Owners Manual

HV-3C

HV-3D

High Voltage Microphone Preamplifiers

Millennia Music & Media Systems

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Introduction

Congratulations on your purchase of the Millennia Media HV-3 series preamp High Voltage Microphone Preamplifier. The HV-3 series preamp is the result of meticulous listening tests on numerous circuit topology, and packaging designs. Your HV-3 series preamp 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- 3 series preamp meets this challenge exceptionally well.

Millennia Media has long enjoyed a reputation for what many engineers call the world's most musically accurate and dynamically stable microphone preamplifier.

With DPA (B&K) high voltage mic input option, DC coupled ribbon mic input option, a fully balanced audio path, enormous non-padded input and output headroom, superior technical specifications, world- class internal componentry, and unparalleled sonic performance, the HV-3 series of microphone preamps will remain contemporary well into the 21st century. Hence, Millennia Media.

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-3 series preamp.

Water, Moisture, and Spillage – Do not attempt to use the HV-3 series preamp 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-3 series preamp unit.

Heat And Ventilation – Be sure to allow adequate ventilation to HV-3 series preamp 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. It is best to leave one rack screw space between units if possible.

Power Sources and Power Cord Protection – The HV-3 series preamp 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-3 series preamp.

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 / CFI 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 HV-3 series preamp 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 HV-3 series preamp 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 HV-3 series preamp.

Before connecting power to the HV-3 series preamp, assure that the rear panel voltage selection fuse block switch is set correctly. In the USA, Canada or Japan, HV-3 series preamp 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.

Note that since 2017, HV-3C and HV-3D preamplifiers have been shipping with switch-mode power supplies. These SMPS's detect mains voltages (90VAC to 243VAC) and adapt automatically -- no need to manually change the fuse block voltage setting.

The HV-3 series preamp enclosure measures 19" wide x 1.75 (HV-3C) or 3.5" (HV-3D) high x 13" deep and is designed for mounting into a standard 19" equipment rack. If the HV-3 series preamp 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-3 series preamp be supported or otherwise reinforced to withstand such conditions.

HV-3 series preamp are 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.

HV-3 series preamp Front-End Protection – Millennia Music & Media Systems enjoys a reputation for what many top engineers and producers call the world's most musically accurate and dynamically uniform microphone preamplifier — the HV-3. But this thoroughbred design is not achieved without certain operating criteria. Back-to-back Zener diodes protect the super-matched discrete bipolar input transistors against high transient energy spikes common when inserting and extracting XLR connectors. To maintain top performance and protect the HV-3 series preamp's sensitive HV-3 front-end, it is advised that you do not insert or extract XLR connectors with power on. Get in the habit of disabling AC power and waiting about ten seconds for the phantom power to fully "ramp down" before inserting or removing a microphone. This is good advice for protecting your microphone investments, as well.

Any changes or modifications not expressly approved by MILLENNIA MEDIA, SPC (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 HV-3 series preamp is transferred to you.

Inspection – Inspect packing box(es), HV-3 series preamp, 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 HV-3 series preamp. 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 HV-3 series preamp system will include:

- Quick Start Guide
- UL approved power cord (110 V countries only)
- Owner's Registration Card, Register online at http://mil-media.com/registration.html or fill out the Owner's Registration Card and return to Millennia at your earliest ability.

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 HV-3 series preamp serial number is located on the rear left side 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 online or return your completed warranty card immediately.

Features and specifications subject to change without notice.

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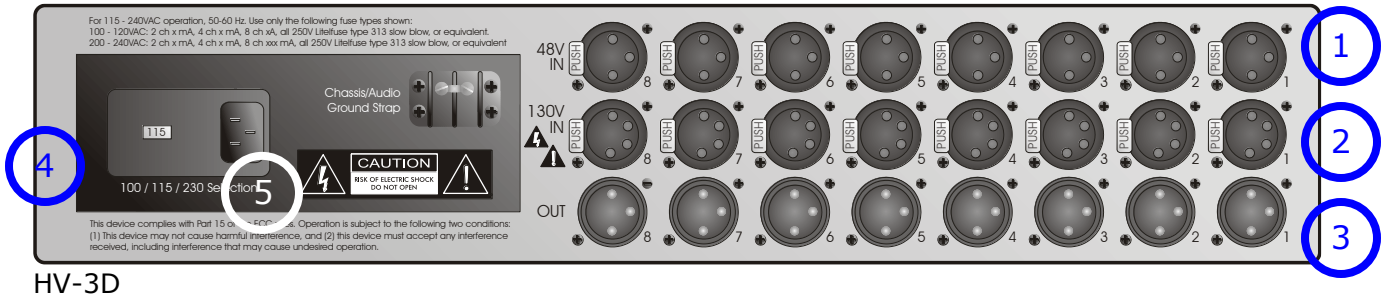
Serial Number _____

Purchase Date _____

Where Purchased _____

HV-3C



HV-3D

Rear Panel

1. **CONVENTIONAL MIC INPUTS** "48V IN " 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.

2. **OPTION MIC INPUTS** Two input options are available; a 130V input and a DC-coupled input. The option inputs are installed in the center row. The drawing shows eight 130V inouts installed.

130V Option
Four-pin female XLR connector for use only with DPA (B&K) models 4003, 4004, 4009, and 4012 microphones. 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 DPA models to this connector may result in serious damage to microphone, the HV-3 series preamp, or both.

DC Option
Three-pin female XLR connector optimized for dynamic microphones (ribbon, etc.). The DC option bypasses the entire phantom circuit and routes a microphone directly to the bases of the matched gain transistors.

3. **LINE LEVEL OUTPUTS** "OUT"
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 (recommended). In the former configuration, the output is automatically increased by 6 dB.

4. **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.

Note that since 2017, HV-3C and HV-3D preamplifiers have been shipping with switch-mode power supplies. These SMPS's detect mains voltages (90VAC to 243VAC) and adapt automatically -- no need to manually change the fuse block voltage setting.

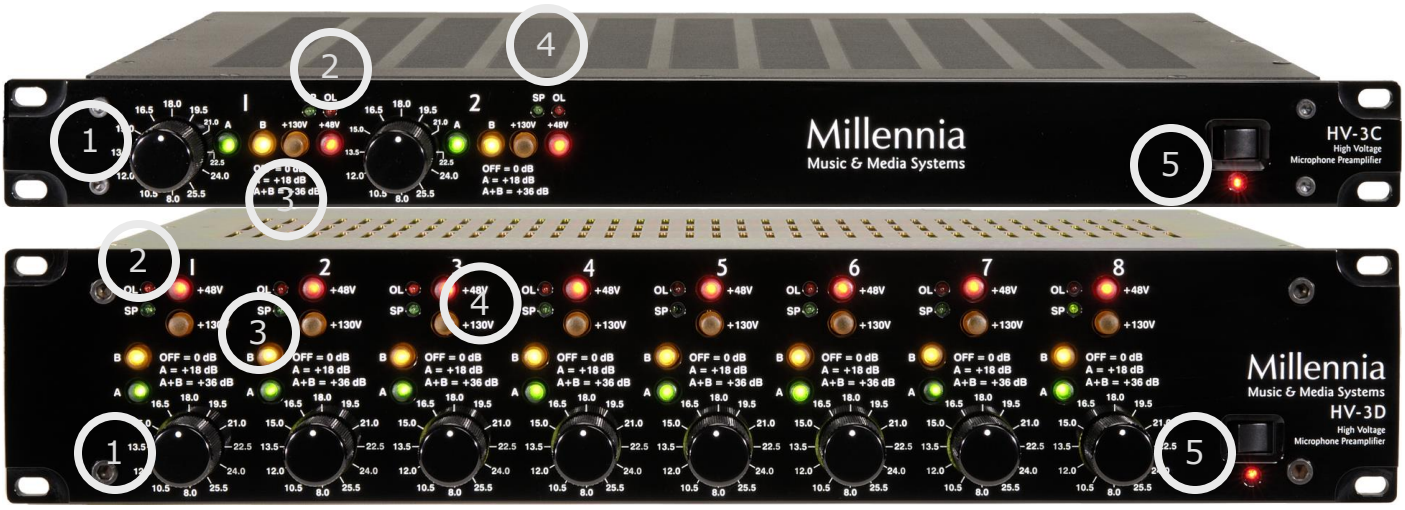
The fuse block contains two fuses — one fuse is in series with the hot power line while the other fuse is in series with the neutral power line. Both fuses must be installed. To change the mains voltage selection, remove IEC power connector and assure that the HV-3 series preamp is not connected to mains 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. Orient the fuse block so that the proper voltage is shown and reinsert into the power entry module.

Double check that the fuses installed correspond to the AC mains voltage range which is shown on the exterior panel. Gently push the fuse block back until flush and snug.

5. **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-3 series preamp unit or equivalent U/L approved type SV, SVT, SJ, or SJT AC power supply cord. Do not defeat the third pin earth ground.

FUSES:
5 x 20 mm,500 mA, slow blow, 250 V, Littelfuse 218 or equiv..



HV-3 Series Preamp Front Panel

1. **HIGH RESOLUTION GAIN CONTRO**L
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-3 series preamp when phantom power is active.

3. **HIGH VOLTAGE SELECT SWITCH** ("+130V")
Optional Illuminating pushbutton switch which selects the four pin XLR input (+130VDC) for DPA (B&K) high voltage microphones type 4003, 4004, 4009, and 4012.

When this switch is depressed (illuminated amber), the HV-3 series preamp 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-3 series preamp will not combine ("mix") both conventional and high voltage microphones on one channel. NOTE: The HV-3 series preamp 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.

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-3 series preamp 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-3 series preamp 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. **POWER SWITCH** "POWER and **PILOT INDICATOR LIGHT LED** - Rocker switch for switching AC line power on and off. When LED is illuminated, shows that the HV-3 series preamp unit is powered up and active.

HV-3 Series Preamp General Specifications

Specifications	
Minimum Gain	8 dB
Maximum Gain (1 dB per step, 61 steps)	69 dB (80 dB on request)
Frequency Response +0 / -3 dB	sub 3 Hz to beyond 300 kHz
Noise 60 dB Gain, 10 Hz - 30 kHz, Inputs common	-130 dB EIN
Total Harmonic Distortion + Noise 35 dB Gain, 10 Hz - 20 kHz bandwidth, +27 dBu Out	< .002%, Typ. < .0007%
Intermodulation Distortion (50 Hz & 7 kHz) 35 dB Gain, +27 dBu Out	< .0009%
Phase Response 35 dB Gain, 50 Hz - 20 kHz bandwidth, +27 dBu Out	< 2 degrees deviation
Common Mode Rejection Ratio 35 dB Gain, 10 Hz - 20 kHz bandwidth, 100 mV C.M.	> 65 dB, Typ > 85 dB
Slew Rate 35 dB Gain, +27 dBu Out	> 25 Volts per microsecond
Maximum Input Level 20 Hz - 40 kHz	+23 dBu (no attenuator pads required)
Maximum Output Level 20 Hz - 40 kHz	+32 dBu
Phantom Input Impedance 1 kHz	6,750 ohms
Output Impedance	24.3 Ohms (x2)
DPA (B&K) Mic Powering	+130 V dc max, (non-phantom)
Phantom Powering	+48 V dc, +/- 2 V dc
Power Consumption	Hv-3D 125 watts maximum Hv-3C 12 watts maximum
Power Requirements	Selectable: 90-243 V ac, 50/60 Hz
Dimensions/Shipping Weight	HV-3C 19” W x 1.75” H x 13” D, 15 lbs. HV-3D 19” W x 3.5” H x 13” D, 23 lbs.
Millennia Media, SPC reserves the right to change specifications, delivery and pricing without notice	

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 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, radio frequency interference, acts of God, or service performed by anyone other than Millennia Media or its authorized agent.

Limits and Exclusions – There are no express warranties except as listed above. Millennia 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 Millennia will abide by the law of each country from which the product was initially sold.

For North American repairs and service, contact Millennia (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 Millennia Distributor.

Discarding Units

In the event that any Millennia equipment manufactured after July 1, 2006 needs to be discarded, you must return it to Millennia, at our headquarters in California, USA. Please contact the distributor in your country or Millennia 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.