

UAX220

*Professional
USB Audio Interface*



User's manual

**For technical support,
please contact your supplier**

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INFORMATION FOR THE USER

This device complies with part 15 of FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a CLASS B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions contained in this data sheet, may cause harmful interference to radio and television communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- * reorient or relocate the receiving antenna
- * increase the separation between the equipment and the receiver
- * connect the equipment into an outlet on a circuit different from that of the receiver
- * consult the dealer or an experienced audio television technician.

Note: *Connecting this device to peripheral devices that do not comply with CLASS B requirements or using an unshielded peripheral data cable could also result in harmful interference to radio or television reception. The user is cautioned that any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. To ensure that the use of this product does not contribute to interference, it is necessary to use shielded I/O cables.*

IMPORTANT NOTICE

This device has been tested and found to comply with the following standards:

- International: CISPR22 Class B
- Europe : EMC 89/336/CEE (1992) specifications.
- United States: FCC Rules-Part 15-Class B (digital device).

CONTENTS OF THIS PACKAGE

Thank you for purchasing a Digigram UAX220 USB audio device.

The UAX220 package consists of the following components:

- * the UAX220 audio device
- * the user's manual at hand
- * a carrying case

Feel free to visit our web site www.digigram.com to get more technical information, consult FAQs, and discover our complete and updated audio product line.

FEATURES

UAX220 is a stereo audio interface for USB ports (compatible with USB ports 1.1 and 2.0). It is fed via USB, and does not require any driver installation of (as it is compatible with the USB Audio specification 1.0).

Main hardware features

- 2 balanced* analog mono line inputs
- 2 servo-balanced** analog mono line outputs
- 1 female 1/4" jack headphone stereo output with potentiometer adjustable gain
- 24 bits/96 kHz A/D and D/A converters
- Direct monitoring enabled via switch on the box

Note: *the input echo is mixed on the output with the sounds played by the application.*

* can be used with unbalanced signals

** Electronically servo-balanced outputs provide automatic level adjustment to accommodate either balanced or unbalanced lines

Main software features

UAX220 complies with the USB Audio specification. Therefore, and depending on the operating system used, it is compatible with WDM DirectSound, ALSA, and CoreAudio.

Furthermore, it is possible to use a third-party ASIO driver.

HARDWARE REQUIREMENTS

- A USB port (standard 1.1 or higher)
- Minimum Apple Macintosh configuration:
PowerMac G3, G4 or G5 with 128 MB RAM
- Minimum PC configuration:
Pentium III (or equivalent), 256 MB RAM

Software requirements

Your UAX220 does not require any driver installation, because it meets the USB Audio Standard 1.0.

Supported operating systems

Windows XP

Mac OS X

Linux

HARDWARE INSTALLATION

UAX220 installation

Connect the UAX220 to the USB port (USB 1.1 or 2.0) of your computer. It will then automatically be detected by the operating system and its driver will also be automatically installed.

SOFTWARE INSTALLATION

Your UAX220 does not require any driver installation, because it meets the USB Audio 1.0 standard, which is supported by your operating system (Windows XP, Mac OS X, Linux).

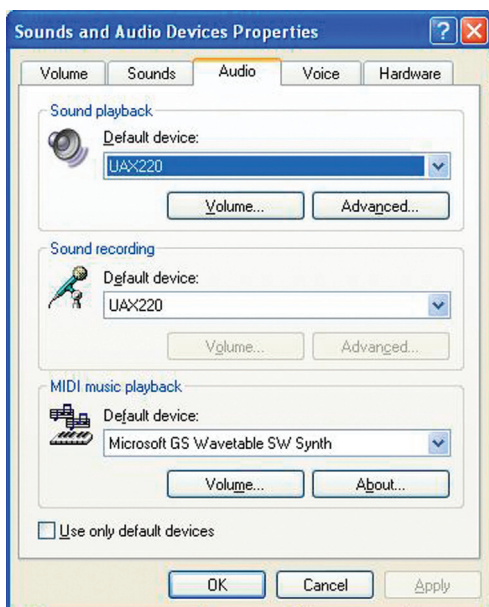
HOW TO CHECK THE INSTALLATION

Once the UAX220 is connected to the USB port of your computer, you can check the accessibility of its inputs/outputs as described hereafter.

Under Windows

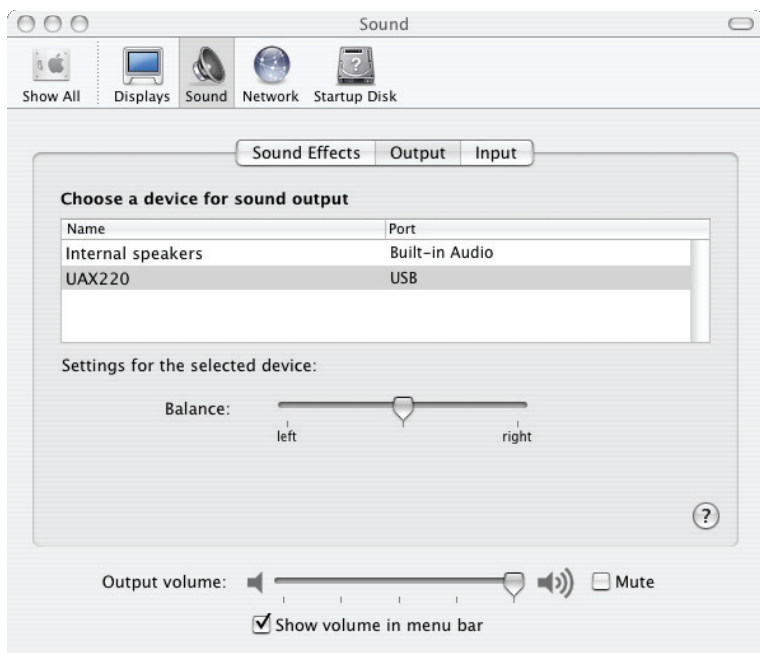
Go to <Start> <Settings> <Control panel><Sound and Multimedia >.

The UAX will be displayed like this:



Under Mac OS X

Go to the **<System Preferences> <Sound>**. The UAX will be displayed as follows.



Under Linux

The UAX220 parameters are accessible from the sound editing application of your choice.

LEVEL CONTROLS

The UAX220 provides level adjustment and mute controls on the outputs of the D/A converters. These controls are applied to both line and headphone outputs. By default, the output level of the D/A converter is set to maximum: a full scale digital signal of 0 dBfs is thus restored at +10 dBu. This operating mode is recommended to obtain finest audio quality. On the inputs, there are no controls available.

You will rarely access these controls, as the headphone level potentiometer gives you direct access to its volume control.

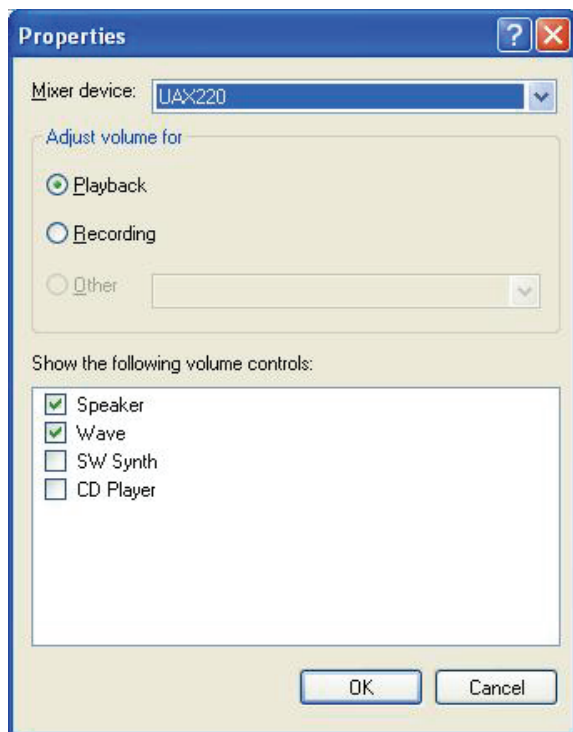
However, in case you'd like to modify the D/A converter output, this is how to proceed under Windows XP and Mac OS X:

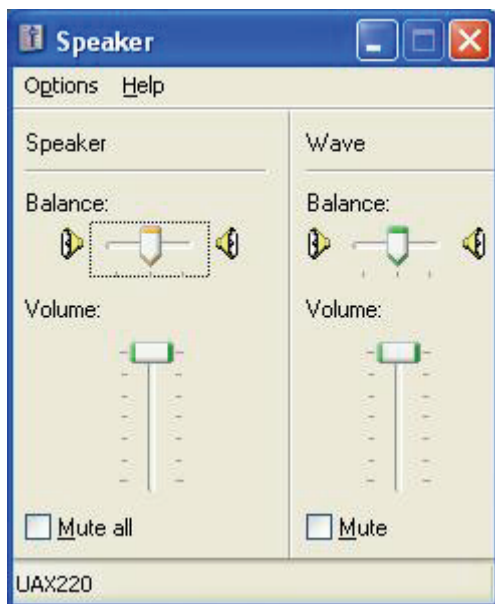
Control Panel under Windows

To control the output levels of your UAX220, use the **Volume Control** application. To open this application, double-click onto the speaker icon in the Windows task bar. In case this icon is not displayed in the task bar, go to **<Start>**, **<Settings>**, **<Control panel>**, **<Sound and Multimedia >**.

On the **'Volume'** tab, check the box *"Show volume icon in the task bar"*.

The UAX2200 offers Volume and Mute controls for the outputs. These controls are not available for the inputs.





'Speaker' volume control

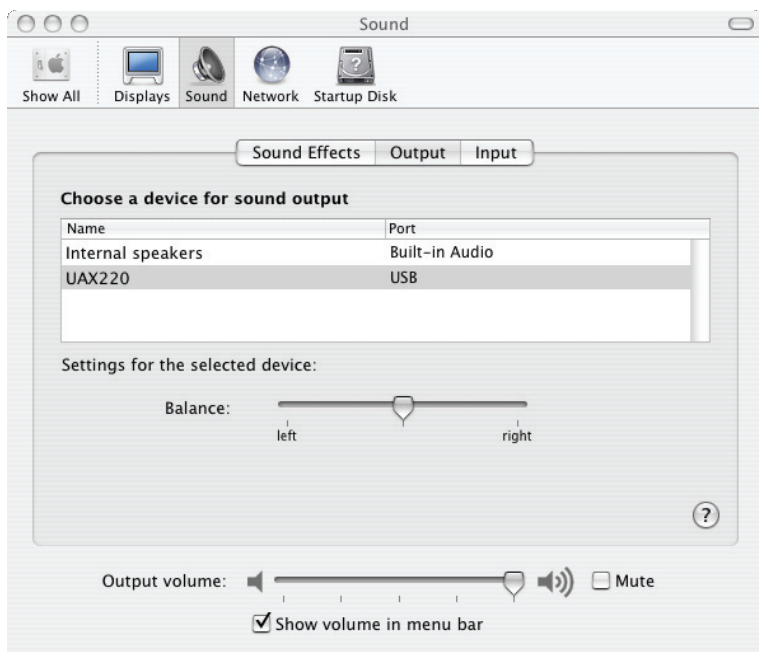
The fader **'Speaker'** modifies the output level of the D/A converter of UAX220. This control applies to both line output and headphones.

The check box **'Mute all'** in the speaker section allows muting/unmuting the outputs of your UAX220.

'Wave' volume control

The volume and mute controls are applied to the audio stream read by the application.

Sound panel under Mac OS X



The fader '**Output volume**' modifies the output level of the D/A converter of UAX220. This control applies to both line output and headphones.

The check box '**Mute**' allows muting/unmuting the outputs of your UAX220.

CONFIGURATION

UAX220 operates by default at an internal sample rate of 48 kHz. In case the files played back have a different sampling rate, the operating system performs a real-time frequency conversion.

Under Windows XP ($\geq$ SP2) only, it is possible to modify the embedded firmware version of the UAX220 so that it accepts other internal sample rates: 8 kHz, 11.025 kHz, 16 kHz, 22.05 kHz, 24 kHz, 32 kHz, 44.1 kHz, 48 kHz. That makes it possible to work with files at e.g. 44.1 kHz without frequency conversion.

To use this feature, please download the corresponding firmware update application at www.digigram.com/drivers/index.htm. In the 'Firmware' section, select 'UAX220'. Read the instructions on how to use this application carefully.

Attention: *When using this firmware, UAX220 notifies Windows that it is able to manage sample rates from 8 through 48 kHz. Nevertheless, UAX220 uses internally the same sampling rate for recording and playback. This entails, that if an application plays a file at a given sample rate, and then another application is launched in parallel to record at another sampling rate, UAX220 will record at the sampling rate defined by the playback application, whereas the recording application assumes to work at another sampling rate. On the other hand, if a recording is already in hand at a certain frequency and a playback is launched at another frequency, the output will have the right frequency. To sum up, the audio stream being recorded or played back first imposes the sampling rate!*

With the firmware delivered by default, Windows detects that UAX220 supports only 48 kHz, and in consequence performs frequency conversions automatically when it detects that the frequency required by the application is different from 48 kHz.

SPECIFICATIONS

Configuration

Bus/Format	USB1.1 (compatible USB 2.0)
Size	Box: 90 x 81 x 22 mm (3,55 x 3,19 x 0,87") USB cable: 2 m (~6.6 ft) Audio cables: 0.5 m (~1.65 ft)
Power consumption	500 mA max, powered via USB
Operating: temperature/humidity (non-condensing)	0°C / +50°C • 5% / 90%
Storage: temp / humidity (non-condensing)	-5°C / +70°C • 5% / 95%

Inputs/Outputs

Analog line inputs (mono)	2 balanced*
Maximum input level/impedance	+10 dBu/ >10k Ω
Analog outputs (mono)	12 servo-balanced**
Maximum output level / impedance	+10 dBu / 100 Ω
Programmable output gain	by steps of 1 dB, from -60 dB ^{***} to +10 dB
Headphone output	Dedicated headphone output stage with volume control by potentiometer Maximum power: 55 mW + 55 mW/32 Ω
Connectors	• Standard USB type A for connection with computer • Neutrik™ XLR-3 female for line inputs • Neutrik™ XLR-3 female for line outputs • Locking 1/4" cable jack
Operating mode	Full duplex
Direct monitoring	Enabled via switch on the box Mixed with the output stream on line and headphone outputs

* can be used with unbalanced signals

** electronically servo-balanced outputs provide automatic level adjustment to accommodate either balanced or unbalanced lines

*** D/A converter gain, reference value: 0dBfs equals 0 dBu

Audio specifications

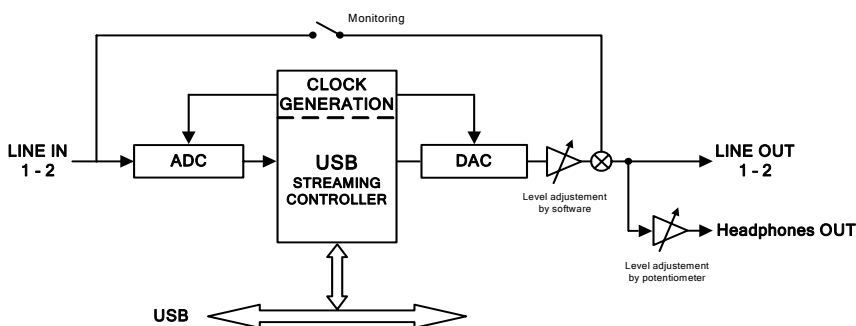
Sampling frequencies available	48* kHz
A/D and D/A converter resolution	24 bits / 96 kHz
Frequency response	20 Hz -20 kHz: ± 0.2 dB
Channel phase difference 20 Hz/20 kHz	$< 0.2^\circ/2^\circ$
Dynamic range	Input: > 104 dBA Output: > 103 dBA
Distortion + noise at 1 kHz (record + play)	Input: < -98 dB Output: < -97 dB Loop: < -93 dB
Analog channel cross talk at 1 kHz	1 kHz at 10 dBu: < -110 dB 15 kHz at 10 dBu: < -95 dB

Note: All measurements are done at $F_s=48$ kHz. Unless explicitly specified, results are unweighted.

* A frequency conversion is automatically applied by the host operating system if required. Other frequencies are available by means of a firmware upgrade. Please refer to chapter 'Configuration'

APPENDICES

Schematic diagram

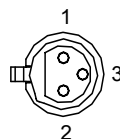


Connector allocation

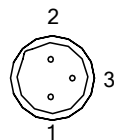
XLR-3

Pin #	Signal
1	Ground
2	Positive signal ('hot pin')
3	Negative signal ('cold pin')

XLR-3P Female



XLR-3P Male



Headphone connector:

Contact	Signal
Sleeve	Ground
Tip	Left channel
Ring	Right channel