



Neuron

COMPRESS

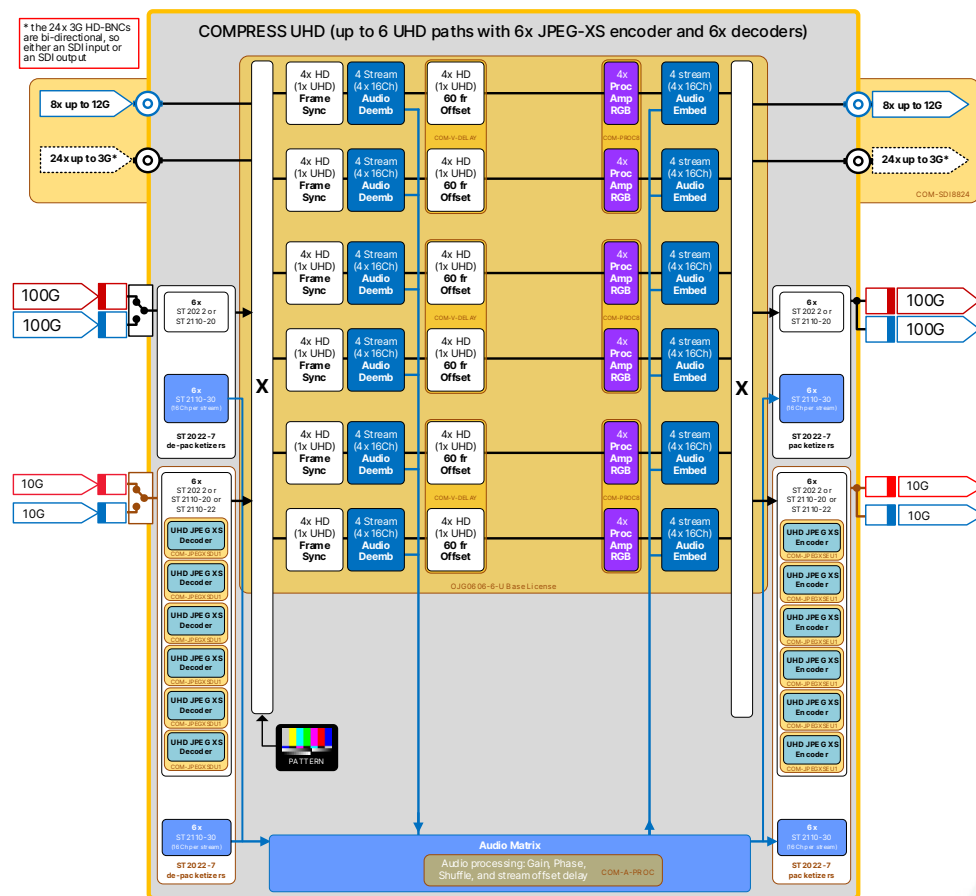
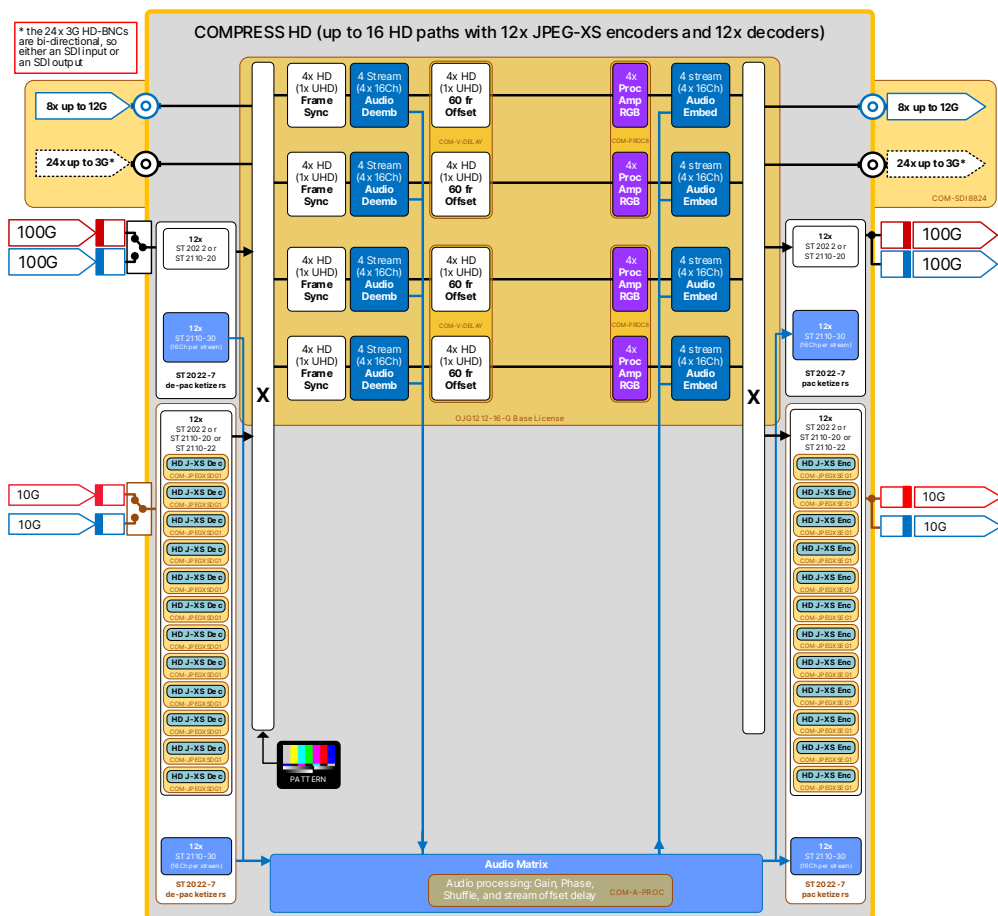
Visually lossless, ultra-low latency, multichannel JPEG XS compression



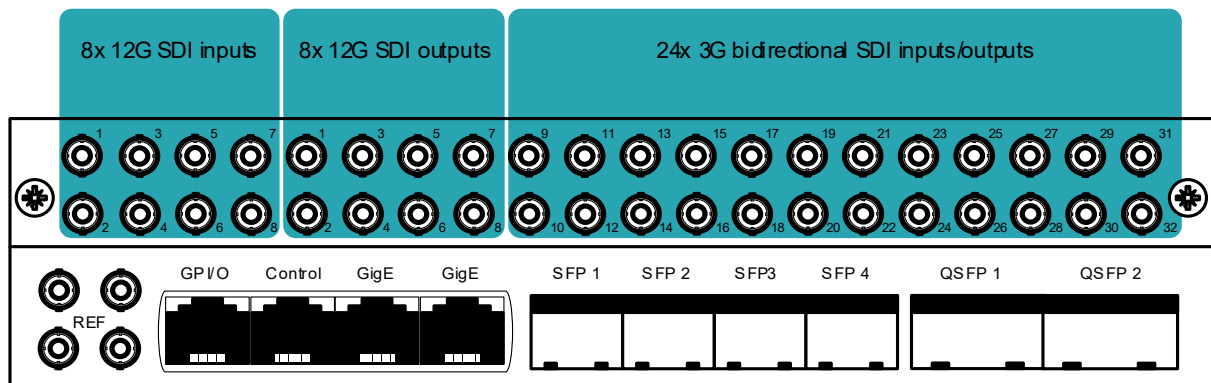
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COMPRESS

Block schematics of configurations



I/O Panel



I/O of configurations

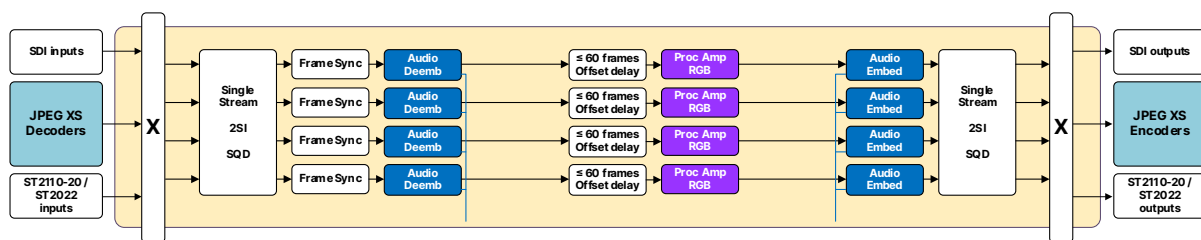
	SDI Inputs	IP Inputs	SDI Outputs	IP outputs
OJG1212-2Q2S7-G	32 ¹	24 ^{1 & 3}	32 ¹	24 ^{1 & 3}
OJG0606-2Q2S7-U	8 ²	12 ^{2 & 3}	8 ²	12 ^{2 & 3}

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

²) amount of UHD (2160p50/59.94) channels

³) Redundant streams

Video Processing paths



The COMPRESS UHD has up to 6, and COMPRESS HD has up to 4 these processing paths. Depending on the active licenses, these processing paths include framesyncs, audio de-embedders, video offset delay (optional), color correcting proc amps (optional), audio embedders and audio gain/phase/delay functionality (optional). Outside the processing paths, in front and behind the muxes, there are the multiple optional JPEG-XS encoders and decoders.

Audio Processing

The audio matrix below the processing paths allows audio shuffling of:

- The individual audio channels coming from the audio de-embedders
- The individual audio channels from the ST2110-30 inputs (each containing up to 16 audio channels)

With the audio processing license activated, these audio channels can also be individually gained and phased and the streams can be delayed.

Features

COMPRESS centers around JPEG XS decoding and encoding. The JPEG XS (ISO/IEC 21122) standard is a lightweight low latency image and video compression algorithm (codec) that maintains visually lossless compression. The typical compression ratio is between 1:6 and 1:12, so a UHD signal which uses 12Gb/s normally, would require 1Gb/s after JPEG XS compression and is still visually lossless. There are 2 configurations available with various numbers of HD or UHD JPEG XS encoders and decoders.

Besides JPEG XS compression, the COMPRESS configurations use the 100Gb/s QSFP28 interfaces for all baseband streams (uncompressed ST2110-20 and ST2022 streams) and the 10Gb/s SFP+ interfaces for all compressed I/O (ST2110-22 streams), meaning what's going in the card is physically separated from what goes out of the card, turning it into a perfect Firewall for IP infrastructures.

Like most Neuron cards, the COMPRESS configurations have frame synchronizers, audio deembedders, video offset delay, color correcting audio procs and audio embedders on all processing paths. The audio embedders can embed any of the audio in the big audio channel matrix.

Optionally, the COMPRESS can be expanded with an SDI I/O module. This will add physical HD-BNC SDI connectors and allows easy integration of video over IP with existing SDI baseband operations, simultaneously acting as bridge.

- Standards supported: UHD, 3G-SDI level A, HD-SDI, ST2022 and ST2110-20/22/30.
- JPEG XS Encoding output as ST2110-22
- JPEG XS Decoding received as ST2110-22
- ST2110-22 streams in and out available on 10GbE interfaces
- Processing channels can be used in transparent mode allowing for gateway functionality
- Up to 24 IP video listeners and 24 IP audio listeners
- Up to 16 channels of bridging SDI to/from Ethernet (requires SDI optional board)
- Up to 24 channel frame-sync to local clock on external ref (B&B or ST2059)
- Up to 24 times 16 channel audio de-embedding
- Up to 24 times 16 channel audio embedding
- Up to 24 times Proc-amp for RGB and RGB-Black gains
- Individual audio channel gain/phase and stream offset delay
- Mono channel audio matrix
- Clean switch and fast switch capabilities between all inputs (IP and/or SDI)
- Clean switch between incoming SDI and IP signals
- 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, ST2022-6/7, ST2110-20/22/30

Applications

- Transport over video links and IP networks
- Point to point (back-to-back) applications for direct replacement of CWDM systems (with Opt-I/O A) with up to 12:1 compression using JPEG XS codecs
- Enabling local or remote productions over private or commercial networks
- IP production infrastructure

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:

COMPRESS FHD Base license (IP and SDI I/O)

OJG1212-16-G-GO

Base License for Compress for 16 FHD processing paths with up to **12 JPEG-Xs encoders** and up to **12 JPEG-Xs decoders (requires license per en/decoder)**. Includes 16x framesync, 16x embedding/de-embedding, and IP I/O. **SDI I/O requires NEU-SDI40-BOARD and COM-SDI8824-GO. Max. 1 of these base licenses per processing board**

COMPRESS FHD Optional licenses

COM-SDI8824-GO	Activation license for NEU-SDI40-BOARD.
COM-JPEGXSEG1-GO	JPEG-Xs FHD encoder for 1 FHD channel. Max. 12 per processing board
COM-JPEGXSDG1-GO	JPEG-Xs FHD decoder for 1 FHD channel. Max. 12 per processing board
COM-V-DELAY-GO	Additional video offset delay of up to 60 frames for 8x FHD or 2x UHD. Max. 2 per processing board in case of Compress FHD
COM-PROC8-GO	Proc-amp and RGB color correction license for 8x FHD or 2x UHD. Max. 2 per processing board in case of Compress FHD
COM-A-PROC-GO	Audio Processing license for Gain/phase/delay. Max. 1 per processing board

COMPRESS UHD Base license (IP and SDI I/O)

OJG0606-6-U-GO

Base License for Compress for 6 UHD processing paths with up to **6 JPEG-Xs encoders** and up to **6 JPEG-Xs decoders (requires license per en/decoder)**. Includes 6x framesync, 6x embedding/de-embedding, and IP I/O. **SDI I/O requires NEU-SDI40-BOARD and CON-SDI8824-GO. Max. 1 of these base licenses per processing board**

COMPRESS UHD Optional licenses

COM-SDI8824-GO	Activation license for NEU-SDI40-BOARD.
COM-JPEGXSEU1-GO	JPEG-Xs UHD encoder for 1 UHD channel. Max. 6 per processing board
COM-JPEGXS DU1-GO	JPEG-Xs UHD decoder for 1 UHD channel. Max. 6 per processing board
COM-V-DELAY-GO	Additional video offset delay of up to 60 frames for 8x FHD or 2x UHD. Max. 3 per processing board in case of Compress UHD
COM-PROC8-GO	Proc-amp and RGB color correction license for 8x FHD or 2x UHD. Max. 3 per processing board in case of Compress UHD
COM-A-PROC-GO	Audio Processing license for Gain/phase/delay. Max. 1 per processing board

Specifications

Reference I/O

Connector Type	Micro BNC (HD BNC)
Number of inputs	2
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	1 (2 for future use)
Standards	10/100/1000 Base-T
Protocols streaming	AES67, ST2059
Protocol control	ACPv2
Cable	Shielded twisted pair

QSFP Cages

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

SFP Cages

Number of cages	2
Standards	SFP28, 10GbE
Protocols	ST2022-6/7(A), ST2110, AES67, ST2059

Serial video inputs (optional)

Standard	UHD SMPTE ST 2082, 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

Audio shuffler

Protocol	SWP08
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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

Video compression

Video compression	JPEG XS by IntoPIX
Encapsulation	JPEG XS in RTP/UDP/IP, ST110-22 IETF RTP Payload for JPEG XS
Encoding/Decoding	Up to 6/12 channels of encoding/decoding Compression ratio 5:1 to 40:1
	OJG1212-16-G 12 FHD/HD/SD enc/dec
	OJG0606-6-U 6 UHD/FHD/HD/SD enc/dec
Video sampling	YCbCr, 4:2:2 10 bit

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	100-120Watts