



Neuron

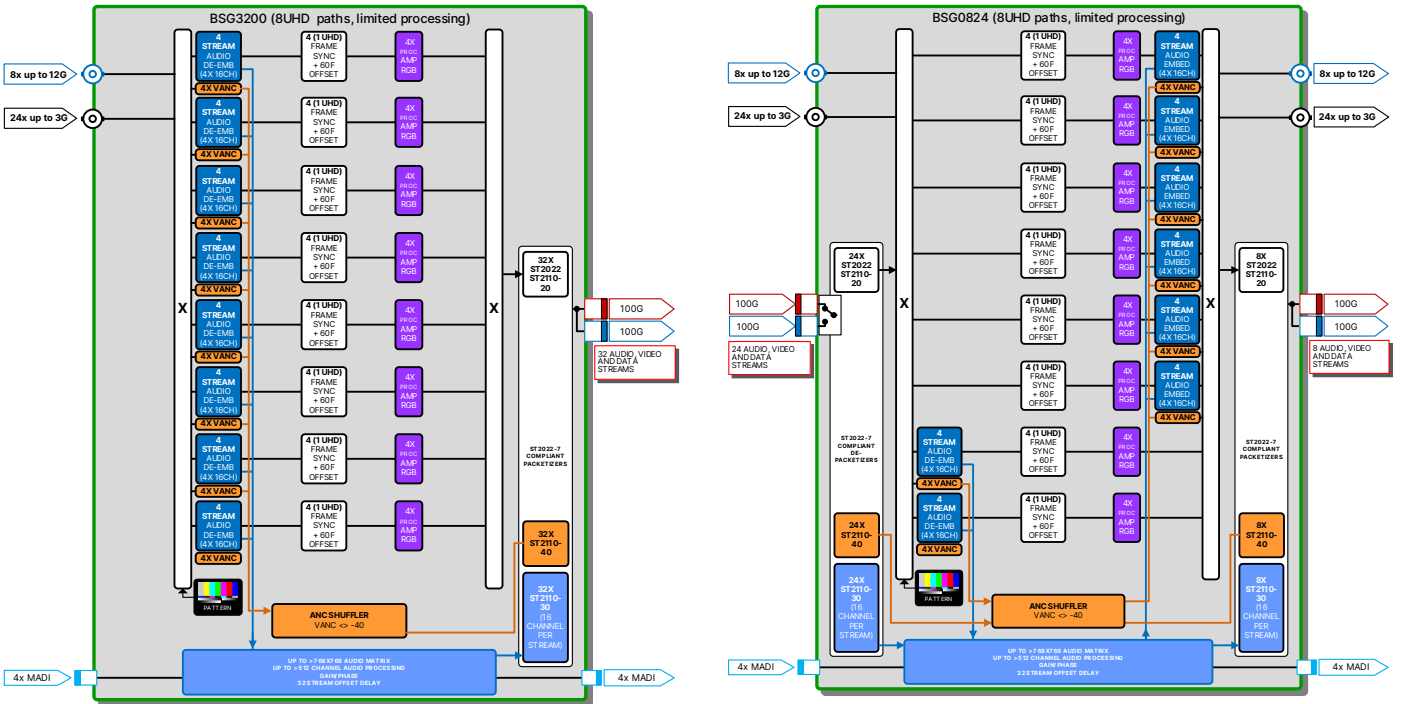
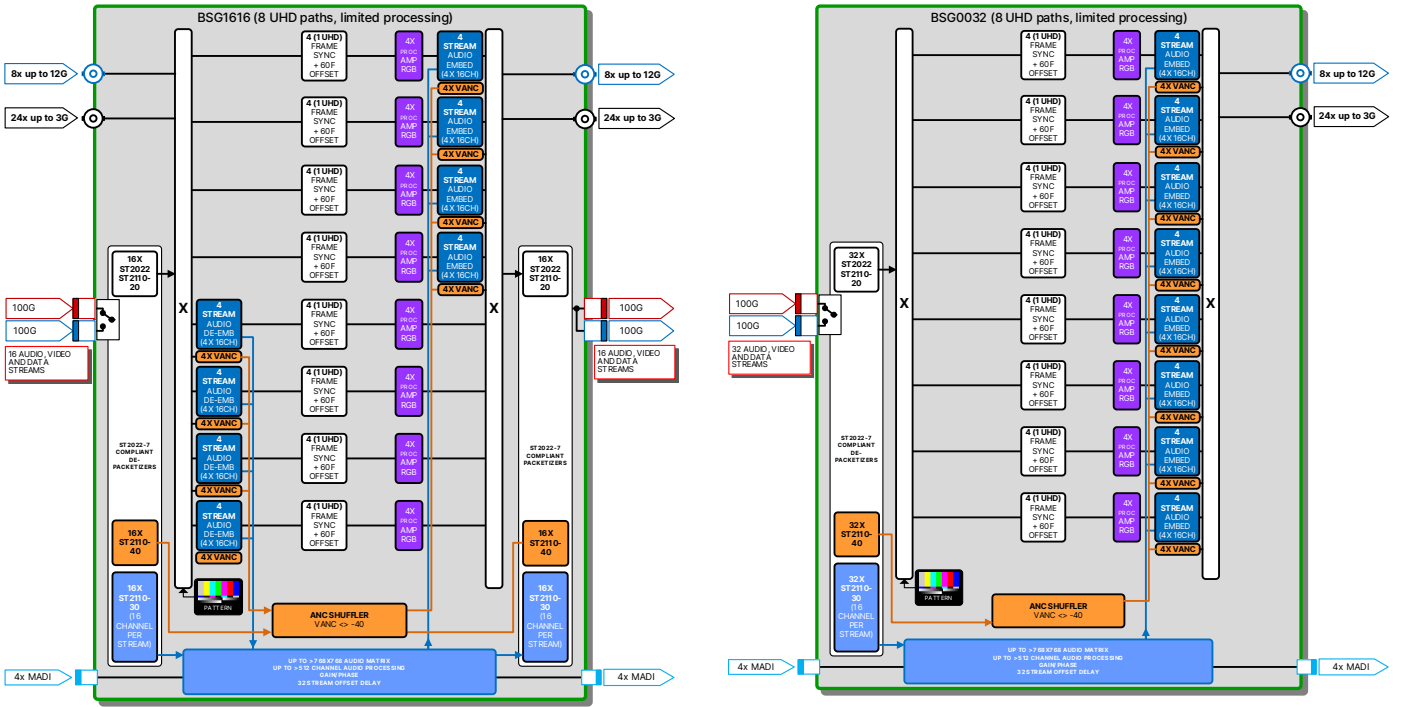
BRIDGE

IP gateway, bridge and synchronizer for IP, SDI and hybrid baseband video and audio

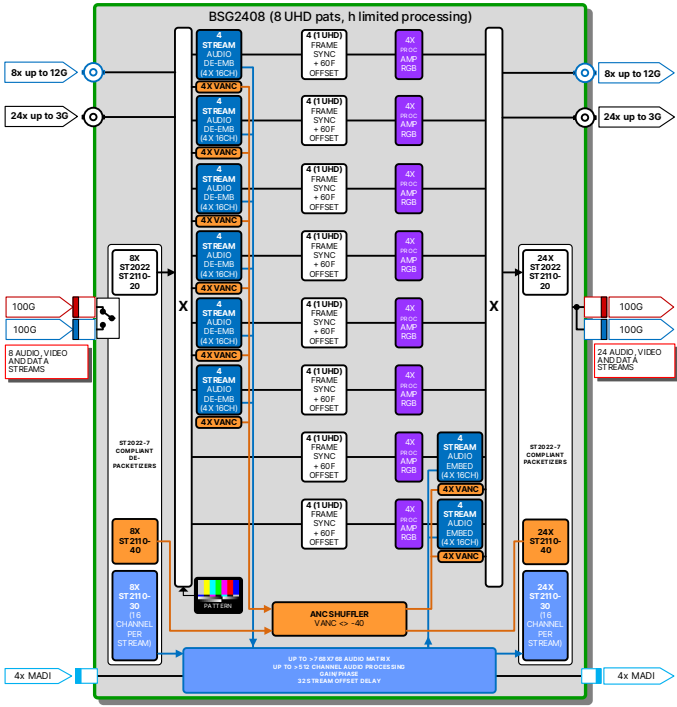


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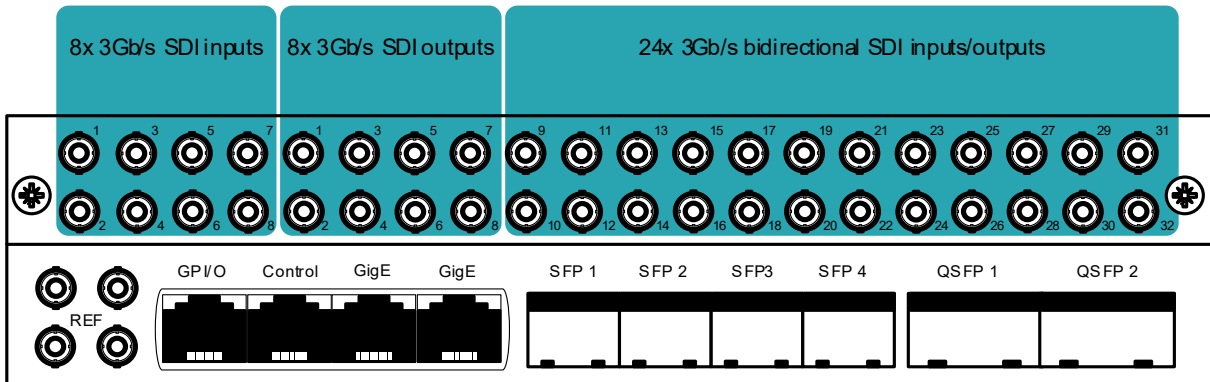
Block schematics of the various configurations



BRIDGE



I/O Panel



The BRIDGE offers 32 x 1080p processing paths in various configurations. Depending on the loaded configuration, some paths with include de-embedding and/or embedding. All paths include frame synchronization, audio gain/phase/delay processing, and color-correcting processing amplifiers.

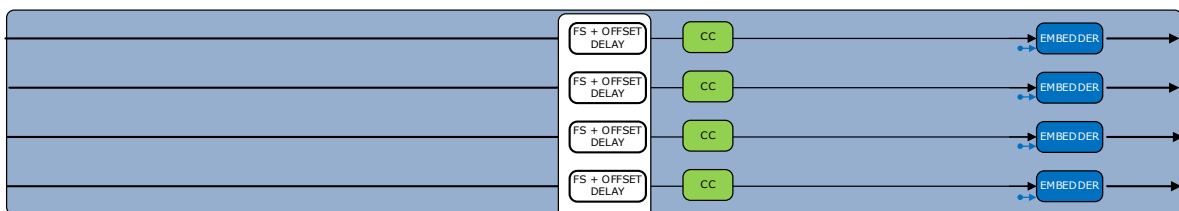
I/O of configurations

	SDI Inputs ¹	IP Inputs ¹	SDI Outputs ¹	IP outputs ¹
BSG3200-2Q6/2Q7	32	0	0	64 ²
BSG2408-2Q6/2Q7	24	16 ²	8	48 ²
BSG1616-2Q6/2Q7	16	32 ²	16	32 ²
BSG0824-2Q6/2Q7	8	48 ²	24	16 ²
BSG0032-2Q6/2Q7	0	64 ²	32	0

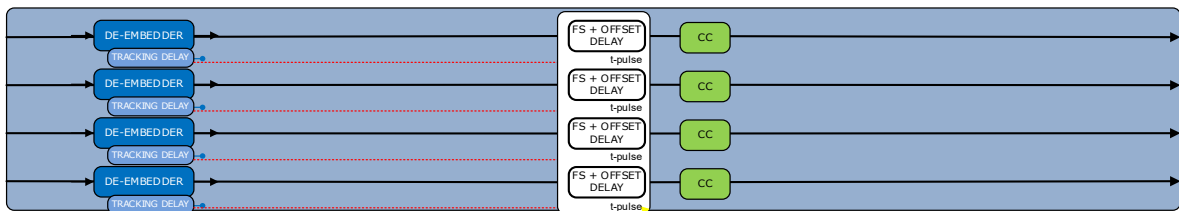
¹) amount of FHD (1080p50/59.94) channels

²) Redundant streams

Embedding paths



Deembedding paths



Features

The BRIDGE is a 32-channel media-over-IP transceiver developed for low-latency Live IP networking. Supporting all modern encapsulation standards like ST2022 and ST2110, a Neuron BRIDGE card can process up to 32 x 1080p signals to and from SDI and IP via redundant 100GbE network interfaces, with configurations enabling bridging in either direction in groups of 8 FHD channels

The BRIDGE can process up to 32 channels of video and multiple audio channels in half a rack unit. Two BRIDGEs can fit into a single 1RU Neuron chassis. Interworking of ST2022-6/7 to 2110-20/30 and back is also supported. Each video channel is capable of frame-synchronizing, color correcting, UHD remapping, embedding, de-embedding and audio gain and phase. Grouping four signal paths will offer UHD handling.

The BRIDGE is equipped with an SDI I/O module, which supports up to 40 x SDI I/O via HD-BNC connectors.

- Supports asynchronous SDI inputs
- Standards supported: UHD (single wire 2Si, 4 wire SQD/2Si), FHD Level-A, HD, SD SDI, ST2022-6/7 and ST2110-20 on 50Hz and 59.94Hz. (2160p, 1080p, 1080i and 720p)
- UHD remapping (gearboxing) of single wire to four-wire SQD/2SI and vice versa
- Redundant IP signals in and out (ST2022-7)
- Up to 32 redundant IP video, 32 redundant IP audio and up to 32 redundant IP anc data listeners
- Up to 32 channels of bridging SDI to/from Ethernet (requires SDI optional board)
- Up to 32 channel frame-sync to local clock on external ref (B&B or ST2059)
- Up to 32 channels of up/down/cross conversion (UHD requires 4 channels)
- Up to 32 times 16 channel audio de-embedding
- Up to 32 times 16 channel audio embedding
- Up to 32 times Proc-amp for RGB, YCrCb and RGB-Black gains and black and white clip
- 512 channels audio gain/phase and offset delay
- Mono channel audio matrix (De-embedded audio, ST2110-30 and MADI), Controllable via SWP-08 protocol
- Up to 4x64 channels MADI IO
- Dual QSFP28 single 100Gb/s MAC
- Transparency of VANC data to ST2110-40 in SDI and vice versa with possibility to shuffle streams
- PTP Network timing with slave functionality on the Ethernet ports, compliant with SMPTE ST2059-2 (BMCA)
- External black burst inputs
- Possibility to output 2x Analog bi-level reference locked to PTP
- Multicast and unicast configurable per streams
- Automatic fan control
- Stream and Ethernet port redundancy
- Compatible protocols: ACPv2, DNS, IGMPv2, IGMPv3, LLDP, DHCP, SDP, NMOS IS04, NMOS IS04, 802.1as, ST2059-1/2, ST2022-6/7, ST2110-20/30/31/40

Applications

- Universal SDI to Ethernet bridge in Ethernet networks (with optional I/O expansion board)
- Conversion of MADI to/from IP domain
- Gear box for UHD signals
- 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

Ordering information

Hardware options:

- **NBASE-BOARD:** Neuron base processing board
- **NSDI40-BOARD:** Neuron SDI IO board, with 8x 12G in, 8x 12G out and 24 bidirectional IO on HD BNC

Software options:

- **BRIDGE-8:** Bridge 8 channel (2x UHD) – All configurations can be used (requires reprogramming) including IP & SDI IO and audio processing. Requires SDI IO option board. Maximum of 4 per board
- **BRI-MADI64:** MADI I/O option bi-directional 64 channel, MSA SFP is not included. Maximum of 4 per board

Specifications

Reference I/O

Connector Type	Micro BNC (HD BNC)
Number of inputs	1
Number of outputs	2, Loop input or analog reference out
Termination	75 Ohms when not looped
Bi-Level	PAL/NTSC Black Burst ITU624

Gigabit Ethernet

Connector Type	RJ45
Number	3 (2 Future use)
Standards	10/100/1000 Base-T
Protocols streaming	
Protocol control	ACpV2
Cable	Shielded twisted pair

QSFP Cages

Number of cages	2
Standards	QSFP28, 100GbE
Protocols	ST2022-6/7 (Class D), ST2110, AES67, ST2059

SFP Cages

Number of cages	4
Standards	MADI
Protocols	MSA

Serial video inputs (optional)

Standard	UHD ST2082, HD-SDI ST292, ST296 ST274 3G-SDI ST424 (Level A) ST425-1
Number of Inputs	8
Connector type	Micro BNC (HD BNC)
Signal Level	800mV
DC Offset	0V±0.5V
Overshoot	Within 10% of signal level
Return Loss	>15dB up to 1.5GHz, >10dB up to 3GHz

Serial video outputs (optional)

Standard	UHD ST2082, HD-SDI ST292/ST296/ST274 3G-SDI ST424 (Level A)/ST425-1
Number of Inputs	8
Connector type	Micro BNC (HD BNC)
Signal Level	800mV
DC Offset	0V±0.5V
Overshoot	Within 10% of signal level
Return Loss	>15dB up to 1.5GHz, >10dB up to 3GHz

Serial video bi-directional connections (optional)

Standard	HD-SDI ST292/ST296/ST274 3G-SDI ST424 (Level A)/ST425-1
Number of Inputs	24
Connector type	Micro BNC (HD BNC)
Signal Level	800mV
DC Offset	0V±0.5V
Overshoot	Within 10% of signal level
Return Loss	>15dB up to 1.5GHz, >10dB up to 3GHz

Miscellaneous

Weight	Approx. 2050gr
Operating temp.	0°C to +40°C
Dimensions	400 x 193 x 42mm (LxWxD)

Electrical

Voltage	+12V nominal (tolerance:-1V/+0.5V)
Power	100-200Watts