Synapse

GDB990-950-900-550-500
HDB990-950-900-550-500

3Gb/s, HD, SD digital or analog audio de-embedder with dual channel function

A Synapse® product

Quad speed MASTER

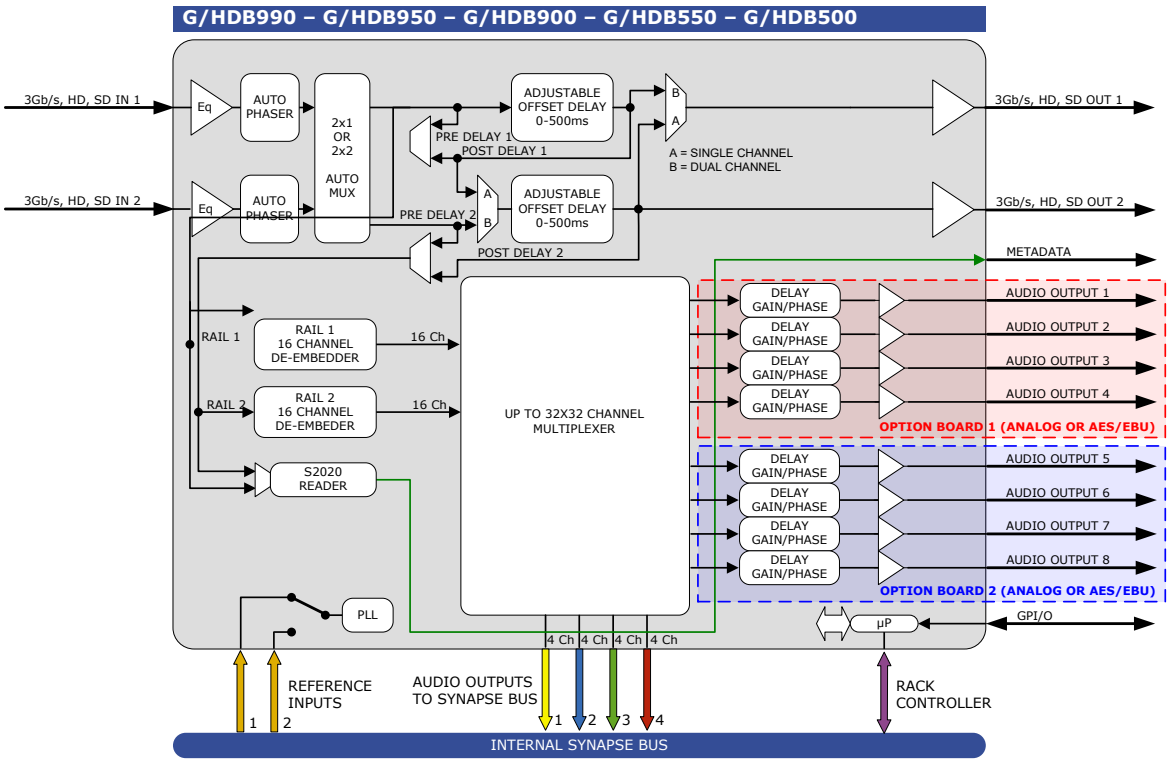
3 TRIPLE RATE Gb/s, HD, SD

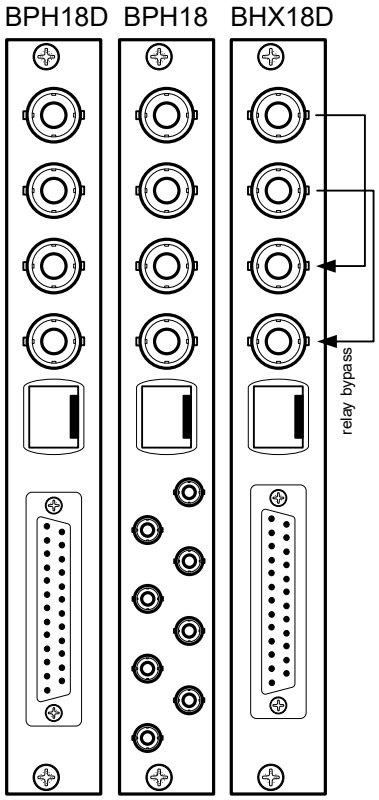
Powered by LINUX

TWINS

Embedded Metadata S2020

Block schematic & I/O panel





3Gb/s, HD, SD SDI INPUT 1	
3Gb/s, HD, SD SDI INPUT 2	
3Gb/s, HD, SD SDI OUT 1	
3Gb/s, HD, SD SDI OUT 2	
GPI INPUT/OUTPUT	
AES/EBU OR ANALOG AUDIO OUTPUTS	

Features

The GDB990-950-900-550-500 is a 3GB/s, HD SDI and SD SDI audio de-embedder. It is capable of extracting AES/EBU digital audio channels or analog audio channels. The card has 2 option output boards: 4 mono analog audio outputs (4ch total) per board, or 4 stereo AES/EBU outputs (8ch total) per board.

The core consists of four de-embedder-blocks DeEmb_A, DeEmb_B, DeEmb_C and DeEmb_D. In front of these de-embedders are SDI channel selection muxes which allow for individual de-embedding out of the two SDI inputs. The delay blocks can be used in series for a single SDI 4 group de-embedder with up to 1 sec of video offset delay, or in parallel for 2 individual channels with each 2 group de-embedders and individual 500ms offset delay in a fully separate channel TWINS function. Each block is capable of de-embedding 4 audio selectable out of 16 channels from each input. The TWINS mode is a single command operation and controls 2 individual selection switches as can be seen in the block diagram.

In addition, four ADD-ON cards can be connected to create a routing matrix. The architecture of DeEmb_A to DeEmb_D blocks is identical. The local AES/EBU or analog outputs can be controlled to adjust Phase, Gain and delay (on the fly). Future upgrades are possible, like for instance the HDB900 can be future upgraded to HDB990, GDB900 or GDB990. This allows for staged implementation of HD infrastructures and spread the cost over multiple budget years.

- Dual (TWINS*) or single channel SDI mode
- Up to 8 AES/EBU outputs (available with 110 Ohm and 75 Ohm connectors)
- Up to 8 analog audio outputs (available with balanced or unbalanced connectors)
- 2 SDI inputs (with auto switch on carrier loss and switch back function)
- 8 extra AES/EBU inputs through the Synapse bus
- 2 SDI + embedded audio outputs
- Pre and post delay de-embedding
- 8 presets that configure all 16 output channels at once. controlled by GPI or ACP (Cortex)
- Audio level and phase control
- Audio offset delay up to 5000 ms
- Video offset delay up to one second (or 2x 500ms)
- 16 extra audio channels (4 groups) with ADD-ON card for additional audio outputs
- Peak detection 0 dBFS
- Silence detection with threshold (-100 to -20dBFS) and time control (1 to 255 sec)
- Transparent for ATC time code RP188, RP196, RP215
- Locks to Tri-level, Bi-level syncs and SDI input
- Full control and status monitoring through the front panel of the SFR04/SFR08/SFR18 frame and the Ethernet port (ACP)
- Optional relay bypass (BHX18 or BHX18D)

Complementary cards

- DAC20, ADL24, DAS24, DIO48,

* *In dual mode, or 2-SDI shuffle mode, the input signals need to be of the same SDI format*

Output options

This platform has 2 option boards which define the outputs of the card. Refer to the block schematic for the position of the option boards. These are the options:

Card model	Option board 1	Option board 2
GDB990	4 AES/EBU outputs (8 channels)	4 AES/EBU outputs (8 channels)
HDB990	4 AES/EBU outputs (8 channels)	4 AES/EBU outputs (8 channels)
GDB950	4 AES/EBU outputs (8 channels)	4 analog outputs (4 channels)
HDB950	4 AES/EBU outputs (8 channels)	4 analog outputs (4 channels)
GDB900	4 AES/EBU outputs (8 channels)	None
HDB900	4 AES/EBU outputs (8 channels)	None
GDB550	4 analog outputs (4 channels)	4 analog outputs (4 channels)
HDB550	4 analog outputs (4 channels)	4 analog outputs (4 channels)
GDB500	4 analog outputs (4 channels)	None
HDB500	4 analog outputs (4 channels)	None

Applications

- 3Gb/s, HD and SD audio de-embedding
- Preset based audio de-embedding
- High density studio de-embedding functions where minimal space is required (36 3Gb/s SDI de-embedders in 4RU)
- On the fly audio routing from two individual SD, HD and 3Gb/s SDI video streams.
- Fiber I/O embedding with an optical and electrical switchable input and a simultaneous powered optical and electrical SDI output.

Ordering information

Module:

- **GDB500:** 3Gb/s, HD, SD 4 channel analog audio dual SDI de-embedder with TWINS dual channel function
- **GDB550:** 3Gb/s, HD, SD 8 channel analog audio dual SDI de-embedder with TWINS dual channel function
- **GDB900:** 3Gb/s, HD, SD 8 channel digital audio dual SDI de-embedder with TWINS dual channel function
- **GDB950:** 3Gb/s, HD, SD 8 channel digital audio and 4 channel analog audio dual SDI de-embedder with TWINS dual channel function
- **GDB990:** 3Gb/s, HD, SD 16 channel digital dual SDI audio de-embedder with TWINS dual channel function
- **HDB500:** HD, SD 4 channel analog audio dual SDI de-embedder with TWINS dual channel function
- **HDB550:** HD, SD 8 channel analog audio dual SDI de-embedder with TWINS dual channel function
- **HDB900:** HD, SD 8 channel digital audio dual SDI de-embedder wth TWINS dual channel function
- **HDB950:** HD, SD 8 channel digital audio and 4 channel analog audio dual SDI de-embedder with TWINS dual channel function
- **HDB990:** HD, SD 16 channel digital dual SDI audio de-embedder with TWINS dual channel function

Standard I/O:

- **BPH18_GDBxxx:** I/O panel for GDBxxx/HDBxxx with unbalanced audio outputs
- **BPH18D_GDBxxx:** I/O panel for GDBxxx/HDBxxx with balanced audio outputs

Relay bypass I/O:

- **BHX18D_GDBxxx:** relay I/O panel for GDBxxx/HDBxxx with balanced audio outputs

Specifications

Serial Video Input

Standard	SD,HD and 3Gb/s SDI: SMPTE 292M, SMPTE 259M, SMPTE424
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	2
Connector	BNC
Signal Level	900mV 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

AES/EBU Output

Connector	25 pins female sub-D (balanced) or DIN1.0/2.3 coax (unbalanced)
Standard	AES-1992 for balanced synchronous or asynchronous PCM/AES, SMPTE 276M for single ended synchronous or asynchronous PCM/AES
Number of outputs	4 or 8
Sampling Rate	48 kHz Synchronous
Resolution	24 bits
Minimum Input/Output Delay	2 ms
Impedance	110 Ohms or 75 Ohms
Level	1V nom for Coax, 2V for balanced operation

Analog Audio Output

Connector	25 pins female sub-D (balanced) or DIN1.0/2.3 coax (unbalanced)
Number of outputs	4 or 8
D/A Resolution	24 bits
Minimum Input/Output Delay	2 ms
Impedance	100 Ohms balanced and unbalanced
Level	Up to +24dBu for 0dBFS embedding, switchable to +18, +15 and +12dBu

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 (HxLxD)

Electrical

Voltage	+24V to +30V
Power	<15 Watts