

THUNDER | CORE

AX Center

**Thunderbolt 3, DANTE, MADI and ADAT
Modular Analogue & Digital Audio
Interface**

Installation Guide



IMPORTANT SAFETY INSTRUCTIONS

READ AND KEEP THESE INSTRUCTIONS



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.



The garbage bin with a cross is intended to alert the user that the product may not be disposed of by regular garbage, but as electronic equipment.

WARNING – when using electric products, basic precautions should be followed, including the following:

Read all of the safety and installations instructions and explanation of graphic symbols before using the product.

1. Do not use this apparatus near water.
2. Clean only with dry cloth.
3. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
4. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
5. Do not defeat the safety purpose of the polarized or grounding-110 to 125V type plug according to UL 817 and CSA C22.2 no. 42. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
6. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
7. Only use attachments/accessories specified by the manufacturer.
8. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
9. Unplug this apparatus during lightning storms or when unused for long periods of time.
10. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

DANGER

Improper connection of the equipment-grounding can result in a risk of electric shock. Do not modify the plug provided with the product – if it will not fit the outlet have a proper outlet installed by a qualified electrician. Do not use an adapter which defeats the function of the equipment-grounding conductor. If you are in doubt as to whether the product is properly grounded, check with a qualified serviceman or electrician.

The product must be grounded. If it should malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This product is equipped with a power supply cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into an appropriate outlet which is properly installed and grounded in accordance with all local codes and ordinances.

WARNING

- This product, either alone or in combination with an amplifier and speakers or headphones, may be capable of producing sound levels that could cause permanent hearing loss. Do not operate at a high volume level or at a level that is uncomfortable. If you experience any hearing loss or ringing in the ears, you should consult an audiologist.
- The product should be located so that its location or position does not interfere with its proper ventilation.
- The power-supply cord of the product should be unplugged from the outlet when left unused for a long period of time. When unplugging the power supply, do not pull on the cord, but grasp it by the plug.
- Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.

SERVICE

- Do not attempt to service the product beyond that described in the user maintenance instructions. All other servicing should be referred to qualified service personnel.
- The product should be serviced by qualified service personnel when:
 1. The power supply cord or plug has been damaged, or
 2. Objects have fallen, or liquid has spilled into the product, or
 3. The product has been exposed to rain, or
 4. The product does not appear to be operating normally or exhibits a marked change in performance,
or
 5. The product has been dropped, or the enclosure damaged.

WARNING – Hazardous moving parts inside the unit. Keep fingers and other body parts away.

Contents

GENERAL DESCRIPTION.	5
BEFORE YOU START	6
Mechanical installation and low fan noise	6
Network configuration	6
CONTROL SOFTWARE INSTALLATION	6
Computer recommendation	6
Program installation	6
INSTALLATION OF DAD THUNDERBOLT 3 DRIVER FOR MACOS	9
INSTALLATION OF DAD THUNDERBOLT 3 DRIVER ON WINDOWS PC	10
OPERATION	11
REAR PANEL CONNECTIONS.	12
Digital I/O and Network Connections	13
Analogue Output Connections	14
Analogue I/O Connections on optional DAD I/O Cards	15
Reconfig button	16
SPECIFICATIONS	17
Audio Specifications	17
Electrical Specifications:	19
Mechanical specifications	19
Environmental specifications.	19

© 2023 All rights reserved. DAD - Digital Audio Denmark is a registered Trademark of NTP Technology A/S, who is the legal owner of the brand.

Product features and specifications are subject to change without notice.

NTP Technology A/S shall not be liable for technical or editorial errors contained herein, nor for incidental or consequential damages resulting from the furnishing, performance or use of this manual.

Company Address: NTP Technology A/S, Nybrovej 99, DK-2820 Gentofte, Denmark
E-mail: info@digitalaudio.dk, Web: www.digitalaudio.dk.

All trademarks are recognized as the property of their respective owners.

Doc No. AXCNTR-8001-A-4 rev.2

General description.

Congratulations, and thank you for choosing the Thunder|Core-enabled AX Center Modular Analogue and Digital Audio Interface. AX Center is an extremely capable multi-channel audio converter and digital audio interface, which is ideal in your sound studio as a pristine and versatile audio center piece.

AX Center has a native 2x8 channel analogue section providing two selectable Mic/Instrument inputs, two stereo headphone outputs and two set of stereo monitor outputs. The DAD routing engine provides a 1024x1024 matrix where all inputs and outputs can be patched in any combination. In addition, a 512x64 channel summing processor and a 1024 filter SPQ equalizer is also available.

AX Center supports sample rates from 44.1 to 348 kHz and a resolution of 32-bit floating point. It has a Thunderbolt 3 interface w/ 256 bidirectional channels for connection to a computer and can also provide 15W power on each port for powering peripheral devices. Digital I/O is provided for 256 channels of Dante™, 64 channels of MADI, 16 channels of ADAT and 4 channels of S/PDIF.

As an option a 128 channel mini MADI I/O module can be installed, as well as up to two DAD I/O cards, providing additional interfacing for MADI, Dante with onboard SRC, 3G SDI, AES/EBU, and pristine 8 channel analogue line and microphone input and 8 channel analogue line output depending on the cards installed



Note. The AX Center is operated via the DADman control software. The control is handled via the Thunderbolt connection or Ethernet if Thunderbolt is not connected to the unit.

Below is a diagram of the overall functionality

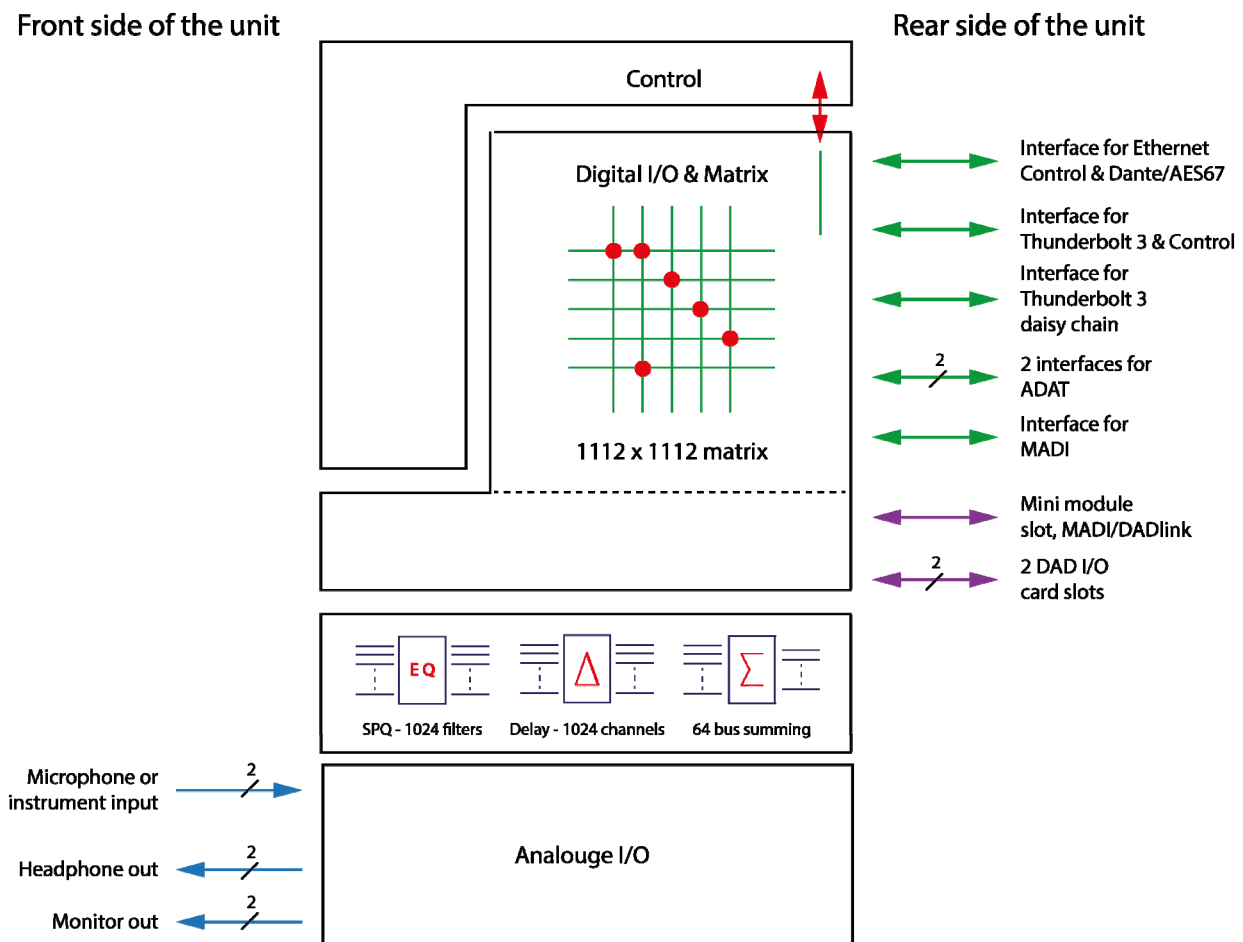


Figure 1, Block diagram of the unit

Before you start

Place your AX Center on a hard and dry surface or mount it into a 19" rack and leave plenty of room for ventilation.

In order to meet the EMC requirements of directives EN 55032 and FCC 47 CFR part 15, and in order to obtain the highest performance of the AX Center, you must use good quality and correctly shielded cables for all external connections when installing AX Center. For the power connection, a normal unshielded power cable with a proper protective earth conductor can be used.

Make sure that your sound system is at a safe volume level.

Mechanical installation and low fan noise

AX Center is fitted with two very quiet fans to ensure optimum operating temperature. Under normal operating conditions and correct installation, the fans are not audible in the studio environment. The fans are temperature-controlled, i.e. the rotation speed, and thereby noise, is dependent of the temperature inside AX Center.

The optimal air flow is through the ventilation openings in the front panel to the rear of the unit. When the unit is installed, considerations have to be made to ensure proper air circulation for the air leaving the rear of the unit. The speed of the low noise fan will be increased automatically to keep the internal temperature low if there is insufficient airflow. If the internal temperature exceeds 60°C / 140°F a temperature alarm will appear in the DADman software and is also indicated by the red error LED on the front panel.

Network configuration

AX Center is equipped with two GigaBit Ethernet connectors, and internally it has an Ethernet switch, a controller part and a part for the IP Audio option powered by Dante™. The network connectors can operate as two "parallel" connectors for the internal switch, or as dual connectors for redundant IP audio operation. In this case, controlling the unit is done via Net port 1.

AX Center has two to three different IP addresses: One for the unit control via DADman and one or two for the IP audio in single or redundant mode respectively. The network configuration is managed separately for the controlling interface and the IP audio interface and can have a different configuration from the controlling interface. The controlling interface is used for controlling AX Center from DADman and the IP audio interface is used for interfacing Dante IP audio on a network.

The factory default setting of the IP address of the controller port of the AX Center is 10.0.7.20. This IP address can be changed manually via DADman, or it can be set to be automatically assigned by a DHCP server/router on the network.

Control software installation



Computer recommendation

The DADman control program operates on any Windows or MacOS based computer and is frequently maintained for compliance with the latest OS versions.

Program installation

This section will take you through the installation procedure for the DADman computer control program.

AX Center is controlled from a PC or MAC via the Thunderbolt 3 connection or by a network connection. The PC/MAC and AX Center units must be connected on the same subnet.



For control via Thunderbolt 3, the DAD Thunderbolt 3 driver has to be installed.

The DADman remote control program installation

1. Install the DADman program by downloading the application from the DAD support website: www.digitalaudiosupport.com. Follow the instructions of the install program. Please note that there are two different program downloads; One for Windows and one for MacOS.
2. Create a shortcut for the DADman program on the desktop.
3. Double-click on the DADman icon and launch the DADman application.

Connect your AX Center to DADman

AX Center can be controlled via Thunderbolt or Ethernet. At the first start-up, the the DADman window may be blank as no units are yet connected. In the top menu bar, select Tools/Device List and the window will show a list of the discovered units. If the unit is connected via Thunderbolt this will appear in the list. If there is no Thunderbolt connection, the units can be connected via Ethernet. If a unit on the Ethernet does not appear in the list, apply 'Refresh' when using a Windows PC in order to discover the AX Center over Ethernet. On MacOS, 'Action' is used to select 'Refresh IP list' The Device List window is shown in figure 1. A unit will always be discovered but depending on your network configuration it will have to be set to DHCP or Manual IP addressing.

In order to attach the unit to DADman the connect box has to be checked.

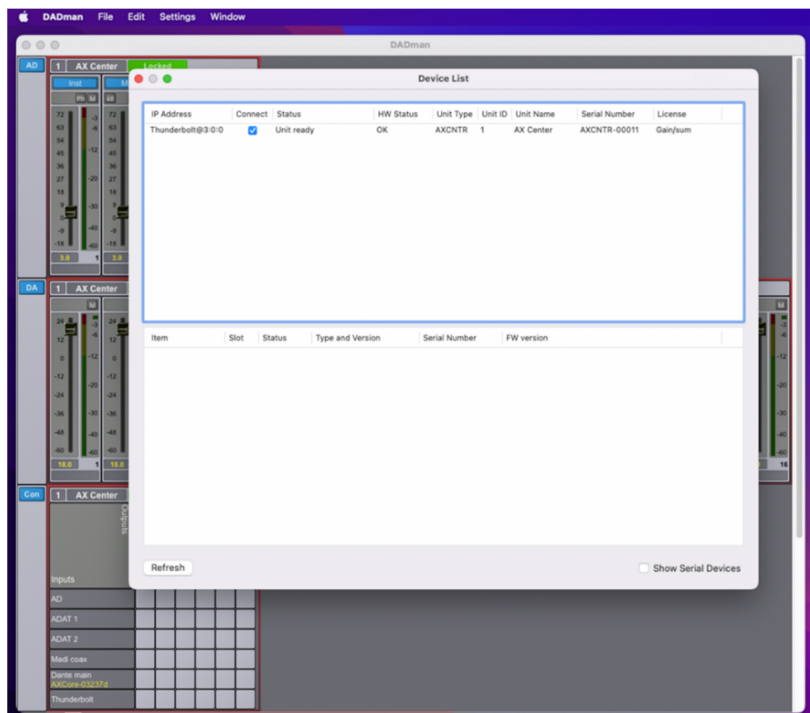


Figure 2, DADman Device list



Note. If the DAD Thunder|Core Thunderbolt driver is installed on the computer where DADman is running, the software will automatically connect via Thunderbold to AX Center and not via Ethernet.

Assigning the IP address for the computer and the AX Center

When the DADman program is installed, you are able to finalise the network configuration of AX Center. You have the option of using fixed IP addresses or IP addresses assigned via DHCP. DHCP can be auto assigned via the Ethernet by itself or via an external DHCP server providing IP address for all units on your network.

Fixed IP address

You must have a preferred range of IP addresses, and a network mask for the computer network and the connected AX Center units.

1. Configure your computer IP address and network mask via the computer control panel to e.g. 10.0.7.25 | 255.255.255.0

Select AX Center in the DADman Settings/ Device List menu by right clicking on the unit line and select 'Network settings' when using a Windows PC. On MacOS you use the 'Action' button to select 'Network Settings'.

In DADman, configure each AX Center in turn with a unique IP address and the preferred network mask e.g. 10.0.7.21 | 255.255.255.0. In this window you can also configure the IP audio network settings.

When you are done you can connect more than one AX Center to the network, and they will appear in the DADman Device List.

Automatic IP address

You must have a network with a DHCP server which will allocate the IP addresses, or the IP address will self-assigned.

1. Configure your computer IP address via the computer control panel to DHCP.

Select the AX Center in the DADman Tools / Device List menu by right clicking on the unit line and select 'Network settings'.

If you have more AX Center units connected, they will all be configured with IP address via DCHP.

2. Once the DHCP system has allocated an IP address to the unit it will appear in the DADman Device List with the name AXCNTR.

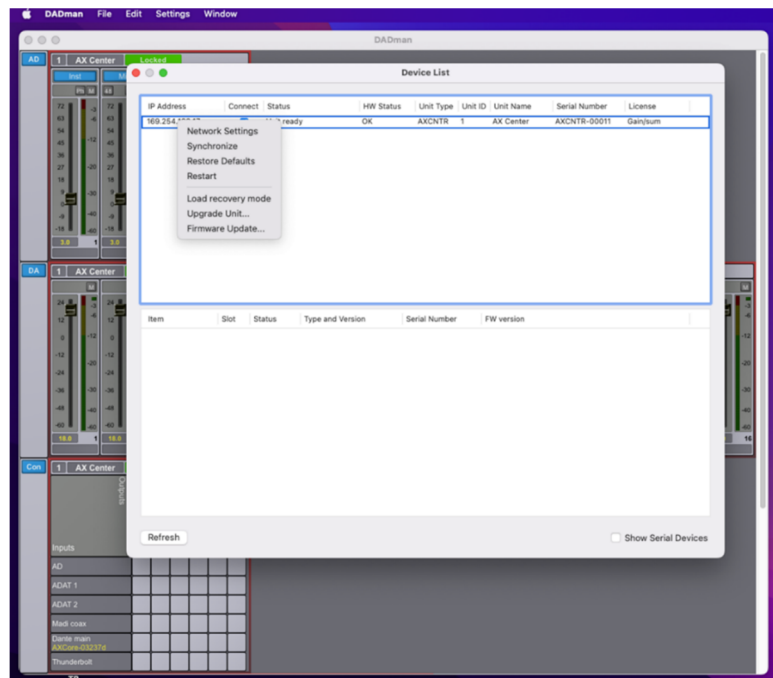


Figure 3, DADman Device list w. settings



Note. In order to have proper function of AX Center the routing and sample rate configuration has to be set correctly via DADman.

Installation of DAD Thunderbolt 3 driver for MacOS



The driver software has to be installed completely before it can work properly.

When you install the driver, it is of no importance whether you have units or other peripheral devices connected to the Thunderbolt 3 / USB-C port on the computer. In the process described below there are no devices connected before installation.

The installation sequence:

1. Copy the driver .pkg file to the computer desktop and double click to start the installation.
2. Follow the installation instructions. Click *Next* and then *Install*.
3. Enter Administrator password and click *Install*.
4. If the driver has not been installed before on the computer, you get the message "System extension blocked". Click on *Open Security Preferences*.
5. In the "Security and Privacy" window you have to click on the lock symbol in the bottom left corner and unlock settings and click *Allow*.
6. Restart the Computer and open the Thunderbolt 3 driver application and connect the DAD Thunder|Core interface to the USB-C/Thunderbolt 3 port on the Computer. Make sure that you are using a high-speed (20Gbps) Thunderbolt 3 USB-C cable.

For mor information how to install and configure the Thunderbolt 3 driver please refer to the Thunder|Core installation guide on www.digitalaudiosupport.com.

Once the driver is installed the device can be attached to via the setup window.

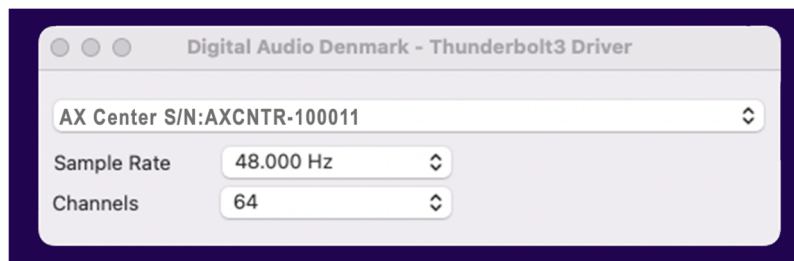


Figure 4, DADDriver setup window for MacOS

Installation of DAD Thunderbolt 3 driver on Windows PC

The driver software has to be installed completely in order to function properly.

When you install the driver, it is of no importance whether you have units or other peripheral devices connected to the Thunderbolt 3 / USB-C port on the computer. In the process described below there are no devices connected before installation.

The installation sequence is the following:

1. Copy the driver .msi windows installer file to the computer desktop and double click in order to start installation.
2. Follow the installation instructions. Click Next and then Install.
3. Once the driver is installed, open your audio application and choose the Digital Audio Denmark ASIO driver.
4. In order to configure the ASIO driver, open the ASIO dialogue window in the audio configuration section of your audio application.
5. Configuration can be done on the parameters shown in figure 6.

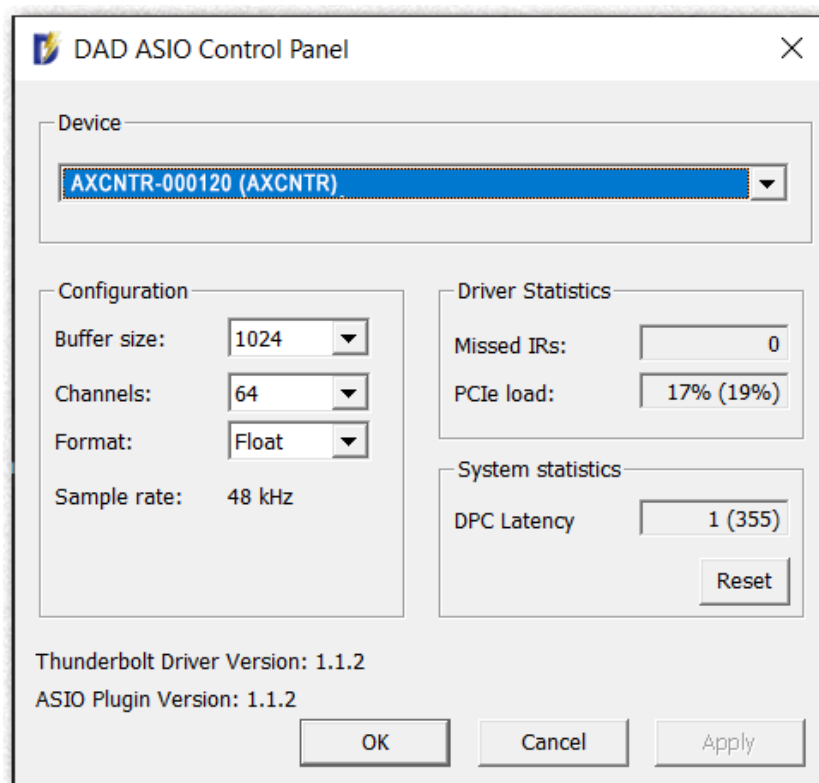


Figure 5, ASIO driver configuration window.



Note. The DAD ASIO control panel is accessible as a stand-alone configuration window or if your DAW audio application supports this, from inside the audio configuration dialogue.

Operation

AX Center is controlled from a Mac or Windows computer via the Thunderbolt connection or the Ethernet port on the rear panel and configured by the DADman software running on the computer. On the front panel, you can monitor some of the primary settings.

In the middle of the unit there are two Combo input XLR / ¼" jack connectors. The mode of each channel of the two-channel input stage can be selected as the instrument input or the microphone input via DADman. The selected mode is shown on the LED indicators next to the two connectors.

On the right side of the unit, there are two ¼" stereo jack connectors for headphones. The headphone level and configuration is managed via the DADman software where the outputs can be attached as headphone monitor outputs managed by the Pro|Mon monitor profile in the DADman software, enabling very flexible monitoring configurations and well as integration to the DAD MOM monitor operation module and Avid Eucon™ for control from Avid Eucon-enabled devices.

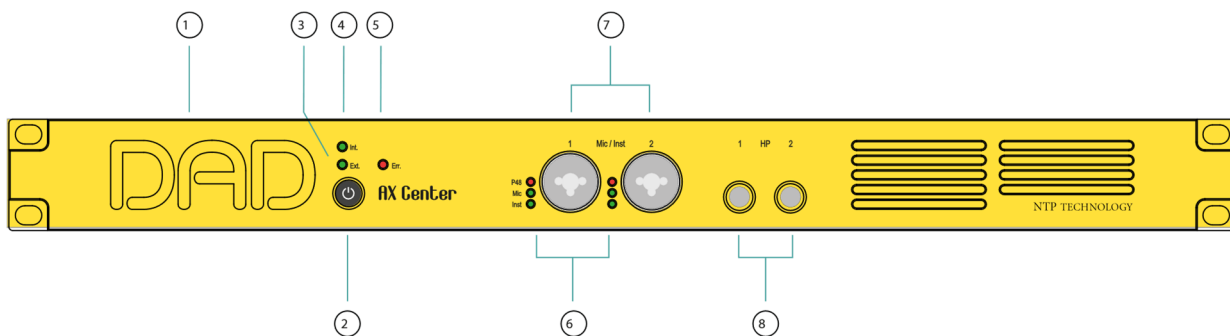


Figure 6, Front panel layout

Front panel layout

1. DAD Logo. Indicates that the unit is turned on and flashes while it is in standby (off)
2. On/Standby button. Note that the unit automatically returns to the latest power state (on or standby) if it is power cycled via the mains power.
3. External sync source two-color indicator. Green LED shows that external sync source is OK, red LED indicates that there is an insufficient sync signal.
4. Internal sync indicator. Green LED shows internal or external sync source.
5. Error indicator: Red LED. Indication is related to hardware performance and can be triggered by temperature overload, fan error, DAD I/O card failure or general internal boot error. A more specific error indication will be visible in DADman.
6. Input mode for Mic/Inst connectors. Red LED shows Phantom Power and two Green LEDs show if microphone or instrument input mode is selected
7. Two mono Combo XLR and ¼" jack connectors for two channels of microphone or instrument input. Microphone signals is connected balanced via the XLR connector and instrument input is connected single ended via the jack input
8. Two stereo ¼" jack connectors for stereo headphone output

Rear panel connections.

Below is the layout of the rear panel of the AX Center,

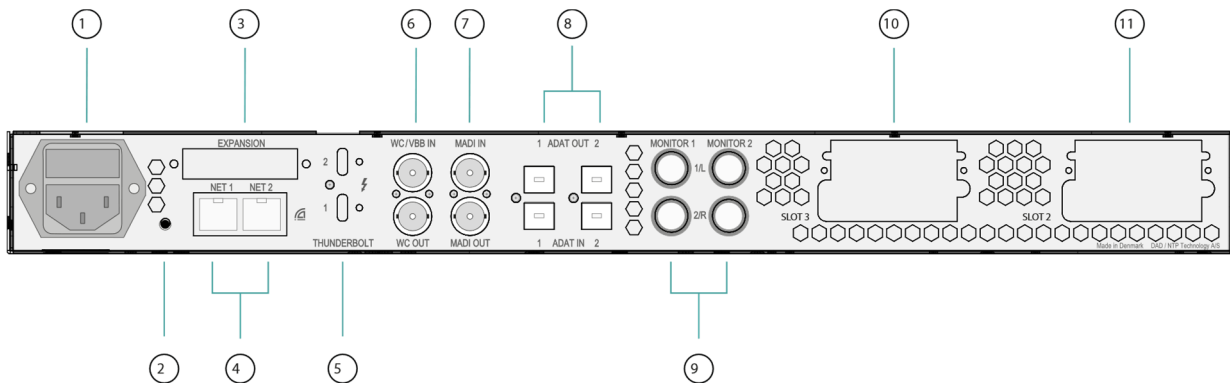
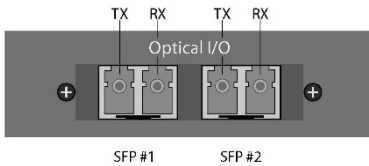


Figure 7, Rear panel layout

Rear panel layout

1. Mains power connector.
2. "Reconfig" button. Please refer to the section below for further details.
3. Expansion slot for optional dual MADI I/O mini module via optical or coaxial SFP modules. The module also supports our DADlink format.
4. RJ45 Ethernet connectors. Two ports for Control and Dante AoIP. Connectors can be set in switched or redundant mode for Dante. In redundant mode the control network has to be connected to port 1.
5. Thunderbolt 3 interface for connection to a computer and for an expansion unit or other peripheral interfacing.
6. Word Clock or Video Black Burst synchronization input (configurable), BNC connector, and Word Clock output.
7. MADI I/O BNC connectors.
8. Two set of TOSLINK optical ADAT input and output connectors. Input can also be set to S/PDIF.
9. Two set of 1/4 inch jack balanced outputs for left and right Monitor 1 and Monitor 2 outputs.
10. Slot 3 for Optional multi-format DAD I/O Cards (Slot 1 is the internal analogue card).
11. Slot 2 for Optional multi-format DAD I/O Cards (Slot 1 is the internal analogue card).

Digital I/O and Network Connections



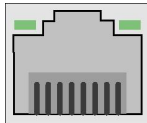
Dual MADI SFP I/O mini-module

The Dual SFP module can operate as a MADI interface or as DADlink.

The Dual SFP module, can be installed with one or two “Small form-factor pluggable” (SFP) transceiver modules supporting Optical LC connection or mini coax HD-BNC electrical connection.

The mini coax HD-BNC electrical SFP connection works only with MADI. The optical SFP modules are standard types, which can support single mode or multimode optical fibres of various types as well as different wavelengths. For MADI typically 1300nm types are used. Each SFP module has a receiver and a transmitter part and can be used for MADI audio I/O or DADlink or a combination. When using DADlink optical SFP modules has to be Gigabit/1000base types. For MADI optical SFP modules can be both 1000base and 100base types.

The right part of the SFP connector is the receiver and the left part is the transmitter.



Dual Ethernet, RJ45 connector, Gigabit

Pin 1.	BI_DA+
Pin 2.	BI_DA-
Pin 3.	BI_DB+
Pin 4.	BI_DC+
Pin 5.	BI_DC-
Pin 6.	BI_DB-
Pin 7.	BI_DD+
Pin 8.	BI_DD-



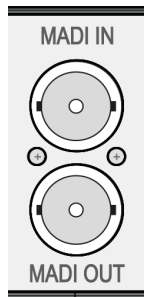
Thunderbolt 3 connectors

Two USB-C type connectors for connecting via Thunderbolt 3. The two connectors have the same functionality. One can be connected to the computer and the other to an additional audio interface for expansion or to a standard USB-C peripheral device providing non-audio functionality.

Two chassis holes enables the use of ThunderLok 3L Thunderbolt Connector Retention clips.

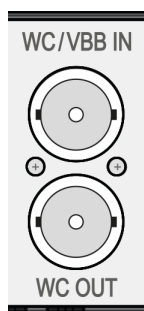
Note that a high-speed Thunderbolt 3 cable has to be used for interconnection. The cable should be the following type:

Thunderbolt 3 20 Gbps or 40 Gbps USB-C cable and preferably Intel Certified.



MADI connectors

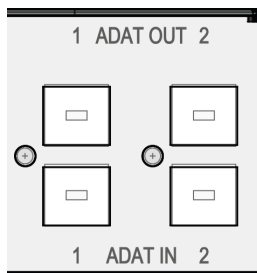
Coaxial BNC connector for input and output of MADI signals via 75Ohm Coax cables.



Sync connectors

Coaxial BNC connector for Clock input synchronization, and Word Clock output

The input clock format can be Word Clock or Video Black and Burst (VBB)

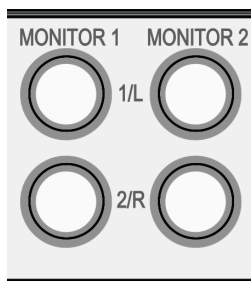


ADAT Connectors

Two TOSLINK Inputs and two outputs. Input and output connectors support ADAT.

S/PDIF is supported on input only.

Analogue Output Connections

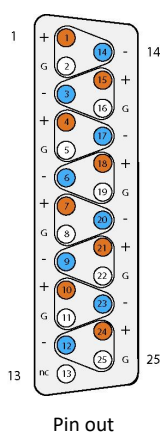
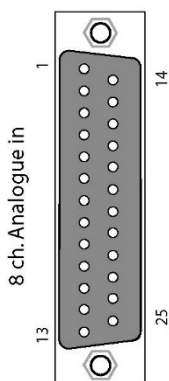
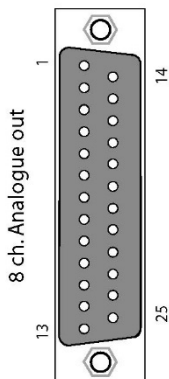


Analogue output on Jack Connectors.

Two sets of ¼" jack connectors for analogue stereo outputs are available. The connections are balanced and with the following pinning:

Pin 1 (tip).	Signal+
Pin 2 (ring).	Signal-
Pin 3 (body)	Signal GND

Analogue I/O Connections on optional DAD I/O Cards



Analogue I/O 25 pole female D-sub connectors.

These are interfaced via 25 pole D-sub connectors on the card, which is accessible from the rear panel of the AX Center chassis.

This connector type is used both for the analogue Line input card and the analogue Line output.

Below, the connection for the 25 pole D-sub connector is listed. The pinning is in accordance with the proprietary standard by the company **Tascam**. The pinning is for each group of 8 channels.

Connections channel 1-8

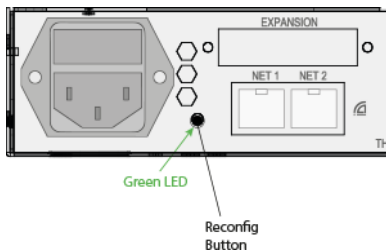
Pin no	Func.	Pin no	Func.
1	AIN/OUT 8 +	14	AIN/OUT 8 -
2	GND	15	A/IN/OUT 7 +
3	AIN/OUT 7 -	16	GND
4	AIN/OUT 6 +	17	AIN/OUT 6 -
5	GND	18	AIN/OUT 5 +
6	AIN/OUT 5 -	19	GND
7	AIN/OUT 4 +	20	AIN/OUT 4 -
8	GND	21	AIN/OUT 3 +
9	AIN/OUT 3 -	22	GND
10	AIN/OUT 2 +	23	AIN/OUT 2 -
11	GND	24	AIN/OUT 1 +
12	AIN/OUT 1 -	25	GND
13	N.C.		

Reconfig button

The “Reconfig” button on the back of the AX Center should not be used during normal installation. It is generally intended as an ultimate recovery function in case something goes wrong during programming of IP addresses or a software upgrade, e.g. an unintended power loss. It allows the AX Center to start in various “basic” modes so it can be restored without having to be returned to the factory.

The “Reconfig” button is accessed via a hole in the rear panel using a pen or a similar pointed item. A green LED is visible through the hole. When the “Reconfig” button is activated, the LED will light up indicating the two reconfig modes of the AX CENTER.

Reconfig mode



“Reconfig”
pushed while the
unit is powering
up

Green LED
turns **ON**

The AX CENTER enters a recovery mode. In this mode only a basic boot software is operative in the unit, and new software can be downloaded via the DADman software. This mode is used if the software in the AX CENTER for some reason is not operative or broken.

The IP address settings of the unit are the last setting used in the unit.

““Reconfig”
short push
while the unit is in
reconfig mode
and Green LED is
on

Green LED
turns **OFF**

“

The AX CENTER remains in reconfig mode as described above.

The IP address settings of the unit is however set to DHCP. In case there is no DHCP server on the network, the AX CENTER will default to IP address 10.0.7.20 / 255.255.0.0 after approx. 2 minutes.

The selection of either of the two recovery modes are fixed after selection. The AX CENTER will start with a basic boot software and IP configuration. The AX CENTER will not be operational until a proper firmware has been downloaded via the DADman software and it has been restarted. By enabling recovery mode with default IP address and network configuration the unit can always be identified on a network via the default setup.



Note that the IP address referred to is the IP address of the controller/management interface of the unit. This is not the IP address of the IP audio interface if a such is installed. This IP address cannot be accessed in recovery or restore defaults mode.

Specifications

Audio Specifications

PCM sample rates	44,1, 48, 88.2, 96, 174.4, 192, 352,8, 384 kHz
Dynamic range (A)	> 124 dB
THD+N(A)	< -115 dB@-3dB FS
Cross talk	< -115 dB
Input Impedance	> 2 k Ohm (Mic), > 1M Ohm (Inst)
Microphone input gain range/accuracy	Adjustable from -21 to 100 dB, in steps of 0.1 dB,
Microphone equivalent input noise (A)	< -131dB
Microphone and instrument input	
Modulator resolution, format	32 x oversampling, 32 bit PCM
PCM (DXD) sample rates	44,1, 48, 88.2, 96, 174.4, 192, 352,8, 384 kHz
Dynamic range (A)	> 128 dB
THD+N(A)	< -115 dB@-3dB FS
Cross talk	< 115 dB
Max output level	Adjustable from -60 dBu to 24 dBu in steps of 0.1 dB
Analogue Monitor output	
Modulator resolution, format	32 x oversampling, 32 bit PCM
PCM (DXD) sample rates	44,1, 48, 88.2, 96, 174.4, 192, 352,8, 384 kHz
Dynamic range (A)	> 120 dB
THD+N(A)	< -100 dB@-3dB FS
Cross talk	< 110 dB
Headphone impedance	18 to 600 Ohm
Analogue Headphone output	
Digital I/O and Synchronisation	
Digital I/O formats/ Supported sample rate	Dante™ IP audio and ADAT/SMUX up to 192 kHz Thunderbolt 3 and MADI up to 384 kHz DADLink up to 384 kHz
Synchronisation	Word Clock, Video Blac Burst, Dante, ADAT and MADI
Network Interface	
Interfaces	1000BASE-T, RJ45 connector, 4-pair connection

Interfaces	<p>Thunderbolt 3 Interface</p> <p>2 x USB-C type connectors, supporting link functionality and 15w power on each port.</p>								
Interfaces	<p>DADLink Interface</p> <p>2 x SFP connectors for Gigabit SFP modules for multi-mode LC optical fibre connection.</p>								
Latency	<p>Below 1 microsecond latency between interconnected units.</p> <p>The overall latency is defined by the system delay set for all the units which is normally 7 samples. All I/O connections across units are 100% aligned in phase.</p>								
Channels and Sample rates per link	<table> <tr> <td>128 channels</td><td>@44.1 and 48 kHz</td></tr> <tr> <td>64 channels</td><td>@88.2 and 96 kHz</td></tr> <tr> <td>32 channels</td><td>@176.4 and 192 kHz</td></tr> <tr> <td>16 channels</td><td>@352.8 and 384 kHz</td></tr> </table> <p>Double channel count by using two fibre links.</p>	128 channels	@44.1 and 48 kHz	64 channels	@88.2 and 96 kHz	32 channels	@176.4 and 192 kHz	16 channels	@352.8 and 384 kHz
128 channels	@44.1 and 48 kHz								
64 channels	@88.2 and 96 kHz								
32 channels	@176.4 and 192 kHz								
16 channels	@352.8 and 384 kHz								

Electrical Specifications:

Power consumption	Digital section 15W DAD I/O Options max 30w Thunderbolt power max 2x15W Mains 80 VA max.
Input voltage	90 – 260 VAC 100 – 240 VAC Nominal, 47 - 63 Hz
Mains fuse, mounted in IEC connector	1 A, T1AH/250V
Safety compliance	IEC 62368-1:2020+A11 2020

Power supply cord must be min. light sheathed flexible cord according to IEC60227 (designation 60227 IEC 52) and include a protective earth conductor having a green-and-yellow insulation. Cross-sectional areas min. 3x0.75mm²

<u>Mains line plug type</u>	<u>Correct type acc. to standard</u>
110-125V	UL817 and CSA C22.2 no 42
220-230V	CEE 7 page VII, SR section 107-2-D1/IEC 83 page C4.
240V	BS 1363 of 1984.Specification for 13A fused plugs and switched and unswitched socket outlets.

Mechanical specifications

Chassis standard	19", 1 RU
Chassis depth, without connectors mounted	32 cm / 12.6"
Chassis body width	43.5 cm / 17.2"
Weight	2.8 kg / 6.5 lbs.

Environmental specifications.

Operating Temperature	0 – 45 °C / 32 - 113°F
Humidity	
EMC compliance	EN 55032:2015: emission EN 55103-2, part 2: Immunity EN 55035:2017: Immunity FCC 47 CFR part 15 (B): emission