STAGEGRID 4000

USER GUIDE

dspro

WSG
WAVES SOUNDGRID

SUMÁRIO

ABOUT

STAGEGRID 4000

Thank you for choosing DSPRO STAGEGRID 4000 for your SoundGrid system.

This stagebox features 32 microphone inputs and 16 analog outputs and thus is, in conjunction with Waves eMotion LV1, an excellent solution for live mixing.

The preamplifier was entirely designed with attention to each detail in order to achieve a pure sound and superior clarity to enable the full potential of the mixing console. Using a discrete design, its performance compares to the best systems on the market.

Designed for the Road, components were carefully selected to improve system reliability and strength, including redundant power supply units.

The main features are:

- 32 Microphone or line inputs
- 16 balanced analog outputs on XLR connectors
- 4 stereo AES / EBU inputs and 4 outputs
- Sampling Rates from 44.1kHz to 96kHz
- 2 Headphones with volume control
- Input and output of Word Clock in BNC
- SoundGrid Ethernet connection
- Redundant AC power supply

SoundGrid

SoundGrid is a flexible and scalable network audio distribution infrastructure for studio, broadcast and live high fidelity solutions featuring uncompressed, multichannel, and low latency audio.

With several hardware options for IO and real-time audio processing, it can be configured in different ways to meet the most demanding specifications.

System Requirements

- A STAGEGRID connected to a computer
- At least one SoundGrid software installed (SoundGrid Studio, Multirack or eMotion LV1). SoundGrid Studio is Windows and MAC compatible. Please consult Waves website for currently supported OS versions and DAWs.
- Ethernet Cable CAT5e/6/7. Additional details on network infrastructure can be found on Waves website.
  - Cable webpage: www.waves.com/support/ethernet-cables-for-soundgrid-systems
  - Switches webpage: www.waves.com/support/network-switches-for-soundgrid-systems

For your convenience, register your SoundGrid product at the Waves website and receive exclusive offers for SoundGrid system owners.
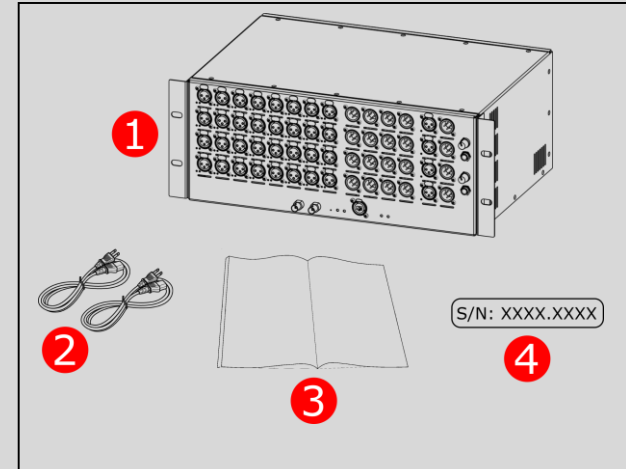
HARDWARE

Package contents

1. One STAGEGRID 4000
2. Two power cords
3. One Safety Instructions Guide
4. One serial number label

The label can be used on the appropriate space on the back panel of the device.

For future reference, take note of the Serial number:

S/N: _____

Rack Installation

STAGEGRID 4000 is a standard 19" rack equipment with four RU in height.

A fan at the rear panel provides proper cooling for the unit. The air exits the enclosure through front and sides. Do not obstruct the air low.

To ensure that the equipment operates over the full rated temperature range, it is necessary to observe a distance of one rack unit from other equipment.

If more than one STAGEGRID 4000 is used, it is possible to group two units together, as shown in the figure.

Regularly clean the dust filter located on top of the fan without using water or any other liquid. If replacement is required, a 45ppi filter should be used.
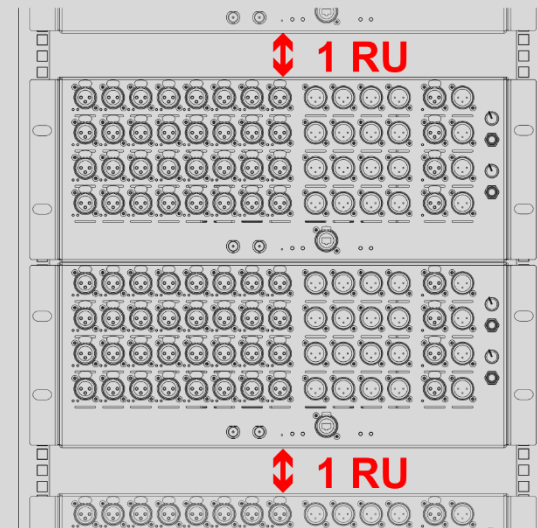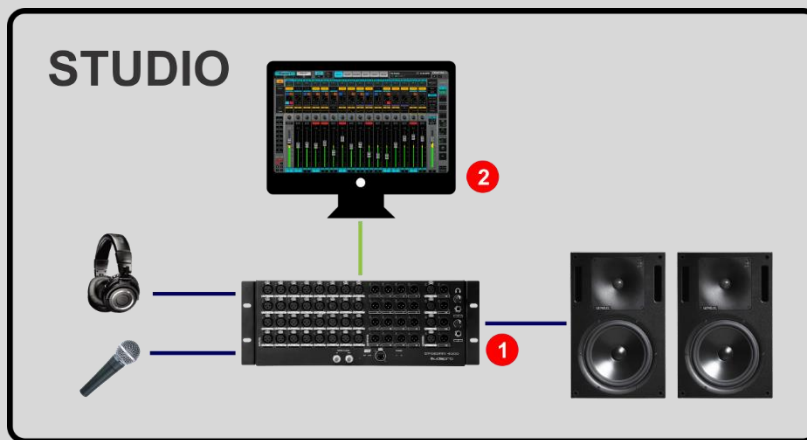
Setups

Studio

The simplest application is to use the STAGEGRID as an audio interface for a native DAW.

Using SoundGrid driver, all channels will be seen as a local interface and the control panel will allow you to set all equipment parameters.

— Soundgrid
— Analog

1. STAGEGRID 4000
2. Host

Live

Adding a Waves Server, all real-time processing is offloaded from the host computer, allowing more power demanding applications.

With eMotion LV1 on the Host computer, this setup is a complete 32-channel mixing console totally controlled by software. It is a light, flexible and powerful mixing console with up to eight plugins per channel.
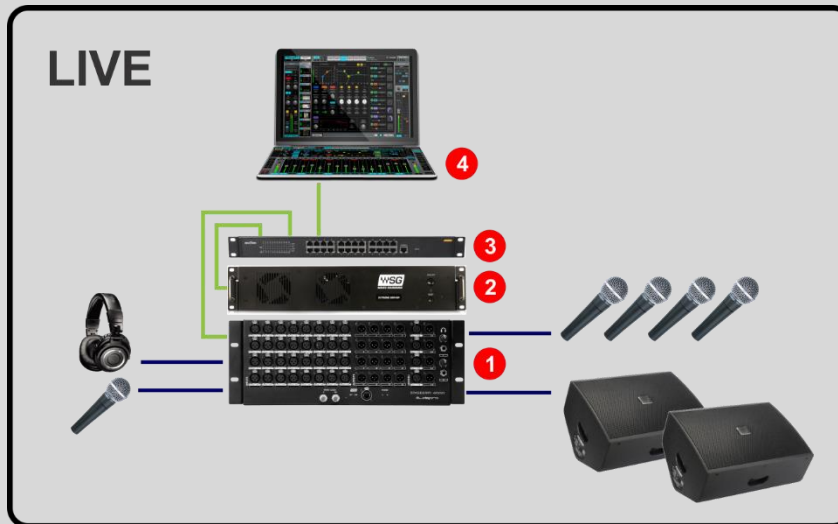
— Soundgrid
— Analog

1. STAGEGRID 4000
2. Waves Server One
3. Network Switch
4. Host Laptop

Large PA

To increase channels count, more STAGEGRID 4000 can be added to the system, by using network switches, the solution can be distributed according to the size of the event.

In this example, besides dividing the system between stage and house mix position, two servers are used together for redundancy, significantly increasing fault tolerance.

1. STAGEGRID 4000 (4x)

2. Network Switch (2x)
3. Waves Extreme Server (2x)
4. Host and Recording
5. Control surface (1x - optional)

Front Panel
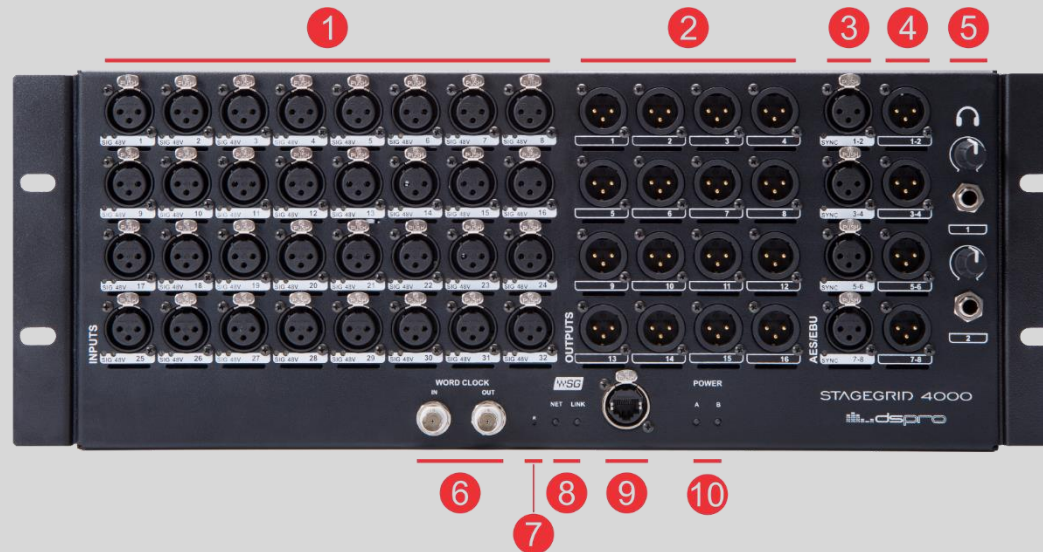
1. **32 mic/line inputs**
2. **16 line outputs**
3. **4 AES/EBU stereo inputs**
4. **4 AES/EBU stereo outputs**
5. **2 Headphones**
6. **Word Clock IN and OUT**
7. **Reset button**
8. **Network LEDs:**
   a. NET – SoundGrid network status
      - Blue: Synchronized with a SoundGrid Host application
      - Red: no SoundGrid sync

- Yellow: Firmware update
- White: Unit malfunction
- Cycling colors: Used to identify the equipment

 b. LINK – Ethernet status

- Green: Link up
- Blink: Link up and network activity
- Off: Link down

9. SoundGrid Gigabit Ethernet port

10. Power status LEDs

 a. POWER A e B

- Green: Power OK
- Red: Power fail

Back Panel

1. Device fan. Air flows from the back to front and sides.
2. Power A ON/OFF switch
3. Power A inlet
4. Power B inlet
5. Power B ON/OFF switch

SOFTWARE

In order to use STAGEGRID 4000 it is necessary to install a Waves SoundGrid application and the device drivers.

The installation of these features is done through Waves Central, a platform for managing user resources and licenses to be installed on the computer. The Waves Central can be found at www.waves.com/downloads/central.

After identifying your Waves user, follow the steps:
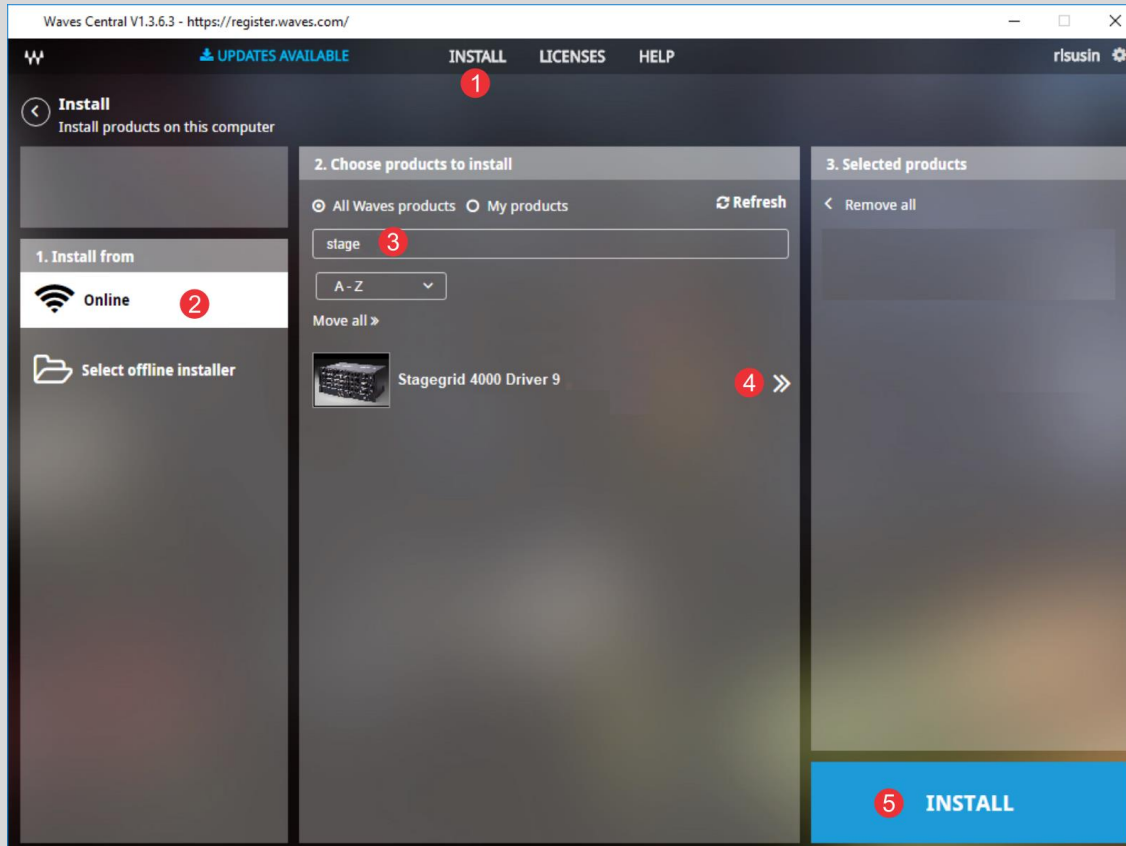
1. Select "INSTALL"
2. Select "Online"
3. Search for "STAGEGRID"
4. Add STAGEGRID to Selected products
5. Start Install

Together with the device drivers, SoundGrid Studio application is downloaded and installed.

Run SoundGrid Studio and:

1. **1.** Select SETUP tab
2. **2.** Select SYSTEM INVENTORY
3. **3.** At Rack A, add SoundGrid IO devices

4. Select Add Device-> Network Devices->SG4000 to allocate STAGEGRID 4000

After adding a STAGEGRID to system inventory, the following screen will be created:

1. FW: To perform a device Firmware update (check "Firmware Update" for detailed procedure)
   Blue: New firmware available
   Red: New mandatory firmware available
   Grey: Firmware up-to-date.
2. ID: Physically identify the device by cycling NET LED colors.
3. Gear: To access device control panel

Control Panel

Control panel has five tabs:

- About: Device description
- System: System details
- Clock: Clock setup
- Input: Input ports setup
- Output: Output ports setup

Input tab

1. Selected channel group
2. Navigation arrows between channel groups
3. Detailed output VU meter
4. Preamp gain control fader -4 a 60dB
5. Channel Phantom Power enabling button
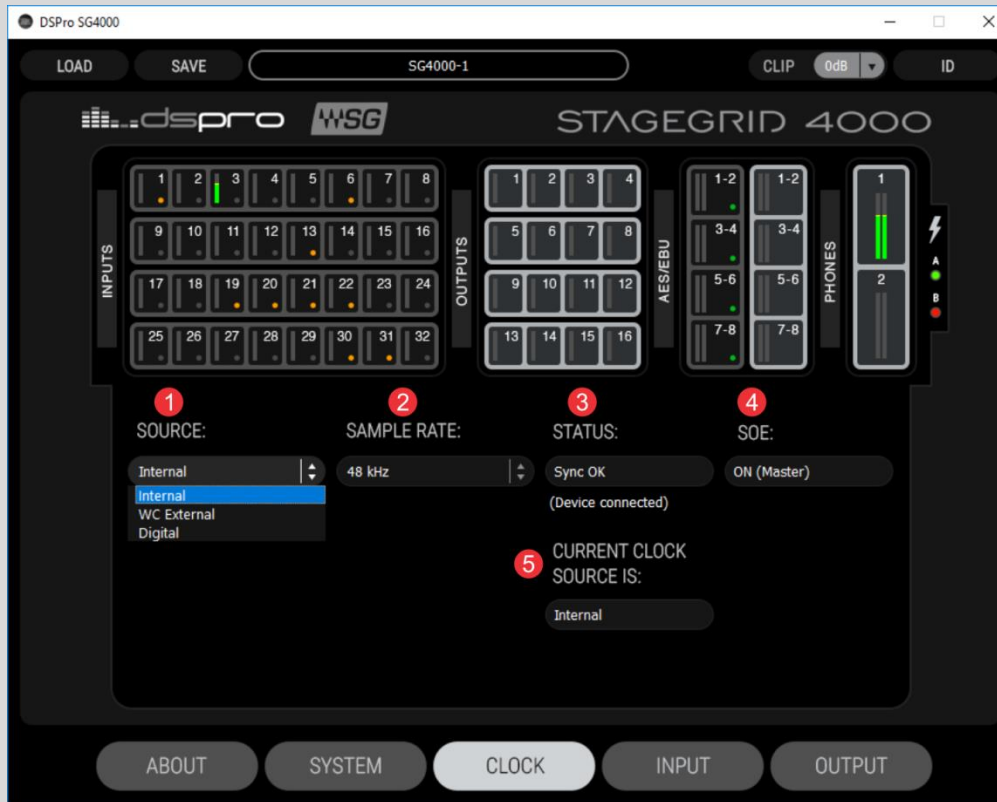
AES Input tab

1. **SYNC: AES/EBU operation status:**
   o Green: synchronized
   o Orange: clock slip. Same sample rate but non-identical clock.
   o Red: different Sample Rate
   o Grey: no signal

Output Tab

1. Selected channel group
2. Navigation arrows between channel groups
3. Detailed output VU meter

CLOCK Tab

1. **SOURCE:** the device clock source.

   When the device is the SOE Master, options are:
   - Internal: clock is internally generated
   - WC External: clock is synchronized to Word Clock input
   - Digital: clock is synchronized to AES/EBU inputs. A second drop-box selects the port.

   When the equipment is SOE Slave, no options are available.

2. **SAMPLES RATE:** selects the Network Sample Rate between: 44.1 kHz, 48 kHz, 88.2 kHz and 96 kHz. Only available when device is SOE Master.
3. **STATUS:** current selected clock source synchronization status
4. **SOE:** indicates if the device is Clock Master or Slave from the network (SOE).
5. **CURRENT CLOCK SOURCE:** Indicates the current clock source based on previous configurations and fallback mechanisms.

Firmware Update

To perform a firmware update, you should use a SoundGrid Host application. On the Inventory screen, the allocated devices with available updates will have the FW button with the following colors:

- BLUE: if it is an optional update
- RED: If the update is mandatory. It will not be possible to use the unit without performing the update
- GREY: current firmware is up-to-date

In the event of a failure in the upgrade process, or any other failure that prevents the device from being recognized by the Host application, the following recovery procedure may be performed:

1. Turn off the power
2. Press the reset button "R" (on the front panel of the device).
3. Turn on the device while keeping the reset button pressed
4. Release the button only after the device has started

This will boot the equipment into forced update mode, which can be verified by a yellow "NET" LED.

SPECIFICATION

Dimensions:

     Height: 176mm (4RU)

     Width: 430mm (for 19" rack)

     Depth: 300mm (connectors excluded)

Power supply:

     Voltage: 110 a 240 Vac

     Frequency: 50 to 60 Hz

     Power: 60W

Environmental specifications:

     Operating Temperature: 0 to 40°C

     Relative Humidity: up to 90% non-condensing

Interfaces:

     Analog Inputs: 32

     Analog Outputs: 16

     AES/EBU inputs: 4

     AES/EBU Outputs: 4

Word Clock In: 1

Word Clock Out: 1

SoundGrid: 1

Headphones: 2

Analog Inputs:

Impedance: 2.86 kOhms

Gain range: -4 to 60 dB

Max Input Level: 28 dBu (-4 dB gain)

Dynamic range: 115 dB (-60 dBFS, 20 dB gain, 1 kHz, A-weighted)

THD: 0,002 % (-1 dBFS, ganho de 20 dB, 1 kHz, A-weighted)

Equivalent Input Noise: -128 dBu (60 dB gain, A-weighted, 150 Ohms)

Frequency response: +/- 0.1 dB (20 to 40 kHz at 96 kHz sampling rate)

Phase Shift: <10° at 20 kHz

Analog Outputs:

Output Impedance: 50 Ohms

Max Output Level (0dBFS): 24 dBu

Dynamic range: 115 dB (-60 dBFS, 1 kHz, A-weighted)

THD: 0,002 % (-1 dBFS, 20 dB gain, 1 kHz, A-weighted)

Frequency response: +/- 0.1 dB (20 to 40 kHz at 96 kHz)

Phase shift: <5° at 20 kHz

AES/EBU IN/OUT:

Standard: AES3 (2009)

Sample rates: 44.1, 48, 88.2 and 96 kHz

Impedance: 110 Ohms

Headphones:

Output Power: 150 mW per channel on 16 Ohms

Dynamic range: 100 dB

SoundGrid:

Interface: Gigabit Ethernet

Connector: Neutrik EtherCON

Word Clock

Connector: BNC

Impedance: 75 Ohms

Voltage level: 5V TTL