U4410

HEADPHONES AMPLIFIER

USER'S MANUAL

OPTIONS

Option 96	Service Manual.
Option 80	FRB Mains Connector
Option 81	CEI Mains Connector

ACCESSORIES

W1101-80	Power cord 2.5m length / FRB connector
W1101-81	Power cord 2.5m length / CEI connector

SERIAL NUMBER

CONTENT

Due to permanent technical improvements, specifications listed here can change without prior notification.

GENERALITIES

The **U4410** is a stereophonic headphones amplifier designed for monitoring applications.

Its three independent outputs are fed by three stereophonic amplifiers, each with its own level adjustment on the front panel. An internal switch adjusts the impedance (50 ohms or 600 ohms) to match the headphone specification. A specific amplifier design provides a large power headroom and a high signal to noise ratio. The **U4410** can handle all the dynamics of today's digital recordings without distortion.

Two indicators (**OVER LEFT/RIGHT**) monitor the input signal. They light up when the input level reaches 6dB below clipping, if a DC offset is present in the input signal or in case of output stage overload.

Thanks to two combo style inputs (XLR balanced or 6.35 mm JACK unbalanced) located on the rear panel, the amplifier **U4410** is easily connected to any modulation source, such as mixing equipment, dispatching, or even to another headphones output.

WARRANTY

This equipment is warranted against defects in material and workmanship for a period of five (5) years from date of delivery.

The warranty will be voided if the unit is tampered with or serviced by unauthorized personnel.

SPECIFICATIONS

INPUTS

Balanced:

Two channels	transformerless left and right inputs.
Nominal level	+4 dBm, 1.2 Vrms
Maximum level	+28 dBm, 19.4 Vrms.
Balanced impedance	10 kOhms.
Common mode impedance	5 kOhms.
Protection	Against phantom power.
Connectors	3 point female XLR.

Unbalanced:

Two channel	independant stereophonic inputs.
Nominal level	+4 dBm, 1.2 Vrms.
Maximal level	+14 dBm, 3.9 Vrms.
Impedance	2 kOhms.
Connectors	2 stereophonic 6.35mm JACK.

OUTPUTS

Unbalanced:

Maximum level	for 0.5 % distorsion: + 19.2 dBm, 7.0 Vrms, 1000 mWatt on 50 Ohms. + 21.7 dBm, 9.5 Vrms, 600 mWatt on 150 Ohms. + 21.8 dBm, 9.6 Vrms, 310 mWatt on 300 Ohms. + 22.0 dBm, 9.8 Vrms, 160 mWatt on 600 Ohms.
Nominal level	+ 13.9 dBm, 3.8 Vrms, 300 mWatt on 50 Ohms. + 18.7 dBm, 6.7 Vrms, 300 mWatt on 150 Ohms. + 21.7 dBm, 9.4 Vrms, 300 mWatt on 300 Ohms. + 21.7 dBm, 9.4 Vrms, 150 mWatt on 600 Ohms.
Impedance	less than 0.5 Ohm at 1 kHz.
Connectors	3 stereophonic 6.35 mm JACK.

TRANSFER

Bandwidth	20 Hz/20 kHz at +/- 0.3 dB
Rise/Fall time	2 µs
Phase shift	< -1˚ from 20Hz to 1 kHz < -8˚ at 10 kHz < -13˚ at 20 kHz
Maximum gain	16 dB on balanced inputs
Distorsion at 1kHz	0.020 % on 50 Ohms at 300 mWatt output. 0.015 % on 150 Ohms at 300 mWatt output. 0.015 % on 300 Ohms at 300 mWatt output. 0.015 % on 600 Ohms at 150 mWatt output.
Signal to noise ratio	110 dB at +4 dBm input, 20 Hz/20 kHz, potentiometer on median position. 125 dB at +20 dBm input, 20 Hz/20 kHz, potentiometer on median position.
Residual noise	- 115 dBm, 20 Hz/20 kHz, potentiometer on median position. - 100 dBm, 20 Hz/20 kHz, potentiometer on maximum position.

GENERAL

Power Supply	230 Vac or 120 Vac mains voltage (set internally). 45 to 65 Hz frequency. consumption < 10W. FRB connector. (option 80) CEI connector. (option 81)
Indicators	left and right overload, 6 dB before clipping. input DC voltage greater than 100mV.
Operating temperature	-10 ˚C to 40 ˚C.
Storage temperature	-20 ˚C to 60 ˚C.
Size	220x170x55 mm.
Weight	1600 g.

PRECAUTIONS

WARNING

To avoid risk of fire or electrical shock, do no expose this equipment to rain or excessive humidity.
Service must be performed by a qualified technician.

MAIN VOLTAGE SETTING

The mains voltage is preset to the value indicated on the rear panel.
Please check that the voltage value indicated on the rear panel matches the main network voltage.
Main voltage is set internally. To change this setting, please contact your local dealer or **MCN** AUDIO technical support.

MAIN CONNECTION

Connect the power cable at the rear of the units, and check that the connector is fully inserted and locked. Then plug the cable on a main network socket providing an earth connection.
Do not use the equipement if the power cord is damaged, if the equipment as experienced a severe mechanial shock or if it is visually damaged.
This equipment is protected by an internal fuse. Use a fuse of the same rating in case of replacement

SWITCHING ON

The power is applied to the amplifier by toggling the rear power switch.
In the OFF position, the unit is completely disconnected from the mains network. It can stay connected without risk.

TEMPERATURE IN OPERATION

An increase of the case temperature is normal when the instrument is connected to the power network and switched on.

HEADPHONES - SAFETY WARNING

The sound pressure headphones can deliver when connected to this amplifier is very high. Avoid using headphones at a high level for a long period, as it may permanently damage your hearing.

When used at a high level, external sounds become undetectable, specifically on closed frame headphones. Avoid using headphones at a high level if missing external sound signals can impair your safety.

Never connect headphones you are wearing to any output whose level is not adjusted to zero. Residual noise at the outputs of the U4410 is almost imperceptible. Do not assume that this absence of noise means volume controls are set to zero.

GROUND CONNECTIONS

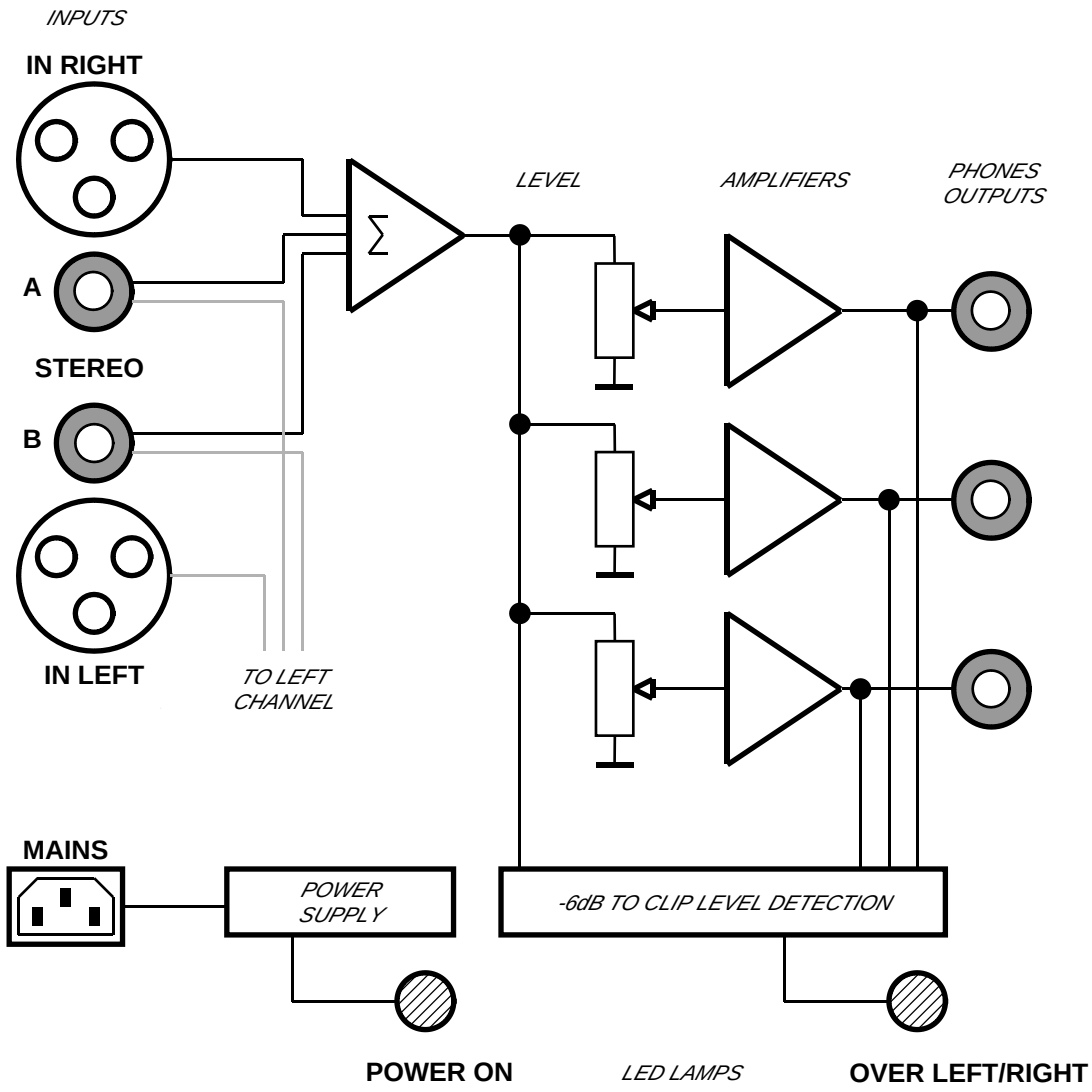
This equipment is designed to be used with an earth connection. It must be connected only to a main socket providing a functional earth connection.

The metallic case and the electronic ground potential of this equipment are connected to the earth.

Even if stereophonic inputs A and B on the rear panel are independent, the ground connection is common for both A and B connectors, and linked to the metallic case of the instrument.

SYNOPTIC

Left and Right channels are identical.



FRONT PANEL

POWER ON

The blue **ON** pilot light is lit when the unit is ON.
When the rear power switch is set to OFF, the unit is disconnected from the power. The power cable can stay plugged in without risk.

OVER LEFT

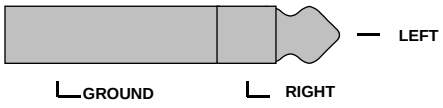
Channel LEFT overload pilot light.
This led lights when:
- the signal is 6 dB below clipping, corresponding to a 14 dBm signal on the balanced inputs,
- the output amplifier is clipping,
- the input signal carries a DC level greater than 100mV.

OVER RIGHT

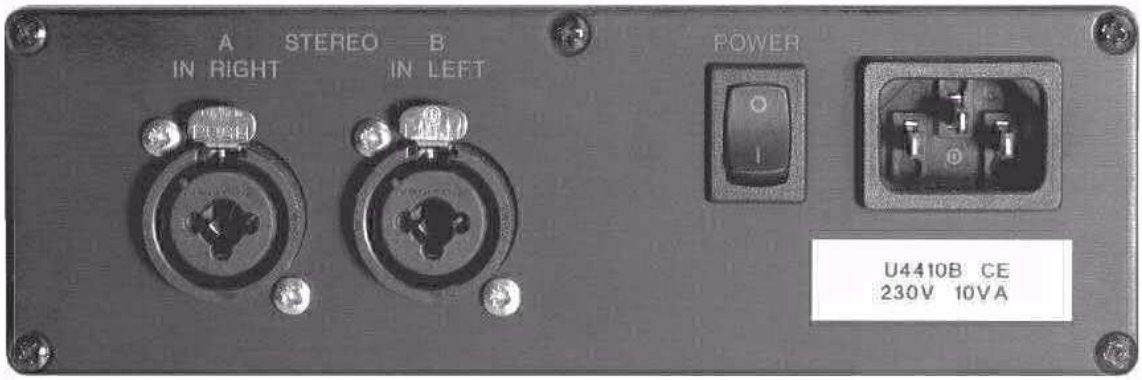
Channel RIGHT overload pilot light.
This led lights when:
- the signal is 6 dB below clipping, corresponding to a 14 dBm signal on the balanced inputs,
- the output amplifier is clipping,
- the input signal carries a DC level greater than 100 mV.

PHONES OUTPUTS

Headphones 6.35 mm JACK output connectors.
Three headphones can be connected simultaneously, fed by three independent amplifiers with independent volume controls. An internal setting allows low impedance (50 ohms) or high impedance (600 ohms) headphones configuration. High impedance is the default setting.



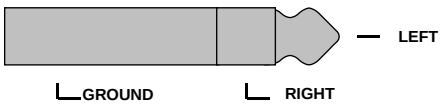
REAR PANEL - Option 81



Male XLR or 6.35 mm JACK connectors can be plugged in the input sockets.

STEREO A Stereophonic 6.35 mm JACK connector for unbalanced stereophonic input A.

STEREO B Stereophonic 6.35 mm JACK connecfor for unbalanced stereophonic input B.



Stereophonic inputs A and B are independent.
Two programs can be fed on stereophonic inputs A and B. In such case, the sum (the mix) of these programs will be heard on the headphones.

Even if stereophonic inputs A and B are independent, the ground connection is common for both sockets A and B and linked to the metallic case of the unit.

IN RIGHT Balanced XLR male connector for right channel.

1	GROUND
2	HOT (+)
3	COLD (-)

IN LEFT Balanced XLR male connector for left channel.

1	GROUND
2	HOT (+)
3	COLD (-)

POWER Main power switch

CEI main input connector.

This equipment is designed to be used with an earth connection. It must be connected only to a main socket providing a functional earth connection. The metallic case and the electronic ground potential of this equipment are connected to the earth.

INPUT AND OUTPUT LEVELS

BALANCED INPUTS

The maximum level that can be applied on the balanced inputs is 28 dBm. Above this level, the signal is limited by the input protection network. The purpose of this network is an active protection in case phantom power is accidentally applied to the amplifier. The nominal input level is the standard 4 dBm.

UNBALANCED STEREOPHONIC INPUTS

The maximum level that can be applied on the unbalanced stereophonic inputs is 20 dBm.
The nominal level is 10 dBm.
These inputs can be directly connected to headphones outputs of almost any equipment with their output level set to their midrange position.

HEADPHONES OUTPUTS

Outputs are short-circuit protected.
According to the impedance of the headphones connected, the available power ranges from 150 to 300 mWatts. An internal setting allows compensation for the level difference which is encountered when using high and low impedances headphones of this amplifier.

BANDWIDTH

The bandwidth of the **U4410** is deliberately very large, so as to minimize gain and phase alterations which normally occur at the limits of the audible range.

An internal control loop automatically trims the bias point of the amplifiers.
This function is able to cancel a residual DC input voltage up to 200 mV. Above 100 mV of input DC voltage, the **OVER** pilot lamp lights up, even if no audio signal is applied at the input.

In case the **OVER** pilot lamps light up as soon as the amplifier is connected to a source, even if no audio signal is present, check for DC residual voltage at the source output. Using the **U4410** on such source can cause damage to your headphones.

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