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IRT Eurocard

Type CPS-3170

Alarm & Control Panel for AMS-3170 Switchers

Designed and manufactured in Australia

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

IRT Eurocard

Type CPS-3170

Alarm & Control Panel for AMS-3170 Switchers

Instruction Book

Table of Contents

This instruction book applies to units later than S/N 0000000.

General description

The CPS-3170 provides a compact monitoring facility for alarm outputs from redundant signal paths and provides a means of selecting either manual or automatic path selection based on the input alarm states.

It is designed primarily to be used in conjunction with the AMS-3170 relay changeover switcher providing a redundant path changeover for video and two audio circuits.

The CPS-3170 provides all indications and switches to control two separate AMS-3170's.

A display inhibit switch is provided to kill any display from alarm circuits that are not in use.

Fail safe operation is ensured by automatic selection of the Main path in the event of power failure, but with the manual override selection of the Alternate path still being operative.

Standard features:

- Controls for two redundant path switches.
- Manual or automatic path selection.
- Fail safe operation.
- Display inhibit.

Equipment provided:

Standard: CPS-3170 Alarm & Control Panel for AMS-3170 Switchers.
ZPS-3170 Rear assembly

Related equipment:-

FRU-3000 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).
AMS-3170 ASI/SDI/G.703 changeover switcher	The AMS-3170 is a relay changeover switch designed for use in path protection circuits. One high frequency changeover is available for use with ASI, SDI, G.703, 70 MHz IF, AES/EBU unbalanced audio or analogue video signals. Two other balanced changeovers are available for use with analogue or AES/EBU audio signals. The three relays may be operated together or independently.

TME-6 Eurocard extender board.

Instruction Book.

Technical specifications
IRT Eurocard module
Type CPS-3170

Alarm/Indicator Inputs:

Type	Negative current sinking to ground.
Maximum current	<10 mA
Open circuit input voltage	-12 Vdc

Control Outputs:

Type	Opto isolated NPN pulldown transistor to ground or Closed switch contact to ground.
Impedance	< 40 Ω.
Max. output current	30 mA.
Max pulldown voltage	+12 Vdc.

Connectors:

Phoenix plug in screw terminal blocks.

Power Requirements:

28 Vac CT (14-0-14) or ± 16V DC

Power consumption <100 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.
Supplied accessories		ZPS-3170 rear connector assembly with matching connectors for inputs & outputs.
Optional accessories		Instruction manual TME-6 module extender card

Technical description

The CPS-3170 comprises two independent alarm/control circuits housed on a single Eurocard with a common power supply circuit.

Power supply
The power supply consists of a full wave rectifier circuit on each of the two available redundant supply inputs from the supporting Eurocard frame.
Fusible resistors F 1 to 4 provide protection to the Frame power supply buss in the event of catastrophic failure of the module.
Diodes D 11 to 14 provide the rectification and C 1 the initial smoothing of the rectified DC. The three terminal regulator U 1 ensures that a reasonably stable DC supply results with C 2 acting as a bypass on the supply rail to assure stable operation.
If all LED's on the CPS-3170 were to be lit at the same time the total demand on the power supply would be of the order of 100 mA. This would be sufficient to cause a ripple component in the –12 Vdc line, but this is of little significance in this circuit.

Alarm indication circuits
Each alarm input consists of an isolating diode, a current limiting resistor and an LED connected to the –12 Vdc supply rail via an isolating switch SW 2 (4) that allows all LED's to be turned off. This inhibit switch causes LED 3 (6) to light when the inhibit function is active.
The inputs are arranged in pairs for the Main and Alternate paths and a bicolour LED is used for each. This assumes the use of a changeover contact alarm output for path loss detection.
The requirement for bicolour LED displays dictates the use of a common cathode arrangement and hence a negative DC supply.

If only a single grounding contact or open collector transistor alarm output is available, this will need to be used to operate a changeover relay contact set in order to give the required separation of OK & Fail indications. A suitable module for this purpose would be the IRT RL-740 relay interface, which provides five isolated relay sets with multiple outputs.

Control circuit
The control circuit required by the AMS-3170 is a grounding contact to change from the stable state. The CPS-3170 uses a switch SW 1(3) to force this change in the manual mode.
For automatic operation switch SW 1(3) is left open and the opto isolator O 1(2) in the Fail alarm input circuit gains control. When the Fail alarm input is grounded the transistor of the isolator is turned on giving a grounding contact to the control output.
To force a Main control output, the output must remain high regardless of the alarm inputs. To achieve this the base of the opto isolator is held at ground potential by switch SW 1(3) ensuring that the transistor in the isolator remains off regardless of the alarm state.

In the event of loss of power to the CPS-3170 module, the switch SW 1(3) will still retain its manual functions of Main and Alternate select. Only the automatic change function will be lost.

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.

Connections:

Alarm inputs:

A grounded alarm input causes the corresponding LED to light. A changeover contact set is required to properly indicate a change from OK to Fail.
If only a single grounding contact or open collector transistor alarm output is available, this will need to be used to operate a changeover relay contact set in order to give the required separation of OK & Fail indications. A suitable module for this purpose would be the IRT RL-740 relay interface, which provides five isolated relay sets with multiple outputs.

System wiring should have as few connections as possible and wire gauge should be matched to the required distance to keep the impedance low.

The alarm inputs must sink approximately 10 mA for reliable operation of the indicators and changeover.
Alarm input line impedance should be kept to less than 20 Ohms.

Where long distances are required, the cable used should be well shielded and run away from sources of interference. Where large amounts of AC hum may be induced, it may be necessary to attach capacitors between the alarm inputs and ground to avoid false triggering.

Alarm inputs to module section A:

Connector P 1:

Pin	Function
1	Alternate OK
2	Alternate Fail
3	Gnd
4	Main OK
5	Main Fail

Alarm inputs to module section B:

Connector P 3:

Pin	Function
1	Alternate OK
2	Alternate Fail
3	Gnd
4	Main OK
5	Main Fail

Control outputs:

The control output from the CPS-3170 is designed to interface with the inputs(s) of the AMS-3170 changeover relay switcher. A grounded output will cause the AMS-3170 to change state from its natural position.
The same precautions should be taken with these outputs as with the alarm inputs described above.

Alarm outputs from module section A:

Connector P 2:

Pin	Function	
1	Control	HI = Main LO = Alternate
2	Gnd	

Alarm outputs from module section B:

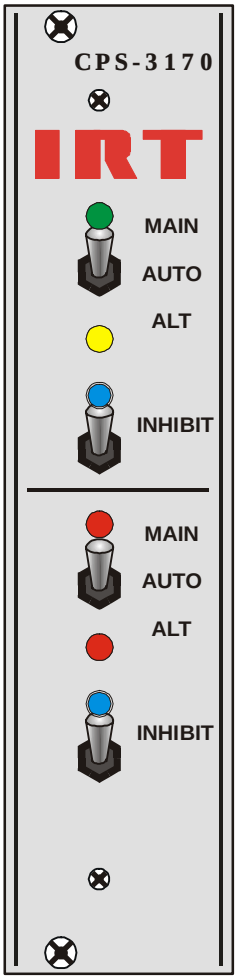
Connector P 4:

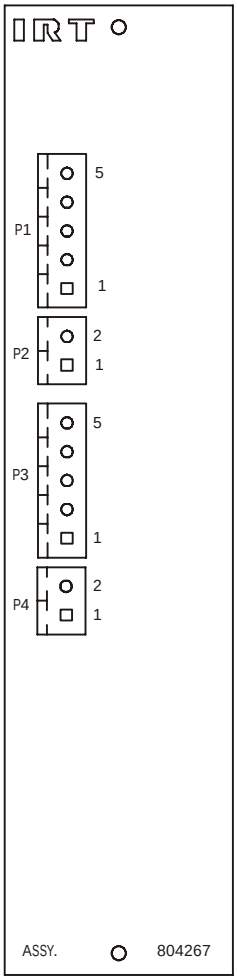
Pin	Function	
1	Control	HI = Main LO = Alternate
2	Gnd	

Where the output is used to control more than one relay on the AMS-3170 the output of the CPS-3170 may be connected to as many of the AMS-3170 control inputs as required.
See also manual for the AMS-3170 for connection details and options.

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.

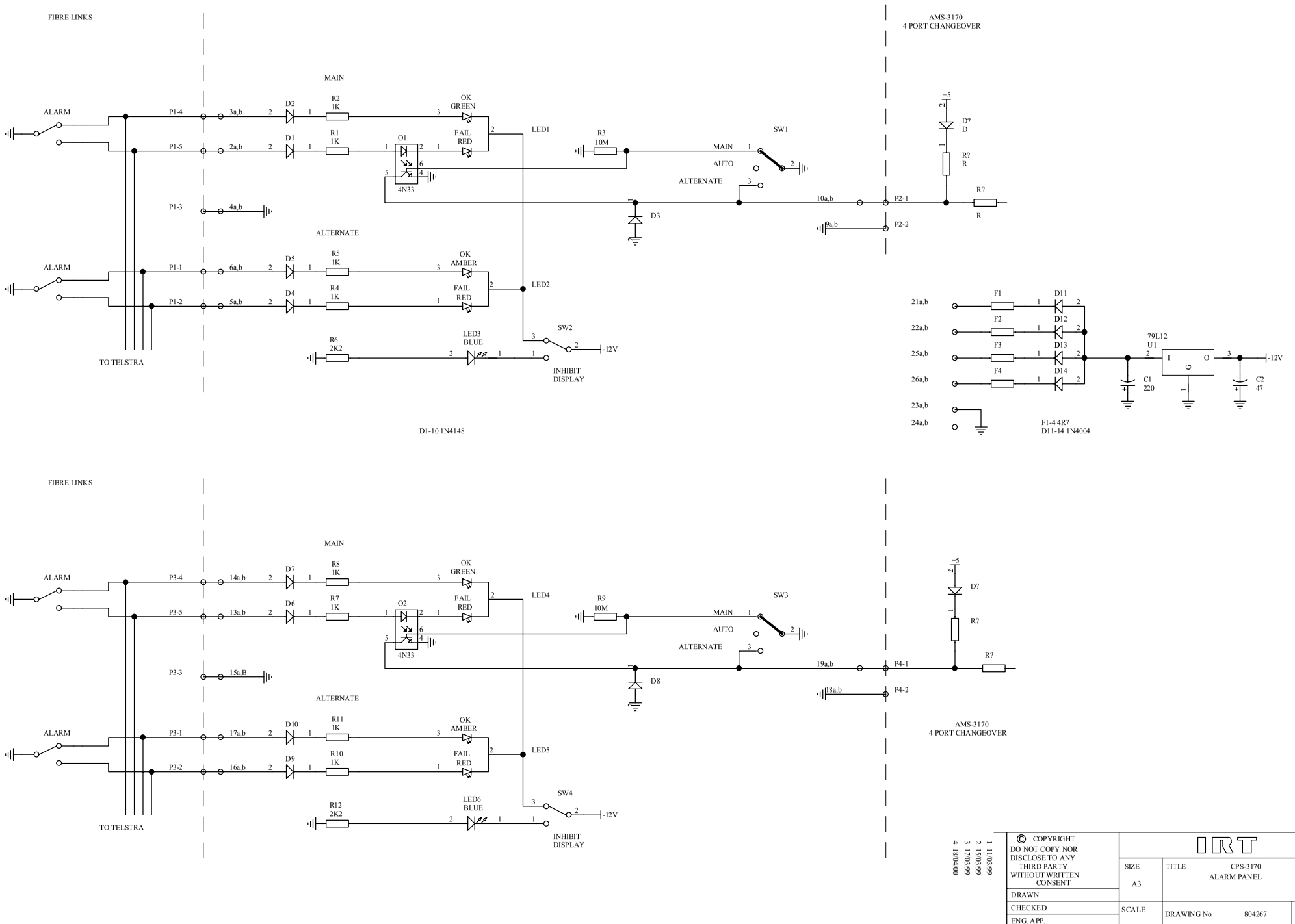
The equipment should be returned **to the agent who originally supplied the equipment** or, where this is not possible, to IRT direct as follows.

Equipment Service
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
804267		CPS-3170 schematic diagram



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CHECKED	SCALE	DRAWING No. 804267	SHEET 1 OF 1
ENG. APP.			
CONTRACT No.			

IRT

SIZE A3

TITLE CPS-3170 ALARM PANEL

IRT Electronics Pty. Ltd.
ARTARMON NSW AUSTRALIA 2064

1	11/03/99
2	15/03/99
3	17/03/99
4	18/04/00

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