I R T Electronics Pty Ltd A.B.N. 35 000 832 575
26 Hotham Parade, ARTARMON N.S.W. 2064 AUSTRALIA
National: Phone: (02) 9439 3744 Fax: (02) 9439 7439
International: +61 2 9439 3744 +61 2 9439 7439
Email: sales@irtelectronics.com
Web: www.irtelectronics.com

IRT Eurocard Types

DVA-3002
Serial Digital VDA

Designed and manufactured in Australia

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

DVA-3002

Serial Digital VDA

Instruction Manual

Table of Contents

This instruction manual applies to DVA-3002 assembly 804048 units later than S/N 9710001

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 IRT DVA-3002 is a one in eight out distribution amplifier for SMPTE/EBU serial digital video signals.

The DVA-3002 features an input circuit with automatic cable equalisation for Belden 8281 or PFS1/2 coaxial cable and cable driver circuits for nine individually sourced outputs, eight outputs are provided on the rear connector panel and the ninth output is a monitoring output on the front panel of the unit.

The input cable equaliser circuit incorporates a carrier detection circuit to mute the output when no signal is applied to the unit. The DVA-3002 uses the carrier detect signal to energise a relay 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 LK1 on the circuit board.

The DVA-3002 is built in a 3U extended Eurocard 220 mm x 100 mm modules designed to mount in the IRT FR-700, FR-722A, FR-748 and FRU-1030 family of Eurocard frames.

Applications

The DVA-3002 is intended to be used where multiple signal outputs are required from equipment with only one output and to provide input cable equalisation for devices not having this feature as most unequalised inputs will only support input signal cable lengths of less than 20 metres.

Frequent reclocking of a serial digital signal can lead to increased jitter and unnecessary increased cost, complexity and transit time in circuits. The DVA-3002 is therefore the unit of choice where reclocking of the signal is provided by the destination equipment or otherwise where reclocking is not deemed necessary.

Technical specifications

DVA-3002

Input:

Number	1.
Impedance	75 Ohm.
Return loss	>15 dB 5 MHz to 360 MHz.

Outputs:

Number	9.
Signal level	800 mV ± 10%
Impedance	75 Ohm.
Return loss	>15 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 PSF1/2 cable.
Output rise time	<1 ns, (700 ps typically).

Connectors:

BNC.

Indicators:

Power	LED (green) for +5v.
Signal present	LED (green) for signal present.
Signal fail (relay contacts)	Rear panel SK10 (pins 1 and 2)

Power requirement:

Voltage	28 Vac CT (14-0-14 Vac) or ±16 Vdc.
Consumption	2.5 VA (<90 mA).

General:

Temperature range	0 - 50° C ambient
Mechanical	Suitable for mounting in IRT 19" rack chassis types FR-700 & FR-722 with input, output and power connections to the rear.
Size	6 HP x 3U Extended Eurocard (220 mm x 100 mm).
Weight	With rear assembly 330g.
Finish:	
Front panel	Grey enamel, silk screened 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).

Circuit Description

The input circuit of the DVA-3002 consists of U1 a CLC014 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. A carrier detect and output mute circuit in the CLC014 is used to mute the output when no signal is present. The CLC014 is insensitive to the pathological patterns that can be present in the serial digital video signal.

The DVA-3002 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 CLC014 input stage is coupled to U2, U3 and U5 CLC007 cable driver circuits to provide the nine isolated outputs from the DVA-3002.

Note the cable driver outputs are complementary signals thus signal inversion can occur between the input and three of the outputs of the DVA-3002.

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 relay RL1 via inverter 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 LK1 on the circuit board.

The dual AC inputs are rectified by D1 to D4, and then regulated in a LM2575-5 switch mode regulator circuit U4 to provide the +5V operating voltage for the unit.

Installation

Handling:

The DVA-3002 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-3002 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.

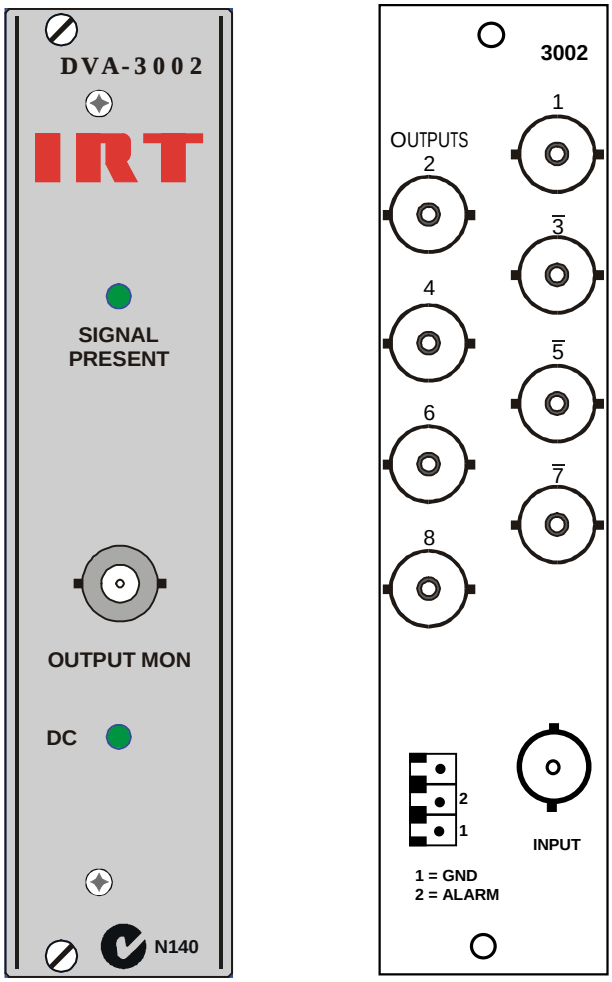
The presence of signal is indicated by the ‘SIGNAL PRESENT’ front panel LED (green).

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.

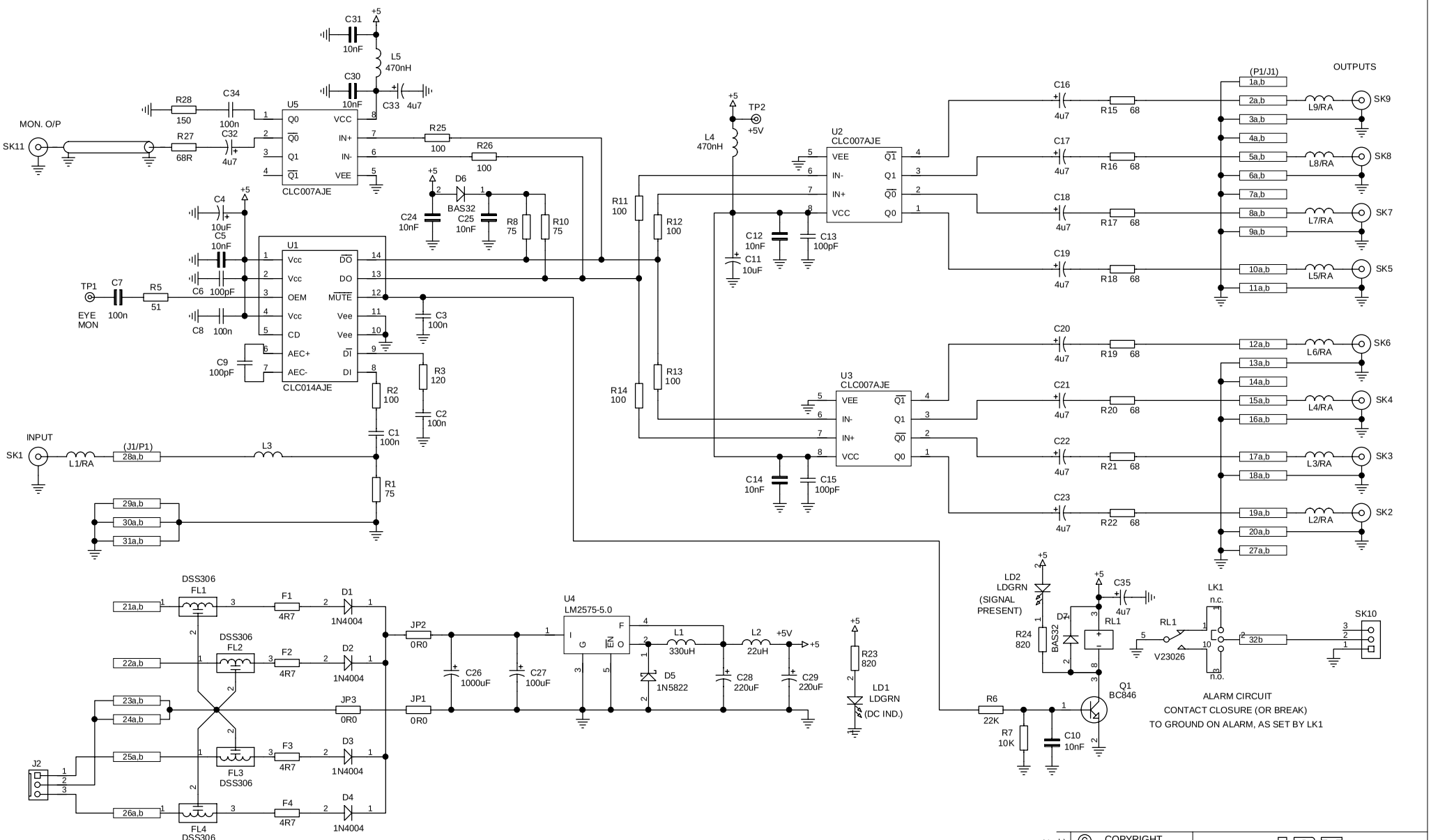
The equipment should be returned **to the agent who originally supplied the equipment or, where this is not possible**, to IRT direct as follows.

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

Phone: 61 2 9439 3744 Fax: 61 2 9439 7439
Email: service@irtelectronics.com

Drawing List Index

Drawing #	Sheet #	Description
804048	1	DVA-3002 serial digital VDA schematic diagram.



PCB 804049R

1 29-01-97
2 30-06-97

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SIZE A3	Title DVA-3002 SERIAL DIGITAL VIDEO DISTRIBUTION AMPLIFIER	
DRAWN K.N.		
CHECKED	SCALE N.T.S.	Drawing No. 804048 — Sheet 1 of 3
ENG. APP.		
Revision: 2	IRT Electronics Pty. Ltd. ARTARMON NSW AUSTRALIA 2064	
Date: 23-Mar-2001		