

READ THIS FIRST!

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

1. Copyright: You acknowledge that no title to the intellectual property in the HV-3D is transferred to you.
2. Inspection: Inspect packing box(es), HV-3D, and cable(s) for damage, unusual marks, or shortages. It is your responsibility to report damage, shortage, or misshipments in a timely manner. Millennia Media and/or its dealers will not be responsible for claims arising from damage in shipping, nor will claims for shortage or misshipments be honored, more than 10 days after ship date.
3. Read this manual carefully and completely before attempting to use the HV-3D. Improper operation could result in damage to product. It is the user's responsibility to understand the safe use and operation of this device.
4. The shipping box of the HV-3D system will include (1) Owner's Manual, (2) HV-3D, (3) a UL approved power cord, (4) Owner's Registration Card. Fill out the Owner's Registration Card and return to Millennia Media at your earliest ability.

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HV-3D is a trademark of Millennia Media, Inc. All other trademarks are property of their respective holders. Serial numbers are located on the rear left side of each unit. We suggest that you record the serial numbers in the space provided below. Refer to it whenever you call an authorized Millennia Media repair facility or the manufacturer. Make sure that you return your completed warranty card immediately.

Features and specifications subject to change without notice.
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Serial Nos. _____

Purchase Date _____

Where Purchased _____

HV-3D


 The logo for Millennia Media, featuring the word "Millennia" in a stylized, cursive font with a registered trademark symbol, positioned above the word "Media" in a bold, sans-serif font.

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 HV-3D. **WARNING: The HV-3D internal circuitry carries lethal voltages.** Carefully observe all warnings, precautions, and instructions on the HV-3D and as described in the instructions supplied with the unit.

1. WATER, MOISTURE, AND SPILLAGE

Do not attempt to use the HV-3D 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 HV-3D unit.

2. HEAT AND VENTILATION

Be sure to allow adequate ventilation to HV-3D and avoid using or installing unit in close proximity to heat sources, such as heaters, stoves, radiators, power amplifiers, spotlights, or other heat-producing appliances or equipment.

3. POWER SOURCES AND POWER CORD PROTECTION

The HV-3D 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 HV-3D.

4. GROUNDING

For your safety, it is extremely important that the grounding pin of the 3-wire power cable (included with unit) 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 protection, if available.

5. DAMAGE REQUIRING SERVICE

This unit should be repaired or serviced by qualified personnel whenever:

- The AC power cord has been damaged, or
- A 130 Volt DC microphone cable has been damaged, or
- Objects have fallen or liquid has spilled into any HV-3D 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

6. SERVICING

Lethal voltages are found inside the HV-3D chassis. The user should not attempt to repair or service this unit. All servicing and/or repairs should be referred to Millennia Media.

If, after reading all instructions, precautions, and warnings, you have remaining questions, please contact Millennia Media directly before attempting to use your HV-3D. Retain this owner's manual as a record of your purchase to aid positive identification in the event of loss.

QUICK START!

READ THIS!! The HV-3D operates with lethal operating voltages — the voltage inside the HV-3D can kill you. Never, under any circumstances, remove the top cover. Refer to a qualified electronics technician any and all servicing and other operations which require the top cover to be removed.

Congratulations on your purchase of the Millennium Media HV-3D High Voltage Microphone Preamplifier. The HV-3D is the result of meticulous listening tests on numerous circuit, topology, and packaging designs. Your HV-3D is a finely tuned instrument intended for critical professional applications — we feel it offers the world's most sonically neutral microphone preamplification. With the emergence of 24+ bit digital audio, recording engineers are faced with a new requirement for undistorted dynamic range. The HV-3D meets this challenge exceptionally well.

Before connecting power to the HV-3D, assure that the rear panel voltage selection fuse block switch is set correctly. In the USA, the HV-3D is shipped with the voltage selection block set to 100-120 VAC. If you change the voltage selection block to 200-240 VAC usage, be sure to change both fuses to the correct types. See "Rear Panel" instructions for proper fuse requirements.

The HV-3D enclosure measures 19" wide x 3.5" high x 12.5" deep and is designed for mounting into a standard 2U, 19" equipment rack. If the HV-3D is mounted in a road case or other rack which is prone to strong vibration or shock, it is recommended that the rear of the HV-3D be supported or otherwise reinforced to withstand such conditions. The HV-3D runs cool but should be mounted with at least one rack space open above and below the unit.

The HV-3D 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 purpose of the earth grounding pin on the A/C power cord.

HV-3D FRONT-END PROTECTION

Back-to-back Zener diodes protect the super-matched bipolar input transistors against high transient energy spikes common when inserting and extracting XLR connectors. However, to maintain top performance and protect the HV-3D's sensitive front-end, it is advised that you do not insert or extract XLR connectors with preamp AC power on. Get in the habit of turning preamp power off when inserting or removing microphone input or line output cables.

Millennia Media has long enjoyed a reputation for what many engineers call the world's most musically accurate and dynamically stable microphone preamplifier. With B&K (DPA) high voltage mic input option, a fully balanced audio path, enormous *non-padded* input and output headroom, superior technical specifications, world-class internal componentry, optional A/D conversion, and unparalleled sonic performance, the HV-3 series of microphone preamps is already becoming a true classic in the professional audio industry — and will remain contemporary well into the next century. Hence, *Millennia Media*.

HV-3D



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HV-3D REAR PANEL

(1) CONVENTIONAL MIC INPUTS "48V IN (1 - 8)"

Conventional 3-pin female XLR input jacks for use with all conventional balanced microphones, both phantom and non-phantom powered. Provides + 48V Phantom powering. Standard input impedance is approximately 6,200 ohms. Pin 1 is ground. Pin 2 is positive polarity. Pin 3 is negative polarity. Connector contacts are Neutrik Galvatronic gold plated. It is suggested that XLR cable connectors used with the HV-3D employ identical plating.

(2) HIGH VOLTAGE MIC INPUTS "130V IN (1 - 8)"

Four pin female XLR connector for use only with B&K (DPA) models 4003, 4004, 4009, and 4012 microphones. On HV-3D units without this option, a metal plate will cover the unused XLR holes. Pin 1 is ground. Pin 2 is not connected. Pin 3 is + 130 Volts DC power, and pin 4 is unbalanced audio signal. Connecting anything other than the above listed B&K (DPA) models to this connector may result in serious damage to microphone, the HV-3D unit, or both. Connector contacts are Neutrik Galvatronic gold plated. It is suggested that XLR cable connectors used with the HV-3D employ identical plating.

(3) LINE LEVEL OUTPUTS "OUT (1 - 8)"

Conventional three pin male XLR connectors providing balanced, line level microphone output. Pin 1 is ground. Pin 2 is positive polarity. Pin 3 is negative polarity. The line level output is capable of driving 600 ohm loads and long, high capacitance cables. Outputs may be configured in an unbalanced configuration by either grounding one of the audio polarities (pin 2 or pin 3), or taking one audio polarity directly as an unbalanced signal. In the former configuration, the output is automatically increased by 6 dB. Connector contacts are Neutrik Galvatronic gold plated. It is suggested that XLR cable connectors used with the HV-3D employ identical plating.

(4) EARTH/AUDIO GROUND JUMPER

A barrier terminal which ties earth ground to audio ground. If ground "hum" loops are experienced when using the HV-3D, removing this jumper may help. Using this jumper to lift ground, the integrity of the chassis/earth ground connection is never compromised. *Do not* defeat the earth grounding pin on the AC plug.

(5) AC VOLTAGE MAINS SELECTION "100-120" or "200-240"

A power entry module with a removable fuse holder block. This fuse holder block is selectable for 100 to 120 Volt or 200 to 240 Volt worldwide mains powering. 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 HV-3D is not connected to mains power. With a non-conductive tool, gently pry the fuse block away from the power entry module. Remove the two fuses and replace both with type as shown below. 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 2 ch, use 5 x 20 mm, 400 mA, slow blow, 250 V, Littelfuse 218 or equiv.

For 100-120 VAC mains 4 ch, use 5 x 20mm, 630 mA, slow blow, 250 V, Littelfuse 218 or equiv.

For 100-120 VAC mains 8ch, use 5 x 20 mm, 1.00 A, slow blow, 250 V, Littelfuse 218 or equiv.

For 200-240 VAC mains 2 ch, use 5 x 20 mm, 200 mA, slow blow, 250 V, Littelfuse 218 or equiv.

For 200-240 VAC mains 4 ch, use 5 x 20 mm, 315 mA, slow blow, 250 V, Littelfuse 218 or equiv.

For 200-240 VAC mains 8 ch, use 5 x 20 mm, 500 mA, slow blow, 250 V, Littelfuse 218 or equiv.

(6) POWER ENTRY "IEC Power Receptacle"

An IEC-type AC line-power receptacle for use with removable cords. Use only the power cord provided with the HV-3D unit or equivalent U/L approved type SV, SVT, SJ, or SJT AC power supply cord. Do not defeat the third pin earth ground. If ground lifting is desired, remove the Earth/Audio Ground Jumper strap (item number 4 above).

HV-3D FRONT PANEL

(1) HIGH RESOLUTION GAIN CONTROL

Detented, 36-position gain control employing a superior quality Grayhill mil-spec gold plated rotary switch. Switch gain is approximately 1.5 dB per step and is inter-channel matched to better than 0.08 dB at all settings. After a brief warm-up period, adjustment of this switch is virtually silent. Two illuminating pushbutton switches (Green and Amber) determine the gain "range" of the rotary switch. When the pushbutton switches are not depressed (non-illuminated), the mic preamp gain provided is as printed on the front panel (9.0 dB, 10.5 dB, 12.0 dB, etc..). When the green pushbutton switch (only) is depressed and illuminated, add 18 dB to the gain settings as printed on the front panel. When the green and amber switches are both depressed and illuminated, add 36 dB to the gain settings as printed on the front panel. For example, with both pushbutton switches depressed and the rotary switch at 12:00 o'clock position, the preamp gain would be 54 dB (18 + 36).

(2) PHANTOM POWER SELECT SWITCH (" + 48V")

Illuminating pushbutton switch which provides phantom power (+ 48VDC) to the microphone inserted into that channel. When this switch is depressed (illuminated red), phantom power is applied simultaneously through dual 6.81k ohm resistors to pins 2 and 3 of the three pin female XLR input. Use phantom power with condenser and other microphones requiring traditional phantom supply. CAUTION: Applying phantom power to ribbon microphones could damage them. Do not use phantom with ribbons, moving coil, and other microphones which do not require phantom power. Use care, as well, to not insert or extract mic cables from the HV-3D when phantom power is active.

(3) HIGH VOLTAGE SELECT SWITCH (" + 130V") *Optional*

Illuminating pushbutton switch which selects the four pin XLR input (+ 130VDC) for B&K (Danish Pro Audio) high voltage microphones type 4003, 4004, 4009, and 4012. When this switch is depressed (illuminated amber), the HV-3D receives mic-level audio from the four pin XLR input. If you are using a B&K (DPA) high voltage microphone with four pin XLR connectors, depress this switch so that it illuminates. If a conventional microphone is used, do not depress this switch.

The HV-3D will not combine ("mix") both conventional and high voltage microphones on one channel. NOTE: The HV-3D is designed to provide uninterrupted DC power to B&K (DPA) high voltage microphones, regardless where this switch is set. Use care that high voltage microphone cables are not inserted or extracted from the unit when power is on.

(...continued on page 8)

(4) SIGNAL INDICATORS "OL" & "SP" LEDs

The green "signal present" (SP) LED indicates that a nominal signal is present at the microphone input. It is set to illuminate in the neighborhood of -35 dBu. The red "overload" (OL) LED has been set to illuminate when the balanced output reaches a level of +25 dBu. However, the HV-3D can produce unclipped, *undistorted levels over twice this voltage*. Hence, the overload LED is not an indication of preamp clipping. Rather, it is a general reference showing a nominal "system" peak level. If clipping is occurring in your recording path, check all devices connected after the HV-3D and reduce system gains accordingly. In the event that B&K (DPA) 4004 or 4012 microphones are used with hazardous sound pressures (over 130 dB, SPL), an attenuator may be required between microphone and preamp.

(5) PILOT INDICATOR LIGHT

LED which, when illuminated, shows that the HV-3D unit is powered up and active.

(6) POWER SWITCH "POWER"

Rocker switch for switching AC line power on and off.

HV-3D GENERAL SPECIFICATIONS

THD + Noise, 20 Hz - 30 kHz, 35 dB gain	< .0007%, typ .002 % maximum, + 27 dBu out
Frequency Response -3 dB points	Sub 2 Hz to beyond 500 kHz
Frequency Response, Interchannel Deviation	< .10 dB
Maximum Input Level	+ 23 dBu
Maximum Output Level	+ 32 dBu
Input Impedance	6,200 ohms, nominal
Output Impedance	24.3 ohms
Noise (Common source)	-73 dB @ 60 dB gain (-133 dB EIN)
(30 ohm source)	-71 dB @ 60 dB gain (-131 dB EIN)
(150 ohm source)	-68 dB @ 60 dB gain (-128 dB EIN)
Common Mode Rejection Ratio	> 70 dB @ 35 dB gain, 100 mV, to 20 kHz > 85 dB typical
Three-pin XLR Polarity	Pin 2 = positive polarity, Pin 1 = ground
Four-pin XLR Polarity	Pin 1 = ground, Pin 2 = no connection Pin 3 = + 130 VDC (limited to 7 mA) Pin 4 = unbalanced audio

ELECTRO-MECHANICAL SPECIFICATIONS

Power Consumption	30 Watts (4 ch), nominal
Power Requirements	100VAC to 240VAC, 50/60Hz, selectable
Fuses (2 required)	2 ea (5 x 20mm, slow-blow, 250V) see "Rear Panel" section of manual for values
Internal DC Power	+ 130V, + 48V, + 25V, -25V
Dimensions	19" W x 12.5" D x 3.5" H
Net Weight	aproximately 25 pounds (8 ch)

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

A WORD ABOUT DPA (Brüel & Kjær) MICROPHONES

At present, Danish Pro Audio (formerly Brüel & Kjær Pro Audio Division) manufactures two families of 4000-series professional recording microphones. One family is +48VDC phantom powered, the other is +130VDC direct powered. A primary difference between omni families (4003/4 vs. 4006/7) is that the high voltage microphones are transformerless whereas the phantom powered varieties are transformer coupled. Millennium Media has used both varieties extensively with symphony orchestra, choir, jazz ensemble, pop recording, and so forth. We have found the transformerless high voltage omni version to perform substantially better than its transformer-coupled omni counterpart. The transformerless version (4003) sounds generally "clearer" and more true to the source; especially during wide frequency and amplitude extensions. And this is saying a lot considering that DPA's transformer-coupled microphones sound extremely pure.

The following is a brief summary of certain DPA high-voltage microphone products and specifications. Most of this material is taken directly from DPA's documentation and is thought to be accurate, however, Millennium Media assumes no responsibility for errors or subsequent changes in the following specifications. Those desiring up-to-date information concerning DPA microphones should contact DPA directly.

	4003	4004	4012
PATTERN	Omni	Omni	Cardioid
SELF-NOISE	15 dB(a)	24 dB(a)	19 dB(a)
SPL (max)	154 dB SPL	168 dB SPL	168 dB SPL
FREQ (-3dB)	8 Hz - 30 kHz	8 Hz - 45 kHz	35 Hz - 25 kHz
IMPEDANCE	< 30 ohms	< 30 ohms	< 30 ohms
SENSITIVITY	50 mV / Pa	10 mV / Pa	9 mV / Pa

A number of options are available for the 4003 microphone. One grid, the 0777, provides superior omnidirectional response throughout the high frequencies. Another grid, the 0297, provides a high frequency presence boost. The standard grid provides the most accurate response on-axis. A development called the APE (acoustic pressure equalizer) tailors the 4003 to respond like vintage M-50 or newer TLM-50 microphones. The various APE attachments boost mid to high frequencies arriving on axis without exhibiting proximity effect at lower frequencies. When used with various grids, numerous polar patterns and response curves can be achieved.

DPA offers a service of factory-matching new pairs of microphones for tight stereo tracking of sensitivity and frequency response. Millennium Media highly recommends this service and can assist customers in obtaining these microphones. The HV-3D micamp circuits maintain near-perfectly flat, inter-channel matched frequency response and less than 1/4 degree of interchannel phase error — a perfect compliment to a factory-matched pair of DPA microphones.

WARRANTY

Millennia Media will repair this product, free of charge, in the USA, in the event of defect of materials or workmanship for one (1) year following date of purchase. This warranty is extended only to the original purchaser. 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 Millennia 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 Millennia Media or its authorized agent. Vacuum tube failures are not covered under warranty.

LIMITS AND EXCLUSIONS

There are no express warranties except as listed above. Millennia Media shall not be liable for special, subsequent, incidental, consequential, or punitive damages, including, but not limited to: damage to recordings, 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.

Some states do not allow the exclusion or limitation of incidental or consequential damages, or length of time an implied warranty remains in effect. As such, the above exclusions may not apply. This warranty gives you specific legal rights and you may also have other rights which can vary from state to state.

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