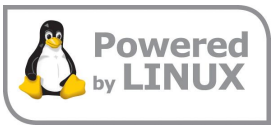
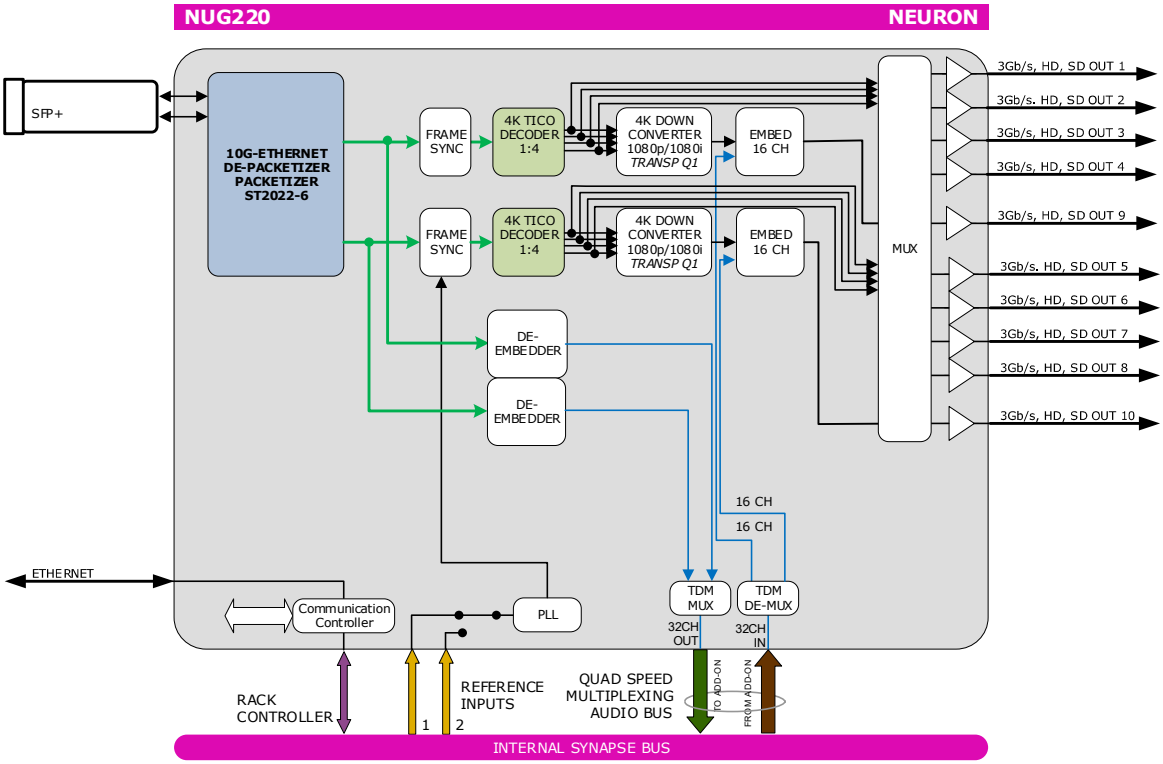
NUG220

2 channel UHD/4K Ethernet bridge with TICO decoder and down converter

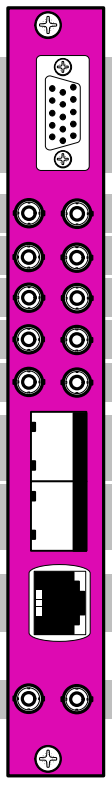
A Synapse® product



Block schematic & I/O panel



GPI I/O, LTC, METADATA	
3Gb/s, HD, SD SDI OUT 1	3Gb/s, HD, SD SDI OUT 2
3Gb/s, HD, SD SDI OUT 3	3Gb/s, HD, SD SDI OUT 4
3Gb/s, HD, SD SDI OUT 5	3Gb/s, HD, SD SDI OUT 6
3Gb/s, HD, SD SDI OUT 7	3Gb/s, HD, SD SDI OUT 8
3Gb/s, HD, SD SDI OUT 9	3Gb/s, HD, SD SDI OUT 10
10Gb ETHERNET 1	
NC	
ETHERNET (DATA CHANNEL IN 10Gb Ethernet)	
NC	NC



BPH50

ANCore

ANCore is the award winning networkable production audio and video system based on industry standards. Due to its highly flexible architecture, ANCore can help customers to move to an IP based infrastructure with compatibility of all possible current and future standards. At this moment, the card is compatible with ST2022-6. Of course, ST2059 is also within the capability of this card as well and compatibility with new standards will be achieved by future upgrades.
By use of today's massive backbone speed of modern, IT based Ethernet equipment, ANCore will change the way in which video and audio (live) production infrastructures are build.

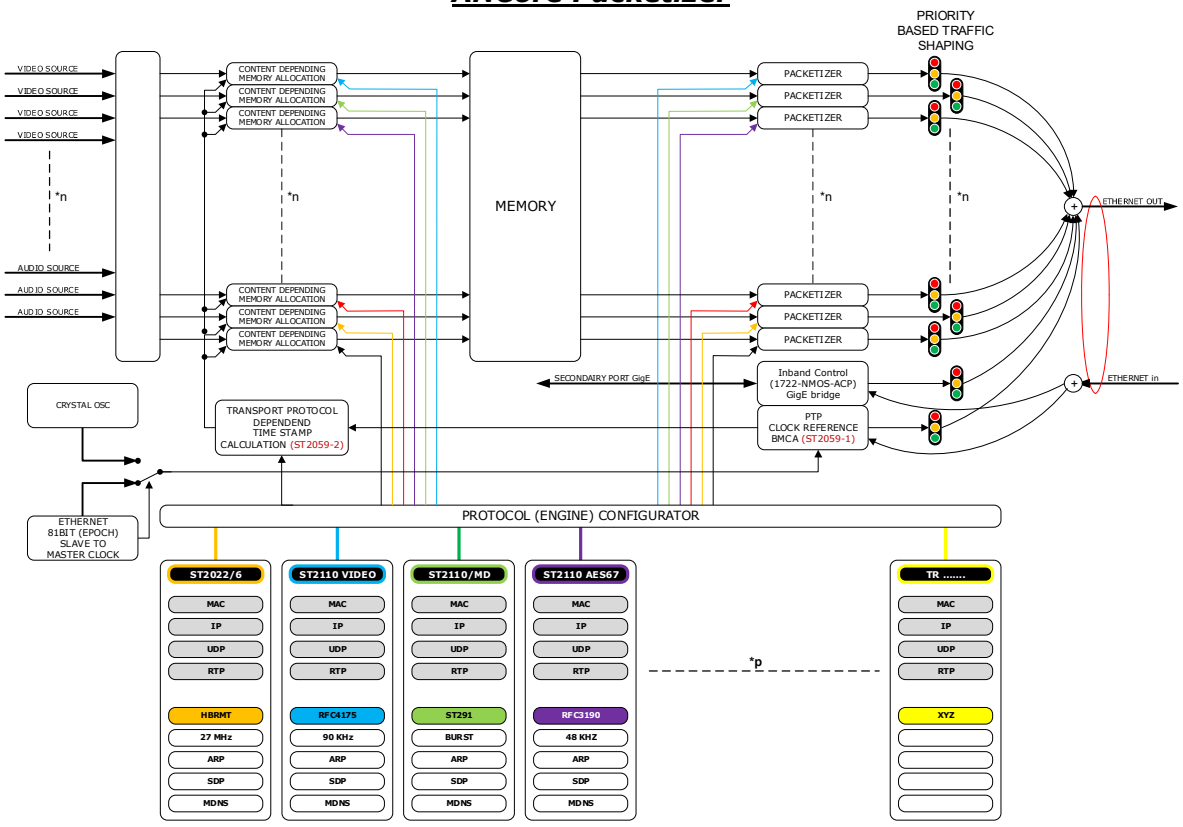
The ANCore:

- Axon in-house developed
- Agnostic for all current and future Ethernet based formats.
- Agnostic for all Ethernet speeds
- Modular structure

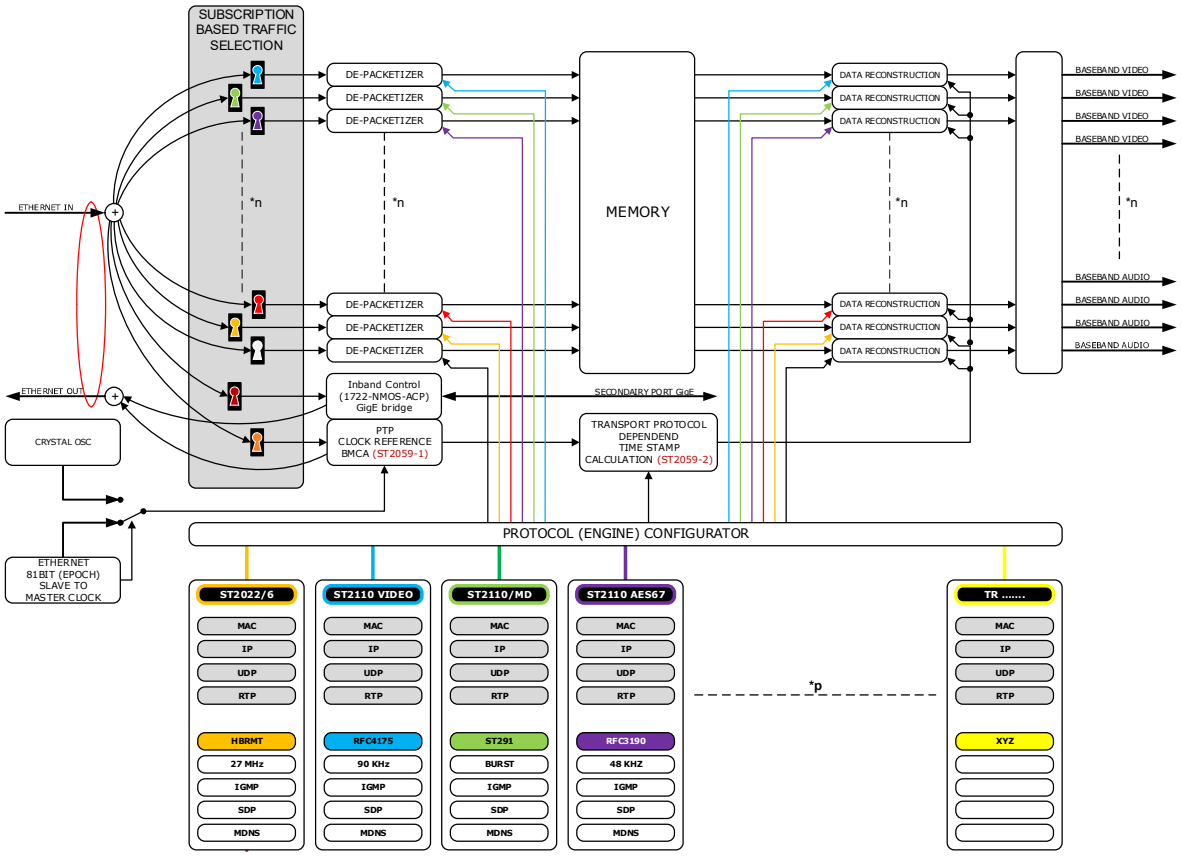
The packetizer & de-packetizer

- Protocol standard agnostic powered by "Protocol (engine) Configurator"
- Low maintenance
- Easy customization
- Adaptive behaviour standards that can be distinguished from each other
- First packetizer with "Traffic shaper"

ANCore Packetizer



ANCore de-packetizer



The modular structure of the ANCore enables to use the different engines for all different standards. A protocol (engine) configurator enables on the fly switching between the different standards and allows translation to and from different standards. Only the protocol unique and required parameters are set and influence the appropriate engine to do its job. This can be done for every stream individually.

ST2022-6 (including redundancy)

This standard describes a transport protocol that can be used for the real time transport of video/audio over IP networks.
In this standard, it is specified that the entire payload of the serial digital interface signal including all VANC and HANC data be encapsulated as one stream.
As extra feature, redundancy is implemented. This can be fast switching (which can interrupt the picture) and clean switching. The clean switch functionality is part of the product. It is based on SDI switching, make before break principle, which is ideal for live productions. S2022-7 requires buffering, which could cause latency up to 450ms.

TICO

TICO stands for Tiny Codec. It is a visually lossless compression up to 4:1. TICO enables mapping of a single 4K/UHD 2160p60 stream over a single 3G-SDI link. Over 10Gbps Ethernet, it allows typically the simultaneous transmission of up to 3 streams of 2160p60. Moreover using the RTP mapping of TICO, any video formats can be transported over RTP over any networks. TICO provides an extremely low latency (limited to just a few pixel lines) and preserves video quality across multiple generations of encoding/decoding. This technology is designed to enhance live IP systems by increasing efficiency and reducing cost for both HD and 4K/UHD video.

Features

The NUG220 is a Synapse card that can bridge up to 2x 4k/UHD Tico Compressed streams into dual 1080i/p SDI stream or a dual 4k/UHD four wire stream

The included downconverter bridges the TICO compressed Workflow to an HD (1080i or 1080p) workflow

Embedding and de-embedding to the to our Quad Speed audio bus is provided to the Quad Speed audio bus.
A typical application is using a DEE28 Dolby E encoder/decoder card (or two) for Dolby E based workflows.

- Dual 4-Wire (quad) UHD outputs
- Dual HD output with down conversion from UHD (4-Wire)
- Dual UHD TICO compression decoder
- Compatible with the following input (auto selecting) and output formats
  - 1080p/50
  - 1080i/50
- 1x 1Gb/s Ethernet for the legacy Ethernet port (bridge function) and control
- Quad speed audio bus Embedding and de-embedding through synapse bus (At time of writing only one video channel can become the source of the Quad Speed Bus)
- 10Gb/s Ethernet SFP+ cage, supports SR, LR, ZR range modules
- Multicast and Unicast selectable per streams
- Selectable VLAN per stream
- Compatible protocols
  - DNS , MDNS, IGMPv2, DHCP, MDHCP, 802.1as, SMPTE2022-6

Applications

- Ethernet to SDI bridge for TICO compressed UHD workflows
- Tailboard applications
- Point to point (back to back) applications for direct replacement of CWDM systems
- Mobile stage box applications with SFR-Mobile
- Embedding onto a TICO compressed stream

Ordering information

Module:

- **NUG220:** 2 channel UHD/4K Ethernet bridge with TICO decoder and down converter

Standard I/O:

- **BPH50_NUG220:** I/O-panel for NUG220

Specifications

Serial Video Input

Standard	SD,HD and 3Gb/s SDI: SMPTE 292M, SMPTE 259M, SMPTE424
Number of Inputs	10 Bidirectional shared with outputs
Connector	DIN 1.0/2.3
Equalization	Typical maximum equalized length of Belden 1694A cable: 90m at 2.97Gb/s, 120m at 1.485Gb/s, and 250m at 270Mb/s
Return Loss	> 15dB up to 1.5GHz

Serial Video Output

Number of Outputs	10 Bidirectional shared with inputs
Connector	DIN 1.0/2.3
Signal Level	800mV nominal
DC Offset	0V ±0.5V
Rise/Fall Time	135ps nominal
Overshoot	< 10% of amplitude
Return Loss	> 15dB up to 1.5GHz (typ.) > 10dB up to 3GHz (typ.)
Wideband Jitter	< 0.2UI

Miscellaneous

Weight	Approx. 450g
Operating Temperature	0 °C to +40 °C
Dimensions	137 x 296 x 40 mm (HxWxD)

Electrical

Voltage	+24V to +30V
Power	<25 Watts