



## NGU220

**2 channel UHD/4K Ethernet bridge with TICO encoder  
and up converter  
NEURON Ethernet bridge**

**A Synapse® product**

*Synapse*

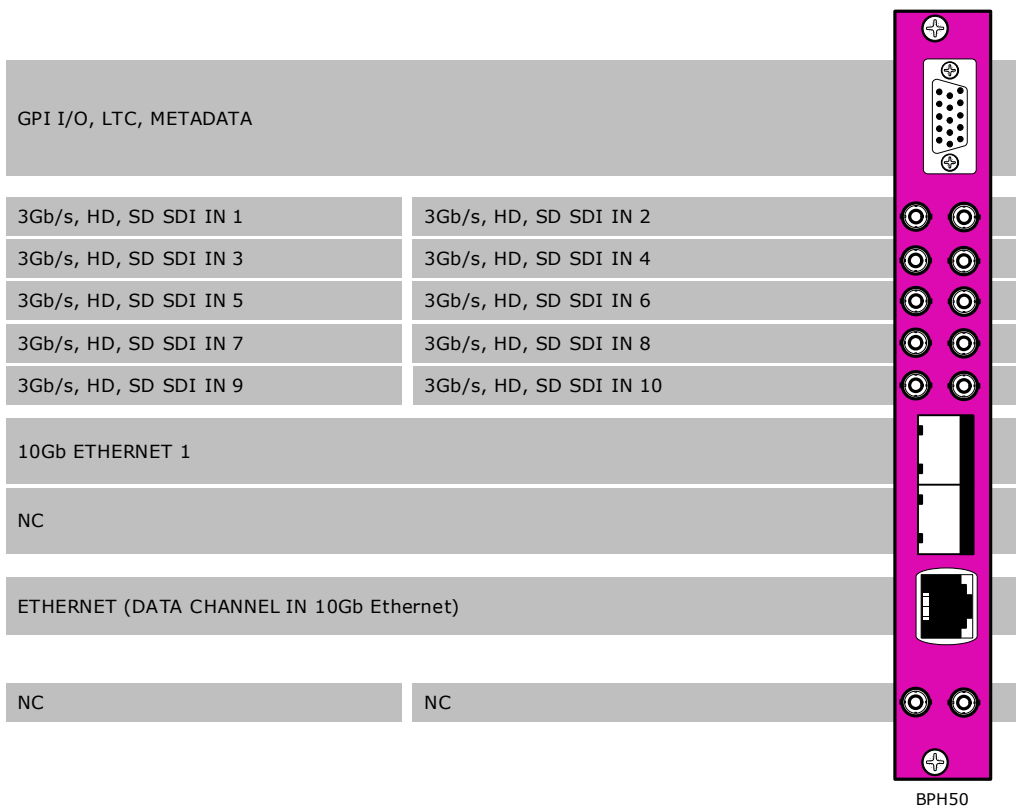
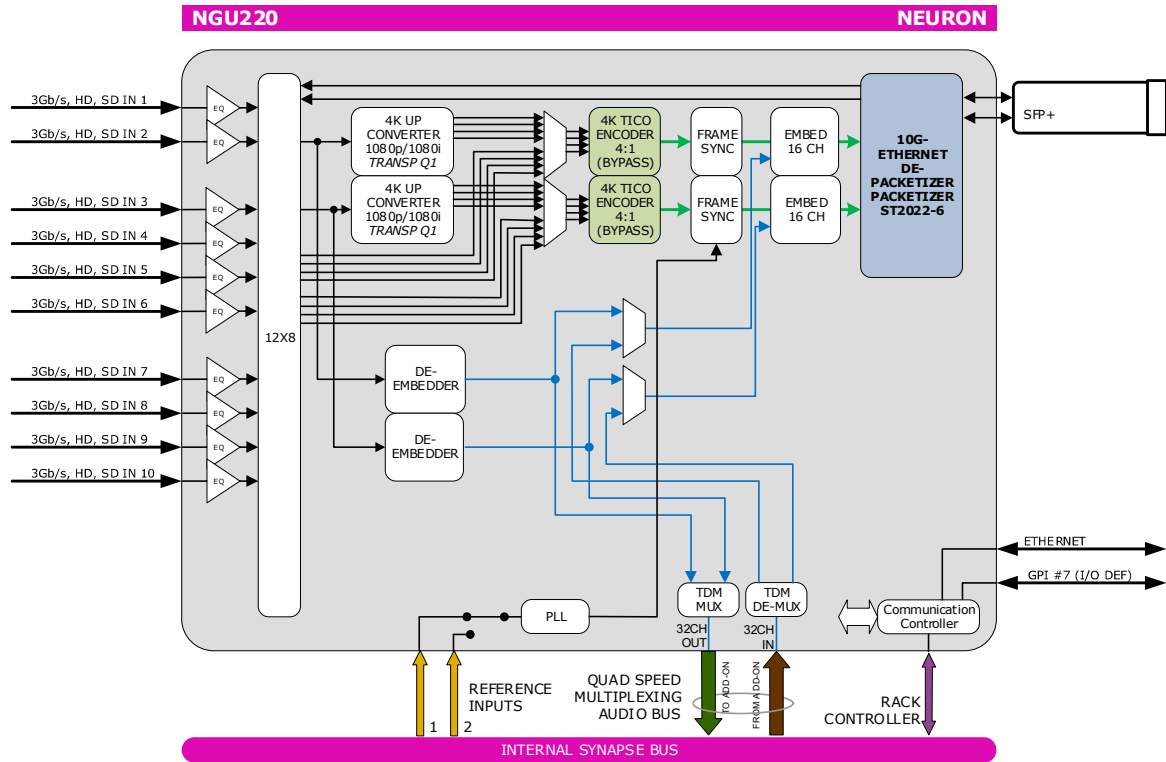


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# Block schematic & I/O panel



## 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.

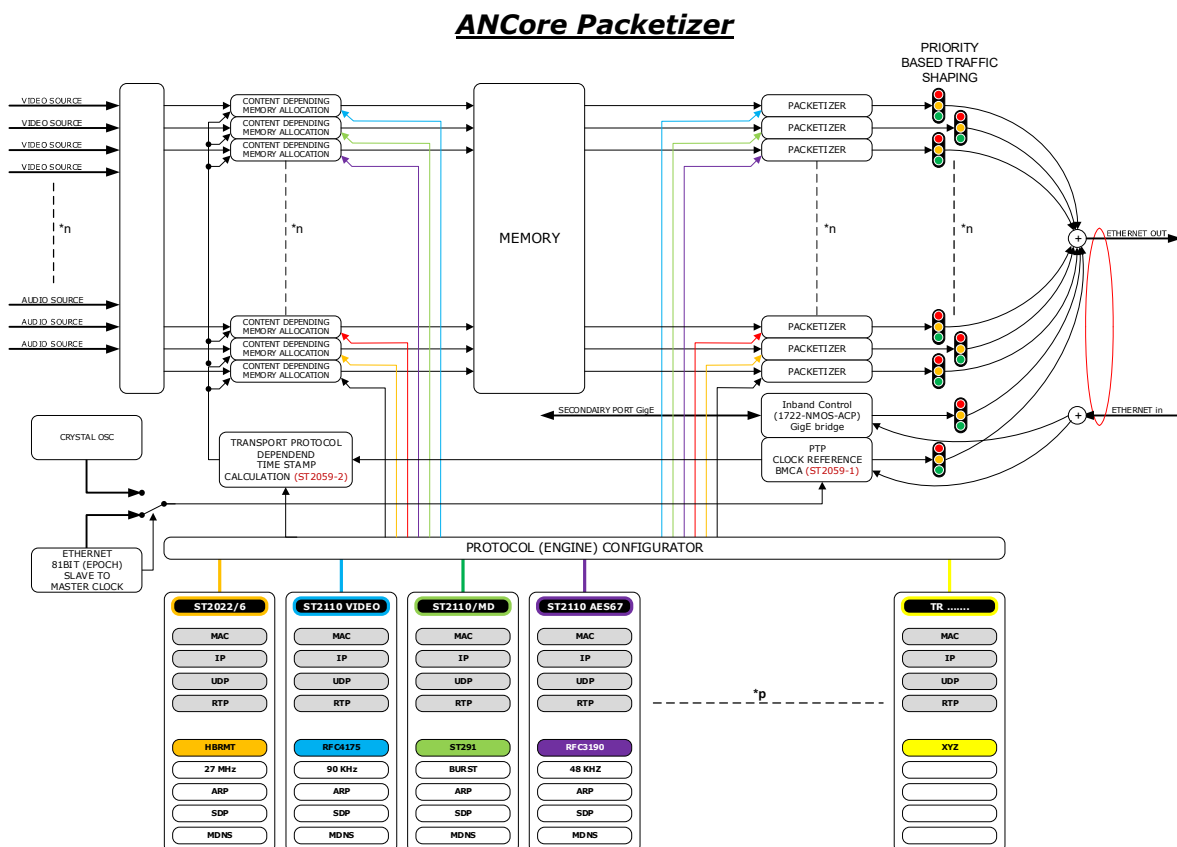
By use of today's massive backbone speed of modern, IT based Ethernet equipment, ANCore will change the way in which video and audio (live) production infrastructures are build.

The ANCore:

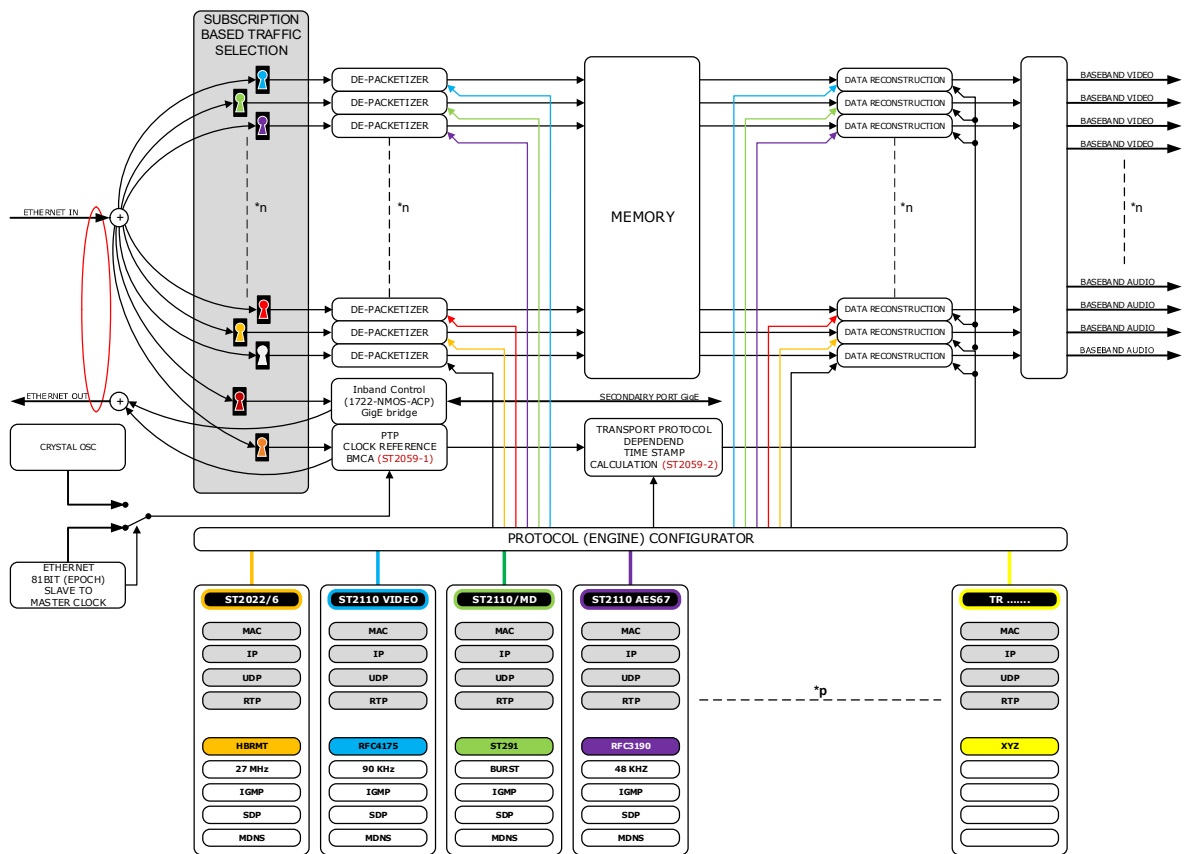
- Axon in-house developed
- Agnostic for all current and future Ethernet based formats.
- Agnostic for all Ethernet speeds
- Modular structure

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 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

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The NGU220 is a Synapse card that can bridge up to 2x 4k/UHD (four-Wire) into a single 10Gb/s Ethernet using TICO compression

The included upconverter also allows 1080i signals to be included into 4K UHD TICO compressed workflow.

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

- Dual 4-Wire (quad or 2Si) UHD inputs
- Dual HD input with up conversion to UHD (4-Wire)
- Dual UHD TICO compression encoder
- 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
- IGMPv2 support
- Compatible protocols
  - DNS , MDNS, IGMPv2, DHCP, MDHCP, SDP, 802.1as, SMPTE2022-6,

## Applications

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- SDI to Ethernet 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

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### Module:

- **NGU220:** Dual 4 wire UHD or dual HD upconverted into Tico compressed Ethernet

### Standard I/O:

- **BPH50\_NGU220:** I/O-panel for NUG220

## Specifications

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### Serial Video Input

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<b>Standard</b>	SD,HD and 3Gb/s SDI: SMPTE 292M, SMPTE 259M, SMPTE424
<b>Number of Inputs</b>	8 Bidirectional shared with outputs
<b>Connector</b>	DIN 1.0/2.3
<b>Equalization</b>	Typical maximum equalized length of Belden 1694A cable: 90m at 2.97Gb/s, 120m at 1.485Gb/s, and 250m at 270Mb/s
<b>Return Loss</b>	> 15dB up to 1.5GHz

### Serial Video Output

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<b>Number of Outputs</b>	8 Bidirectional shared with inputs
<b>Connector</b>	DIN 1.0/2.3
<b>Signal Level</b>	800mV nominal
<b>DC Offset</b>	0V $\pm$ 0.5V
<b>Rise/Fall Time</b>	135ps nominal
<b>Overshoot</b>	< 10% of amplitude
<b>Return Loss</b>	> 15dB up to 1.5GHz (typ.) > 10dB up to 3GHz (typ.)
<b>Wideband Jitter</b>	< 0.2UI

### Miscellaneous

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

### Electrical

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<b>Voltage</b>	+24V to +30V
<b>Power</b>	<25 Watts