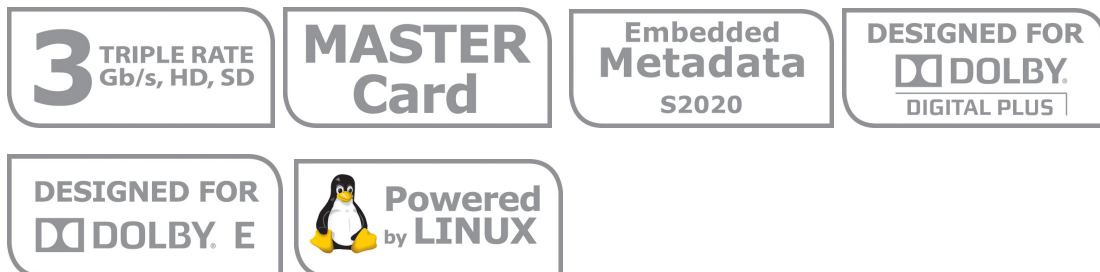# Synapse

GED130
HED130

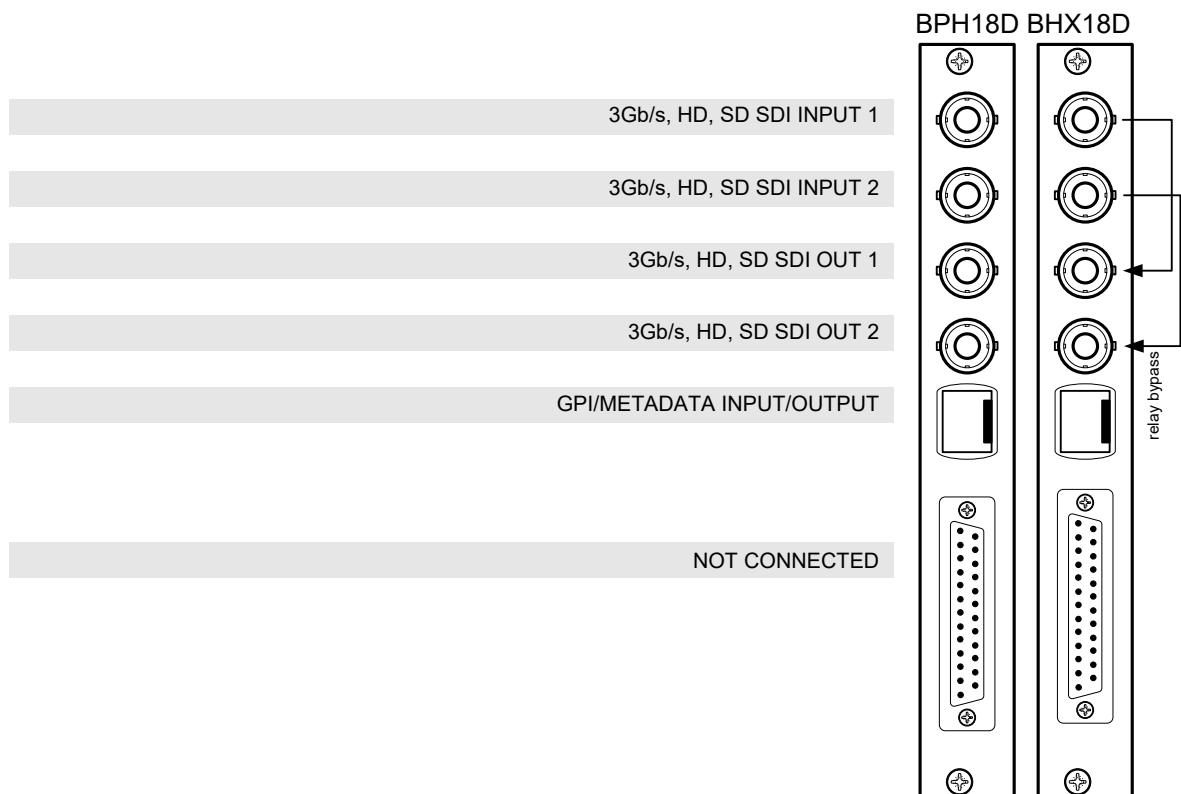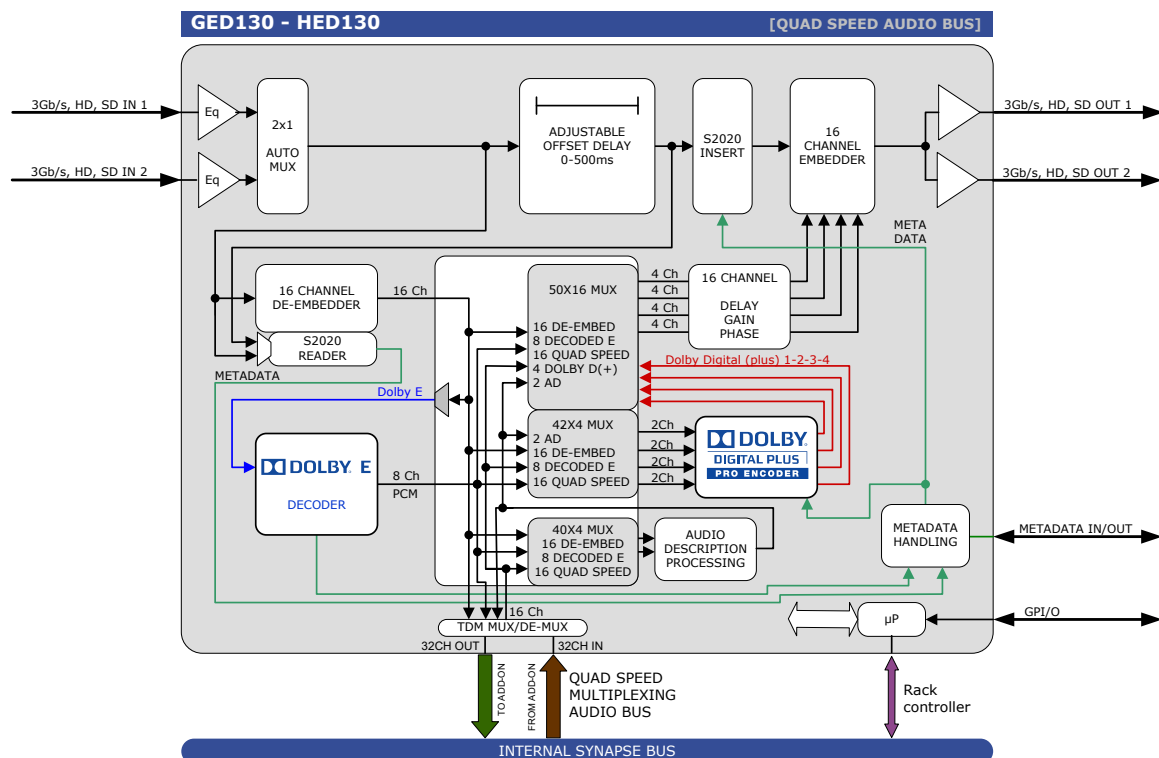**3Gb/s, HD, SD embedded domain Dolby E to Dolby Digital (plus) transcoder with audio shuffler and audio description processor**

A Synapse® product

3 TRIPLE RATE Gb/s, HD, SD

MASTER Card

Embedded **Metadata** S2020

DESIGNED FOR **DOLBY DIGITAL PLUS**

DESIGNED FOR **DOLBY E**

Powered by **LINUX**

Block schematic & I/O panel

Features

The GED130 and HED130 are embedded domain Dolby E to Dolby Digital or Dolby Digital Plus transcoders with fully routable Audio Description processor. This processor uses a stereo track as main program (input 1-2 of the AD processor) and mixes the AD track triggered by the mix enable track (input 3-4 of the AD processor).
The output of the AD processor can be routed to any of the Dolby digital encoder inputs or any of the normal PCM channels of the 16 channel embedder.
Simultaneous encoding of 5.1+2.0 or 4 individual stereo channels (languages) to 4 Dolby Digital (Plus) 2.0 streams is possible.

The new Quad Speed audio bus allows for implementation of 'in between' audio processing. This means that we can stream the decoded Dolby E audio to a Quad Speed Audio ADD-ON card like the DLA44 or DLA42, process this audio and send it back to the G/HED130 for encoding into Dolby Digital or Dolby Digital plus.
The ADD-ON card does not need a connector panel and all audio routing is performed inside the Synapse frame by just placing these cards in adjacent slots.

The HED130 can be future upgraded to GED130. This allows for staged implementation of HD infrastructures and spread the cost over multiple budget years.

- Dolby E decoding (*no Dolby Digital Decoding*)
- Encoding of up to 4 times 2.0 Dolby Digital (Plus) outputs, or 5.1 Dolby Digital (Plus) + 2.0 Dolby Digital (Plus)
- Audio Description processor with free routable I/O
- Dolby Pro Logic II encoding on the 2.0 channel
- Downmix of 5.1 to 2.0
- S2020 metadata handling
- 2 SDI inputs (with auto switch on carrier loss, and switch back function)
- Compatible with the following input formats (auto selecting) (1080p only for GED):
    - 1080p/59.94
    - 1080p/50
    - 1080i/59.94
    - 1080i/50
    - 1080p/30
    - 1080p25
    - 1080p(sf)/23.98
    - 720p/59.94
    - 720p50
    - 720p30
    - 720p25
    - 720p24
    - SD525
    - SD625
- Offset video delay adjustable between 0 and 1000ms
- Quad Speed Audio ADD-ON bus for bidirectional audio processing
- 2 SDI + embedded audio outputs
- 7 presets that configure all 16 input channels at once. controlled by GPI or ACP (Cortex)
- Append and overwrite modes
- Audio level and phase control
- Audio offset delay up to 5000 ms
- 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 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)
- Optional relay bypass (BHX18D)

Caution: The E decoding latency is 4 frames

Complementary cards:

- DIO88 and all other quad speed audio ADD-ON cards

Applications

- 3Gb/s, HD and SD Dolby transcoding in transmission
- Preset based 16 channel audio/bitsream shuffling

Ordering information

Module:
- **GED130:** 3Gb/s, HD, SD embedded domain Dolby E decoder Dolby Digital (plus) encoder re-embedder
- **HED130:** HD, SD embedded domain Dolby E decoder Dolby Digital (plus) encoder re-embedder

Standard I/O:
- **BPH18D_GEDxxx:** I/O panel for GED-HED130 with (future use) balanced AES/EBU inputs

Relay bypass I/O:
- **BHX18D_GEDxxx:** I/O panel for GED130-HED with (future use) balanced AES/EBU inputs 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 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