



# HD PREAMP

OWNER MANUAL

RELEASE ©2019



**/// Dear music lover**

Congratulations, you have just purchased one of the best preamplifiers ever made! The HD PREAMP was created by an engineering team with more than 60 years of experience designing world-class products for the professional audio, national security and military businesses.

Since its inception in 1951, Nagra has built products that continue to earn a reputation for delivering ultimate sonic performance. Numerous awards have been bestowed upon Nagra for its technical innovation, excellence in design and flawless construction including three Oscars® and one Emmy®.

The professional and Hi-Fi ranges are both designed by our Research and Development department. Nagra has launched a Hi-Fi range to allow the wider public to benefit from technical advances that are often the sole privilege of professionals. This technology exists in the service of music, your music. We wish you great moments of listening pleasure with your HD PREAMP.

Thank you for your trust.

**Pascal Mauroux**  
CEO



0 1	Safety warnings	6
	Warranty	7
	Package contents	7
0 2	<b>INSTALLATION OF YOUR HD PREAMP</b>	<b>10</b>
	Choosing a location	10
	Horizontality adjustment of the chassis	10
	Powering the HD PREAMP	11
	Connection to the Mains	11
	Connection/Disconnection of LEMO cables	12
	Fuse replacement	13
	HD PREAMP description	15
	Front panel (audio device chassis)	15
	Rear panel (audio device chassis)	16
	Audio inputs	17
	Bypass inputs	18
	Audio outputs	19
	Rear panel (power supply chassis)	20
	About ground post	20
0 3	<b>OPERATION OF YOUR HD PREAMP</b>	<b>22</b>
	Power on & Audio input selection	22
	Audio output selection	22
	Nagra modulometer	22
	Light intensity adjustment	23
	Modulometer IN/OUT	23
	Volume control synchronization & warning LED	23
	Mute	23
	IR Remote Control Unit	24
	Use of a universal IR Remote Control Unit	27
	Remote automation	28
	Home automation	28
	Tube ageing	29
	HD PREAMP software update	29
	Case cleaning	29
0 4	<b>TECHNICAL SPECIFICATIONS</b>	<b>30</b>

## Safety warnings

- Read this manual carefully before operating the HD PREAMP.
- Should you have any questions on how to setup or use your HD PREAMP, please contact your Nagra dealer.
- Audio Technology Switzerland SA declines any responsibility in the event of an accident caused by the non-observance of these instructions or any other form of user negligence.
- The HD PREAMP has a specific power supply to work correctly in your country. The power supply voltage can only be changed at the factory. Make sure you have the right operating voltage before switching your device ON.
- The HD PREAMP is CLASS I equipment. It is essential that it is connected to a MAINS socket outlet with a protective earthing connection.
- The HD PREAMP must not be exposed to dripping or splashing liquids and no objects filled with liquids, such as vases, should be placed on the machine.
- Never try to open your HD PREAMP when it is powered to prevent the risk of electric shock and burns. Switch it OFF, remove the MAINS cable from the appliance inlet and wait at least 15 minutes before any intervention into your HD PREAMP such as for tube exchange or IR Remote Control Unit channel selection. If you are unsure, please contact your Nagra dealer.

## Warranty

Audio Technology Switzerland SA certifies that this device has been inspected and tested before leaving the factory. Every Nagra unit goes through our test laboratory. The result of the measurements is recorded in the "Protocol" documentation that comes with your device. We guarantee our products against all manufacturing defects. For the HD PREAMP, this is for a period of three years from the date of delivery to the customer (validated by the serial number on the device casing and the invoice from an official Nagra dealer). This warranty is only valid for the original purchaser of new equipment. This limited warranty covers the repair and replacement of defective parts, excluding any other remedy.

### **The absence of a serial number invalidates the warranty.**

We decline any responsibility for damages resulting directly or indirectly from the use of our products and from the use of any components or spare parts other than those designated as original/approved parts by Audio Technology Switzerland SA. As we constantly strive to improve our products, we reserve the right to modify them or change their specifications without notice.

## Package contents

The package of your HD PREAMP includes the following parts:

One ① HD PREAMP audio device chassis

One ① HD PREAMP power supply chassis

Four ④ ceramic balls

One ① user manual

One ① pair of microfiber gloves « Haute Horlogerie »

One ① power cord\*

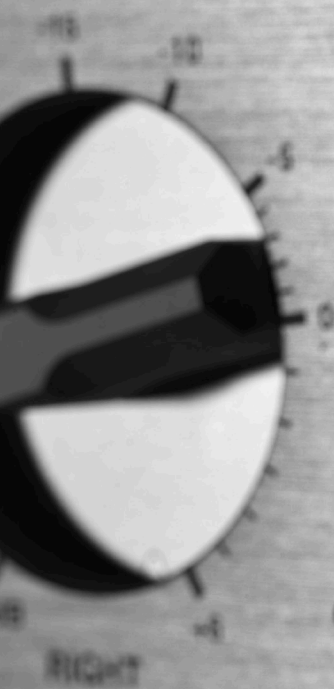
Two ② umbilical cords with LEMO plugs

One ① set of fuses (for 100V~ – 127V~ or 230V~ – 240V~, depending on your country)

One ① remote control unit and its docking station with 3x AA dry cells

Please contact your Nagra dealer should anything be missing.

\* Depending on your country, the power cord features either a US, European or Swiss plug.



MUTE



XLR



RCA





1

RCA 2

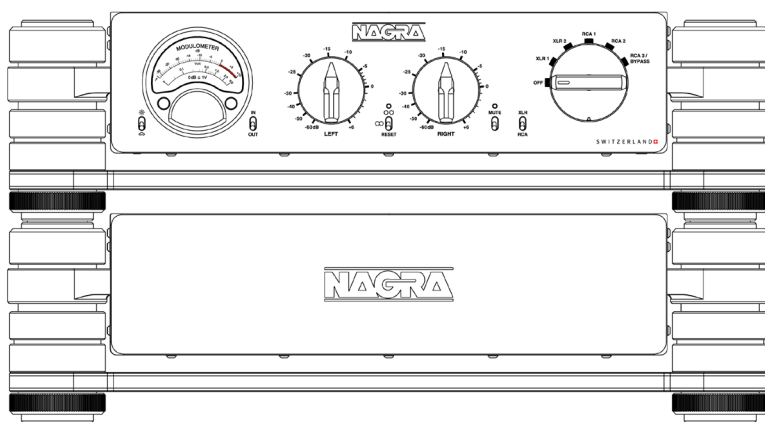
RCA 3/  
BYPASS

SWITZERLAND 

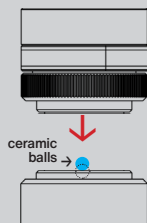
## Choosing a location

The HD PREAMP is designed exclusively for indoor use in a moderate climate.

The HD PREAMP is contained in two chassis: one audio device and one power supply. These chassis feature an anti-vibration base that allows for putting either one chassis on top of the other or one chassis next to the other, while remaining completely insensitive to vibration. They must be installed horizontally on a flat, firm and stable stand. There must be enough space all around the chassis for adequate ventilation. Ventilation should not be impeded by covering the ventilation openings with items such as newspapers, table-cloths, curtains, etc.



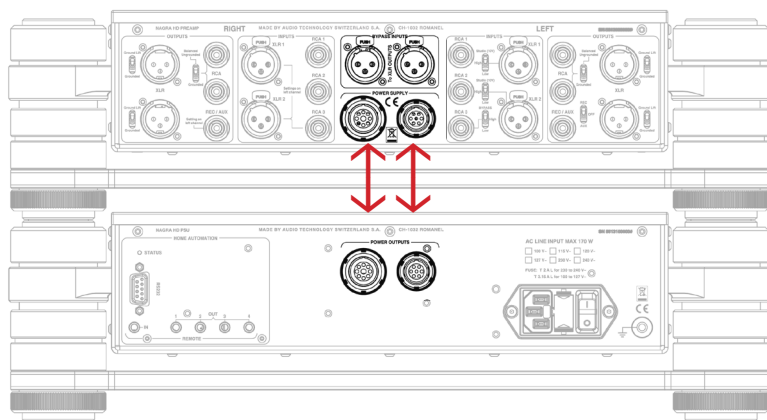
## Horizontality adjustment of the chassis HD PREAMP / HD PSU



Each chassis has four decoupling feet whose height can be adjusted with a wheel (knurled part). Turning the wheel adjusts the height of the foot and thus the level of the chassis. When the chassis are installed one on top of the other, the four feet of the upper chassis are in contact with the four feet of the lower chassis through four ceramic balls supplied with the HD PREAMP. The balls are seated in the small indentations at the top of each foot of the lower chassis (preferably the power supply chassis).

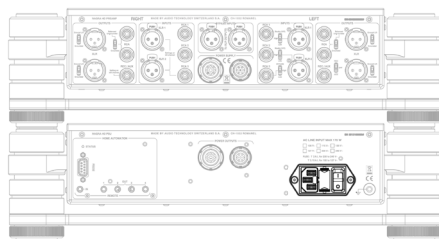
## Powering the HD PREAMP

The power cord of the HD PREAMP is connected on the rear panel of its power supply chassis. The power supply chassis converts the Mains supply into several different regulated voltages sent to the audio device chassis through two umbilical cords with LEMO plugs. These umbilical cords are supplied with the HD PREAMP.



## Connection to the Mains

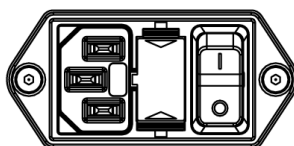
Push the Mains appliance inlet switch at the back of the power supply chassis into the 0 (OFF) position. Insert the Mains cord into the IEC connector of the power supply chassis.



### AC LINE INPUT MAX 170 W

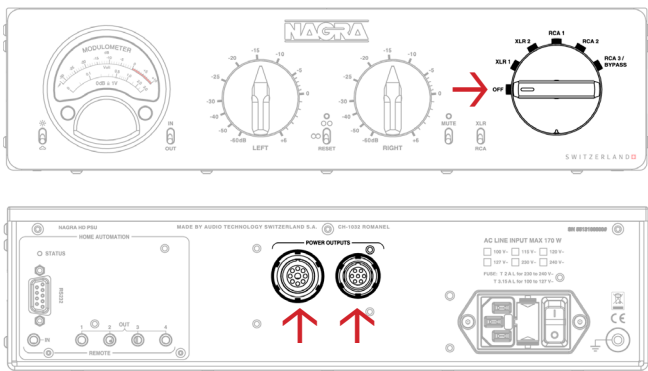
☐ 100 V- ☐ 115 V- ☐ 120 V-  
☐ 127 V- ☐ 230 V- ☐ 240 V-

FUSE: T 2A L for 230 to 240 V-  
T 3.15 A L for 100 to 127 V- Ⓢ

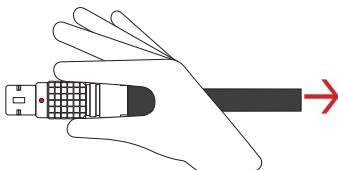
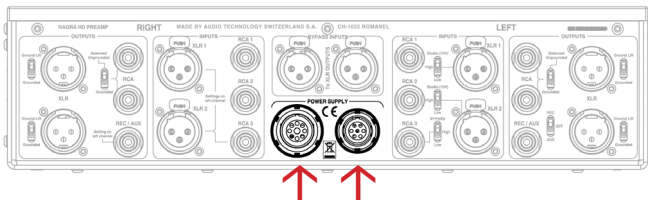


**Connection/Disconnection of LEMO cables**

Turn the front selector of the audio device chassis to the OFF position. Insert one LEMO plug of each umbilical cord into the matching LEMO socket at the back of the power supply chassis. Please note that the red dot on the LEMO plugs must be facing up before trying to insert them into the chassis sockets. You will hear a click indicating that the plug is securely locked in.



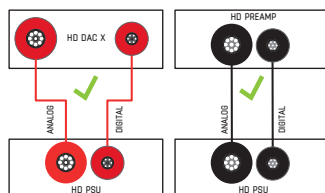
Repeat the procedure with the other ends of the umbilical cords, inserting them into the LEMO sockets at the back of the audio device chassis in the same way.



To disconnect the LEMO plug, hold the knurled section of the plug and pull it backwards.

## Note

There is a coloured ring around each LEMO socket on both chassis and around each LEMO plug on both cables. So if you possess several Nagra HD devices such as an HD PREAMP and an HD DAC X, be sure to connect the right power supply chassis with the right audio device chassis by using the correct cables (same colour of ring). This is important because the power supply chassis have different output configurations.



If you connect the wrong power supply chassis to one of your audio device chassis the STATUS LED located on the rear panel of the power supply chassis above the SUB-D9 HOME AUTOMATION connector comes ON when you move the front rotary selector to a position other than OFF. The audio device chassis does not switch ON for safety reasons.

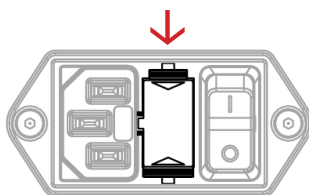
The fuse holder located in Mains appliance inlet, between the IEC connector and the switch, includes a replacement fuse.

The fuse type is: **FST 5x20mm 250V.**

**Should you need to replace it, use only the same fuse type and value.**

T 3.15A L for 100V~ to 127V~ versions.

T 2A L for 230V~ to 240V~ versions.

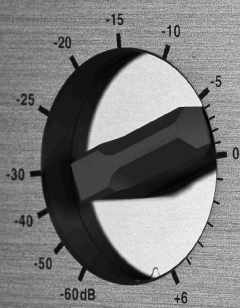




**NAGRA**

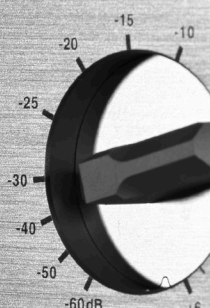


OUT



LEFT

RESET

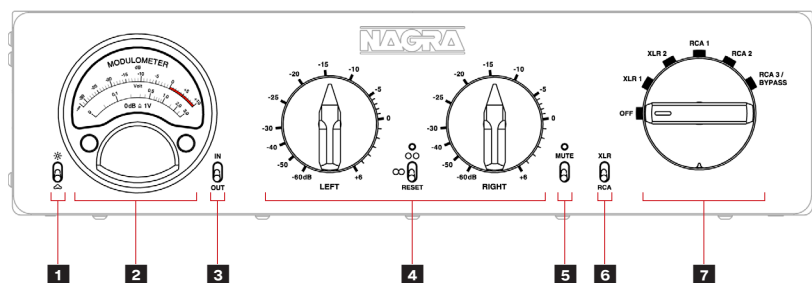


RIGHT

**NAGRA**

## HD PREAMP description

### Front panel // audio device chassis

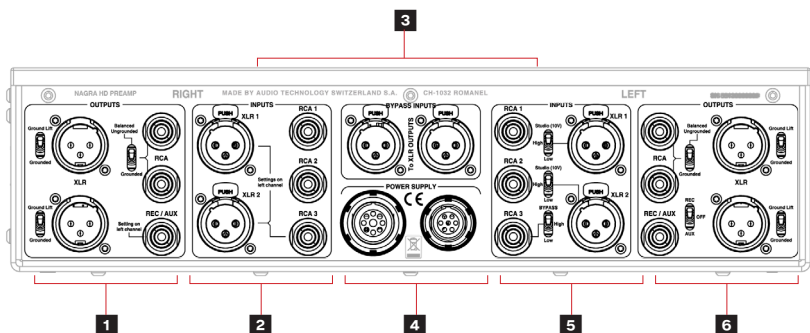


- 1** Modulometer & displays brightness switch.  
Push up for more intensity, push down for less. There are 7 intensity levels.
- 2** Nagra Modulometer. Indicates level in dB. Reference 0 dB = 1 VRMS.
- 3** IN/OUT audio signal switch to select signal displayed on Modulometer.
- 4** Motorized volume level controls LEFT & RIGHT with synchronization switch and warning LED for pre-heating & channels out of balance status.
- 5** MUTE switch with reminder LED.
- 6** RCA/XLR outputs selection switch.
- 7** Front rotary selector.

When turned ON, the HD PREAMP will enter a 4 minute preheating phase in order to optimize tubes and warm up critical components. This will allow your HD PREAMP to offer excellent performance for a longer period of time.

**Note:** Should the HD PREAMP be switched OFF then ON again, the preheating phase will start again from zero.

## Rear panel // audio device chassis



- 1** XLR and RCA outputs of right channel with connection type selectors.
- 2** XLR and RCA inputs of right channel.
- 3** BYPASS XLR inputs.
- 4** LEMO power supply inputs (Analog+Digital) with dedicated colour rings (black).
- 5** XLR and RCA inputs of left channel with sensitivity selectors for both channels.
- 6** XLR and RCA outputs of left channel with connection type selectors.

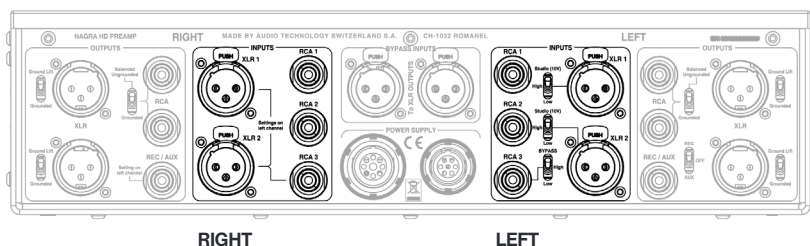
### WARNING



Both XLR and RCA inputs are unbalanced. Balancing transformers for XLR inputs are available as an option! XLR outputs are balanced. RCA outputs are balanced or unbalanced (selection with switch). Please find more details in the following paragraphs. Be careful, when cabling sources and amplifiers to your HD PREAMP, to properly connect them with the appropriate cables so as not to decrease audio signal quality! Pay attention to the grounding to avoid any potential differences between equipment that could permanently damage your HD PREAMP, especially when using mains power filters!



## Audio inputs



The input is selected with the front rotary selector (see page 22).

On both channels, sensitivity of RCA1 and RCA2 inputs is fixed (1V) whereas XLR1, XLR2 and RCA3 inputs have adjustable sensitivity.

Three switches located next to the left channel inputs are dedicated to set sensitivity of XLR1, XLR2 and RCA3 inputs on both channels simultaneously:

- XLR1, XLR2 = Studio (10V) / High (2V) / Low (1V, recommended position).
- RCA3 = BYPASS (RCA3 disabled) / High (2V) / Low (1V).

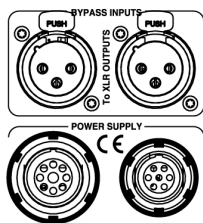
**Note:** When sensitivity is adjusted, you should switch the HD PREAMP off (front rotary selector to OFF), and the HD PSU off (mains appliance inlet switch to 0), then switch them on again in order for the adjustments to be memorized. XLR inputs are unbalanced. Balancing transformers are available as an option. All our transformers are designed and hand-wound on our premises in Romanel-sur-Lausanne, Switzerland. If you require balanced inputs, please contact your Nagra dealer who will supply and install the transformers. Please note that this option is only necessary when balanced XLR inputs are required.

### WARNING



Please note that the HIGH sensitivity mode (2V) should only be used in the case of connection to a source with a much higher audio signal level than standard LOW sensitivity mode (1V). HD PREAMP inputs are very tolerant of signal level and even with an audio signal level of 2V, you can still use the LOW sensitivity mode (1V). When selecting HIGH sensitivity mode (2V), an additional 6 dB voltage divider is connected to the audio signal circuit that modifies the source impedance for the HD PREAMP tube stage and consequently impacts the audio signal quality.

## Bypass Inputs

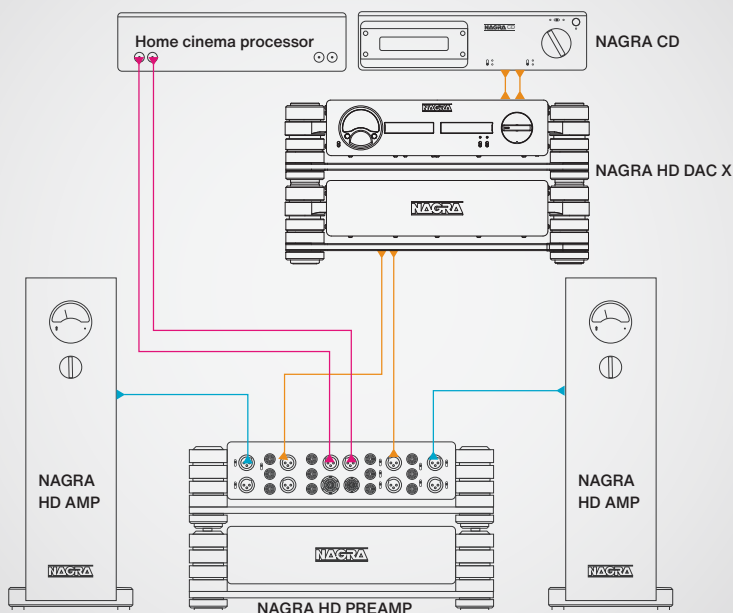


Both XLR Bypass input connectors are directly connected to the XLR outputs when:

- The HD PREAMP is switched OFF.
- The RCA3 inputs are in Bypass mode and the front rotary switch on the audio device chassis is set to RCA3 / Bypass position (see page 22).

This allows the connection of a second system, such as a home cinema processor, to the amplifier connected to the HD PREAMP. The pins of the XLR Bypass inputs and the XLR output connectors are directly coupled for a true balanced signal path.

Here is an example of a configuration using the BYPASS direct path:

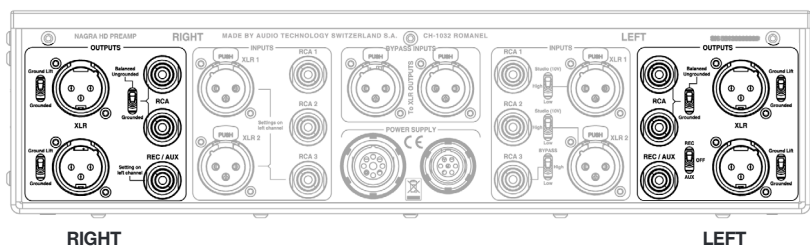


## WARNING



Please note that when the HD PREAMP is in Bypass mode, the volume control is bypassed too. The signal is directly routed to the XLR outputs. Be careful when using a source with volume control. To avoid any damage to the speakers, adjust the volume of the source to the minimum before setting the HD PREAMP in Bypass mode.

## Audio outputs



Depending on the position of the output selector switch on the audio device chassis front panel (see pages 15 & 22), either XLR balanced outputs or RCA outputs will be activated. The use of XLR balanced outputs is recommended because this creates a full galvanic insulation that avoids possible ground loops when connected to mono power amplifiers.

### XLR (balanced)

- GROUND LIFT means audio ground (pin 1 of XLR) is not routed to mains earth (preamplifier chassis).
- GROUNDED means audio ground (pin 1 of XLR) is routed to mains earth (preamplifier chassis).

### RCA (balanced or unbalanced)

- SYMETRICAL UNGROUNDED means the cold point of the two upper RCA connectors is not connected to the audio ground. They are in floating balanced configuration.
- GROUNDED means the cold point of the two upper RCA connectors is connected to the audio ground. They are in standard unbalanced configuration.

### REC / AUX (unbalanced)

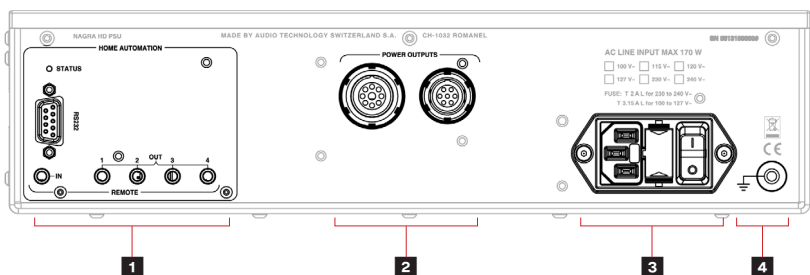
- REC for recording purposes. Fixed output level whatever the volume control position.
- OFF means disabled REC/AUX output, no signal (recommended position if this output is not used).
- AUX means auxiliary output with a variable output level according to the volume control position.



### WARNING

Please be sure not to have any potential difference between HD PREAMP and other equipment (correct grounding). Otherwise there is a risk of HD PREAMP damage when adjusting volume level.

## Rear panel // power supply chassis



- 1** STATUS LED for software upgrade & detection of wrong audio device chassis  
SUB-D9 for Home automation  
REMOTE IN (1x) to be driven by “master” device  
REMOTE OUT (4x) to drive “slave” devices
- 2** LEMO power supply outputs (Analog 9p, Digital 7p)
- 3** Mains appliance inlet with switch and fuse  
+ voltage version & fuse value information
- 4** Ground post

### About ground post

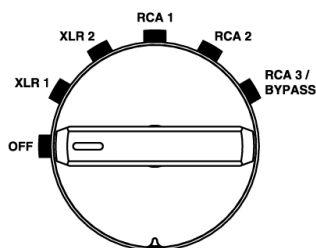
This feature is seldom used but can sometimes come in handy to solve specific setup issues. Your NAGRA dealer will assist you on when and how to use this connector.



**Only proceed if you have completed the installation steps as described in the previous chapter INSTALLATION OF YOUR HD PREAMP.**

## Power on & Audio input selection

To use your HD PREAMP, firstly you must push the Mains power switch to position 1 (ON). The Mains power switch is located on the rear panel of power supply chassis. The front rotary selector offers 6 positions to select the desired input or to switch your HD PREAMP OFF:



### OFF

Similar to STANDBY, the unit is still powered but the consumption remains very low

### XLR1

Selection of XLR1 input

### XLR2

Selection of XLR2 input

### RCA1

Selection of RCA1 input

### RCA2

Selection of RCA2 input

### RCA3/BYPASS

Selection of RCA3/BYPASS input

## Audio output selection

Connect the HD PREAMP output to your amplifier(s) by using either the XLR or RCA connectors according to the XLR/RCA switch position on the audio device chassis front panel.

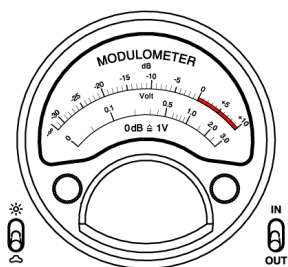
## Nagra modulometer

The Nagra modulometer is inherited from the second recorder developed by Nagra back in 1952, the Nagra II. The Modulometer is a typical Nagra precision instrument that displays the necessary information to achieve the best possible audio level setting. In the case of the HD PREAMP, the modulometer displays either the selected audio input level or the selected audio output level.

Reference 0 dB = 1 VRMS .

**Left channel – black needle**

**Right channel – red needle**





### Light intensity adjustment

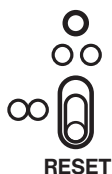
This two-way toggle switch allows you to adjust the Modulometer & displays backlight intensities. Pushing the toggle up will increase the brightness, pushing it down will lower the brightness all the way to complete extinction. There are 7 different intensity levels.



### Modulometer IN/OUT

Selection of audio signal displayed by modulometer.

## Volume control synchronization & warning LED



### Warning LED

Blinking during preheating process.

ON when preheating is ended and volume controls are desynchronized.

OFF when preheating is ended and volume controls are synchronized.

○ ○ Desynchronization of both volume controls.

They can be moved separately.

∞ ∞ Synchronization of both volume controls. They move simultaneously.

### RESET

When pushing switch on RESET, both volume controls calculate an average between their positions and move to this average position (useful for resynchronizing volume controls).



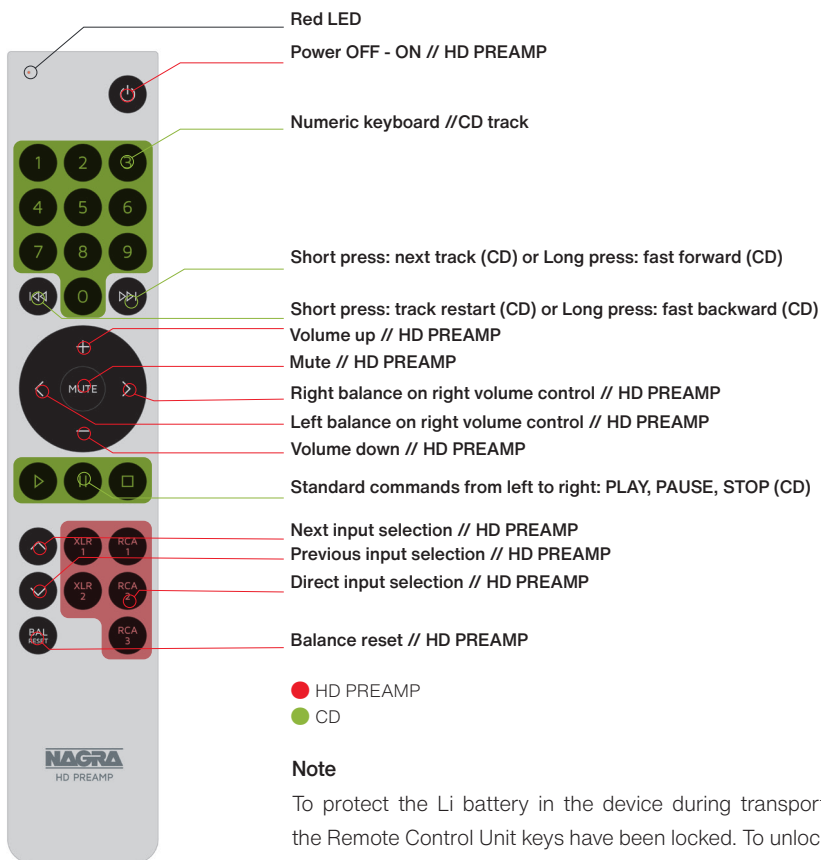
### Mute

The outputs of the HD PREAMP can be set to standby mode when you activate the MUTE switch. Pulling up the switch will activate the muting (no more sound) and light the yellow LED. Pulling down the switch will deactivate the muting and turn the yellow LED off. The HD PREAMP outputs will be working again.



## IR Remote Control Unit

The HD PREAMP currently comes with the new IR Remote Control Unit with Philips RC-5 format encoding. You may also use a Nagra RCU or RCU-II IR Remote Control Unit. As they require a different communication protocol (RECS-80), please contact your Nagra dealer to make the necessary adjustments inside your HD PREAMP.



### WARNING

The Remote Control Unit, with battery installed, must not be exposed to excessive heat such as sunshine, fire or similar.



### Red LED on Remote Control Unit

The red LED lights ON when pressing any key on the Remote Control Unit. If not, it means either the Remote Control Unit keyboard is locked or the Remote Control Unit Li battery is empty. Insert the unit into the docking station to charge the Li battery.

### Power OFF / ON key

Toggle key to switch the HD PREAMP ON and OFF. When switching ON, HD PREAMP automatically turns the front selector to the last input selection active before last power OFF.

**Note: This key is not operative when a REMOTE AUTOMATION jack cable is connected to the REMOTE IN socket of the power supply chassis!**

### + and - volume keys

To move both left and right volume controls simultaneously, either up or down, press on key briefly for a  $\pm 0.5\text{dB}$  change, or longer for bigger volume differences. The volume controls can be set to work either in synchronized mode or in desynchronised mode.

### < and > keys

With synchronized volume controls = No effect.

With desynchronized volume controls = step of  $\pm 0.5\text{dB}$ , only on right volume control.



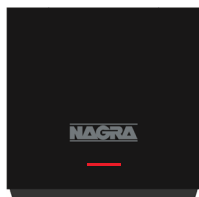
### BAL RESET key

With synchronized volume controls = No effect.

With desynchronized volume controls = both volume controls calculate an average between their positions and move to this average position (useful for resynchronizing volume controls).

## Docking station usage

To charge the Remote Control Unit Li battery, insert the unit into the docking station (unit keyboard towards docking station front). Fully charged, the Remote Control Unit will work for around 2-3 months, depending on usage. The 3x AA-dry cells in the docking station will be able to charge the Li battery for about 3 years.



### Docking station LED indicator

The LED on the front indicates the condition of the Remote Control Unit Li battery **when the unit is inserted into the docking station**:

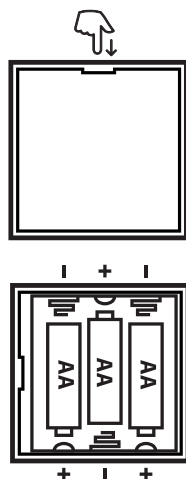
**WHITE blinking** = The Li Battery in Remote Control Unit is charging.

**RED blinking** = The Remote Control Unit is defective. Please contact your Nagra dealer.

**Permanently OFF** = The Li Battery in the Remote Control Unit is fully charged or the Remote Control Unit is not properly inserted into the docking station. Remove and reinsert the unit into the docking station. If the LED blinks white everything is OK, if not, the 3x AA-dry cells are exhausted and must be exchanged.

### Note

When the Li Battery in the Remote Control Unit is fully charged, the docking station only uses a small amount of current to maintain the full charge. There is no risk of overload even if the Remote Control Unit is inserted in the docking station for a long time!



### Battery installation/exchange in docking station

Open the battery box by removing the bottom panel of the docking station (magnet lock). Insert your thumb nail into the groove and lift the panel up. Replace empty batteries with 3x new AA-dry cell batteries.



### WARNING

Do not use any mechanical tool to open the docking station battery box; you could damage the body or the panel of the unit!



By ensuring battery is disposed of correctly, you will help prevent potential negative consequences for the environment and human health. The recycling of materials will help to conserve natural resources. For more detailed information about recycling of battery, please contact your local authority, your household waste disposal service or the shop where you purchased the battery.

### Use of a universal IR Remote Control Unit

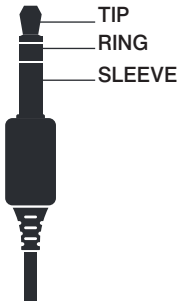
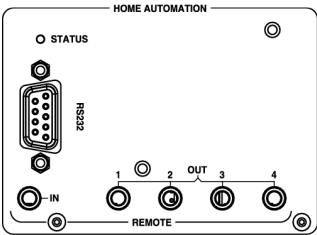
The HD PREAMP responds to IR (Infra Red) signals encoded in Philips RC-5 format. A default code 16 has been allocated to the HD PREAMP as a preamplifier. Should you wish to program your universal remote control, please use the following table:

Code	Device group number	Key
<b>HD PREAMP</b>		
1	16	XLR1
2	16	XLR2
3	16	RCA1
4	16	RCA2
5	16	RCA3
12	16	Power ON/OFF
13	16	Mute
16	16	⊕ (Volume up)
17	16	⊖ (Volume down)
20	16	⊖ Balance reset
26	16	⊙ (Right balance)
27	16	⊙ (Left balance)
32	16	⊙ (Input change, step-up)
33	16	⊙ (Input change, step-down)

### CD

0	20	0
1	20	1
2	20	2
3	20	3
4	20	4
5	20	5
6	20	6
7	20	7
8	20	8
9	20	9
32	20	⏮ (Short press: next track)
33	20	⏮ (Short press: track restart)
48	20	⏸ (Pause)
50	20	⏮ (Long press: fast backward)
52	20	⏭ (Long press: fast forward)
53	20	⏮ (Play)
54	20	⏮ (Stop)

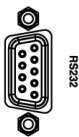
## Remote automation



The power supply chassis has 1x 3.5mm (1/8") stereo jack socket **REMOTE IN** (to connect a master device) and 4x 3.5mm (1/8") stereo jack socket **REMOTE OUT** (to connect slave devices). It allows you to switch a complete configuration of Nagra devices ON/OFF by only driving the master device manually or with an IR Remote Control Unit. If a 3.5mm (1/8") stereo jack connector is inserted into the "Remote IN" input at the back of the power supply chassis, this control gains priority over the IR Remote Control Unit and RS232 commands (ON-OFF key switch on IR Remote Control Unit no longer works).

Short between TIP and RING: HD PREAMP is switched ON. As soon as the HD PREAMP is switched ON, the front rotary switch turns itself to the selected input before it was last switched off. If you manually turn the front rotary switch to the OFF position when TIP and RING are shorted, it will turn itself back to the last selected input. Use standard straight cable to connect the different devices (except for the **REM** (REMOTE IN) input of a slave Nagra MPS). For more information, please ask your Nagra dealer who will provide you with a specific Nagra document on the topic: Nagra Remote automation - User + service instruction - How does it work?

## Home automation



All commands are sent/received on the SUB-D9 connector located on the rear panel of the power supply chassis. The serial settings are: 115200 bits per second, 8 data bits, no parity, 1 stop bit. All commands are executed after sending the command itself and terminating with a <CR> (carriage return).

Command	Description		
BALLEFT	Step balance left	PWON	Power on the device
BALRESET	Reset balance	PWSTANDBY	Set device to standby (or power off)
BALRIGHT	Step balance right	SILEFT	Previous input
BLUP	Increase backlight intensity	SIRIGHT	Next input
BLDOWN	Decrease backlight intensity	SI1	Select input 1
MUOFF	Mute OFF	SI2	Select input 2
MUON	Mute ON	SI3	Select input 3
MVDOWN	Decrease volume	SI4	Select input 4
MVUP	Increase volume	SI5	Select input 5

## Tube ageing

Nagra selects the HD PREAMP tubes according to exacting criteria. Their theoretical minimum useful life is 5'000 hours. In actual fact, some tubes operate consistently for more than 10'000 hours.

Thus, the useful life of the tubes is somewhat unpredictable. Rather than replacing the tubes arbitrarily after 5'000 hours, we suggest that you identify the signs of ageing:

- Distortion gently increases to an audible level
- Presence of clicks (dry, brief noises, like dead wood snapping)
- Presence of pops, brief noises in the low frequencies
- Presence of hiss, higher background noise
- Reduction of spaciousness, loss of naturalness

As soon as one of these signs appears, please contact your Nagra dealer to order an HD PREAMP replacement tube kit.

## HD PREAMP software update

The update is carried out with two MicroSD memory cards, one for the audio device and one for the power supply. You will be advised of the availability of any updates by your dealer who will install them.

## Case cleaning

Clean the HD DAC X casing by using a soft, non-fluffy, slightly damp cloth. Do not use any cleaning products that could have a corrosive effect.



Disposal of old electrical & electronic equipment (Applicable in the European Union and other European countries with separate collection systems). This symbol on the product or on its packaging indicates that it should be handed over to the applicable collection point for the recycling of electrical and electronic equipment. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences for the environment and human health. The recycling of materials will help to conserve natural resources. For more detailed information about recycling of this product, please contact your local authority, your household waste disposal service or the shop where you purchased the product.

Applicable to the following devices: HD PREAMP and all the package contents

<b>Input impedance</b>	> 50 k $\Omega$	
<b>Output impedance</b>	< 0.2 $\Omega$ < 40 $\Omega$	Volume @ -15 dB Volume @ 0 dB
<b>Frequency response</b>	10 Hz - 100 kHz 10 Hz - 200 kHz	+0.1 dB / -0.1 dB +1.5 dB / -0.2 dB
<b>Dynamic range</b>	> 150 dB	Volume @ -15 dB
<b>Input level to reach 0 dB on modulometer</b>		Volume @ 0 dB
Sensitivity LOW	1 V RMS	
Sensitivity HIGH	2 V RMS	
Sensitivity STUDIO	10 V RMS	
<b>Harmonic levels</b>		@ 1 kHz, 1 V out, no load
h2	< -70 dB	
h3	< -120 dB	
h5 & h7	< -150 dB	
<b>Crosstalk</b>	> 130 dB > 110 dB	@ 1 kHz, 1 V RMS @ 20 kHz, 1 V RMS
<b>Remote automation</b>		
Input	1x 3.5mm (1/8") stereo jack socket	Input command
Output	4x 3.5mm (1/8") stereo jack socket	Output switching by relay
<b>Home automation</b>	1x SUB-D9 connector	RS232 115200 bits/s, 8 data bits, no parity, 1 stop bit
<b>Mains power</b>	100V~, 115V~, 120V~, 127V~, 230V~ or 240V~ NOT ADJUSTABLE	$\pm 10\%$ , 50-60 Hz
<b>Power consumption</b>	170W max	
<b>Mains fuse</b>		
230V~ to 240V~	T 2A L	FST 5x20mm 250V
100V~ to 127V~	T 3.15A L	FST 5x20mm 250V
<b>Operating temperature</b>	+15°C to +35°C +59°F to +95°F	Moderate climate
<b>Operating environment</b>	Indoor only	IP30
<b>Dimensions LxWxH with VFP</b>		
Power supply chassis (HD PSU)	433x436x121 mm	17.05x17.17x4.76 in
Audio device chassis	433x436x121 mm	17.05x17.17x4.76 in
<b>Weight with VFP</b>		
Power supply chassis (HD PSU)	16.5 kg	36.38 lb
Audio device chassis	13.5 kg	29.77 lb

Specifications may change without notice

MADE IN SWITZERLAND

MANUFACTURER AUDIO TECHNOLOGY SWITZERLAND

• >>> AUDIO  
TECHNOLOGY  
SWITZERLAND 

© NAGRA // EDITION 2019



[nagraaudio.com](http://nagraaudio.com)