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## **IRT Eurocard Types**

### **DVA-3006**

#### **270 Mb/s ASI/SDI 8 O/P Distribution Amplifier**

**Designed and manufactured in Australia**

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

# **DVA-3006**

## **270 Mb/s ASI/SDI 8 O/P Distribution Amplifier**

### **Instruction Manual**

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This instruction manual applies to units later than S/N 0303051

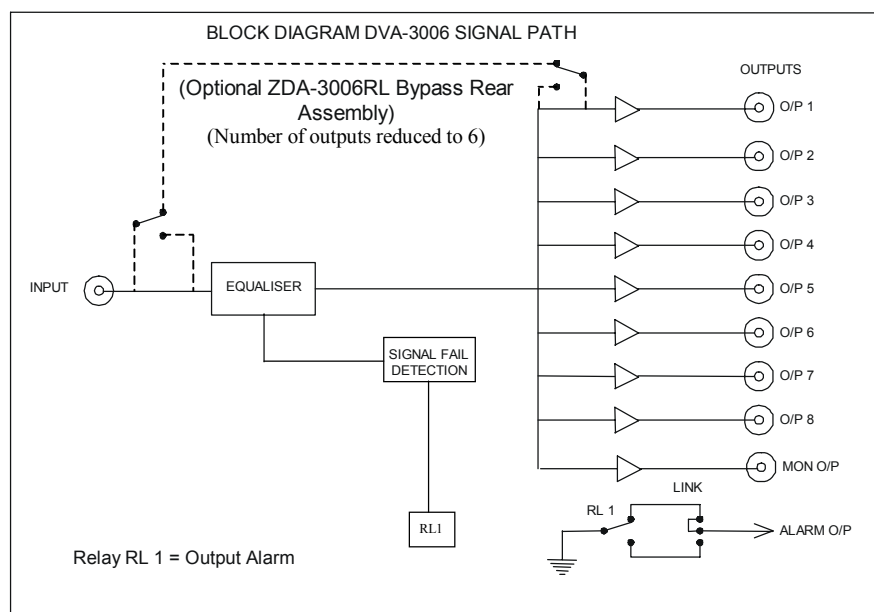
#### **Operational Safety:**

##### **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-3006 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 ASI or SDI signals.

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 a result 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-3006 provides a means of extending the working distances that can be achieved by equalising and re-transmitting the data in mid route.

The DVA-3006 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-3006 does not include re-clocking so as to minimise these errors, leaving re-clocking to be done by the receiving device. For applications requiring reclocking the DVA-3007 should be used.

An optional rear assembly, ZVA-3006RL (sold separately), provides a bypass relay to switch the Input (SK1) to Output 1 (SK2) in the event of a power failure. When this bypass rear assembly is used, number of outputs is reduced to 6.

The DVA-3006 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.**
- **8 x in phase 270 Mb/s ASI or 143, 177, 270, 360 Mb/s SDI non reclocked outputs.**
- **Automatic input equalisation to 250 metres.**
- **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-3006

### Input:

Number	1.
Impedance	75 Ohm.
Return loss	>20 dB 5 MHz to 270 MHz. (>15 dB with optional ZVA-3006RL bypass rear assembly)
Equalisation	Automatic better than 250 metres at 270 Mb/s for Belden 8281 or equivalent cable (reduces to 200m when LK2 is closed).

### Outputs:

Number	8 ASI or SDI plus one front panel monitoring output.
Signal level	800 mV $\pm$ 10%
Impedance	75 Ohm.
Return loss	>20 dB 5 MHz to 270 MHz. (>15 dB with optional ZVA-3006RL bypass rear assembly)
DC offset	Nil.

### Performance:

Output rise time	<1 ns, (700 ps typically).
Residual Jitter	<0.1 UI (measured with up to 300m of Belden 8281 or equivalent cable)

### Connectors:

BNC.

### Indicators:

Power	LED (green) for +5v.
Signal present	LED (green) when valid ASI/SDI signal present.

### Power requirement:

Voltage	28 Vac CT (14-0-14 Vac) or $\pm$ 16 Vdc.
Consumption	2.0 VA (including ZVA-3006RL optional rear assembly).

### General:

Temperature range	0 - 50° C ambient
Mechanical	Suitable for mounting in IRT 19" 1RU and 3RU rack chassis Size 6 HP x 3U Extended Eurocard (220 mm x 100 mm). With rear assembly 340g.
Weight	
Finish:	
Front panel	Grey background, black lettering & red IRT logo.
Rear assembly	Detachable silk screened PCB with direct mount connectors to Eurocard and external signals.
Standard accessories:	Rear connector assembly (supplied with module).
Optional accessories	ZVA-3006RL relay bypass rear assembly (6 O/P).

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

## Technical Description

The input circuit of the DVA-3006 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 200 MHz. This corresponds to 300 metres of Belden 8281 cable. When link LK2 is closed equalisation is reduced to 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-3006 is insensitive to the pathological patterns that can be present in the serial digital video signal.

The DVA-3006 also features an OUTPUT MONITOR point on the front panel. The output monitor is a isolated copy of the signal present at the rear panel outputs.

The output of the input stage is coupled to cable driver circuits to provide the eight isolated in phase outputs from the DVA-3006.

The input cable equaliser circuit U1 incorporates a carrier detection circuit to mute the output when no signal is applied to the unit. The carrier detect signal energises a relay, RL1 via a transistor, Q1, 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 a link LK1, 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.

+5Vdc is fed to pin 32a of the rear Euro-connector via a polyfuse, JP2. The +5V is to provide power for a signal bypass relay on the optional ZVA-3006RL bypass rear assembly, should one be used. The polyfuse protects the +5V power rail by going high impedance should pin 32a be shorted to ground. This protects against the accidental insertion of the DVA-3006 in anything other than its standard rear assembly or the optional ZVA-3006RL rear assembly.

## Installation

### Handling:

The DVA-3006 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-3006 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 is factory set for a contact make to ground on signal failure at SK10 pin 2 on the rear panel, move LK1 from the normally closed (N/C) to the normally open (N/O) position for a break to ground on signal or power loss.

Link LK2 closed reduces the input equalisation to 200m for use in noisy environments or when short input cable is used.

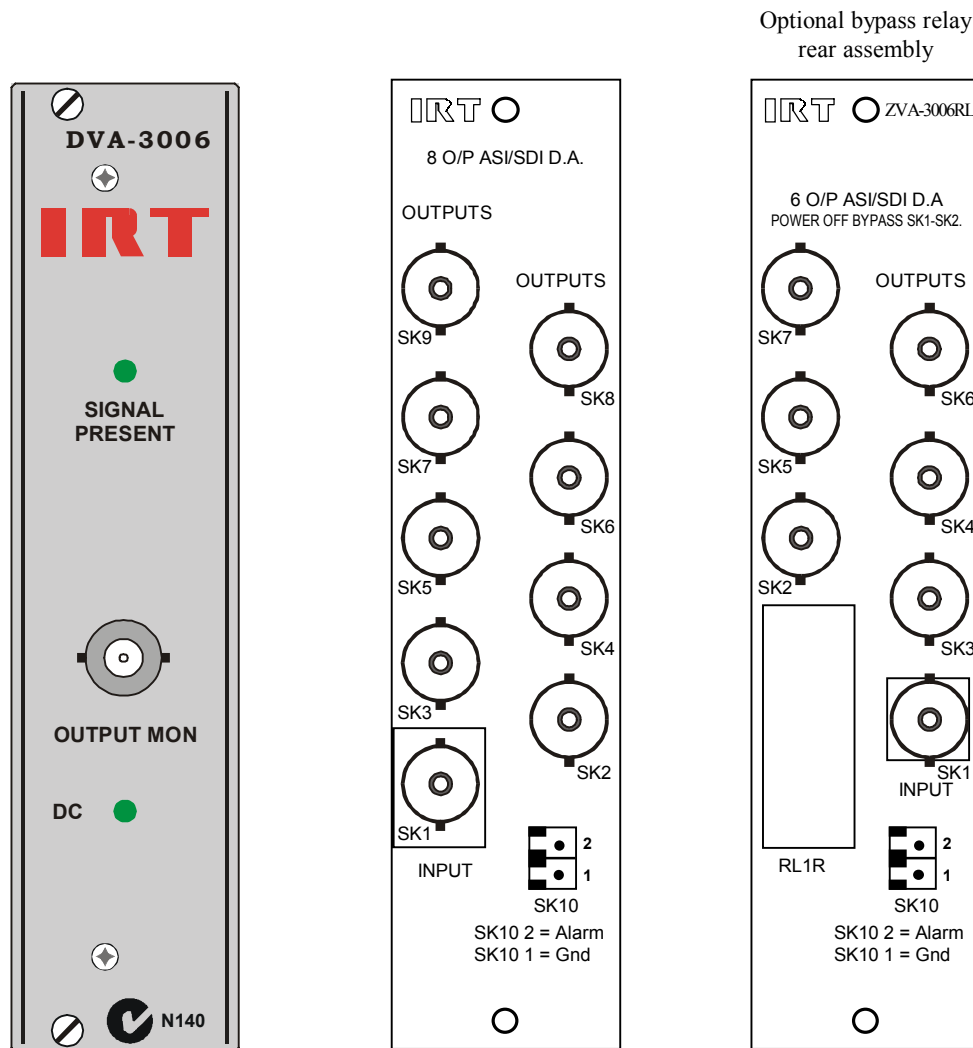
The presence of signal is indicated by the 'SIGNAL PRESENT' front panel LED (green).

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.



**Note** that the ZVA-3006RL is an optional relay bypass rear assembly (sold separately), which bypasses the input direct to output 1 in the event of a power failure. This optional rear assembly is only compatible with both the DVA-3006 and DVA-3007 ASI distribution amplifiers and not the previous ASI/SDI distribution amplifiers, DVA-3001 to DVA-3005.

## 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

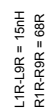
Phone: 61 2 9439 3744  
Email: service@irtelectronics.com

Fax: 61 2 9439 7439


## Drawing List Index

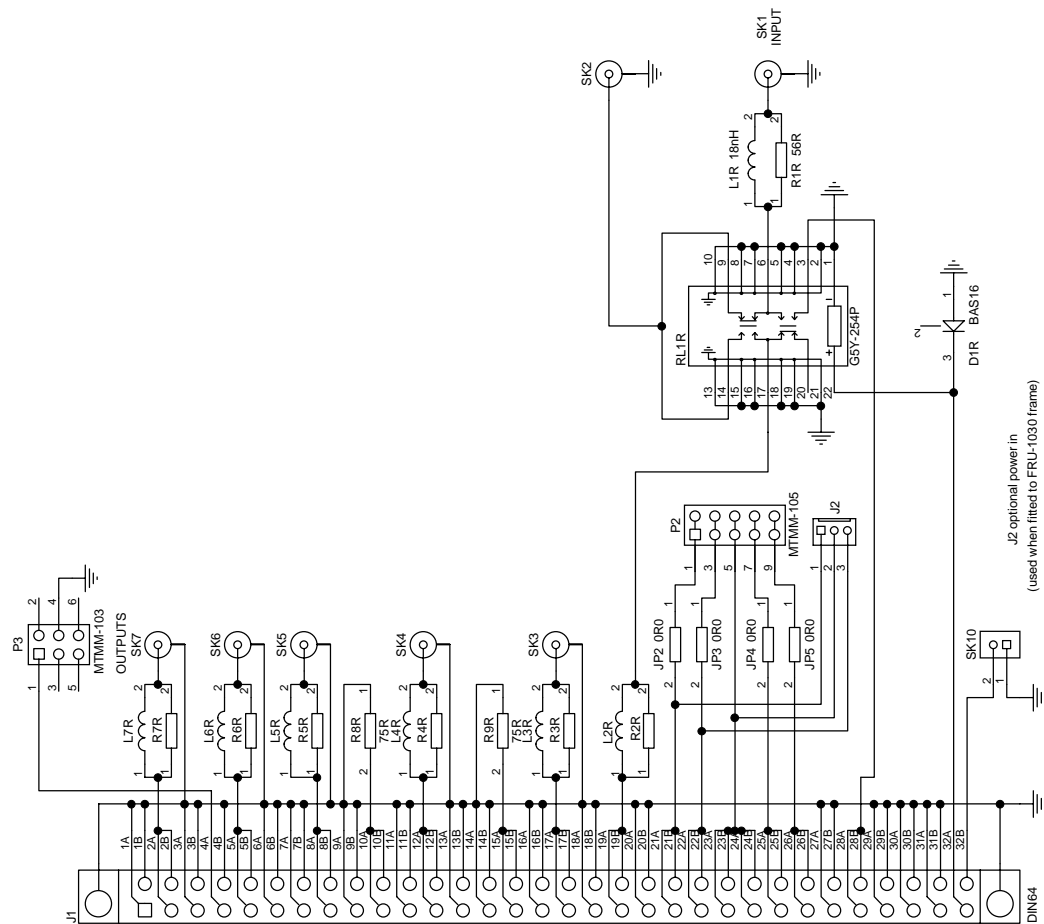
Drawing #	Sheet #	Description
804500	1	DVA-3006 SDI/ASI Distribution Amplifier.
804673		ZVA-3006RL Bypass Relay rear assembly (optional).





1	25-03-02	© COPYRIGHT DO NOT COPY NOR DISCLOSE TO ANY THIRD PARTY WITHOUT WRITTEN CONSENT DRAWN K.N. CHECKED
2	14-11-02 ECR1411	
3	10-01-03 ECR1439	

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	<p><b>DRAWN</b> K.N.</p>	<p><b>SIZE</b> A3</p>	<p><b>Title</b> DVA-3006 SDI/ASI Distribution Amplifier</p>
	<p><b>CHECKED</b></p>	<p><b>SCALE</b> N.T.S.</p>	<p><b>Drawing No.</b> 804500</p>
	<p><b>ENG. APP.</b></p>	<p><b>Sheet</b> 1 of 1</p>	
<p><b>Date:</b> 26-Feb-2003 <b>Revision:</b> 3 ARTARMON NSW AUSTRALIA 2064 IRT Electronics Pty. Ltd.</p>			



L2R-L7R = 18mH  
R2R-R7R = 220R

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SIZE	A3	Title	
DRAWN	K.N.	ZVA-3006RL SDI/ASI D.A. Rear Panel	
CHECKED		Drawing No. 804673	
ENG. APP.		Sheet 1 of 1	
Revision:	1	IRT Electronics Pty. Ltd.	
Date:	14-Nov-2002	ARTARMON NSW AUSTRALIA 2064	

1 11-07-02  
2 11-11-02 ECR1415