



Synapse

GEB880-840-800-440-400

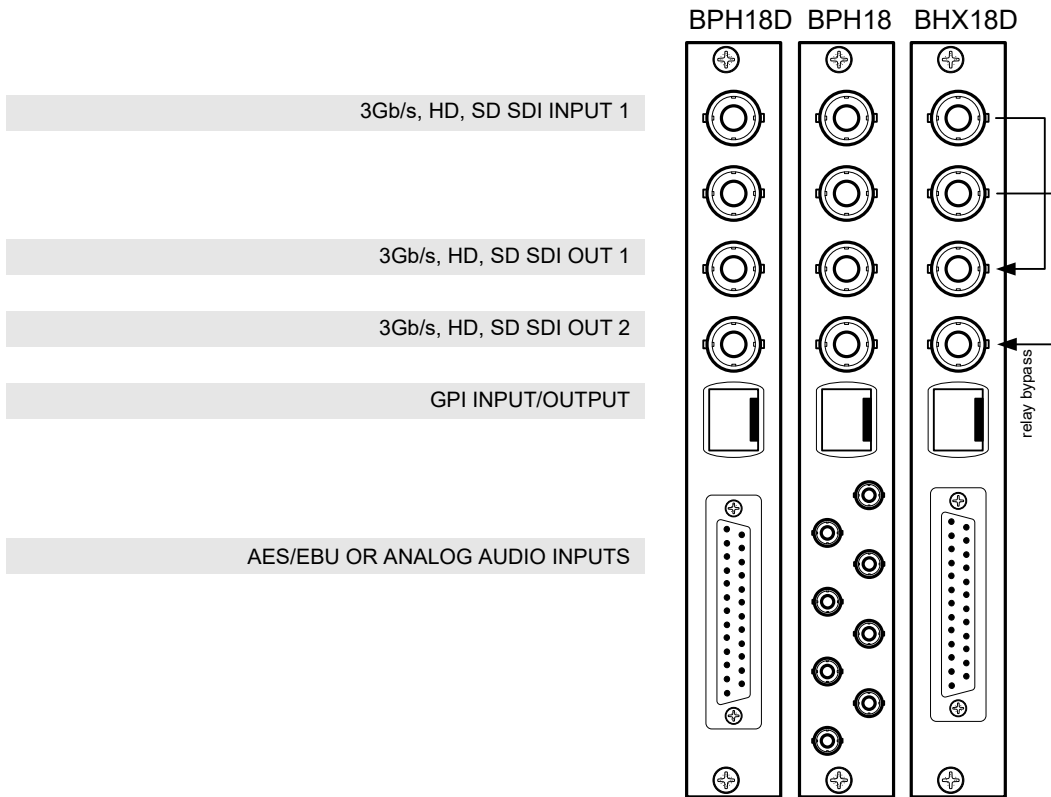
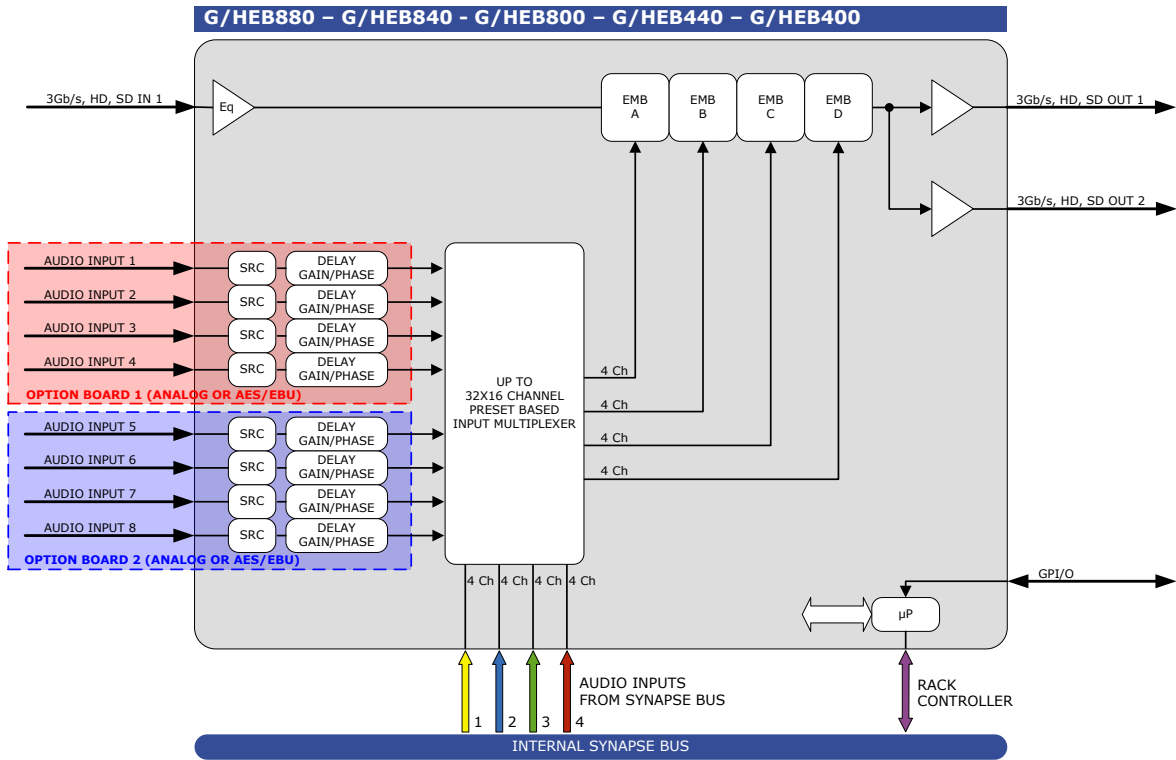
HEB880-840-800-440-400

3Gb/s, HD, SD basic audio embedder
A Synapse® product



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Block schematic & I/O panel



Features

The G-HEB880-840-800-440-400 is a 3GB/s, HD SDI and SD SDI audio embedder. It is capable of inserting or appending up free-running AES/EBU digital audio channels or analog audio channels. The card has 2 option input boards: 4 mono analog audio inputs (4ch total) per board, or 4 stereo AES/EBU inputs (8ch total) per board.

In addition, four ADD-ON cards can be connected to create a routing matrix. The architecture of Emb_A to Emb_D blocks is identical. The local AES inputs can be controlled to adjust Phase, Gain and delay (on the fly).

Future upgrades are possible, like for instance the HEB400 can be future upgraded to HEB880, GEB800 or GEB840, etc. This allows for staged implementation of HD infrastructures and spread the cost over multiple budget years.

- Compatible with the following input formats (auto selecting) (1080p only for GEB):
 - 1080p/59.94
 - 1080p/50
 - 1080i/59.94
 - 1080i/50
 - 1080p/30
 - 1080p/25
 - 1080p(sf)/23.98
 - 1035i/59.94
 - 720p/59.94
 - 720p50
 - 720p30
 - 720p25
 - 720p24
 - SD525
 - SD625
- Up to 8 AES/EBU inputs with sample rate converter (available with 110 Ohm and 75 Ohm inputs)
- Up to 8 analog audio inputs (available with balanced or unbalanced connectors)
- 8 extra AES/EBU inputs through the Synapse bus
- 2 SDI + embedded audio outputs
- 8 presets that configure all 16 input channels at once. controlled by GPI or ACP (Cortex)
- Audio level and phase control
- Audio offset delay up to 5000 ms
- AES/EBU inputs accept synchronous streams like Dolby E and asynchronous up to 96kHz sampling via the built in Sample Rate Converters.
- 16 extra audio channels (4 groups) with ADD-ON card for input multiplexing
- 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 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:

- ADC20, ADC24, DIO24, DIO48

Applications

- 3Gb/s, HD and SD audio embedding
- Up to 16 channel Preset based audio embedding

Input options

This platform has 2 option boards which define the inputs 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
GEB880	4 AES/EBU inputs (8 channels)	4 AES/EBU inputs (8 channels)
HEB880	4 AES/EBU inputs (8 channels)	4 AES/EBU inputs (8 channels)
GEB840	4 AES/EBU inputs (8 channels)	4 analog inputs (4 channels)
HEB840	4 AES/EBU inputs (8 channels)	4 analog inputs (4 channels)
GEB800	4 AES/EBU inputs (8 channels)	None
HEB900	4 AES/EBU inputs (8 channels)	None
GEB440	4 analog inputs (4 channels)	4 analog inputs (4 channels)
HEB440	4 analog inputs (4 channels)	4 analog inputs (4 channels)
GEB400	4 analog inputs (4 channels)	None
HEB400	4 analog inputs (4 channels)	None

Ordering information

Module:

- **GEB400:** 3Gb/s, HD, SD 4 channel analog audio dual SDI embedder
- **GEB440:** 3Gb/s, HD, SD 8 channel analog audio dual SDI embedder
- **GEB800:** 3Gb/s, HD, SD 8 channel digital audio dual SDI embedder
- **GEB840:** 3Gb/s, HD, SD 8 channel digital audio and 4 channel analog audio dual SDI embedder
- **GEB880:** 3Gb/s, HD, SD 16 channel digital dual SDI audio embedder
- **HEB400:** HD, SD 4 channel analog audio dual SDI embedder
- **HEB440:** HD, SD 8 channel analog audio dual SDI embedder
- **HEB800:** HD, SD 8 channel digital audio dual SDI embedder
- **HEB840:** HD, SD 8 channel digital audio and 4 channel analog audio dual SDI embedder
- **HEB880:** HD, SD 16 channel digital audio dual SDI embedder

Standard I/O:

- **BPH18_GEBxxx:** I/O panel for GEBxxx/HEBxxx with unbalanced audio inputs
- **BPH18D_GEBxxx:** I/O panel for GEBxxx/HEBxxx with balanced audio inputs

Relay bypass I/O:

- **BHX18D_GEBxxx:** relay I/O panel for GEBxxx/HEBxxx with balanced audio inputs

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	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

AES/EBU Input

Connector Standard	25 pins female sub-D (balanced) or DIN1.0/2.3 coax (unbalanced) AES-1992 for balanced synchronous or asynchronous PCM/AES, SMPTE 276M for single ended synchronous or asynchronous PCM/AES
Number of Inputs	4 or 8
Sampling Rate	32 kHz to 96 kHz asynchronous 48 kHz Synchronous (SRC=off)
Resolution	24 bits
Minimum Input/Output Delay	2 ms
Impedance Level	110 Ohms or 75 Ohms 0.2V to 1V nom for Coax, 2V to 7V for balanced operation

Analog Audio Input

Connector Standard	25 pins female sub-D (balanced) or DIN1.0/2.3 coax (unbalanced) High impedance 24 bit A/D converter
Number of Inputs	4 or 8
Resolution	24 bits
Minimum Input/Output Delay	2 ms
Impedance Level	10 kOhm 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