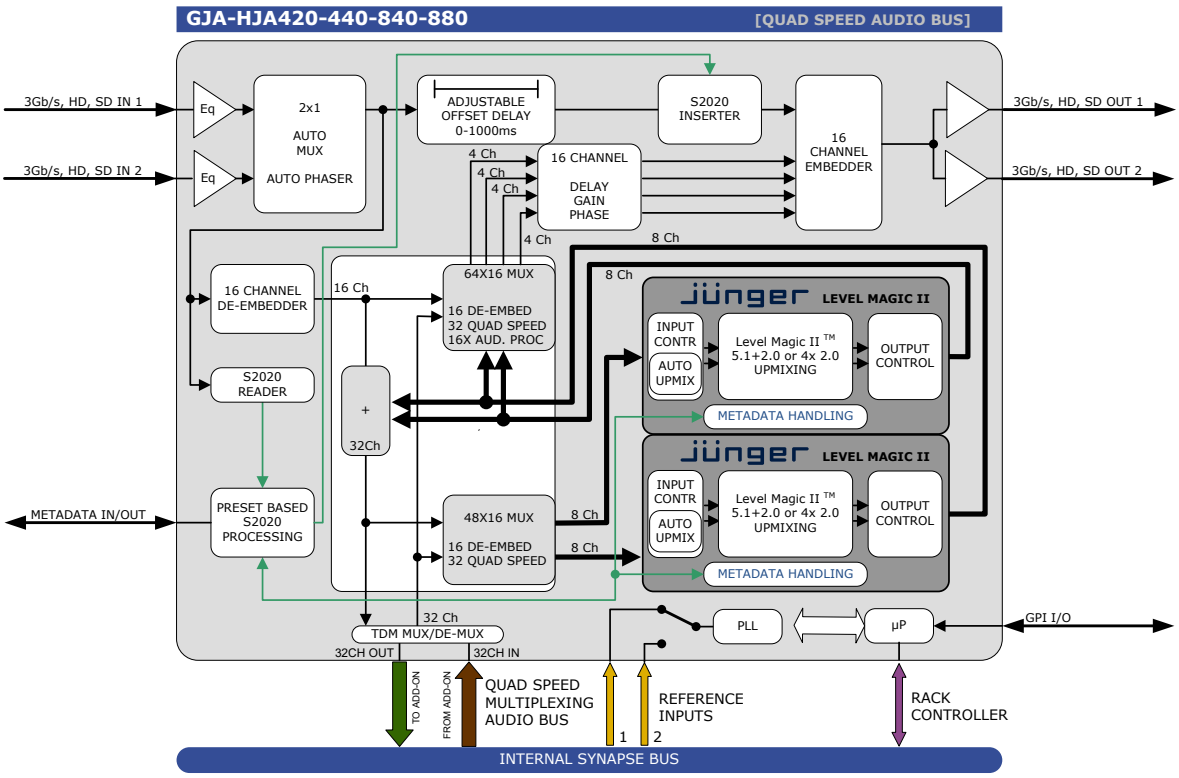
Synapse

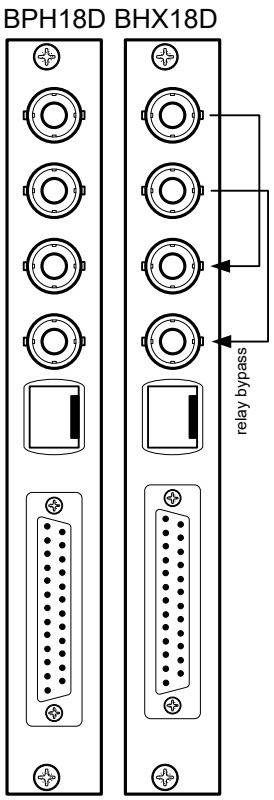
GJA420/440/840/880

3Gb/s, HD, SD embedded domain Loudness controller based on Jünger Audio algorithms

A Synapse® product

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/METADATA INPUT/OUTPUT	
NOT CONNECTED	

Features

The GJA420/440/840/880 are embedded domain dual audio stream hardware processors, designed for broadcasters who need automatic loudness control and optional upmixing.

Based on the popular and well respected LEVEL MAGIC II™ processing these cards can perform a high quality loudness adjustment completely conform the CALM and R128 standards

Users can adjust all the Jünger based settings of the processing and embedded handling directly from the G/JAxx0 GUI in Cortex, with control offered over a variety of different parameters. Output level controls and delay adjustment are also offered for each of the channels in the final 5.1 mix.

The Quad Speed audio bus allows for implementation of additional audio processing. This means that an additional processing card like for instance a DDP24 or DBD28 can be added to perform Dolby processing, without any additional wiring. The ADD-ON card often does not need a connector panel and all audio routing is performed inside the Synapse frame by just placing these cards in adjacent slots.

- GJA420 = 4x 2.0 loudness control for SD, HD and 3Gb/s (G only) embedded I/O
- GJA440 = 5.1 + 2.0 loudness control and auto upmix for SD, HD and 3Gb/s (G only) embedded I/O
- GJA840 = 8x 2.0 loudness control for SD, HD and 3Gb/s (G only) embedded I/O
- GJA880 = 2x 5.1 + 2.0 loudness control and auto upmix for SD, HD and 3Gb/s (G only) embedded I/O
- LEVEL MAGIC II™ loudness management according to: EBU R128, ITU.1770 (all versions), ATSC A/85 and ARIB TR-B32
- Dynamics with compressor and expander
- Surround up mix functionality
- DOLBY® metadata generator
- Loudness logging via Cortex
- Output gain and delay adjustments
- Cross fading between upmixed and discrete 5.1 (5.1/2.0 input auto-sensing)
- 16 channels of audio gain
- 16 channel audio delay up to 5000ms just prior to the embedding stage
- 2 SDI inputs (with auto switch on carrier loss, and switch back function)
- Compatible with the following input formats (auto selecting) (1080p only for GAWxxx):
  - 1080p/59.94
  - 1080p/50
  - 1080i/59.94
  - 1080i/50
  - 1080p/29.97
  - 1080p25
  - 1080psf/23.98
  - 720p/59.94
  - 720p50
  - SD525
  - SD625
- Video offset delay between 0 and 1000ms
- Quad Speed Audio ADD-ON bus for bidirectional audio processing
- 7 presets that configure all 16 input channels at once, controlled by ACP (Cortex)
- Append and overwrite modes
- Silence detection and peak detection (0dBFS)
- Transparent for ATC time code RP188, RP196, RP215
- Locks to Tri-level, Bi-level syncs or input
- Full control and status monitoring through the front panel of the SFR04/SFR08/SFR18 frame and the Ethernet port (ACP)

Complementary cards:

- DBD28, DDP24, DDP84 (plus all Quad Speed audio cards)

Applications

- 3Gb/s, HD and SD embedded domain loudness control
  - Transmission
  - Ingest
- Preset based 16 channel audio shuffling/processing

Ordering information

Module:

- **GJA420-I/O:** 3Gb/s, HD, SD embedded domain 4x 2.0 loudness control
- **HJA420-I/O:** HD, SD embedded domain 4x 2.0 loudness control

- **GJA440-I/O:** 3Gb/s, HD, SD embedded domain 5.1 + 2.0 loudness control and auto upmix
- **HJA440-I/O:** HD, SD embedded domain 5.1 + 2.0 loudness control and auto upmix

- **GJA840-I/O:** 3Gb/s, HD, SD embedded domain 8x 2.0 loudness control
- **HJA840-I/O:** HD, SD embedded domain 8x 2.0 loudness control

- **GJA880-I/O:** 3Gb/s, HD, SD embedded domain 2x 5.1 + 2.0 loudness control and auto upmix
- **HJA880-I/O:** HD, SD embedded domain 2x 5.1 + 2.0 loudness control and auto upmix

Standard I/O:

- **BPH18D-PANEL:** I/O panel for xJAxx0 family

Relay bypass I/O:

- **BHX18D-PANEL:** I/O panel for xJAxx0 family with relay bypass

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 ±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

Reference Input through rack controller

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