AXON

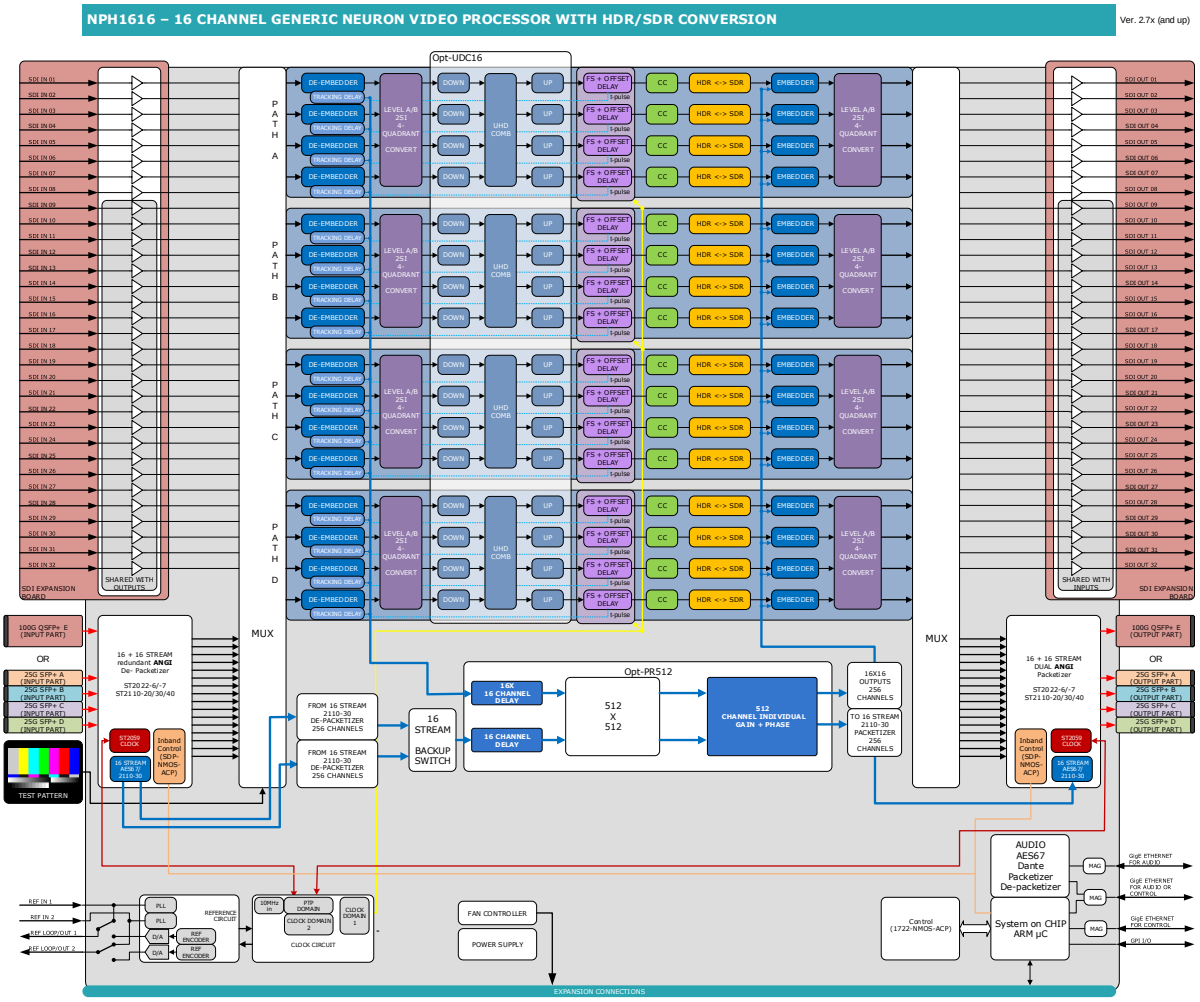
NEURON

NPH1616

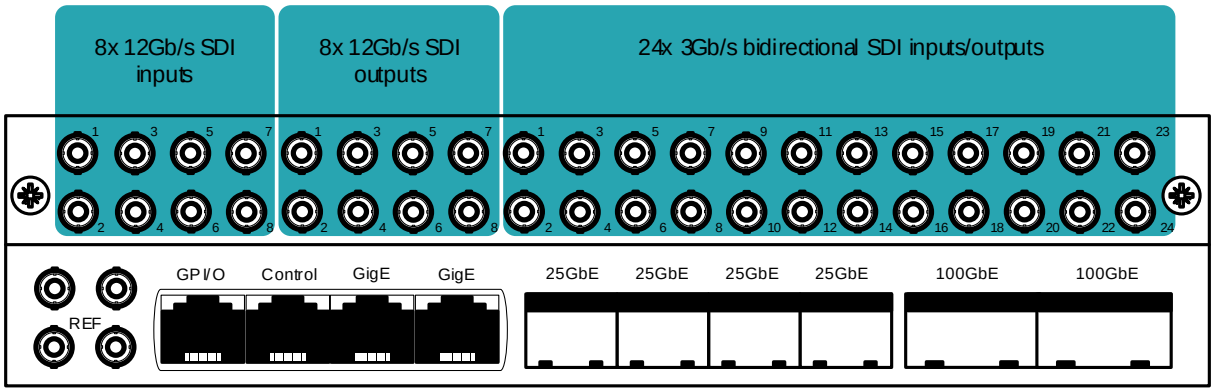
IP gateway, bridge, synchronizer, processor for IP, SDI and hybrid video and audio systems with HDR<>SDR conversion

A Neuron product

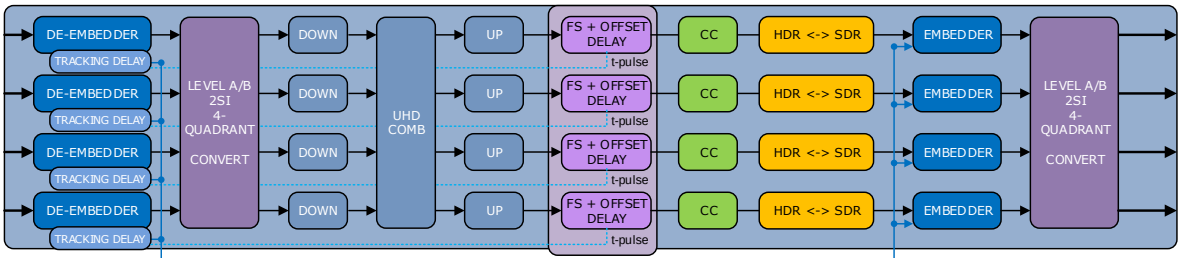
Block schematic



I/O Panel



Processing Paths A - D



The NGH1616 has 16 processing paths, which include audio de-embedding, framesync, up/dn/cr conversion, UHD remapping, Proc Amp, embedding, audio gain/phase/delay and HDR<>SDR conversion functionality.

Features

The NPH1616 is a multi-channel A/V-over-IP transceiver developed for use within low-latency and high-bandwidth Ethernet IP networks. Using the ST2110 and ST2022 encapsulation methods, the NGP1600 is capable of processing up to 16x 3Gb/s signals and transport them over redundant Ethernet links or SDI I/O (optional).

The NPG1600 can be utilized in many different ways. Each video channel is capable of frame-synchronizing, up/down/cross conversion, color correcting, UHD remapping, embedding, de-embedding and audio gain and phase.

In addition the NPH1616 has included HDR<>SDR conversions. It is using a dynamic algorithm. The conversions will be able to convert from and to BT.1886/BT.709, BT.2100-PQ, BT.2100-HLG or Slog3. The solution is particularly useful in situations where the same content must be delivered simultaneously in HDR and SDR format.

- Cost efficiency by integrating IT equipment and speed in a broadcast environment. Lowering cable cost and scalable systems.
- Standards supported: UHD-SDI (single-wire, four-wire, 2Si and SQD), 3G-SDI level A, HD-SDI, ST2022-6 and ST2110-20
- Dynamic SDR to HDR conversion
- HDR and SDR standards supported: BT.1886, BT.709, BT.2100-PQ, BT.2100-HLG, Slog3
- 32 IP video listeners and 32 IP audio listeners
- Up to 16 channels of bridging SDI to/from Ethernet (requires SDI optional board)
- Up to 16 channel frame-sync to local clock on external ref (B&B or ST2059)
- Up to 16 channels of up/down/cross conversion (UHD requires 4 channels)
- UP to 4 channels UHD remapping (SQD from/to 2SI, 4 wire from/to 1 wire)
- Up to 16 times 16 channel audio de-embedding
- Up to 16 times 16 channel audio embedding
- Up to 16 times Proc-amp for RGB and RGB-Black gains
- 512 channels audio gain/phase and offset delay
- 512x512 ch audio matrix (256ch deembedded audio + 256ch ST2110-30 I/O
- Clean switch and fast switch capabilities between all inputs (IP and/or SDI)
- Several configurations of Ethernet links for maximum signal transport using both SFPs, quad 25 GbE Ethernet
- Clean switch between incoming SDI and IP signals
- QSFP+ or SFP+ cages, 4x 25GbE
- Each SDI or IP input can be used as a back-up signal for an SDI or IP output
- Redundant IP signals in and out (output port replication, ST2022-7 compliant)
- PTP Network timing with slave functionality on the Ethernet ports, compliant with SMPTE ST2059-2 External black burst inputs

- Audio synchronization
- 2x Analog bi-level reference out
- Multicast and Unicast selectable per streams
- Selectable VLAN and priority per stream
- Compatible protocols: ACPv2, DNS, IGMPv2, IGMPv3, LLDP, HDCP, SDP, NMOS IS04, NMOS IS-05, 802.1as, ST2059-1/2, ST2022-6, ST2110-20/30

Applications

- Converting HDR signals to SDR and vice versa
- Universal SDI to Ethernet bridge in Ethernet networks
- Network Attached Processor (NAP)
- Universal SDI to Ethernet bridge in Ethernet networks (with optional I/O expansion board)
- Point to point (back to back) applications for direct replacement of CWDM systems (with optional I/O expansion board)
- System for distributed routing over an IP network with clean switching
- Outputs at shader position. Ultra-fast clean switching.
- Enabling local or remote productions over private or commercial networks
- Video frame synchronization
- Video Auto phasing
- Audio embedding and de-embedding
- 4 wire synchronization and alignment

Ordering information

Module:

- **NPH1616:** IP media gateway, bridge, synchronizer and processor for all IP/hybrid SDI and audio and HDR<>SDR conversion. Processing board for Neuron.

Options:

- **Opt_I/O SDI40:** SDI I/O board with 8 12G inputs, 8 12G outputs and 24 3G bidirectional connectors
- **Opt_UDC16:** 16 channel up/down/cross conversion with up to 4 UHD converters
- **Opt_PR512:** Audio gain, phase and delay per stream up to 1,2 seconds

Specifications

Serial Video Input

Standard	SD, HD, 3Gb/s and 12Gb/s SDI: SMPTE 292M, SMPTE 259M, SMPTE424, ST2082
Number of Inputs	8 up to 32 inputs
Connector	HD-BNC
Equalization	Typical maximum equalized length of Belden 1694A cable: 70m 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	8 up to 32 outputs
Connector	HD-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

IP interface

Cage	SFP+, QSFP+
Number of cages	4, 2
Supported modules	SR, LR, ZR (Optical)
Phy	4 x 25GB/s, Max. power 1.5W/module

Miscellaneous

Weight	Approx. < 2.5kg (5.5 lbs)
Operating Temperature	0 °C to +30 °C
Dimensions	40x188x365mm (HxWxD)

Electrical

Voltage	+12V
Power	<250 Watts