Allen & Heath M-Waves Card

User Guide

Contents

Introduction

The Allen & Heath M-Waves expansion card is an audio networking option that links an Allen & Heath dLive or Avantis console I/O port to a SoundGrid network.

M-Waves cards are available in three versions:

- M-Waves V1 or V2 for Allen & Heath iLIVE and GLD consoles - M-Waves V1 and V2 cards provide 64 channels.
- M-DL-Waves3 for Allen & Heath dLIVE consoles - Each M-DL-Waves3 card provides 128 channels of bi-directional audio to SoundGrid.

Please note: You can use M-Waves V1 and V2 by using M-DL-ADAPT card adapter with dLive consoles.

A SoundGrid I/O device is part of a SoundGrid network. 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 I/Os link to the SoundGrid network with standard Ethernet cable.
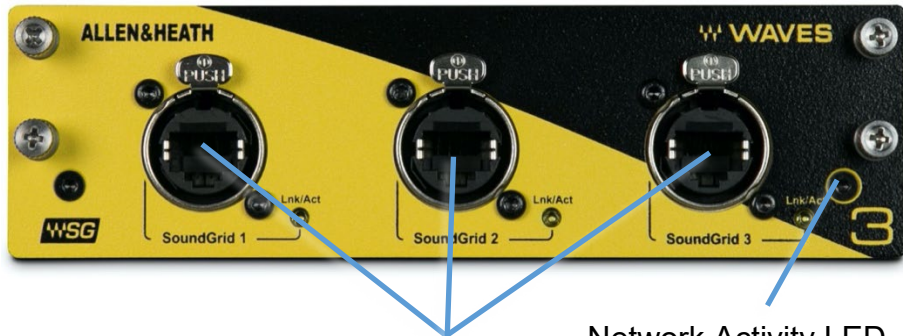
SoundGrid is scalable. Connect one I/O device to a DAW and you have a high-quality sound card. Add more I/Os and your system becomes more flexible and powerful. Depending on the host application, a SoundGrid host can assign up to sixteen I/O devices. Complete SoundGrid systems can be networked together 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—it also provides very low system latency.

Hardware and Connections

The Allen & Heath M-Waves expansion card has three SoundGrid Ethernet ports.

Each port has a Network Activity LED.
- Flashing amber LED - GigE connection
- Solid green LED - Link/Activity

M-Waves V1 and V2 additionally have a SoundGrid connection indicator on the SoundGrid 1 Port.

SoundGrid Ports 1, 2, and 3

Network Activity LED

You can use M-Waves V1, V2 (using M-DL-ADAPT card adapter) and M-DL-WAVES3 cards together in a dLive setup. iLive setups can use M-Waves V1 and V2 cards. M-Waves V1 cannot be an Ethernet clock (SOE) slave. It must provide clock sync to an M-Waves V2 or M-DL-WAVES3 card. Setting up the clock master for the network is done in either SuperRack SoundGrid, QRec, SoundGrid Studio, or eMotion LV1.

M-Waves has three SoundGrid Ethernet ports. This enables you to connect the M-Waves card to a host computer and two other devices, (e.g., SoundGrid I/Os, SoundGrid host computers, SoundGrid server) without needing an Ethernet switch—each port can connect to one SoundGrid device or computer. It is not important which of the three Ethernet ports is used to connect to the SoundGrid network.
For installations that include more than three additional devices, a SoundGrid compatible Ethernet switch is necessary.

For further instructions, please refer to your console's user guide.

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, one Allen & Heath M-Waves expansion card is used to connect a console to the SoundGrid host application 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 SoundGrid host computer

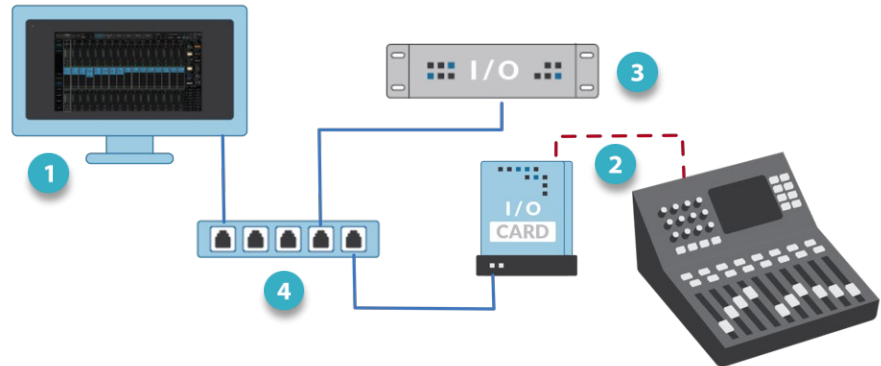2 A&H console with SoundGrid I/O
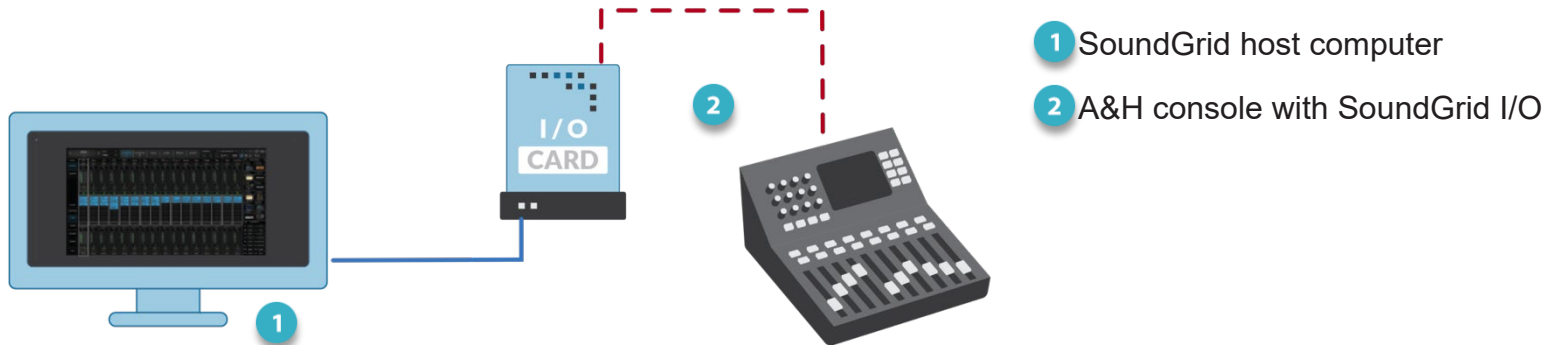
The host computer's LAN port that's connected to the SoundGrid network should be used for SoundGrid only. Do not share this port with the internet or other networks.

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 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. Use a "star" network configuration with a 1GB Ethernet switch when you need more network ports than the interface card provides. Only use switches tested and approved by Waves.

1 SoundGrid Host computer

2 A&H console with SoundGrid I/O

3 Additional SoundGrid I/O

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. All SoundGrid I/O devices, hosts, and servers are connected through the Ethernet switch. You can also add more computers to enable streaming among 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.

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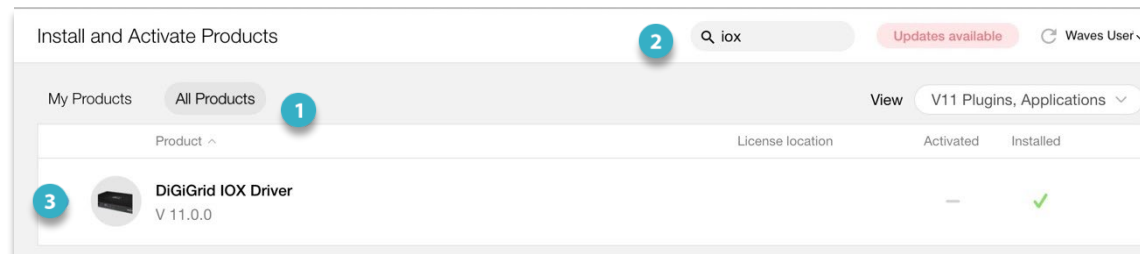
1 Choose **All Products**
2 Search for the driver by name
3 Choose the driver and click **Install**

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.

(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.
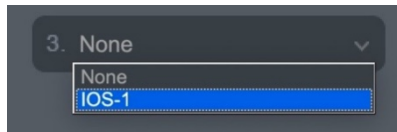

SoundGrid QRec

SoundGrid Studio Setup Window

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

Manual Device Configuration

SoundGrid QRec

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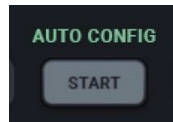
Any device not already used will be available for assignment. If no other devices are assigned, the current device will become your clock master. Drivers and servers are assigned in the same manner.

SoundGrid Studio

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

Automatic Device Configuration

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 require that the SoundGrid ASIO/Core Audio driver is assigned manually.
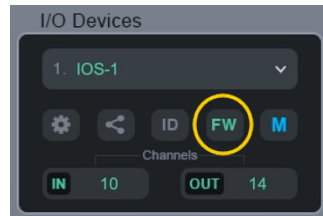
Device Firmware

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.


SoundGrid Studio

SoundGrid QRec

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

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
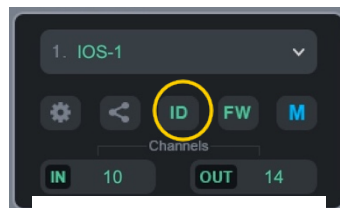
SoundGrid QRec

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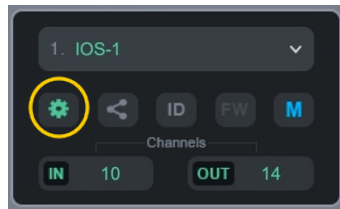
M-Waves Control Panel

There are two ways to open the device control panel:

FROM THE DEVICE RACK

Click on the **Gear** button on a device in the rack slot.
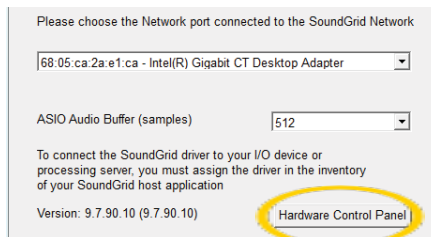
SoundGrid Studio   SoundGrid QRec

FROM THE DRIVER CONTROL PANEL

Open the driver control panel and then click the Hardware Control Panel button. The driver control panel is located here in the host computer:

>	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 establish the clock source and set the sample rate.

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.

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

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

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.

Status	Reports the presence or absence of sync between the unit and the SoundGrid network
Current Clock Source	Displays the current sync method. This may differ from the choice made in the Source menu
SOE	Indicates whether this unit is the master or a slave in the SoundGrid network. This mirrors the status information in the SoundGrid Studio Device Rack

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

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.

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 and its firmware. This information can be useful for troubleshooting. Please have this information handy if you contact Waves technical support concerning the device.

Presets

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

You can save and load presets of device settings. A saved preset includes all Clock panel parameters. Use presets to use on future sessions or copy them to another computer to duplicate a configuration.

Click the **ID** button to indicate which unit belongs to this Control Panel. Clicking the button causes the Network LED on the panel of the M-Waves card to flash.

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.