



Intelli-X3 series

System Management



REDESIGNING
THE STANDARDS

Intelli-X3 series

System Management

System management processors

The Intelli-X3 series combines intuitive control software with fast and fully-featured system management processing. The Intelli-series sets the new benchmark in audio system management with Dante audio over IP networking capability supporting full network redundancy.

Featuring internal processing up to 192 kHz as standard, high-end studio-grade analogue circuit designs and mastering-grade compressors, the new Intelli-X3 series sets the new standard in system management and speaker processing design.

With over 15 years of digital audio expertise, the new Intelli-X3 48 is the latest generation of digital audio products from Apex. Building on the success of the original Intelli-X²-series we have delivered a product featuring premium audio performance in combination with an interface that is both powerful and intuitive.

Designed in close collaboration with sound engineers, system techs and system integrators, the new Intelli-series redefines what a system management



 **Dante**[®]

speaker processor should achieve. Not only does it lead the field in terms of audio performance, but it also provides full control of processor parameters via an intuitive front panel design and the Apex Intelli-Ware software control platform. Designed to be Plug-and-Play, the Intelli-X3 is simple to configure and easily integrates into any network.

Whether the application is for a standalone system controller or crossover, configured using front panel controls, or a comprehensive wireless networked system for Stadium or Arena sized tours, the Intelli-X3 will be up for the task. With a comprehensive factory preset

Features

- Dante audio over IP with full network redundancy
- Fast to learn "one-click-away" user interface
- Simultaneous control from multiple computers
- Copy and paste of a complete device, a complete channel or a single function
- Ganging of complete devices, complete channels or single functions
- Off-line preset loading, editing and saving
- Integration with Rational Acoustics Smart 7 or 8 and WaveCapture LiveCapture
- Resizeable interface to match any size of screen from tablet to large screen

library provided as standard, implementing the Intelli-series into your system couldn't be easier.

Reliability hasn't taken a back seat either. Comprehensive test procedures including vibration and thermal tests, extended soak testing and the use of high-reliability power supplies all ensure that the Intelli-X3 is as reliable as possible against the rigors of life on-the-road.

Features

The Intelli-series provides all the system management tools necessary for comprehensive system alignment and EQ, through to the provision of IIR and custom FIR based crossovers.

The new Intelli-series features a no-compromise design resulting in unmatched audio performance, even when using lower sample rates. The internal processing is selectable from 44.1 kHz to 192 kHz, providing full compatibility with both standard and high-end sample rate formats. Sample rate converters are provided on the inputs as standard and



Local I/O



Gain



Delay



GEQ



PEQ



Comp



Mix Mtx

may be switched in and out of circuit as required, enabling digital equipment operating at different rates to be connected. A high degree of sonic quality in the analogue domain is also attained based on the no-compromise design philosophy. The new Intelli-series is equally at home in both live and studio applications.

Intelli-X3 I/O can be selected (in pairs) to be either analogue, AES/EBU or Dante audio network, enabling a mix of audio formats to be used simultaneously.

Comprehensive front panel control means that reliance on computers to configure or tweak parameters is a thing of the past. An exceptionally intuitive front panel, with integral LCD menu (using graphical icons similar to those used on many smartphones) makes operation of the Intelli-X3 extremely quick to learn.

Critical attention has been focussed on synchronisation. Four sync options are available: Dante, AES A/B, AES C/D and internal. The Intelli-X3 series manages synchronisation by providing a three-tiered redundancy approach, ensuring that if any sync source is lost, the Intelli-X3 will automatically revert to another (as defined by the user) ensuring no loss in audio.

An integral date and time-based logging system is incorporated within all Intelli-devices. The log provides details of any key configuration/control changes made and this log is available for viewing on the front panel display, or can be downloaded directly onto a computer.

The Intelli-series is designed to interface easily into any existing (or bespoke) Ethernet network via internal 3-way Ethernet switches. Both automatic IP (DHCP) and static IP configuration is provided as standard, enabling plug & play connectivity and more rigid IP assignments for use in fixed installations. SNMP support also provided. Wireless access points can be directly connected to Intelli-X3 devices allowing direct control over a wireless network.

Dante Audio over IP network

Intelli-X3 support full redundant Dante audio over IP, an uncompressed, multi-channel digital media networking technology, with near-zero latency and synchronization. Dante is the preferred audio networking solution that has been



Intelli-X348

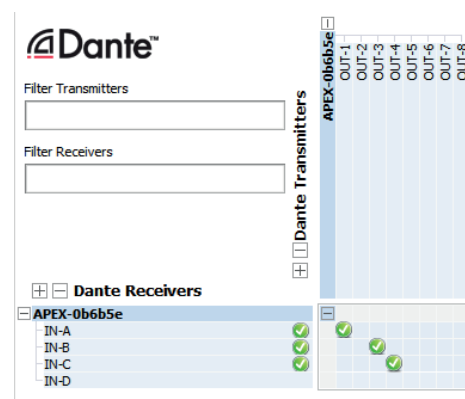


Rear view

adopted by more pro-audio AV manufacturers than any other networking technology. Interoperability is not a dream of the future, but a reality today.

Signal routing and system configuration with Dante is fast, simple, and incredibly flexible. Dante Controller is a powerful software application that manages devices on the network. Setting up a Dante network is typically just a matter of plugging devices into an Ethernet switch and connecting a computer to the network. All Dante devices are automatically discovered and displayed in Dante Controller, so you can be up and running in seconds.

Intelli-X3 devices support 'glitch-free' redundancy, enabling a secondary physical network to be provided, duplicating the audio traffic on the primary network. This automatically prevents any audio loss or interruption in the event of a connectivity problem on the primary network.



Delay



Drv Align



X-Over



PEQ



Gain



Limiter



Local I/O

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Intelli-Ware

The Intelli-X3 is designed to be controlled remotely via the Apex Intelli-ware controller software application.

Intelli-Ware is designed to provide fast and intuitive control from both portable Touch and Tablet PCs, and tethered PCs. The interface mirrors the powerful, but intuitive design of the hardware, whereby operation is predominantly icon driven.

Intelli-Ware also provides comprehensive system-wide ganging and copy/paste allowing complex configurations to be configured, presented and stored in a more efficient and intuitive way. The Intelli-Ware screen layout is fully configurable and can be sized to match any type of display.

Full offline design capabilities are provided within Intelli-Ware enabling shows to be prepped offsite.



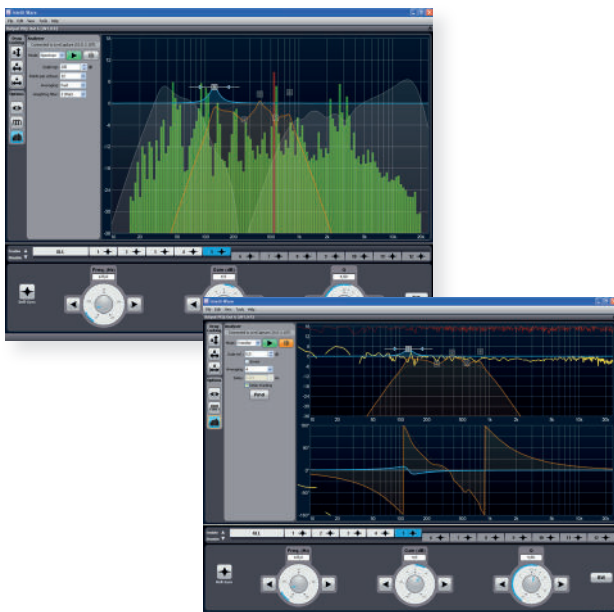
Analyser Bridge

The Apex Intelli-Ware software application (as used with the Intelli-X348 series of audio processors) now comes complete with an analyser-bridge feature, enabling comprehensive integration of WaveCapture Live-Capture (Light and Pro versions) and Rational Acoustics Smaart 7/8 sound measurement software applications.

The bridge is available at no extra cost and is an integral part of the Intelli-Ware software application. Only a fully licensed copy of Smaart or Live-Capture is required. Network-based communications permit a fast and smooth RTA/Transfer function underlay display on every PEQ or X-over frequency response screen.

The analyser software can run on either the same computer running Intelli-Ware, or a separate computer connected to the same network; thus offering very flexible configuration options such as running the analyser on a powerful laptop with Intelli-Ware running on a Wi-Fi connected Tablet.

Featuring comprehensive integration, the analyser-bridge enables control of all commonly used sound measurement tools found on Live-Capture and Smaart 7/8, all directly from within Intelli-Ware (such as the ability to invert the transfer response to provide a target EQ curve).



Electrical specifications

Balanced line level inputs

Connectors:	3-pin XLR (software switch-able between analog and AES-3)
Type:	electronically balanced
Impedance:	>10k ohms, balanced
Common mode rejection:	>90dB
Max input level:	21, 24 dBu software selectable, balanced, 1% THD+N
Frequency response:	20 Hz - 20 kHz, ± 0.3 dB
THD+N:	less than 0,0055%, +4 dBu, 20Hz- 20 kHz, 22 kHz BW
Dynamic range:	120 dB, 20 Hz to 20kHz, un-weighted at +21dBu headroom settings
Crosstalk:	>90 dB
AD conversion:	24-bit, sigma-delta, tandem

Balanced line level outputs

Connector:	3-pin XLR (software switch-able between analog and AES-3)
Type:	electronically balanced
Impedance:	<50 ohms, balanced
Max output level:	15, 21 dBu software selectable, into 600 ohms, balanced, 1% THD+N
Frequency response:	20 Hz - 20 kHz, ± 0.3 dB
THD+N:	less than 0,007%, +4 dBu, 20Hz- 20 kHz, 22 kHz BW
Dynamic range:	120 dB, 20 Hz to 20kHz, un-weighted at +21dBu headroom settings
Crosstalk:	>90 dB
DA conversion resolution:	24-bit

AES-3 inputs

Connector:	3-pin XLR (software switch-able between analog and AES-3)
Type:	transformer isolated
Impedance:	110 ohms, balanced
Supported formats:	AES-3 and SPDIF up to 24-bit
Supported sample rates:	32 to 192 kHz

AES-3 outputs

Connector:	3-pin XLR (software switch-able between analog and AES-3)
Type:	transformer isolated
Impedance:	110 ohms, balanced

Dante Audio over IP

Connector:	2x Neutrik ethercon (seperate from control network)
Connection:	2x 1Gb
Redundancy:	Yes (switched or Redundant Pri/Sec modes)
Input / output channel:	4 sources x 8 sinks

Audio Clocking

Clock sources master:	Internal low jitter clock
Clock sources slave:	Dante PTP clock, AES A/B, AES C/D

Digital processing

Sample rate:	44,1kHz, 48kHz, 88,2kHz, 96kHz, 176,4kHz or 192kHz selectable
Internal processing:	Dual 32-bit floating point processors
Input / output channel:	4 in x 8 out

Network remote control

Built-in Ethernet switch:	IEEE 802.3 10Base-T/100Base-TX
Connectors:	3 x Neutrik EtherCon, Auto MDI-MDIX
Protocol:	Proprietary UDP/IP based, SNMP

Mains

Connector:	Neutrik PowerCon
Voltage:	Auto-detect 100-240 Vac (+/- 10 %) – 50-60 Hz
Power consumption:	< 60 VA

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Input channels functions

Gain:	-80 to +15dB, 0,1dB steps
Polarity:	normal / inverted
Delay:	
Duration:	0 to 1500ms, sample rate depend steps,
Distance:	0 to 500m
Temperature:	-20 to 50°C (-4 to 122°F), 0,1° steps
Relative humidity:	0 to 100%, 0,1% steps
GEQ:	30-band ISO centred, +/-15 dB, proportional-Q or constant-Q mode selectable
PEQ:	
Bands	12
Filter types:	Bell-Symmetrical, Bell-Asymmetrical, Notch, Low-Shelving 6dB/oct, Low-Shelving 12dB/oct, High-Shelving 6dB/oct, High-Shelving 12dB/oct, All-Pass 90°, All-Pass 180°, High-Pass 6dB/oct, High-Pass 12dB/oct, High-Pass Vari-Q 12dB/oct, Low-Pass 6dB/oct, Low-Pass 12dB/oct, Low-Pass Vari-Q 12dB/oct, Band-Pass
Frequency:	10Hz to 22kHz, 0,1Hz steps
Gain:	-40 to +15dB, 0,1dB steps (when applicable)
Q:	0,1 to 48, 0,01 steps (when applicable)
Compressor:	
Threshold:	-80 to 0dBfs, 0,1dB steps
Ratio:	1:1 to 20:1, 1 steps
Knee:	hard or soft
Attack time:	0,5 to 100ms, 0,1ms steps
Release time:	5 to 5000ms, 0,1ms steps
Side-chain mode:	flat, high-pass or band-pass mode
Make-up gain:	0 to +10dB, 0,1dB steps

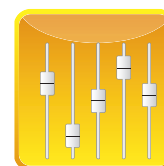
Mix matrix functions

Gain:	-80 to +15dB, 0,1dB steps
Routing:	enabled/disabled

Output channel functions

Delay:	
Duration:	0 to 1500ms, sample rate depend steps,
Distance:	0 to 500m
Temperature:	-20 to 50°C (-4 to 122°F), 0,1° steps
Relative humidity:	0 to 100%, 1% steps
Driver alignment:	
Duration:	0 to 30ms, sample rate depend steps,
Distance:	0 to 1029cm, 0,1cm steps (temperature and relative humidity independent)
PEQ:	
Bands	12
Filter types:	Bell-Symmetrical, Bell-Asymmetrical, Notch, Low-Shelving 6dB/oct, Low-Shelving 12dB/oct, High-Shelving 6dB/oct, High-Shelving 12dB/oct, All-Pass 90°, All-Pass 180°, High-Pass 6dB/oct, High-Pass 12dB/oct, High-Pass Vari-Q 12dB/oct, Low-Pass 6dB/oct, Low-Pass 12dB/oct, Low-Pass Vari-Q 12dB/oct, Band-Pass
Frequency:	10Hz to 22kHz, 0,1Hz steps
Gain:	-40 to +15dB, 0,1dB steps (when applicable)
Q:	0,1 to 48, 0,01 steps (when applicable)
High-pass and low-pass crossover:	
Filter types:	Butterworth 6 to 48dB/octave, 6dB steps Linkwitz-Riley 12 to 48dB/octave, 12dB steps Bessel 12 to 48dB/octave, 6dB steps
Frequency:	10Hz to 20kHz, 0,1Hz steps
FIR filters:	
At 48 kHz:	8 x 1024 taps or 8 x 512 taps
At 96 kHz:	3 x 1024 taps or 6 x 512 taps

Gain: -80 to +15 dB, 0,1 dB steps
Polarity: normal / inverted
Limiter:
 Type: Dual-stage, RMS + Peak limiter
 RMS threshold: -80 to 0 dBfs (or dBu equivalent), 0,1 dB steps
 Peak threshold: -80 to 0 dBfs (or dBu equivalent), 0,1 dB steps
 RMS attack: 0,1 to 100 ms, 0,1 ms steps
 Peak attack: 0ms
 Release: 5 to 5000 ms, 0,1 ms steps
Operating
 Temperature: 0° to 50° C
 Relative humidity: 10 to 60 %, non-condensing



Environment

Storage
 Temperature: -20° to 70° C
Dimensions
 Unit
 Width: 483 mm (19-inch)

Mechanical specifications

Height: 43,6 mm (1,75-inch - 1U)
 Depth: 286 mm

 Package
 Width: 590 mm
 Height: 120 mm
 Depth: 400 mm

Weight
 Unit (Nett): 3,75 kg
 Package (Shipping): 5,5 kg

Block Diagram

