SOUNDSTUDIO

STG 2412

Digital Audio Stagebox with SoundGrid Connectivity

User Guide

STG-2412 User Guide

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Safety Instruction Sheet for STG-2412
Warning: Electrical Hazard

To ensure your safety, please read thoroughly before using the unit. Kindly observe all of these safety rules.

1. Keep this user guide for future reference.
2. Take notice of and comply with all warnings included in the user guide or indicated on the device itself.
3. Do not expose this unit to rain or moisture. Do not spill water or other liquids on this unit.
4. When cleaning the cabinet or other parts of this appliance, use only a dry or slightly damp soft cloth.
5. Do not block any ventilation openings or interfere with the proper ventilation of this unit. Install in accordance with the instructions.
6. Do not defeat the internal ventilation fans.
7. Do not use or store near any heat sources such as radiators, heat registers, stoves, or other heat-producing appliances.
8. To avoid the risk of electrical shock, do not touch any exposed wiring while the unit is in operation.

9. Protect the power cord from being walked on or otherwise damaged by items placed on or against it. Particular attention should be given to the plugs, receptacles, and the point where the cord exits the appliance.
10. Only use attachments/accessories specified by the manufacturer.
11. Unplug this unit and all connected electrical equipment during lightning storms or when left unused for a long period of time.
12. Refer all servicing to qualified service personnel. Servicing is required when the appliance has been damaged in any way or fails to operate normally.
13. The socket-outlet shall be installed near the equipment and shall be easily accessible.
La prise d'alimentation utilisée doit être proche de l'appareil et facilement accessible.

If you have questions about safe installation, please contact us at https://soundstudio.com/contact-us.

This device complies with Part 15 of the 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.
Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment

NOTE: 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, may cause harmful interference to radio communications.

Under environments with electrical fast transients, the product may malfunction and require user to reset.

The unit may malfunction when there is radio interference on the AC mains & Ethernet line. The unit will revert to normal operation when the interference stops. It may require user to reset the unit.

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, interference by one or more of the following measures:
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
-Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This Class B digital apparatus meets the requirements of the Canadian Interference-Causing Equipment Regulations.
CAN ICES-3 (B)/NMB-3(B)

Product Overview

SoundStudio STG-2412 is a rugged stage box with 24 analog inputs and 12 line outputs. It's designed for both stage and studio applications. All connections on this 4U rack-mountable device are on the front panel, except the mains connection and power switch, which are on the rear panel.

In addition to analog mic and line inputs and line outputs, there are inputs and outputs for AES, word clock, and MIDI. There's also a SoundGrid-compliant Ethernet port network. All device configurations including Preamp and Clock are software controlled.

STG-2412 operates within in a SoundGrid Ethernet network, so it's an ideal interface for the Waves eMotion LV1 or MultiRack. The SoundGrid network can also be used with a DAW for recording.


What's in the box?

1 Cat 6 Ethernet cable

2 Mains cables

3 Mains safety clips

4 Registration card with serial number

Using STG-2412 for Mixing, Processing, and Recording

STG-2412 uses Waves SoundGrid protocol to connect to an eMotion LV1 mixer, to a MultiRack processor, and to any DAW. A typical SoundGrid network consists of a host computer, a SoundGrid server, and I/O devices, all connected with Cat 5e (or better) Ethernet cables via a 1GB Ethernet switch.
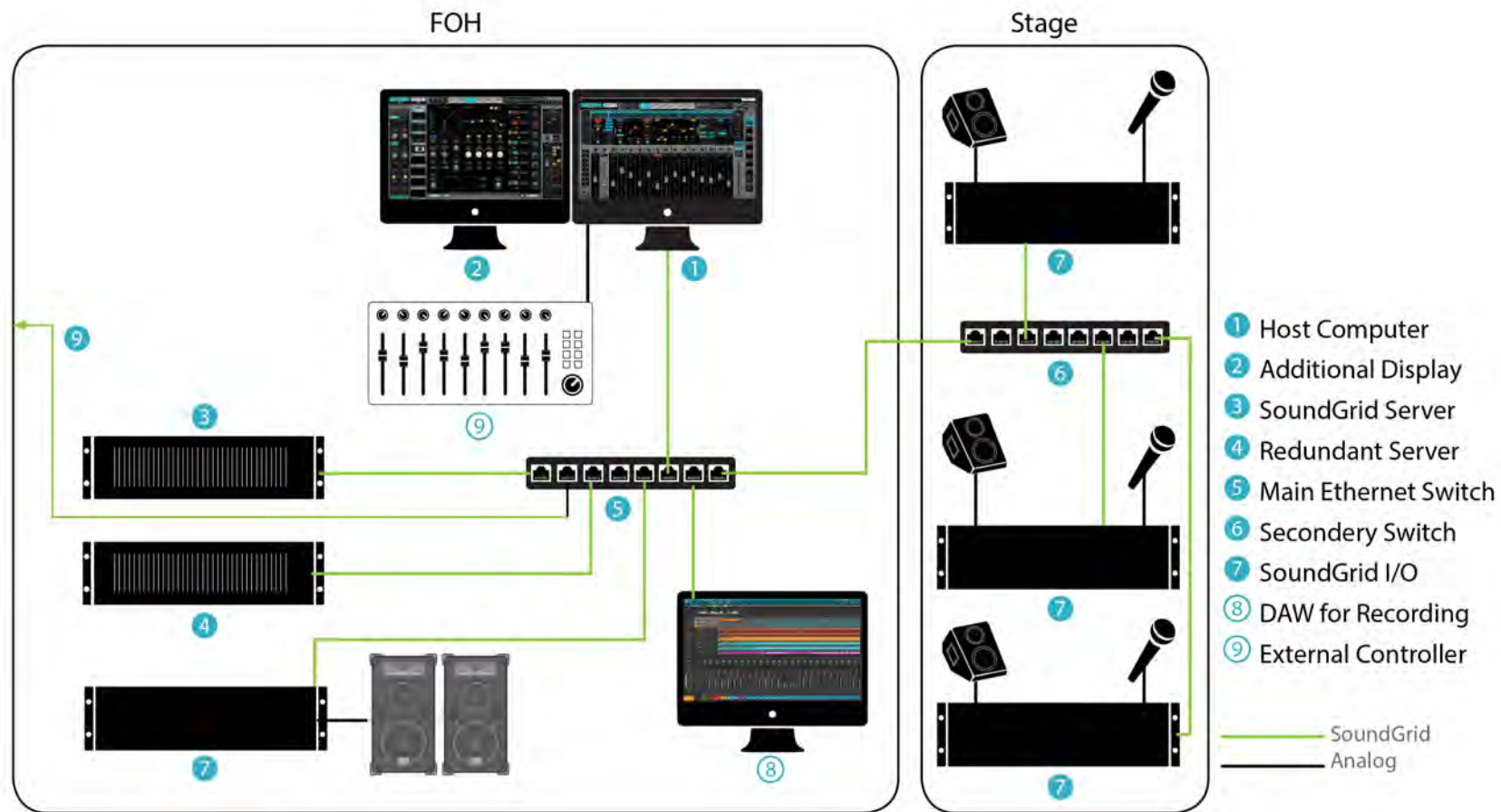
This setup allows for LV1 mixing or MR processing and can be used in parallel a with a DAW.

1. Host Computer
2. SoundGrid Server
3. Ethernet Switch
4. SoundGrid I/O
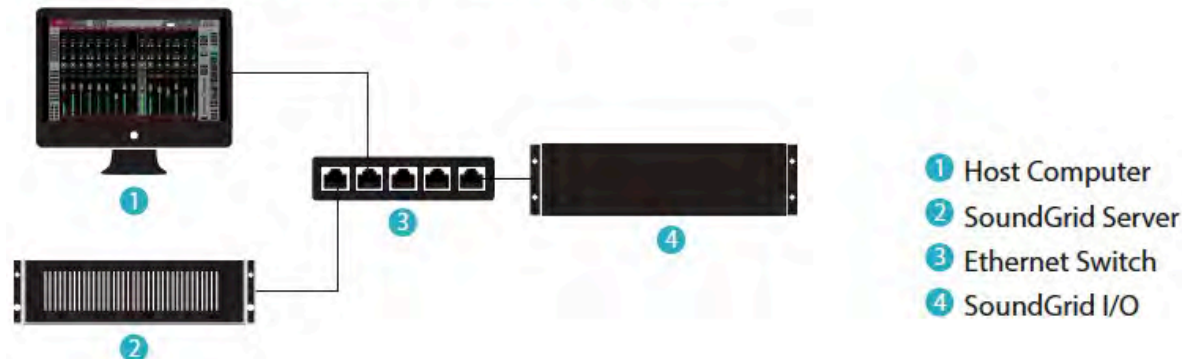
Maximum distances between devices vary depending on configuration. However, maximum cable length between I/Os and switch is usually 100 meters. When connecting the Ethernet cable to an STG-2412, make sure that the connectors and the cable are protected from stage equipment and traffic. For SoundGrid protocol cable and switch specifications, visit the Waves Support desk: http://www.waves.com/support.

Keep your SoundGrid network clean. Make sure that the host computer network port that you use for the SoundGrid network is not used for other networks (such as internet).

Connect multiple SoundStudio I/O units within a SoundGrid network for a high channel count.

FOH **Stage**

1. Host Computer
2. Additional Display
3. SoundGrid Server
4. Redundant Server
5. Main Ethernet Switch
6. Secondery Switch
7. SoundGrid I/O
8. DAW for Recording
9. External Controller

— SoundGrid
— Analog

In this example, there are three I/O devices onstage. These are used for onstage microphones and monitoring. In the FOH are two SoundGrid servers (one primary and one redundant) and one I/O. This example has an external control surface and a DAW for recording.

Software Drivers

The STG-2412 stage box can be used with a number of Waves SoundGrid software applications, including the eMotion LV1 live mixer, the MultiRack live plugin host, and SoundGrid Studio. STG-2412 software drivers are installed using Waves Central, a Waves application for downloading software and managing licenses.

To install the driver, you will first need to download Waves Central if you do not already have it installed on your computer. Open Waves Central and log in. Select "Install" and choose "Online." This shows all products on your Waves Cloud, including the STG-2412 driver. Locate the driver for your SoundStudio product. If the driver doesn't appear in the list, check "All Waves Products." Select the correct driver and click "Install."

When the installation is finished you'll need to reboot your computer.

For your convenience, complete software download instructions are also available online.

Launch the Waves Central Application

Select the SETUP tab

Select ONLINE to see your Waves License Cloud

Locate and selecte the STG-2412 driver

Click INSTALL

Configuration

SoundStudio I/O devices must be assigned to a SoundGrid host application. This is done within the setup system inventory page. Assignment is similar in all SoundGrid host applications. Refer to the application's user guide for detailed instructions.

In this example, a STG-2412 will be assigned to SoundGrid Studio.

Open the SoundGrid Studio application.

Select the SETUP window.

Choose the SYSTEM INVENTORY tab, which is where devices are assigned.

Assign STG-2412 to the Host Application

I/O devices are assigned in the Device Racks of the System Inventory tab. You can assign the STG-2412 to any Device Slot.

ASSIGN 2412 TO A DEVICE RACK
If the STG-2412 is not already assigned to the SoundGrid host, click on the arrow in an empty device slot. Choose the device from drop-down menu.

THE 2412 DEVICE ICON WILL APPEAR IN THE RACK

Access the STG-2412 Control Panel

Use the STG-2412 Control Panel to adjust preamps and channel outputs, and to manage device clocking. Firmware version, serial number and other hardware information are also displayed in the control panel.

Click the GEAR button to open the STG-2412 control panel.

SoundStudio STG-2412 Control Panel

There are five tabs in the control panel. We'll focuses on three of them: Clock, Input, and Output.

Clock Tab

Use the **Clock** tab to manage the clock relationship between the STG-2412 and the SoundGrid network. In this example the device is locked to the network via Sync Over Ethernet (SOE). This is the most common configuration. You can also lock the STG-2412 to another clock source via AES or word clock.

Go back to the Setup page to establish which device is the SoundGrid SOE network master. Refer to the SoundGrid Studio user guide or the eMotion LV1 user guide to learn more about clock in a SoundGrid network.

LOAD/SAVE
Enables you import and export preamp settings for later use. Available in all tabs.

SAMPLE RATE
When the device is the SOE master and is set to Internal clock, the drop-down menu is used to set the sample rate. When the STG-2412 is not the clock master, the window displays the sample rate.

STATUS
Displays device network sync status

SOURCE SELECT
Request a clock source. If this source is not available, the device will poll all other potential clocks. If there are no available clock sources, the device will switch to internal clock.

SOE
Indicates SOE status: on/off; SOE Master/Slave

CURRENT CLOCK SOURCE
Indicates the actual clock source

Input Tab

STG-2412 has 26 inputs: 24 analogue and 2 digital. Use the Input tab to control Input I/O parameters. Channel input controls set here, are avalible in the Mixer and Channel windows of the eMotion LV1 and in other SoundGrid applications.

48v ON/OFF

MIC/LINE SELECT
Select input: mic preamp or line input (XLR and TRS).

PREAMP GAIN and INPUT METER

ID Click this button and a light will blink on the STG-2412 device.

CLIP INDICATOR SELECT
Adjust the clip indicator level of the entire I/O.

AES INPUT METER

MONITOR
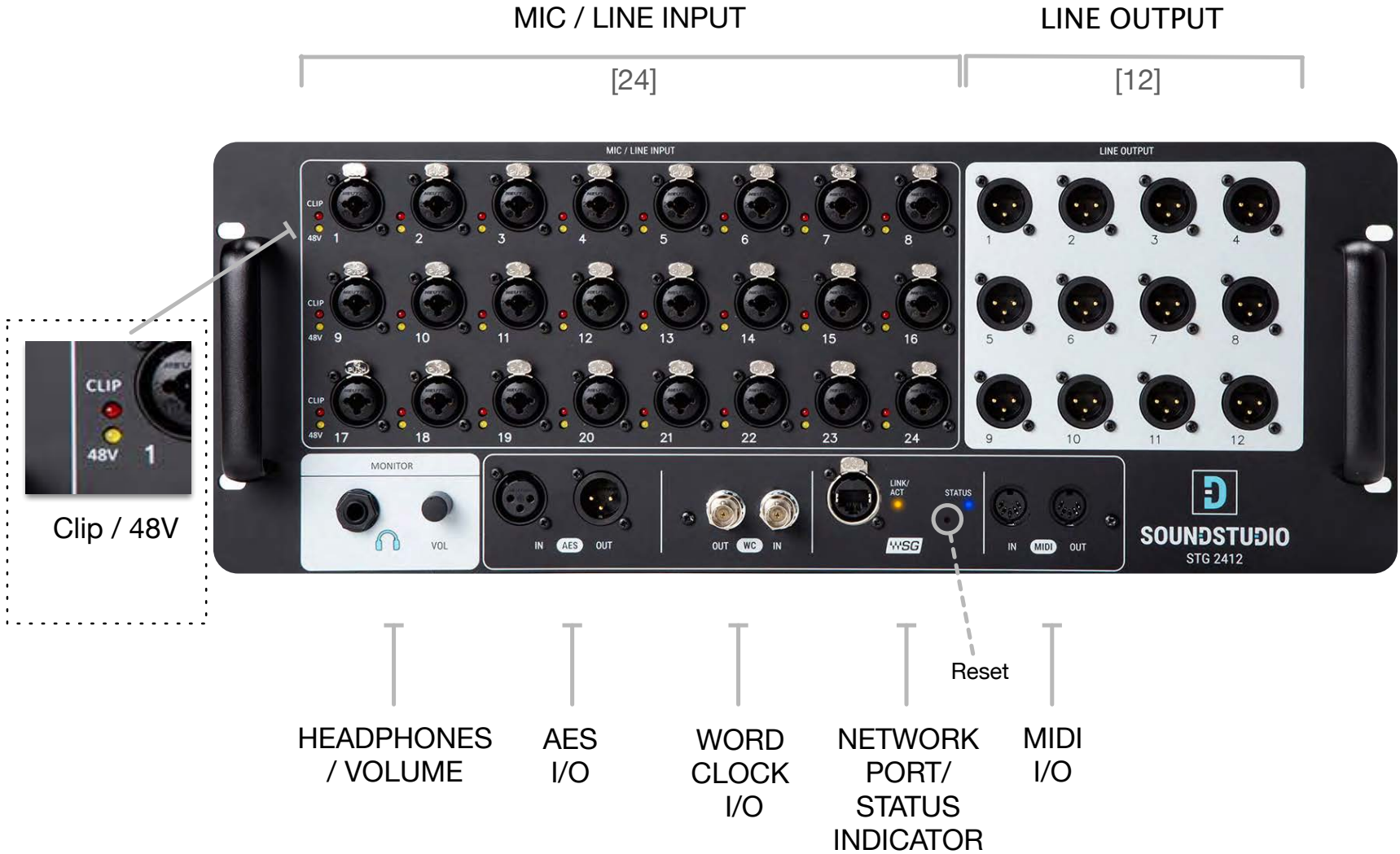Shows the level of the monitor headphone jack on the front panel

Output Tab

The Output tab is used primarily to set the output headroom and monitor output levels. There are 12 analogue and 2 digital outputs.

HEADROOM SELECT

Choose between +18dB and
+24 dB mixer headroom

AES OUTPUT METER

CHANNEL OUTPUT METER

MONITOR METER

Connections

Front Panel

MIC / LINE INPUT   LINE OUTPUT

[24]   [12]

Clip / 48V

HEADPHONES   AES   WORD   NETWORK   MIDI
/ VOLUME   I/O   CLOCK   PORT/   I/O
                          I/O   STATUS
                                      INDICATOR

Reset

Rear Panel

ON/
OFF

INPUT:
AC 100–240V
50–60Hz 0.3A

Specifications

XLR Input

Input Gain:
Adjustable from 0 dB to 60 dB in steps of 1dB

Frequency Response:
+0/-0.2 dB, 16 Hz to 21 kHz @ 48 kHz sample rate (+4dBu input @ +20 dB gain)
+0/- 0.2 dB, 17 Hz to 40 kHz @ 96 kHz sample rate (+4dBu input @ +20 dB gain)

Dynamic Range: (Measured bandwidth limited 20 Hz to 20 kHz) 110 dB Gain = 0

EIN (Gain 60, 150 ohms) -128 dBu A weighted

THD+N (Measured at 1 kHz @ +4dBu, Gain = +20) 0.0023%

Phase Response:
+/- 10 Deg 20 Hz to 20 kHz

Input impedance : 2k ohms
48V phantom power available per input

TRS Input

Input Gain:
Adjustable from 0 to 60 dB in steps of 1dB

Frequency Response:
+0/-0.2 dB, 16 Hz to 21 kHz @ 48 kHz sample rate (+4dBu input @ +20 dB gain)
+0/- 0.2 dB, 17 Hz to 40 kHz @ 96 kHz sample rate (+4dBu input @ +20 dB gain)

Dynamic Range: (Measured bandwidth limited 20 Hz to 20 kHz) 110 dB Gain = 0

EIN (Gain 60, 150 ohms) -128 dBu A weighted

THD+N (Measured at 1 kHz @ +4dBu, Gain = +20) 0.0023%

Phase Response:

+/- 10 Deg 20 Hz to 20 kHz

Input impedance: 10k ohms

XLR Balanced Outputs

Selectable maximum output level: +18 dBu or + 24 dBu

Frequency Response:

+0/-0.2 dB 16 Hz to 22 kHz @ 48 kHz sample rate
+0/-0.2 dB 17 Hz to 40 kHz @ 96 kHz sample rate

THD+N (Measured at 1 kHz, Gain = 0) 0.001%

Output impedance: 40 ohms

Headphones output

1 watt per channel into 32 Ohm headphones.

Digital I/O

AES-3, AES-EBU Stereo Output. Output sample rate 44.1 kHz to 96 kHz

Word clock input: Standard 5 Volt square wave. 50% duty cycle.
Word clock output: 1X sample rate Standard 5 Volt square wave. 50% duty cycle.
Word clock Input: 1X sample rates of 44.1 kHz, 48 kHz, 88.2 kHz and 96 kHz.

Power

Universal input power supply 100V-240 VAC, 50/60 Hz, 1.0 Ampere

Dimensions

482 x 177 x 254 mm

Weight

8.9 kg (19.6 lb)

Specifications subject to change without notice