DAX-3206 Instruction Book





Designed and manufactured in Australia

IRT can be found on the Internet at: http://www.irtelectronics.com

IRT Eurocard

Type DAX-3206

Audio Extractor for 270 Mb/s SDI

Revision History

Revision	Date	Ву	Change Description	Applicable to:
1	09/10/2001	AL	Original draft based on DAX-3200 manual.	S/N: ≥ 0206001
2	03/12/2001	SH	Update of manual and format cleanup.	S/N: ≥ 0206001
3	13/06/2002	AL	Specs. updated, single balanced/unbalanced rear connector substituted.	S/N: ≥ 0206001
4	22/07/2002	SH	Links updated.	S/N: ≥ 0206001
5	19/07/2004	AL	Corrections to configuration adjustments – RV1 to RV4 and specs.	S/N: ≥ 0206001
6	03/05/2011	AL	Equalisation specification corrected to > 250m.	S/N: ≥ 0206001

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This instruction book applies to units later than S/N: 0206001.

Operational Safety:

WARNING

Operation of electronic equipment involves the use of voltages and currents that may be dangerous to human life. Note that under certain conditions dangerous potentials may exist in some circuits when power controls are in the **OFF** position. Maintenance personnel should observe all safety regulations.

Do not make any adjustments inside equipment with power **ON** unless proper precautions are observed. All internal adjustments should only be made by suitably qualified personnel. All operational adjustments are available externally without the need for removing covers or use of extender cards.

IRT Eurocard

Type DAX-3206

Audio Extractor for 270 Mb/s SDI

General Description

The DAX-3206 is a high performance embedded audio extractor for 270 Mbit SDI video signals. It is primarily designed to operate with IRT's DAI-3206 digital audio inserter but will work on any embedded SDI source.

A typical SDI signal may contain up to eight audio pairs arranged in four groups. Each DAX-3206 is capable of extracting one audio group (2 AES / 4 analogue) from those available. Selection is made via a front panel local control switch.

The DAX-3206 supports AES/EBU synchronous and asynchronous audio at 48 kHz, 20-bit audio data packets.

Both analogue and digital audio outputs are provided so that the one module may be used for all applications in monitoring and processing.

The use of digital audio filtering and 20-bit digital to analogue converters produce studio quality analogue audio and the AES/EBU digital interface allows digital interconnection in either balanced or unbalanced formats.

An audio presence indicator is provided for each group output. If no audio is detected the corresponding output is muted.

The DAX-3206 complements the DVC-3111 SDI to analogue video converter for full conversion of SDI signals to analogue video and audio.

The DAX-3206 comes configured standard with 110 Ω balanced AES/EBU outputs. 75 Ω unbalanced outputs are available by insertion of links on the rear assembly.

The DAX-3206 is fabricated in IRT's standard Eurocard format and may be housed in a variety of IRT Eurocard frames alongside other standard modules.

Standard features:

- Standard 75 Ω 270 Mb/s SDI video input.
- Standard 75 Ω 270 Mb/s SDI video output.
- Extracts embedded audio. (Supports 48 kHz Synchronous and Asynchronous level A & D audio packet decoding)
- Supports 525 & 625 line standards.
- Indicators / external alarms for loss of carrier & audio.
- Automatic input equaliser to > 250 m.
- Four high quality analogue audio outputs.
- Two 110 Ω balanced or 75 Ω unbalanced AES/EBU outputs.

Technical Specifications

IRT Eurocard module Type DAX-3206

SDI input: Number Impedance Equalisation Format	1 (BNC). 75 Ω terminated. Automatic for cables lengths > 250 m (Belden 8281). 270 Mbit/s video with embedded audio serial data to SMPTE 272M-A & D.
SDI output: Number Impedance Format	1 (BNC). 75 Ω terminated. 270 Mbit/s video with embedded audio serial data to SMPTE 272M-A & D.
Analogue outputs: Number Impedance (balanced) Output Level SNR unweighted Frequency response THD IMD Crosstalk between channels At unity gain, 20 Hz to 20 kHz and rela	4 (1 Group). <60 Ω. +24 dBu at Full Scale. 90 dBFS. 0.5 dB (20 Hz to 20 kHz). 0.05 % (20 Hz to 20 kHz). 0.05 % SMPTE at +4 dBu. 95 dB. ative to +24 dBu.
AES/EBU outputs: Number Balanced outputs: Output impedance	2 (1 group). 110 Ω balanced. 3.5 V ± 1 V _{p-p} .
Rise and fall times Data jitter	10 ns typical. <± 20 ns.
Balanced outputs: (when configured) Output impedance Signal amplitude Data jitter	75 Ω unbalanced 1 $V_{p-p} \pm 20\%$. <± 20 ns.
Alarms:	Contact closure on loss of SDI input, or loss of power.
Front Panel Indicators: Loss of carrier Presence of audio group Preset position selected DC power	LED (Red). LED (Green). LED (Green). LED (Green).
Other: Power requirements Power consumption Temperature range Connectors Mechanical	 28 Vac CT (14-0-14) or ± 16 Vdc. <7 VA. 0 - 50° C ambient. Phoenix plug in terminal blocks unless otherwise noted. Suitable for mounting in IRT 19" rack chassis with input output and power connections on the rear panel.
Finish: Front panel Rear assembly Dimensions Accessories supplied with module	 Grey background, black lettering & red IRT logo. Detachable silk-screened PCB with direct mount connectors to Eurocard and external signals. 30 mm x 3 U x 220 mm IRT Eurocard. Rear connector assembly including matching connectors for audio, alarms and controls.

Due to our policy of continuing development, these specifications are subject to change without notice.

Internal adjustments

The following adjustable resistors are factory set and should not be adjusted unless a component has been replaced. They are not 'operational' controls. Before adjusting any of these controls, allow time for the module to reach temperature stability.

- RV 1 Analogue output gain calibration (Left 2)
- RV 2 Analogue output gain calibration (Right 2)
- RV 3 Analogue output gain calibration (Left 1)
- RV 4 Analogue output gain calibration (Right 1)

Configuration

Links:

Link	Normal	Function
LK 2	IN:	48 kHz de-emphasis
	OUT:	No de-emphasis

Switches:

Switch	Position	Function
Sw 1	PRE	* Preset (Sw 2 position)
	OFF	Mute
	1	Group 1
	2	Group 2
	3	Group 3
	4	Group 4
* Sw 2	0	Not used
	1	Group 1
	2	Group 1
	3	Group 2
	4	Group 2
	5	Group 3
	6	Group 3
	7	Group 4
	8	Group 4
	9	Mute

* NOTE: SW 2 is the selector for the Preset position of SW 1. This Preset selection can be forced regardless of the position of SW 1 by connecting pins 1 and 2 together on the Alarm connector, J2, on the rear connector assembly.

Installation

Pre-installation:

Handling:

This equipment may contain or be connected to static sensitive devices and proper static free handling precautions should be observed.

Where individual circuit cards are stored, they should be placed in antistatic bags. Proper antistatic procedures should be followed when inserting or removing cards from these bags.

Power:

AC mains supply:	Ensure that operating voltage of unit and local supply voltage match and that correct rating fuse is installed for local supply.
DC supply:	Ensure that the correct polarity is observed and that DC supply voltage is maintained within the operating range specified.

Earthing:

The earth path is dependent on the type of frame selected. In every case particular care should be taken to ensure that the frame is connected to earth for safety reasons. See frame manual for details.

Signal earth: For safety reasons a connection is made between signal earth and chassis earth. No attempt should be made to break this connection.

Installation in frame or chassis:

See details in separate manual for selected frame type.

Connections:

Controls

• Group select (1,2,3 or 4)

Indicators and alarms

The alarm output on the rear of the DAX-3206 indicates a loss of 270 Mb/s data or power failure. The alarm state is indicated by a contact closure, which is available on J2 of the rear assembly.

J2 alarm connectors on rear panel:

Pin 4	Relay COM
Pin 3	Relay N/C
Pin 2	External Preset I/P
Pin 1	Ground



LED's on the front panel indicate:

Loss of carrier Presence of Audio Preset position selected DC power

SDI Video:

Input:

The SDI input is a single BNC connector terminated in 75 Ohms (SK 1).

The input equaliser compensates automatically for losses of up to 250 metres of high quality 75 Ohm coaxial cable. Performance tests are made using Belden 8281 cable as a reference. Actual results and bit error rates will depend on the quality of the cable and the noise environment as well as the quality of the originating equipment.

Output:

The SDI output is a single BNC connector terminated in 75 Ohms (SK 10).

AES Audio:

Two AES audio outputs are provided in balanced format or unbalanced (after configuration). Each AES signal is encoded as stereo and therefore does not require separate connections for 'Left' and 'Right' channels.

The unbalanced BNC output connectors should only be used with 75 Ohm coaxial cable and must be 75 Ohm terminated at the destination in order to obtain correct levels and performance.

The balanced outputs should be used with high quality twisted pair shielded cable and terminated in a balanced configuration of 110 Ohms at the destination. This format is not polarity (phase) conscious, but +ve and -ve marks are provided beside the output connector for consistency in wiring. However, it is important that the cable lengths and losses of the pair be the same. In particular, patch bays can introduce these problems, resulting in distorted eye patterns and thus, high bit error rates.

This format is not generally suited to long cable runs. For these applications the unbalanced 75 Ohm output should be used.

AES Digital Output Configuration:

There are four pairs of pads on the reverse side of the rear assembly marked \blacksquare . To convert a rear assembly from 110 Ω balanced to 75 Ω unbalanced connect each pair of pads together.

Analogue Audio:

Balanced analogue 'Left 1', 'Right 1', 'Left2' and 'Right2' audio outputs are provided. These are low impedance and may be connected to either 600 Ω or high impedance balanced inputs.

It is essential that relative phasing of 'Left' and 'Right' channels is maintained and +ve and –ve markings are provided next to the connectors to facilitate correct connection. These connectors are polarised to ensure correct orientation.

Front & rear panel connector diagrams

The following front panel and rear assembly drawings are not to scale and are intended to show connection order and approximate layout only.

> Alarm

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Maintenance:

No regular maintenance is required.

Care however should be taken to ensure that all connectors are kept clean and free from contamination of any kind. This is especially important in fibre optic equipment where cleanliness of optical connections is critical to performance.

Storage:

If the equipment is not to be used for an extended period, it is recommended the whole unit be placed in a sealed plastic bag to prevent dust contamination. In areas of high humidity a suitably sized bag of silica gel should be included to deter corrosion.

Where individual circuit cards are stored, they should be placed in antistatic bags. Proper antistatic procedures should be followed when inserting or removing cards from these bags.

Warranty & Service

Equipment is covered by a limited warranty period of three years from date of first delivery unless contrary conditions apply under a particular contract of supply. For situations when "No **Fault Found**" for repairs, a minimum charge of 1 hour's labour, at IRT's current labour charge rate, will apply, whether the equipment is within the warranty period or not.

Equipment warranty is limited to faults attributable to defects in original design or manufacture. Warranty on components shall be extended by IRT only to the extent obtainable from the component supplier.

Equipment return:

Before arranging service, ensure that the fault is in the unit to be serviced and not in associated equipment. If possible, confirm this by substitution.

Before returning equipment contact should be made with IRT or your local agent to determine whether the equipment can be serviced in the field or should be returned for repair.

The equipment should be properly packed for return observing antistatic procedures.

The following information should accompany the unit to be returned:

- 1. A fault report should be included indicating the nature of the fault
- 2. The operating conditions under which the fault initially occurred.
- 3. Any additional information, which may be of assistance in fault location and remedy.
- 4. A contact name and telephone and fax numbers.
- 5. Details of payment method for items not covered by warranty.
- 6. Full return address.
- 7. For situations when "No **Fault Found"** for repairs, a minimum charge of 1 hour's labour will apply, whether the equipment is within the warranty period or not. Contact IRT for current hourly rate.

Please note that all freight charges are the responsibility of the customer.

The equipment should be returned to the agent who originally supplied the equipment or, where this is not possible, to IRT direct as follows.

Equipment Service IRT Electronics Pty Ltd 26 Hotham Parade ARTARMON N.S.W. 2064 AUSTRALIA

 Phone:
 61 2 9439 3744
 Fax:
 61 2 9439 7439

 Email:
 service@irtelectronics.com
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