



GATEWAY

User Manual

Distribution Date:
June 7, 2022



User Manual

Copyright © 2022 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/en/support/downloads-directory>

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
913-0003 Gateway

Directive 2014/30/EU: Electromagnetic Compatibility Directive
913-0003 Gateway



Signed at Port Perry, ON. CA - July 23rd, 2021



Brock Adamson (President & CEO)

ADAMSON SYSTEMS ENGINEERING, Inc.
1401 Scugog Line 6, Port Perry
Ontario, Canada L9L 1B2
T: +1 905 982 0520, F: +1 905 982 0609
Email: info@adamsonsystems.com
Website: www.adamsonsystems.com



Contents

Symbols	3
Safety & Warnings	4
Product Overview	5
Front View	5
Rear View	5
Dimensions	5
Specifications	6
Simplified Block Diagram	7
Connecting the Gateway	7
AVB Milan Audio	7
Streaming AVB to the Gateway	9
Clear User Data	9

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/en/support/downloads-directory>

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.
- Only use attachments and/or accessories specified by Adamson Systems Engineering.
- A qualified technician must be present during the installation and use of this product. 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.
- Refer all servicing of this product to qualified service personnel.



This product contains potentially dangerous voltages.

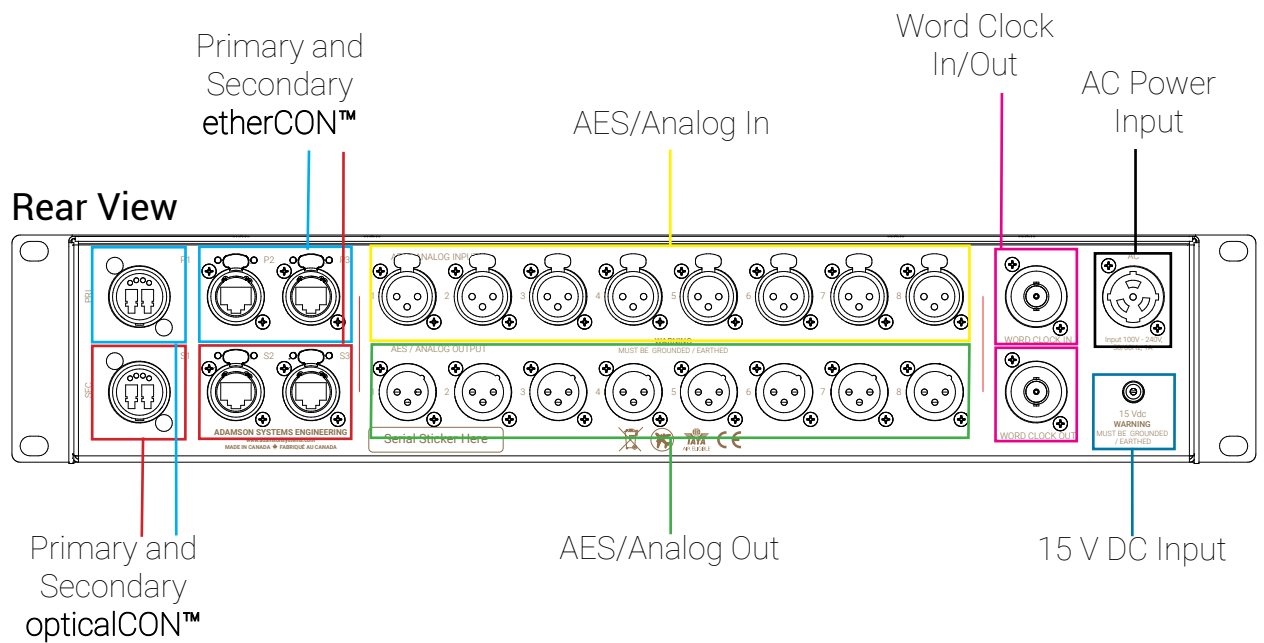
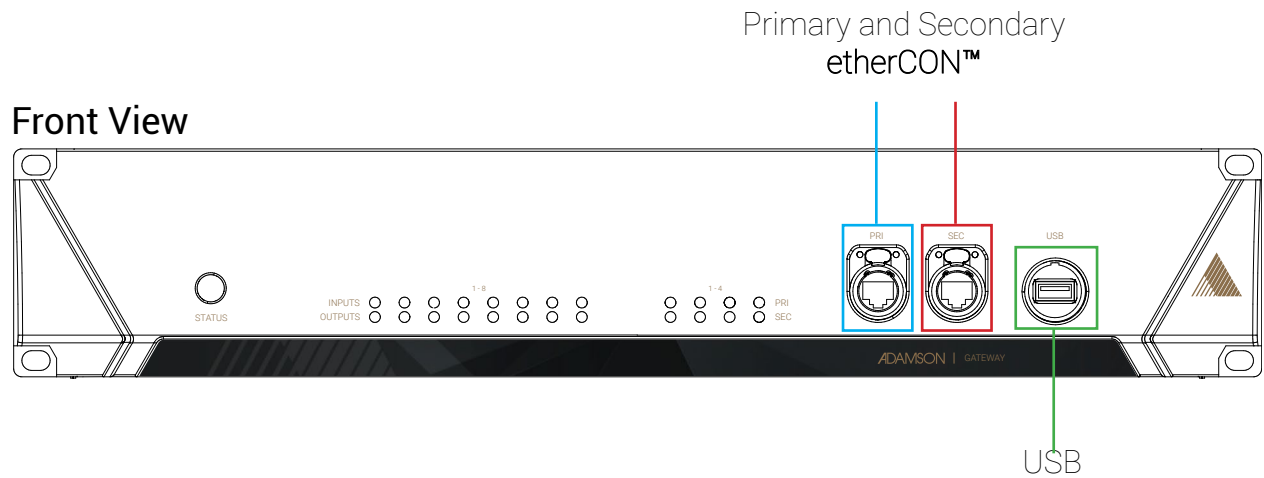
- Do not open the unit. There are no user serviceable parts inside this product. Failure to comply voids warranty.
- Do not use this product with a power cable that does not have a polarized, grounded plug. This product must be grounded/earthed.
- Do not install this product in wet or humid locations.
- Unplug this product from the power source during lightning storms.
- Be sure to use caution while moving this product to avoid injury.



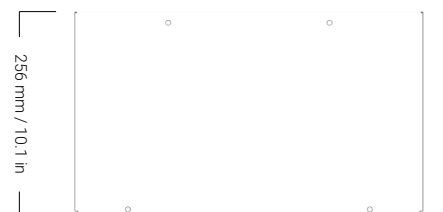
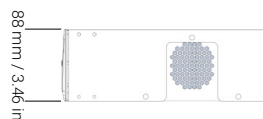
This product can get hot when in use for extended periods of time.

- 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.

Product Overview



Dimensions



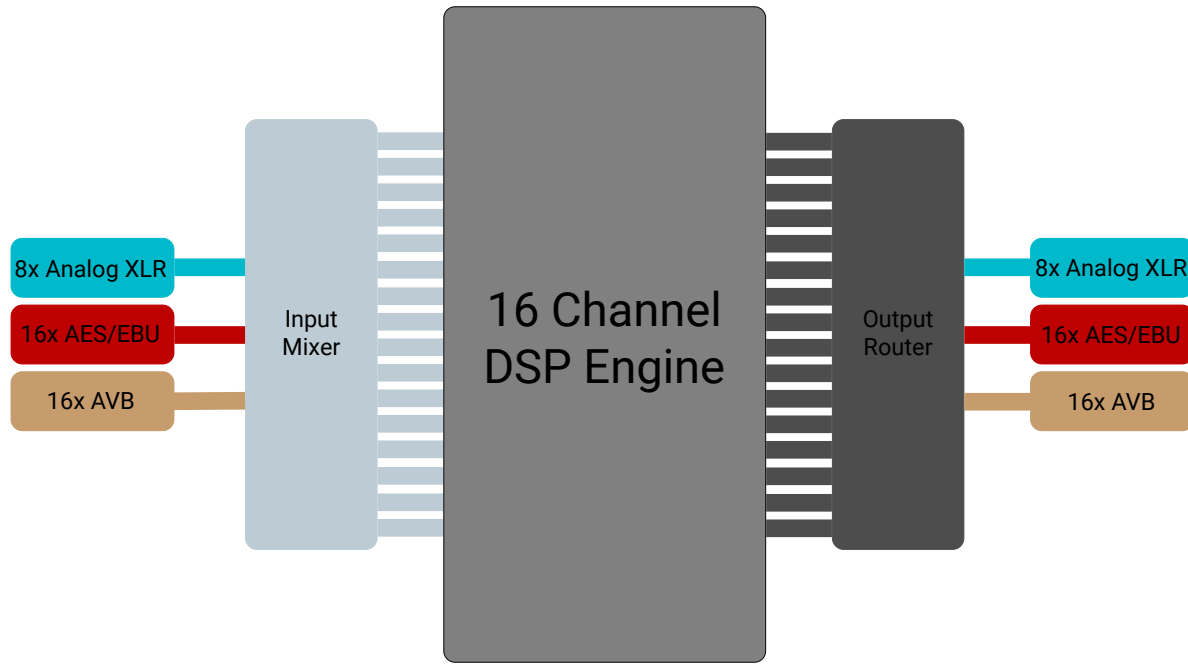
Product Overview

Specifications

- The Gateway acts as a Milan compliant Ethernet switch, providing 6x Gigabit etherCON™ and 2x Gigabit opticalCON™ connection points to handle incoming and outgoing network signals.
- The rear panel includes XLR connections for 16x AES/EBU digital inputs and outputs or 8x analog audio inputs and outputs. Each XLR can be switched independently to be used for analog or digital signal.
- The Gateway accepts or generates two AVB audio streams enabling digital data (audio, control, etc.) to be sent over the network to the Endpoints. It also digitizes the analog audio (if used) for the same purposes.
- Tree layers of redundancy can be freely defined from all available inputs.
- Each AES/EBU digital input contains an asynchronous sample rate converter allowing to connect up to eight different clock sources to the Gateway.
- 16x DSP channels are available on the Gateway, each offering mute, gain, polarity, delay and EQ.
- All incoming audio can be mixed into the 16x DSP channels as the Gateway functions as a 16 x 16 matrix mixer.
- The DSP outputs can be freely patched to all available outputs.
- The 15 V DC input is used for back-up power in the event of AC power loss. Use only the supplied 15 V DC power supply connected to a secondary power supply.
- Audio Input/Output LEDs on the front panel emit green when the associated rear-panel XLR connector is programmed for analog, blue when programmed for digital/AES.
- The front panel of the Gateway features Network activity LEDs for both Primary and Secondary connections.

Product Overview

Simplified Block Diagram



Connecting the Gateway

The Gateway and other Adamson devices can be connected to the AI software using standard ethernet cabling (minimum Cat5e). If the network is used for control only, standard gigabit switches can be used in addition to the switch-ports of the Gateway. A **maximum of eight** devices can be connected in a daisy-chain.

AVB Milan Audio

Full network connectivity, including AVB audio transport and control requires AVB enabled switches. Currently Luminex Gigacore Series and Extreme Networks X-Series switches with AVB license were tested to work with Adamson AVB systems. As the Gateway includes a Milan enabled switch it can be used for smaller AVB Milan setups without additional switches.

Adamson AVB components use a fixed presentation time of 2 ms (network latency). From the talker to the furthest listener in a network chain a maximum of 2 ms latency is allowed. If the total network latency exceeds 2 ms the audio connection will break. Each CS-Series cabinet and rack-mounted equipment includes switch fabric and introduces a fixed latency. An additional latency is introduced by the talker when creating the stream:

- CS-Series cabinets: 0.26 ms
- Adamson Gateway and Bridge: 0.14 ms
- Creation of Stream on an Adamson Gateway: 0.12 ms
- Gigabit AVB Switch: 0.12 ms

Below is an example calculation for a setup with an Adamson Gateway converting an analog signal to AVB, connected to an NDS using Luminex switches. Six CS7 are connected in daisy-chain to one of the cabinet outputs of the NDS:

Adamson Gateway (Creation of Stream + Switch)	0.26 ms
NDS (Gigabit AVB Switch)	0.12 ms
CS7	0.26 ms
CS7	0.26 ms
CS7	0.26 ms
CS7	0.26 ms
CS7	0.26 ms
CS7	<u>0.26 ms</u>
Total Latency:	1.94 ms

Adamson recommends daisy-chaining a maximum of six cabinets. This number may be reduced, depending on the network setup and resulting additional latency. The total latency can be inspected for each AVB patched endpoint on the diagnose page.

AVB audio connections can be patched in the AI software or in a third party application like [Hive](#).

Streaming AVB to the Gateway

To be able to stream AVB Milan audio into the Gateway a dedicated clock leader needs to be set, as any sending device may act as clock leader in this situation.

To synchronize the clock streams and patch audio connections Hive needs to be used.

- Select the clock following device in the discovered entities list in Hive.
- In the entity inspector go to "clock_domain".
- In the "dynamic info" select 3. Primary Clock Input stream 2. (or any other Clock or CRF stream that contains the synchronizing clock).
- In the "Stream Based Connection" view output stream 2 (the stream of the Gateway containing the clock stream) of the leader needs to be patched to input stream 2 of the follower. A valid stream can be identified as a green symbol (primary and secondary connected) with a black dot (valid word clock detected) in the middle.
- Once this is done change Hive to "Channel Based Connection" view and patch the desired audio channels. This is possible in both directions.

Clear User Data

The Gateway can be reset to firmware default settings, either through the AI software on the menu page (allows for multiple devices to be cleared at the same time), or on the diagnose page or by following the power cycle sequence below. Clear user data will clear all user settings (EQ, gain, delay) as well as control and AVB patch.

1. Power up the device. The fan will briefly run at full speed before going to idle.
2. When the status LED flashes in green once, disconnect power.
3. Power up the device. The fan will briefly run at full speed before going to idle.
4. When the status LED flashes in green twice, disconnect power.
5. Power up the device. The fan will briefly run at full speed before going to idle.
6. When the status LED flashes in green three times, disconnect power.
7. Power up the device. The fan will run at full speed for a longer period of time than the previous times, at this point the LED flashes orange.
8. The factory reset is successful when the status LED continuously turns green.