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EUROCARD

AES/EBU Digital Audio Distribution Amplifier

Type DAA-4400

Designed and manufactured in Australia

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

IRT Eurocard

Type DAA-4400

AES/EBU Digital Audio Distribution Amplifier

Revision History

Revision	Date	By	Change Description	Applicable to:
0	15/03/2005	AL	Original Issue.	Serial numbers > 0406001
1	29/01/2010	AL	Front panel layout changed and AES sample rate corrected.	Serial numbers > 1001001

DAA-4400

AES/EBU
Digital Audio
Distribution Amplifier

Instruction Manual

Table of Contents

This instruction book applies to units SN:0406001 and above

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.

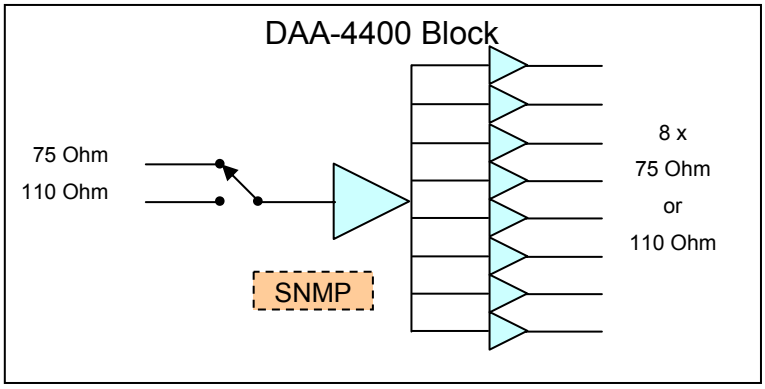
Do not make any adjustments inside equipment with power **ON** unless proper precautions are observed. All internal adjustments should only be made by suitably qualified personnel. All operational adjustments are available externally without the need for removing covers or use of extender cards.

IRT Eurocard

Type DAA-4400

AES/EBU Digital Audio Distribution Amplifier

General Description.



The DAA-4400 is designed to provide a solution to most AES/EBU digital audio signal distribution requirements.

The DAA-4400 will operate at AES sample rates from 34 to 54 kHz and may be used with non-AES digital signals that have a net zero DC content.

Whilst analogue VDA's may be used for 75 Ohm AES signals, the digital circuitry of the DAA-4400 offers the advantage of restoring the signal rise and fall times and output level without the need to manually adjust gain and compensation controls.

A choice of rear assembly is available for either 110 Ohm or 75 Ohm use. No changes are required to the main DA to convert between the two output types.

The input includes both 110 Ohm and 75 Ohm input connectors and is link selectable on the main PCB.

An optional SNMP (Simple Network Management Protocol) plug-in module is available for monitoring when used in an IRT frame fitted with SNMP capability.

The DAA-4400 is designed to fit IRT's standard 1RU and 3RU Eurocard frames and may be used alongside any other of IRT's analogue or digital Eurocards.

Standard features:

- **8 outputs.**
- **75 and 110 Ohm inputs.**
- **Choice of 75 or 110 Ohm outputs by changing rear connector assembly.**
- **Front panel monitoring output.**
- **Optional plug-in SNMP monitoring module.**
- **All inputs and outputs transformer coupled.**
- **Digital circuit re-shapes output and restores level.**
- **No cable compensation adjustments required.**

Technical Specifications

IRT Eurocard module
Type DAA-4400

Inputs:

Number			2.
Type			1 x 110 Ω balanced or 1 x 75 Ω unbalanced selected by link on PCB.
Format			AES3-1992 standard.
Input level			200 mVp-p minimum.
Cable length			>500 m 75 Ω (Belden 8281). >200 m 110 Ω (AES digital high quality shielded pair).

Outputs:

Number			8.
Type	ZAA-4401	(standard)	110 Ω balanced > 3 Vp-p.
			or
	ZAA-4400	(optional)	75 Ω unbalanced > 1 Vp-p.
Monitoring			1 x 75 Ω unbalanced.
Format			AES3-1992 standard.

Performance:

AES sample rate	34 to 54 kHz continuous.
Rise & fall times	<20 ns.
Power requirements	28 Vac CT (14-0-14) or ± 16 Vdc.
Power consumption	<4 VA.

Connectors:

Balanced	Phoenix 3 terminal plug-in blocks.
Unbalanced	BNC.

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, 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		Rear connector assembly including matching plugs for 110 Ohm connections.
Optional accessories		SMU-4000 plug in SNMP Management Information Base (MIB) module.

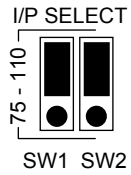
Due to our policy of continuing development, these specifications are subject to change without notice.

Configuration

Other than the following link settings, there are no user configurable settings. All other potentiometer and link settings are factory set and should not be moved.

Input Impedance:

The AES/EBU input can be set for either 110 Ω balanced (3 pin phoenix connector) or 75 Ω unbalanced (BNC), regardless of rear assembly chosen. On board link settings (both SW1 and SW2) need to be set for either 110 Ω balanced terminating or 75 Ω unbalanced terminating depending on the input connector chosen.



Output Impedance:

Output impedance is determined by the choice of rear assembly. The DAA-4400 is generally supplied standard with the ZAA-4401 110 Ω balanced output rear assembly. The ZAA-4400 75 Ω unbalanced output rear assembly is available at time of ordering. Both rear assemblies take either balanced or unbalanced inputs.

SNMP

What Is It?

SNMP stands for Simple Network Management Protocol. It is an application layer protocol for managing IP (Internet Protocol) based systems. SNMP enables system administrators to manage system performance, and to find and solve system problems. SNMP runs over UDP (User Datagram Protocol), which in turn runs over IP.

Three types of SNMP exist: SNMP version 1 (SNMPv1), SNMP version 2 (SNMPv2) and SNMP version 3 (SNMPv3). It is not the intention here to discuss the differences between various versions, only to bring attention to the fact that IRT Electronics modules, fitted with SNMP capability, use SNMPv1.

An SNMP managed network consists of three key components: Network Management Systems (NMS), *agents,* and *managed devices.*

An *NMS* is the console through which the network administrator performs network management functions, such as monitoring status (e.g. alarm states) and remote controlling, of a set of managed devices. One or more *NMSs* must exist on any managed network. Generally the *NMS* is a computer running third party SNMP control software. There are a number of third party SNMP software applications currently available on the market.

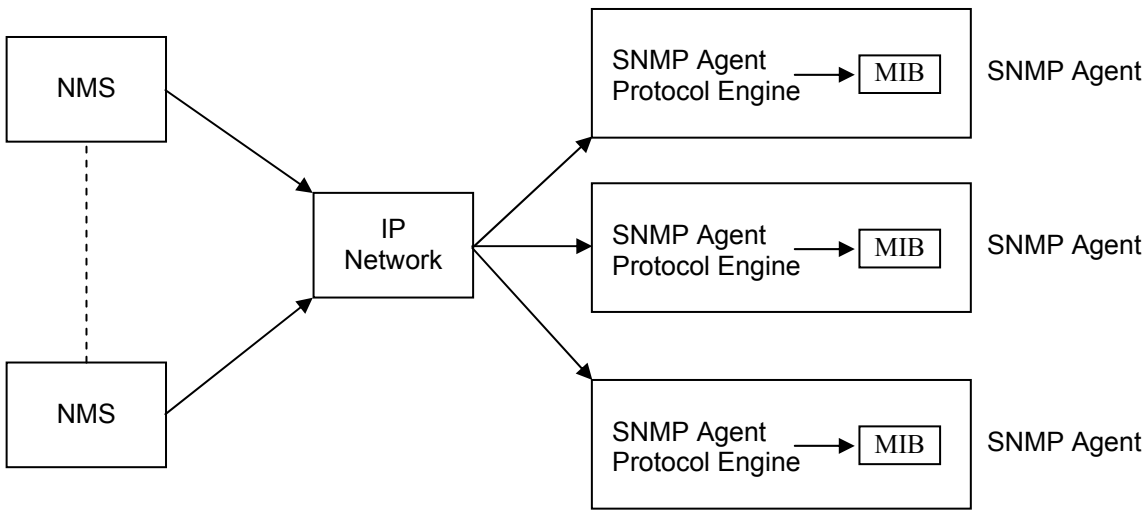
An *NMS* polls, or communicates with, an *agent.* An *agent* is a network management software module that resides in a *managed device.* An *agent* has local knowledge of management information and translates that information into a form compatible with SNMP. The *agent,* therefore, acts as an interface between the *NMS* and the managed devices. The *NMS* sends a request message, and control commands for the managed devices, to the *agent,* which in turn sends a response message, containing information about the *managed devices,* back to the *NMS.*

A *managed device* contains an SNMP *agent* and resides on a managed network. *Managed devices* collect and store management information and make this information available to *NMSs* using SNMP.

Managed device agent variables are organised in a tree structure known as a Management Information Base (MIB). Within the *MIB* are parameters pertaining to the *managed device.* An Object Identifier (OID) number within the *MIB* defines the managed device type. This is a unique number specific to the model of *managed device.* Other information relating to the device is also stored, information such as alarm states, controllable settings, etc. The *MIB* tree is organised in such a way that there will be no two *MIB* files with conflicting placements.

Normally an *NMS* polls an *agent* for information relating to the *MIB* in a managed device to be sent back to the *NMS.* When certain conditions are met within the *MIB,* such as major alarm conditions, for example, the *agent* automatically sends what is known as a *trap* to the *NMS* without any prompting from the *NMS.* This allows automatic notification of a predetermined event.

SNMP Block Diagram



SNMP **with IRT Products:**

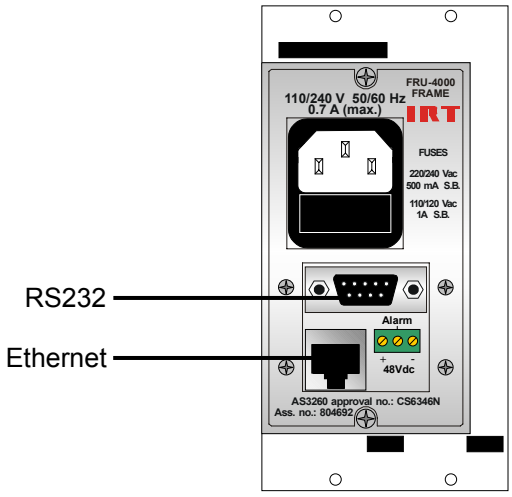
IRT Electronics currently employs SNMPv1 with its SNMP capable frames. The frame acts as an *agent* when fitted with a CDM-xxxx module. This module has its own designated slot next to the power supply so as to not affect the number of modules that the frame will take. Communication between the *NMS,* the frame and its loaded modules are via this CDM-xxxx module. Note that the *NMS* software is third party and not supplied by IRT Electronics.

Ethernet connection for SNMP operation is via an RJ45 connector on the rear of the frame, below the mains inlet. Ethernet rate runs at either 10 baseT or 100 baseT.

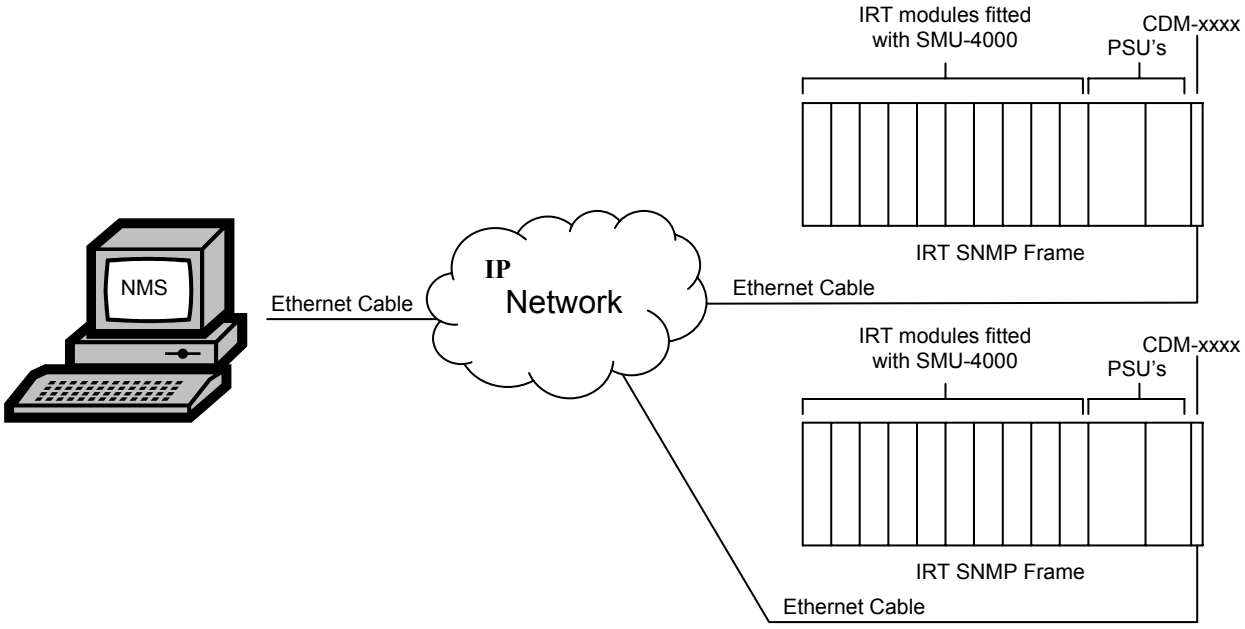
Frame parameters, such as Name, Address and Location, are set via an RS232 interface, a D9 connector on the rear of the frame below the mains inlet. A software terminal emulator, such as Tera Term or HyperTerminal, is used for setting and reading the parameters of the frame.

IRT modules that are SNMP compatible need a plug-in SMU-4000 module with a program relevant to the module that it is plugged into. Depending on the module, besides the module identification, parameters such as alarm states, inputs and controls etc. are communicated to the CDM-xxxx *agent* via a data bus on the rear of the frame. Thus the CDM-xxxx collects information on what is loaded within the frame, what positions they occupy, and their current status for communication to the *NMS* when the *NMS* sends a request for information.

In the event of a major alarm from any of the SNMP compatible modules, or power supplies, a *trap* is automatically sent by the CDM-xxxx *agent* to the *NMS* without any prompting by the *NMS.* This alerts the operator to any fault conditions that may exist that need immediate attention.



IRT SNMP Connections



IRT SNMP Setup

DAA-4400 SNMP Functions:

With the DAA-4400 fitted with the optional plug-in SMU-4000 SNMP module, programmed with the firmware to suit, and installed in an IRT 4000 series frame with SNMP capability, can be interrogated by an SNMP Network Management System (NMS).

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

The current state of the “Urgent” alarm (loss of input);
An indication that an input signal is present;
Whether “Trap” function is enabled;
Trap automatically sent, if enabled, on “Urgent” alarm;
Trap automatically sent, if enabled, if “Urgent” alarm clears; and
Unit reset control.

Installation

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.

Installation

Installation requires the unit to be plugged into the front of the mounting frame and the rear assembly to be secured to the rear panel of the mounting frame, to install a module in the frame please see instructions under selected frame type in the relevant manual describing the frames.

Signal connections are made to the connectors on the selected rear panel of the DAA-4400.

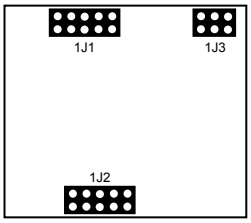
The input signal can be either 75 ohms unbalanced terminating or 110 ohms balanced terminating, the **input selection** is done be links **SW1, SW2 on the module pcb** near pin 32 of the input connector. Move the links provided to the 75 or 110 positions marked on the board as required. The input signal is then connected to the appropriate input connector on the rear panel.

For unbalanced 75 Ω output circuits use the ZAA-4400 rear panel and for balanced 110 Ω output circuits use the ZAA-4401 rear panel assembly.

The presence of signal at the output of the rear assembly can be monitored using the front panel monitoring BNC socket provided.

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 SNMP capable frame fitted with a CDM-xxxx SNMP agent and being interrogated by a suitable Network Management System.

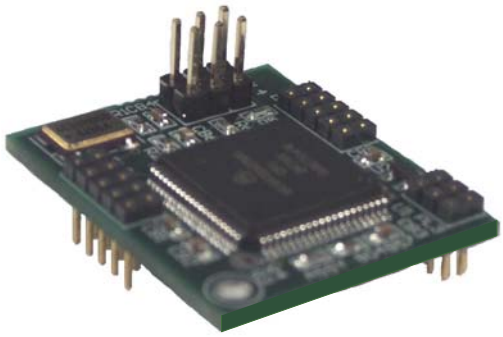
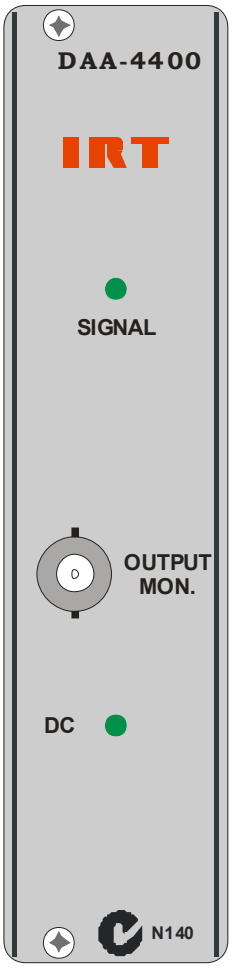
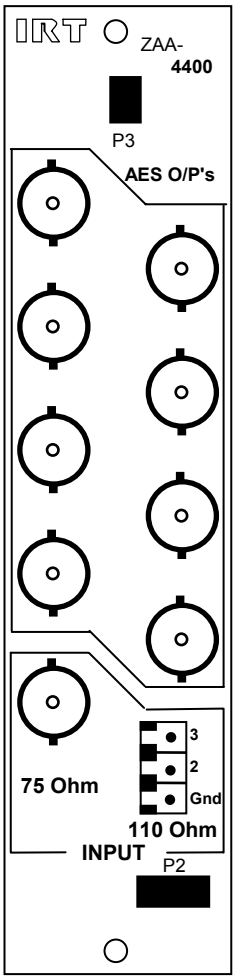


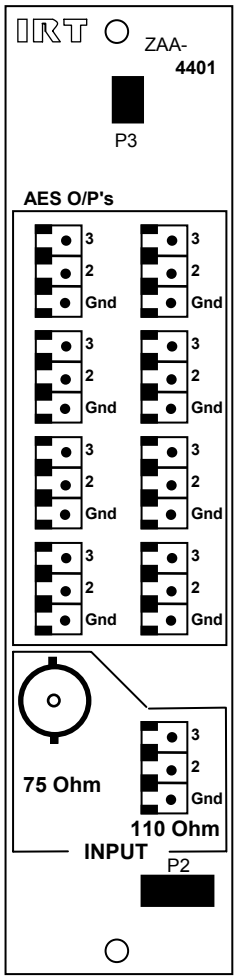
Figure 1: SMU-4000 module

Front & rear panel connector diagrams

The following front panel and rear assembly drawings are not to scale and are intended to show connection order and approximate layout 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
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AUSTRALIA

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Email: service@irtelectronics.com