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IRT Eurocard

Type AAD-4130

Stereo Audio Phase / Failure Detector

Designed and manufactured in Australia

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

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Instruction Book

Table of Contents

This instruction book applies to units later than S/N 0704001.

Operational Safety:

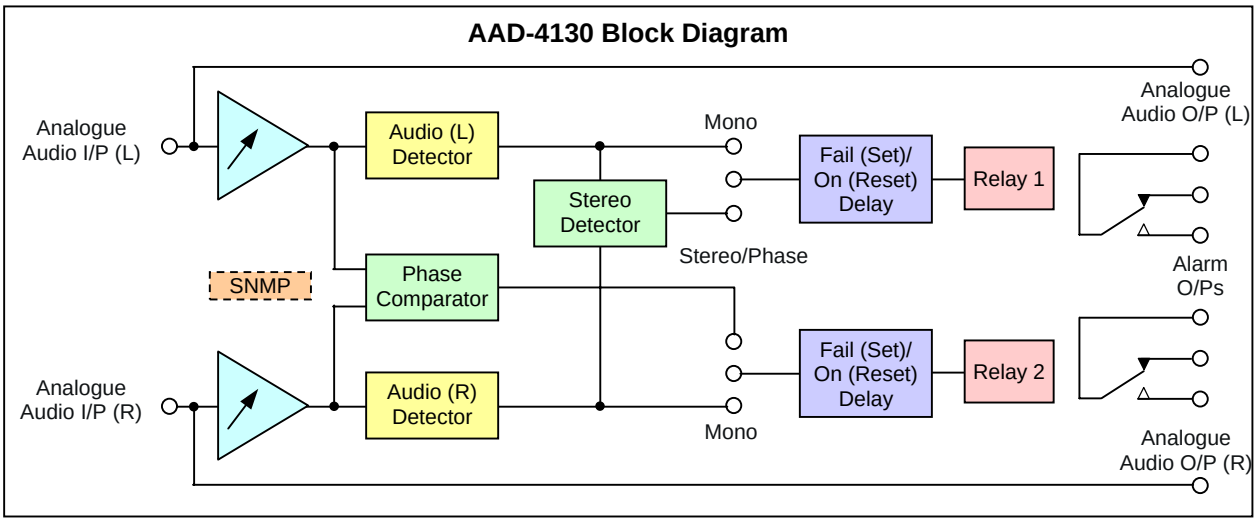
WARNING

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 AAD-4130
Stereo Audio Phase / Failure Detector

General Description



The AAD-4130 audio detector is designed to detect the presence of a stereo program signal and provide alarm outputs on failure of the left, right or both channels and of stereo phase reversal. Alternately the AAD-4130 can be used to monitor two mono audio circuits and provide individual alarm outputs on failure of an audio circuit.

The AAD-4130 will accept audio signals in the range -20 dBm to +20 dBm from a balanced or unbalanced source, presenting an input impedance of 10kΩ.

The detector circuitry consists of precision rectifier circuits driving comparators, which enable oscillators that trigger dual mono stable circuits that allow the response time of the alarm circuits to be set. The detection threshold of each channel is adjustable within the range -20 dBm to +20 dBm. The response time is set by means of DIP switches in the RC timing circuit and is adjustable from 5 to 160 seconds for the AUDIO FAIL time out and 5 to 40 seconds for the AUDIO PRESENT response time, the adjustment being made in 5 second steps.

The alarm circuitry consists of latching circuits triggered by the detector circuits. These drive two relays whose contacts are available at the rear panel of the AAD-4130. The alarm circuits can be reset automatically upon return of the audio signals or by a contact closure from the front panel or a remote circuit.

Visual indication of the state of the AAD-4130 detector and alarm circuits is provided by LED indicators on the front panel.

An optional SNMP (Simple Network Management Protocol) plug-in module is available for remote monitoring when used in conjunction with IRT's 4000 series frame fitted with SNMP capability.

The AAD-4130 is built to the Eurocard format and will mount in all IRT standard frames.

Standard features:

- Individual left and right failure outputs.
- Stereo out of phase output.
- Adjustable threshold on each output.
- Adjustable fail and restore times
- Relay isolated outputs.
- Front panel indications.
- Remote, local or auto reset.
- Optional plug-in SNMP monitoring module.

Technical Specifications
IRT Eurocard module
Type AAD-4130

Audio:

Inputs:

Type	Tranformerless, balanced bridging.
Impedance	> 10 kΩ
Max. Input Level	-20 dBm to +20 dBm.
Connectors	Pluggable screw block connectors, and Krone IDC connectors.

Control:

Detection threshold	Internal preset adjustments in the range -20 dBm to +20 dBm.
Response time	5 - 160 seconds for AUDIO FAIL condition. 5 - 40 seconds for AUDIO PRESENT condition. Timing adjustable in 5 second steps using PCB mounted DIP switch assemblies.
Visual indicators	AUDIO FAIL ALARM PHASE AUDIO 1 PRESENT AUDIO 2 PRESENT POWER
Outputs:	Relay circuits operated from alarm logic. **Latching or auto-reset mode available.** Make or break relay contacts available.
Inputs:	When operated in the LATCHING ALARM MODE internal logic alarm circuits can be reset by a front panel RESET pushbutton or by external 12V to 48V to an opto-isolator circuit used to isolate the internal logic circuit.
Connector	Pluggable screw block connectors.
Power Requirements:	28 Vac CT (14-0-14) or ± 16V DC.
Power consumption	2.0 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 background, 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		Rear connector assembly with matching connectors for inputs & outputs.
Optional accessories		SMU-4000 SNMP plug-in module for use with 4000 series frame fitted with SNMP "Agent".

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

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.

Audio input:	transformer balanced signal connection with Gnd shield pin marked on rear assembly.
Reset input:	opto isolated with option for connecting one side to +12 Vdc rail (current limited).
Control outputs:	relay isolated selectable make or break pair with no connection to ground.

Internal Adjustments

The AAD-4130 detector is factory aligned for correct operation in the stereo mode with the detector thresholds set for a -20 dBm input signal and the response times set for 5 second delay before a change in state occurs.

See *Configuration* for user adjustments.

Configuration

Relay output mode:

The relay contacts used can be the normally open or closed set this is set by selection of links 7, 8, 9 and 10.
Note that the relay is unenergised when operation is normal and energised during an alarm condition.

Links 7 and 9 IN the **normally open** set (closes on alarm)

Links 8 and 10 IN the **normally closed** set (opens on alarm)

Stereo or 2 channel mono mode:

The AAD-4130 can be operated as a stereo detector to check for the presence of both the left and right audio channels and correct phasing of the two channels, or as a dual independent mono audio detector.
Links 1 to 4 are used to set the AAD-4130 in the required mode.

LK 2 and 3 IN **stereo/phase** operation

LK 1 and 4 IN **mono** operation

Alarm latch reset mode:

Links 5 and 6 are used to set the alarm latch reset mode.
To **enable** the alarm latch circuits leave LK5 and LK6 out,
this will ensure that if a failure occurs the relay contacts will register the fact until a manual or remote reset is applied. With LK5 and LK6 IN unit will automatically reset when alarm condition clears after reset time period determined by DIP switch settings.

Remote reset mode:

The remote reset can be initiated in different ways as set by links 11, 12 and 13.

Positive voltage:
To reset using a positive voltage in the range 12 to 48 Volts with the **negative grounded** insert link in position LK 12. The reset voltage is applied to the control connector SK3 pins 1 and 2, with 1 being the positive control input and 2 being the ground.

Negative voltage:
To reset using an isolated or **positive grounded** voltage in the range 12 to 48 Volts insert a link in position LK 12. The reset voltage is applied to the control connector SK3 pins 1 and 2 with, 1 being the positive and 2 being the negative input.

Alternatively insert links in positions LK12 and LK13. The reset negative voltage is applied to the control connector SK3 pin 2 with LK13 already supplying the positive ground connection on the board.

Relay contact:
To reset using a grounding isolated relay contact the internal 12 Volts negative supply can be used, insert links in positions LK11 and LK13. The relay contact is applied between pins 1 and 2 of the control connector, with 1 connected to ground in the AAD-4130.

Detector threshold:

The detector thresholds are set by RV 1 and RV 2 and are factory adjusted for -20 dBm sensitivity.

These can be set by applying a 1 KHz audio signal at the required level to the input of the channel to be set and adjusting RV 1 for channel 1 and RV 2 for channel 2 sensitivity.
Adjust the potentiometer to just turn off the AUDIO ON LED indicator LD 2 or LD 3.
Note that LD 2 and LD 3 monitor the detector outputs and are thus an instantaneous indication of audio signal exceeding the threshold level, and during operation they will turn on and off indicating program activity.

Alarm timing:

Signal fail - Channel 1 / Phase:
DIP switches SW 9 to SW 13 are used to set the time out response of the delay circuit at signal failure of channel 1 when used as a mono audio detector, or out of phase detection when used as a stereo audio detector as set by links LK3 and LK4.

SW 9 open = 5 seconds,
SW 10 open = 10 seconds,
SW 11 open = 20 seconds,
SW 12 open = 40 seconds &
SW 13 open = 80 seconds.

Set the response time by opening switches whose time will add up to give the response time required - 5 seconds (the minimum time). The unit is preset for a 5 second delay with all DIP switch settings closed.
It is recommended that the time be set to 60 seconds or more when used as an audio detector on channel 1 in the mono mode and at 10 seconds for a phase detector in the stereo mode and the alarm latch be used in the auto reset mode with link 6 IN for out of phase detection.

Signal restore - Channel 1 / Phase:
DIP switches SW 14 to SW 16 are used to set the channel 1 or phase detector response delay to the return of signal or correct phase.

SW 14 open = 5 seconds,
SW 15 open = 10 seconds &
SW 16 open = 20 seconds.

Set the response time by opening switches whose time will add up to the response time required - 5 seconds (the minimum time). The unit is preset for a 5 second delay with all DIP switch settings closed.

Signal fail - Channel 2 / Stereo:
DIP switches SW 1 to SW 5 are used to set the time out response of the delay circuit at signal failure of channel 2 when used as a mono audio detector, or either channel when used as a stereo detector as set by links 1 and 2.

SW 1 open = 5 seconds,
SW 2 open = 10 seconds,
SW 3 open = 20 seconds,
SW 4 open = 40 seconds &
SW 5 open = 80 seconds.

Set the response time by opening switches whose time will add up to give the response time required - 5 seconds (the minimum time). It is recommended that the time be set to 60 seconds or more.

Signal restore - Channel 2 / Stereo:
DIP switches SW 6 to SW 8 are used to set the channel 2 or stereo signal detector response delay to the return of signal.

SW 6 open = 5 seconds,
SW 7 open = 10 seconds &
SW 8 open = 20 seconds.

Set the response time by opening switches whose time will add up to the response time required - 5 seconds (the minimum time).

NOTE: DIP switch settings open correspond to the OFF position. DIP switch settings closed correspond to the ON position.

Installation

Installation in frame or chassis:

See details in separate manual for selected frame type.

Audio connections:

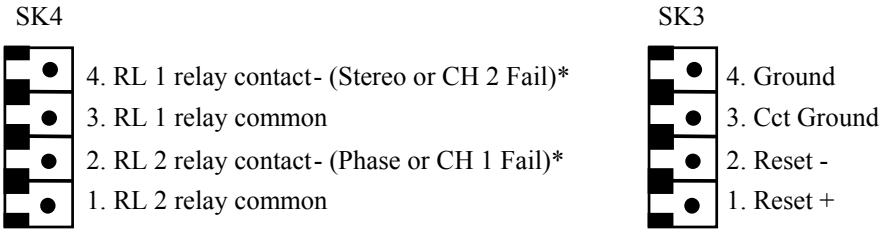
Audio input connections are made using either the three pin screw terminals or the Krone IDC connectors provided with the AAD-4130 rear assembly.

For mono operation it is usual to connect the input audio cable to the Left input pins. For stereo connect the Left input cable to the IN 1 input and the Right input audio cable to the IN 2 input.

Audio inputs are of high impedance so that the detector may be used in bridging situations. Where this is not the case, and a 600 Ω input termination is required, 620 Ω termination resistors should be fitted to the input sockets. (The 620 Ω in parallel with the 10 kΩ input impedance results in a 600 Ω input.)

Control connections:

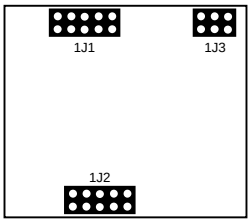
Control and Alarm output connections are via two 4-pin pluggable screw block connectors on the rear assembly.



* (Depends on LK 1 - 4 setting. See *Configuration* section for details.)

SMU-4000 Installation

The SMU-4000 plug-in SNMP management controller module can only be fitted to IRT's 4000 series modules that are capable of being SNMP upgradeable. To determine whether a module is SNMP upgradeable, a square section on the main PCB is silk screened and fitted with three multipin sockets – as shown below:



This is where the SMU-4000 plug-in SNMP management controller module is fitted. The three sets of multipins on the underside of the SMU-4000 line up with the three sets of multipin sockets on the main PCB module. Align all pins and then gently press the SMU-4000 all the way down into place.

If the SMU-4000 is not already programmed with the correct firmware to match the module that it is being plugged into, it then needs to be programmed via the pins on the topside of the SMU-4000.

Note that installation will generally be done by IRT Electronics at the time of ordering.

Note also that an SMU-4000 will only be functionally operational when the main module that it is plugged into is fitted into an IRT 4000 series frame fitted with a CDM-4000 SNMP agent and being interrogated by a suitable Network Management System.

Figure 1: SMU-4000 module

AAD-4130 SNMP Functions:

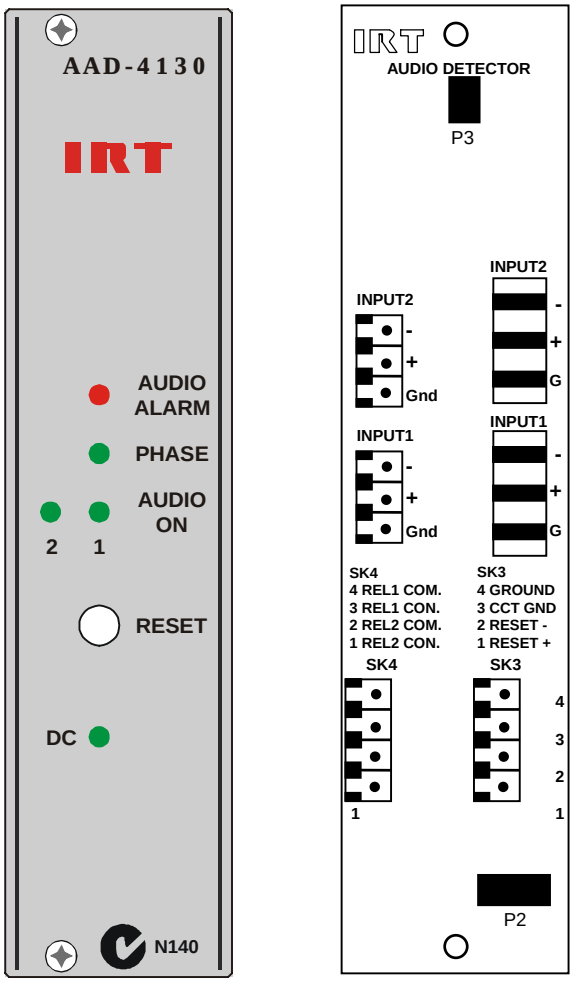
With the AAD-4130 installed in an IRT 4000 series frame with SNMP capability, the AAD-4130 can be interrogated by an SNMP Network Management System (NMS).

The following SNMP functions are capable of being monitored by an NMS:

An indication that an input signal is present;
An indication of the current state of the Urgent Alarm;
An indication that the signals are in phase;
Trap automatically sent, if enabled, when an Urgent Alarm occurs or is restored;
Audio alarm reset control;
Unit reset control.

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.

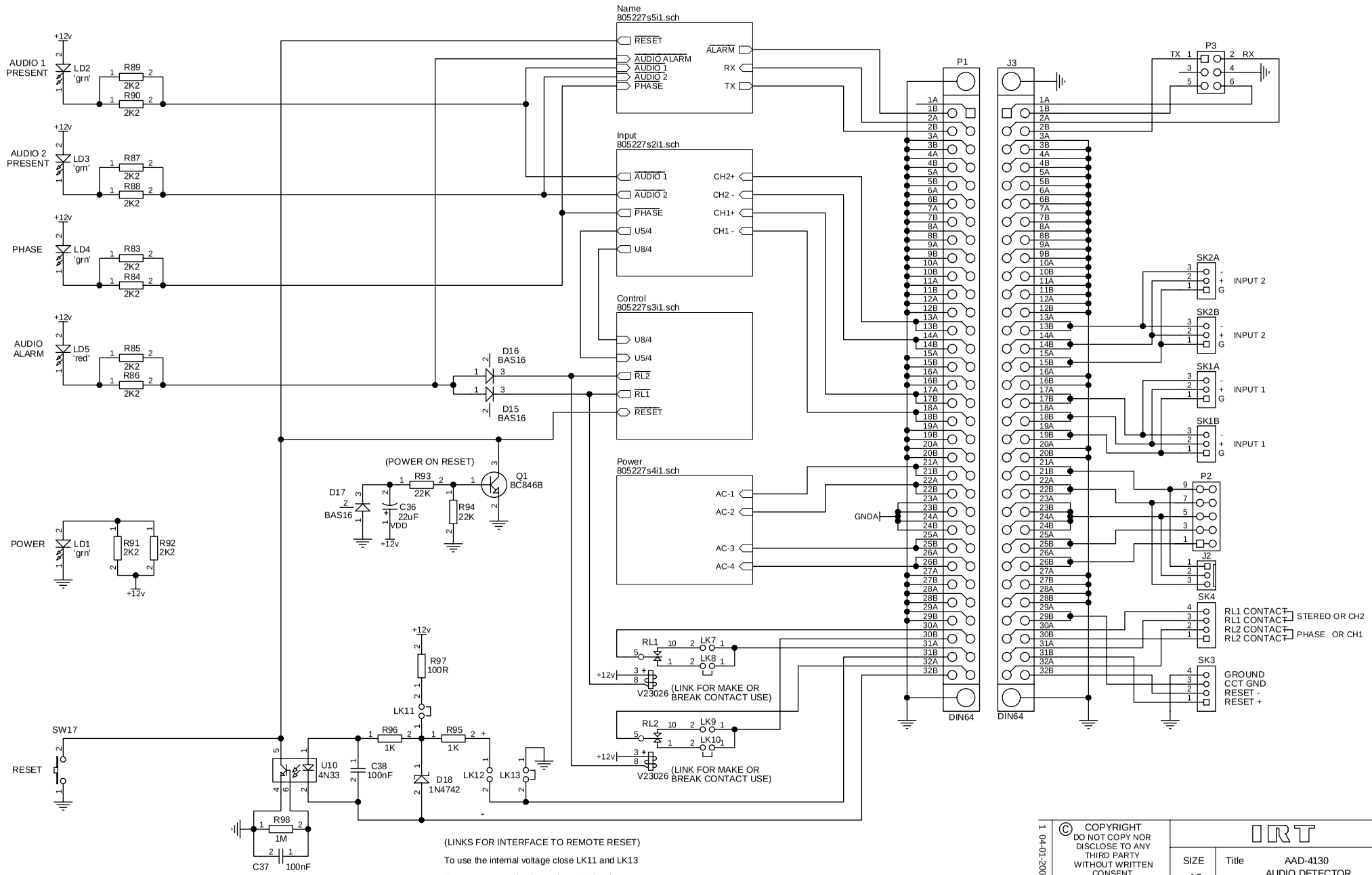
The equipment should be returned **to the agent who originally supplied the equipment** or, where this is not possible, to IRT direct as follows.

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
805227	1	AAD-4130 audio circuit schematic



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Date: 26-Sep-2007			

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SIZE A3	Title AAD-4130 AUDIO DETECTOR	
SCALE N.T.S.	Drawing No. 805227	Sheet 1 of 5

IRT Electronics Pty. Ltd.
ARTARMON NSW AUSTRALIA 2064