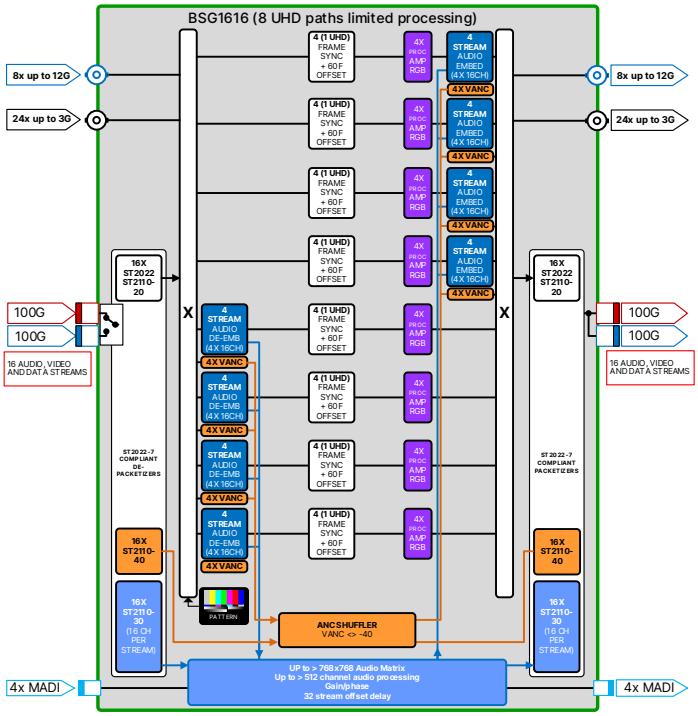
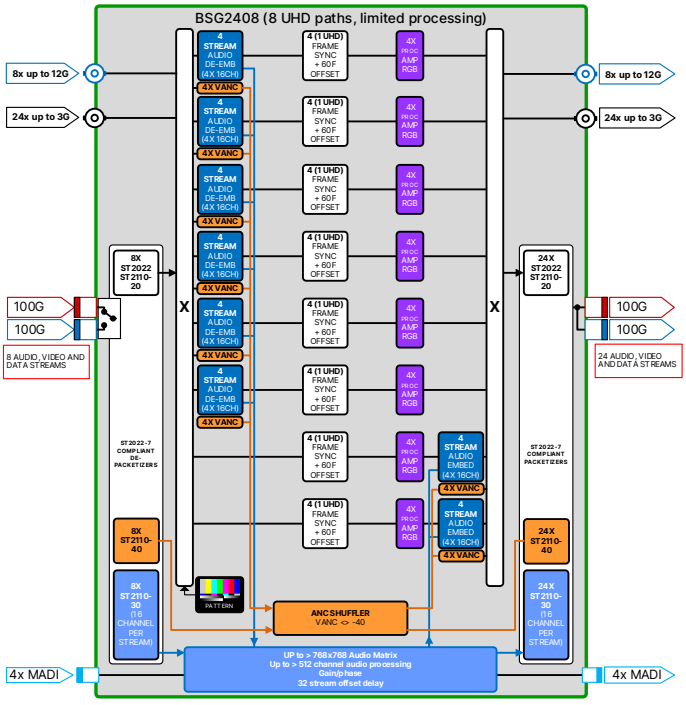
Neuron

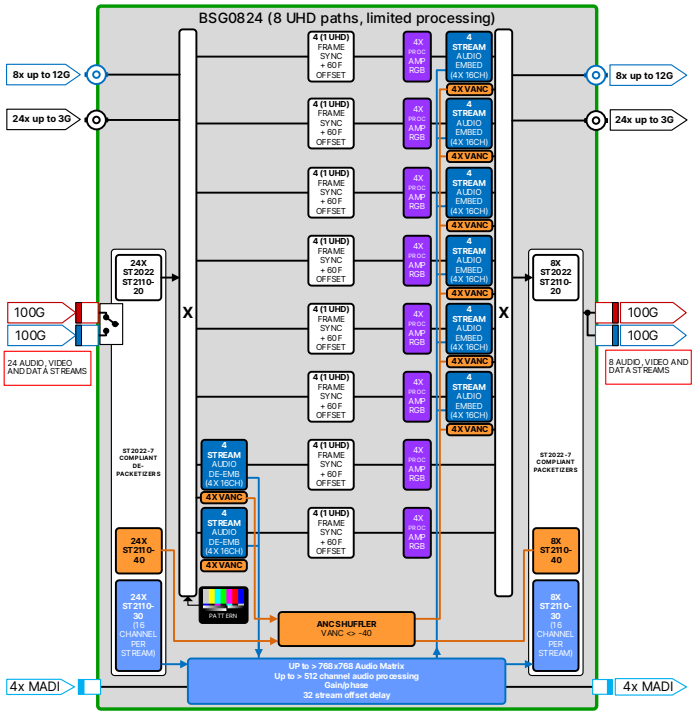
BRIDGE

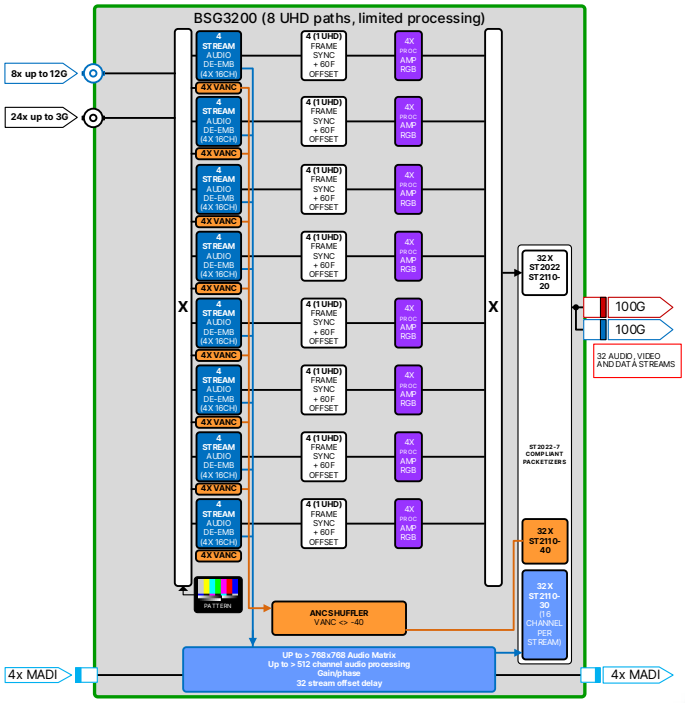
IP gateway, bridge and synchronizer for IP, SDI and hybrid baseband video and audio

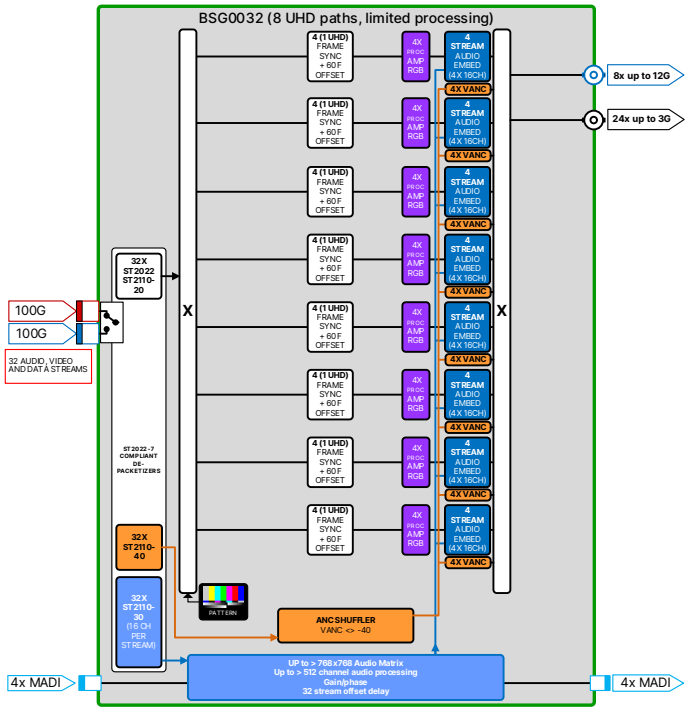
Block schematics of configurations



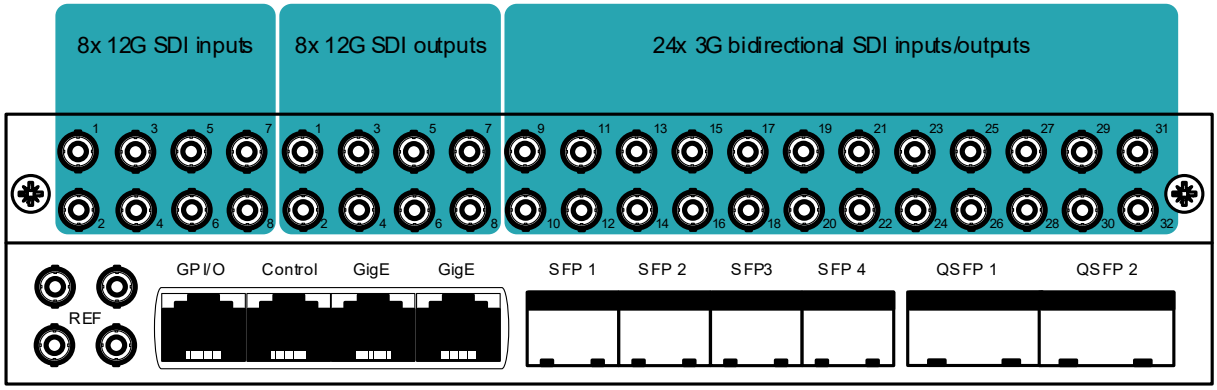







BSG0032 (8 UHD paths, limited processing)
100G
100G
32 AUDIO, VIDEO AND DATA STREAMS
32X ST2022 ST2110-20
ST2022-7 COMPLIANT DE-PACKETIZERS
32X ST2110-40
32X ST2110-30 (16 CH PER STREAM)
PATTERN
ANC SHUFFLER VANC <> -40
UP to > 768 x768 Audio Matrix
Up to > 512 channel audio processing
Gain/phase
32 stream offset delay
4x MADI
4x MADI
8x up to 12G
24x up to 3G
4 (1 UHD) FRAME SYNC + 60 F OFFSET
4X PROC AMP RGB
4 STREAM AUDIO EMBED (4 X 16CH)
4 X VANC

I/O Panel



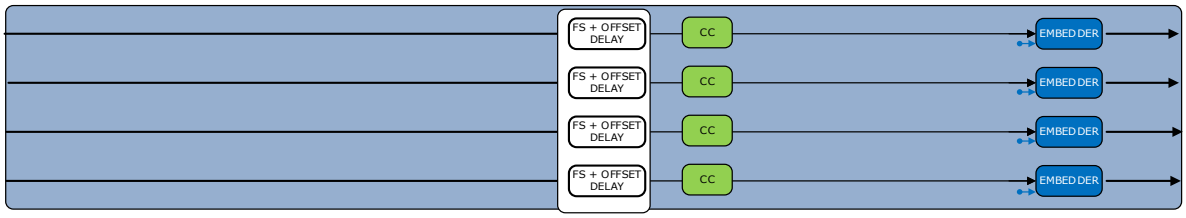
BRIDGE offers 32 x 1080p (= 8 x 2160p) processing paths in various configurations. Depending on the loaded configuration, some paths with include de-embedding and/or embedding. All paths include frame synchronization, audio gain/phase/delay processing, and color-correcting processing amplifiers.

I/O of configurations

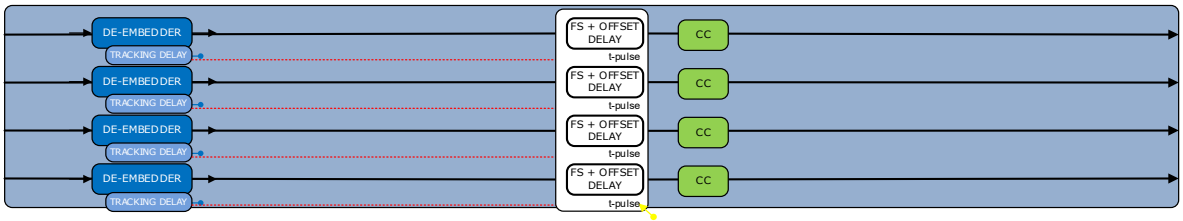
	SDI Inputs[1]	IP Inputs[1]	SDI Outputs[1]	IP outputs[1]
BSG3200-2Q6/2Q7	32	0	0	32[2]
BSG2408-2Q6/2Q7	24	8[2]	8	24[2]
BSG1616-2Q6/2Q7	16	16[2]	16	16[2]
BSG0824-2Q6/2Q7	8	24[2]	24	8[2]
BSG0032-2Q6/2Q7	0	32[2]	32	0

[1]) amount of FHD (1080p50/59.94) channels
[2]) Redundant -7 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 ST2022-6 and ST2110, the BRIDGE can process up to 32 x 1080p (or up to 6x 2160p) signals to and from SDI and IP via redundant 100GbE network interfaces, with configurations enabling bridging in either direction in groups of 8 processing paths.

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, 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 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
- Up to 32 IP video I/O streams, 32 IP audio I/O streams and 32 IP anc data I/O streams
- 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
- Redundant IP signals in and out (double stream or ST2022-7)
- 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 IS05, 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 ou 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