



GRF-HRF050-090-500-590-900-950-990

**3Gb/s, HD, SD analog or digital audio
re-embedder with audio shuffler and framesync**

A Synapse ® product

Synapse

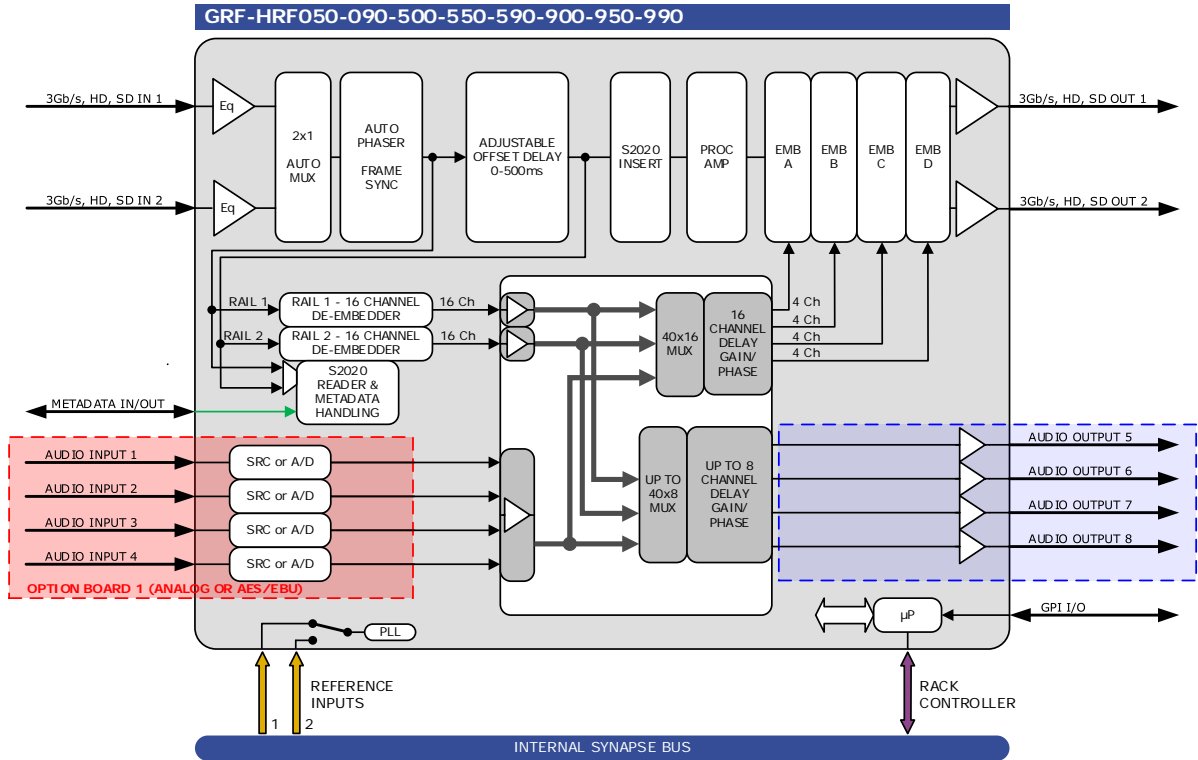


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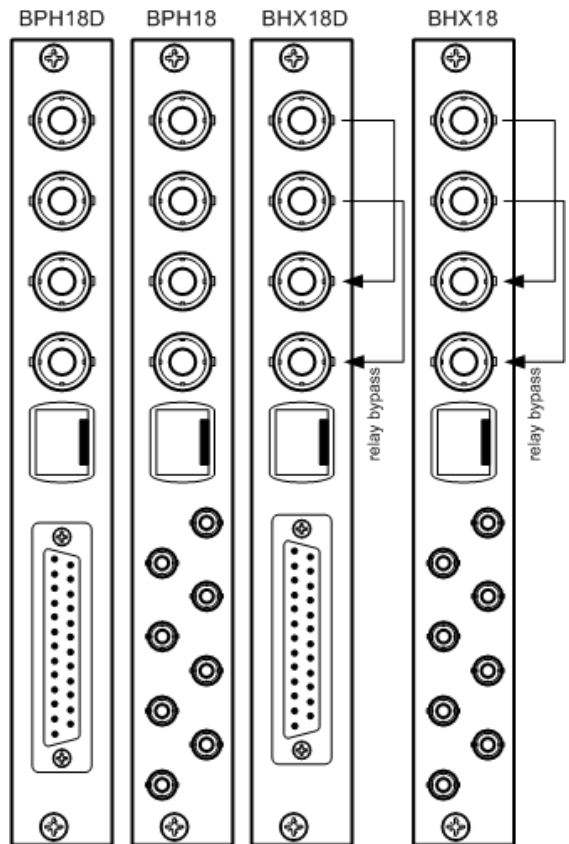
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Block schematic & I/O panel



- 3Gb/s, HD, SD SDI INPUT 1 (OPTIONAL FIBER INPUT)
- 3Gb/s, HD, SD SDI INPUT 2 (OPTIONAL FIBER INPUT)
- 3Gb/s, HD, SD SDI OUT 1 (OPTIONAL FIBER OUTPUT)
- 3Gb/s, HD, SD SDI OUT 2 (OPTIONAL FIBER OUTPUT)
- GPI AND METADATA (S2020) OUTPUT
- ANALOG OR DIGITAL AUDIO INPUTS AND/OR OUTPUTS



Features

The GRFxxx and HRFxxx are re-embedders with analog or digital audio in-outputs and a built-in framesync. Re-embedding of available embedded sources is also included (shuffling)

The HRFxxx can be future upgraded to GRFxxx. This allows for staged implementation of HD infrastructures and spread the cost over multiple budget years.

- 2 SDI inputs (with auto switch on carrier loss, and switch back function)
- 2 SDI outputs
- Compatible with the following input formats (auto selecting) (1080p only for GXX):
 - 1080p/59.94
 - 1080p/50
 - 1080i/59.94
 - 1080i/50
 - 1080p/30
 - 1080p25
 - 1080p(sf)/23.98
 - 1035i/59.94
 - 720p/59.94
 - 720p50
 - SD525
 - SD625
- Offset VIDEO delay adjustable between 0 and 050ms
- 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.
 - 30 Frames delay offset (per channel)
 - 1080i60
 - 1080i50
 - 1080p30
 - 1080p25
 - 1080p24
 - 1080p60
 - 1080p50
 - 60 Frames delay offset (per channel)
 - 720p60
 - 720p50
 - 720p30
 - 125 Frames delay offset (per channel)
 - SD525
 - SD625
- 4 Analog audio or Digital audio in and/or outputs that can be used with balanced and unbalanced systems via the BPH18D and BPH18 respectively (unbalanced outputs have a -6dB gain mismatch).
- 7 presets that configure all I/O channels. controlled by GPI or ACP (Cortex)
- S2020 metadata insertion/extraction from an external source
- Append and overwrite modes
- Audio level and phase control
- Audio offset delay up to 0500 ms
- Peak detection 0 dBFS
- Silence detection with threshold (-100 to -20dBFS) and time control (1 to 255 sec)
- Video Proc-Amp with Y, Cr, Cb controls for level and black
- Transparent for ATC time code RP188, RP196, RP215
- Locks to Tri-level, Bi-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)
- Optional 1 or 2 fiber inputs, 1 or 2 fiber outputs or a fiber in and output (replacing 1 SDI in and output) on the I/O panel
- Optional relay bypass (BHX18 or BHX18D)

Applications

- Ingest de-embedding to analog or digital audio with shuffle function from asynchronous video sources

Ordering information

Module:

- **HRF050:** HD, SD digital audio re-embedder/shuffler/Framesync with 4 analog audio outputs
- **GRF090:** 3Gb/s, HD, SD digital audio re-embedder/shuffler/Framesync with 4 digital audio outputs
- **GRF500:** 3Gb/s, HD, SD digital audio re-embedder/shuffler/Framesync with 4 analog audio inputs
- **HRF500:** HD, SD digital audio re-embedder/shuffler/Framesync with 4 analog audio inputs
- **GRF900:** 3Gb/s, HD, SD digital audio re-embedder/shuffler/Framesync with 4 digital audio inputs
- **HRF900:** HD, SD digital audio re-embedder/shuffler/Framesync with 4 digital audio inputs
- **GRF050:** 3Gb/s, HD, SD digital audio re-embedder/shuffler/Framesync with 4 analog audio outputs
- **HRF090:** HD, SD digital audio re-embedder/shuffler/Framesync with 4 digital audio outputs
- **GRF550:** 3Gb/s, HD, SD digital audio re-embedder/shuffler/Framesync with 4 analog audio inputs and 4 analog audio outputs
- **HRF550:** HD, SD digital audio re-embedder/shuffler/Framesync with 4 analog audio inputs and 4 analog audio outputs
- **GRF990:** 3Gb/s, HD, SD digital audio re-embedder/shuffler/Framesync with 4 digital audio inputs and 4 digital audio outputs
- **HRF990:** HD, SD digital audio re-embedder/shuffler/Framesync with 4 digital audio inputs and 4 digital audio outputs
- **GRF590:** 3Gb/s, HD, SD digital audio re-embedder/shuffler/Framesync with 4 analog audio inputs and 4 digital audio outputs
- **HRF590:** HD, SD digital audio re-embedder/shuffler/Framesync with 4 analog audio inputs and 4 digital audio outputs
- **GRF950:** 3Gb/s, HD, SD digital audio re-embedder/shuffler/Framesync with 4 digital audio inputs and 4 analog audio outputs
- **HRF950:** HD, SD digital audio re-embedder/shuffler/Framesync with 4 digital audio inputs and 4 analog audio outputs

Standard I/O:

- **BPH18_GRFxxx:** I/O panel for GRFxxx with unbalanced audio in and outputs
- **BPH18D_GRFxxx:** I/O panel for GRFxxx with balanced audio in and outputs

Relay bypass I/O:

- **BHX18_GRFxxx:** relay I/O panel for GRFxxx
- **BHX18D_GRFxxx:** relay I/O panel for GRFxxx

Fiber outputs*:

- **BPH18T_FC/PC_GRFxxx:** I/O panel for GRFxxx with one fiber transmitter
- **BPH18T2_FC/PC_GRFxxx:** I/O panel for GRFxxx with two fiber transmitters
- **BPH18DT_FC/PC_GRFxxx:** I/O panel for GRFxxx with one fiber transmitter
- **BPH18DT2_FC/PC_GRFxxx:** I/O panel for GRFxxx with two fiber transmitters

Fiber inputs*:

- **BPH18R_FC/PC_GRFxxx:** I/O panel for GRFxxx with one fiber receiver
- **BPH18R2_FC/PC_GRFxxx:** I/O panel for GRFxxx with two fiber receiver
- **BPH18DR_FC/PC_GRFxxx:** I/O panel for GRFxxx with one fiber receiver
- **BPH18DR2_FC/PC_GRFxxx:** I/O panel for GRFxxx with two fiber receiver

Fiber inputs and outputs*:

- **BPH18TR_FC/PC_GRFxxx:** I/O panel for GRFxxx with one fiber transmitter and receiver
- **BPH18DTR_FC/PC_GRFxxx:** I/O panel for GRFxxx with one fiber transmitter and receiver

* Ordering information fiber input and/or output modules:

- In case of SC connector: replace FC/PC by SC.

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

Analog Audio output

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