



# Synapse

GDB880-840-800-440-400

HDB880-840-800-440-400

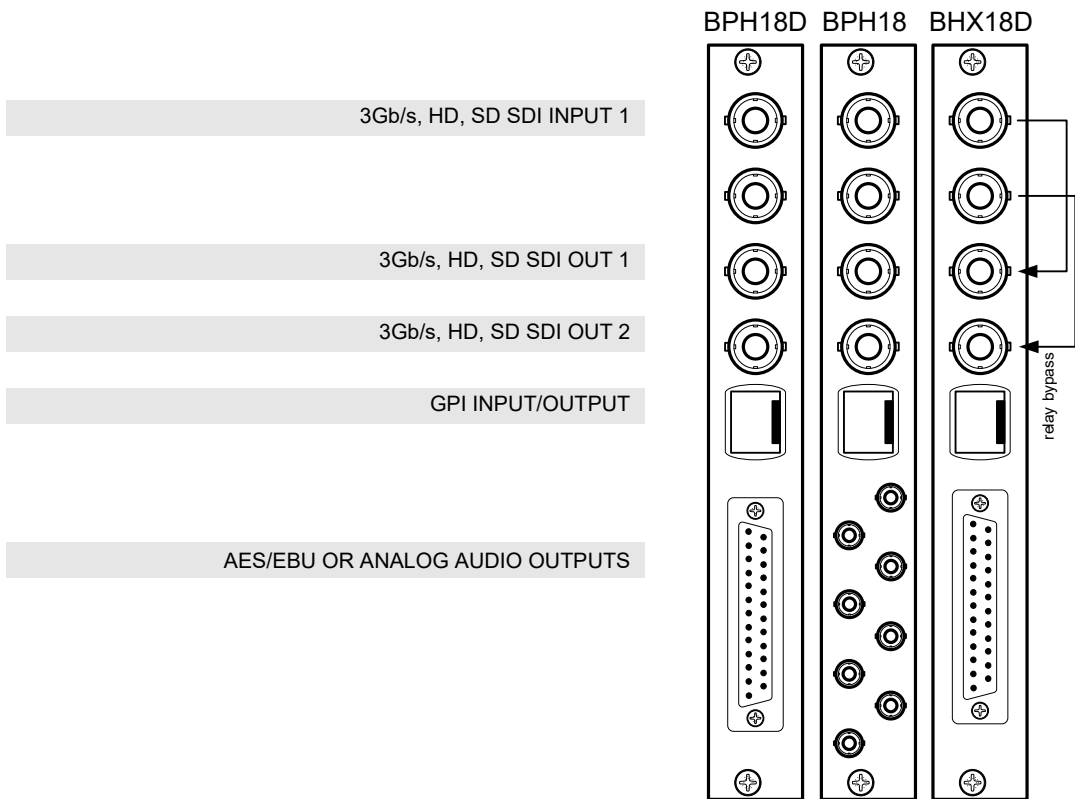
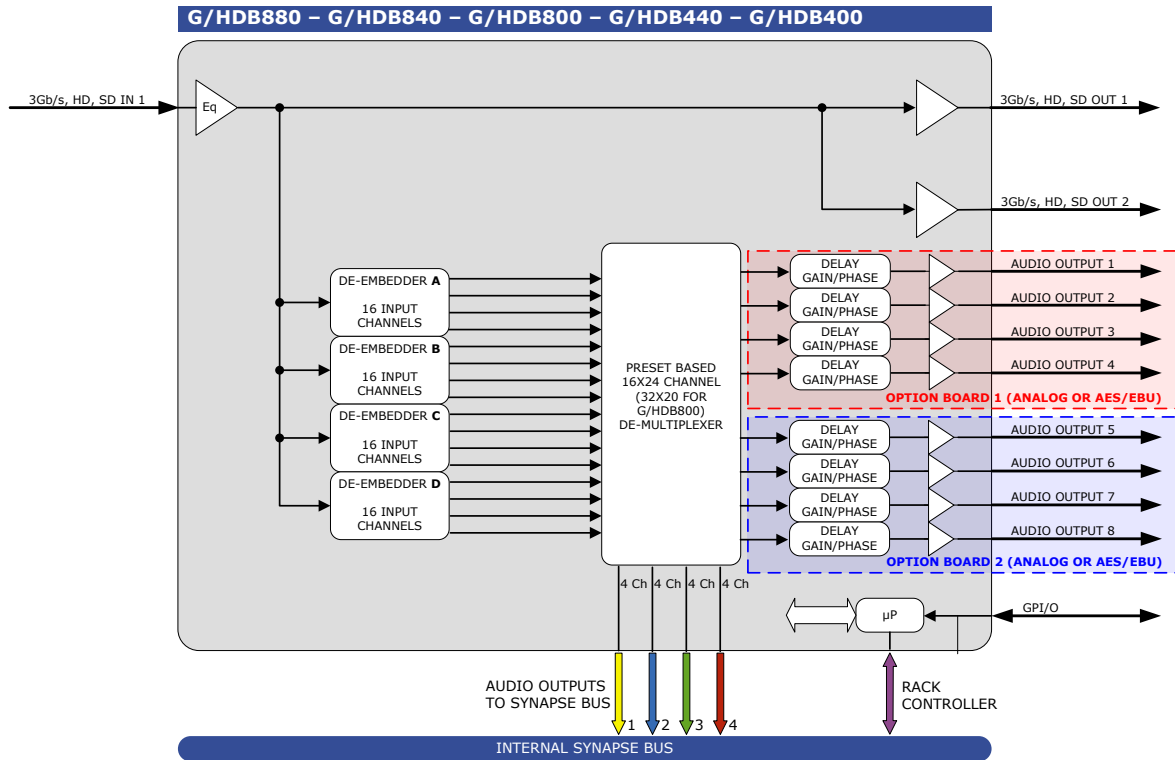
3Gb/s, HD, SD basic digital or analog audio de-embedder

A Synapse® product



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Block schematic & I/O panel



## Features

The GDB880-840-800-440-400 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.

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 HDB400 can be future upgraded to HDB880, GDB800 or GDB880, etc. This allows for staged implementation of HD infrastructures and spread the cost over multiple budget years.

- 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 + embedded audio outputs
- 8 extra AES/EBU inputs through the Synapse bus
- 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
- 16 extra audio channels (4 groups) with ADD-ON card for additional audio outputs
- Peak detection 0dBFS
- 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:

- DAC20, ADL24, DAS24, DIO48,

## Applications

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

## 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                 |
|------------|--------------------------------|--------------------------------|
| GDB880     | 4 AES/EBU outputs (8 channels) | 4 AES/EBU outputs (8 channels) |
| HDB880     | 4 AES/EBU outputs (8 channels) | 4 AES/EBU outputs (8 channels) |
| GDB840     | 4 AES/EBU outputs (8 channels) | 4 analog outputs (4 channels)  |
| HDB840     | 4 AES/EBU outputs (8 channels) | 4 analog outputs (4 channels)  |
| GDB800     | 4 AES/EBU outputs (8 channels) | None                           |
| HDB800     | 4 AES/EBU outputs (8 channels) | None                           |
| GDB440     | 4 analog outputs (4 channels)  | 4 analog outputs (4 channels)  |
| HDB440     | 4 analog outputs (4 channels)  | 4 analog outputs (4 channels)  |
| GDB400     | 4 analog outputs (4 channels)  | None                           |
| HDB400     | 4 analog outputs (4 channels)  | None                           |

## Ordering information

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**Module:**

- **GDB400:** 3Gb/s, HD, SD 4 channel analog audio dual SDI de-embedder
- **GDB440:** 3Gb/s, HD, SD 8 channel analog audio dual SDI de-embedder
- **GDB800:** 3Gb/s, HD, SD 8 channel digital audio dual SDI de-embedder
- **GDB840:** 3Gb/s, HD, SD 8 channel digital audio and 4 channel analog audio dual SDI de-embedder
- **GDB880:** 3Gb/s, HD, SD 16 channel digital dual SDI audio de-embedder
- **HDB400:** HD, SD 4 channel analog audio dual SDI de-embedder
- **HDB440:** HD, SD 8 channel analog audio dual SDI de-embedder
- **HDB800:** HD, SD 8 channel digital audio dual SDI de-embedder
- **HDB840:** HD, SD 8 channel digital audio and 4 channel analog audio dual SDI de-embedder
- **HDB880:** HD, SD 16 channel digital audio dual SDI de-embedder

**Standard I/O:**

- **BPH18\_xDBxxx:** I/O panel for GDBxxx/HDBxxx with unbalanced audio outputs
- **BPH18D\_xDBxxx:** I/O panel for GDBxxx/HDBxxx with balanced audio outputs

**Relay bypass I/O:**

- **BHX18D\_xDBxxx:** relay I/O panel for GDBxxx/HDBxxx with balanced audio outputs

## 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> | 2  |
| <b>Connector</b>         | BNC  |
| <b>Signal Level</b>      | 900mV 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.)<br>> 10dB up to 3GHz (typ.) |
| <b>Wideband Jitter</b>   | < 0.2UI  |

### AES/EBU Output

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

### Analog Audio Output

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

### 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<br>600 mVp-p nominal, 75 Ohms terminated through loop                                     |
| <b>Bi-level</b>         | PAL Black Burst ITU624-4/SMPTE318, Composite NTSC SMPTE 170M<br>1Vp-p nominal, 75 Ohms terminated through loop |

### Miscellaneous

|                              |                           |
|------------------------------|---------------------------|
| <b>Weight</b>                | Approx. 250g              |
| <b>Operating Temperature</b> | 0 °C to +50 °C            |
| <b>Dimensions</b>            | 137 x 296 x 20 mm (HxLxD) |

### Electrical

|                |              |
|----------------|--------------|
| <b>Voltage</b> | +24V to +30V |
| <b>Power</b>   | <15 Watts    |