

Millennia

Music & Media Systems

NSEQ Series Equalizers



NSEQ-2



NSEQ-4

Owner's Manual

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Introduction

Congratulations on your purchase of the Millennia Media NSEQ Equalizer. It uses a minimalist design which has only one active stage in the audio path (Dove Topology). This results in full timbral control with total signal integrity.

The NSEQ-2 features Twin Topology®. You have your choice of a Tube OR Solid State signal path.

The NSEQ-4 uses the world's first (and only) all-discrete, true differential Class-A input buffer/amplifier along with an all discrete J-FET solid state signal path



We will refer to both the NSEQ-2 and NSEQ-4 as NSEQ unless there is an operational difference.

The NSEQs are the result of meticulous listening tests on numerous circuit, topology, and packaging designs. Your NSEQ is a finely tuned instrument intended for critical professional applications — we feel it is the world's most sonically neutral analog EQ. With the emergence of 24+ bit digital audio, recording engineers are faced with a new requirement for undistorted dynamic range. The NSEQ meets this challenge exceptionally well.

Before connecting power to the NSEQ, assure that the rear panel voltage selection fuse block switch is set correctly. In the USA, the NSEQ is shipped with the voltage selection block set to 100-120 VAC. At this voltage setting, a pair of 1 amp 5 x 20 mm slow blow fuses have been factory installed. If you change the voltage selection block to 200-240 VAC usage, be sure to change both fuses to 500 milliamp (0.4 amp) slow blow types.

Safety Precautions

For your safety and the safety of others, be sure to read and understand all safety and operational instructions before attempting to use the NSEQ.



WARNING: The NSEQ's internal circuitry carries lethal voltages. Carefully observe all warnings, precautions, and instructions on the NSEQ and as described in the instructions supplied with the unit.

Water, Moisture, and Spillage – Do not attempt to use the NSEQ in, near, or around water or in unusually moist environments, such as near a sink or swimming pool. Prevent liquids or any other materials or objects from spilling or falling into the NSEQ unit.

Heat & Ventilation – Be sure to allow adequate ventilation on both sides of the NSEQ and avoid blocking the vents.

Power Sources & Power Cord Protection – The NSEQ Power Supply should be connected to a power source only of the type described in the operating instructions or as marked on the Power Supply.

Route the power cord so that it is not likely to be walked on or pinched by having objects placed on it. Pay particular attention to plugs, receptacles, and the point where the AC power cord exits the NSEQ.

Grounding – For your safety, it is extremely important that the grounding pin of the 3-wire power cable (included with 110 Volt units) be inserted into a grounding type 3-pin power outlet. If you are unable to insert the plug into an existing outlet, contact an electrician to install a properly grounded 3-pin power outlet, preferably that with OFI / GFI protection, if available.

Damage Requiring Service – This unit should be repaired or serviced by qualified personnel whenever:

- The AC power cord has been damaged, or
- Objects have fallen or liquid has spilled into any NSEQ unit, or
- The unit does not function properly or exhibits a marked change in performance, or
- The unit has been abused, dropped, or damaged, or
- The unit has been exposed to rain or moisture.

Servicing – Lethal voltages are found inside the NSEQ chassis. The user should not attempt to repair or service this unit. All servicing and/or repairs should be referred to Millennia.

If, after reading all instructions, precautions, and warnings, you have remaining questions, please contact Millennia directly before attempting to use your NSEQ.

The NSEQ enclosure measures approximately 17" wide x 3.5" high x 12.5" deep and is designed for mounting into a standard 1U, 19" equipment rack. If the NSEQ is mounted in a road case or other rack which is prone to strong vibration or shock, it is highly recommended that the rear of the NSEQ be supported or otherwise reinforced to withstand such conditions.

NSEQ is designed on a common ground topology. For high quality operation, and for your own safety and the safety of others, do not defeat the power cord earth grounding pin.



Any changes or modifications not expressly approved by MILLENNIA MEDIA, FPC (Millennia) could void your authority to operate this equipment under the EC, ICAN, or FCC rules.

Copyright – You acknowledge that no title to the intellectual property in the NSEQ is transferred to you.

Inspection – Inspect packing box(es), NSEQ, and cable(s) for damage, unusual marks, or shortages. It is your responsibility to report damage, shortage, or mis-shipments in a timely manner. Millennia and/or its dealers will not be responsible for claims arising from damage in shipping, nor will claims for shortage or mis-shipments be honored, more than 10 days after ship date.

Read this manual carefully and completely before attempting to use the NSEQ. Improper operation could result in damage to product. It is the user's responsibility to understand the safe use and operation of this device.

The shipping box of the NSEQ system will include:

- Quick Start Guide
- UL approved power cord (110 V countries only except Japan)

The material contained in this manual consists of information that is property of Millennia and is intended solely for use by the purchasers of the equipment described in this manual. Without express written permission, Millennia prohibits the duplication of any portion of this manual or the use thereof for any purpose other than the operation and/or maintenance of the equipment described in this manual. This manual may not be duplicated in whole or in part without the written consent of Millennia.

The NSEQ serial number is located on the side and of each unit. We suggest that you record the serial number in the space provided below. Refer to it whenever you call an authorized Millennia repair facility or the manufacturer. Make sure that you register your Millennia product(s) online.

Features and specifications subject to change without notice.

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Serial Number

Purchase Date

Where Purchased

NSEQ Controls



NSEQ-2 Front Panel

- Band In/Out Switch "IN"** — places its associated EQ band in circuit or out of circuit
- Frequency Select Switch** — selects fixed high and low band frequencies
- Peak/Shelf Select** — When LED is on, EQ is shelving at 6 dB per octave. When LED is off, EQ is peaking with a fixed "Q" of 1.0.
- Boost/Cut Control** — +18 dB of boost and -18 dB of cut. Boost/Cut potentiometer has 21 detented positions for accurate repeatability and session logging.
- Parametric Frequency Control** – selects EQ center frequency.
- Parametric Frequency Range Select Switch "10X"** —When LED is on, frequencies as shown on front panel legend are multiplied by 10X. When LED is off, frequencies are as shown on front panel legend.
- Parametric Q Control** – EQ bandwidth.
- Master Equalizer In/Out Select Switch** — "EQ IN" places EQ in the signal path. Hardwired relay bypass when out.
- Twin Topology** — Select J-FET (LED illuminated) or Vacuum Tube circuitry.
- Gain Range** — +/- 18dB or +/- 9dB
- Power Indicator** — when illuminated shows the NSEQ-2 is powered up and active.
- Power Switch** — turns power on and off.



NSEQ-4 Front Panel

- Band In/Out Switch "IN"** — places its associated EQ band in circuit or out of circuit
- Frequency Select Switch** — selects fixed high and low band frequencies
- Peak/Shelf Select** — When LED is on, EQ is shelving at 6 dB per octave. When LED is off, EQ is peaking with a fixed "Q" of 1.0.
- Boost/Cut Control** — +18 dB of boost and -18 dB of cut. Boost/Cut potentiometer has 21 detented positions for accurate repeatability and session logging.
- Parametric Frequency Control** – selects EQ center frequency.
- Parametric Frequency Range Select Switch "10X"** —When LED is on, frequencies as shown on front panel legend are multiplied by 10X. When LED is off, frequencies are as shown on front panel legend.
- Parametric Q Control** – EQ bandwidth.
- Master Equalizer In/Out Select Switch** — "EQ IN" places EQ in the signal path. Hardwired relay bypass when out.
- Balanced/Unbalanced Input**— Unbalanced increases gain by 6dB to compensate for possible signal loss when balanced and unbalanced equipment is used in the same signal path.
- Gain Range** — +/- 18dB or +/- 9dB
- Power Indicator** — when illuminated shows the NSEQ-4 is powered up and active.
- Power Switch** — turns power on and off.



NSEQ Rear Panel

1. **Inputs** — In 1 (Left), In 2 (Right) Conventional 3-pin female XLR input jacks for all balanced or unbalanced line level signals.
2. **Outputs** — Out 1 (Left), Out 2 (Right) Conventional 3-pin male XLR output jacks.
3. **Earth/Audio Ground Jumper** — A barrier terminal which ties earth ground to audio ground. If ground "hum" loops are experienced when using the NSEQ-4, removing this jumper may help. Using this jumper, the integrity of the chassis/earth ground connection is never compromised. **Do not defeat the earth grounding pin on the AC plug.**
4. **AC Voltage Mains Selection** — The fuse block contains two fuses; one fuse is in series with the hot power line while the other fuse is in series with the neutral power line. Both fuses must be installed.

To change the mains voltage selection, remove IEC power connector and assure that the NSEQ-4 is not connected to mains power. With a non-conductive tool, gently pry the fuse block away from the power entry module. Slide out the internal PC Board, turn it over, and reinsert the PCB so that the desired AC mains voltage appears in the viewing window. Double check that the fuses installed correspond to the AC mains voltage range which appears in the viewing window. Gently push the fuse block back until flush and snug.

Fuses: For 100-120 VAC mains, use two 5 x 20 mm, 1A, slow blow, 250 V, Littelfuse 218 or equiv. For 200-240 VAC mains, use two 5 x 20 mm, 1A, slow blow, 250 V, Littelfuse 218 or equiv.

5. **Power Entry** — IEC Power Receptacle for use with removable cords. Use only the power cord provided. (Export units' cords are provided by the distributor.)

Millennia Media reserves the right to change specifications, delivery, and pricing without notice.

NSEQ-2 Specifications

"Q" Range	Q = 0.4 to 4.0 Adjustable on middle ranges Q = 1.0 Fixed on low & high ranges
Maximum Output Level	> + 28 dBu (VT)
Maximum Input Level (EQ Flat)	+ 28 dBu (VT)
Maximum Input Level (EQ Full Boost)	+ 17 dBu (VT)
Frequency Response	
+0 / -3 dB	sub 2 Hz to beyond 300 kHz
Noise (All EQ Stages In, Controls Flat)	-106 dBu (SS), -94 dBu (VT)
Maximum Boost (21 Step Detented)	+20 dB (+10 dB with range switch in)
Maximum Cut (21 Step Detented)	-20 dB (-10 dB with range switch in)
EQ Frequencies	
Low Range Switch (Centers - Peak/Shelf Selectable):	20, 34, 56, 100, 180, 270
Low Mid Sweep:	20 Hz - 220 Hz or 200 Hz - 2.2 kHz. 10X Range switch selectable.
Hi Mid Sweep:	250 Hz - 2.5 kHz or 2.5 kHz - 25 kHz. 10X Range switch selectable.
High Range Switch (Centers - Peak/Shelf Selectable)	4.8 k, 5.8 k, 8.0 k, 10 k, 16 k, 21 k
THD + Noise	
20 Hz - 30 kHz, All EQ Bands Switched In	< .009%, typ < .003 % (VT or SS)
Common Mode Rejection Ratio (With Balanced Option)	
10 Hz - 20 KHz, 100 mV C.M.	> 60 dB, Typ > 80 dB
Slew Rate, +27 dBu Out	> 50 volts per microsecond
Main Hard-wire Bypass Switch For Each Channel?	Yes
Peak/Shelf Selection On High & Low Range?	Yes
Hard-wire Bypass Switching On Individual EQ Bands?	Yes
Input Impedance	25 kilohms
Minimum Output Load Impedance	1 kilohm (VT), 150 ohms (SS)
Recommended Load	> 3 kilohms (VT)
Output Impedance	< 300 ohms (VT), < 5 ohms (SS)
Twin Topology EQ Amplifiers	Switch In: Pure Class-A Discrete J-FETs Switch Out: Pure Class-A Triode Tubes
Power Consumption	40 watts maximum
Power Requirements	Selectable: 100-120, 200-240 V ac, 50/60 Hz
Dimensions/Shipping Weight	19" W x 3.5" H x 12.5", 26 lbs.

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NSEQ-4 Specifications

"Q" Range	Q = 0.4 to 4.0 Adjustable on middle ranges Q = 1.0 Fixed on low & high ranges
Maximum Output Level	> + 28 dBu
Maximum Input Level (EQ Flat)	+ 28 dBu
Maximum Input Level (EQ Full Boost)	+ 17 dBu
Frequency Response	
+0 / -3 dB	sub 2 Hz to beyond 300 kHz
Noise (All EQ Stages In, Controls Flat)	-106 dBu
Maximum Boost (21 Step Detented)	+20 dB (+10 dB with range switch in)
Maximum Cut (21 Step Detented)	-20 dB (-10 dB with range switch in)
EQ Frequencies	
Low Range Switch (Centers - Peak/Shelf Selectable):	20, 34, 56, 100, 180, 270
Low Mid Sweep:	20 Hz - 220 Hz or 200 Hz - 2.2 kHz. 10X Range switch selectable.
Hi Mid Sweep:	250 Hz - 2.5 kHz or 2.5 kHz - 25 kHz. 10X Range switch selectable.
High Range Switch (Centers - Peak/Shelf Selectable)	4.8 k, 5.8 k, 8.0 k, 10 k, 16 k, 21 k
THD + Noise	
20 Hz - 30 kHz, All EQ Bands Switched In	< .009%, typ < .003 %
Common Mode Rejection Ratio	
10 Hz - 20 KHz, 100 mV C.M.	> 60 dB, Typ > 80 dB
Slew Rate, +27 dBu Out	> 50 volts per microsecond
Main Hard-wire Bypass Switch For Each Channel?	Yes
Peak/Shelf Selection On High & Low Range?	Yes
Hard-wire Bypass Switching On Individual EQ Bands?	Yes
Input Impedance	25 kilohms
Minimum Output Load Impedance	50 ohms
Recommended Load	> 500 ohms
Output Impedance	5 ohms
EQ Amplifiers	Pure Class-A Discrete J-FETs
Power Consumption	30 watts maximum
Power Requirements	Selectable: 100-120, 200-240 V ac, 50/60 Hz
Dimensions/Shipping Weight	19" W x 3.5" H x 12.5", 25 lbs.

World Wide Warranty

We will repair our products, free of charge, in the event of defect of materials or workmanship for two (2) years following date of purchase.

This limited warranty covers failures due only to defects in materials and workmanship which occur during normal, intended use and does not cover damage which occurs in shipment or failures which are caused by products not supplied by Millennium Media.

This limited warranty does not cover failures which arise from accident, misuse, abuse, neglect, mishandling, misapplication, faulty installation, improper adjustment, alteration or modification of product, incompatibilities, line-power surges, acts of God, or service performed by anyone other than Millennium Media or its authorized agent.

Limits and Exclusions – There are no express warranties except as listed above. Millennium shall not be liable for special, subsequent, incidental, consequential, or punitive damages, including, but not limited to: damage to recordings, broadcasts, microphones, mixing consoles, or any associated equipment, downtime costs, loss of goodwill, or claims of any party dealing with purchaser for such damages resulting from the use of this product. All warranties express and implied, including the warranties of merchantability and fitness for a

particular purpose are limited to the applicable warranty period set forth above.

Vacuum tube and bulb failures are not covered under warranty. Shipping costs to/from factory are not covered under this warranty. International warranty law may vary from country to country, and Millennium will abide by the law of each country from which the product was initially sold.

For North American repairs and service, contact Millennium (tech@mil-media.com) to obtain a Return Authorization number. Please include your shipping address, daytime phone number and description of the problem. Outside of North America, please contact your local Millennium Distributor.

Discarding Units

In the event that any Millennium equipment manufactured after July 1, 2006 needs to be discarded, you must return it to Millennium, at our headquarters in California, USA. Please contact the distributor in your country or Millennium directly for instructions. We will make arrangements to have the equipment shipped to us at no cost to you, and we will dispose of it in a manner that complies with whatever regulations are in existence at that time.

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The NSEQ is proudly hand-crafted in the USA