

sonnum

H2O

Evolution II
Microphone Preamplifier
API 500 compliant



INDEX

Introduction and main features	Page 2
Rack Mounting the Preamp	Page 3
Manufacturers rack	Page 4
Front View	Page 5
Controls	Page 6, 7
Front and rear connectors	Page 8
Technical specifications	Page 9, 10
Taking care of your Preamplifier	Page 10
Warranty	Page 11, 12
Recall Sheet	Page 13
Certifications	Page 14
Connection Outlines	Page 15, 16
Our Technology	Pages 17, 18
Copyright	Page 19

INTRODUCTION

Sonum © H2O Evolution II is the result of our strong desire to be the first Italian company on the market to ever create a discreet-component Class A Preamplifier/DI featuring state-of-the-art technology, unprecedented input level gain (+69db), ultra-low noise and maximum transparency. In other words, an incredible Line Mic, Hi-z preamplifier of superb quality. We wanted the H2O Evolution II to have a wonderful design as well. Every single component was conceived, designed and manufactured exclusively for Sonum © following our constant search for personality.

Our mission is creating new professional products featuring quality, state-of the-art technology and a great design.

So why the name Sonum © ?

This word comes from the Latin “Sonus, Soni” and it exactly means sound! No other words could better merge the Italian origins of our products and their unbelievable sound quality. This word can also be translated with the following terms: canto, verse, accent, tone, character, sonority, musicality.

H2O too is not just a randomly chosen name. It perfectly reflects the qualities of its clean, transparent, fluid and strong sound. All features that water has!

MAIN FEATURES

The state-of-the-art technology used to build this preamp (transformer-less solid state PS, with discreet Class A components for instance) makes the H2O Evolution II the perfect professional solution whenever ultra-low noise, incredible gain, sound transparency as well as an unprecedented transient processing speed are required.

These outstanding features are a must when it comes to faithfully recording classic and acoustic guitars, voices, strings, brass sections and pianos.

Sonum © H2O Evolution II is perfect for every single instrument.

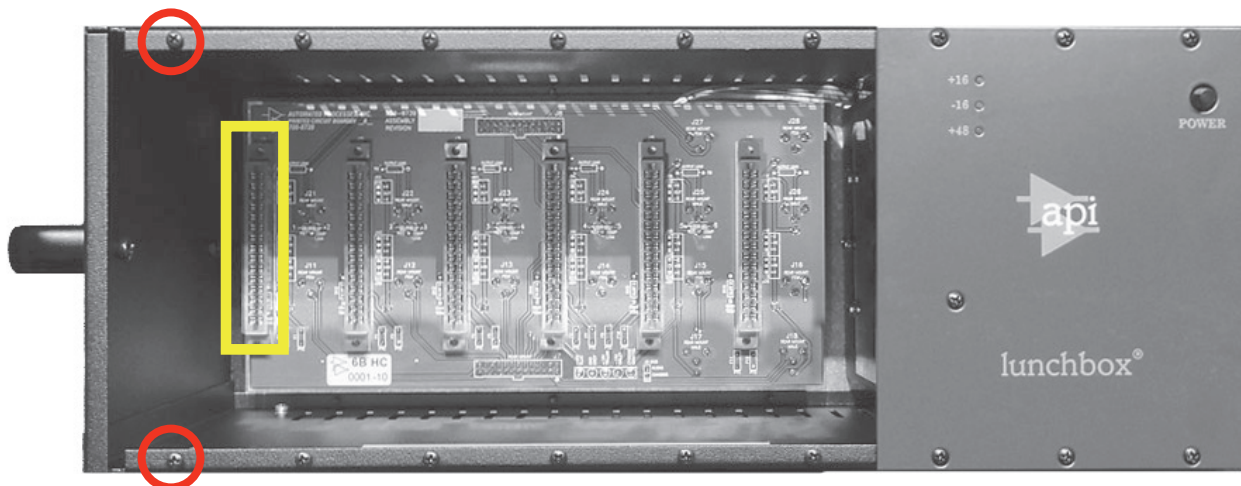
RACK MOUNTING

- 1) Remove the protective packaging
- 2) Remove the anti-electrostatic packaging
- 3) Make sure the rack is turned off and physically unplugged from the means.
- 4) Use a star screwdriver to remove the two blocking screws off the slot you are going to insert the preamp in (see red circles on pic 1*)
- 5) Touch the rack metal chassis to discharge any electrostatic charges that may damage the preamp.
- 6) Gently insert the preamp into the chosen slot, making sure the bottom connector perfectly fits into the rack socket (marked by a yellow rectangle on pic 1)
- 7) Fix the preamp using the screws you removed at step 4. Do not apply too much force during this operation.
- 8) Properly connect the audio input and output of the slot. Reconnect your audio cables in case you have removed them.
- 9) Plug the rack back into the means.
- 10) Set the preamp volume to 0 by turning the knob all the way to the right.
- 11) Turn on the rack. You are ready to go!

*Please note:

We used an API-500 B6 Lunchbox (main picture below) as an example for describing the mounting procedure. However, according to API's "VPR Alliance" standardization program guidelines.

Foto 1



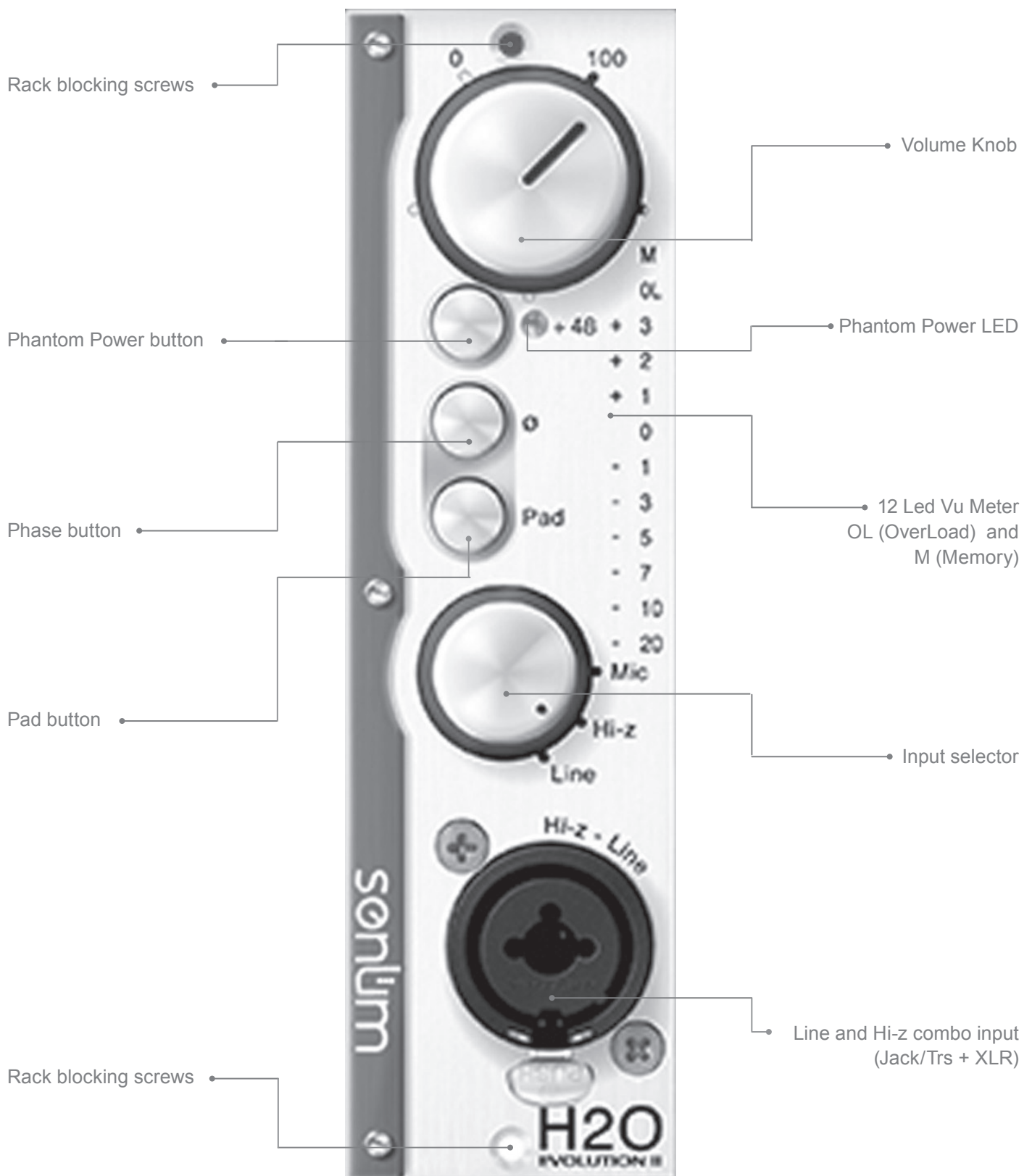
MANUFACTURERS RACK

At the date of release of this manual the following products are also compatible with the 500 series:

A-DESIGN [®]	• 500HR - 2 slot powered 1U rack**	http://www.adesignsaudio.com
API [®]	• 500-6B - 6 slot lunchbox • 500VPR - 10 slot 3U rack	http://www.apiaudio.com
ATLAS PRO AUDIO [®]	• REVOLVER - 2 slot desktop	http://www.atlasproaudio.com
BAE [®]	• DLB - 2 slot desktop • 6 Module rack - 6 slot 3U rack • 11 module rack - 11 slot 3U rack • 6 Module Lunchbox - 6 slot Lunchbox	http://www.brentaverill.com
CHAMELEON LABS [®]	• CPS-501 - 1 slot powered 1/2 rack	http://www.chameleonlabs.com
EMPIRICAL LABS [®]	• EL-500 - 2 slot powered 1U rack	http://www.empiricallabs.com
PURPLE AUDIO [®]	• Sweet Ten Rack - 10 slot 3U rack	http://www.purpleaudio.com
RADIAL [®]	• The Cube- 3 slot desktop** • Powerstrip rack - 3 slot 1U rack** • Workhorse - 8 slot 3U rack with 8x2 summing • WR-8 Workhorse - 8 slot - 3U rack	http://www.radialeng.com
SMPROAUDIO [®]	• JUICERACK - 1 slot 1/2 rack • JUICERACK - 3 slot 1U rack • JUICERACK - 8 slot 3U rack • JUICEBLOCK - 3 slot desktop	http://www.smproaudio.com
TONELUX [®]	• V4 ROADSTER - 4 slot desktop	http://www.tonelux.com
TUBE-TECH [®]	• RM2 - 2 slot desktop • RM8 - 8 slot - 3U rack	http://www.tube-tech.com

Note** Max one piece of H2O Evolution II, the power supply is too low.

PREAMPLIFIER FRONT VIEW



PREAMPLIFIER CONTROLS

1) VOLUME

Volume can be controlled as follows:

ROTATION	VOLUME	MINIMUM	ROTATION	VOLUME	MAXIMUM
clockwise	decrease		anti-clockwise	increase	

2) VU-METER

Sonum © H2O Evolution II features the standard professional +4dBu Vu-Meter with a range of -20 dB / +3dB with a overload LED for preamp saturation. We included a M (memory) LED for temporary saturation value memory (approx. 6 seconds).

Colore dei led:

range - 20 dB / 0 dB: Green Led
 range + 1 dB / + 3 dB: Orange Led
 OverLoad: Red Led
 Memory: White Led

LED COLOR	FUNCTION	VU-METER
White	OverLoad Memory	 M
Red	OverLoad	 OL
Orange	Range + 1 dB / + 3 dB	 + 3  + 2  + 1
Green	Range - 20 dB / 0 dB	 0  - 1  - 3  - 5  - 7  -10  -20

3) PHANTOM POWER

The "+48V" button switch enables the phantom power supply for the mic input on the back of the rack. The tension of 48V is reached progressively in the time. (2 second ones)

Phantom Power is generated in the rack itself so its quality is strictly dependent on the quality of the rack model you are using. Anyway we included decoupling and a filter in the preamp so as to provide the H2O Evolution II with the best power in terms of quality.

STATE	BUTTON	PHANTOM
OFF		Deactivated
ON		Activated

PREAMPLIFIER CONTROLS

4) LED PHANTOM POWER

When the blue led (4) lights up it means that phantom power is being supplied to the mic connector correctly.

5) PHASE

Inverts the signal phase

STATE	BUTTON	PHASE
OFF		Normal
ON		Invert

6) PAD

Reduces the gain by 17db

Being a completely active gain reduction, it does not introduce passive power. Therefore it does not affect the input impedance, the final quality of the sound, or the signal/noise ratio. The only one thing it does is modifying the gain range.

STATE	BUTTON	PAD
OFF		0 dB
ON		-17 dB

7) INPUT SELECTOR

Fornisce tre opzioni:

Gives you three different options:

Mic: Enables the mic input on the back of the rack. It accepts balanced input signals up to +22dBu and features 2150 Ohm impedance.

Hi-z: Enables the front jack combo connector. It accepts unbalanced signals up to +11dBu and features 1.000.000 Ohm impedance

Line: Enables the front XLR combo connector. It accepts balanced signals up to +27dBu and features 11000 Ohm impedance.

ALL INPUTS ARE PROTECTED AGAINST OVERVOLTAGE

8) COMBO CONNECTOR

Accepts TRS and XLR. If enabled you have access to all the features of a DI box

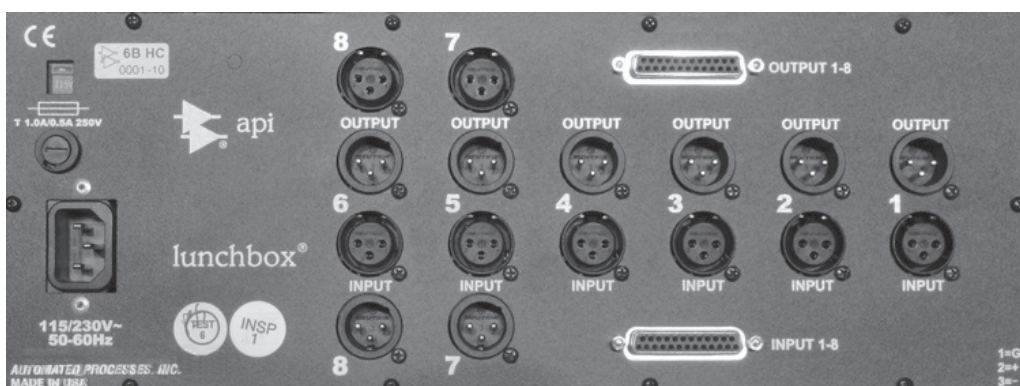
FRONT AND BACK CONNECTORS

The Line/Hi-z input is on the front of your H2O Evolution II. The Neutrik® combo connector (see pic. 1) equally accepts XLR Male, Jack Male Mono, Jack Male Stereo (TRS) connection types.



Pic 1

Mic inputs and outputs are usually on the back of the rack in which the preamp is inserted. The connection types depend on the model of the rack you are using. Below (pic. 2) you can see a API® 500-B6 Lunchbox



Pic 2

SPECIFICATIONS

Model	H2O Evolution II
Vu-Meter	
• Vu-Meter	12 led operating level +4dBu Led of temporary memory of OverLoad (6 second)
Phantom Power	
• Phantom Power	Rack Supplied Phantom Power +48V
Circuit	
• Circuit	Class A discreet component circuit architecture (Original Project).
Compatibility	
• API 500 Series	API 500 Compliant
Absorption	
• Power supply	+16VDC @ 100mA (No Load) - 16VDC @ 60mA (No Load)
Connectors	
• Front Panel	Balanced/Unbalanced Line input XLR/F, Unbalanced Hi-z TRS/F
• Rear Panel In/Out	Comb 15 Positions cardedge standard EDAC 156 X .156 - 306-015-520-102
Input Level	
• Max Mic Input Lvl	+ 22 dBu
• Max Libe Input Lvl	+ 27 dBu
• Max Hi'z Input Lvl	+ 11 dBu
Output Level	
• Max Output Lvl	+ 28 dBu
Input Gain	
• Max Mic Input gain	+ 69 dB
• Max Line Input gain	+ 47 dB
• Max Hi-z Input gain	+ 49 dB
Pad	
• Active Pad	- 17 dB Being a completely active gain reduction, it does not introduce passive power. Therefore it does not affect the input impedance, the final quality of the sound, or the signal/ noise ratio. The only one thing it does is modifying the gain range.
Input impedance	
• Mic input impedance differential	2.150 Ohm
• Line input impedance differential	11.000 Ohm
• Input Hi-z impedance	1.000.000 Ohm (new shielding of increased isolation)
Output impedance	
• Output impedance	10 Ohm

SPECIFICATIONS

Cover	Stainless steel 5/10 mm	Protection from Electromagnetic Interferences (EMI), from Radio frequency (RFI) and electrostatic charges (ESD). It isolates the circuits from the accidental damages.
Weight		0,420 Kg
Measures		L x H x D 138 x 38 x 175 mm Vu-Meter

TAKING CARE OF YOUR PREAMPLIFIER

FRONT PANEL CLEANNESS

Delicately clean the front panel using a micro-fiber damp cloth and glass detergent. Do not use abrasive detergents for this purpose. Do not spray the products directly on the preamp but always use a cloth. Do not use paper or other materials that may leave residues. You could risk plugging up the micro-holes of the VU-Meter. In case this happens do not use pins or needles to clean them up or you will irreparably damage them. Use only low- pressure dehumidified compressed air.

BACK CONNECTOR CLEANNESS

Normally, you don't need to clean the back connector for it is gold plated and guarantees the best quality over a long period of time.

So perform this operation only when the connector is really dirt or if it has oxidized. In order to properly clean it you must remove the preamp from the rack first. (see page 3)

Gently pull the H2O Evolution II out its slot and use isopropyl alcohol only. Make sure you do not touch the connector and the contacts with your bare fingertips. Let dry and re-mount the preamp into the rack.

SHIELDING CLEANNESS

There is no need to do this. Should you go through this anyway, use isopropyl alcohol.

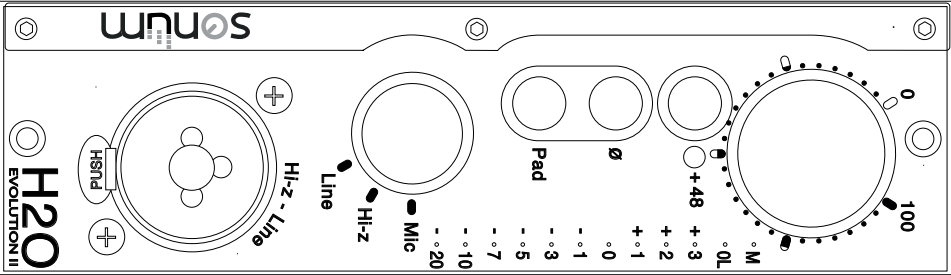
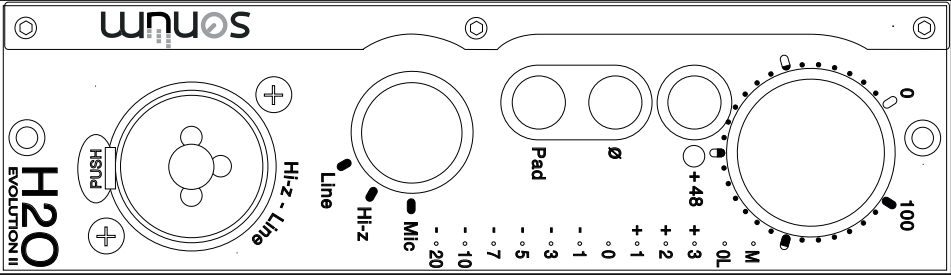
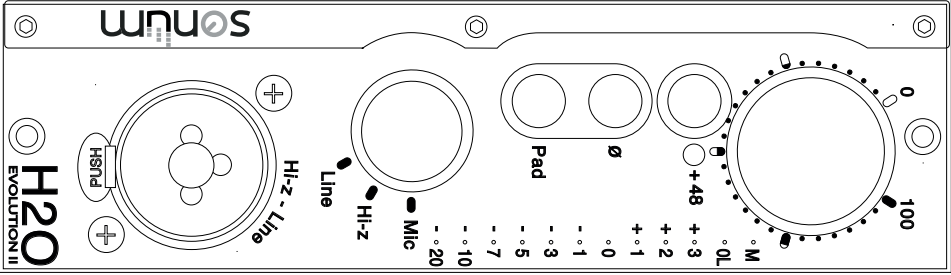
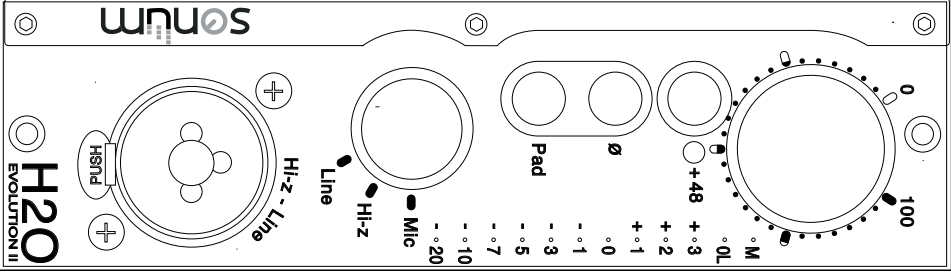
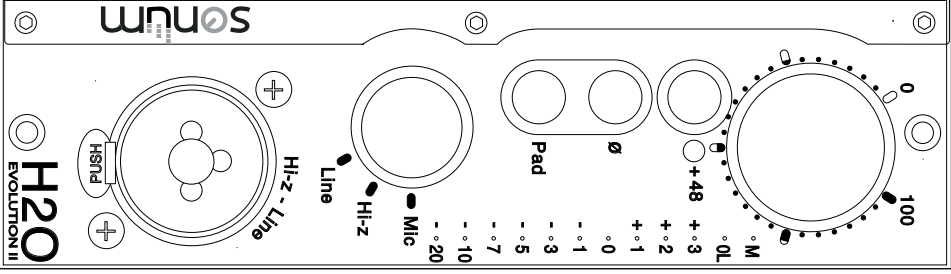
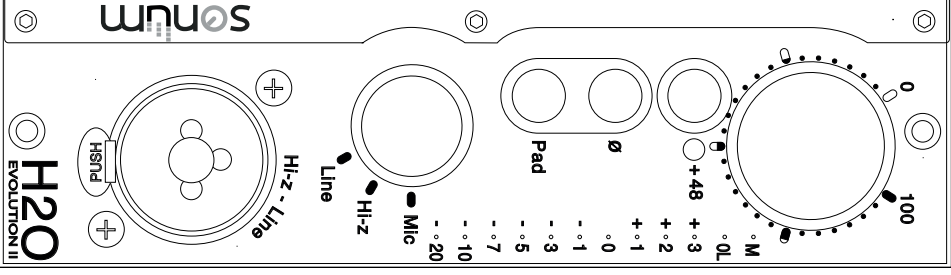
WARRANTY

- Sonum © H2O Evolution II product warranty is regulated by the Italian law in force and the legal rights it gives you may vary from country to country, state to state and province to province, according to the local jurisdiction. Total warranty period is 12 months from the original date of purchase. This warranty covers the H2O Evolution II against factory and workmanship defects, present since the date of purchase and they must be notified to Sonum © as soon as possible
- This warranty DOES NOT cover damage caused by: improper installation, wrong use of the unit, bad maintenance as well as careless conservation, repairs performed by unauthorized personnel, transportation, corrosion and whenever the serial number is lost, removed, changed or unreadable. The present warranty does not cover factory defects occurred after the warranty expiration date and if these defects were absent at the moment the unit was purchased or delivered to the final user. In addition to what listed above, Sonum © can not be held responsible for any damage caused by incidents and natural calamities such as snow, rain, thunder and similar. Periodic check-ups and functional controls are not covered unless necessary when a component needs complete restoring and reconditioning within the warranty period. Damage due to overvoltage, caused by other electronic devices or manual alteration of the product are not covered. We can not be held responsible for any unnotified changes in employed materials or design modifications different from what specified in ads, catalogs or on the internet. Ultimately, this warranty does not cover excessive repair and technical assistance costs.
- Whenever the listed conditions are respected, Sonum © will repair the product free of charge and will send it freight prepaid back to the retail seller. All products covered by our warranty must be sent to Sonum © freight prepaid and inclusive of all fiscal documentation. In case the product is sent to us after the warranty has expired the buyer will bear all costs (administration, shipping, technical assistance). Please always contact us via email prior to sending the unit so we can evaluate all possible costs in advance.



white page

RECALL SHEET

Project		Date	
n.	Description		
	Note		
n.	Description		
	Note		
n.	Description		
	Note		
n.	Description		
	Note		
n.	Description		
	Note		
n.	Description		
	Note		

CERTIFICATIONS



Declaration of Conformity

Sonum[®] declares the H2O Evolution II single channel microphone preamplifier module to be in material conformity with the following EC directives and related standards:

- 2006/95/EC Low Voltage Directive
- 2004/108/EC EMC Directive

The technical documentation is available in our center.



Certificate of Compliance

Sonum[®] declares the H2O Evolution II single channel microphone preamplifier module is RoHS compliant and meet the requirements and specified limits of restricted substances according 2002/95/EC directive.



RAEE

Sonum[®] H2O Evolution II is marked with the WEEE symbol to comply with the European Union's Waste Electrical & Electronic Equipment (WEEE- European Union's Waste Electrical & Electronic Equipment) Directive 2002/96/EC.

The symbol indicates that this product should not be treated as household waste. It must be disposed and recycled separately as electronic waste. Please assist to keep our environment clean

Above declarations are void by modification of the device without approval, or unauthorized servicing.

05/07/2011, Firenze

Sonum[®]
Marraghini Miriano

CONNECTIONS OUTLINES

CABLE

Most users of the Sonum[®] H2O Evolution II, have invested much time and money in their selection of microphones and preamplifiers. We recommend that you give some consideration to the microphone, instrument and output cables you select, as well.

Use high-quality, low capacitance cable. Braided shielding and “star quad” type mic cables will perform better in electrically noisy environments. Manufacturers such as “Mogami”, “Canare”, “Belden”, etc. make high performance cable of this type.

Use cables with high-quality connectors. Manufacturers such as “Neutrik”, “Switchcraft”, etc.. make high performance component.

Our studio testing has shown that some of the more esoteric guitar/instrument “super-cables” do, indeed, sound better. Manufacturers such as “Klotz”, “Elixir” etc.. make cable of this type.

Avoid excessive cable length and replace damaged cable and connectors.

CABLE TYPE

There are two styles of audio cables used for connections to the Sonum[®] H2O Evolution II in a 500 series rack:

- Shielded / single-conductor type for unbalanced signals (Instrument cables)
- Shielded / twisted-pair type for balanced signals (Microphone / Line level cables)

We recommend that all interconnecting cables are wired according to the following standards. Failure to do this can result in malfunction or audible distortion.

Instrument cables (unbalanced) on TS connectors: (Jack mono 6,3mm):

Tip = positive (+) signal

Sleeve = shield

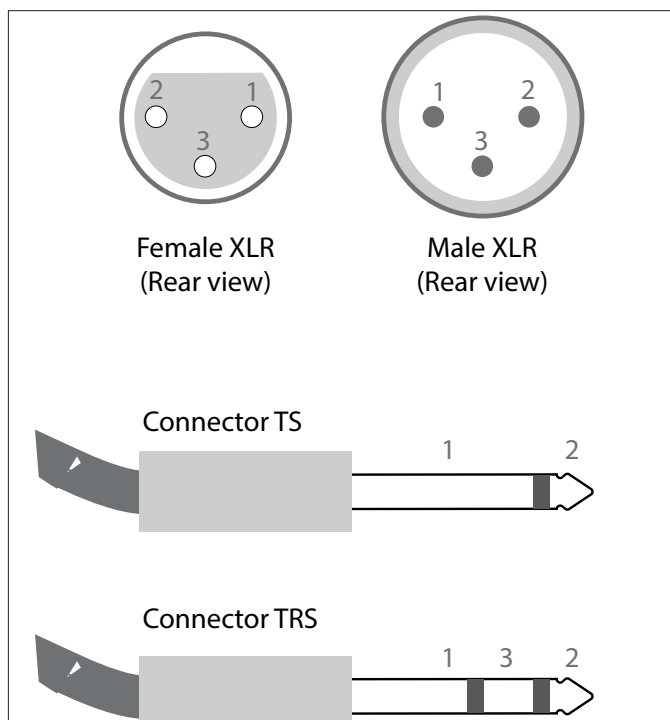
Microphone and Line level cables (balanced) on XLR or TRS (Jack stereo) connectors:

Pin 1 = Shield

Pin 2 = Positive (+) signal

Pin 3 = Negative (-) signal

Attention: When connecting an balanced output to a subsequent audio device with an unbalanced input, the negative signal lead (from Pin 3) must be wired to shield (Sleeve) at the TS connector



CONNECTIONS OUTLINES

CARD EDGE CONNECTIONS

If you are using a custom card rack, or a card rack not manufactured by API®, please verify the following power supply terminations:

- 1 CHASSIS GROUND
- 2 +OUTPUT
- 3 NC
- 4 -OUTPUT
- 5 AUDIO COMMON
- 6 NC
- 7 NC
- 8 -INPUT
- 9 NC
- 10 +INPUT
- 11 NC
- 12 +16VDC
- 13 POWER COMMON
- 14 -16VDC
- 15 +48VDC

Pin 1 is located at the top of the card edge connector.

OUR TECHNOLOGY

A sound engineer should be amazed when listening to it. A true high end preamplifier, being the very first device where sound flows through after being picked up by the microphone, must render it in every single detail. Sonum© H2O microphone preamplifier was built keeping all of this in mind.

The entire project is based on an innovative technology that makes our preamp totally different from its competitors.

We set a new bar by bringing something new to the global panorama of professional API 500 compliant microphone preamps.

Our strengths are the result of an innovative technological research.

- A custom made front panel with a great modern look designed by Sonum© and manufactured in Italy; ergonomic knobs, high quality vu-meter.
- A 4 Layer PCB Stack-up. The circuit was entirely built in Italy using the highest technological standards available. We implemented a computer-based simulation method optimizing the placement of each single component so as to eliminate the risk of unwanted coupling.
- For audio coupling, only MMK5, Metallized Polyester Film Capacitors were used. These components are able to process the fastest transients without distorting or introducing noise.
- Ultimate audio quality is guaranteed by selected, discreet CLASS A components.
- Dynamic change of the input stage architecture is made possible by a revolutionary gain control method. Sonum© H2O always works using the entire dynamic range of the input signal and maintains a constant, high S/N ratio throughout the whole gain range.
- The PAD, like the gain, does not operate the traditional way. It is fully active, which means it cuts down the gain of the active components without introducing passive power or altering the sound quality.
- 48V Phantom Power is supplied progressively in two seconds when a device that requires it is detected. This prevents any risk of damage. When it is not needed anymore it takes another two seconds to completely shut down for the same reason.
- We were obsessive about choosing the best components: resistant and reliable switches, selected among the higher standards of military technical component industry; long life, low ESR, temperature-resistant capacitors, “matched” transistors for ultimate balancing, gold-plated contacts for maintaining the best performances over a long period of time even if the preamp needs to be frequently removed from the rack; high quality 12-MicroLED vu-meter compliant with VPR Alliance specifications; Neutrik® front connector and much more...

Sound engineers who also collaborated with Sonum© during the planning stage envisioned both a DI and a Line/Hi input connection on the front panel of the unit.

The result of all this is a top-end preamp featuring incredible volume gain; unprecedented sonic detail; rich and transparent sound with no distortion whatsoever even when pushed hard.

OUR TECHNOLOGY

IMPEDENCE-BASED VOLUME & CONSTANT SIGNAL/NOISE RATIO

The gain potentiometer is not used as signal partitioner, as usual.

The potentiometers on the market boost the signal when turned clockwise. However the drawback is that the S/N ratio is heavily altered low volume levels, let alone when the signal is padded. This is due to the noise-floor being the same at each regulation. Inside the Sonum© H2O the potentiometer acts by modifying the circuit architecture and changing the gain alone. This way, the S/N ratio is never modified and remains constant.

The input impedance does not change with the volume being regulated, as a consequence the sonic quality is not affected in the least. In order to achieve this using non-custom potentiometers (so as to cut the final costs but maintaining the same top quality) we used an inverted logarithmic potentiometer. This is why the knob is turned anti-clockwise.

Here is an example using some real figures:

Noise = 1mV

Audio Signal= 10V

Traditional preamplifier with fixed gain and input signal partitioner:

volume 10% = $S/N = 1V/1mV = 1000$

volume 50% = $S/N = 5V/1mV = 5000$

volume 100% = $S/N = 10V/1mV = 10000$

Sonum© H2O Evolution II with variable gain and logarithmic potentiometer

volume 10% = $S/N = 10V/1mV = 10000$

volume 50% = $S/N = 10V/1mV = 10000$

volume 100% = $S/N = 10V/1mV = 10000$

As already stated, the pad works the same. It features a completely active gain reduction architecture that does not introduce passive power and does not alter the sound quality or the S/N ratio. Only, it modifies the active gain range of the preamp.

Manufactured by Sonum[©]
Viale L. Ariosto 492/F
50019 Sesto Fiorentino
Firenze - Italia

<http://www.Sonum.it>
email info@Sonum.it

All content, including pictures and photos, is copyright protected. Any full or partial reproduction of this manual (analog or digital) is strictly prohibited without Sonum[©]'s written permission.

With the goal of constantly improving our products, we reserve the right to make technical and functional changes without notice. Sonum [©] operates in full respect of the law in force.

The information contained in this manual was reviewed and controlled prior to publication. You agree to hold Sonum [©] harmless against any loss, liability or damage due to direct or indirect omissions and/or errors.

All trademarks, product names and company names appearing in this manual (A-DESIGN[©], API[©], ATLAS PRO AUDIO[©], AVID[©], BAE[©], BELDEN[©], CANARE[©], CHAMELEON LABS[©], ELIXIR[©], EMPIRICAL LABS[©], KLOTZ[©], SWITCHCRAFT[©], MOGAMI[©], NEUTRIK[©], PURPLE AUDIO[©], RADIAL[©], SMPROAUDIO[©], SWITCHCRAFT[©], TASCAM[©], TONELUX[©], TUBE-TECH[©]) e i rispettivi modelli (500HR, 500-6B LUNCHBOX, 500VPR, L200PS, REVOLVER, DLB, 6 MODULE RACK, 11 MODULE RACK, 6 MODULE LUNCHBOX, CPS-501, EL-500, SWEET TEN RACK, THE CUBE, POWERSTRIP, WORKHORSE, WR-8 WORKHORSE, V4 ROADSTER, RM2, RM8, JUICERACK 1, JUICERACK 3, JUICERACK 8, JUICEBLOCK 3) are exclusive property of their respective owners and therefore copyright protected.