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IRT Eurocard

Type AMS-4370HD
4 Port Changeover Relay switcher for High Definition Digital Video, G.703, SDI, ASI, or Analogue Video

Designed and manufactured in Australia

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

IRT Eurocard

AMS-4370HD – 4 Port Changeover Relay switcher for High Definition Video, G.703, SDI, ASI or Analogue Video

Instruction Book

Table of Contents

General Description

The AMS-4370HD is a magnetic latching 4 port changeover switcher using enhanced performance relays which provide switching capabilities for high speed data signals up to 1.4 Gb/s. It is suitable for switching high definition video, ASI, SDI or G.703 data streams or analogue video signals, provided that they have characteristic impedances of 75Ω.

The AMS-4370HD is arranged as a changeover switch with two inputs and two outputs. No terminations are provided on the board allowing the switcher to be used in a wide variety of applications and with signals of various types and impedances.

The magnetic latching characteristic of the high performance relay allows momentary control and also provides for no change of path during power loss. Remote changeover is by a momentary ground connection.

The AMS-4370HD is ideally suited to applications where a simple choice between two inputs or outputs is required and may be easily driven by detector circuits for automatic path selection.

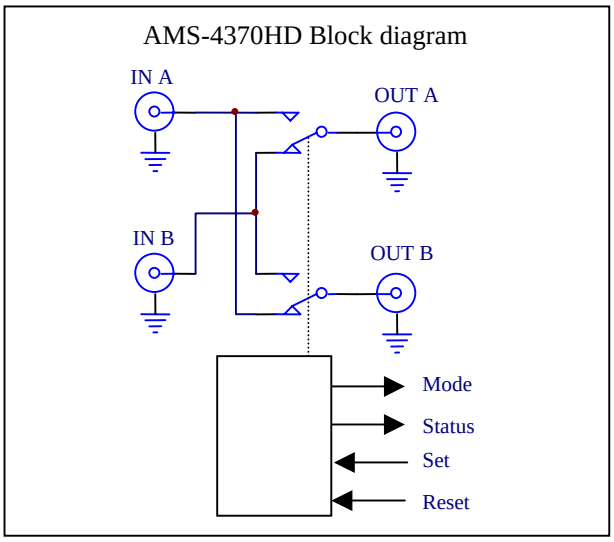
Remote indication of tally and local/remote status is provided for integration into central alarm and monitoring systems.

The AMS-4370HD relay card is built to the Eurocard format and will mount in an IRT 1RU or 4000 series 3RU frame.

Standard features:

- Signal path suitable for HD (1.4Gb/s), SDI , analogue video, ASI data streams and G703 signals @ 2, 8, 34, 45, 144 Mb/s.
- Momentary Set/Reset control.
- No path change on power fail.
- Local or remote control.
- Front panel LED status indicators.

Functional Block Diagram:



Technical Specifications
IRT Eurocard module
Type AMS-4370HD

Signal path:

Signal types	HD/SDI/ASI/G703/Video
Switching characteristic	Magnetic latching 4 port changeover relay.
Crosstalk between channels	< -45 dB to 270 MHz, < 30 dB to 1.5 GHz.
Frequency response	+0/-0.5 dB to 1.25 GHz, +0/-1.5 dB to 1.5 GHz.

Auxilliary Data:

Mode	Contact set – Local = SC, Remote = OC.
Data/Tally	Magnetic latching relay changeover contact set.

Remote Control:

Mode	Momentary ground to the relay coil with the common of the coil circuit connected to +12 Volts.
Power requirement	< 60mA sink to ground.

Connectors:

Video:	BNC.
Control & Status:	Krone LSA plus.

Other:

Relay contact rating		24 Vdc - 1 A 100 Vac - 0.3 A
Power requirements:		28 Vac CT (14-0-14) or ± 16 Vdc
Power consumption		1 VA.
Temperature range		0 - 50° C ambient
Mechanical		Suitable for mounting in IRT 1RU or 4000 series 3RU 19" rack chassis with input, output and power connections on the rear panel.
Finish:	Front panel	Grey background, silk-screened black lettering & red IRT logo.
	Rear assembly	Detachable silk-screened PCB with direct mount connectors to Eurocard and external signals. Note that BNC connections are connected directly to the main PCB.
Dimensions		6 HP x 3 U x 220 mm IRT Eurocard.
Supplied accessories		Rear connector assembly with matching connectors for control input and tally/mode outputs.
Optional accessories		Instruction manual.

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

Technical Description

See drawing 804701 in the back of this manual.

The AMS-4370HD consists of two magnetic latching relays controlled by either front panel switch when the unit is switched to local operation, or by remote switching, when unit is set to remote operation.

When front panel local/remote switch is set to 'Local', selecting 'Input Select' switch to 'Input 1' resets the two magnetic latching relays. Contacts on RL1 switch *Input 1(SK1)* to *Main Output(SK2)* and *Input 2(SK3)* to *Auxiliary Output 2(SK4)*. Relay RL2 switches on the Input 1 front panel LED and connects terminals 1 and 2 of TB1 on the rear connector assembly for remote monitoring of the input/output status. Selecting 'Input Select' switch to 'Input 2' sets the two magnetic latching relays thus switching *Input 1(SK1)* to *Auxiliary Output 2(SK4)* and *Input 2(SK3)* to *Main Output 1(SK2)*. Relay RL2 switches on the Input 2 front panel LED and connects terminals 1 and 3 of TB1 on the rear connector assembly for remote monitoring of the input/output status.

Pins 1 and 2 on TB2 are short-circuited together when in "Local" mode and are open when in 'Remote' mode. Pin 3 on TB2 is connected to ground and can be used, if desired, to provide a switched ground signal, in conjunction with pins 1 and 2, to provide local/remote module status to an external alarm. This allows the remote operator or equipment to know whether the module can be remotely controlled or not as the unit can only be remotely controlled when the module is set to remote operation.

When in the remote mode of operation, TB3 provides the set and reset control points via pins 2 and 1 respectively. Pin 3 is connected to ground to act as a switching reference. When a momentary ground contact is made to the relevant set or reset pins, the relays change to the relevant state. Set causes a changeover state such that *Input 1(SK1)* goes to *Auxiliary Output 2(SK4)* and *Input 2(SK3)* goes to *Main Output 1(SK2)* and reset causes relays to reset resulting in *Input 1(SK1)* going to *Main Output 1(SK2)* and *Input 2(SK3)* going to *Auxiliary Output 2(SK4).*

Being magnetically latched relays, if a power failure occurs, relays will remain in their current state of operation.

Power supply:
The AMS-4370HD power supply consists of two full wave rectifier circuits D1 – D4, C1, C2, three terminal regulator U 1 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.

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.

Internal Adjustments

The AMS-4370HD requires no internal adjustments for correct operation.

Configuration

Remote control mode:
With the front panel switch set for remote control operation, control of the AMS-4370HD changeover relay is by momentary ground contact only.

Input termination:
No terminations are provided on the module so that the switcher can function in changeover mode. For 2 x 1 switcher applications the following terminations should be installed.

> Output A only is used and should be terminated at connected equipment.
> Output B should be terminated in 75 Ohms (or 50 Ohms if being used for 50 Ohm RF signals) using a BNC termination plug.

Installation

Installation in frame or chassis:

See details in separate manual for selected frame type.

See also *Configuration*.

Signal connections:

Signal connections are made to BNC coaxial connectors. No termination of inputs is provided on the module. When switched to the output the input load impedance is that of the load connected to the output. Note that BNC connections are connected directly to the main PCB.

Control connections:

Switch status is made by a relay contact on TB1 Krone connector located on the rear assembly. With pin 2 short circuited to pin 1 (pins 1 and 3 open circuited), module is in reset position, i.e. Input 1 to Output 1 and Input 2 to Output 2. Likewise, if pin 3 is short circuited to pin 1 (pins 1 and 2 open circuited) then module is in set position, i.e. Input 1 to Output 2 and Input 2 to Output 1.

Tally input connector TB1 pin configuration is as follows:

Pin	Description
1	Relay common contact connected to +12Vdc (via 4R7 resistor).
2	Relay reset contact – I/P 1 selected.
3	Relay set contact – I/P 2 selected.

Local/Remote mode is made by a switch contact closure between pins 1 and 2 on TB2 Krone connector located on rear assembly. When pins 1 and 2 are short-circuited together, the unit is in Local mode of operation. Likewise, when pins 1 and 2 are open-circuited, the unit is in Remote mode of operation. Front panel switch sets the mode of operation. Common ground is provided on pin 3 for use if desired.

Local/Remote Indication input connector TB2 pin configuration is as follows:

Pin	Description
1	Switch common contact
2	Switch local contact
3	Ground

Remote control connections are via TB3 Krone connector located on the rear assembly.
Connecting the appropriate control input momentarily to ground will cause the relays to operate and the output state to cross over as follows:

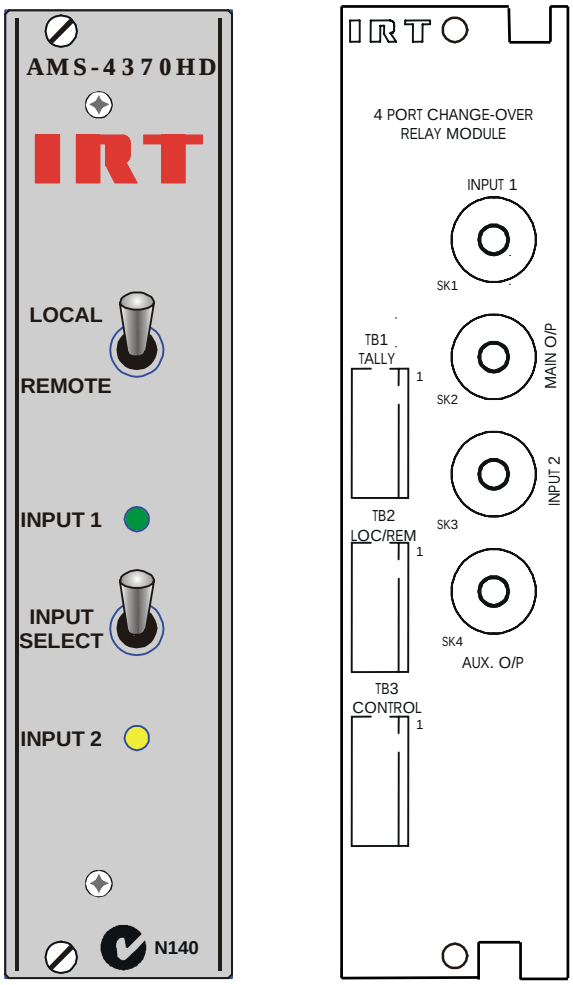
Control	Input		Output
Reset (Gnd)	A	↔	A
	B	↔	B
Set (Gnd)	A	↔	B
	B	↔	A

Control input connector TB3 pin configuration is as follows:

Pin	Description
1	Reset control – select I/P 1
2	Set control – select I/P 2
3	Ground

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.

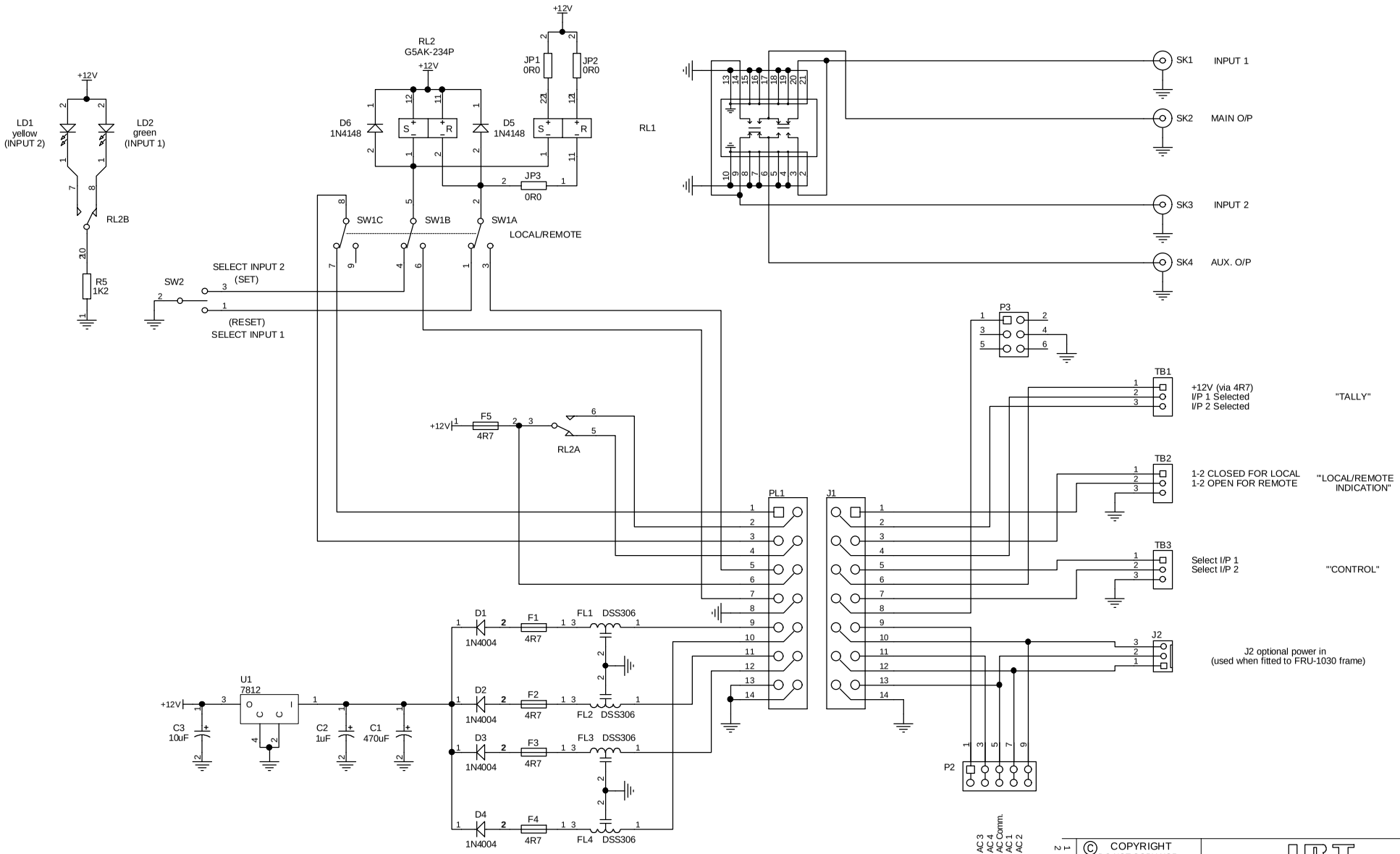
The equipment should be returned **to the agent who originally supplied the equipment or, where this is not possible**, to IRT direct as follows.

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

Drawing #	Sheet #	Description
804701	1	AMS-4370HD main circuit schematic.



PCB 804702

Relays shown in RESET position.

1 18-11-02
2 28-05-03 Changed labeling

DRAWN	K.N.	SIZE A3	Title AMS-4370/HD 4 PORT CHANGE-OVER RELAY MODULE
CHECKED		SCALE N.T.S.	Drawing No. 804701 Sheet 1 of 1
ENG. APP.			
Revision:	1	IRT Electronics Pty. Ltd. ARTARMON NSW AUSTRALIA 2064	
Date:	28-May-2003		