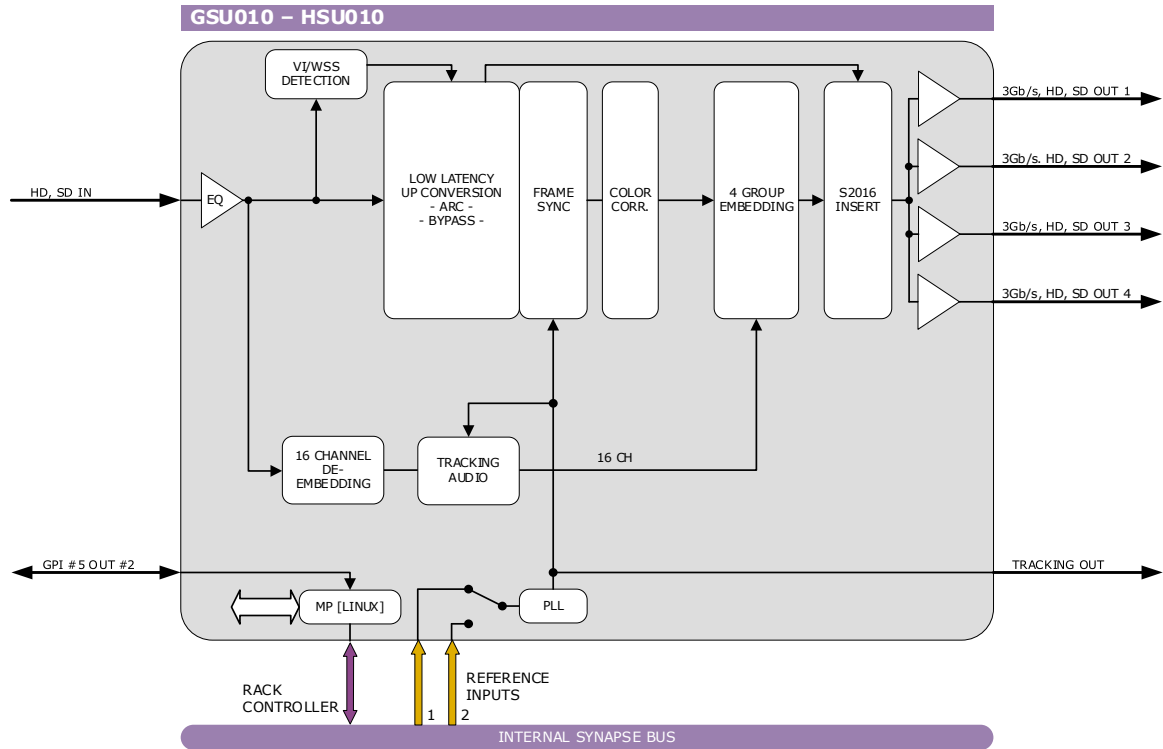
**3Gb/s, HD, SD basic up converter/synchronizer**

A Synapse® product

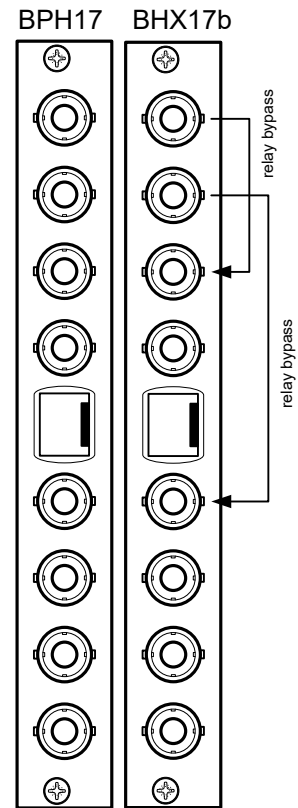


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## Block schematic & I/O panel



- HD, SD INPUT 1
- 3Gb/s, HD OUTPUT 1
- 3Gb/s, HD OUTPUT 2
- GPI INPUT/OUTPUT, TRACKING OUT
- 3Gb/s, HD OUTPUT 3
- 3Gb/s, HD OUTPUT 4



## Features

The GSU010 and HSU010 are *low latency* up-converters with 16 channel audio transparency.

The GSU010 is compatible with 270Mb/s, 1.5Gb/s and 3Gb/s for full 1080p/50 or 1080p/59.94 use. The HSU010 are compatible with SD-SDI (270Mb/s) and HD-SDI (1.5Gb/s) and can be future upgraded to 3Gb/s compatibility

- 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)	▪ 720p/59.94
▪ 1080p/50 (2GU only)	▪ 720p/50
▪ 1080i/59.94	▪ 720p/23.98
▪ 1080i/50	▪ SD525
▪ 1080p/23.98	▪ SD625
▪ 1080psf/23.98	
- Frame sync with output phase control in Lines and pixels with respect to reference.
- ARC modes contain:
 

▪ Anamorphic	▪ LBox-14:9
▪ Center Cut	▪ PBox-4:3
▪ V-Zoom	▪ PBox-14:9
▪ LBox-16:9	▪ Variable H and V (50—200%)
- 16 Free individual programmable presets banks for:
  - Up 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)
- Color corrector (RGB and total gain, RGB and total black)
- Transparent for 16 channels of embedded audio
- Video proc-amp (Y and C control)
- Hue control for NTSC inputs
- Locks to Tri-level, Bi-level or SDI input
- WST to OP47 cross conversion
- Timecode cross conversion
- Auxiliary timecode input, allowing for 2 separate timecodes
- CC-608 to CC-708 conversion
- 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)

## Applications

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

## Conversion abilities

The G-HSU010 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										
	1080p23.97		x									
	1080p50*			x								
	1080p59.94*				x							
	1080i59.94					x						
	1080i50						x					
	720p59.94							x				
	720p50								x			
	720p23.98									x		
	480i59.94(525)	x	x			x		x		x	x	
	576i50(625)			x			x		x			x

\* = GSU models only

## Ordering information

### Module:

- **GSU010:** 3Gb/s, HD, SD-SDI up converter
- **HSU010:** HD, SD-SDI up converter\*

### Standard I/O:

- **BPH17\_GSU010:** I/O-panel for G-HSU010

### Relay bypass I/O:

- **BHX17b\_GSU010:** I/O-panel for G-HSU010 with relay bypass

## Specifications

### Serial Video Input

<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

### 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