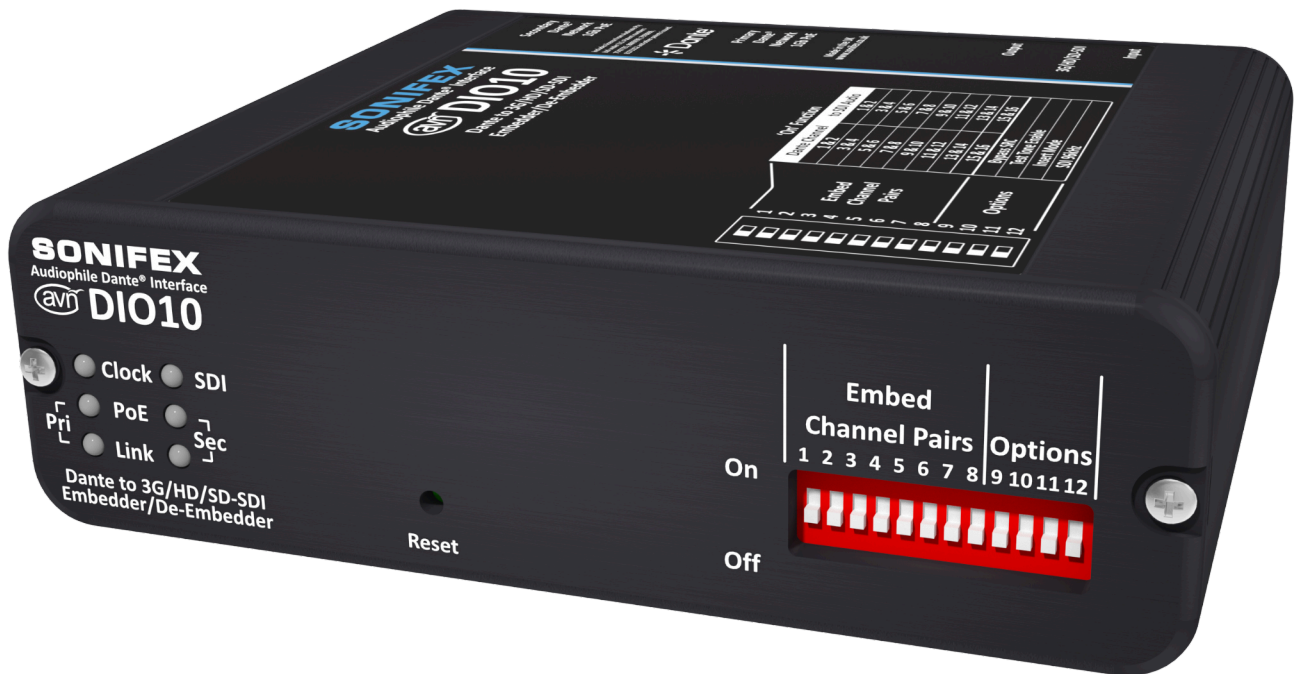# AVN-DIO10
Dante® to 3G/HD/SD-SDI Embedder/De-Embedder
Handbook

AVN -ᐧᐧᐧ Dante®

SONIFEX

Audio Solutions for
AV & Broadcast Media

Registration & Warranty

This handbook is for use with the following products:
AVN-DIO10 Dante® to 3G/HD/SD-SDI Embedder/De-Embedder

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-DIO10 Dante® to 3G/HD/SD-SDI Embedder/De-Embedder

AVN-DIO10 Front View
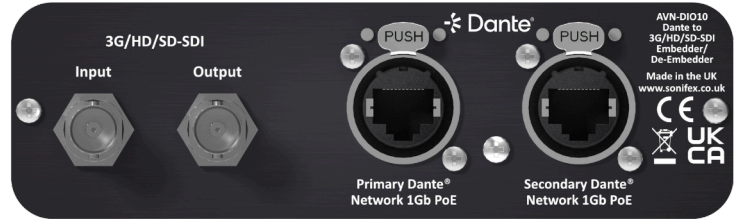
AVN-DIO10 Rear View

The easiest way to connect SDI equipment to the Dante® network, the AVN-DIO10 can be used for simultaneous embedding and de-embedding. This simple plug and play audio/video interface provides a convenient and elegant method of connecting legacy 3G/HD/SD-SDI equipment to the Dante® AoIP audio network.

The AVN-DIO10 takes an SDI feed, de-embeds up to 16 audio channels and places them on channels 1-16 on the Dante network, mapped using Dante Controller. It simultaneously takes the 16 input channels mapped to the device on Dante Controller and re-embeds them onto the SDI output.

Switches on the unit allow embedding of Dante channels onto the SDI output per channel pair and there are two modes of operation: Insert Mode enabled allows embedding to overwrite existing SDI audio selectively per channel pair. Insert Mode disabled clears any incoming audio channels on the SDI output and then allows selective embedding onto the SDI output per channel pair.

These switches are replicated in the web interface, so that they can be altered remotely, with a 'Local Override' option so that the hardware switches can still be used if required.

The unit can operate in either loop through mode where the input is fed to the output, or in generator mode where the input and output are completely independent to each other and the SDI output signal is provided by an integrated SDI video generator. This allows the unit to operate as an embedder only, without the need of an existing SDI feed, or as a separate de-embedder and embedder. In this mode, the input and output can be different formats. This is fully configurable through the web UI.

The unit supports both 48kHz and 96kHz sample rates in the embedded audio allowing for different sample rates in the de-embed and embed paths. When operating at 96kHz sample rate, the number of channels within the SDI signal are halved. A single group carries two channels rather than the four available at 48kHz.

Test Tone mode allows 1kHz, 2kHz, 3kHz and 4kHz signals to be output on channels 1 to 4 respectively, for any group where embedding is enabled. There is also a test tone mode for the de-embedder outputs where a 1KHz tone is placed on the transmitting Dante® channels. This is so that downstream SDI audio outputs and inputs can be tested without the need of Dante® or SDI sources.

It's powered by Power over Ethernet (PoE), using Neutrik® EtherCON connectors, with primary and secondary ports for power and data redundancy. The AVN-DIO10 uses the latest Audinate Dante® chipsets so is AES67 and Dante Domain Manager® compliant. There are front panel LEDs to indicate network clock status, SDI lock status, AoIP Primary and AoIP Secondary link status, PoE Primary power and PoE Secondary power active.

Up to 3 of the AVN-DIO10 units can be rackmount in the 1U AVN-DIORK.

Features

- 1 x 3G/HD/SD-SDI input.
- 1 x reclocked 3G/HD/SD-SDI output.
- 16 channel de-embedder.
- 16 channel embedder.
- Dual redundant Primary and Secondary Dante network ports using Neutrik EtherCon® Ethernet connectors.
- Powered via PoE (Power over Ethernet) with PoE dual redundancy.
- Fully Dante compliant device.
- AES67 compatible.
- Dante Domain Manager compliant.
- Web interface for configuration.
- Clock, SDI Lock, PoE and Link LEDs.
- Overwrite or insert into existing SDI audio groups.
- SDI video generator built in.
- Independent embed and de-embed paths.
- Test tones available on both embedder and de-embedder paths.
- SDI audio sample rate support at 48kHz and 96kHz.
- All available Dante sample rates supported.
- Sample rate conversion of audio between Dante and SDI.
- Dante clock domain can be optionally synchronised from the SDI clock.
- 3 x units rackmount in the AVN-DIORK.

Front Panel Dipswitch Settings

The DIPSwitches provide basic control of the embedding process and other settings which are detailed below. A top panel label shows the DIPSwitch functions. The unit can also be controlled by using the built-in webserver. See embedded webserver section for more details.

	'On' Function	
	Dante Channel	**to SDI Audio**
1	1 & 2	1 & 2
2	3 & 4	3 & 4
3	5 & 6	5 & 6
4	7 & 8	7 & 8
5	9 & 10	9 & 10
6	11 & 12	11 & 12
7	13 & 14	13 & 14
8	15 & 16	15 & 16
9	Bypass SRC	
10	Test Tone Enable	
11	Insert Mode	
12	SDI 96kHz	

Embed Channel Pairs: 1–8. Options: 9–12.

Embedder Control

The embedder takes the Dante audio received from the network and embeds it onto the SDI output. Audio is embedded on a channel pair basis and the routing internally is fixed so that Dante channels 1 & 2 are embedded onto SDI group 1, pair 1 and so on.

Any routing or swapping of channels can be performed with Dante Controller. The Dante audio can operate at any of the selectable sample rates from 44.1kHz up to 192kHz and the SDI sample rate can be either 48kHz or 96kHz. To transfer between these two domains a sample rate converter (SRC) is used. This will increase latency but is required when the two clock domains are asynchronous. The SRC can be bypassed in certain situations which are described below.

Insert Mode

When Insert Mode is enabled it allows embedding to overwrite existing SDI audio selectively per channel pair. For example, enabling embedding on channels 1 & 2 will embed Dante channels 1 & 2 onto SDI group 1 channels 1 & 2, but retain the original audio on channels 3 & 4, if any.

With Insert Mode disabled, any groups that are enabled for embedding will have all incoming audio on those groups cleared before audio from the Dante network is embedded. Insert mode is not active when the SDI generator or test tones are enabled.

Embedder Bypass SRC

This controls the enabling and disabling of the Sample Rate Converter which transfers the audio between the Dante and SDI audio clock domains prior to embedding. Since the embedder and de-embedder can operate independently, there is a separate control for both. Normally this control should be left disabled. In situations where the Dante and SDI clock domains are synchronous, such as when the AVN-DIO10 is the preferred leader and the 'Enable Sync to External' option is selected, then this switch can be set to the ON position.

This reduces latency through the embedder and passes the audio from the Dante network to the SDI embedder unmodified. Note that this control only has effect when the Dante and SDI sample rates are set to either 48kHz or 96kHz, any other sample rate selection would force sample rate conversion.

Embedder Test Tones

With this control enabled, it puts 1kHz, 2kHz, 3kHz and 4kHz audio tones on channels 1 to 4 respectively, for any group where embedding is enabled, overriding any Dante audio that is routed to the SDI output. Note that Insert mode is not active while test tones are enabled or the SDI generator is active.

Embedder 96kHz

The audio sample rate embedded within the SDI signal can be set to 96kHz, rather than the normal 48kHz. When this control is enabled, the number of channels available to the embedder is halved. This is because the space normally used for the left and right sample, is replaced with a double sample of just the left sample, so an audio group can only transport 2 channels rather than the usual 4.

Any sending or receiving equipment must also support 96kHz otherwise you will see aliasing effects in the audio.

De-Embedder Extended Groups

By default, the AVN-DIO10 takes the SDI audio channels from groups 1 to 4 of each video sub image and puts them onto the Dante network. There is support for a further 4 groups which allow for an extra 16 channels of audio. These are called extended groups 5 to 8. The audio within these groups are selectable on a per channel pair basis by using the controls in the web UI De-Embedder page. Enabling the extended group for each pair allows you to select between the normal groups 1 to 4 or 5 to 8.

De-Embedder Test Tones

With this control enabled, a 1kHz audio tone is presented on all Dante transmit channels. A valid SDI input must be present for this to be active.

De-Embedder Bypass SRC

This controls the enabling and disabling of the Sample Rate Converter which transfers the audio between the SDI and Dante audio clock domains after de-embedding. Since the embedder and de-embedder can operate independently, there is a separate control for both. Normally this control should be left disabled. In situations where the Dante and SDI clock domains are synchronous, such as when the AVN-DIO10 is the preferred leader and the 'Enable Sync to External' option is selected, then this switch can be set to the ON position. This reduces latency through the de-embedder and passes the audio from the SDI de-embedder to the Dante network unmodified.

Note that this control only has effect when the Dante and SDI sample rates are set to either 48kHz or 96kHz, any other sample rate selection would force sample rate conversion.

De-Embedder 96kHz

The audio sample rate embedded within the SDI signal can be set to 96kHz, rather than the usual 48kHz. When this is selected, the number of channels available is halved. This is because the space normally used for the left and right sample, is replaced with a double sample of just the left sample, so an audio group can only transport 2 channels rather than the usual 4. Any sending or receiving equipment must also support 96kHz otherwise you will see aliasing effects in the audio.

SDI Video Generator

The AVN-DIO10 includes a built-in video pattern generator. This allows the unit to operate as an embedder without the need of an existing SDI signal. The generator is completely configurable and allows selection of picture resolution, packing, frame rate and pattern type. It can also generate a 3G-SDI level B signal. See the technical specification for a detailed list of supported formats. The pattern can be selected to be either blank, 100% colour bars or 75% colour bars. The colour bar pattern has no effect on the embedded audio data and is provided as an alternative to a blank picture. When the generator is enabled, the SDI receiver is still fully functional and will operate independently from the embedder. It also includes an 'Auto Gen' mode which, when enabled, will allow the generator to automatically turn on in the event that the incoming SDI signal is lost. Note that the generator must also be in the 'Enabled' position for Auto Gen to work.

Sync To External

When the unit is operating as a clock leader and the Sync to External option is set in Dante Controller, the Dante clock will be synchronised to either the SDI input or output depending on whether the video generator is enabled. With the generator enabled, the device will be clocked from the internal clock. With the generator disabled, the device will be clocked from the SDI input.

Dante® Controller

Dante Controller is an application provided by Audinate and can be downloaded from their website: https://www.audinate.com/

Use Dante Controller as you normally would to setup the audio routes on the unit. For 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/

Embedded Web Server

The AVN-DIO10 has an embedded web server which provides easy access to control and network settings, status information and allows for firmware updates when new releases are available.

The device has two Ethernet ports on the back panel. One is the 'Primary' Ethernet port and the other is the 'Secondary' Ethernet port. When set to switched mode in Dante Controller, either of these ports can be connected to a network and a computer on the same network which can then access the embedded web server. When set to redundant mode, only the primary Ethernet port will allow access to the web server.

By **default**, the **embedded web server is set to static address mode** and the IP address is **192.168.0.100** with a subnet mask of 255.255.255.0. If the network address mode for the port to be used has been set to 'Dynamic', the unit will attempt to acquire an IP address from a DHCP server. If no DHCP server is found an automatically generated IP address will be used.

The active IP address for the network port can be found using a service discovery tool such as the 'Discovery Application' which can be found on the Sonifex website (http://sonifex.co.uk/technical/software/index.shtml#sfxsrvdisc).

Information

The Information tab has a Device Information page and a Status page.

Device Information

The **Information** tab shows the current status of the unit as well as the software versions of the various modules running on the unit. When contacting Sonifex technical support, it is important to provide the information shown on this page. The lower half of the page shows the configuration of the network ports; the 'Control Port Information' shows the network address configuration of the embedded web server which can be accessed on both the 'Primary' and 'Secondary' Ethernet connections.
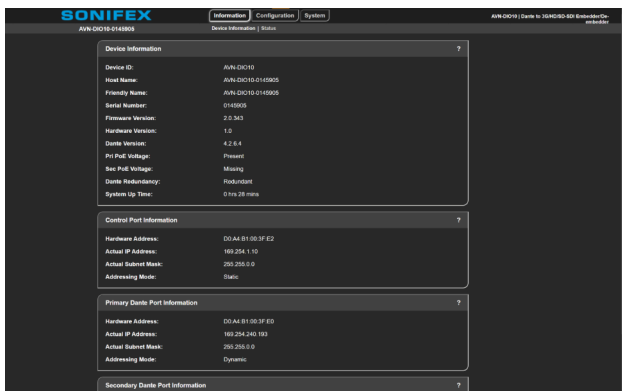
The 'Primary Dante Port Information' and the 'Secondary Dante Port Information' shows the configuration information of each port to the Dante audio network. The network settings of these two ports can be controlled via the Dante controller application or via the 'network' configuration web page. If the Dante redundancy setting for the unit is set to "Switched" via Dante controller then only the Control Port and Primary Dante Port Information are shown here.

Status

The status page shows the current status of the SDI input. This includes the current lock status, the input standard and transport format along with presence indication for each audio group.
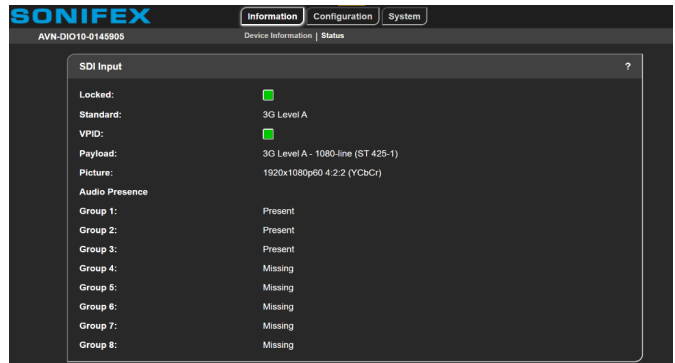

Configuration

The Configuration tab has the Network, Embedder, De-Embedder and Generator page.

Network

The **Configuration** tab has the Network page which shows the current configuration of the control port which is used to access the devices web and Dante server. It also displays information about the Dante ports. The friendly name and security options can also be set here.
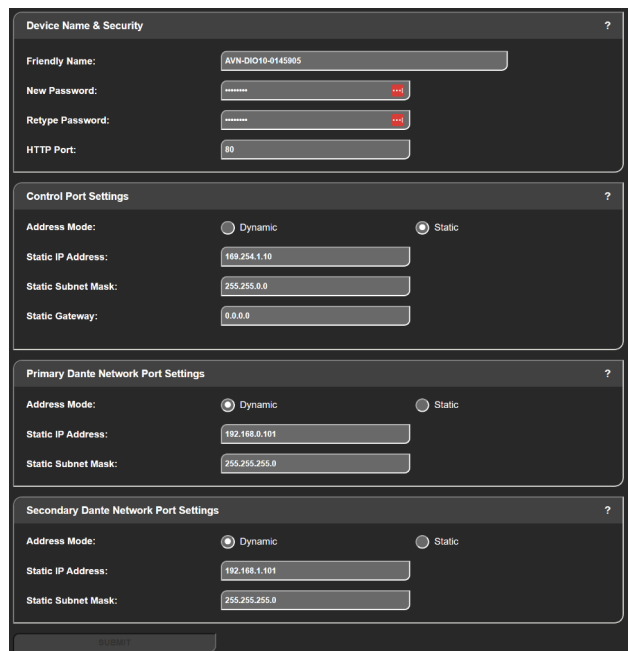
Friendly Name

The friendly name identifies the unit on the network. It is a good idea to assign a user name or location as this is easily recognised by other users. The default friendly name is made from the device ID and the 7-digit product serial number. The friendly name can only contain letters, numbers and hyphens although it cannot start or end with a hyphen.

Password

In order to prevent other users connected to the same network from modifying the configuration of the device it is possible to protect your device with a password. The password may be between 4 and 8 characters long and may only contain numbers and letters.

Removing Password Protection

Password protection can be removed from a device by clearing both the 'Password' and 'Retype Password' fields and clicking 'submit'.

HTTP Port

The HTTP port number can be set to any integer from '1024' up to and including '65535', or to '80' the default value. The value entered determines which port the web server on the device will use. When the port number is modified the unit will be restarted automatically. To view the web pages of a device with a modified port number, the port number must be specified in the address bar of the web browser after the IP

address and separated by a colon. For example, if the HTTP port of a unit is set to '1024' and the IP address of the unit is '192.168.0.100' then 'http://192.168.0.100:1024' would need to be entered into the address bar of the web browser. When the port is set to its default value of '80', a port number doesn't need to be specified when accessing the web server. The web server on the unit is advertised as an Avahi / Bonjour service so tools like Sonifex Service Discovery or avahi-browse will be able to discover the address and port number being used by the unit's web server.

Address Mode

The address mode determines how the port obtains its IP address. When set to dynamic, the unit will attempt to acquire an IP address automatically from either a DHCP server or via auto configuration if no DHCP server is found. The actual IP address is shown on the device

Static IP Address

This is the IP address that will be assigned to the port when static address mode is selected. It is important to ensure that this IP address is not currently in use on the network. This value is not used when the address mode is dynamic.

Static Subnet Mask

This is the subnet mask that will be used for the port when static address mode is selected. This value is not used when the address mode is dynamic.

Static Gateway

The router IP address used for the port when static address mode is selected.

Note

If the device is in 'switched' mode the secondary Dante network port settings are not displayed. If any of the network configuration options are changed, the unit automatically restarts to implement the new settings. If the address mode of the control port is changed, a new connection is made once the unit has restarted and the IP address assigned via DHCP is known. Otherwise, the new page will be reloaded automatically once the restart of the unit is complete.

Embedder

The Embedder page allows the user to fully customise which pairs from which groups are enabled for embedding and which ones are not. Simply toggle the switch next to the pairs and corresponding Dante channels.

This page is also used to enable the Bypass SRC, Test Tone, Insert Mode and 96kHz settings for the embedder which are explained in a previous section.
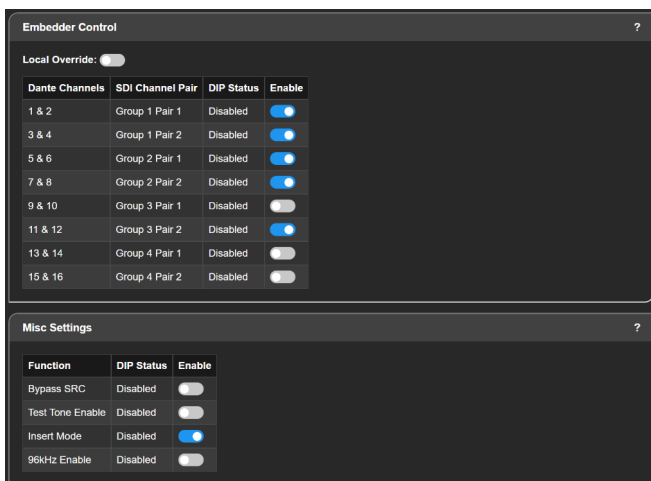

De-Embedder

The De-Embedder page allows the user to configure de-embedding for extended groups 5 to 8 as well as enabling the Bypass SRC, Test Tone and 96kHz settings for the de-embedder which are explained in a previous section.

By default, Dante channels 1 to 16 are populated by audio de-embedded from groups 1 to 4 of the device's incoming SDI signal. By toggling any of the switches, audio can instead be de-embedded from groups 5 to 8 of the SDI signal. In the example below, Dante channels 1 to 12 are being populated by groups 1 to 3 but Dante channels 13 to 16 are being populated by group 8 from the SDI Input.
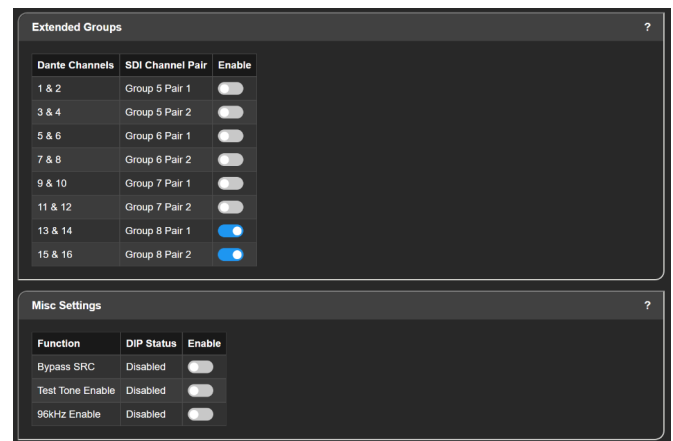
Generator

This page allows for the configuration and enabling of the SDI video generator and its Auto Gen mode. Five drop-down menus allow the user to select the resolution, packing, frame rate and level (3G Only) of the outgoing signal as well as the pattern type. The Interface field at the top of the page displays the SDI format being output and its connection speed.
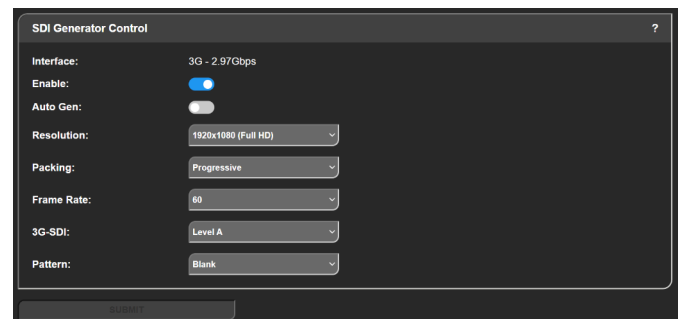
System

The System tab is used for the following;

- Updating the unit.
- Rebooting and resetting the unit.

Update Firmware

In this section the current firmware version on the connected unit is shown. New versions of firmware will be released as new features are added, and when any bug fixes are completed, click on the software downloads link to visit the firmware downloads webpage of the Sonifex website. If an update is available for your unit you can download it as a zipped archive file, you will need to extract the 'SWU' file from the archive, this can be done in Windows by right-clicking the archive and selecting extract all.

Reboot or Factory Reset

The unit can be rebooted using the reboot button, a quick reboot can often fix any issues with the unit, after rebooting the webpage should automatically be reloaded. The factory reset button restores the unit to factory settings, restoring the factory settings will also cause the unit to reboot.

Bootstrap Mode

In the unlikely event that power is lost during a firmware upgrade then the unit may enter bootstrap mode. This is a limited firmware set that allows firmware upgrades to take place to return the unit to a normal working state. This is indicated by both primary and secondary PoE and Link LEDs flashing in unison. Firmware updates are performed using a TFTP client running on a host PC.

Forcing Bootstrap Mode

If you need to force the unit into bootstrap mode, this is done by pressing and holding the 'reset' button down for more than 5 seconds. After 5 seconds the front panel LEDs will start to flash slowly, this indicates that the unit will be forced into bootstrap mode with a static IP address of 192.168.0.100. If the reset button is held for more than 10 seconds, the LEDs will flash faster which indicates that the unit will be forced into bootstrap mode with dynamic mode addressing set. The unit will now attempt to get an address from a DHCP server or fall back to a link-local IP address using Auto-IP. If the reset button is held for more than 15 seconds, the LEDs will flash even faster and the unit will now perform a factory reset and clear all of the current configuration settings.

Upgrading Firmware in Bootstrap Mode

Once the device has been put into bootstrap mode, a TFTP client can be used to transfer firmware to it. The IP address of the device must be known - the Sonifex Service Discovery Application can be used to find the IP address of the device. Many TFTP clients are available, on MS Windows a free application called TFTPD64 is available. Within TFTPD64, select the TFTP tab, enter the device's address in the host field and 69 in the port field. Next navigate to the firmware update file (this has the .dwn file extension). The 'Remote File' field should be left blank and the 'Block Size' left on default. Finally press the button labelled 'Put', the progress of the upload will then be displayed. The device will reboot and now be using the uploaded firmware. If you are still experiencing issues, try holding the reset button for 15 seconds to perform a factory reset.
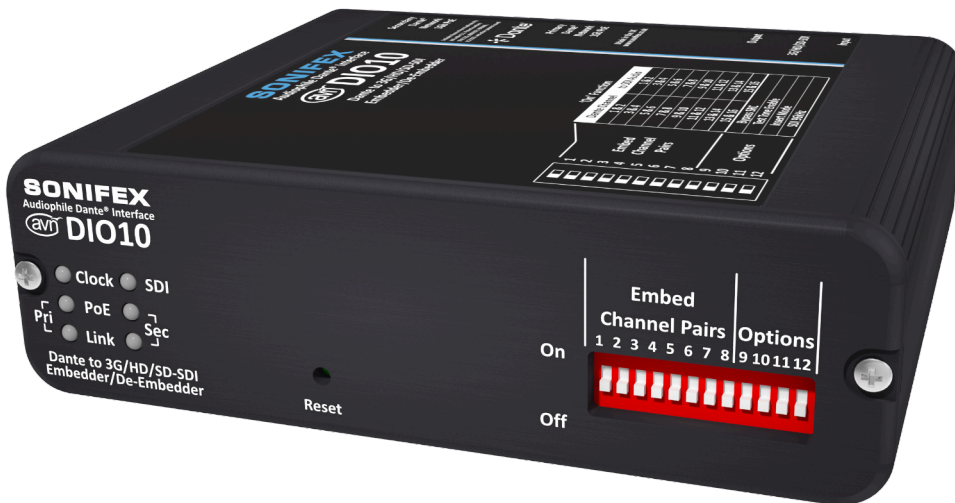
AVN-DIO10 Front Iso View Shown without Accessories

AVN-DIO10 Rear Iso View Shown without Accessories

Technical Specification For AVN-DIO10

SDI Input	
Input Impedance	75Ω Unbalanced
Return Loss	< 15 dB @ 1.5 GHz < 10 dB @ 3 GHz
SDI Supported Standards:	270Mbps SMPTE-259M-C (SD) 1.485 or 1.4835Gbps SMPTE-292M (HD) 2.97 or 2.967Gbps SMPTE-424M (3G)
Supported Video Formats:	525/59.94 (SMPTE-125M) 625/50 (ITU-R BT.656) 1280x720p/23.98, 24, 25, 29.97, 30, 50, 59.94, 60 (SMPTE 296) 1920x1035i/59.94, 60 (SMPTE 260) 1920x1080i/50, 59.94, 60 (SMPTE 274) 1920x1080p/23.98, 24, 25, 50, 59.94, 60 (SMPTE 274) 1920x1080pSF/23.98, 24, 25, 29.97, 30 (RP-211) 1080i/50 (SMPTE 295) 1920x1080p/50 (SMPTE 295) 2048x1080p/23.98, 24, 25, 29.97, 30, 47.95, 48, 50, 59.94, 60 (SMPTE 2048-2) 2048x1080pSF/23.98, 24, 25, 29.97, 30 (SMPTE 2048-2) (SMPTE 2036)
Embedded Audio:	48kHz and 96kHz, synchronous SMPTE 272M-ABCH SMPTE 299-1 / 48,96 SMPTE 299-2 (De-embedding only)
Supported Image Mapping:	SMPTE-425M-AB

SDI Output	
Output Impedance:	75Ω Unbalanced
Alignment Jitter:	<0.2UI
Output Level:	800mV ±10%
Return Loss:	< 15 dB @ 1.5 GHz < 10 dB @ 3 GHz
SDI Supported Standards:	270Mbps SMPTE 259M-C (SD) 1.485 or 1.4835Gbps SMPTE 292M (HD) 2.97 or 2.967Gbps SMPTE 424M (3G)
Supported Video Formats: (Loop-through)	Output follows input
Supported Video Formats: (Generator)	525/59.94 (SMPTE 125M) 625/50 (ITU-R BT.656) 1280x720p/23.98, 24, 25, 29.97, 30, 50, 59.94, 60 (SMPTE 296) 1920x1080i/50, 59.94, 60 (SMPTE 274) 1920x1080p/23.98, 24, 25, 50, 59.94, 60 (SMPTE 274) 1920x1080pSF/23.98, 24, 25, 29.97, 30 (RP-211) 2048x1080p/23.98, 24, 25, 29.97, 30, 47.95, 48, 50, 59.94, 60 (SMPTE 2048-2) 2048x1080pSF/23.98, 24, 25, 29.97, 30 (SMPTE 2048-2)
Embedded Audio:	48kHz, synchronous SMPTE 272M-ABCH SMPTE 299-1 / 48,96

Latencies	
SDI Input to Output	<1 line
Audio:	Example latencies using an AVIOAES and Phabrix SxE with SDI and Dante sample rates at 48kHz and 1ms latency setting.
Embedding: SRC Enabled:	AVIOAES to DIO10 to Phabrix SxE <7ms
De-embedding: SRC Enabled:	Phabrix SxE to DIO10 to AVIOAES <3.5ms

Network and AoIP	
AoIP Standard:	Dante
Channels:	16 receive, 16 transmit
Flows:	16 receive, 16 transmit
Sample Rates:	44.1kHz, 48kHz, 88.2kHz, 96kHz, 176.4kHz, 192kHz
Encoding:	PCM 16, PCM 24, PCM 32
AES67 Support:	Yes
Connectivity:	2 x etherCON (RJ45 compatible)
Speed:	1Gbps or 100Mbps
Network Modes:	Switched or redundant
Dante Domain Manager Ready:	Yes
Clock Source:	Internal (PTP Leader) Network PTP Leader SDI input with generator disabled (Sync to External) Internal with generator enabled (Sync to External)

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

Equipment Type	
AVN-DIO10:	Dante to 3G/HD/SD-SDI Embedder/De-Embedder

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) Weight (Gross)	0.36kg 0.79lbs 0.55kg 1.211lbs

Accessories	
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

Audio Solutions for
AV & Broadcast Media

www.sonifex.co.uk

t:+44 (0)1933 650 700

sales@sonifex.co.uk