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IRT Eurocard Type

DVA-3003
Reclocking Serial Digital VDA

Designed and manufactured in Australia

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

DVA-3003

Serial Digital Reclocking VDA

Instruction Manual

Table of Contents

This instruction manual applies to DVA-3003 assembly 804224
units later than S/N 9901000

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.

Description

The IRT DVA-3003 is a one in eight out distribution amplifier for SMPTE/EBU serial digital video signals. The module may also be used with 270 Mb/s ASI signals, but due to the polarity consciousness of this format, only four outputs are available.

The unit features an input circuit with automatic cable equalisation for Belden 8281 or PFS1/2 coaxial cable and cable driver circuits for eight individually sourced outputs.

In addition the DVA-3003 provides reclocking of the input serial digital signal.

The amplifier is built in a 3U extended Eurocard 220 mm x 100 mm module designed to mount in the family of Eurocard frames.

Applications

The DVA-3 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-3003 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.

The DVA-3003 is the unit of choice where signal deterioration may have occurred and equalisation and reclocking are advised.
Where more than eight reclocked outputs are required these can most economically be obtained by a DVA-3003 feeding the required number of DVA-3002's.

Technical Specifications
DVA-3003

Signal input:

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

Signal outputs:

Number	8 SDI or 4 ASI plus one front panel monitoring output.
Type	Reclocked.
Level	800 mV ±10% into 75 Ω.
Impedance	75 Ω.
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.
Reclocking	Auto rate selection of 143, 177, 270 and 360 Mb/s.
Rise time	<1.0 ns, (700 ns typically).
Residual jitter	<200 ns, (150 ns typically) at 270 Mb/s.

Connectors:

Signal	BNC 75 Ohms.
Alarm	Krone IDC.

Indicators:

Power	LED (green) for +5 V.
Signal present	LED (green).
270 Mb/s lock	LED (green).
360 Mb/s lock	LED (yellow).

Alarm:

Signal loss	Contact closure. Link selectable NO/NC.

Power requirement:

Voltage	28 Vac CT (14-0-14 Vac) or ±16 Vdc.
Consumption	7 VA (<240 mA).

Other:

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.
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.
Dimensions		6 HP x 3 U x 220 mm IRT Eurocard.
Standard accessories (supplied with module)		Rear connector assembly.

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

Circuit Description

DVA-3003:

The input circuit 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 40dB at 200MHz. 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 output of the CLC014 input stage is coupled to U2 a CLC016 data re-timing PLL with automatic rate selection. The CLC016 is set up for automatic rate selection on the SMPTE 259M/EBU serial data rates of 143,177,270 and 360 Mb/s. As with U1 (the CLC014 input stage) the carrier detect and mute circuit of U2 is used to mute the output when no signal is present. U2 the CLC016 has a low residual output jitter of less than 170 ps p-p at 270 Mb/s and is insensitive to the pathological patterns that can be present in the serial digital video signal.

The output of the CLC016 re-timing stage is coupled to cable driver circuits, U3 a CLC007 and U4 a CLC006 to provide the eight isolated outputs from the DVA-3001.

Note the cable driver outputs are complementary signals thus signal inversion can occur between the input and four of the outputs of the DVA-3001.

IC's U5 and U6 provide the necessary LED drivers and logic to decode the rate detection indications from U2. LED LD2 is used to indicate the state of the carrier detect circuit, indicating the presence of signal to the re-timing IC U2, and LED LD3 is used to indicate lock of a 270 Mb/s rate signal by U2. Whilst the logic and drivers for indications of 360 Mb/s, PAL and NTSC rates are provided, the LED's for these functions are not provided on the front panel to avoid confusion. These may be inserted by the user if so desired.

The dual AC inputs are rectified by D1 to D4, and then regulated in a LM2575-5 switch mode regulator circuit U7 to provide the +5V operating voltage for the unit.

Installation

Handling:

The DVA-3003 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-3003 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.

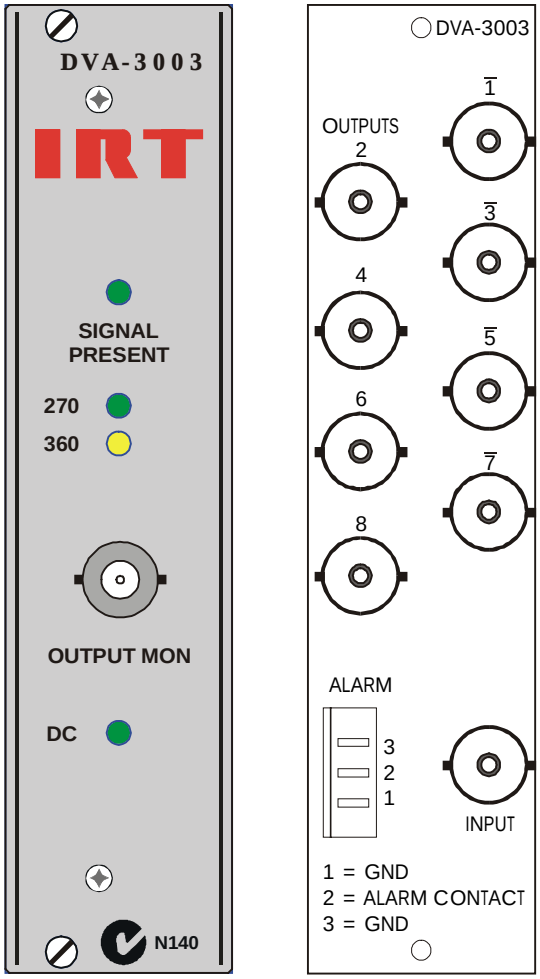
Installation:

To install the module in a frame please see instructions for the appropriate frame type in the frames/PSU's manual.

The DVA-3003 does not require any adjustment prior to use. There are no external controls on the front panel of the units.
The presence of the internal +5 Vdc supply is indicated by the front panel LED (green).

Front & rear panel connector diagrams

The following front panel and rear assembly drawings are not to scale and are intended to show relative positions of connectors, indicators and controls 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.

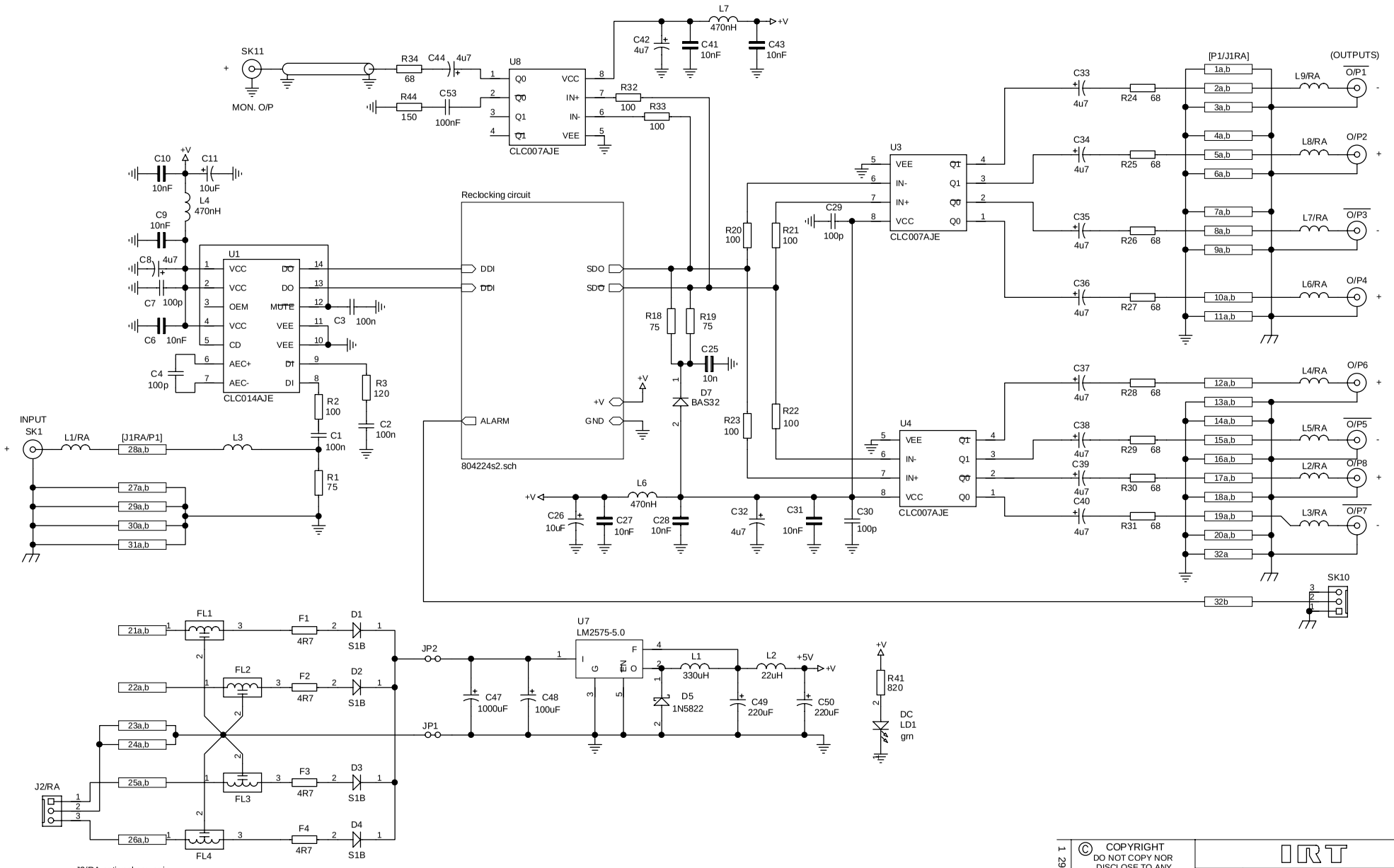
Equipment Service
IRT Electronics Pty Ltd
26 Hotham Parade
ARTARMON
N.S.W. 2064
AUSTRALIA

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

Drawing Index

Note: Components marked n/c on the diagrams are optional and are not included on standard production units. They are shown to assist with interpretation of additional or optional functions, which may be included or are necessary for factory set-up procedures.

Drawing #	Sheet #	Description
804224	1	DVA-3003 input, output and power supply diagram.
804224	2	DVA-3003 reclocking and indicator diagram.



J2/RA optional power in
(used when fitted to FRU-1030 frame)

PCB 804216 ISS.1

1 29-09-1998			
DRAWN K.N.	SIZE A3	Title DVA-3003 RECLOCKING SERIAL D.A.	
CHECKED	SCALE N.T.S.	Drawing No. 804224	Sheet 1 of 4
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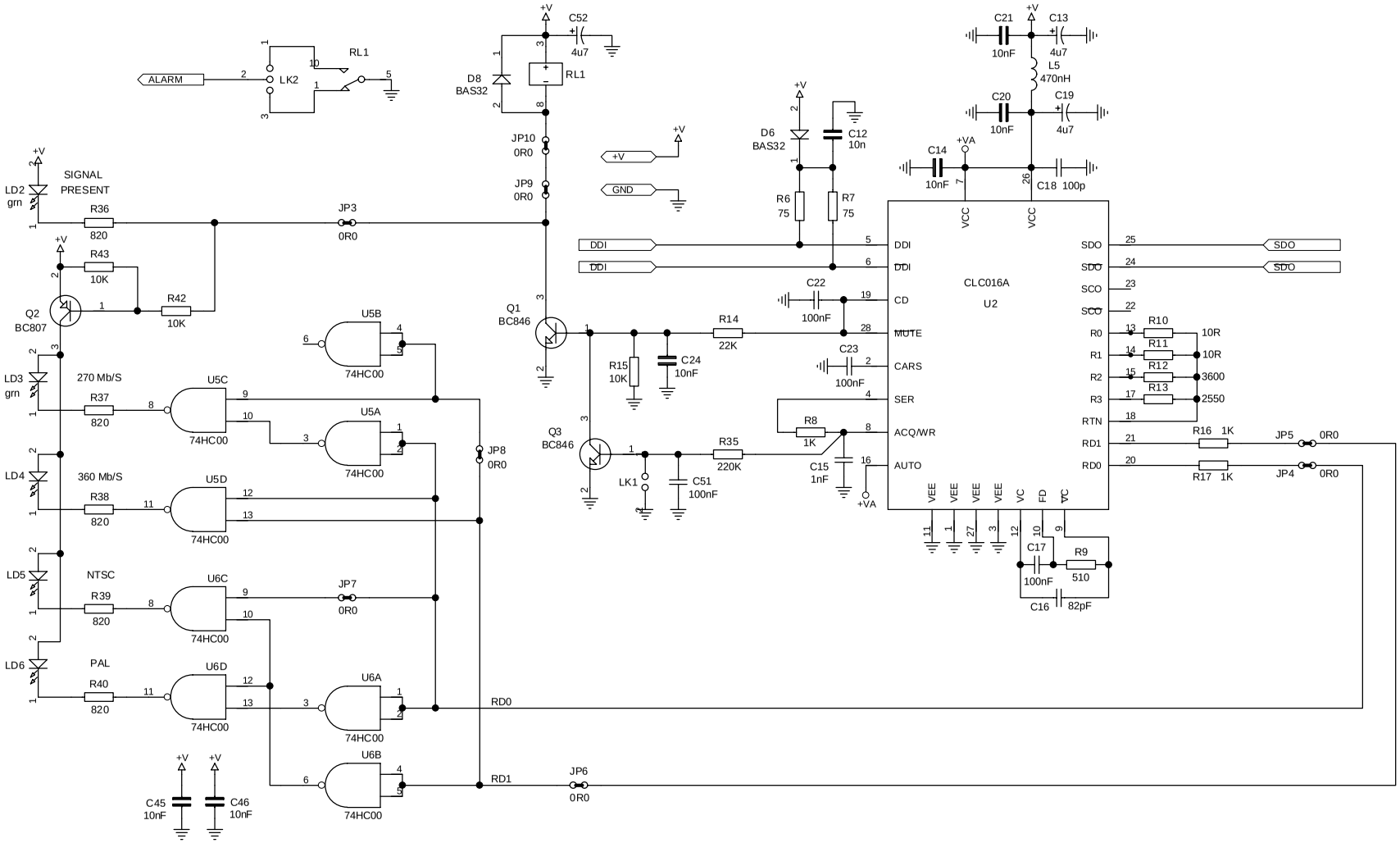
Date: 28-Mar-2001			



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2 04-12-00 ECR1154	DRAWN K.N.	SIZE A3 — Title DVA-3003 RECLOCKING SERIAL D.A.
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