X-WSG SoundGrid I/O Card

User Guide
Compliance Info

FCC INFORMATION (U.S.A.)

1. IMPORTANT NOTICE: DO NOT MODIFY THIS UNIT!
   This product, when installed as indicated in the instructions contained in this manual, meets FCC requirements. Modifications not expressly approved by Waves Audio may void your authority, granted by the FCC, to use the product.

2. IMPORTANT:
   When connecting this product to accessories and/ or to another product, use only high- quality shielded cables. Use ONLY the cable(s) supplied with this product.
   Follow all installation instructions. Failure to follow instructions could void your FCC authorization to use this product in the USA.

3. NOTE:
   This product has been tested and found to comply with the requirements listed in FCC Regulations, Part 15, for Class “B” digital devices. Compliance with these requirements provides a reasonable level of assurance that your use of this product in a residential environment will not result in harmful interference with other electronic devices. This equipment generates/uses radio frequencies and, if not installed and used according to the instructions found in the user guide, may cause interference harmful to the operation of other electronic devices. Compliance with FCC regulations does not guarantee that interference will not occur in all installations. If this product is found to be the source of interference, which can be determined by turning the unit “OFF” and “ON,” please try to eliminate the problem by using one of the following measures: This device complies with Part 15 of the FCC Rules.
   Operation is subject to the following two conditions:
   a. This device may not cause harmful interference.
   b. This device must accept any interference received, including interference that may cause undesired operation.
   See user manual instructions if interference to radio reception is suspected.
Company Information
Company: Waves Inc.
Address: 2800 Merchants Drive, Knoxville TN, 37912
Telephone: 1-865-909-9200
Type of Equipment: Waves Interface Card
Model Name: X-WSG
Precautions

PLEASE READ CAREFULLY BEFORE PROCEEDING

Please keep this manual in a safe place for future reference.

WARNING

Always follow the basic precautions listed below to avoid the possibility of serious injury or even death from electrical shock, short-circuiting, damages, fire, or other hazards. These precautions include, but are not limited to, the following:

• Before installing the card in an audio device, please confirm that the device is compatible with the card and check possible restrictions regarding the maximum number of third-party expansion cards that can be simultaneously installed. Refer to the owner’s manual supplied with the audio device, and/or the Behringer ® Pro Audio web site.

• Do not install the card in any Behringer®/Midas® products not specified by manufacturer for use with the card, to avoid possible electrical shock, fire, or equipment damage.

• Do not attempt to disassemble or modify the card. Do not apply excessive force to card connectors or other card components.

• Mishandling of the card may lead to shock, fire hazard, or equipment failure.

• Be sure to disconnect the power cable of the host device before installing the card and connecting/disconnecting the cables (in order to eliminate shock hazard, create undesired noise, and avoid equipment damage).

• Turn off all peripheral devices connected to the host device before installation and unplug all related cables.

• Be sure to properly ground the host device to prevent electrical shock and/or malfunction.

• Do not touch the metallic leads (pins) of the circuit board when handling the card.

• Wear a pair of heavy gloves during installation to avoid scratching or cutting your hands on sharp edges.

• Avoid touching exposed connectors and metal parts to minimize the possibility of bad connections.

• Drain all static electricity from your clothing and body before handling the card.

• Static electricity can damage the card. Touch an exposed metal part of the host device or other grounded object beforehand.

• Do not drop the card or subject it to physical shock as this can result in breakage and/or malfunction.
• Do not drop screws or other small parts inside the card. If power is applied while screws or similar metal objects are loose inside the unit, the card may malfunction or be damaged. If you cannot retrieve dropped objects yourself, refer the problem to qualified Behringer service personnel.

• The illustrations as shown in this Owner’s Manual are for instructional purposes only and may be different from the ones on your equipment.

• The company names and product names in this Owner’s Manual are the trademarks or registered trademarks of their respective companies.
Introduction

The X-WSG expansion slot card makes it possible to run Waves plugins on Behringer X32 Series consoles, using Waves SoundGrid technology. It provides 32 channels of bi-directional audio at 44.1 kHz and 48 kHz sample rates.

The X-WSG card uses Waves SoundGrid protocol to connect all I/O devices and an optional DSP server with the host computer. Audio data and clock are carried over Ethernet cable, using Sync-over-Ethernet to synchronize multiple consoles and perform digital splits.

SoundGrid is the Waves high-speed networking protocol for moving audio, clock, and other information between a host system and I/O devices—and between I/O devices themselves. A SoundGrid host configures the network, assigning servers and I/O devices to mix, process, or record, depending on the host. SoundGrid devices link to the SoundGrid network with standard Ethernet cable.

SoundGrid is scalable. Connect one I/O device to a DAW and you have a high-quality sound card. Add more I/Os and your system becomes more flexible and powerful. Depending on the host application, a SoundGrid host can assign up to sixteen I/O devices. Complete SoundGrid systems can be networked together to share devices.

Add a server to a SoundGrid system to offload plugin processing from the host CPU to a SoundGrid DSP server. This dramatically increases processing power and enables greater plugin counts, as well as providing very low system latency.
Hardware and Connections

1. The X-WSG card has one SoundGrid Ethernet port with two LEDs to indicate network status:
   - Link/Activity Led = Flashing green
   - GigE (Gigabyte Connection Indicator) = Solid orange
     Please note: the card will connect only to 1000 Base-T (Gigabit) Ethernet equipment.

2. A network LED is located at the back of the console, on the front panel of the card.
   The LED functions as follows:
   - SoundGrid network found = Blue
   - SoundGrid network not found = Flashing red
   - Firmware update in progress = Yellow
   - Hardware error = White
   - Device ID mode = Revolving colors

3. Recovery/reset button

Refer to the Behringer X-32 user guide for installation instructions.
Getting Started

Configure SoundGrid and assign your devices as follows, however large or small your system.

A Connect the hardware
B Install the software
C Configure your system.

**A Connect the Hardware**

One I/O

In this illustration, the single X-WSG SoundGrid Ethernet port is used to connect the console to the SoundGrid host application’s SoundGrid ASIO/Core Audio driver for plugin processing and/or DAW playback/recording. The interface is connected directly to the host using a Cat 5e Ethernet cable or better.

The host computer’s LAN port that’s connected to the SoundGrid network should be used for SoundGrid only. Do not share this port with the internet or other networks.

In this configuration, all plugin processing is carried out on the host computer. The speed and power of the host defines overall latency.
Add I/Os

Adding SoundGrid I/O devices not only increases the number of I/O channels, but lets you have separate devices for stage and FOH, or live room and control room. When you have more than one device in the SoundGrid network, use a "star" network configuration with a 1GB Ethernet switch. Only use switches tested and approved by Waves.

![Diagram of SoundGrid system components]

1 Host computer
2 Behringer console with X-WSG interface
3 One or more additional SoundGrid I/Os
4 1GB Ethernet switch

See this [support article](#) for a list of supported switches.

You can connect and assign up to 16 SoundGrid I/O devices to the network, depending on the SoundGrid host application. You can also add more computers to enable streaming between hosts.

ADD A SERVER

To add a server to your SoundGrid system, just connect it to the Ethernet switch and configure it in your host application. This moves all DSP processing from the host computer to the server, which provides a higher plugin count and enables the eMotion LV1 and ST mixers. Visit the [waves.com hardware pages](#) to learn more about SoundGrid servers. Consult your SoundGrid host application’s user guide to learn about using servers.
**Download and Install Software**

**INSTALLING A NEW SOUNDGRID HOST SYSTEM**
Installing the Waves SoundGrid host application will also install applicable device drivers and ASIO/Core Audio drivers. Your devices will appear in the Inventory of your host system. If a device is not visible in the Inventory, you may need to install a specific driver from Waves Central—please see below. First, however, check the device’s connections and power.

**ADDING AN I/O DEVICE TO AN EXISTING SOUNDGRID HOST SYSTEM**
If you are already using a Waves SoundGrid host application and your device does not appear in the Network Devices list, use Waves Central to update the host application, which also updates the device drivers—or install just the missing device driver from Waves Central.¹

*Waves Central*
All Waves software is downloaded and installed via the Waves Central application. To install a specific device driver, launch Waves Central and follow these steps:

1. Choose **All Products**
2. Search for the driver by name
3. Choose the driver and click **Install**

If you are new to Waves products, begin by downloading the Waves Central installer from the Waves Download Page. See the Waves Central User Guide for instructions on how to install drivers, plugins, and applications.

**LICENSES**
You do not need a license to use this device. However, many hosts or specific host configurations do require a license. Refer to your host’s [product page](#) for details.

¹ The SoundGrid QRec host is installed with any I/O.
Configure the System

A SoundGrid network is configured and devices are assigned in a host’s Setup window. At the heart of this window are racks where devices are assigned. Any compatible device that’s part of the host’s SoundGrid network will be available for assignment. This collection of devices is called the Inventory. Setup is similar with all hosts: identify the host’s LAN port, select a device slot, and use the drop-down menu to choose an available device.

Please consult the user guide of your host application for specific instructions.

All SoundGrid devices are configured in the same manner. Throughout this section, we show DiGiGrid IOS as an example.
Manual Device Configuration

You can assign, remove, and manage a device manually. Click on the plus or arrow symbol in a device slot to open the **Device Menu**, then select a device.

Any device not already used will be available for assignment. If no other devices are assigned, the current device will become your clock master. Drivers and servers are assigned in the same manner.

See the user guide of your host system for specific instructions on device assignment and I/O channel patching.

Automatic Device Configuration with SoundGrid Studio

Certain SoundGrid hosts—including SoundGrid Studio, eMotion LV1 or SuperRack SoundGrid—offer an **Auto-Config** tool. Once your devices are connected and powered up, click **Auto Config** to start the configuration.

Auto-Config chooses the correct LAN port on the host computer and scans the SoundGrid network for devices. It then patches the devices to the host. We recommend that you let Auto-Config take care of things, at least when you are getting started. If later you add, remove, or swap a device, Auto-Config will reconfigure your inventory and re-patch.

Note that SoundGrid Studio assigns the SoundGrid driver automatically. SuperRack SoundGrid, and eMotion LV1 all require that the SoundGrid ASIO/Core Audio driver is assigned manually.
Device Firmware
An I/O that is using outdated or incompatible firmware will not work properly in a SoundGrid network until its firmware is updated. The color of the FW button in a device slot indicates the current firmware status.

<table>
<thead>
<tr>
<th>Color</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grey</td>
<td>Compatible firmware</td>
</tr>
<tr>
<td>Blue</td>
<td>Compatible firmware, but a newer version exists</td>
</tr>
<tr>
<td>Red</td>
<td>Firmware not compatible and must be updated in order to use</td>
</tr>
</tbody>
</table>

SoundGrid Studio  SoundGrid QRec

If a device requires updated firmware, click on the FW button to start a hardware scan. Do not disconnect the device or turn off the computer before Done appears. Once the update is ready, turn the device off and on to reset.

Identify a Device on the SoundGrid Network

SoundGrid Studio  SoundGrid QRec

Click on the ID button to activate a hard-to-miss LED on the panel of the corresponding hardware device.
Using an I/O Device with a DAW

Setting up SoundGrid devices with a DAW involves these steps:

**PATCH THE I/O DEVICE AND THE SOUNDGRID ASIO/CORE AUDIO DRIVER**

When using a DAW on a SoundGrid network, the SoundGrid ASIO/Core Audio driver serves as a bridge between the I/O device and the DAW. It enables the I/O to communicate with the DAW, and it provides patches. Patching an I/O to the SoundGrid ASIO/Core Audio driver differs slightly among hosts. When you use a host’s Auto-Config tool, the host input channels are patched automatically, in an order based on rack. The order of the devices in the Device Rack determines the default patching order. Please refer to your SoundGrid host’s user guide for details.

**CONFIGURE THE DAW FOR SOUNDGRID**

1. Set the DAW playback engine to “Waves SoundGrid.” The SoundGrid driver channels will now appear in the DAW I/O preferences and in the Input/Output selector in each DAW channel.
2. Route the DAW inputs and outputs to SoundGrid.
Resetting the Unit

If an unsuccessful firmware update results in the device no longer being recognized by the SoundGrid host application, follow these steps:

1. Turn off the console.
2. Press and hold the Reset button located on the SoundGrid I/O panel in the back of the console.
3. Turn ON the console while holding the button.
4. Release the Reset button once the console has fully booted.

The unit is now in “force update” mode, and a new firmware update can be performed.