# MOSFET Stereo Amplifier


## Instruction manual

P/N: 2055018151

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# Important safety warnings

Before operating the MSA, read the manual carefully

Should you have any questions on how to setup or use your MSA, please contact your dealer.

Do not attempt to open the amplifier under any circumstances. Refer any service / repair work to Nagra qualified personnel. There are no user serviceable parts inside the amplifier

Audio Technology Switzerland SA declines all responsibility in the event of an accident caused by the non-observance of these instructions or any other form of user negligence

To perfectly work in your country, the MSA has a specific power supply for 100, 115 and 230V. The power supply tension can only be changed at the factory. Make sure you have the right operating voltage before switching your amplifier on.

# Warranty

AUDIO TECHNOLOGY SWITZERLAND SA, certifies that this instrument was thoroughly inspected and tested prior to leaving its factory and is in accordance with the data given in the accompanying measurement protocol and test sheet.

We warrant the products of our own manufacture against any defect arising from faulty manufacture for a period of three years from the date of delivery to the user.

Warranty will be void if the serial number has been removed from the unit.

This limited warranty covers the repair of confirmed defects or, if necessary, the replacement of the faulty parts, excluding all other indemnities.

All freight costs, as well as customs duty and other possible charges, are at the customer's expense.

We decline any responsibility for any and all damages resulting, directly or indirectly, from the use of our products.

We reserve the right to modify the product, and / or the specifications without notice.

## Congratulations

Congratulations, you have just purchased one of the best amplifiers ever made!

The MSA 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 builds 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 hi-fi products and field recorders are developed by the same R&D Department. Nagra philosophy is to provide innovation and technology in order to design high quality products. The hi-fi range was created to implement innovative designs and provide Nagra expertise to a new field.

Thank you for being our customer and enjoy your new Nagra MSA amplifier!

# Package content

On top of the MSA and manual, each box should contain the following:

- Microfiber gloves (from Swiss Haute Horlogerie);
- AC power cable*;
- Set of fuses (for 100 - 120 or 220 – 250 V, depending on your country);
- 2x RCA to XLR adapters;
- 1x Bridge jumper.

If anything should be missing, please contact your dealer.

*depending on your country, the AC mains cable features either US, European or Swiss plug.

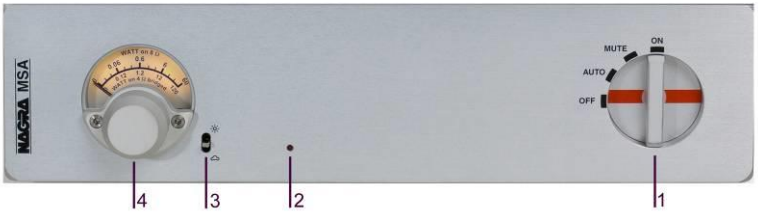
# Installation

## Positioning the MSA

If you have a thick carpet, it is advisable to place the MSA on small stands to allow an optimal thermal dissipation.
We recommend you to ask your Nagra dealer a demonstration of the VFS anti-vibration platform that offers a perfect match for your MSA.

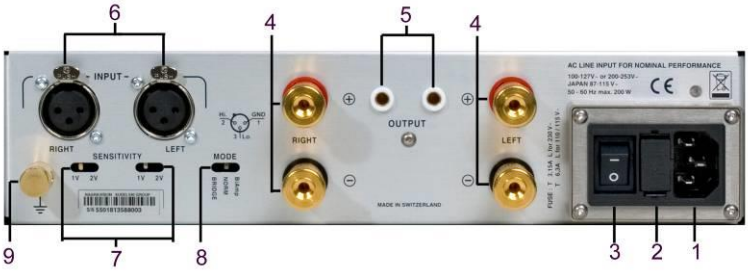
## Presentation of your MSA

**Front panel**




1 – Main selector
2 – Clipping and alarm LED
3 – Modulometer intensity switch
4 – Modulometer

**Back panel**




1 - IEC Mains connector
2 – Fuse holder
3 – Mains switch
4 – Speaker terminals
5 – Jumper plug (for bridge mode only, see page 8)
6 – Inputs (on XLR balanced connectors)
7 – Sensitivity selector
8 – Operating Mode selector
9 – Ground connector

## Fuse type

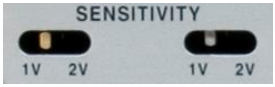
Replacement fuses are provided with your MSA.
Make sure to use 6.3 A for 100 – 120 V and 3.15 A for 220 – 250 V mains.

The fuse holder itself contains a spare fuse. The active fuse is on the left hand side on the picture.

Should the fuse blow two times in a row without apparent reasons, please contact your Nagra dealer for advices.

## Sensitivity

Depending on the source, you can adjust the MSA's input sensitivity. This will guarantee a perfect match. You can change the input sensitivity at any time by moving the LEFT and RIGHT channel switches on the back (see position on the picture above).



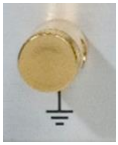

On this picture the sensitivity is 1 V rms.

With Nagra preamplifiers, it is recommended to use 1 V sensitivity.

## Audio inputs

The MSA is a fully balanced amplifier. The inputs are provided on two XLR balanced connectors.
If your source is unbalanced with RCA outputs, you can use RCA / RCA cables with the adaptors we provided with the unit.

## Ground connector



In some specific situation the ground connector can be used to connect different pieces of equipment.

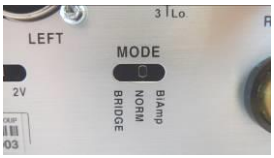
Your Nagra dealer will advise during set-up on the interest to use this connector.

# Selecting the amplifier's mode

The MSA can operate in three different modes.
**NORM** or normal (or stereo), this is the standard mode

**BiAmp** for BiAmping this mode is intended for using one MSA to power the left speaker and one MSA to power the right speaker, or one MSA for the bass and one MSA for the mids and highs.

**BRIDGE** both channels are used in parallel to double the output current, thus doubling the power.

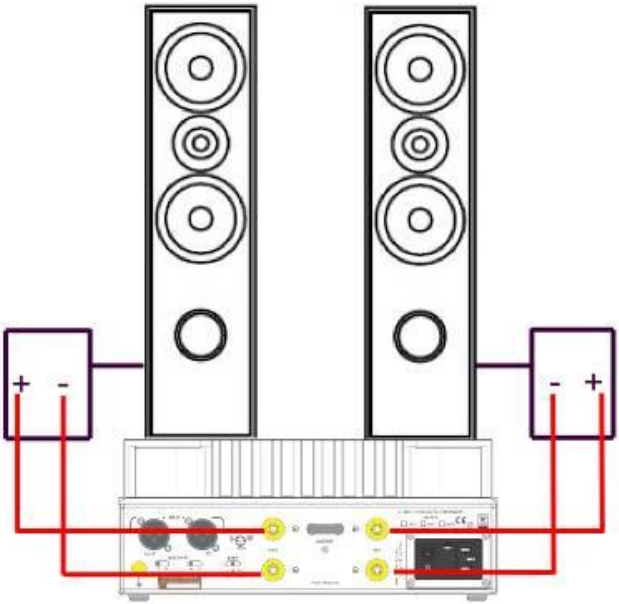



Make s ) turn the amplifier **OFF** before changi : Mode.

The mode selector is located between the inputs and the right output terminals.

**Stereo mode**

The amplifier will deliver 2 x 60 W rms under 8Ω
Put the Mode selector on **NORM**



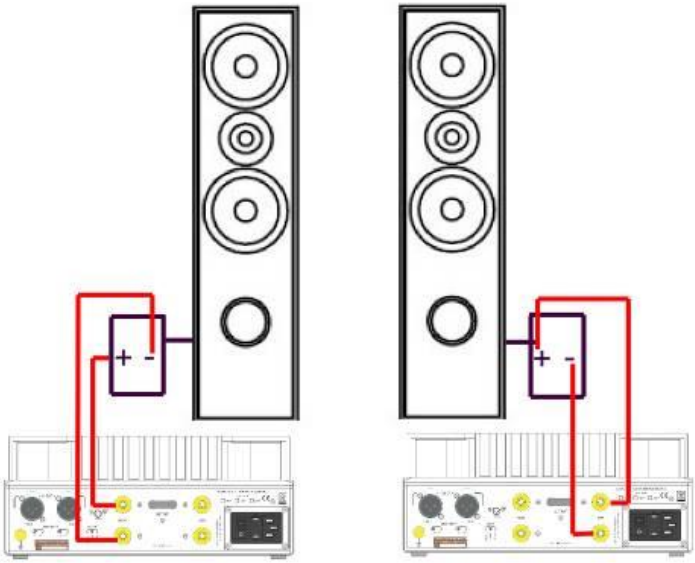
**Bridge mode**
The MSA will deliver 120 W rms under 4Ω on one channel. It will double the potential current allowing for a better drive of your speaker. You do need to connect one MSA to each speaker.

In this mode you need to put the jumper in place.

Place the Mode selector on **BRIDGE**

Use the left input.

You may also replace the jumper with a link connector of the same range as your speaker cable.

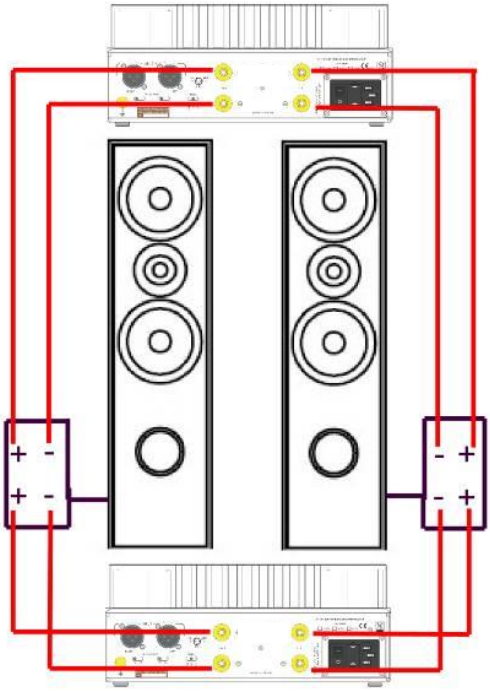


**Bi-Amplification mode**
In this mode, do not use the jumpers.

If your speakers allow to connect bass and high/mids sections separately you can use two MSA to power either one speaker each or one MSA for basses and one for highs (or mids and highs).

Place the Mode selector on **BiAmp**

Always use the left input.




In this example one MSA is used to power the bass, one to power the highs.

Whereas to use one method or the other, depends very much of your speakers, you should try different solutions to find the best match.

## Connecting the mains cable

Make sure the switches are in the **OFF** position prior to connecting the mains cable.

# Operating the MSA

Proceed only once you have completed the installation steps described in the previous chapter **Installation**.

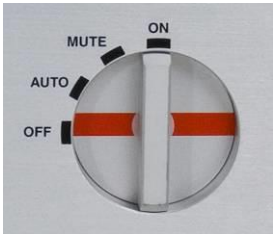
## Switching On

The MSA features two different selectors.


The **Mains switch** is located on the rear panel.

In the **OFF (O)** position, the MSA does not draw any current from the mains.

To use your amplifier, you must first, put the main switch in the **ON (I)** position.




Then you can use the front selector on the front panel.

| Mains | Selector | Action |
|---|---|---|
| **O** | any | The MSA is shut down |
| **I** | **OFF** | This is the Standby position in which the MSA will use less than 1 W |
| **I** | **AUTO** | Automatic On/Off the MSA will detect signal on the input and turn ON automatically, it uses less than 1 W like in standby, it shuts down in the absence of signal after about 15 minutes |
| **I** | **MUTE** | The MSA is ON but the input are muted |
| **I** | **ON** | The MSA in ON |

# Security

The MSA is loaded with different protection systems, to allow for smooth and secure operation for itself and for your loudspeakers.

## Protection mode

Whenever a potential danger arises, for the amplifier or the loudspeakers, the MSA will shut down. This is called "Protection mode". The front red LED will light up as shown on the picture.

When does the MSA go into the "Protection mode":

- It is connected to the wrong voltage;
- Continuous clipping;
- Short-circuit protection;
- Direct current appears on the output;
- Internal temperature is too high.

What should you do in this case:
On the rear of the unit, turn the Mains switch OFF (**O**), wait for 30 seconds and turn it ON (**I**).

**Note** Should the MSA go into the Protection Mode without apparent reasons or several times, turn it OFF (from the Mains switch) and contact your Nagra dealer.

## Wrong voltage

The MSA power supply is designed to work for a specific Mains voltage, either 100-120 V or 220-240 V. To avoid potential components destruction, it won't turn on if it is connected to the wrong voltage. If this is the case, please contact your Nagra dealer.

## Clipping protection

Clipping will occur when you push the amplifier to its limit, the front red LED will start to blink. While a short "clip" will not even be heard, a long clip can damage the amplifier or the loudspeakers. That's why, after one second of continuous clipping, the MSA will self-protect by going into the **Protection Mode**.

## Short-circuit protection

In the event of a short-circuit on the speaker's connectors, the front red LED will light up; after one second, the amplifier will go into the **Protection Mode**. Before turning the unit ON again, you should check the speaker connections.

## DC protection

A DC (direct current) component generated from the amplifier could damage your loudspeakers. If a DC component of more than +/- 2.5 V appears on the output of the MSA, it will go into **Protection Mode**.

## Thermal problem

If the amplifier runs too hot, it will shut down automatically. In this case, don't do anything; it will turn on again when the temperature drops down. Make sure the amplifier is positioned on a solid platform and that fresh air can circulate inside the unit. Eventually, install spikes to raise the unit from the floor.

## Modulometer


The modulometer provides two scales to display the rms power on the output of the amplifier. The upper scale is into 8 Ohms the lower is for 4 Ohms in BRIDGE mode.

Right channel - black needle
Left channel - red needle

## Adjusting the modulometer brightness

The toggle switch located on the right hand side of the modulometer allows you to adjust the backlight intensity.

From full blow to a complete extinction it provides 7 levels of intensity.

This setting is automatically memorized by the MSA when you turn the amplifier OFF.

# Technical specifications

| | | |
|---|---|---|
| Class | AB | |
| Power | 60 W rms into 8Ω | |
| Sensitivity | 1V or 2V rms | |
| Bandwidth | <10 Hz to 90 KHz | +0 / -3 dB |
| Crosstalk | >70 dB | |
| Signal-to-noise ratio | Typically 109 dB | Measured in ASA A |
| THD+N | < 0.09 % | @60 W |
| Input impedance | >100 KΩ | |
| Input connectors | XLR | Balanced |
| Monitoring | Stereo level meter | |
| | Clipping indication | Red LED on front panel<br>I>12A or U>42V |
| Automatic start | For input level > 10mV | |
| Protection<br>Deactivates the amplifier | Overheating | Above 60°C (140°F) |
| | DC protection for loudspeakers | Above +/- 2.5 V DC |
| Output connectors | Gold plated WBT | Bare wires up to 4.2 mm<br>4mm banana plugs<br>6.35mm spade lugs |
| Consumption | 300 W max | Sine wave current draw complies with EN61000-3-2 regulation |
| | Less than 1W in Standby and Auto | |
| Weight | 9 Kg (20 lbs) | Net weight |
| Size | 28 x 25.4 x 12.5 cm | 12 x 10 x 5 inches |
| Operating range | 90-110 or 110 - 132V<br>or 180-264V | 50 - 60 Hz |

DECLARATION DE CONFORMITE
DECLARATION OF CONFORMITY

**FABRICANT:** Audio Technology Switzerland 1032 Romanel SUISSE
**MANUFACTURER:** Audio Technology Switzerland 1032 Romanel, SWITZERLAND

**APPAREIL :** Nagra MSA ou MSA
**MODEL:** Nagra MSA or MSA

NORMES APPLICABLES :
APPLICABLE NORMS:

| | |
|---|---|
| Champ électromagnétique rayonné<br>**Radiated electromagnetic field** | EN 55022 Cl. B<br>**EN 55022 Cl. B** |
| Perturbations conduites sur secteur<br>**Disturbance voltage on mains terminal** | EN 55022 Cl. B<br>**EN 55022 Cl. B** |
| Immunité aux champs électromagnétiques<br>**Immunity to electromagnetic fields** | EN 61000-4-3<br>**EN 61000-4-3** |
| Immunité aux décharges électrostatiques<br>**Immunity to electrostatic discharges** | EN 61000-4-2<br>**EN 61000-4-2** |
| Immunité aux transitoires électriques rapides en salves sur câble d'alimentation<br>**Immunity to burst on mains line** | EN 61000-4-4 level 2 (1000V)<br>**EN 61000-4-4 level 2 (1000V)** |
| Immunité aux transitoires électriques rapides en salves sur câbles d'entrées/sorties signaux<br>**Immunity to burst on input/output signal line** | EN 61000-4-4 level 1 (500V)<br>**EN 61000-4-4 level 1 (500V)** |
| Immunité aux ondes de choc<br>**Immunity to surge** | EN 61000-4-5 level 2 (1000V)<br>**EN 61000-4-5 level 2 (1000V)** |

Cheseaux 3ème trimestre 2009
Cheseaux 3rd quarter 2009

Nagra R&D team