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IRT Eurocard

Type RL-740
5 Relay General Purpose Switch

Designed and manufactured in Australia

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

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Type RL-740

5 Relay General Purpose Switch

Instruction Book

Table of Contents

This instruction book applies to units later than S/N 9600000.

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 RL-740 relay card is designed to interface with the IRT Eurocard VG-737 video and AG-738 audio program fail modules.

Front panel LED indicators are used to indicate the status of each relay circuit.

The RL-740 utility relay card is designed to provide two isolated contact sets and contains 5 DPST relays which can be controlled individually, both the make and break contacts are available either directly or by on board link selection.

One of the contact sets can also have the relay common contacts bussed to facilitate connection to the input circuit of the IRT 5x1 video and audio switchers.

When the relay is NOT ENERGISED relay 1 circuit switches input 1 to the output thus providing a secure path when power is not present on the module.

The relays used are bifurcated contact low energising current relays designed for long life and high reliability.

Note: For relay switching of video, data and HF, see the AVS-3170 relay switcher.

See also other 3000 series switching products.

Features:

- **Suitable for general purpose switching and isolation.**
- **TTL or direct relay switching.**
- **Front panel LED status indicators.**

Technical Specifications
IRT Eurocard module
Type RL-740

Control inputs		Ground active control to the relay coil with the common of the coil circuit connected to +12 volts.
Control connections		2 pin socket strip with mating locking plug assembly.
Outputs		Two relay contact sets from each relay. One set with the common, normally open and normally closed contacts available. The other set with the common available individually or bussed, and the make or break contact available by link selection on the RL-740 circuit board.
Output connections		Terminal strips accepting spade terminals for one contact set and 2 or 8 pin socket strip with mating locking plug assembly for the other.
Relay contact rating		24 Vdc - 1A, 100Vac - 0.3 A
Visual indicators		RELAY CIRCUIT ENABLED POWER
Power requirements		28 Vac CT (14-0-14) or ± 16 Vdc.
Power consumption		1 VA.

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.

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

Technical Description

See drawing 803161 & 803165.
The RL-740 utility relay card consists of five DPST relays, with one side of the coils connected to the +12 volt supply and the other coil connection of each relay brought out to rear panel connections, diodes connected across each coil provide back EMF protection. A LED indicator circuit is wired across each relay coil to provide visual indication on the front panel of the relay status.

The contact set of each relay is available on the rear panel connections. One contact set of each relay is available on TB 1 of the rear panel and the other contact set of each relay is available on SK 6 to SK 11 of the rear panel. By using links 1-15 the bussed common and either the make or break contacts are available on SK 6 or if links 1 - 5 are not used to buss the common contact, the common and either the make or break contact of the second contact set of each individual relay is available on SK 7 - SK 11.

The RL-740 power supply consists of full wave rectifier circuits D6-D9, C 1, C 2, three terminal regulator U1 and C3 to provide the +12 volts required to operate the relay circuits.

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.

Internal Adjustments

The RL-740 require no internal adjustments for correct operation.

Configuration

The control input connections are SK 1 - SK 5 2 pin 0.1 inch spaced socket strip with mating locking plug assembly.

Two sets of relay contacts are provided with one set available only on output connector TB 1.
The other set is available on both SK 6 and on SK 7 - 11.

Relay contact set 1:
Rear assembly sockets SK 13 to SK 17 are 3 pin plug sockets for Phoenix polarised screw terminating connectors type MC 1.5/3-ST-3.81. Make and break contacts for one contact set of each relay are available here.

Pin configuration is as follows:

Pin	Connection
3	relay common
2	relay normally open
1	relay normally closed

Pin function and relay numbers are marked on the rear assembly next to each connector as shown on rear assembly diagram elswhere in this manual.

Relay contact set 2:
The other contact set of each relay is wired to both SK 6 and SK 7 -11. SK 6 is a 8 pin socket strip wired to the control connections of the IRT 5 x 1 switchers. A bussed common connection is set by links 1 - 5 on the circuit board.
All connectors are 0.1" spacing and are supplied with matching HE14 type IDT cable sockets. A suitable termination tool is available from Radio Spares Components Pty Ltd.

Connection of relay common connection to the common bus and selection of normally open or normally closed operation is made by links LK 1 - 5 and links LK 6 - 15 as follows:

Relay	Common Link	Normally open	normally closed	Output SK 6	Other output
1		LK 6	LK 7	pin 2	SK 7 pin 2
	LK 1			pin 1 & 8	SK 7 pin 1
2		LK 8	LK 9	pin 3	SK 8 pin 2
	LK 2			pin 1 & 8	SK 8 pin 1
3		LK 10	LK 11	pin 4	SK 9 pin 2
	LK 3			pin 1 & 8	SK 9 pin 1
4		LK 12	LK 13	pin 5	SK 10 pin 2
	LK 4			pin 1 & 8	SK 10 pin 1
5		LK 14	LK 15	pin 6	SK 11 pin 2
	LK 5			pin 1 & 8	SK 11 pin 1

Note that common setting effects both SK 6 and SK 7 - 11.
Pin 7 of SK 6 is connected for use with the external 12 Vdc input option. (See text.)

External DC supply:
An alternate DC input for the RL-740 is available from an external source. This should not exceed 12 Vdc and should be negative ground. No filtering and no regulation is provided on this input, so it is important that the external supply provides these features.

To implement this option:

1. Cut the track linking the output of U 1 to the supply between the two pads located above C 3 on the upperside of the PCB.
2. Insert a link between the centre pad and the pad on the right of the centre pad.
3. Insert a fuse holder at point F 5.
4. Install a 250 mA fuse in F 5 holder.
5. Apply external power between pin 7 (+ve) and pin 8 (Gnd) on the rear assembly remote connector SK 12.

Installation

Installation in frame or chassis:

See details in separate manual for selected frame type.

Signal connections:

See *Configuration* for details of link settings for various control options.
Care should be exercised to ensure that the contact ratings of the relays are not exceeded.

Relay contact rating	24 Vdc - 1 A
	100 Vac - 0.3 A

Relays must not be used to directly control AC mains supplies. If this type of control is required the relay output should be used to control a separate AC actuator housed in a fully enclosed case with suitable safety fusing.

Control connections:

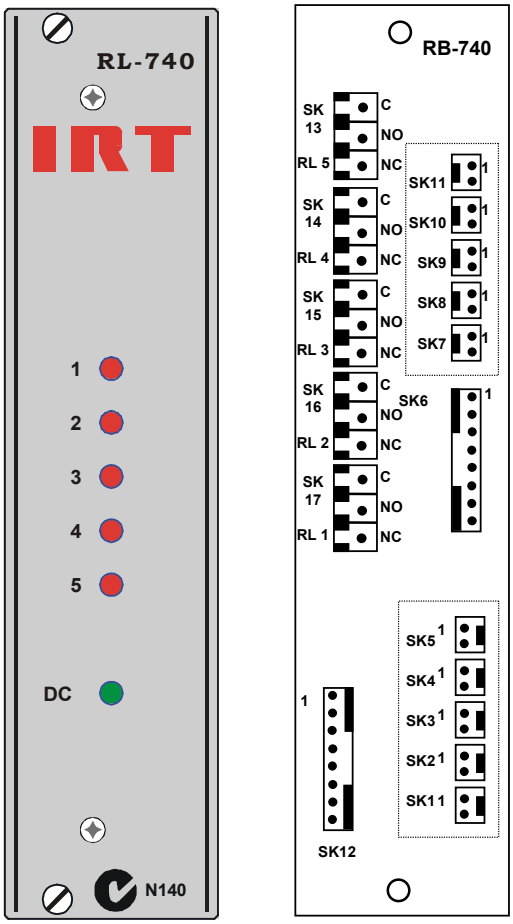
Control connections are via SK 12, an 8 pin socket strip, or via SK 1 - 5, 2 pin socket strips, located on the rear assembly.
Connecting the appropriate control input to ground will cause the corresponding input to be connected to the output.
See *Configuration* for appropriate link setting for resultant contacts made for various control inputs.

Pin configuration is as follows:

Description	SK 12 Pin	Alternate
Gnd	1	SK 1 -5 pin 1
Relay 5 control	2	SK 5 pin 2
Relay 4 control	3	SK 4 pin 2
Relay 3 control	4	SK 3 pin 2
Relay 2 control	5	SK 2 pin 2
Relay 1 control	6	SK 1 pin 2
External 12 Vdc input option. (See text.)	7	
Gnd.	8	

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.



Note: RL-740 rear assembly is normally supplied without SK 1, 2, 3, 4, 5, 7, 8, 9, 10 & 11 fitted. These are shown above inside dotted lines.

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.

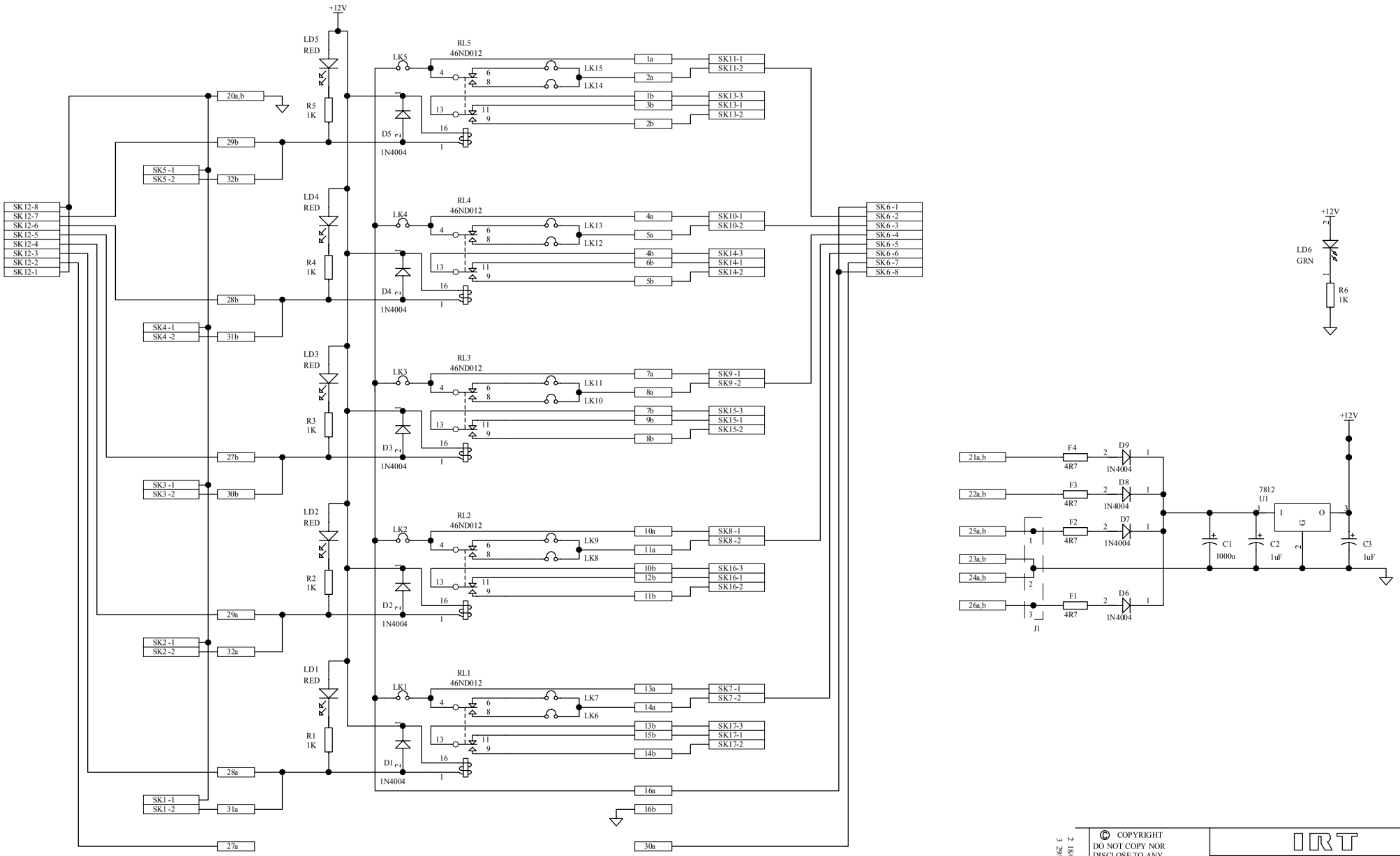
The equipment should be returned **to the agent who originally supplied the equipment or, where this is not possible**, to IRT direct as follows.

Equipment Service
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
803161		RL-640 / RL-740 main circuit schematic.
803165		RB-640 (RL-740) rear assembly.


+12V
LD5
RED
LK5
RL5
46ND012
LK15
LK14
R5
1K
D5
1N4004
20a,b
29b
SK5 -1
SK5 -2
32b
1a
2a
1b
3b
2b
SK11-1
SK11-2
SK13-3
SK13-1
SK13-2
LD4
RED
LK4
RL4
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LK13
LK12
R4
1K
D4
1N4004
28b
SK4 -1
SK4 -2
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4a
5a
4b
6b
5b
SK10-1
SK10-2
SK14-3
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30a
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SK12-7
SK12-6
SK12-5
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SK12-3
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SK6 -4
SK6 -5
SK6 -6
SK6 -7
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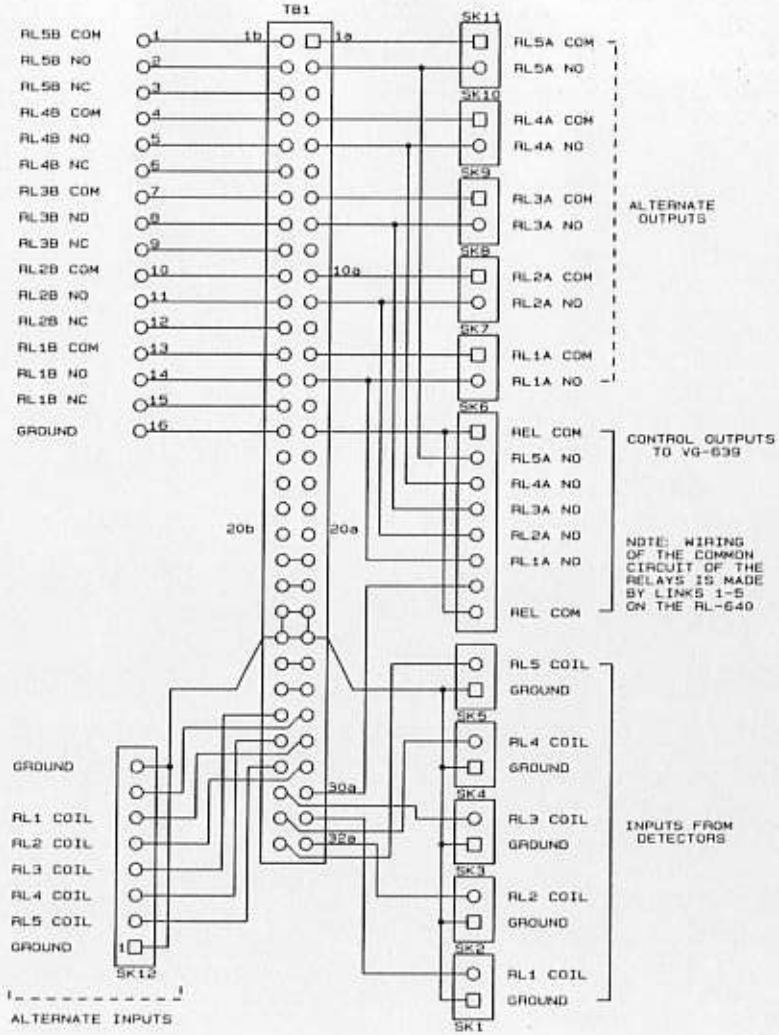

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SIZE A3	TITLE RB-640 REAR ASSEMBLY	
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