

**HANDCRAFTED
IN POLAND**

**WORLD'S FIRST
REMOTE CONTROLLED,
STEREO/M-S RIBBON
MICROPHONE
WITH BUILT-IN
HIGH-END
DISCRETE
MIC PREAMPS**



**WE
BUILD
THE
SOUND**



WWW.HUM-AUDIO.COM

RS-2 Stereo Ribbon Recording System

OWNER'S MANUAL

v1.1 - 02/2018

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Dear Customer,

Thank you for the confidence you have shown towards HUM Audio Devices by purchasing the RS-2 Stereo Ribbon Recording System. You have chosen an unique, high end tool which will help you to get excellent recordings. RS-2 is a result of over two years of meticulous development, careful audiophile quality component selection, and extensive studio testing during real sessions to get THAT sound. Because we are also sound engineers with 20 years of practice in recordings, we did our best to provide RS-2 with all unique features that make it very practical, creative and extraordinary tool.

We believe you will have much fun using RS-2 and love it as we do.

We wish you every success with your new RS-2 stereo ribbon mic system!

Your HUM Audio Devices - Team



Krzysztof Tonn



Krzysztof Rudnicki

Follow us on Youtube, Facebook and our site:

www.hum-audio.com

HUM Audio Devices RS-2 was designed, developed and precisely handcrafted in Poland.

Introduction

Our RS-2 is world's first remote controlled, Stereo/M-S ribbon microphone system with built-in High-End discrete class A mic preamps.

RS-2 is complete recording system with sound and features never before found in any of the top class ribbon mics. Custom tailored 1.8 micron aluminium ribbon motors are paired together with audiophile quality handcrafted audio circuits and high precision CNC-machined mechanics.

You will find that RS-2 excels on many sound sources, covering wide range of studio recording applications, including string section recordings, piano, guitars, woodwinds, ambience, drum overheads and vocals. It gives you huge, larger than life sound with a lot of details - like in good condenser mics, but at the same time you have that classic lovely ribbon sound flavour, so much beloved by musicians and sound engineers. Tracks recorded with RS-2 also blend very well with other elements in the mix. That's a distinctive feature of all best mics on the market.

Operation Safety

Power the RS-2 system exclusively with the voltage rating specified on the PSU unit. It is always factory prepared for use in a country of purchase. The actual operating voltage is stated on the back panel of PSU. In case of doubt, or when it's necessary to change PSU voltage contact your local dealer.

Disconnect the unit from the electric power grid if you are not going to use it for a long period of time. Unplug the power cord from the mains to cut power supply to the unit.



Do not use this devices anywhere near water (for example in a bath room, a damp cellar, near swimming pools, or similar environments). Otherwise your are dealing with an extremely high risk of electrical shocks! RS-2 should also not be installed near equipment which produce strong magnetic fields or extreme heat.

Be careful to not insert any object into any of the PSU chassis openings. You can otherwise easily come into contact with dangerous voltage or cause a damaging short circuit. Never allow any fluids to be spilled or sprayed on the RS-2 PSU. Such actions can lead to dangerous electrical shocks or fire!

Never cover up the ventilation slots on the top of the PSU unit. If, during operation the sound is interrupted or indicators no longer illuminate, or if abnormal odor or smoke is detected, or if liquids are spilled on the unit, immediately disconnect the power cord plug and contact your dealer.

Service and Repairs

Unplug the RS-2 PSU from all power and signal connections and contact your local dealer when you think repairs are needed - or when moisture or foreign objects may accidentally have reached inside the PSU housing, or in cases when the any of the RS-2 system devices may have fallen and shows any sign of having been damaged. This also applies to any situation in which the units have not been subjected to any of these unusual circumstances but still is not functioning normally or their performance is substantially altered. In cases of damage to the power supply and cord, first turn off the main circuit breaker before unplugging the power cord. All repairs are done at HUM audio Devices factory or in some cases at authorized dealer's site.



**Do not open any of the RS-2 devices ourselves -
- there are no user serviceable parts inside !**



Replacement parts

Be sure that any authorized service technician uses original replacement parts or those with identical specifications as the originals. Incorrectly substituted parts can lead to fire, electrical shock or other dangers, including further equipment damage. HUM Audio Devices can only guarantee quality of performance if correct replacement parts are used.

Always be sure to ask a service technician to conduct a thorough safety check and ensure that the state of the repaired device is in all respects up to factory standards.

Cleaning

Do not use any solvents, as these can damage the chassis, rubbers or wood finish. Use a clean, dry cloth (if necessary, with an acid-free cleaning oil). Great for cleaning RS-2 's anodised mic body and front panels is dry micro fibre cloth. Disconnect the device from power source before cleaning.



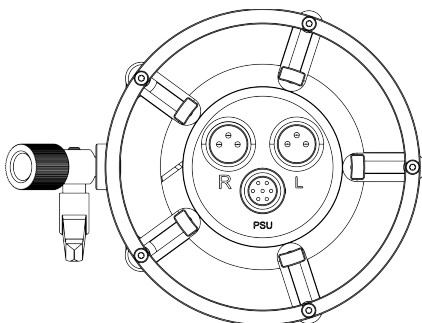
Declaration of CE Conformity

The construction of these units is in compliance with the standards and regulations of the European Community.

Active and Passive mode

There are two ways of using RS-2 microphone system:

1) Passive mode



This mode is similar to other ribbon microphones, when you decide to use your favourite mic preamps. In this case you don't need to connect PSU and Remote Controller at all, and have mic level signals directly from RS-2 mic body to your external preamps.

When you have set up RS-2 with PSU and Remote units for active mode, but decide to use passive mode - there is no need to disconnect the whole system, just power off the PSU and RS-2 mic becomes passive. Because all functions and power supply are controlled and switched by top class relays, there are no thumps and other sound artefacts during power cycle or changing system connections. It is always safe and convenient to change between modes of operation at any moment.

In passive mode you can of course use rotary RS-2 mic head, to record M/S signals, but you must remember to decode it later somewhere in the chain, or in the DAW.

Although passive mode can give you good results, we strongly recommend to use RS-2 in active mode, when you benefit from all useful, unique features and the best sound. Try, and we believe you will not want to loose them.

2) Active Mode

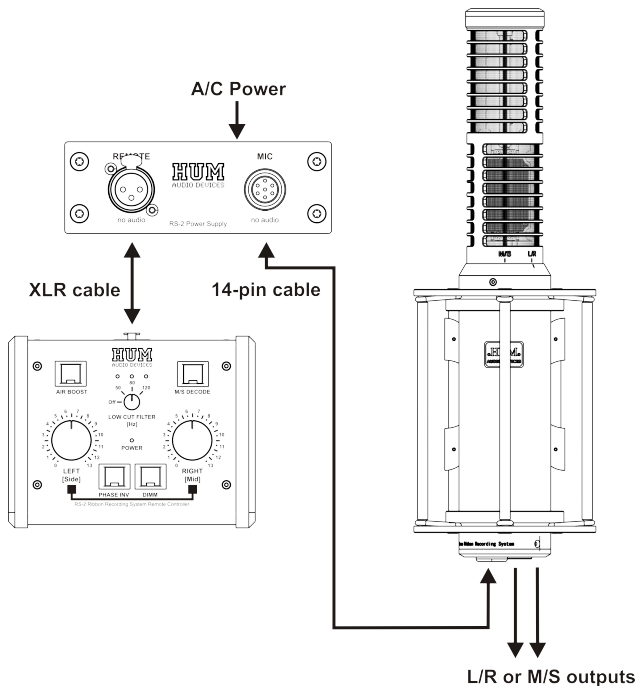
In this mode you connect all RS-2 system units, and have access to all features and functions localized on RS-2 Remote Controller. In this situation you have also line level signals coming out straight from L-R connectors on bottom of RS-2 mic body, so you can connect directly your converters, tape or signal processing units. When connecting RS-2 L/R outputs to a mixing console in active mode, always use console's line inputs, unless you are searching for a special effects when intentionally overdriving mic inputs.

Installation and connections (Active mode)

This mode uses all the precisely crafted circuits, top Lundahl mic and line transformers, high-end discrete class A preamplifiers based on legendary Jensen JE990 opamps, passive transformer-based M-S matrix and passive lo-cut and eq circuits, which are all built into the RS-2 mic body.

Active mode gives you strong benefits because ribbon mics are very sensitive to preamp you use and also to quality and length of audio cables. In other words - up to now you were always doomed to loose part of your sound when using any ribbon mic, even not knowing about that. Our design eliminates all these shortcomings. Extremely short signal path, noiseless and ultra linear preamplifiers with high gain, and all other high-end circuits are precisely tailored to give you the best sound you wish to have from ribbon mic.

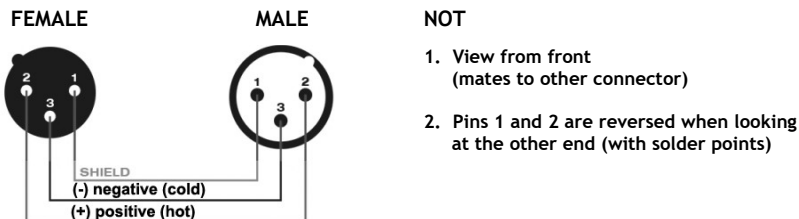
RS-2 system connection scheme in Active Mode:



RS-2 microphone set has XLR cable for connecting Remote Controller and special high quality 14-pin cable for connecting PSU included in the RS-2 set. 6 meters of 14-pin cable length should be more than enough in all typical studio situations. In case when you need this cable longer than standard - you can order a

longer one. XLR cable for Remote Controller is also 6m long, and in case when you need more - you can connect any XLR cables you have in studio. There are no special requirements on this cable, just every working cable with properly soldered pins are adequate. We guarantee correct remote operation up to 100m, and even more. Remember to use clean, direct line between studio rooms - no mic splitters or trafos, they change line impedance which will cause remote malfunction.

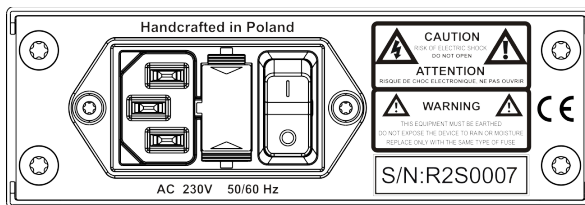
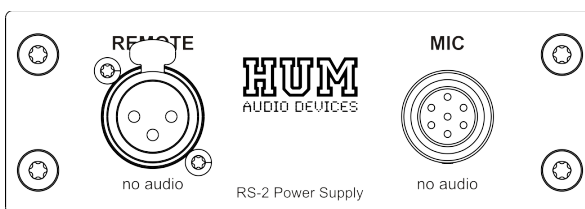
XLR wiring scheme:



Because all control signals from Remote Controller and its DC power are conducted via single XLR cable, you have big degree of freedom in connecting the Remote Controller. You can easily use existing studio cables or multicores to do connectons between studio rooms, or if you are setting the RS-2 mic in studio room or record yourselves - you can also take the RS-2 conroller with you to tweak the sound there.

Power Supply Unit

Sound quality of all audio equipment strongly depends on good power supply. That's why we designed very high quality PSU for RS-2 system.



PSU is based on custom shielded trafo with individual voltages for audio and control parts of RS-2 system, and best Linear Technology voltage regulators. You have also soft start and protection during power cycle, so no thumps and other sound artefacts are present on your monitors. Although it is safe to turn on/off PSU or reconnect RS-2 system on working monitors, it is good to get into the habit of muting the monitors output before making any substantial changes in any of your audio connections.

We strongly recommend using good quality, custom shielded AC cable included in RS-2 set to power the unit.



Always connect the RS-2 PSU to the AC outlet with correct voltage stated on the back panel. The unit is prepared to use in a country of purchase.

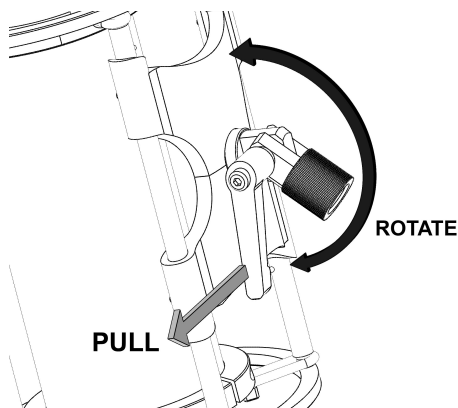


Be sure also to use correct fuse adequate to operating voltage !

There is possible to change voltage - contact your local dealer in case you need to do that.

Hand Lever operation

RS-2 microphone swivel has a special rotatable hand lever with built-in spring mechanism. Together with locking clutch action it provides fast and convenient change of microphone angle position.

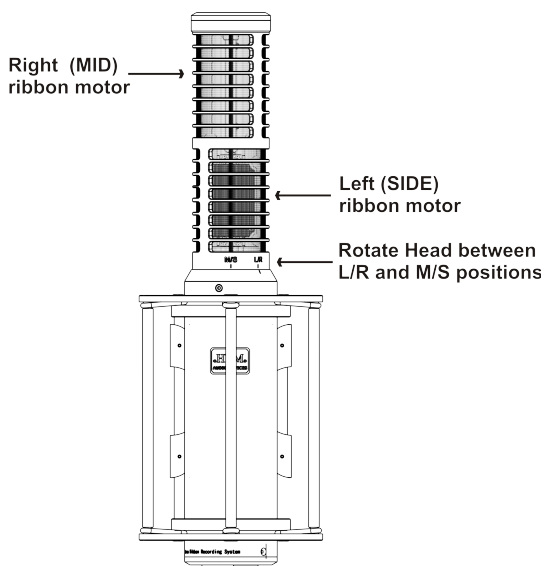


Thanks to the spring mechanism you can tighten or loose the lever fully even when only small rotation angle is possible. To make full use of this feature - just pull the lever towards the grey arrow , rotate to a new required starting position (black arrow) and release. Then you can continue to tighten or loose the lever.

Stereo L/R (Blumlein) and M/S modes

In active mode, RS-2 can record 2 channel audio in three modes: Stereo L/R (Blumlein), M/S encoded and M/S decoded into L/R, with stereo image fully controlled by tweaking Remote Controller gain pots. Rotatable mic head can easily change RS-2 recording mode from Stereo L/R to M/S, without any need to change stand and mounting position. Spring mechanism in rotatable head bearing will gently lock the head in chosen position.

There are two possible configurations when designer considers stereo ribbon motors arrangement: from point of view of microphone, or from point of view of sound source. We chose configuration from microphone point of view. You can imagine it like looking on the piano: left (bottom) ribbon looking on left hand, and right (upper) ribbon looking on the right hand. This arrangement is taken into consideration because it seemed more natural to us. Both motors have typical figure of eight pattern.



Besides stereo and M/S applications of course you can always use any of the two RS-2 channels for recording mono sources, like vocals. When you decide to record mono source, it is good idea to rotate head to M/S position and turn Remote Controller SIDE gain pot to zero, than sing or play instrument to the upper ribbon. Of course you can be creative here and instead of recording mono track, you can make use of M/S mode and gradually increasing SIDE gain expand the stereo image.

Useful Remote Controller DIM switch reduces preamps gain to minimum to avoid unwanted sounds in monitors during mic position change or rotating the head



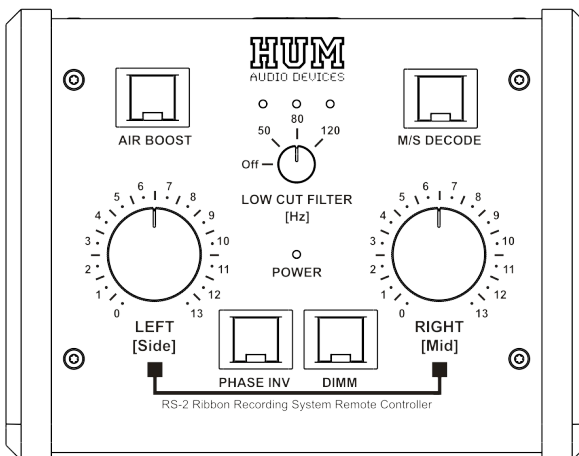
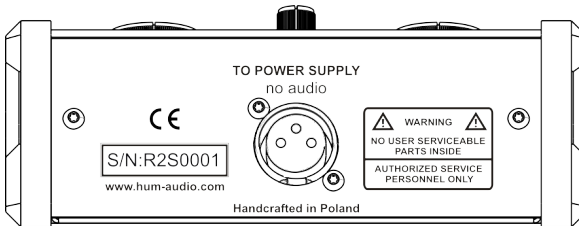
Ribbon mics are very sensitive to air flow blowing directly onto motors foil. In case you plan to record sound sources that can emit blasts of air, like vocal, woodwind, kick drum or guitar combo - place mic head off axis of air flow source and consider using a pop filter, otherwise you can damage the motors !



Using Remote Controller

Our genuine remote control system designed for RS-2 gives you an access to all functions, including high-end M/S matrix decoder, switchable Lo-Cut Filters, DIM, Phase Invert for both channels simultaneously and very special „AIR” mode. Because there is no software or programmed digital parts here, it is absolutely reliable. All functions are switched by top class relays and very reliable C&K switches.

Disconnecting the RS-2 remote automatically mutes audio signals, so no thumps are present in your monitors.



POWER

When this green led diode is lit - means the RS-2 system is in Active Mode and connection with Remote Controller is correct. You can then operate all functions.

LEFT [Side], RIGHT [Mid]

Gain pots respectively for left and right channel. Gain varies from +20dB (position 0) to + 60 dB (position 13). Because RS-2's audiophile quality gain control system is designed on opto elements (4 per channel), it makes gain changing smooth and more precise than standard gain pots, at the same time ensuring full separation between control signal and audio signal. In M/S mode balancing M and S gains changes the stereo width by choosing how much of stereo component (room signal) is present in recording.

DIM

This function switch reduces gain of both channels to position 0, without the need to physically turn down gain pots. It is very useful during the mic position change or rotating the head. Protects between unwanted sound in your monitors or headphones.

PHASE INV

Phase inversion for both channel simultaneously. It is very useful especially when RS-2 works in multi-microphone setups, for example recording drum overheads or ambience. It lets you match the sound with the other mics in your setup.

LOW CUT FILTER [Hz]

Rotary switch lets you to choose three useful low cut frequencies: 50, 80 and 120 Hz with gentle 6dB/oct slope. This is tested in practice and just good for the application. The filter is high quality pasive transformer design, and sound very musical.

AIR BOOST

Passive Pultec-style gentle HF boost. Sounds great on many sources, like vocals or cymbals. Adds subtle sparkle and additional „air” when needed.

M/S DECODE

This switch activates passive, transformer-based M/S decoder built into the RS-2 mic body. This is the best way to decode M/S signal in analogue domain. You can of course record M/S signal without decoding and do this later in the chain or in your DAW, but unless you do not need M/S signal for further manipulation, we strongly recommend to use RS-2's decoder, because it sounds really great.

Specifications

Ribbon motors type:	Two, custom built 1,8 micron aluminium foil, at fixed 90 degrees configuration. Shielded with copper.
Mic Head:	Rotatable, position marked L/R and M/S. 45 degrees of rotation with spring locking mechanisms.
Preamps:	Two discrete class-A mic preamps based on legendary Jensen JE990 op-amp built into mic body. min. gain: +20dB (position 0), max. gain: +60dB (position 13).
Gain control:	Circuit based on 4 photocells per channel ensures full separation between control and audio signals.
Audio Outputs:	Two line level XLR outputs from mic body straight to A/D converter or tape machine. Top quality Lundahl mic input and line output transformers (4 in total).
Recording Modes:	Stereo L/R (Blumlein), M/S (encoded or decoded), Mono
M/S Matrix:	Transformer based, passive, built into the mic body.
Low Cut Filter:	Switchable, passive Low Cut filter with three useful frequencies: 50, 80 and 120 Hz. 6dB/Oct slope.
Remote Controller: (no audio here)	Access to all functions via standard 3-pin XLR cable. All functions controlled by high class relays and very reliable C&K switches. Powered via the same XLR cable.
Anti-vibration system:	Dual (external shock mount and internal vibration isolators).
PSU: (no audio here)	Classic, linear based on custom trafo and Linear Technology voltage regulators. Internally switchable between 230V / 120V. Fuse: 250mA (230V operation) 500mA (120V operation)
Connectors:	Amphenol 14 pin gold plated (mic body and PSU unit), Gold plated Neutrik HD - L/R (mic body), Gold plated Neutrik XLR (PSU and Remote Controller).

Max. Output Level: Preamps: +24 dBu (in Active Mode)

Output Impedance: Preamps: 600 Ohm (in Active Mode)
 Mic: 150 Ohm (in Passive Mode)

Frequency response: Preamps: 10Hz - 50kHz (+/- 0,5dB)
 Mic: 30Hz - 15kHz (+/- 3dB)

Weight: Mic: 2,1 kg (incl. suspension)
 PSU: 1,6 kg
 Remote Controller: 0,53 kg
 RS-2 set in Flight Case: 10,1 kg

**Dimensions:
 (without PSU and
 Remote rubber feet)**

Mic body	Length: 421,5 mm diameter: 70mm (lower), 60mm (upper) spider external diameter: 140mm
PSU	Length: 245mm (incl. sockets) Width: 128mm Height: 44mm
Remote	Length: 123,5mm Width: 154mm Height: 59mm (with knobs)
Flight Case	Length: 340mm Width: 490mm Height: 180mm

Warranty

- 1) We provide full two (2) year Warranty for all HUM Audio Devices microphones against defects in material and workmanship. This Warranty relates to each original Customer of HUM Audio Devices product and is not transferable to other persons.
- 2) The period of this Warranty commences at the official receipt date of product purchase from authorized HUM Audio Devices Distributor or Dealer in given country, or directly from HUM Audio Devices for other countries. Within a period of Warranty, HUM Audio Devices will remove defects in materials and manufacturing faults adversely affecting warranted product performance, by repairing or replacing parts or replacing the product as we deem appropriate, free of charge.
- 3) This Warranty does not apply to any defect, failure, or damage due to any cause other than defects in materials or workmanship of the product.
- 4) HUM Audio Devices will not be responsible for damage to, or failure of, or need for repair or correction of any product, which occurs as a result of user abuse or misuse, including but not limited to the operation with wrong power supply or excessive voltage, or other wrong application or storage including unreasonable exposure to heat, cold, wind, water, or other elements, negligence or accident, and to material fatigue or degradation through very intensive normal usage.
- 5) Serial number removing or altering, actual or attempted correction, repair, service, modification or alteration of any HUM Audio Devices product by persons not authorized to do it automatically expires this Warranty.
- 6) Customer must contact his local HUM Audio Devices Distributor or Dealer, or in countries without Distribution - directly with HUM Audio Devices, to receive Product Return Authorization Number that will be used to track and identify the returned product.
- 7) After receiving Product Return Authorization Number please deliver the complete product in the original packing or in such packing that is adequate to prevent damage to the product during the normal course of transport to your local HUM Audio Devices Dealer, or in case of direct purchase - to HUM Audio Devices. Transportation and insurance is the Customer's responsibility and is not covered by this Warranty.
- 8) In the interests of product development, the specifications, construction and appearance of all above products are subject to change without prior notice and without obligation to install these improvements in any product previously manufactured.

- 9) All remedies and the measure of damages are limited to the above services. It is possible that economic loss or injury to person or property may result from the failure of the product; however, even if HUM Audio Devices has been advised of this possibility, this limited warranty does not cover any such consequential or incidental damages. Some states or countries do not allow the limitations or exclusion of incidental or consequential damages, so the above limitation may not apply to you.

Limitations of Liability

In no event will HUM Audio Devices be liable for any damages, including loss of data, lost profits, cost of cover or other special, incidental, consequential or indirect damages arising from the use of the unit, however caused and on any theory of liability. This limitation will apply even if HUM Audio Devices or an authorised dealer has been advised of the possibility of such damage.

Contact

HUM Audio Devices

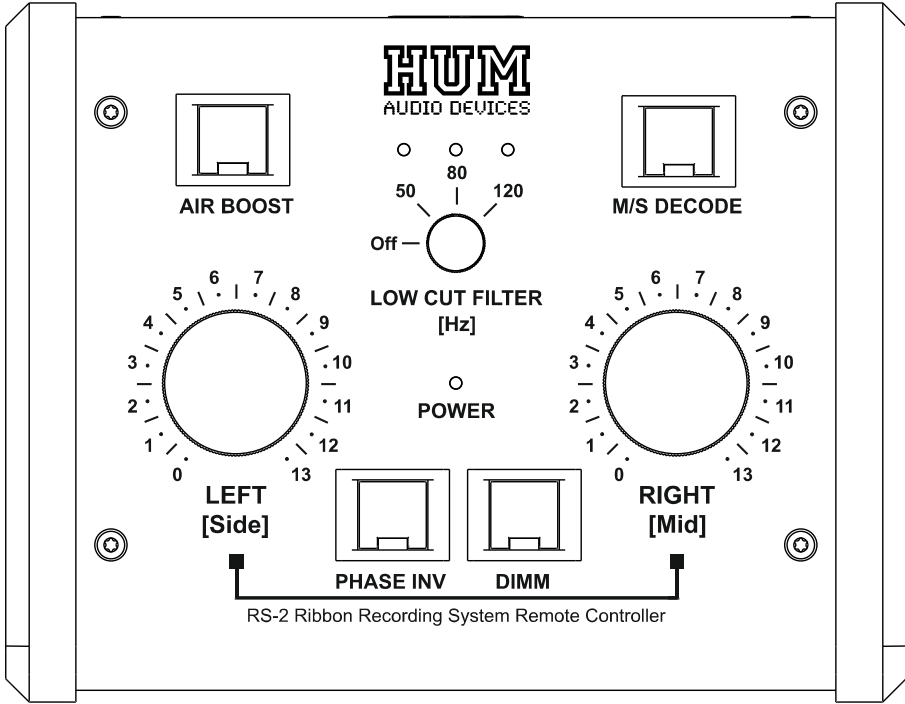
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RS-2 SESSION RECALL SHEET



MIC HEAD POSITION: M/S L/R

SESSION:	
ARTIST:	
TRACK:	
ENGINEER:	
DATE:	
STUDIO:	
NOTES:	