

DMI Waves

User Guide



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Introduction

Thank you for choosing a DMI Waves audio interface for SoundGrid systems. In order to get the most out of your DMI Waves product, please take some time to read this user guide. We also suggest that you become familiar with the Waves support site (<http://www.waves.com/support>), where you'll find an extensive answer base, the latest tech specs, detailed installation guides, software updates, and current information about licensing and registration.

About SoundGrid and the DMI Waves Audio Interface

SoundGrid is a scalable infrastructure that provides a variety of cost-effective, high quality solutions for recording studios and live applications. It can be configured in many ways—with many hardware possibilities—to provide a very flexible work environment. This framework is managed by the **SoundGrid Studio Application**, **eMotion LV1**, or **MultiRack SoundGrid**. Each of these applications can configure the network, assign and manage I/Os, controllers and servers, and patch audio throughout the system. Any user, anywhere on the SoundGrid network, has access to the network's I/O devices. Adding a SoundGrid DSP server enables recording and monitoring with very low latency and moves processing away from the host computer to the server.

The DMI Waves card for Orange Box and S21 consoles enables integration with Waves SoundGrid systems via a single Ethernet cable. This provides SoundGrid networking technology for low-latency plugin processing, multitrack recording and playback, and audio networking. DMI Waves also features Sync-over-Ethernet for clocking multiple consoles and performing digital splits. Other benefits of a SoundGrid network include:

- Super-low-latency networking platform for processing, playback, and recording.
- SoundGrid-compatible devices and SoundGrid systems connect via a single Cat 5e or Cat 6 Ethernet cable. Compatible with standard computers and switches.

- Each DMI Waves card allows 64 channels of bi-directional audio.
- ASIO/Core Audio drivers for recording and playback.
- Built-in 2-port Gigabit switch for direct connection to multiple devices.
- Provides redundancy and recovery options.
- Works with MultiRack SoundGrid, SoundGrid Studio, and eMotion LV1 software for setup and control.

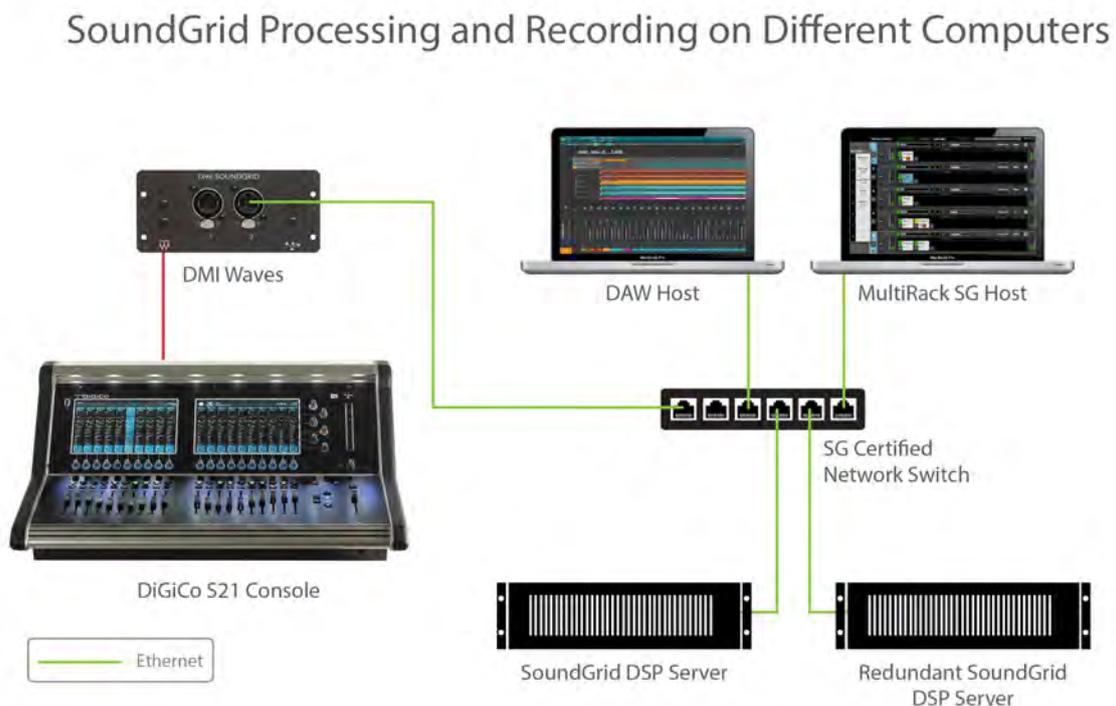
Typical Uses

The DMI Waves card can be used in both SoundGrid and Native configurations.

SoundGrid

In a SoundGrid configuration, the DMI Waves card connects to a SoundGrid network with a SoundGrid DSP server. This provides a high plugin count with super-low latency processing. It also enables other networking capabilities, including the option of an additional DSP server for backup .

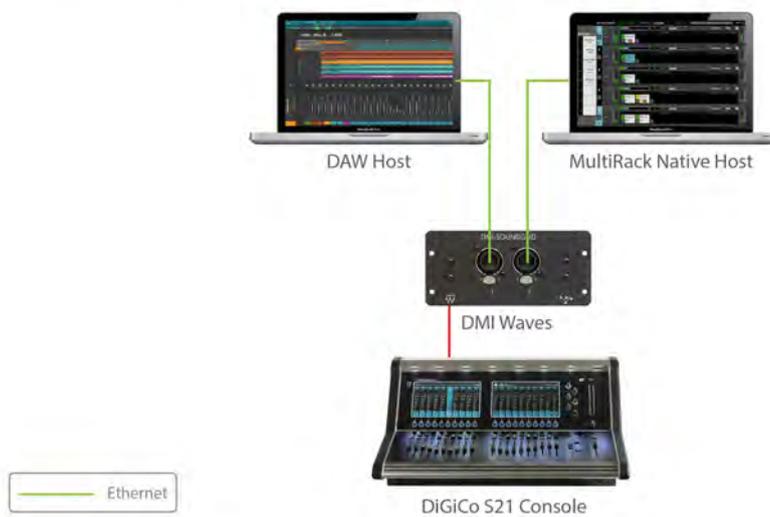
Please note: A SoundGrid DSP server is required for SoundGrid configurations.



Native – In a Native configuration, the DMI Waves card is used to connect a console to the SoundGrid ASIO/Core Audio driver for plugin processing and/or DAW playback/recording. Since the Native configuration utilizes the computer’s CPU to power the plugin processing, plugin count and overall system latency depend on the computer’s CPU and sound driver capabilities.

Please note: A SoundGrid DSP server is not required for Native configurations.

Native Processing and Recording on Different Computers

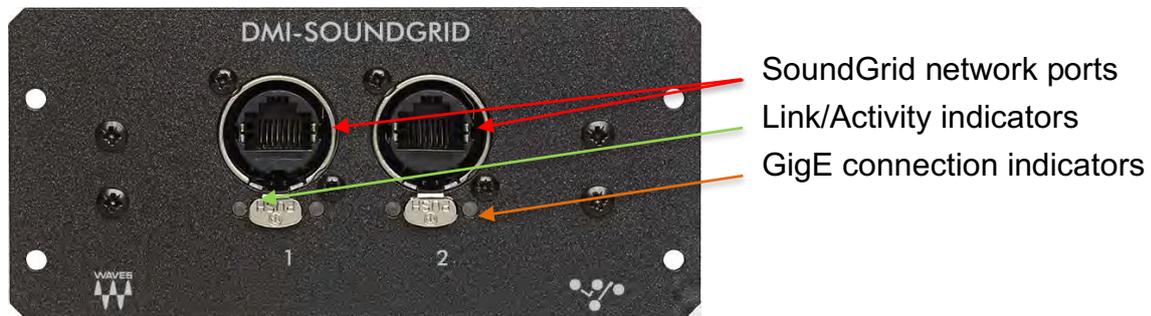


Native/SoundGrid Comparison Table

Features	Native	SoundGrid
Low Latency		✓
Processing	✓	✓
Recording	✓	✓
Simultaneous Recording and Processing		✓
CPU Load	DAW computer's CPU	Dedicated SoundGrid DSP server
Backup DSP Server		✓
Networking		✓
I/O Interface	DMI Waves	DMI Waves
Plugin Host Software	MultiRack Native	MultiRack SoundGrid
Plugin Licenses	Native	SoundGrid

1. Hardware and Connectors

SoundGrid Ports 1-2 (Ethernet) connect the SoundGrid Network.



Each port has two LEDs to indicate status;

- Link/Activity Flashing green
- GigE connection Solid orange

When the ID button on the SoundGrid device rack is pressed, the LEDs on the front panel of the hardware change colors repeatedly to help identify the device.

2. Installation and Configuration Overview

The ASIO/Core Audio drivers and control panel for the DMI Waves interface—as well as most other Waves products—are installed using the Waves Central application. When you download the drivers and interface, Waves Central also installs the latest version of the SoundGrid driver and the SoundGrid Studio Application, which are required for DAW recording and playback.

Download Waves Central here:

<http://www.waves.com/downloads/central>

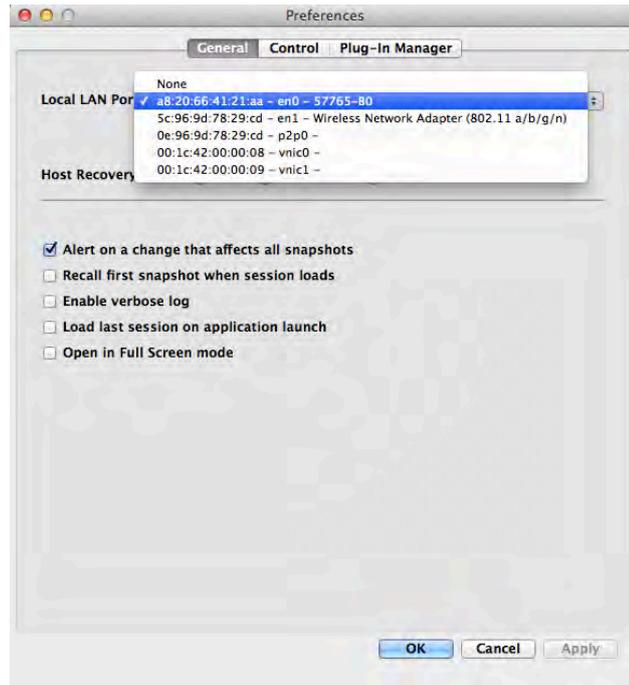
2.1 Installing the DMI Waves Card

Please refer to the DMI Waves card section of your DiGiCo manual for installation instructions.

2.2 Configuring the DMI Waves in MultiRack SoundGrid

Access the DMI Waves control panel from the **Inventory** window in the MultiRack SoundGrid application.

1. Launch the MultiRack SoundGrid application.
2. Enter the **Preferences** window by typing **Ctrl+P** (Windows) or **Cmd+,[comma]** (Mac), or from the appropriate application menu.
3. Under **Local LAN Port**, choose the adapter connected to the SoundGrid network and the DMI Waves card. Network adapters are displayed as MAC addresses and port names.



4. When you select the correct port, the message “SoundGrid Network Found” will appear on the panel. Close this window.
5. Open the **SoundGrid Inventory** window from the **Audio** Menu (F2). The **SoundGrid Inventory** window displays all SoundGrid I/O devices connected to your network.
6. Assign SoundGrid drivers in the **Assign** column. Use consecutive numbers for multiple devices, with the first unit assigned as number 1.
7. Assign SoundGrid DSP servers in the **Assign** column. The primary SoundGrid DSP server will be assigned as number 1. If you are using a redundant SoundGrid DSP server, assign it as number 2.

SoundGrid System & Inventory

SOUNDGRID INVENTORY

SYSTEM PARAMETERS

SAMPLE RATE 48000 NETWORK LATENCY 40 DRIVER LATENCY 192

SYSTEM INVENTORY REFRESH

I/O DEVICES

ASSIGN	DEVICE	CONTROL PANEL	CHANNEL	NAME	MAC ADDRESS / COMPUTER NAME	STATUS	CLOCK	MASTER	ID	DEVICE FIRMWARE
1	MR: MultiRack		256	MultiRack-1	40:6c:8f:43:36:68	On			▶	
1	IO: DMI	SETTINGS	64	DMI	00:1c:d1:00:7d:8e	On	DIG: No Sync	◻	ID	UPDATE
2										
3										
4										
-										

SOUNDGRID SERVERS

ASSIGN	DEVICE	MAC ADDRESS / COMPUTER NAME	STATUS	DEVICE FIRMWARE
1	SG Server	00:e0:4c:17:0f:c0	On	UPDATE

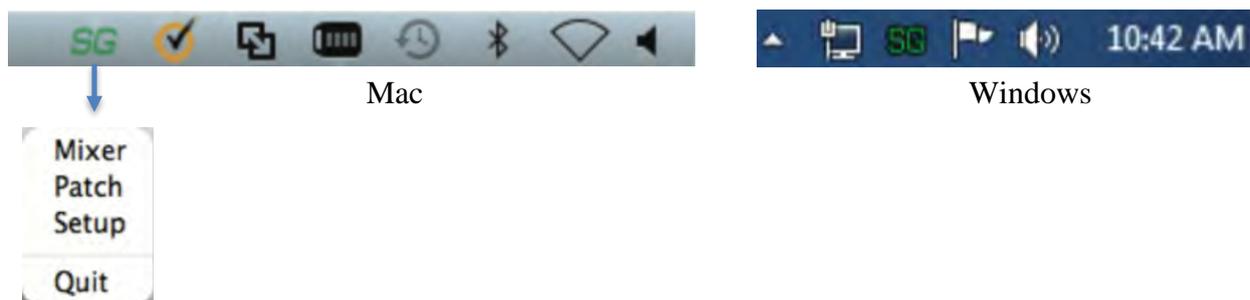
8. Assign your DMI Waves card/s in the **Assign** column. Use consecutive numbers for multiple devices, with the first unit assigned as number 1.
9. Click **Settings** to open the DMI Waves Control Panel window.

2.3 Configuring the DMI Waves in SoundGrid Studio

This is a quick overview of what you need to know about SoundGrid Studio software to get your network up to speed. There's enough information here for you to configure a simple network, assess network status, and set up your I/O devices. For more complex configurations, please refer to the MultiRack SoundGrid and SoundGrid Studio user guides.

2.3.1 Setting up SoundGrid Studio

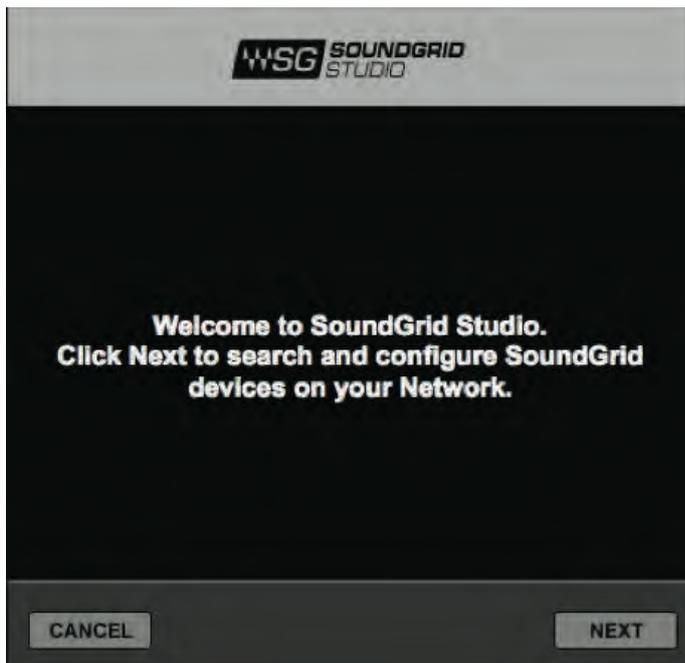
The SoundGrid Studio Application oversees the SoundGrid network and manages all network devices. To maintain network effectiveness, the SoundGrid Studio Application is always running in the background. Bring SoundGrid Studio to the front by clicking on the SoundGrid icon (**SG**) in the Mac Top Bar or the Windows System Tray. Select a SoundGrid window from the drop-down menu.



When SoundGrid Studio opens you will see the System Inventory page, which is part of the Setup window.



The first time you launch SoundGrid Studio, the Wizard will open. It scans the network, inventories its assets, and then configures the devices. If the Wizard does not start automatically, click the Start Auto Config button, which is next to the Network Port. Choose “NEXT” to start automatic configuration. This will take a few moments. Choose “CANCEL” to configure manually.



If the Wizard cannot locate the requested SoundGrid network devices, this may mean that the devices might be off or are not connected properly. In such a case the Wizard will allow you to rescan the network or work as a Driver node slaved to another system. For more information please refer the SoundGrid Studio User Guide.

When configuration is complete, close the window. If there's still a problem, you can use the System Inventory page to assign devices, control the network, and manage clock. To learn how to use this page, please refer to the SoundGrid Studio Application user guide.

SoundGrid Studio uses Ethernet to stream audio between devices on a SoundGrid network. Clock synchronization is also carried over Ethernet. This method of providing clock is called Sync over Ethernet (SoE). SoundGrid I/O devices can clock

by other means as well, but SoE is by far the most common (and convenient) way to provide clock information to network devices.

In the SoundGrid Studio Setup page you will see racks containing all of the devices assigned to your system: physical and virtual I/O devices, drivers, and servers. Each I/O rack slot displays the device's mode, clock status, and sample rate.

The first device added to a rack is designated as the Sync-over-Ethernet clock master and is placed in the first rack slot.

A populated device slot displays the mode, clock status, and sample rate of the I/O. The clock master device is indicated by its blue color and the icon text: On, Master Clock, INT (48 kHz).



To add another SoundGrid device, click on the arrow in an empty rack slot. From the list of available devices, choose the one that you want to add—in this case, a second DMI Waves card. In this image, DMI Waves is grayed out (and therefore unavailable), since it is already claimed.

The new device is visible in the rack slot. Unless changed by the user, it remains the clock slave and is colored green.

Use the same menu to change the assignment of clock master from one device to another, or to remove the device from the rack slot.



Now you know how to assign I/O devices and designate a device as the clock master. Click on the **Gear** symbol in the device slot to open the DMI Waves Control Panel in order to set up clock details.

2.3.2 Firmware Status and Updates

On the left of the device icon are two buttons:

FW indicates the status of the device’s firmware. The user is given the choice to update it. Status indications are color-coded:

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



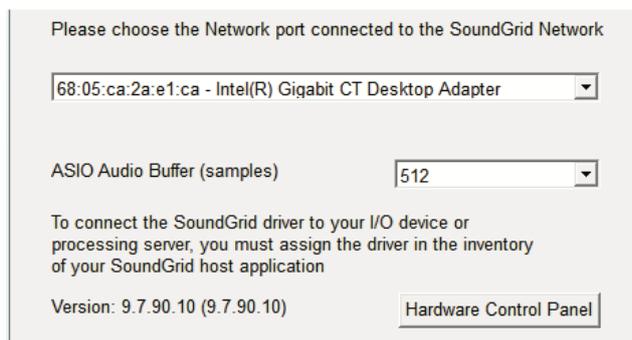
Click on the FW button to launch the Reflasher. This will initiate a scan of the hardware and then offer options. Do not disconnect device or turn off computer until you see "Done."

When the ID button on the SoundGrid device rack is pressed, the LEDs on the front panel of the hardware change colors repeatedly to indicate the device.

3. DMI Waves Control Panel

If you are working with MultiRack SoundGrid, access the DMI Waves Control Panel via the **Inventory** window.

If you are using SoundGrid Studio, click on the **Gear** symbol in the device slot to open the DMI Waves Control Panel.



Pressing the “Hardware Control Panel” button on the Driver Control Panel app will open the control panels of all I/O devices assigned to your SoundGrid application. If none are assigned, nothing will happen.

The Driver Control Panel app is located here:

PC: C:\Program Files (x86)\Waves\SoundGrid\Driver Control Panel

Mac: System HD/Applications/Waves/SoundGrid

3.1 Clock Page

When you launch the DMI Waves control panel, it loads the Clock Settings tab. The following settings are available here:

SOURCE sets the clock source.

- | | |
|--------------------|--|
| Internal | The interface itself provides the clock. |
| Digital | Syncs via the DMI Waves connection to the console. |
| Sync-over-Ethernet | Syncs to the master I/O of the SoundGrid network. |



SAMPLE RATE sets the sample rate when Clock Source is set to Internal.



STATUS displays synchronization status (Sync or No Sync).

CURRENT CLOCK SOURCE IS displays the current sync method.

SOE displays Sync-over-Ethernet status (On or Off).

LOAD and **SAVE** (at the top left corner of the control panel window) allow you to save and load your DMI Waves settings.

3.2 About Page

The **About** page displays an overview of the device's specifications.



3.3 System Info Page

The **System Info** page displays the device's connection status, manufacturer, model, MAC and SoE Master MAC addresses, and firmware version.



3.4 Saving, Loading and Identifying

LOAD and **SAVE** (at the top left corner of the Control Panel window) allow you to save and load your DMI Waves settings.

IDENTIFY (at the top right corner of the Control Panel window) allows you to identify connected devices. When the ID button is pressed, the LEDs on the front panel of the hardware change colors repeatedly.