

# Neuron NPH1616 Feature list

**Version 2.7.1, February 2020**  
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## Disclaimer I/O compatibility

This device has been designed and tested to be compatible with the specified standards. We cannot guarantee compatibility in every application nor compatibility with every third party device. If you encounter compatibility issues please contact your Axon representative for technical assistance.

# Features

√ = implemented √\* = new in this release

Version number NPH1616 v2.7.1/2	Features
<b>Video</b>	√
16-SDI in	√
16-SDI out	√
2160p50, 1080p50, 1080i50, 720p50 SDI	√
1080p50, 1080i50, 720p50 IP (Ancore)	√
UHD-SDI using four wire square division (in/out)	√
Frame sync to Black-burst input 1	√
Frame sync to PTP	√
Frame sync to SDI input 1	√
Analog bi-level reference out Locked to PTPv2	√
Downscale from 2160p50 to 1080p50	√
Downscale from 2160p50 to 1080i50	√
Downscale from 2160p50 to 720p50	√
Downscale from 2160p50 to 625	√*
Downscale from 2160p60 (59.94Hz) to 1080p60 (59.94Hz)	√
Downscale from 2160p60 (59.94Hz) to 1080i60 (59.94Hz)	√
Downscale from 2160p60 (59.94Hz) to 720p60 (59.94Hz)	√
Downscale from 2160p60 (59.94Hz) to 525	√*
Cross from 1080p50 to 1080i50	√
Cross from 1080p50 to 720p50	√
Cross from 1080i50 to 1080p50 (line based quality)	√
Cross from 1080i50 to 720p50 (line based quality)	√
Cross from 720p50 to 1080p50	√
Cross from 720p50 to 1080i50	√
Cross from 1080p60 (59.94Hz) to 1080i60 (59.94Hz)	√
Cross from 1080p60 (59.94Hz) to 720p60 (59.94Hz)	√
Cross from 1080i60 (59.94Hz) to 1080p60 (59.94Hz) (line based quality)	√
Cross from 1080i60 (59.94Hz) to 720p60 (59.94Hz) (line based quality)	√
Cross from 720p60 (59.94Hz) to 1080p60 (59.94Hz)	√
Cross from 720p60 (59.94Hz) to 1080i60 (59.94Hz)	√
Up from 625 to 2160p50	
Up from 720p50 to 2160p50	√
Up from 1080i50 to 2160p50	√
Up from 1080p50 to 2160p50	√
Up from 525 to 2160p60 (59.94Hz)	√*

Up from 720p60 to 2160p0 (59.94Hz)	√
Up from 1080i60 to 2160p60 (59.94Hz)	√
Up from 1080p60 to 2160p60 (59.94Hz)	√
Use HD test pattern (no native 4K support)	√
Audio delay (not adjustable; just follows video)	√
QSFP1 <=1M Direct Attached Copper (DAC) support	√
QSFP1 Short Range (SR) optical fiber support	√
Report QSFP1 link status	√
SFP+ Short Range (SR) optical fiber support	√
Report SFP+ link status	√
16 ST2022-6 listeners (8 per mac; 2 macs; 7*1080p + 1*1080i)	√
16 ST2022-6 talkers (8 per mac; 2 macs; 7*1080p + 1*1080i)	√
16 ST2110-20 listeners (8 per mac; 2 macs)	√
16 ST2110-20 talkers (8 per mac; 2 macs)	√
User is able to enable/disable each individual talker	√
Static mapping of processing pipelines and selected inputs and outputs	√
Selectable Unicast or multicast per IP stream	√
OSD SDI / IP	√
Fixed fan-speed	√
Firmware update support	√
Automatic fan-speed	√
Supporting duplicate Ip addresses (Routing Mode input)	√
Supporting "local host"(Routing Mode)	
Video processing (Opt-UDC16): 16 channel up/down/cross conversion with up to 4 UHD converters	√
Standards supported: UHD-SDI (12G in 2Si) on 50Hz	√*
Standards supported: UHD-SDI (12G in 4 L), 3G-SDI level A/B, HD-SDI, SD-SDI, ST2022-6 on 59.94Hz	√*
Standards supported: UHD-SDI (12G in 2Si and 4L), 3G-SDI level A/B, HD-SDI, SD-SDI, ST2022-6 on 59.94Hz	√*
PTPv2 Master, Neuron locks to external reference and generates PTP clock (Multicast)	
Clean switching IP main back-up synchronous switching	√
Clean switching	√
Fast switching	√
Video proc amp	√
Internal 100G link between two boards	
Dynamic SDR to HDR conversion BT709 2 BT2100, PQ, HLG, SLog3	√*
HDR 2 HDR conversion BT2100 2 BT2100, PQ, HLG, SLog3	√*
Dynamic HDR to SDR conversion BT2100 2 BT709, PQ, HLG, SLog3	√*
<b>Audio</b>	
Up to 256 audio channels on a maximum of 16 ST2110-30 streams capability (in and/or out) (groups of 16 channels)	√
Up to 256 x 256 audio channel shuffler (groups of 16 channels)	√
ST2110-30 in and out (mono channels)	√
Up to 256 audio channels on a maximum of 16 ST2110-30 streams capability (in and/or out) (mono channels)	√

Up to 256 x 256 audio channel shuffler (mono channels)	√
Up to 512 audio channels on a maximum of 32 ST2110-30 streams capability (in and/or out)	√*
Up to 512 x 512 audio channel shuffler	√
Up to 256 channel audio gain (-99dBfs to +12dBfs in 0,25db steps) (groups of 16 channels)	√*
Up to 256 channel audio phase (0 or -180deg) (groups of 16 channels)	√*
Up to 256 channel audio offset delay (up to 1 second per channel in 1ms intervals) (groups of 16 channels)	√*
Up to 256 channel audio gain (-99dBfs to +12dBfs in 0,25db steps) (mono channels)	√*
Up to 256 channel audio phase (0 or -180deg) (mono channels)	√*
Up to 256 channel audio offset delay (up to 1 second per channel in 1ms intervals) (mono channels)	√*
Up to 512 channel audio gain (-99dBfs to +12dBfs in 0,25db steps)	√*
Up to 512 channel audio phase (0 or -180deg)	√*
Up to 512 channel audio offset delay (up to 1 second per channel in 1ms intervals)	√*
<b>General</b>	
Inputs are signalled to ACP2 and read by Cerebrum	√
Outputs can be set by Cerebrum	√
Up conversion	√
Up to 32 channel frame-sync to local clock on external ref (Tri level)	√
Audio processing (Opt-PR512): Audio gain	√
Audio processing (Opt-PR512): Audio Phase	√*
4x 25G on SFP+	√
Each SDI or IP input can be used as a back-up signal for an SDI or IP output.	√
A single SDI or IP input can be replicated to 2 IP outputs for creating identical stream (port replication)	√
Find My Neuron	√
<b>Protocols</b>	
IS-04	√
IS-05	√*
ACpv2 protocol support	√
DNS protocol support	√
IGMPv2 protocol support	√
ST2059-2 PTP master	√
ST2059-2 PTP slave	√
Fire Code FEC support for QSFP1	√
Reed Solomon FEC support for QSFP1	√
ST2110-20 Tx, 16 streams	√
ST2110-20 Rx, 16 streams	√
ST2110-30 Tx, 16 streams	√
ST2110-30 Rx, 16 streams	√
LLDP	√
IGMPv3	√
SDP	√
ST2110-20 block packing mode	√

ST2110-20 general packing mode	√
<b>Certification</b>	
UL certified	√