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IRT Eurocard
Type RWA-3085
RF Distribution Amplifier
for
70 MHz IF signals

Designed and manufactured in Australia

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

IRT Eurocard
Type RWA-3085
RF Distribution Amplifier
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70 MHz IF Signals
Instruction Book

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This instruction book applies to units later than S/N 9900000.

General description

The RWA-3085 has been designed to provide distribution and amplification of signals in 70 MHz IF systems.

An input attenuator with a 20 dB range provides gain control to optimise signal levels at the output. This allows adjustment from -5 dB to +15 dB from input to output.

The amplifier will tolerate a wide range of input levels to a maximum of 0 dBm and a maximum output level of +10 dBm.

The frequency response of the amplifier is tailored to give optimum low noise amplification to 70 MHz IF signals used in satellite distribution.

The amplifier finds special application in the provision of redundant path generation for fibre optic links from satellite sites to control centres.

The amplifier may also be used to distribute one satellite feed to numerous down converters and decoders for viewing multiple channels from one satellite receiving dish.

The RWA-3085 may be mounted in standard IRT Eurocard frames alongside other Eurocard modules including switchers and fibre optic transmitters or receivers for 70 MHz IF signals.

Standard features:

- 40 - 100 MHz frequency response optimised for use in 70 MHz IF distribution.
- Very low noise.
- -5 - +15 dB variable gain control.
- Output monitoring on front panel.

Equipment provided:

Standard:	RWA-3085 RF distribution amplifier module. RWA-3085 Rear connector assembly
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Accessories available:-

FR-700 Eurocard module mounting frame

Mounts up to 12 Eurocard modules and one PT-700 Dual AC power supply side by side in 134 mm of standard rack space (3 Rack Units).

FRU-1030 1 RU chassis conversion/PSU

Converts Eurocards to a 1 rack unit format. The FRU-1030 can be fitted with either one or two Eurocards in a horizontal side by side format. A single AC power supply is included to power the cards.

TME-6 Eurocard extender board.

Instruction Book.

Technical specifications

IRT Eurocard module

Type RWA-3085

RF:

Input:

Number	1.
Impedance	75 Ω .
Return loss	> 14 dB (40 - 100 MHz).
Maximum input level	> 0 dBm.

Outputs:

Number	4 plus 1 x front panel monitoring.
Impedance	75 Ω .
Return loss	> 14 dB (40 - 100 MHz).
Isolation between outputs	> 20 dB (40 - 100 MHz).
Maximum output level	>+10 dBm at 70 MHz.

Performance:

Input/output gain	-5 to +15 dB. Adjustable from front panel.
Frequency response	
(Referenced to 70 MHz)	40 to 100 MHz \pm 1 dB.
Group delay	\pm 2 ns (40 - 100 MHz).
Two tone intermodulation IP3	
(65 MHz + 75 MHz test signals)	> +20 dBm.
Noise	
(Referenced to a -10 dBm signal)	-110 dBc/Hz.

Connectors:

BNC

Power requirements:

Power consumption	14 - 0 - 14 Vac or \pm 15 Vdc.
	<10.5 VA.

Other:

Temperature range	0 - 45° C ambient.
Mechanical	Mounts in IRT 19" rack chassis.
	* Maximum number per frame is dependent on PSU capability, other types of modules in same frame and air circulation - See installation section of manual.

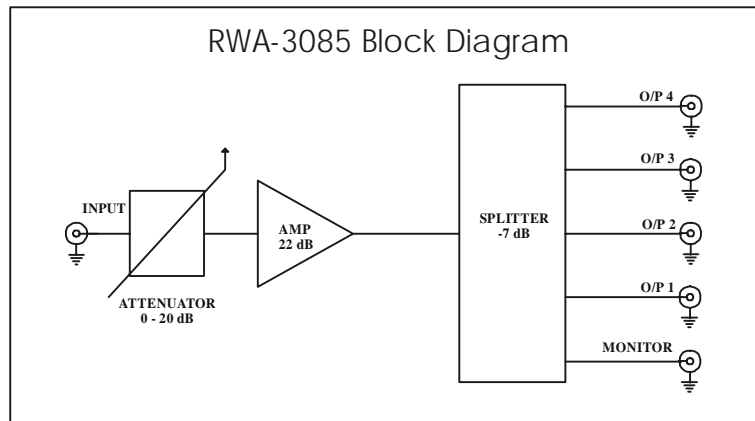
Finish:	Front panel	Grey enamel, silk-screened black lettering & red IRT logo.
	Rear assembly	Detachable silk-screened PCB with direct mount connectors to Eurocard and external signals.

Dimensions	6 HP x 3 U x 220 mm IRT Eurocard.
Dimensions	30 mm x 3 U x 231 mm IRT Eurocard.
Optional accessories	Instruction manual.

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

Technical description

Signal Path:



The block diagram above shows the principal parts of the signal path for the RWA-3085.

The input signal is applied directly to the input variable attenuator module which has a characteristic impedance of 75 Ohms and a maximum attenuation of 20 dB.

The BGY67A wideband RF amplifier hybrid module that follows the attenuator has a fixed gain of approximately 22 dB (maximum 24 dB) resulting in a minimum gain of 2 dB above input level at its output.

The output of the amplifier feeds a passive splitter module with five output ports. The loss at any output is approximately 7 dB, resulting in an overall system gain of from -5 dB to + 15 dB.

Four of the outputs are available on the rear of the amplifier and one on the front panel for monitoring purposes. Note that this front panel output is no different to any other output in its characteristics.

Power supply:

The RWA-3085 is equipped with two AC rectifier circuits to take advantage of the redundant AC power supplies provided in IRT's 3 RU frames.

Filters FIL 1 to 4 and capacitors C1 to 4 provide EMC filtering between the power supply busses and the module.

Resistors F 1 to 4 provide fuse protection to the frames power supply busses in the event of a failure on the module. Should these fail they should only be replaced by resistors of the same type and value or damage may result to the module and may also effect the operation of other modules in the same frame.

The rectified power is filtered by capacitors C 5 to C 12 providing both high and low frequency filtering.

The BGY67A hybrid amplifier module is the only active component in the RWA-3085. This amplifier requires a single sided DC supply of +24 V, which is outside the range normally available from the frame's AC power supply buss.

In order to obtain this supply a DC-DC converter is employed. This converter may be damaged by overvoltage on its input and so input protection is provided by the Zener diode ZD 1 and resistors R 1 & 2, which limit the input voltage to 33 Volts.

The output of the DC-DC converter has additional filtering applied by the LC network of C 13 to 15 and L 1.

The front panel DC LED is fed from the 24 Vdc supply and thus gives a true indication of the whole power supply operation and power being available to the amplifier module.

Internal adjustments

The RWA-3085 has no internal adjustments or user serviceable parts.

Installation

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.

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.

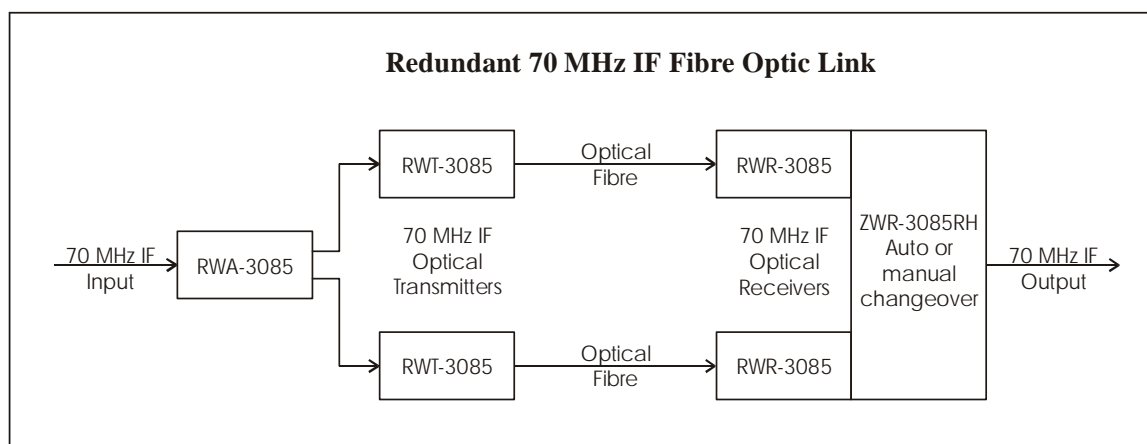
RF connections:

Connection should be made to the input and output BNC connectors using high quality 75 Ohm BNC connectors and cable so as to minimise return loss and signal reflection problems.

Whilst it is not necessary to terminate any unused outputs, this is good practice for both EMC and return loss reasons.

However, there should be no need to terminate the front panel monitoring output in any normal circumstances.

The following diagram illustrates one possible application of the RWA-3085.

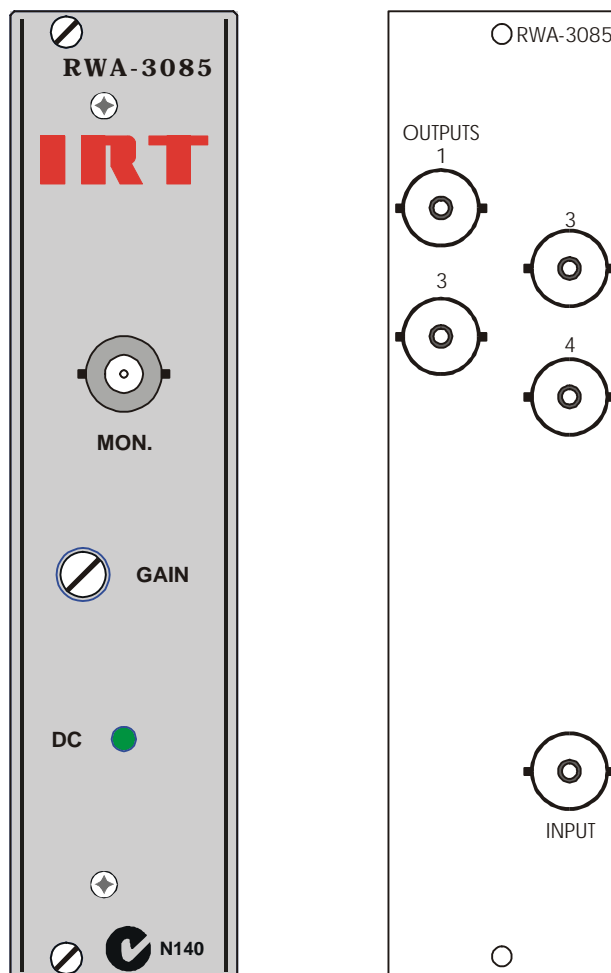


In this example the RWA-3085 amplifier is used to provide identical signals to two 70 MHz IF fibre optic transmitters to provide a redundant optical pathway to the receive site.

At the receiver end a special, double rear connector assembly (type ZWR-3085RH) is used to link the two receivers and provide one 70 MHz IF output. This rear assembly may be arranged to automatically change to the second path in the event of a failure being detected by the main module or may be controlled remotely by other detectors or a manual changeover switch.

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 1 hour’s labour, at IRT’s current labour charge rate, 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 1 hour’s labour will apply, whether the equipment is within the warranty period or not. Contact IRT for current hourly rate.

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
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26 Hotham Parade
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AUSTRALIA

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

Fax: 61 2 9439 7439

Drawing index

Drawing #	Sheet #	Description
804258	1	RWA-3085 IF splitter circuit schematic

