AVN-DIO16

Dante® to 4 Analogue XLR Outputs
Handbook

SONIFEX

Manufacturers of Audio Products for AV,
Installed Sound, Broadcast Radio & Broadcast TV

Registration & Warranty

This handbook is for use with the following products:
AVN-DIO16 Dante® to 4 Analogue XLR Outputs
Artwork: AW11067 Stock Code: 30-392

Made in the UK by SONIFEX

Register Online for an Extended 2 Year Warranty

Product: _____

Serial No: _____

www.sonifex.co.uk/register

Product Warranty - 2 Year Extended

As standard, Sonifex products are supplied with a 1 year back to base warranty. In order to register the date of purchase and so that we can keep you informed of any product design improvements or modifications, it is important to complete the warranty registration online. Additionally, if you register the product on the Sonifex website, you can increase your product warranty to 2 years. Go to the Sonifex website at: www.sonifex.co.uk/register to apply for your 2 year warranty.

Sonifex Warranty & Liability Terms & Conditions

1. Definitions

'the Company' means Sonifex Ltd and where relevant includes companies within the same group of companies as Sonifex Limited.

'the Goods' means the goods or any part thereof supplied by the Company and where relevant includes: work carried out by the Company on items supplied by the Purchaser; services supplied by the Company; and software supplied by the Company.

'the Purchaser' means the person or organisation who buys or has agreed to buy the Goods.

'the Price' means the Price of the Goods and any other charges incurred by the Company in the supply of the Goods.

'the Warranty Term' is the length of the product warranty which is usually 12 months from the date of despatch; except when the product has been registered at the Sonifex website when the Warranty Term is 24 months from the date of despatch.

'the Contract' means the quotation, these Conditions of Sale and any other document incorporated in a contract between the Company and the Purchaser.

This is the entire Contract between the parties relating to the subject matter hereof and may not be changed or terminated except in writing in accordance with the provisions of this Contract. A reference to the consent, acknowledgement, authority or agreement of the Company means in writing and only by a director of the Company.

2. Warranty

a. The Company agrees to repair or (at its discretion) replace Goods which are found to be defective (fair wear and tear excepted) and which are returned to the Company within the Warranty Term provided that each of the following are satisfied:

i. notification of any defect is given to the Company immediately upon its becoming apparent to the Purchaser;

ii. the Goods have only been operated under normal operating conditions and have only been subject to normal use (and in particular the Goods must have been correctly connected and must not have been subject to high voltage or to ionising radiation and must not have been used contrary to the Company's technical recommendations);

iii. the Goods are returned to the Company's premises at the Purchaser's expense;

iv. any Goods or parts of Goods replaced shall become the property of the Company;

v. no work whatsoever (other than normal and proper maintenance) has been carried out to the Goods or any part of the Goods without the Company's prior written consent;

vi. the defect has not arisen from a design made, furnished or specified by the Purchaser;

vii. the Goods have been assembled or incorporated into other goods only in accordance with any instructions issued by the Company;

viii. the defect has not arisen from a design modified by the Purchaser;

ix. the defect has not arisen from an item manufactured by a person other than the Company. In respect of any item manufactured by a person other than the Company, the Purchaser shall only be entitled to the benefit of any warranty or guarantee provided by such manufacturer to the Company.

b. In respect of computer software supplied by the Company the Company does not warrant that the use of the software will be uninterrupted or error free.

c. The Company accepts liability:

i. for death or personal injury to the extent that it results from the negligence of the Company, its employees (whilst in the course of their employment) or its agents (in the course of the agency);

ii. for any breach by the Company of any statutory undertaking as to title, quiet possession and freedom from encumbrance.

d. Subject to conditions (a) and (c) from the time of despatch of the Goods from the Company's premises the Purchaser shall be responsible for any defect in the Goods or loss, damage, nuisance or interference whatsoever consequential economic or otherwise or wastage of material resulting from or caused by or to the Goods. In particular the Company shall not be liable for any loss of profits or other economic losses. The Company accordingly excludes all liability for the same.

e. At the request and expense of the Purchaser the Company will test the Goods to ascertain performance levels and provide a report of the results of that test. The report will be accurate at the time of the test, to the best of the belief and knowledge of the Company, and the Company accepts no liability in respect of its accuracy beyond that set out in Condition (a).

f. Subject to Condition (e) no representation, condition, warranty or other term, express or implied (by statute or otherwise) is given by the Company that the Goods are of any particular quality or standard or will enable the Purchaser to attain any particular performance or result, or will be suitable for any particular purpose or use under specific conditions or will provide any particular capacity, notwithstanding that the requirement for such performance, result or capacity or that such particular purpose or conditions may have been known (or ought to have been known) to the Company, its employees or agents.

g. i. To the extent that the Company is held legally liable to the Purchaser for any single breach of contract, tort, representation or other act or default, the Company's liability for the same shall not exceed the price of the Goods.

    ii. The restriction of liability in Condition (g)(i) shall not apply to any liability accepted by the Seller in Condition (c).

h. Where the Goods are sold under a consumer transaction (as defined by the Consumer Transactions (Restrictions on Statements) Order 1976) the statutory rights of the Purchaser are not affected by these Conditions of Sale.

Unpacking Your Product

Each product is shipped in protective packaging and should be inspected for damage before use. If there is any transit damage take pictures of the product packaging and notify the carrier immediately with all the relevant details of the shipment. Packing materials should be kept for inspection and also for if the product needs to be returned.

The product is shipped with the following equipment so please check to ensure that you have all of the items below. If anything is missing, please contact the supplier of your equipment immediately.

Item	Quantity
Product Unit	1

Repairs & Returns

Please contact Sonifex or your supplier if you have any problems with your Sonifex product. Email technical.support@sonifex.co.uk for the repair/upgrade/returns procedure, or for support & questions regarding the product operation.

CE and UKCA conformity

The products in this manual comply with the essential requirements of the relevant UK and European health, safety and environmental protection legislation. The technical justification file for this product is held at Sonifex Ltd. Relevant declarations of conformity can be found at: https://www.sonifex.co.uk/declarations

WEEE Directive

Directive 2012/19/EU of the European Parliament and of the Council of 4th July 2012 lays down measures to protect the environment and human health by preventing or reducing the adverse impacts of the generation and management of waste from electrical and electronic equipment (WEEE).

The policy of Sonifex Ltd is to comply with all applicable laws of all jurisdictions having authority over Sonifex's business, including the WEEE directive. Accordingly, Sonifex has implemented a rigorous program designed to ensure compliance of its products with the WEEE directive. The latest statements can be found at: https://www.sonifex.co.uk/company/recycling

Atmosphere/Environment

This apparatus should be installed in an area that is not subject to excessive temperature variation (<0°C, >50°C), moisture, dust or vibration.

This apparatus shall not be exposed to dripping or splashing, and no objects filled with water, such as vases shall be placed on the apparatus.

AVN-DIO16 Dual Microphone Input to Dante® with Mic Gain Converter

Fig 1: AVN-DIO16 Front Panel

Fig 2: AVN-DIO16 Rear Panel

The **AVN-DIO16** is a 4 analogue XLR output to Dante converter in the Sonifex DIO range of Dante input/output devices. It features four balanced analogue XLR outputs and one Neutrik etherCON connector for direct connection to a Dante AoIP network.

The front panel provides a global 0dBFS line-up which can be set to +12dBu, +18dBu or +24dBu to meet your specific requirement via the front panel recessed toggle switch. There are also front panel LEDs to indicate network clock status, AoIP link status and PoE power active.

It's powered using Power over Ethernet (PoE), using a Neutrik etherCON connector. The AVN-DIO16 uses the latest Audinate Dante chipset so is AES67 and Dante Domain Manager compliant.

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Setup

Connect the device to a PoE enabled switch using an Ethernet cable, the device will automatically turn on. If the switch does not support PoE, a PoE injector can be used to provide power.

By default the Dante IP address is obtained automatically, therefore the device will automatically appear in Dante Controller. If your device does not appear in Dante Controller please see the Network Troubleshooting section of this manual.

A computer on the same network can configure connections between the DIO and other Dante enabled devices, using Dante Controller.
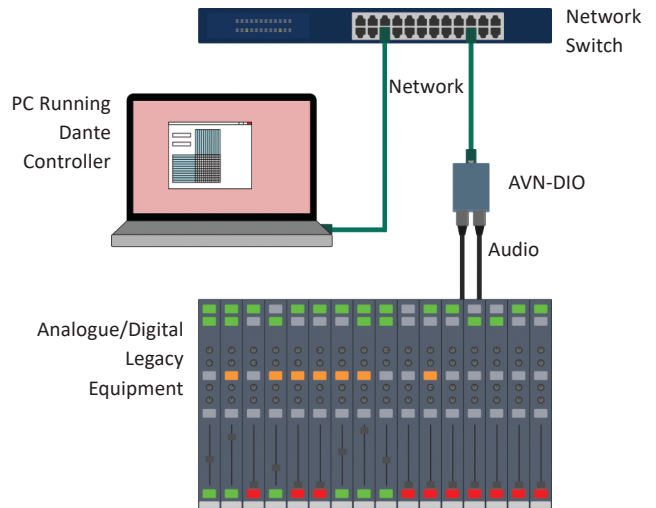
Fig 3: Typical AVN-DIO setup

Link

Link status is indicated using the top-left status LED. Once power has been supplied to the unit the link status LED turns red. The link status LED turns amber when a link is established with a link speed of 100 Mbps.

Link activity is indicated using the top-right status LED which blinks when incoming or outgoing data is sensed on the port.

Fig 4: Power, Link, and Activity LEDs

Dante Controller

Once a link has been established Dante Controller can be used to configure the device. Dante Controller is an application provided by Audinate and can be downloaded from their website.

https://www.audinate.com/

Within Dante Controller the unit should be visible within the Routing tab.

Fig 5: Dante Controller - Routing tab

Network Troubleshooting

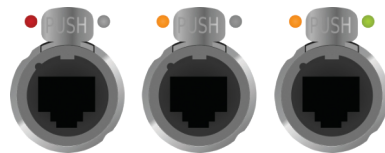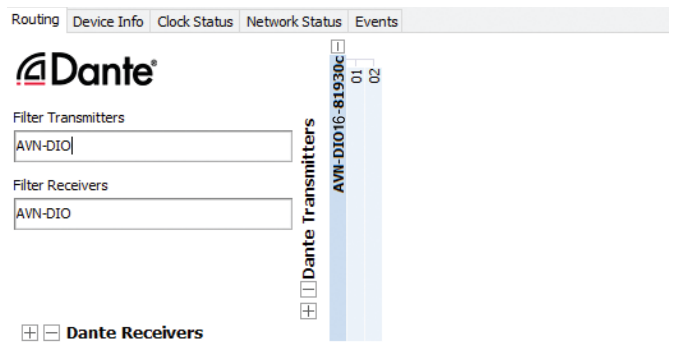If the device does not show up in Dante Controller please check that the Ethernet cable is correctly connected and that the device and computer are on the same network.

If the computer and the device are on different IP subnets, the device will appear in Dante Controller with red text:

Device Name	Sync	Mute	Clock Source	Domain Status	Primary Status
AVN-CU4-0006dc	▢		Dante	N/A	Slave
Matt-PC	▢		Dante	N/A	Slave
Recording-Studio	▢		Dante	N/A	**Master**
AVN-DIO16-81930c	▢		Dante	N/A	Slave

Fig 6: Red device name indicates network configuration error

Opening the **Device View** for the device will provide details about the problem.

Dante Controller has discovered an address for device 'AVN-DIO12-81930c' that does not match the subnet configuration of the local Dante interface 'Ethernet 2'.

Possible causes of this problem include:

- Multiple DHCP servers on the network
- Using a static IP address on a local interface that is on a different subnet to the DHCP address obtained by the device

Details:

- Resolved device address on Dante interface is 192.168.1.200
- Local address on Primary Dante interface 'Ethernet 2' is 10.0.60.1/255.0.0.0

Fig 7: Error details

In this example notice the device is on the 192.168.1.X subnet and the computer is on the 10.X.X.X subnet. To access the device, edit the computer's IP address.

In Windows 10, type **View Network Connections** into the search bar. Right-click the network that the device is connected to and select **Properties**. Double click **Internet Protocol Version 4 (TCP/IPv4)** in the item list and edit the IP address.

○ Obtain an IP address automatically

◉ Use the following IP address:

IP address: 192 . 168 . 1 . 201

Subnet mask: 255 . 255 . 255 . 0

Default gateway: . . .

Fig 8: Windows IPv4 settings

Save the changes made to the settings then close and re-open Dante Controller. The device should now appear correctly.

Note: if your computer has multiple network interfaces on the same physical network or IP subnet this can lead to unexpected results, in this case those interfaces can be disabled. To do this in Windows 10, type **View Network Connections** into the search bar, right-click the network connection to disable, and select **Disable**.

In Dante Controller the device's configuration should now be accessible. The device can now be configured and the network settings can be modified so that the device is in the correct IP subnet.

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Dante Redundancy

Current:

New: ▢

This feature cannot be configured

Addresses

○ Obtain an IP Address Automatically (default)

◉ Manually configure an IP Address

IP Address: 10 . 0 . 60 . 2

Netmask: 255 . 0 . 0 . 0

DNS Server: . . .

Gateway: . . .

Apply   Revert

Reset Device

Reboot   Clear Config

Fig 9: Dante Controller - Network Config in Device View

Open the **Device View** for the device and select the **Network Config** tab. Within this tab are options to obtain an IP address automatically, or to configure an IP address manually.

After configuring the devices IP address, click the **Reboot** button, the device will restart and its IP address will be updated. Reconfigure the computers IP address to return to the prior IP subnet.

For more troubleshooting information please see the official Dante FAQs at:

https://www.audinate.com/resources/faqs

And Dante Controller User Guide at:

https://dev.audinate.com/GA/dante-controller/userguide/pdf/latest/

Routing Audio

Audio can be routed seamlessly between each Dante enabled device on the network by creating connections between the transmit channel of one device and the receive channel of another device. When a routing is initially created, an hour glass is displayed to show the connection is being created. After a short time a green tick is displayed to indicate the connection has been created successfully.

Transmitters and receivers can also be filtered by typing a name into the corresponding filter field. Further filtering options are available from the filter pane.

Fig 10: Routed audio stream

To remove a connection simply click on the green tick.

Transmit and receive channels in a diagonal can be quickly routed together by holding the control key (Ctrl) and clicking on the minimise/maximise button on the routing grid.

Device View

Open up the Device View by double clicking on the device name in the routing grid.

Status

Within the **Status** tab, information about the device can be seen, such as the product type and the current IP address.

Device Information

Manufacturer: Sonifex
Product Type: AVN-DIO16
Product Version: 1.0.0
Software Version: 1.0.0
Firmware Version: 1.0.0

Dante Information

Model: UltimoX4
Dante Firmware Version: 4.1.4.2
Hardware Version: 4.1.1.1
ROM/Boot Version: 1.0.0

Clock Synchronisation

Mute Status: Unmuted
Sync Status: Locked
External Word Clock: No
Preferred: No
Frequency Offset: 11 ppm

Interfaces

P   100   IP Address: 10.0.2.86
            MAC Address: 00:1D:C1:81:93:0C
            Tx Utilisation: 1 Kbps   Errors: 0   [Clear Counters]
            Rx Utilisation: 39 Kbps   Errors: 0

Device Configuration

Within the **Device Config** tab the following can be modified.

Rename Device

AVN-DIO16-81930c   [Apply]

Sample Rate

Sample Rate: 48k ⌄   Pull-up/down: ⌄

This device does not support Pull-up/down configuration.

Encoding

Preferred Encoding: PCM 24 ⌄

Clocking

Unicast Delay Requests: Disabled ⌄

Device Latency

Latency: 1.0 msec ⌄

Reset Device

[Reboot]   [Clear Config]

Fig 11: Device Config tab

- Device Name
- Sample Rate
- Encoding
- Clocking
- Device Latency

An option is also available to clear the configuration, resetting all settings to their default values.

Fig 1-3: AVN-DIOBT Brackets & Belt Clip

Fig 1-4: AVN-DIOMT Deskbar Fittings

Fig 1-5: AVN-DIO16 Front View Shown with AVN-DIOBT Brackets and Belt Clip

Fig 1-6: AVN-DIO16 Iso View Shown with AVN-DIOBT Brackets and Belt Clip Attached

Fig 1-7: AVN-DIO16MT Iso View Shown with Deskbar Attached

Fig 1-8: AVN-DIO16 Front Iso View Shown without Accessories

Fig 1-9: AVN-DIO16 Rear Iso View Shown without Accessories

Technical Specification For AVN-DIO16

Analogue XLR Output Pin-out

Pin	Function
1	Chassis Ground
2	Phase
3	Non Phase

Line Outputs - XLR

Output Impedance:	<200Ω balanced
0dBFS Line-Up:	Selectable +12/+18/+24dBu
Frequency Response:	20Hz to 20kHz, +0/-0.5dB (ref 1kHz)
THD+N:	<-100dBu, -30dBFS, 20Hz to 20kHz, 20kHz BW
Dynamic Range	120dB, 20kHz BW
Cross Talk	<-110dB

Network and AoIP

AoIP Standard:	Dante
Channels:	4 receive
Flows:	2 receive
Sample Rates:	44.1kHz, 48kHz, 88.2kHz, 96kHz
Encoding:	PCM 16, PCM 24, PCM 32
AES67 Support:	Yes
Connectivity:	etherCON (RJ45 compatible)
Speed:	100Mbps
Dante Domain Manager Ready:	Yes
Clock Source:	Internal (PTP Leader) or Network PTP Leader

PoE Power

Standard	802.3af
Class	0
PD Power Range	0.44 W to 12.94 W
Typical PSE Power Usage	6 W
Max PSE Power Usage	15.4 W

Equipment Type

AVN-DIO16:	4 Analogue XLR Outputs to Dante®

Physical Specification

Dimensions (Raw):	14.0cm (W) x 13.6cm (D) x 4.2cm (H) 5.5" (W) x 5.4" (D) x 1.7" (H)
Dimensions (Boxed):	17.8cm (W) x 17cm (D) x 5.6cm (H) 7.0" (W) x 6.7" (D) x 2.2" (H)
Weight	Nett: 0.42kg Gross: 0.56kg Nett: 0.95lbs Gross: 1.25lbs

Accessories

AVN-DIOBT:	AVN-DIO Large Unit Belt Clip Kit
AVN-DIOMT:	AVN-DIO Large Unit Underdesk Mount
AVN-DIORK:	AVN-DIO 1U 19" rack kit (5 x small DIO or 3 x large DIO)

SONIFEX

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