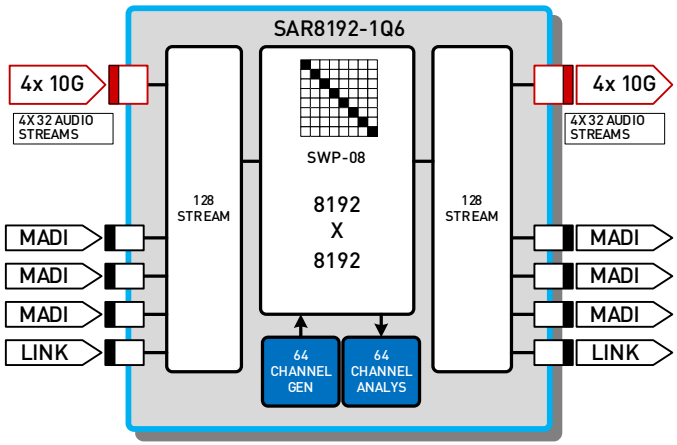
Neuron

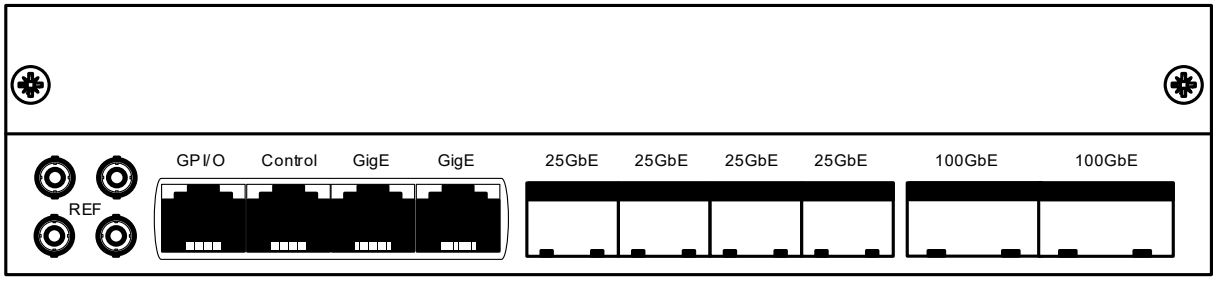
SHUFFLE

IP audio matrix/shuffler for 8192 individual channels

Block schematics of configurations



I/O Panel



Features

With new 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 the Neuron audio matrix, you can shuffle, mix and delay thousands of audio channels.

The Neuron audio matrix runs on the same hardware as the general processing modules of Neuron. A Neuron frame can hold 2 modules. This means that in just 1 RU you can fit two 8192 x 8192 audio matrices. It will handle 128 streams on a single 40Gb/s QSFP28 connector. Each stream available on the matrix can contain up to 64 channels of audio, which adds up to a massive 8192 channels. The SHUFFLE offers the ability to synchronize all IP streams.

- Cost efficiency by integrating IT equipment and speed in a broadcast environment. Lowering cable cost and scalable systems.
- Audio standards supported: ST2110-30/31 and AES67
- 128 IP audio listeners and 128 IP talkers
- Up to 64 channels per stream, configuration dynamically changeable
- Matrix routing controlled with SWP08 (advanced)
- 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)
- Stream and channel swapping
- 8192 x 8192 audio channel routing with additional 64 x 64 channels for the audio generator and analyzer
- 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
- Phase control
- PCM audio analyzer for 64 channels with frequency and audio level detection
- 32 streams delay with a maximum of 100ms
- 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
- QSFP28 cage, 40GbE (4x10GbE)
- 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

Ordering information

Hardware options:

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

Software options:

- **SHUFFLE 64:** 64 stream 4096 channel audio router
- **SHUFFLE 128:** 128 stream 8192 channel audio router

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	1
Phy	4 x 10GbE, 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