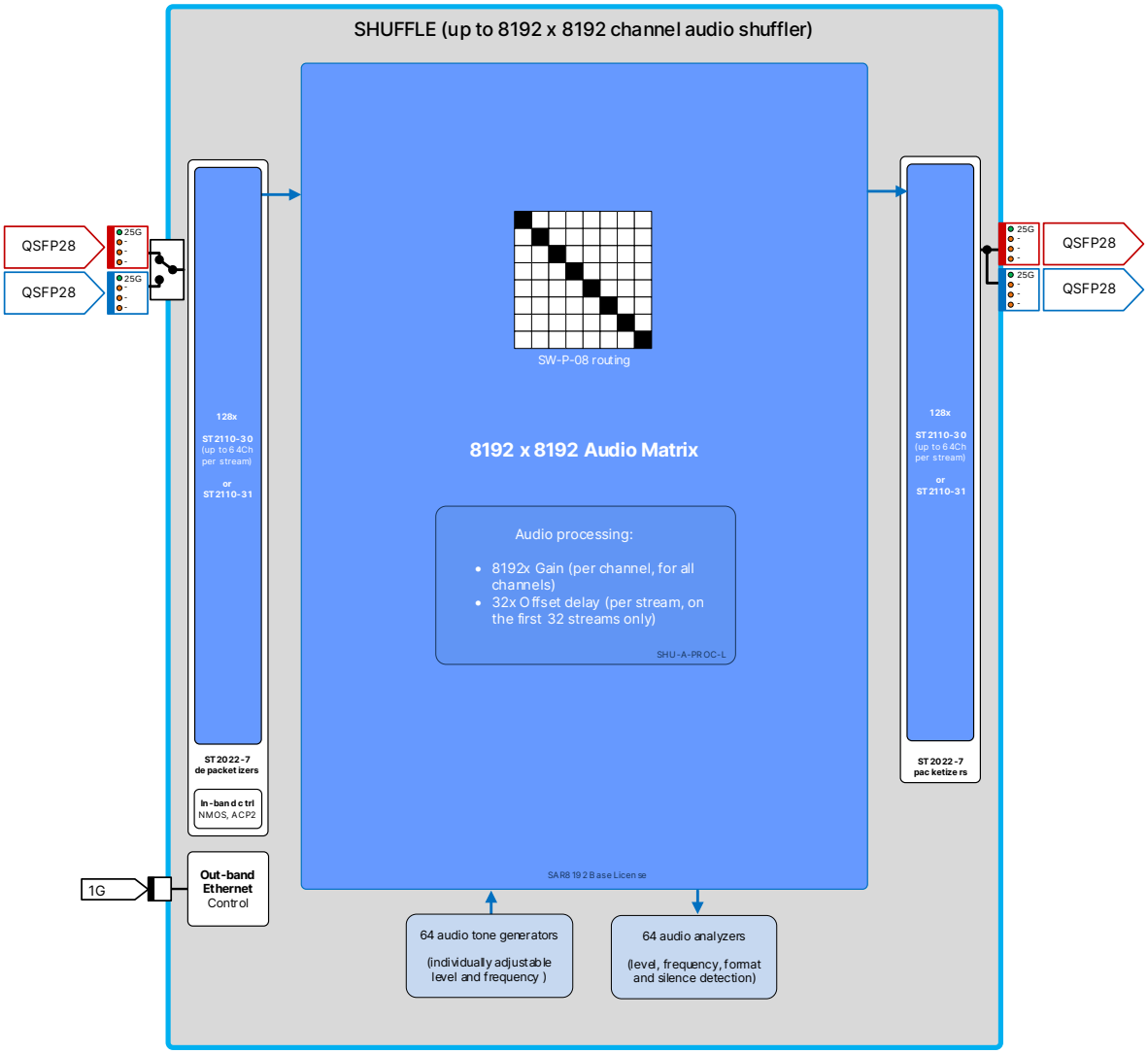
Neuron

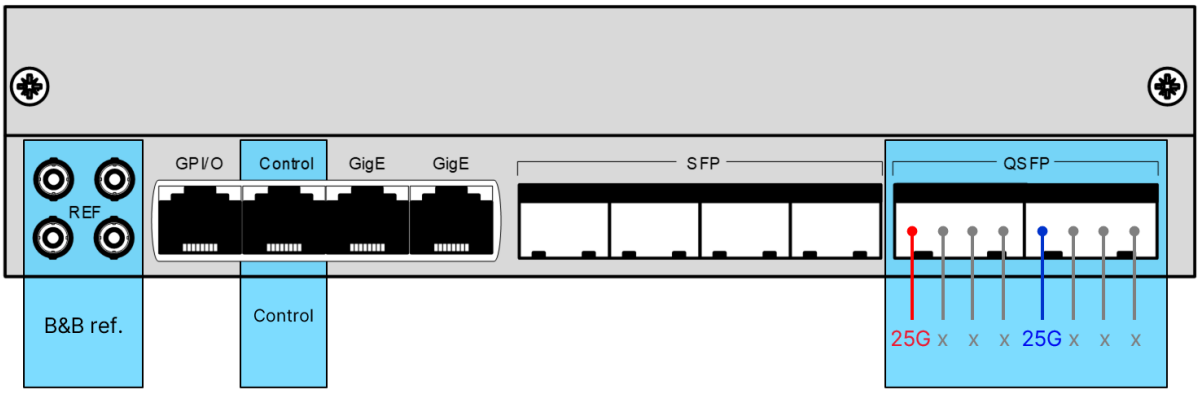
SHUFFLE

IP audio matrix/shuffler for 8192 individual channels

Block schematics of configurations



I/O Panel



Features

With IP based audio formats, like ST2110-30/31 and AES67, the amount of audio channels within a broadcast facility can easily grow into the thousands. Managing which channels belong in which audio streams and shuffling the various channels from one stream to the other is becoming quite a challenge. With Neuron Shuffle, you can shuffle, mix, gain and delay thousands of audio channels.

Neuron Shuffle is a 8192 x 8192 IP audio matrix. It is fully -7 (class D) compatible on both the 128 input streams as well as the 128 output streams and offers the ability to synchronize all these IP streams. Each stream can consist of up to 64 audio channels. Besides this matrix, it offers more functionality, such as: 64 adjustable tone generators, 64 audio analyzers , 32 audio stream input delays of up to 2300ms (optional), Mono channel gain (optional) and in Cerebrum it features a big matrix view for routing individual audio channels.

The Neuron audio matrix runs on the same hardware as the other identities of Neuron (Bridge, Convert, Compress, Protect and View) meaning that whenever your requirements change, you can reuse the hardware for other purposes. Shuffle handles up to 128 streams on a single QSFP28 connector.

- Audio standards supported: ST2110-30/31 and AES67
- 128 IP audio listeners and 128 IP talkers, fully -7 (class D) compatible
- Up to 64 channels per stream, configuration dynamically changeable
- 8192 x 8192 audio channel routing with an additional 64 x 64 channels for the audio generator (audio sources) and audio analyzer (audio destinations)
- Matrix routing controlled with SWP08
- Stream and channel swapping
- Independent input and output configurations
- Audio synchronization
- Audio clean switch for Dolby-E, and PCM. This feature provides a clean audio switch-over by ducking the audio to -144dB, perform the switch and ramp up again to nominal value. (V-fade)
- PCM audio generator routable to the Matrix with 64 independent channels, 24 bits 48KhZ sine, with a frequency range of 40Hz to 16kHz and adjustable audio level between -63 and 0 dBFS
- PCM audio analyzer for 64 channels with frequency and audio level detection
- 32 streams can be delayed with a maximum of 2300ms (option)
- Mono channel audio Gain from -60 to +12 dB (option)
- PTP Network timing with slave functionality on the Ethernet ports, compliant with SMPTE ST2059-2 External black burst inputs
- Multicast and Unicast selectable per streams
- Single 25GbE link on a 100GbE QSFP28 module
- Compatible protocols: ACPv2, DNS, IGMPv2, IGMPv3, LLDP, HDCP, SDP, NMOS IS04, NMOS IS-05, 802.1as, ST2059-1/2, ST2110-30/31, AES67, SW-P-08,

Applications

- Audio router replacement
- Router unit for distributed routing over an IP network with clean switching
- Audio generator + analyzer for router configuration and debugging

Ordering information

Hardware options:

- **NBASE-BOARD:** Neuron base processing board

Software options:

- **SAR8192-GO:** Base license for Shuffle for 8196 channels audio routing.
- **SHU-A-PROC-L-GO:** Audio Processing license for mono Gain and 32 stream delay

Specifications

Audio	
Standard	ST2110-30 A/B/C, ST2110-31 A/D, AES67 16 bits,48kHz
Number of Inputs	128
Number of Outputs	128
IP interface	
Cage	QSFP28
Number of cages	2
Phy	Single 25GbE link on a 100GbE QSFP28 module
Miscellaneous	
Weight	Approx. < 2.5kg (5.5 lbs)
Operating Temperature	0 °C to +30 °C
Dimensions	40x188x365mm (HxWxD)
Electrical	
Voltage	+12V
Power	<120 Watts