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IRT Eurocard

DDA-3104

(Telstra SI 347/110)

Serial Digital 140 Mb/s Data Distribution Amplifier

Instruction Manual - DDA-3104 (Telstra SI 347/111)

Designed and manufactured in Australia

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

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Serial Digital 140 Mb/s Data Distribution Amplifier

Instruction Manual

Table of Contents

This instruction manual applies to DDA-3104 assembly 804074 units later than S/N 9700000

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 DDA-3104

Serial Digital 140 Mbits/s Data Distribution Amplifier

General Description

The IRT DDA-3104 is a one in four out data distribution amplifier whose input and outputs comply with ITU Rec G703 (140 Mbit rate).

The DDA-3104 provides input cable equalisation and reclocking of the serial digital signal, muting of the output signal when no input signal is applied and an external alarm contact on loss of signal or loss of the power supply.

Four individually sourced outputs are provided at the rear of the module.

Indicators are provided on the front panel for: Signal present.
Power on.

An external alarm signal is available on the rear panel of the module.

The DDA-3104 is designed to be used where multiple outputs are required from equipment with only one output and to provide input cable equalisation and reclocking of the serial digital signal for devices not having this feature.

Standard features:

- Input and output connections on the rear panel.
- Adaptive input cable equalisation.
- Data regeneration & re-clocking.
- External alarm.
- IRT Eurocard construction compatible with other IRT Eurocard modules and frames.
- Dual power supply operation.

Equipment provided:

Standard: DDA-3104 140 Mb/s Data distribution amplifier module.
DDA-3104 Rear assembly.

IRT Eurocard type DDA-3104

Technical Specifications

140 Mbits/s data:

Input:

Type	AC coupled.
Impedance	75 Ω terminated.
Electrical characteristics	to ITU-T Rec G.703 interface at 139,264 Kbit/s (see below).

Outputs:

Type	AC coupled.
Number	4 regenerated data located on rear connection assembly.
Impedance	75 Ω source terminated.
Electrical characteristics	to ITU-T Rec G.703 interface at 139,264 Kbit/s (see below).

Performance:

Cable Equalisation	0 - 12 dB at 70 MHz. using Belden YR23769 cable.
Jitter Tolerance	As per ITU-T Rec G.823 Table 2.

Connectors:

Data:	1.6/5.6 coaxial.
Alarm:	Krone LSA plus.

Indicators:

Power	LED (green) for +5V.
Signal present	LED (green).

Alarm signal:

General Alarm	Contact closure to ground on a). loss of input signal as detected by reclocking circuit carrier detect circuit or b). power failure.

Power Requirements:

Voltage	28 Vac CT (14-0-14) or ± 16 Vdc.
Power consumption	3 VA (< 107 mA).

Other:

Temperature range		0 - 50° C ambient
Mechanical		Suitable for mounting in IRT 19" rack chassis types FR-748, FR-700, FR-722 & FRU-1030 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		DDA-3104 rear connector assembly (supplied with module).
Optional accessory		Instruction manual.

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

Electrical characteristics of signal:

CMI coded binary signal - to ITU-T Rec G.703

Test load impedance	75 Ohms resistive.
Nominal peak to peak	1.0 ±0.1 V.
Rise time between 10% and 90% amplitudes of the measured steady state amplitude	< 2 ns.
Transition timing tolerance (referred to the mean value of the 50% amplitude points of negative transitions)	Negative transitions: ± 0.1 ns. Positive transitions at unit interval boundaries: ± 0.5 ns. Positive transitions at mid-intervals: ± 0.35 ns.
Input return loss	> 15 dB over the frequency range 7 MHz to 210 MHz.
Output return loss	> 15 dB over the frequency range 7 MHz to 210 MHz.

Circuit Description

The input circuit of the DDA-3104 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 12 dB at 70 MHz.
This corresponds to 160 metres of Belden 8281 cable. A carrier detect and output mute circuit in U1 is used to mute the output when no input signal is present.

The output of U1 is coupled to U2 (a CLC016 data reclocking PLL) set to operate at 140 Mb/s. As with U1 the carrier detect and mute circuit of U2 is used to mute the output when no signal is present.

The output of U2 is coupled to CLC006 cable driver circuits, U4 to U7 to provide the four isolated outputs from the unit.

IC U3 is used to provide an indication of loss of digital signal to the PLL reclocking circuit, which will release RL 1 and extinguish LED indicator LD 2 (signal present). The loss of signal indication using the carrier detect signal of the CLC016 can be added by removing link LK 2, this will OR the PLL out of lock indicator with the carrier detect signal and thus indicate if the incoming carrier is off frequency or if the jitter on the incoming signal exceeds the PLL pull in range. Note the alarm circuit U3 is just that; it does not affect the normal operation of U2 the PLL reclocking circuit which will only mute on carrier failure.

As RL 1 is normally energised, the alarm circuit will indicate both signal loss and power supply loss.

The relay contact common is grounded and the circuit is made or broken to ground on failure as selected by link LK 1. Selecting the normally closed contact (relay un-energised) LK 1 2 to 3, will allow the alarm output of a number of units to be wired in parallel for general fault indication. Selecting the normally open contact (relay un-energised) LK 1, 1 to 2 will allow the alarm output to indicate failure of an individual DDA-3104 unit as well as module removal.

The dual AC inputs are rectified by D1 to D4, and then regulated in a LM2575-5 switch mode regulator circuit U8 to provide the +5V operating voltage for the unit.

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.

Installation

Installation requires the unit to be plugged into the front of the mounting frame and the rear assembly to be secured to the rear panel of the mounting frame. To install the module in a frame please see instructions for the appropriate frame type in the **'IRT Eurocard Frames and Power Supplies'** Manual.

The DDA-3104 is delivered with link LK 1 in the 2 to 3 (N.C.) position and link LK 2 closed. This will give a contact closure to ground at SK 6 pin 2 on the rear panel when a fault condition occurs.

To change to a contact break to ground on a fault condition move LK 1 to the 1 to 2 (N.O) position.

To add the PLL off frequency indication open link LK 2.

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

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

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.

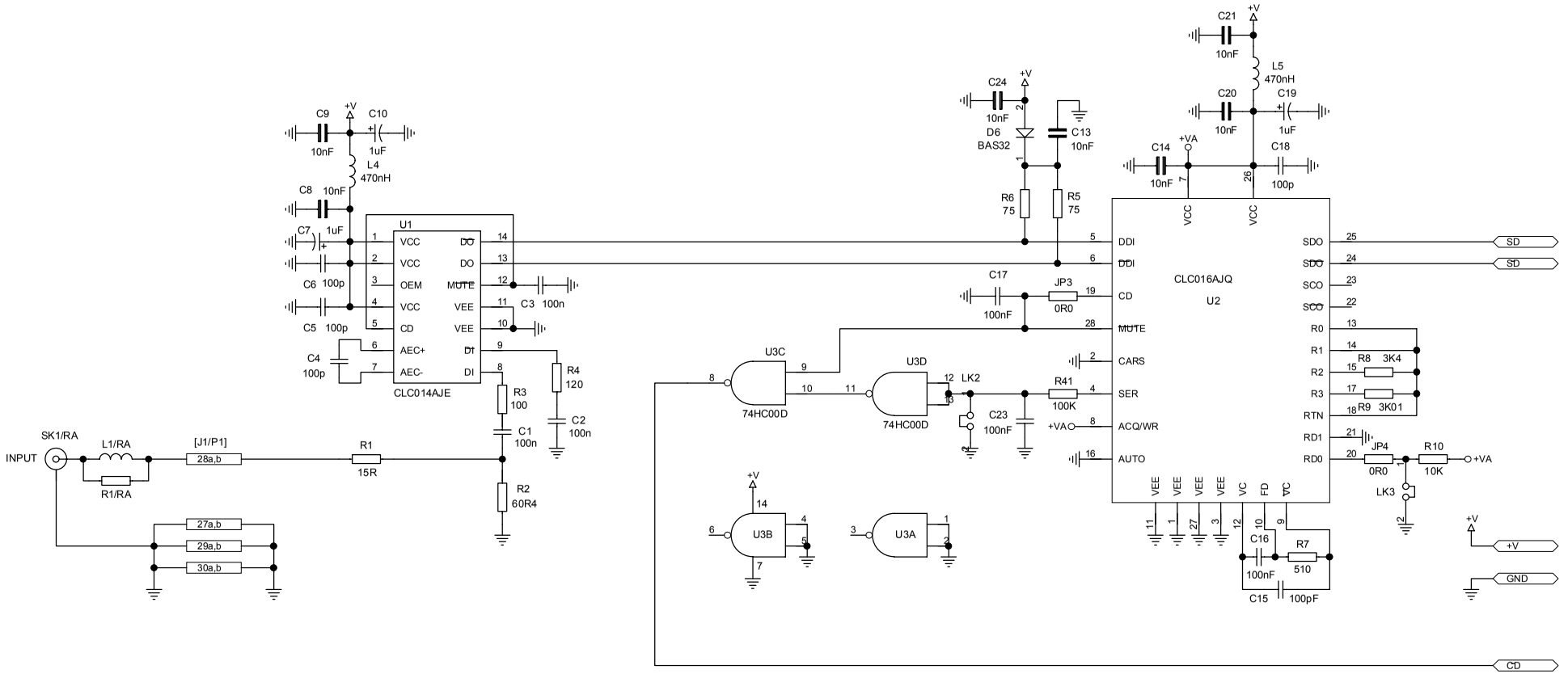
The equipment should be returned **to the agent who originally supplied the equipment or, where this is not possible**, to IRT direct as follows.

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

Drawing #	Sheet #	Description
804074	1	DDA-3104 serial digital DA schematic diagram.
804074	2	DDA-3104 serial digital DA schematic diagram.



LK2 IN ALARM = SIGNAL LOSS ONLY

LK2 OUT ALARM = SIGNAL LOSS + PLL UNLOCK

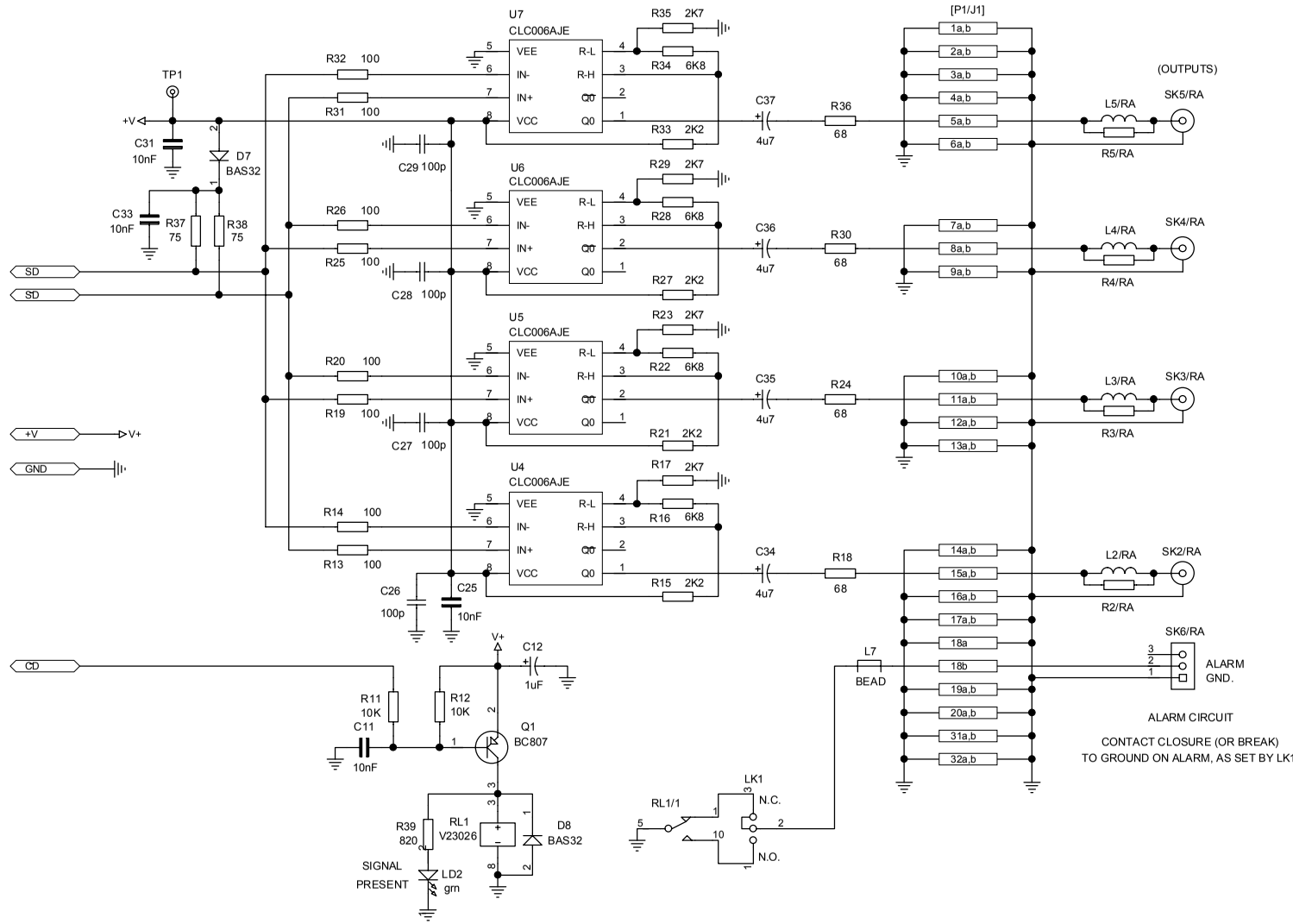
LK3 IN = 140Mb/s OPERATION

LK3 OUT = 155Mb/s OPERATION

J2/RA optional power in
(used when fitted to FRU-1030 or FRU-1031 frame)

PCB 804075R ISS.3

2	07-08-2000		
1	19-03-1997		
DRAWN	K.N.	SIZE A3	Title DDA-3104 140/155Mb/s RECLOCKING D.A.
CHECKED		SCALE N.T.S.	Drawing No. 804074 Sheet 1 of 4
ENG. APP.			
Revision: 2		IRT Electronics Pty. Ltd. ARTARMON NSW AUSTRALIA 2064	
Date: 3-Oct-2001			



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