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IRT Eurocard Types

DVA-3009

Dual 270 Mb/s ASI/SDI 3 O/P Distribution Amplifier

Designed and manufactured in Australia

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

DVA-3009

Dual 270 Mb/s ASI/SDI 3 O/P Distribution Amplifier

Instruction Manual

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This instruction manual applies to units later than S/N 0301001

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.

General Description

The DVA-3009 270 Mb/s serial digital video distribution amplifier provides the user with a single standard module to cover a wide range of distribution and monitoring functions for SDI or ASI signals. Two triple output distribution amplifiers are provided on the one card.

Due to the fact that standard loop through techniques used in the analogue domain are unsuitable to the digital domain most digital equipment comes with no facility to route the input signal to other locations.

As digital equipment usually lack “loop through” inputs a DA is required at almost every point in the digital chain.

Serial digital signals also suffer severe deterioration over relatively short cable distances. The DVA-3009 provides a means of extending the working distances that can be achieved by equalising and re-transmitting the data in mid route.

The DVA-3009 may also be used to provide input equalisation for devices not having this feature, as most unequalised inputs will only support cable lengths of less than 20 metres.

Frequent re-clocking of serial digital signals can lead to serious increases in jitter with resultant data errors. The DVA-3009 does not include re-clocking, which minimises these errors, leaving re-clocking to be done by the receiving device.

For applications requiring reclocking the DVA-3007 should be used.

To provide for the polarity sensitive nature of ASI signals, all outputs of the DVA-3009 are in phase with the input.

The DVA-3009 may be mounted in IRT's 1 RU or 3 RU frames with other analogue or digital modules.

Standard Features:

- **For use as buffer or distribution amplifier.**
- **3 non inverting outputs on each amplifier.**
- **Automatic input equalisation to 300 metres.**
- **Low jitter on the output, <0.1UI when equalising 100m of cable.**
- **Automatic output muting on no input.**
- **Front panel monitoring output, signal presence LED and external alarm contacts.**
- **Non reclocking design ideal for use in conjunction with reclocking DA to provide additional outputs.**

Technical specifications

DVA-3009

Input:

Number	2.
Impedance	75 Ohm.
Return loss	>20 dB 5 MHz to 360 MHz.
Equalisation	Automatic, better than 300 metres at 270 Mb/s for Belden 8281 or equivalent cable. (reduces to approx. 200m when LK3 (input A), LK4 (input B) is closed).

Outputs:

Number	3 ASI/SDI per input.
Signal level	800 mV \pm 10%
Impedance	75 Ohm.
Return loss	>20 dB 5 MHz to 360 MHz.
DC offset	Nil.

Performance:

Cable compensation	Automatic, better than 300 metres at 270 Mb/s for Belden 8281 or equivalent cable. (reduces to approx. 200m when LK3 (input A), LK4 (input B) is closed).
Output rise time	<1 ns, (700 ps typically).

Alarms:

Signal Loss on either channel or power failure	Contact closure. Link selectable N.O./N.C.
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Connectors:

BNC.

Indicators:

Power	LED (green) for +5 Vdc.
Signal present	LED (green) when signal present for each input.

Power requirement:

Voltage	28 Vac CT (14-0-14) or \pm 16 Vdc
Consumption	2.5 VA (<80 mA).

General:

Temperature range	0 - 50° C ambient
Mechanical	Suitable for mounting in IRT 19" rack chassis with input, output and power connections on the rear panel.
Dimensions	6 HP x 3U Extended Eurocard (220 mm x 100 mm).
Weight	With rear assembly 365g.
Finish:	Grey, with black lettering & red IRT logo
Front panel	Detachable silk-screened PCB with direct mount connectors to Eurocard and external signals
Rear assembly	
Supplied accessories	Rear connector assembly with matching connector for alarm outputs.

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

Technical Description

The DVA-3009 consists of two identical circuits. The input circuits of the DVA-3009 consists of an adaptive cable equaliser IC, which automatically adapts to equalise any cable length from zero metres to lengths that attenuate the signal by 40 dB at 135 MHz. This corresponds to 300 metres of Belden 8281 cable. When link LK3 is closed, for input circuit A, or link LK4 is closed, for input circuit B, equalisation is reduced to approx. 200 metres for use in noisy environments or when a short input cable is used. A carrier detect and output mute circuit is used to mute the output when no signal is present. The DVA-3009 is insensitive to the pathological patterns that can be present in the serial digital video signal.

The outputs of the input stages are coupled to cable driver circuits to provide the two sets of three isolated in phase outputs from the DVA-3009.

The input cable equaliser circuits U1 & U4 incorporate a carrier detection circuit to mute the output when no signal is applied to the unit. The carrier detect signal energises relays, RL1 via a transistor Q1, for input A, and RL2 via a transistor Q2, for input B, when carrier is present. The relay contacts are connected to SK10 on the rear panel to give a failure alarm in the form of a make (or break) to ground on failure as set by links LK1 & LK2, on the circuit board.

The dual AC inputs are rectified and then regulated by a switch mode regulator circuit to provide the +5V operating voltage for the unit.

Installation

Handling:

The DVA-3009 contains static sensitive devices and proper static free handling precautions should be observed.

When individual modules are stored, they should be placed in antistatic bags and proper antistatic procedures should be followed when inserting and removing cards from these bags.

Power:

Ensure that the voltage selection of the IRT mounting frame used to house the DVA-3009 and the local AC mains supply voltage match and that the correct rating fuse is installed in the mounting frame power supply.

Earthing:

Chassis earth connection of the equipment-mounting frame is via the earth connection on the three pin (IEC) AC mains supply inlet. This is a safety earth and must be connected.

Installation in frame or chassis:

See details in separate manual for selected frame type.

LK1 & LK2 are factory set for a contact make to ground on signal failure at SK10 pins 3 & 2 on the rear panel, move LK1 & LK2 from the normally closed (N.C.) to the normally open (N.O.) position for a break to ground on signal or power loss.

Links LK3 & LK4 closed reduces the input equalisation to approx. 200m for use in noisy environments or when short input cable is used.

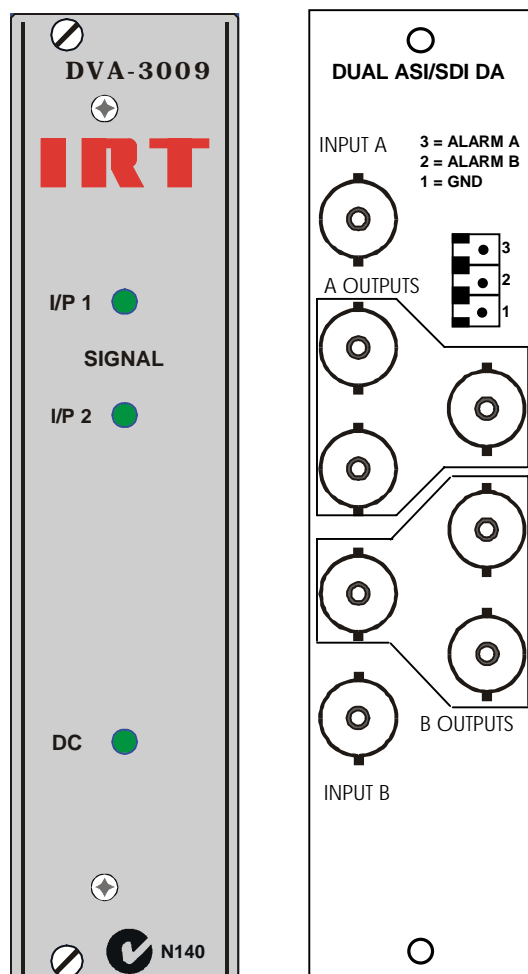
The presence of signal is indicated by the 'SIGNAL PRESENT' front panel LED (green).

The presence of the internal +5 Vdc supply is indicated by the front panel LED (green).

It is recommended that unused outputs on the rear panel be terminated with 75 ohm termination plugs.

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.



Maintenance & storage

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 \$A100.00 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 \$A100.00 will apply, whether the equipment is within the warranty period or not.

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
Email: service@irtelectronics.com

Fax: 61 2 9439 7439

Drawing List Index

Drawing #	Sheet #	Description
804653		Dual ASI/SDI Distribution Amplifier.

