

ADAMSON CS Series Upgrade Amplifier



# ADAMSON CS Series Upgrade Amplifier User Manual

[Home](#) » [ADAMSON](#) » ADAMSON CS Series Upgrade Amplifier User Manual 

## Contents

- [1 ADAMSON CS Series Upgrade Amplifier](#)
- [2 Product Usage Instructions](#)
- [3 FAQ](#)
- [4 EU Declaration of Conformity](#)
- [5 Symbols](#)
- [6 Safety & Warnings](#)
- [7 Status LED](#)
- [8 Product Overview](#)
- [9 Power](#)
- [10 Connectivity](#)
- [11 Rack Mounted Systems](#)
- [12 ArrayIntelligence](#)
- [13 Technical Specifications](#)
- [14 Documents / Resources](#)
  - [14.1 References](#)



**ADAMSON CS Series Upgrade Amplifier**



## Specifications

- Model: S E R I E S
- Distribution Date: June 12, 2023
- Low Voltage Directive: 992-0012/992-5012 CS118
- Machinery Directive: 930-0021/930-5021 Extended Beam
- Electromagnetic Compatibility Directive: 992-0012/992-5012 CS118
- Manufacturer: Adamson Systems Engineering
- Location: Port Perry, Ontario, Canada
- Contact: T: +1 905 982 0520, F: +1 905 982 0609

## Product Overview

The SERIES is a high-quality audio system designed for professional use. It includes various components such as amplifiers, power distribution systems, support frames, and rigging accessories.

## Power Connectivity

Ensure proper power connectivity by using the specified power distribution systems (110V or 230V) provided by Adamson Systems Engineering. Connect the amplifier upgrades and network distribution systems according to the user manual instructions.

## Rack Mounted Systems

The SERIES components can be rack-mounted for organized and efficient setup. Follow the guidelines for rack mounting provided in the user manual to ensure secure installation.

## ArrayIntelligence

ArrayIntelligence provides technical information and safety warnings essential for the proper setup and operation of the SERIES. Familiarize yourself with ArrayIntelligence to optimize the performance of the audio system.

## Technical Specifications

Refer to the detailed technical specifications provided by Adamson Systems Engineering for information on input/output configurations, power ratings, frequency response, and other important parameters specific to each component of the SERIES.

## Product Usage Instructions

### Safety & Warnings

Read and keep the user manual accessible for future reference. Clean the product with a dry cloth only. Avoid blocking ventilation ports and protect cables from damage. Always have a qualified technician present during installation and use to prevent misuse.

### Inspection and Maintenance

Inspect the product before each use for defects or damage. If any issues are found, stop using the product and seek maintenance. Servicing should only be done by trained technicians if the loudspeaker is dropped or malfunctions.

### Rigging Instructions

Prior to suspending the product, watch the CS-Series Rigging Tutorial video or read the CS-Series Line Array Rigging Manual. Adhere strictly to rigging information and safety warnings in ArrayIntelligence. Use only Adamson-specified rigging frames/accessories.

## FAQ

### Q: Can I use components from other brands with the SERIES?

A: It is recommended to use only components specified by Adamson Systems Engineering to ensure compatibility and optimal performance.

### Q: How do I know if the product is operating within safe sound levels?

A: Refer to local sound-level regulations and exercise good judgment when using the product. If unsure, consult with a professional audio technician.

- Distribution Date: June 12, 2023  
Copyright © 2023 by Adamson Systems Engineering Inc.; all rights reserved.
- This manual must be accessible to the person operating this product. As such, the product owner must store it in a safe place and make it available upon request to any operator.  
Resale of this product must include a copy of this manual.
- This manual can be downloaded from <https://adamsonsystems.com/support/downloads-directory/cs-series/cs118>

## EU Declaration of Conformity

Adamson Systems Engineering declares that the products stated below are in conformance with the relevant

fundamental health and safety criteria of the applicable EC Directive(s), in particular:

**Directive 2014/35/EU: Low Voltage Directive**

992-0012/992-5012 CS118

910-0004 CS118 Amplifier Upgrade

913-0003 Gateway

913- 0005 Bridge

914- 0002 Power Distribution System 110 V

914-0003 Power Distribution System 230 V

**Directive 2006/42/EC: Machinery Directive**

930-0021/930-5021 Extended Beam

930-0025 Ultra-Compact Support Frame

930-0033/930-5033 Moving Point Extended Beam 932-0047 Line Array H-Clamp

932-0043/932-5043 Extended Lifting Plates

**Directive 2014/30/EU: Electromagnetic Compatibility Directive**

992-0012/992-5012 CS118

910-0004 CS118 Amplifier Upgrade

905-0039 Network Distribution System

913-0003 Gateway

913- 0005 Bridge

914- 0002 Power Distribution System 110 V

914-0003 Power Distribution System 230 V

Signed at Port Perry, ON. CA – June 12, 2023

Brock Adamson (President & CEO)

ADAMSON SYSTEMS ENGINEERING, Inc. 1401 Scugog Line 6, Port Perry Ontario, Canada L9L 1B2

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- **Email:** [info@adamsonsystems.com](mailto:info@adamsonsystems.com)
- **Website:** [www.adamsonsystems.com](http://www.adamsonsystems.com)

## **Symbols**

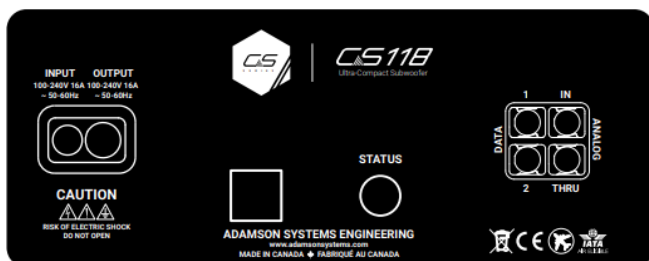
- This symbol alerts the user that there are important operating and maintenance instructions in the literature accompanying this appliance
- This symbol alerts the user to the presence of voltages that can cause dangerous electric shock
- This symbol alerts the user to the weight of the appliance that can cause muscle strain or back injury
- This symbol alerts the user that the appliance can be hot to the touch and should not be touched without taking care and instruction

## **Safety & Warnings**

- Read these instructions and keep them available for future reference.
- This manual can be downloaded from <https://adamsonsystems.com/support/downloads-directory/cs-series/cs118>

- Heed all warnings and follow all instructions.
  - Clean this product with a dry cloth only.
  - Never restrict the ventilation ports.
  - Protect the cabling from being walked on or pinched.
- A qualified technician must be present during the installation and use of this product. This product is capable of producing extremely high sound pressure levels and should be used according to the specified local sound level regulations and good judgement. Adamson Systems Engineering will not be liable for damages caused by any possible misuse of this product.
  - Inspect the product before each use. If any sign of defect or damage is detected, immediately withdraw the product from use for maintenance.
  - Servicing is required when the loudspeaker has been dropped or damaged in any way or does not operate normally. All service requirements must only be undertaken by a trained service technician.
  - View the CS-Series Rigging Tutorial video and/or read the CS-Series Line Array Rigging Manual before suspending this product. Rigging information and safety warnings presented in ArrayIntelligence must be strictly adhered to. Use only with the rigging frames/accessories specified by Adamson or sold with the loudspeaker system.
  - This speaker enclosure is capable of creating a strong magnetic field. Please use caution around the enclosure with data storage devices such as hard drives.
  - This product contains potentially dangerous voltages.
    - Do not open the unit. There are no user serviceable parts inside this product. Failure to comply voids warranty.
    - Do not use this product with a power cable that does not have a polarized, grounded plug.
    - Do not install this product in wet or humid locations.
  - Avoid lifting this product. For movement and storage, use only the cart or case sold by Adamson for the product, or one as specified by Adamson. Be sure to use caution while moving the case or cart to avoid injury.
  - This product can get hot when in use for extended periods of time.
    - To reduce the risk of overheating the product, avoid exposing it to direct sunlight.
    - Do not install this product near heat sources such as radiators, heat registers, stoves, or other apparatus that produce heat.

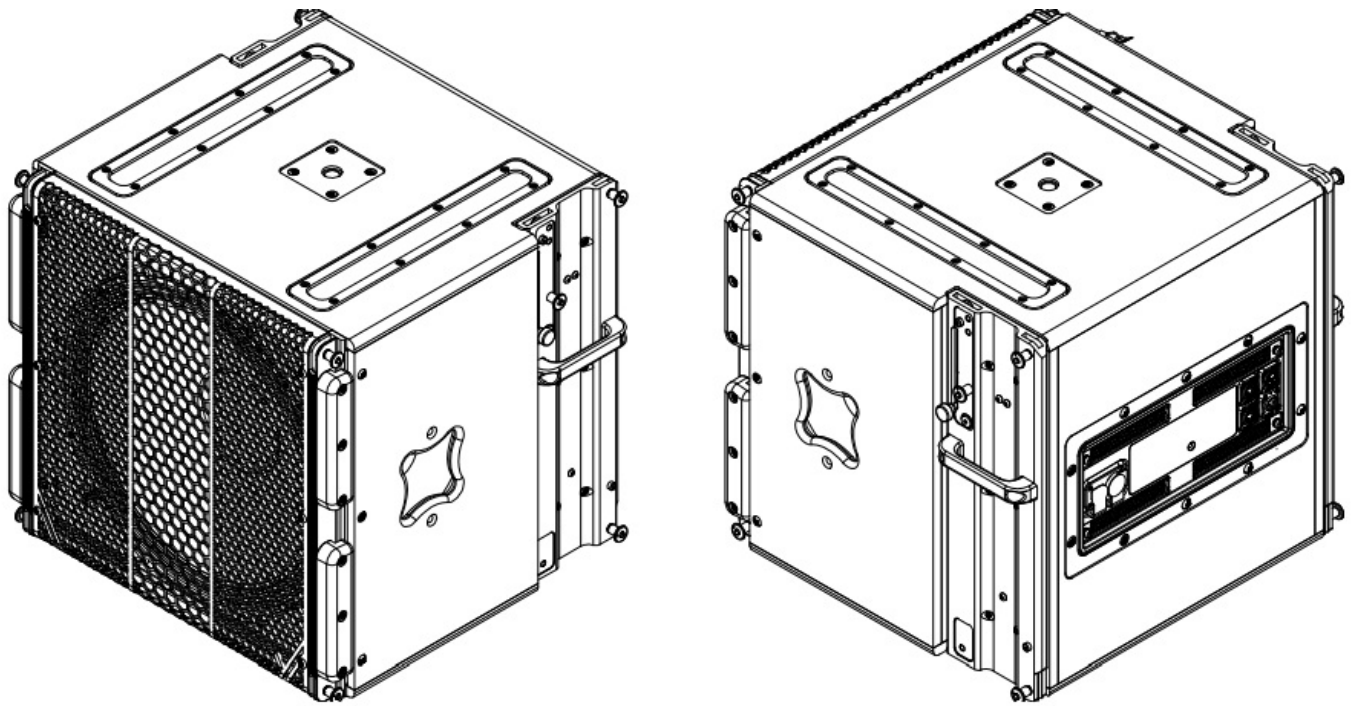
## Status LED



	Colour	State
Start-Up	Green	Flashing
Normal Operation	Green	Solid
Amplifier Off	Amber	Solid
Amplifier Clipping	Red	Flashing
General Fault	Red	Solid

In an effort to continuously improve its products, Adamson releases updated software, presets and standards for its products. Adamson reserves the right to change the specifications of its products and the content of its documents with no prior notice.

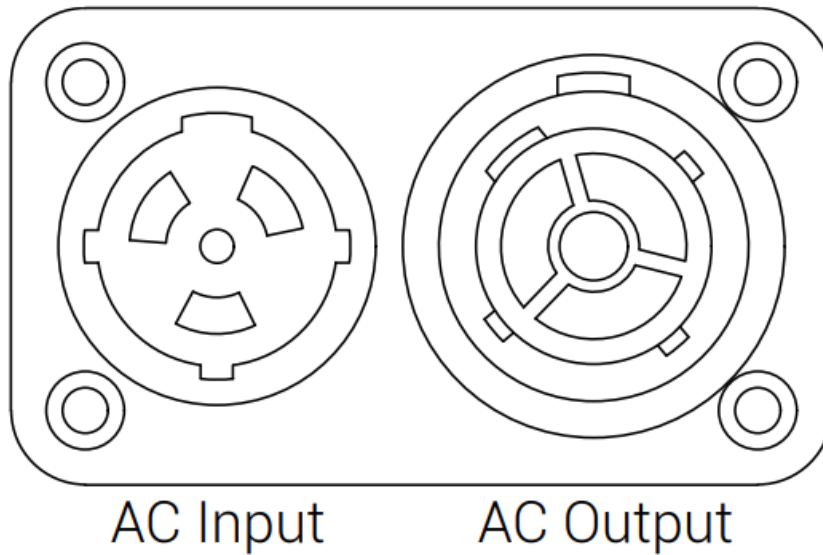
## Product Overview



- The CS118 is an ultra-compact, powered, intelligent, subwoofer enclosure for extended LF applications. It contains one 18" LF driver.
- Each CS118 cabinet houses proprietary Class-D Amplification and comprehensive internal signal processing including Milan AVB connectivity. Internal switch fabric allowing multiple enclosures to be daisy-chained in order to reduce the amount of cabling needed in complex system setups.
- The operational frequency range of the CS118 is 35Hz to 100Hz. The use of proprietary technologies such as Advanced Cone Architecture allows high maximum SPL.
- The enclosure is made of marine grade birch plywood, with an integrated aluminum and steel four-point rigging system, and a steel pole mount on top. Without sacrificing low resonance to composite material, the CS118 weighs only 34 kg / 75 lbs.
- Up to sixteen CS118 can be flown in the same array when using the Ultra-Compact Support Frame (930-0025). The CS118 can be flown in the same array as the CS7.
- The CS118 is designed to pair easily and coherently with all CS-Series line array and point source cabinets with a crossover frequency of approximately 80 Hz.

## Power

- The CS118 utilizes advanced loudspeaker technology, augmented with advanced power processing. Understanding electrical safety is critical in the safe operation of this product.
- This product must always be grounded/earthed. Do not ground-lift the AC cable – never use a ground-lifting adapter or cut the AC cable ground pin.
- Improper grounding of connections between loudspeakers and the rest of the audio system may produce noise or hum, and can damage the input and output stages of the system's electronics components.
- Before applying AC power to the loudspeaker, make sure that the voltage potential difference between the neutral and earth/ground lines is less than 5 V AC when using single-phase AC wiring.
- The CS118 is equipped with one Neutrik powerCON TRUE1 20 A locking input connector and one Neutrik powerCON TRUE1 20 A locking output connector on the CS118.
- The accepted voltage range is 100 V – 240 V AC.



- The line-to-ground voltage should never exceed 250 V AC. The CS118 is protected against excessive voltages but will need to be serviced should that protection be engaged.
  - The input voltage supplied to the AC Input connector will be the same voltage supplied to any additional CS-Series products connected to the CS118's AC Output connector. The number of loudspeakers that is safe to link in this manner is determined by the supply voltage, the current draw of all connected loudspeakers on the circuit, the circuit breaker rating, and the rating of the utilized AC cabling.
  - When linking AC power for additional CS-Series products, do not exceed the current capability of the AC Input connector. Consider the total current draw for all loudspeakers on the circuit, including the first.
- For long periods of idle it is recommended to switch amplifiers to standby (requires Adamson CS software) to reduce cooling fan run-time.

	100 V	115V	120 V	208 V	230 V	240 V
RMS Long-Term	2.88 A	2.50 A	2.40 A	1.38 A	1.25 A	1.20 A
RMS Idle	1.04 A	0.90 A	0.86 A	0.50 A	0.45 A	0.43 A

Table 1 – Single Cabinet Current Draw (A)

- Current draw for the CS118 is dynamic and fluctuates as operating levels change.
- The Power Distribution Sysytem (PDS, 914-0002 – 110 V/914-0003 – 230 V) provides six individually protected AC circuits of 208/230 V, 16 A. When using the Adamson PDS, you can link a maximum of four CS118 loudspeakers per circuit.
- When wiring an AC cable for use with this product in a single-line system, use the wiring scheme described below in Table 2 and illustrated with Fig. 1. All work must be completed by a qualified technician.

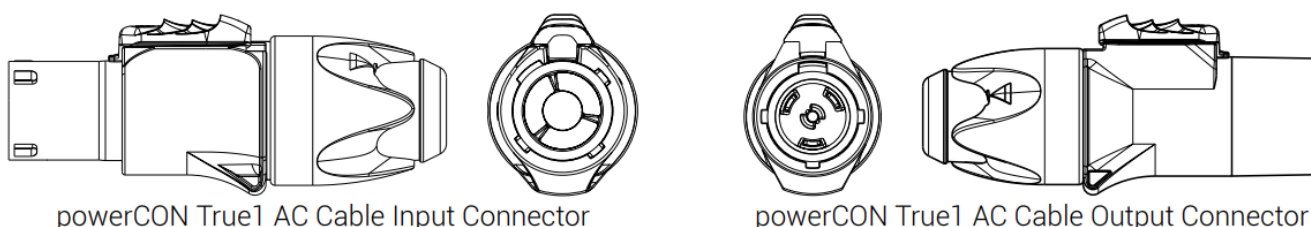




Fig. 1

Hot or Live (L)	Brown
Neutral (N)	Blue
Protective Earth / Ground (E or PE)	Green and Yellow

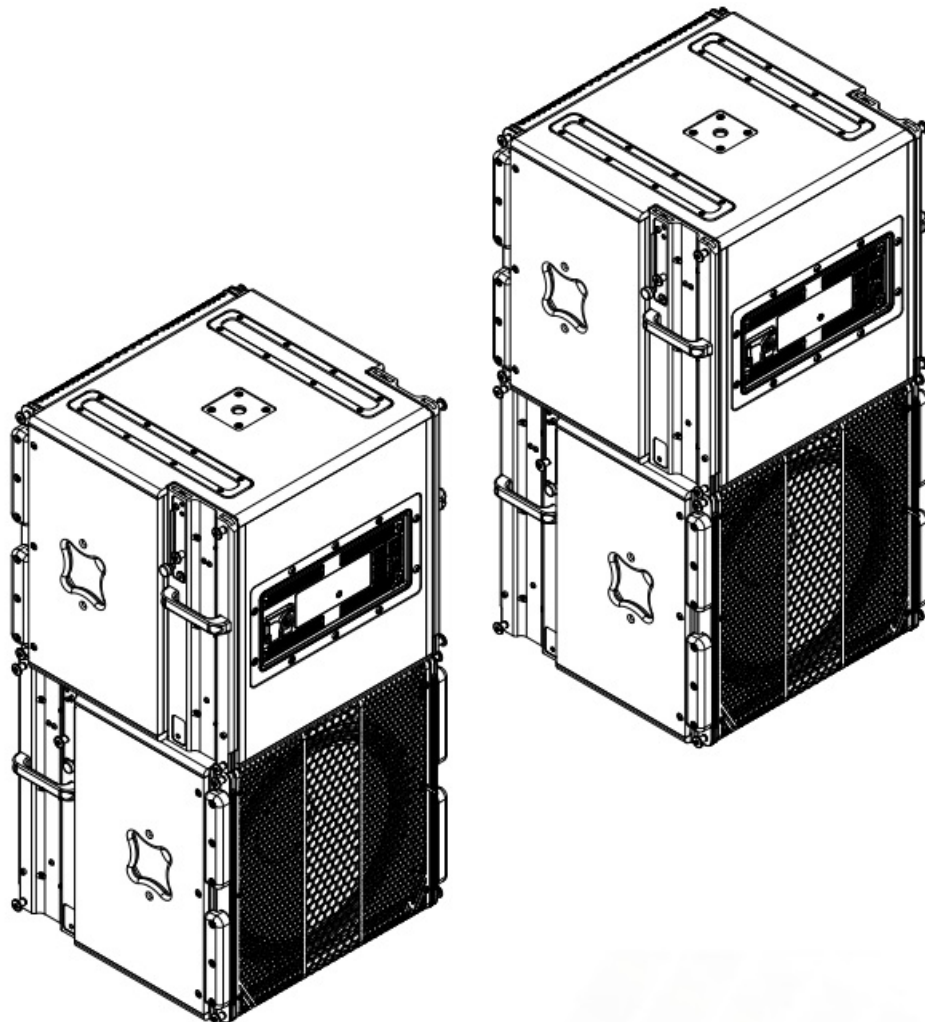
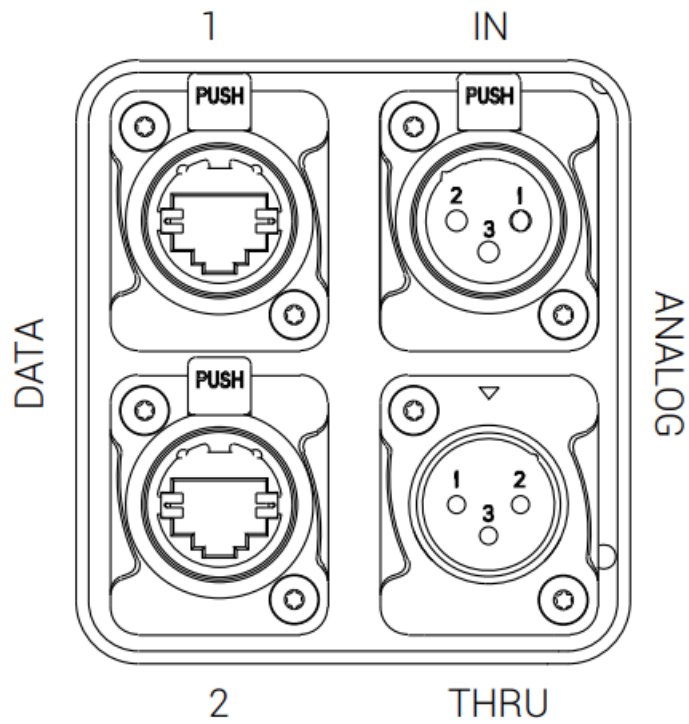
**Table 2**



## Connectivity

- On-board Digital Signal Processing (DSP) is accessed via two data ports on the rear of the cabinet. These ports are used to stream AVB audio as well as transmit AES70 control data. All CS-Series loudspeakers are configured to receive two separate LAN signals on a single data link. The Network Distribution System (NDS, 905-0039) combines both LANs on one ethernet cable. This approach allows network redundancy as well as the ability to daisy-chain control data and digital audio between enclosures.
- When using the NDS, up to six CS-Series loudspeakers can be daisy-chained on a single network path. This quantity takes into account the Gateway, the NDS, the network switches, as well as each CS-Series loudspeaker to determine the amount of latency created by each individual hop, and ensuring the total latency remains within pre-determined parameters. The audio signal latency between each CS118 is 0.26 ms, jump to jump.
- All CS-Series cabinets are Milan-certified. With Milan, every device will automatically connect with any other Milan device using a variety of standard formats and definitions in the protocol.
- Each CS-Series loudspeaker is equipped with balanced XLR input and output connectors for line level analog audio signals.
- The CS118's driver is powered by a proprietary single channel Class-D amplifier capable of providing up to 3000 W of power.



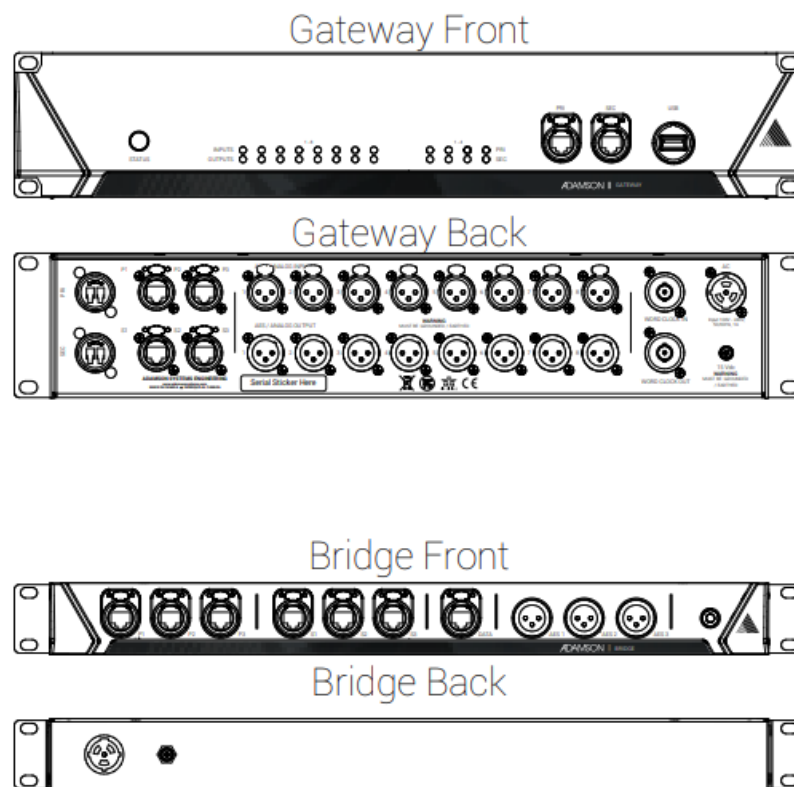


## Rack Mounted Systems

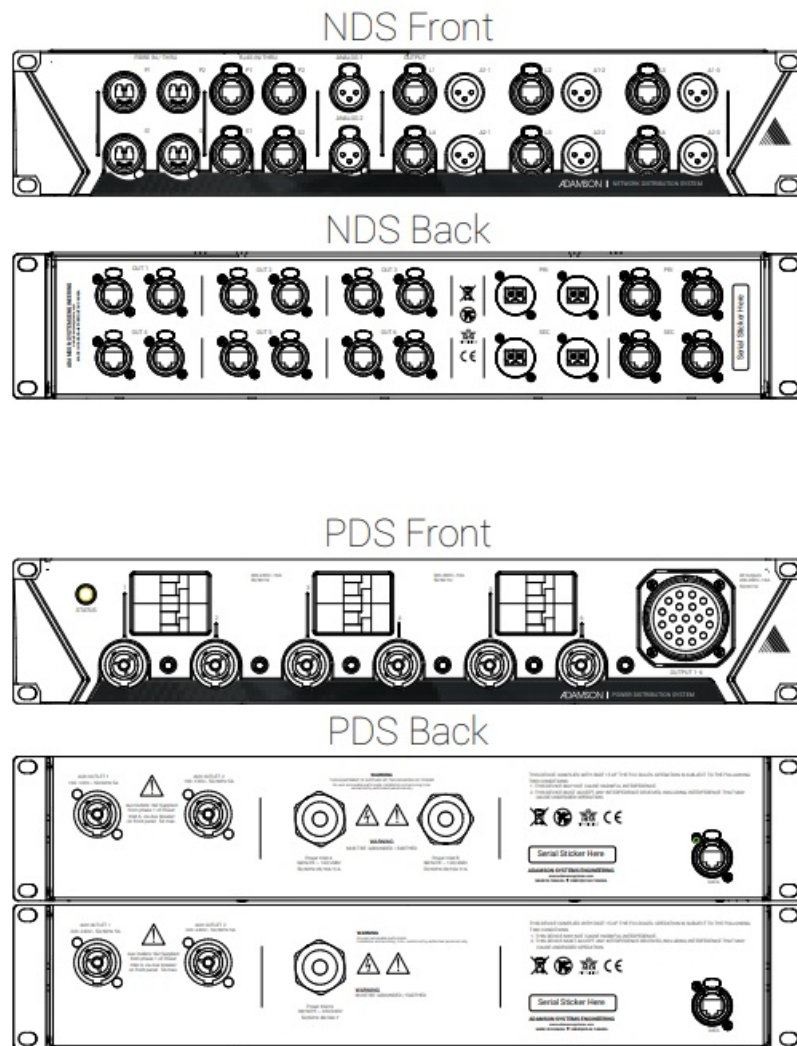
- **Gateway (913-0003)** – The AVB on-ramp into the CS-Series ecosystem, the Gateway is a 16×16 matrix with 16 channels of user accessible DSP, containing dual-LAN, Milan AVB, AES/EBU, and analog connections. The Gateway converts AVB to and from analog and AES/EBU. An extremely powerful tool, the Gateway's network connectivity also allows for integrating other systems link broadcast feeds or matrixing multiple consoles in a

festival environment.

- **Bridge (913-0005)** – The Bridge is designed to replace existing network infrastructure in Adamson's E-Rack, allowing users to seamlessly integrate CS-Series loudspeakers into their existing inventories by converting dual-LAN, Milan AVB signal to AES/EBU for networking to existing Lab Gruppen amplifiers, while also offering six channels of DSP per unit.



- **Network Distribution System NDS (905-0039)** – The NDS is a network and analog patch bay that allows users to send redundant audio and control to CS-Series loudspeakers on a single network cable. The NDS combines LAN A and B network ports using two external AVB enabled switches.
- **Power Distribution System PDS (914-0002/914-0003)** – Available in 110 V (2x L21-30) and 230 V (32 A CEE) models, the PDS is designed to ensure that all components of the CS-Series ecosystem receive ample power. The PDS provides six circuits of 208 V or 230 V, 16 A offered via powerCON or Socapex outputs. An integrated data port allows users to monitor consumption data via ArrayIntelligence, both per power output and for overall draw.



## ArrayIntelligence

- **ArrayIntelligence** is a single software platform which allows the user to design and deploy a system, all from a single interface. From room design and simulation to connectivity and diagnostics, this unified platform reduces the need for additional software in order to properly deploy and deliver complete audio systems.
- **Blueprint** – Design your space using basic geometric shapes. Users can create any environment from a basic field, to a complex structure. When arena or stadium design is needed, multi-point Extrude and Revolve surfaces will easily allow you to set multiple inclines and elevated surfaces with a few keystrokes.



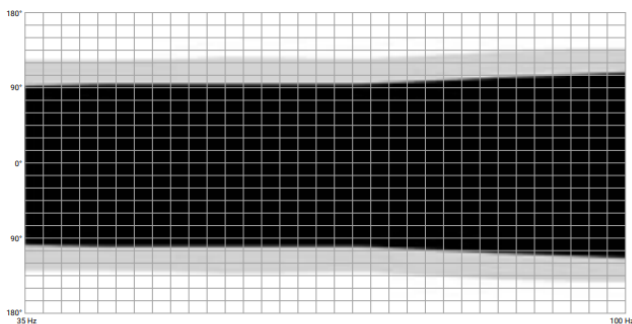
- **Simulation** – After placing virtual cabinets in your room design, different aspects of their behaviour may be simulated, including 2D and 3D SPL, delta time of two cabinets, and speaker directivity.

- **Patch** – Assign virtual loudspeakers to their real-world counterparts quickly and effectively. Determine control zoning and AVB routing to ensure complete control over your environment.
- **Optimization** – With DSP in every cabinet, you have more control than ever over your system. Adamson's proprietary Optimization algorithm gives you incredible control over the listening experience, taking advantage of each line array element's on-board DSP to deliver accurate, uniform sound.
- **Control** – Gain, Muting, Delay, EQ, and Grouping are all controlled on a single page, allowing you to build and fine-tune your system with as little friction as possible. Implement your changes on a per-box level or use control zones to shape the performance of multiple cabinet groupings.
- **Metering** – Access input and output metering for all online devices on one page, so you can reliably determine headroom for your entire system.
- **Diagnose** – Monitor your system with a comprehensive set of system insight tools including spectral impedance and displacement, inclinometer monitoring, clip and limiter tracking, power consumption, and AVB stream statistics.

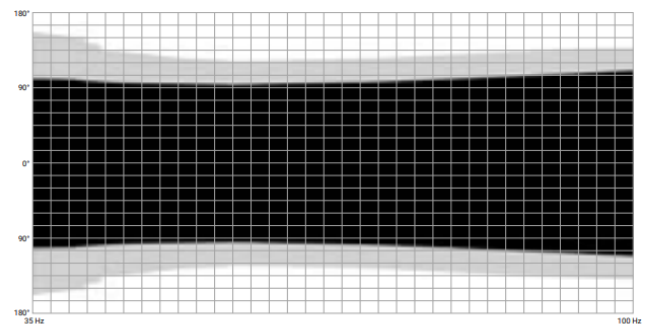
For more information, see the ArrayIntelligence User Manual.

## Technical Specifications

Adamson's ArrayIntelligence software contains presets for a variety of CS118 deployments. The dispersion patterns for two commonly used presets are shown here:

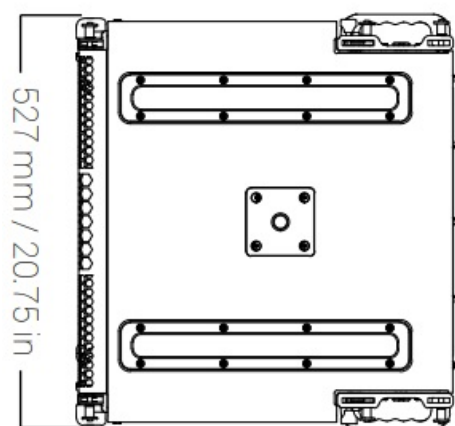
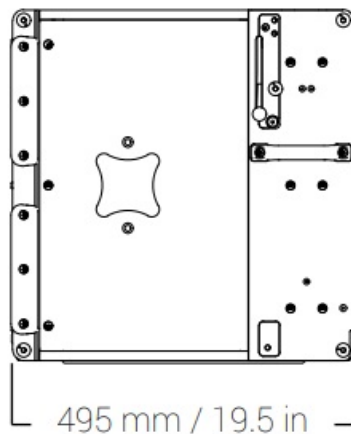
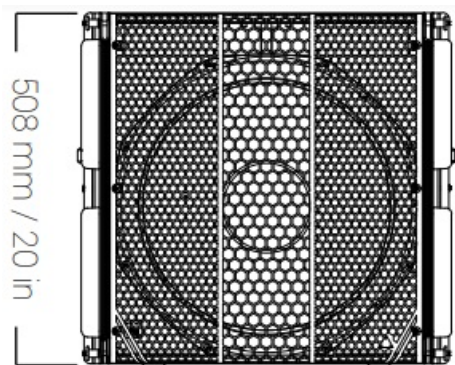


CS118 FB (Front-Back)

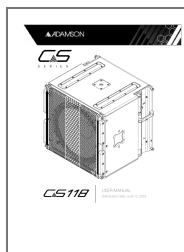


CS118 FBF (Front-Back-Front)

Frequency Range (6dB)	35 Hz – 100 Hz
Maximum Peak SPL**	133 dB
Components LF	ND18-S 18" Kevlar Neodymium Driver
Rigging	Slidelock Rigging System Built-in M20 Thread
Connections	Power: powerCON TRUE1 Network: 2x etherCON Analog: 2x XLR
Height (mm / in)	508 / 20
Width (mm / in)	527 / 20.75
Depth (mm / in)	495 / 19.5
Weight (kg / lbs)	34 / 75
Amplification	Single channel Class-D, 3000 W total output
Input Voltage	100 – 240 V
Current Draw at 230 V	0.45 A rms idle, 1.35 A rms long-term, 11 A max peak
Processing	Onboard / Proprietary



## Documents / Resources



[ADAMSON CS Series Upgrade Amplifier](#) [pdf] User Manual  
910-0004, 913-0003, 913-0005, CS Series, CS Series Upgrade Amplifier, Upgrade Amplifier, Amplifier

## References

- [Adamson - Pro Audio & Live Sound Reinforcement](#)

- [!\[\]\(fd4127b9e2af37bd6ea0fa06afa8e6d8\_img.jpg\) CS118](#)
- [User Manual](#)

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