

AUDIONET

Scientific magic.

DNP

The Birth of a New Reference



This is a scientific paper.
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Thanks very much. We're glad you are with us.

Scientific magic.

The Birth of a New Reference

Audionet's new DNP (Digital Network Preamplifier) offers a new standard in combining world class tone, dynamics and reference class sound staging with access to a multitude of digital formats, turning digital music data into a captivating listening experiences. The Audionet DNP is a high potential preamplifier that competes favorably with the world's best, including our own, all analog Audionet PRE G2. The Audionet DNP is capable of handling both coarse and fine dynamic with outstanding musical exactness and finesse while paying special attention to imaging as well as room correction. In combination with Audionet's new reference external power supply, the EPX, the DNP reaches new levels of performance, featuring the usual Audionet qualities of presenting music as realistic as possible and free from grain, distortion or coloration, while offering also rarely found level of convenience and customization in integrating signals from computers, servers, HDD, USB sticks and streaming from the internet.



The Audionet DNP is the first preamplifier which can be fully integrated into a network and controlled completely by Windows, Linux or Mac computers. Users worldwide noticed the outstanding ease of use, making programming the DNP a breeze. Our in-house developed software RCP (Audionet RCP – Audionet Remote Control Point) allows the user to organize complex functions and settings effortlessly through a GUI (graphic user interface).

“... The Twin-Turbo preamplifier ...”

(HiFi & Records, Germany)

Additionally intuitive and powerful apps are available, which interfaces with all tablet PCs and smart phones, including all members of the Android and iOS operating

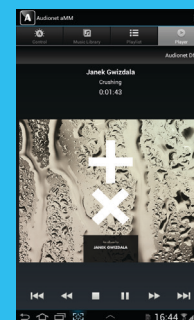
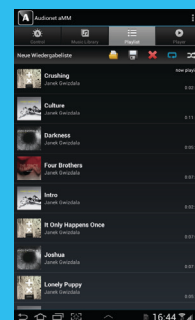
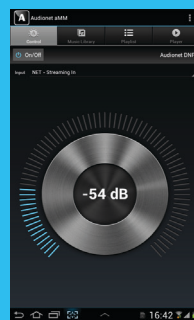
“... really a ground breaking component, redefining what a 'full function preamp' means today ...”

(HiFi & Records)

systems (Audionet aMM – Audionet Music Manager for Android, Audionet iMM – Audionet Music Manager for iOS). The RS-232 interface allows in addition for professional integration into home automation systems. At long last it can also be controlled in the classic way with the Audionet System Remote Control.

The Audionet DNP is the very first stereo preamplifier that is equipped with an ultra precise delay, bass, and equalization management, allowing for very nuanced balance adjustment while preserving the coherence of the music. The Audionet DNP allows near unlimited options to adjust the music reproduction, setting a new standard in high quality customizable music reproduction systems. To accomplish this, we have further enhanced our proven and acclaimed digital filter technology and integrated it into the DNP. A pair of subwoofers may be integrated, which are separately adjustable in all parameters. Room influences and tonal challenges and problems can be efficiently corrected. Speaker arrangements can be optimized for every possible listening situation. Joined with Audionet's room analysis software, CARMA, which captures and analyzes the acoustical behavior and properties of the room, the Audionet DNP is now able to perform professional grade room compensation and correction for the passionate amateur and expert.

The Audionet DNP offers a wealth of features. It receives internet and FM radio, has a USB audio and a digital USB-A interface, can be upgraded with a high-class phono preamp, may be integrated into any home cinema due to its bypass mode and has an excellent onboard A/D converter which can be used for the high-class digitalisation of all analogue sound sources. The inputs can be named freely and different input levels matched. Connected via Audionet Link, other Audionet devices can also benefit from a remote turn-on. A trigger output can be used to control active speakers. And it has even an automatic mains phase recognition.



Maximal connectivity is provided by thirteen (13!) digital inputs, and five analogue inputs; digital ports include WLAN, LAN, USB Audio, and S/PDIF, electrical and optical. In analogue, the DNP features five stereo inputs, four coaxial, and one balanced. In total, the Audionet DNP is capable of powering up to two subwoofers and six amplifiers.

Optionally, the DNP can be extended with our high-quality phono preamplifier board. Audionet's DNP is compatible with the external precision adaptor EPX.

Construction

The DNP's development and realization combines cutting edge circuit design with Audionet's eighteen years of experience in digital and analogue technology. More than 5000 individual components ensure accurate signal processing. Isolated and autonomous power supplies for digital and analogue sections further reduce power source-related imperfections. High-performance processors working in combination with Audionet's proprietary software for digital signal processing manage the digital signal processing of the Audionet DNP.



Equalizer, Delay- and Bass-Management

The DNP's double precision bass management uses 48-bit resolution at all sampling frequencies, enabling the most accurate reproduction of even the lowest frequencies. The bass manager offers freely selectable cutoff frequencies, filter Q factors, and subwoofer phases; thus enabling integration of up to two subwoofers into the network, and are configurable into multi-room outputs.

The digital parametric equalizer uses 5 Minimum Phase Equalizers (MPE), for main channel and subwoofer

outputs. Each MPE is configurable in filter type, frequency, gain, and Q factor within an unusually wide adjustment range, allowing the effective optimization of all parameters and compensation of less than ideal room characteristics or acoustical problems.

The delay manager allows for a range of up to 7 meters, automatically calculating delay times in relationship to the setup and speaker distances while allowing phase control of each subwoofer.

Finish

Front panel:
Brushed aluminium, black anodized, light grey printing
Brushed aluminium, silver anodized, black printing

Display:
Red or blue

Cover:
Aluminium, 6 mm, black anodised

Sides:
Aluminium, 8 mm, black anodised

Chassis:
Sheet steel, 2mm, black varnished



Signal Processing

In order to optimize the D/A conversion, Audionet's engineers pursued the uncompromising reduction and elimination of jitter, resulting in a highly exact, musical and solid sound image, stage and depth. To this end, we have developed Audionet's Intelligent Sampling Technology, which performs with stellar results the analogue signal recovery from the digital bit stream. Audio data is routed through a two-stage filtering and decoupling procedure.

First, the input data is filtered with Audionet's proprietary software using a powerful signal processor and up sampled synchronously, through filters designed for optimal transient and frequency response. At the next stage, the optimized data is then resolved through an asynchronous up sampling procedure at 192kHz/24bit, allowing the complete isolation from any potential jitter originating from the input clock. The resulting audio data is then passed to two high-performance converters, which are clocked by dedicated ultra high precision quartz crystals and individually processed per channel into analogue signals. This method ensures that jitter faults are eliminated – completely lossless – in the analogue signal to the highest degree, resulting in unmatched clarity, room depth, and stage imaging. In addition, power flux interferences are avoided by powering the digital section of the Audionet DNP entirely separately from the analogue section.

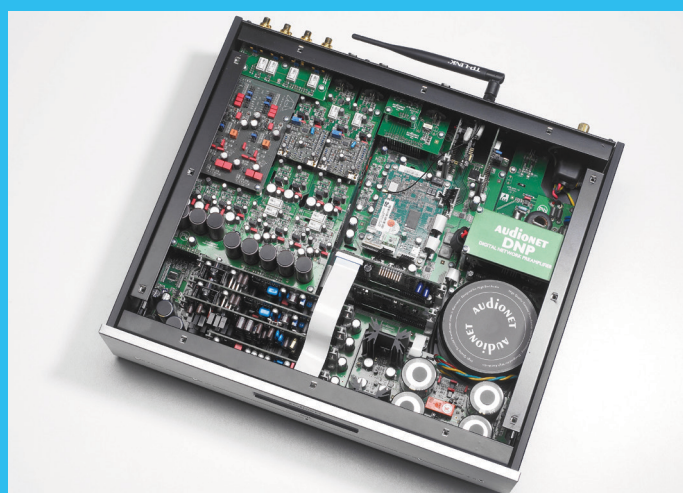
Architecture

No compromise is made in craftsmanship of the analogue signal processing as well. Circuit construction has been designed for maximum performance using only the finest components. At each point, we use the highest quality parts the world has to offer, many of them custom made. For example, filter caps are designed to our specifications

using Japanese silk dielectrics, custom mica caps, and selected high-current foil caps from Germany, manufactured for an ultra low loss angle. Internal wiring is done with top-grade silver/gold alloy.

In order to meet our own standards of performance, operational amplifiers used in the Audionet DNP are manufactured in-house. Each contains more than 86 discrete components, for a unique gain-bandwidth product. The volume level is set by an electronically switched, real time linearized precision resistor network, for unmatched accuracy. To optimize the high frequency properties, the circuits have been miniaturized, and signal paths reduced to a minimum. The circuit layout eliminates sound marring components such as coils, chokes, and capacitors in the signal path.

The analogue section operates on a separate power supply with a 100VA toroidal mains transformer, and 62,000 μF of filtering capacitance, and dual stabilization provided by discrete, instantaneous voltage regulators. In addition, local voltage at each op amp is filtered again with an extra total capacitance of 8,000 μF filtering capacitance. Noise, distortions, and crosstalk are a thing of the past, setting the stage for Audionet DNP's to redefine today's state of the art. The Audionet DNP defines today's metrological state of the art. Noise, distortions and crosstalk have been reduced to a minimum to deliver a maximum of energy, dynamics and sonic purity.



Function

Network-compatible 2.2 channel stereo preamplifier.

Special Features

- Streaming client for internet radio playback (vTuner Internet Radio Service), network devices (UPnP mediaserver) and music data from USB memory sticks
- Supported streaming client formats: WAV (up to 192kHz/24bit), FLAC (up to 192kHz/24bit), ALAC (up to 96kHz/24bit), AIFF (uncompressed, up to 192kHz/24bit), AAC, WMA, OGG-Vorbis
- USB 2.0 (USB-A) for external media control and USB Audio 2.0 (up to 192kHz/24bit)
- 2.0 to 2.2 stereo operation mode (2 analogue subwoofer outputs or usable as multiroom outputs)
- Parametric equaliser and delay manager for all outputs
- Double-precision bass manager with 48bit resolution and freely adjustable crossover frequencies and filter properties
- Audionet Intelligent Sampling Technology with asynchronous upsampling up to 192kHz/24bit
- Precise clock generator for the elimination of clock flank deviations (jitter)
- Sampling frequencies and resolution of the digital inputs: 32 kHz to 192kHz/24bit
- Audionet HighBit interface for all audio data including DVD-A and SACD
- FM radio receiver with RDS function
- Audionet ULA technology (Ultra Linear Amplifier)
- Fully DC-coupled, no capacitors in the signal path
- One 100VA toroidal mains transformer for analogue signal processing
- 62,000 µF total filtering capacitance
- Separate power supplies for digital and analogue section
- Gold-doped, pure silver, solid core signal cabling
- Microprocessor with dedicated power supply controls and handles all functions
- Remote activation of other Audionet component via Audionet Link (optical fiber)
- Headphones output electronically switchable
- Automatic mains phase detection

Bass manager

- Management of one (mixed-mono) or two subwoofer (mixed-mono or stereo)
- Data processing with 48bit resolution (double precision)
- Channels/channel-groups can selectively be driven with the full signal or across the digital frequency crossover with adjustable crossover frequencies and filter qualities.
- X-Bass: Subwoofer can be configured as additional active bass
- Filter quality adjustable from 0.3 to 2.00 in 12 logarithmic steps
- Crossover frequencies adjustable from 20 Hz to 303 Hz in 51 logarithmic steps
- Subwoofer phase switchable

Delay manager

- Adjustment range: Distance Listening position <-> loudspeaker 0m to 7m
- Automatic calculation of the delays resulting from the distance settings

Equalizer

- 5 MPE (Minimum Phase Equalizer) for each main channel and Sub
- Adjustment range for each MPE: Filter type Peak-Filter, High-Shelve, Low-Shelve, high-order filter, low-order filter
- Frequency (f): 20 Hz to 20 kHz, 128 logarithmic steps
- Gain: -12 dB to +6 dB, 0.5 dB-steps
- Quality (Q): 0.3 bis 8.0, in 20 logarithmic steps
- Import of CARMA equalizer settings

Connectors

- WLAN 802.11b/g/n – WEP, WPA, WPA2
- LAN/Ethernet (RJ 45)
- USB 2.0 for external media control
- RS232 (control input)

In- and Outputs

Analogue audio inputs:	4 pairs RCA Line, gold plated, Teflon insulated 1 pair Neutrik XLR balanced, gold plated
Digital audio inputs:	4 RCA, 75 Ohm, gold plated, Teflon insulated 4 optical (TosLink) 1 Neutrik XLR AES/EBU, 110 ohms, gold-plated, teflon insulated 1 USB Audio type B
Audio outputs:	2 pairs RCA, gold-plated, Teflon insulated 2 RCA sub out (multiroom), gold-plated, Teflon insulated 1 pair Neutrik XLR balanced, gold-plated 6.3 mm socket (headphones), electronically switchable
Additional connectors:	1 USB 2.0 1 Ethernet (RJ 45) WLAN antenna (SMA) FM-antenna, 75 Ohm RS232 Screw connector for turntable earth connection Screw connector for additional earth connection, gold plated
Remote activation:	2 Audionet Link OUT, optical (TosLink) 3.5mm-jack plug as trigger output with 12V-switching voltage
External power supply EPX:	5-pin socket
Mains:	IEC male power insert connector

Technical Data

Frequency response:	0 – 1,000,000 Hz (-3 dB), DC-coupled 2 – 1,000,000 Hz (-3 dB), AC-coupled, DC servo 1st order
Slew Rate:	10V/μsec
Channel separation:	between channels: > 100 dB at 20 kHz between inputs: > 108 dB at 20 kHz
Input voltage:	max. 5 Vrms
Input impedance:	Line: 50 kOhm real XLR: 7 kOhm real
Output voltage:	Line: max. 6 Vrms XLR: max. 12 Vrms Headphones: max. 6 Vrms (max. gain 6 dB)
Output impedance:	Line: 24 Ohm real XLR: 48 Ohm real Headphones: 24 Ohm real
Filtering capacity:	> 62,000 μF
Analogue inputs	
THD+N:	< -108 dB from 20 Hz up to 20 kHz at Vin 3 Vrms
SNR:	> 120 dB at 1 kHz referred to Vin, max
Digital inputs	
Sample frequency:	32 up to 192 kHz
THD+N:	Front: < -104 dB
Mains connection:	220...240 V / 50...60 Hz or 100...120 V / 50...60 Hz
Power consumption:	< 1 W stand by, max. 150 W
Dimensions:	width 430 mm height 110 mm depth 360 mm
Weight:	12 kg

Scientific Breakthroughs: Audionet Key Technologies

Audionet-Ultra-Linear-Amplifier ULA

Audionet's worldwide respected and award-winning ULA (Ultra Linear Amplifier) technology is of fundamental importance for our outstanding technology. This highly complex circuit topology, initially conceived with medical engineering in mind, delivers metrological results which mark a limit of feasibility. Even under the most severe strain or in other stress situations signal impurities are barely traceable, and the high return loss guarantees that even the most demanding loudspeakers will perform faultlessly up to their utmost limits.

Audionet Operational Amplifier

Audionet operational amplifiers (OP) are used in our devices at most sound-critical parts of the circuit design to deliver the very best tonal results. Usual operational amplifiers, available in different quality and price ranges on the global market, can't satisfy our core demands for perfect sound quality. Even the most expensive ones with the best results on paper aren't perfect. That's why we have designed our own operational amplifier technology. Any single Audionet OP contains at least 86 parts and components, and our topology ensures an impressive gain-bandwidth-product of 1 GHz.

Asynchronous Upsampling

With the D/A conversion we've focused our highest attention on eliminating jitter, the wobbling of digital signal slopes. Jitter faults curtail the sound reproduction in every respect: imaging, stage and depth rendition will be impaired. The conversion is done using Audionet's Intelligent Sampling Technology which guarantees an absolutely flawless recovery of the analogue signal from the digital bit stream. For this purpose the data are sent through a sophisticated, two-stage filtering and decoupling procedure. First the input data are filtered with Audionet's proprietary software using a powerful signal processor and upsampled synchronously. The filters have been designed under audiophile aspects with regard to an optimised transient and frequency response. The thus optimised data are then resolved through an asynchronous upsampling procedure at 192kHz/24bit. Hereby the bit stream is completely isolated from its input clock and its associated jitter. The data are then fed to high-performance converters, which are clocked by special ultra-precision quartz crystals, and individually processed per channel into analogue signals. This method ensures that jitter faults are

almost entirely eliminated in the analogue signal. No information gets lost and every bit of information will be processed at the right time, bringing forth an unmatched clarity, room depth and stage imaging.

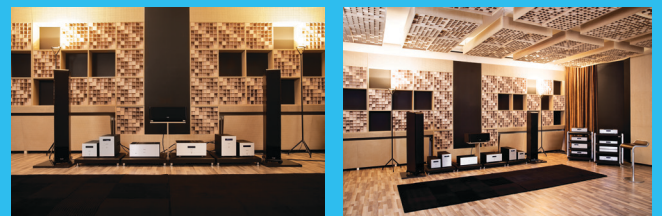
Double-Precision-Bassmanager and Parametric Equalizer

The digital signal processing is accomplished with efficient signal processors and our proprietary Audionet software which was developed and continuously improved exclusively under audiophile aspects in more than 15 years of painstaking scientific labour.

Audionet Listening Room

Listen and be enlightened!

In Audionet's quite incomparable listening room.



The double precision bass management uses a 48bit resolution at all sampling frequencies. Even the very lowest frequencies are therefore precisely reproduced and accurately processed. The bass manager offers freely selectable cutoff frequencies, filter Q factors and subwoofer phases. Thus you can perfectly integrate your subwoofers into the system and into the room.

The digital parametric equalizer uses Minimum Phase Equalizers (MPE) both for the main channels and subwoofer channels. For each MPE the filter type, frequency, gain and Q factor can be selected within an unusually wide adjustment range and disturbing room interference and tonal annoyances efficiently compensated. In combination with CARMA, our computer aided room acoustics measurement system, it is possible even for non-professionals to reach nearly professional results.

The delay manager has an adjustment range of up to 7 m and automatically calculates the delay times from the distances.

Reference

Positive Feedback:

“It is really a ground breaking component, redefining what a ‘full function preamp’ means today. Hopefully, I will get more time down the road to explore some of these.”

HiFi & Records Germany:

“Already today the Audionet DNP gives the answer to the question how a future high-end command centre must look like. The symbiosis of analogue, digital and USB/network components in one enclosure is simply a perfect success. In combination with the EPX precision power supply we have an audiophile twin-turbo, which to me seems to be without any alternative right now.”

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Audionet is a registered trademark of
IDEKTRON Unternehmens- und
Technologieberatung GmbH & Co.
Entwicklungs- und Produktions-KG

Herner Straße 299
44809 Bochum
Germany

Phone +49 (0) 234 507 27 0

Fax +49 (0) 234 507 27 27

kontakt@audionet.de

Errors and omissions excepted. Specifications and design are subject to changes without prior notice.

Sources

VIP G3
ART G3



Integrated Amplifier

SAM G2



Preamplifier

PRE G2
PRE I G3
MAP I
PAM G2



Power Amplifier

MAX
AMP
AMPVII
AMP IV2
AMPV
AMP IV
AMP III



Network Components

DNP
DNA 2.0
DNA I
DNC



Power Supply

EPX
EPS G2

