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# WSG – PY64

## User Guide



# Compliance Information

## FCC INFORMATION (U.S.A.)

### 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 Yamaha may void your authority, granted by the FCC, to use the product.

#### Important:

When connecting this product to accessories and/ or another product use only high-quality shielded cables. Cable/s supplied with this product **MUST** be used.

Follow all installation instructions. Failure to follow instructions could void your FCC authorization to use this product in the USA.

#### 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 manual, 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.



# Precautions

PLEASE READ CAREFULLY BEFORE PROCEEDING.

Please keep this manual 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 check to make sure that the device is compatible with the card and check possible restrictions regarding the maximum number of Yamaha and third-party expansion cards that can be simultaneously installed. Refer to the owner's manual supplied with the audio device and/or the Yamaha Pro Audio website at [www.yamahaproaudio.com](http://www.yamahaproaudio.com).
- Do not install the card in any Yamaha products not specified by Yamaha 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, undesired noise, and avoid equipment damage).
- Turn off all peripheral devices connected to the host device before installation; 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 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. Touch an exposed metal part of the host device or other grounded object beforehand. Static electricity can damage the card.
- 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 Yamaha 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 user guide are the trademarks or registered trademarks of their respective companies.

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# Introduction

WSG-PY64 is an PY interface card that enables Waves plugins to run on Yamaha DM7 series consoles, using Waves SoundGrid technology. The WSG-PY64 lets you process up to 64 channels of audio using award-winning Waves reverbs, equalizers, compressors, limiters, delays, and more. You can also assign additional SoundGrid I/O devices to your network.

The WSG-PY64 card uses Waves SoundGrid protocol to connect all I/O devices to the DSP server and the host computer. Audio and clock data are carried over an 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



The WSG-PY64 card has one SoundGrid Ethernet port and LEDs to indicate operation status.

### Link/Activity indicator LED

Link/Activity = Flashing green

GigE (Gigabyte Connection Indicator) = Solid orange

Please note: the card will connect only to 1000 Base-T (Gigabit) Ethernet equipment.

### Status LED:

SoundGrid network found = Blue

SoundGrid network not found = Flashing red

Firmware update in progress = Yellow

Hardware error = White

Device ID mode = Cycling colors

# Getting Started

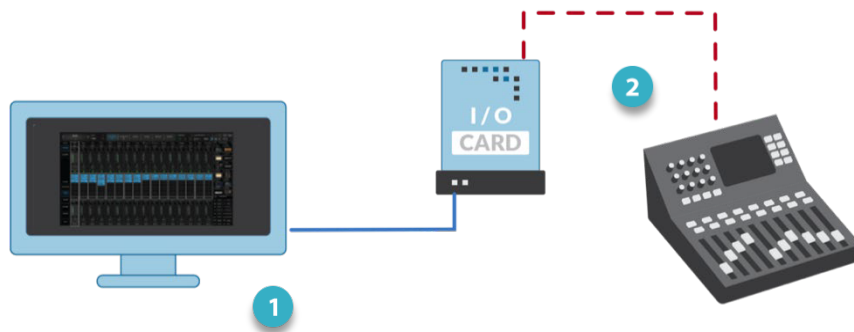
Configure SoundGrid and assign your devices as follows, however large or small your system.

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

## **A** *Connect the Hardware*

### One I/O

In this example, the single WSG-PY64 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.



- 1** Host computer running SoundGrid application
- 2** Yamaha console with WSG-PY64 Interface card

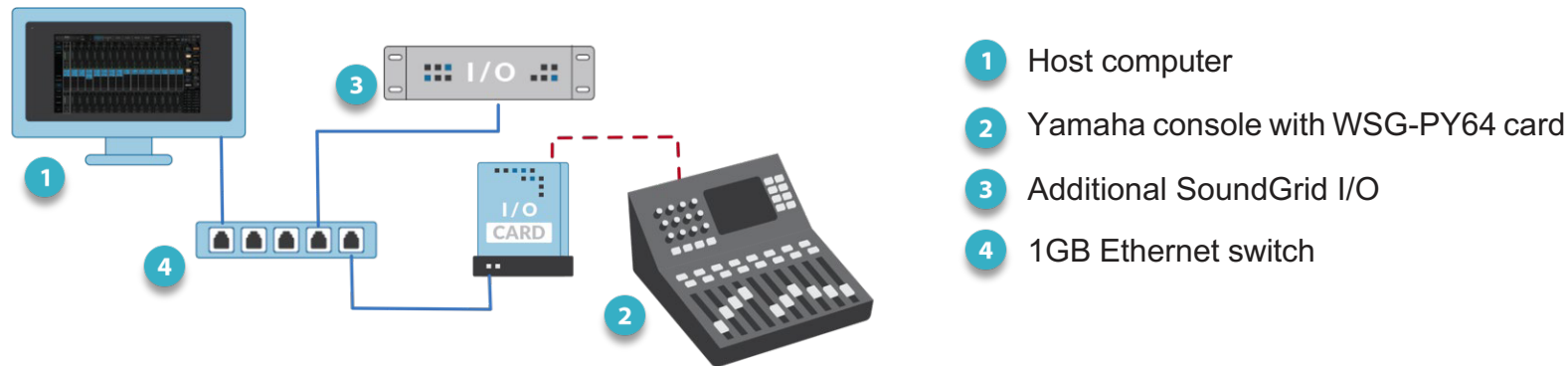
The host computer's LAN port that's connected to the SoundGrid network should be used for SoundGrid only. Do not share this port with the internet or other networks.

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 also 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.



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.

Visit the [Waves Hardware Page](#) for a list of supported switches.

## Add a Server

To add a server to your SoundGrid system, for processing plugins, just connect it to the Ethernet switch and configure it in your host application. Using the DSP Server, all audio processing is performed on the server rather than the host computer running the application. Up to 4 processing and 4 backup servers can be used by the host application to process plugins. 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.



## **B** *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 when assigning devices or by automatic configuration.

### **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.

### **Licenses**

You do not need a license to use this device. In addition, the QRec configuration application does not require a license. Other hosts applications or specific host configurations may, however, require a license. Refer to your host's product page for details.

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## C 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.

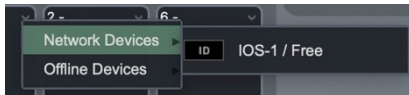
Please consult the user guide of your host application for specific instructions.



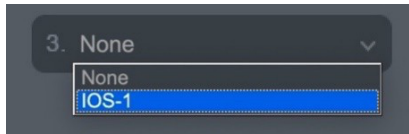
SoundGrid QRec

All SoundGrid devices are configured in a similar manner. Throughout this section, we show DiGiGrid IOS as an example.

## Manual Device Configuration



SoundGrid QRec



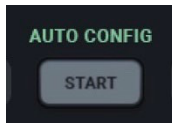
SoundGrid Studio

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



SuperRack SoundGrid and SuperRack Performer, as well as eMotion Lv1 offer an **Auto Config** tool. Once your devices are connected and powered up, click **Auto Config** to start the configuration.

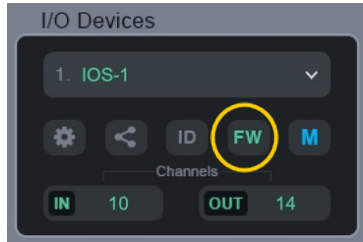
Auto-Config chooses the correct LAN port on the host computer and scans the SoundGrid network for devices. It then patches the devices to the host. We recommend that you let Auto Config take care of things, at least when you are getting started. If later you add, remove, or swap a device, Auto-Config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

Note that SuperRack SoundGrid and eMotion LV1 require that the SoundGrid ASIO/Core Audio driver is assigned manually, if recording/PB is required.



## 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.

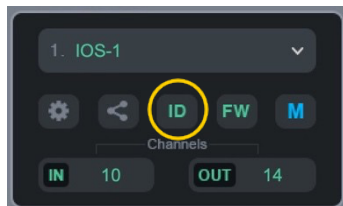


Grey	Compatible firmware
Blue	Compatible firmware, but a newer version exists
Red	Firmware not compatible and must be updated in order to use

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



Click on the **ID** button to activate a hard-to-miss LED on the panel of the corresponding hardware device. You can also activate the LED from the top bar of the device's control panel.

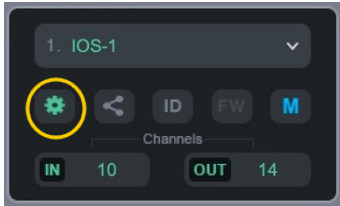
SoundGrid QRec



# WSG-PY64 Control Panel

There are two ways to open the device control panel:

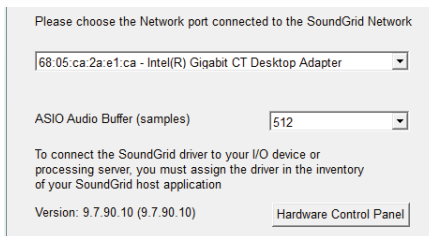
## FROM THE DEVICE RACK



Click the **Gear** button on a device in the rack slot in the host Setup page.

SoundGrid QRec

## FROM THE DRIVER CONTROL PANEL



When the device is used for recording and/or playback, using SoundGrid Asio/Core Audio, you can also access the control panels of all assigned I/O devices from Driver Control Panel application, which is located here:

PC: C:\Program Files (x86)\Waves\SoundGrid\Driver Control Panel  
Mac: System HD/Applications/Waves/SoundGrid

## CONTROL PANEL PAGES

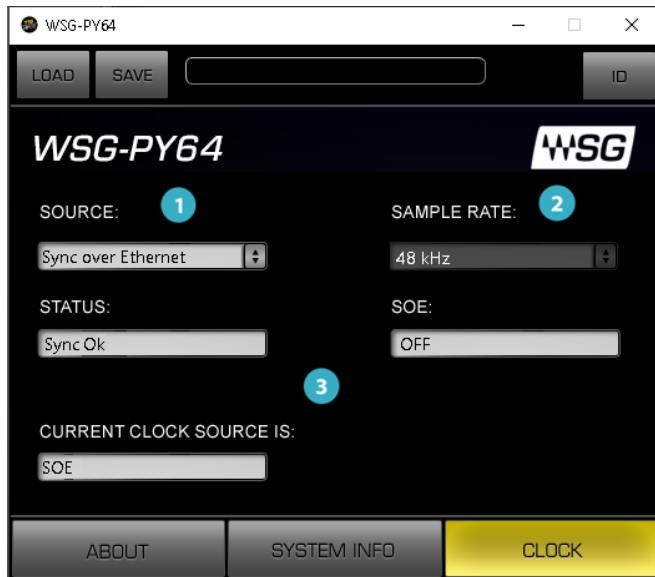


The **About** and **System Info** pages provide information about the unit, such as MAC address, SOE master MAC Address, firmware version, and more. The **Clock** page is used to set up and manage the WSG-PY64.



## Clock Page

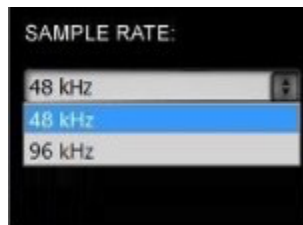
Use the Clock page to set the clock source and sample rate for the device and to assess clock status.



**1 SOURCE** sets the requested clock source.

Digital	The Yamaha console provides the Clock to the card.
Sync over Ethernet	The device receives clock from the SoundGrid network.

**2 SAMPLE RATE** sets the sample rate when Clock Source is set to Internal. Range: 48 / 96 kHz.



If the device is the network (SOE) clock master, as determined in the Device Racks of the SoundGrid host, this setting determines the sample rate of the SoundGrid network.

If Clock Source is set to an external clock source, you cannot change the sample rate from the host. The Sample Rate menu is grayed out and inoperative.



### 3 CLOCK STATUS INDICATORS

Three windows on the right side of the Clock control panel help you to quickly assess the network status of the device.



When the device is a slave in the SoundGrid network, you will likely sync it to the SoundGrid network clock (via SOE).

Status	Displays the clock sync availability and integrity for the WSG-PY64 expansion card
Current Clock Source	Displays the actual clock source being used. Due to clock availability and/or fallback the actual source may differ from the user selected source.
SOE (Master)	Indicates if WSG-PY64 is set to be the clock master for the entire SoundGrid network its connected to, or not.

Even when the device is an SOE slave, you can lock it to an external clock source. For example, if another SoundGrid I/O device is the SOE master and is locked to a word clock device, you may choose to receive clock from the same external device over word clock from the master device rather than via network SOE.

If the selected clock source fails, the WSG-PY64 card has a series of clock fallback layers, in this order: SOE, Internal. If the WSG-PY64 card is clocked to SOE and this external source fails, it will fall back to Internal.

## System Info Page and About Page

The **About** page contains a description of the device. The **System Info** page contains technical details about the device, including MAC address, Firmware version, and Module version. This information is useful for troubleshooting. Please have this information handy if you contact Waves technical support concerning the device.

LOAD SAVE WSG-PY64-1 ID

# WSG-PY64



- Ultra-low latency: only 0.8 ms
- 64 I/O audio channels at all sample rates over SoundGrid network
- Supported sample rates: 48/96 kHz
- Record/play back in parallel to processing on Windows/Mac
- Connects to SoundGrid systems, Servers and IO devices

ABOUT SYSTEM INFO CLOCK

LOAD SAVE WSG-PY64-1 ID

# WSG-PY64

Admin:

Manufacturer: Yamaha

Model: WSG-PY64 card

MAC address: 00:00:00:00:00:0a

SoE Master MAC address: 00:1c:d1:01:76:3c

Firmware version:

Control Module version: 15.0.286.287

ABOUT SYSTEM INFO CLOCK



## Presets



The Top Bar is used to load and save device presets and to identify device hardware.

A saved preset includes all Clock and Control panels parameters. Save WSG-PY64 presets to use on future sessions or copy them to another computer to duplicate a configuration.

Click the **ID** button to indicate which WSG-PY64 hardware device belongs to this Control Panel. Clicking the button causes the Network LED on the panel of the WSG-PY64 to flash in a rather psychedelic manner.

## 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.

