ADS-7864
Analog Audio Switch

Preliminary

READ THIS FIRST!

Save Time and Avoid Damage!

We realize that you probably want to start right now to install this equipment. But, you will probably save time and avoid damage by taking a few moments to review the following helpful information before you proceed.

1) Module Installation and Cable Connections

   Before turning the power on, consult the Installation section of each module that you will use to obtain specific advice on cable connections and module jumper configuration.

2) After Installation

   See the Operation section for each module to understand the proper way to use this equipment.

3) Module Calibration

   All amplifier and power supply modules have been precisely calibrated. Adjustment of internal sealed calibration adjustments or any repairs to these modules is to be performed by Ross technicians. Unauthorized repairs will void the Warranty.

In Case of Problems:

If you encounter problems, please call our Customer Service Department at (613) 652-4886. Advice is available without charge for the life of this equipment, not just for the warranty period.

AM-7864-02

RossGear Terminal Equipment • Warranty and Repair Policy

This **RossGear Terminal Equipment** product is warranted free of any defect with respect to performance, quality, reliability, and workmanship for a period of FIVE (5) years from the date of shipment from our factory.

In the event that your **RossGear** product proves to be defective in any way during this warranty period, we will gladly repair or replace this piece of equipment with a unit of equal or superior performance characteristics.

Should you find that this **RossGear** product has failed after your warranty period has expired, we will repair your defective piece of equipment for as long as suitable replacement components are available. You, the owner, will bear any labor and/or component costs incurred in the repair or refurbishment of said equipment, beyond the FIVE (5) year warranty period.

Should your **RossGear** product be of our **Digital Terminal Equipment** product line, a power supply, or product with surface mount devices, and it proves to be defective, we would ask that an authorized Ross Video Limited factory representative repair the product. Any attempt to repair this product by anyone other than an authorized **Ross Video Limited** factory representative, will void your warranty.

If this is a manual for a **RossGear** product, of our **Digital Terminal Equipment** product line, a power supply, or piece of equipment that carries surface mount devices, you will find it provides all pertinent information for the safe installation and operation of your **RossGear** product.

If this is a manual for a **RossGear** product, of our **Analog Terminal Equipment** product line, you will find it provides all pertinent information for the safe installation and operation of your **RossGear** product. Included in this manual (if this product does not carry any surface mount devices) you will also find schematics, bills of materials and layout drawings. These are provided for your convenience, should you find it necessary to perform discretionary field repair or modifications to your **RossGear** product.

Ross Video Limited reserves the right to assess any modifications or repairs made by you and decide whether they fall within warranty limitations, should you decide to return your **RossGear** product for repair.

In no event shall **Ross Video Limited** be liable for direct, indirect, special, incidental, or consequential damages (including loss of profits) incurred by the use of this product. Implied warranties are expressly limited to the duration of this warranty.

IN CASE OF PROBLEMS:

Should any problem arise with your **RossGear Terminal Equipment Product**, please contact our **Customer Service Department** at 613-652-4886, 24 hours a day, 7 days a week.

A Return Material Authorization number (RMA) will be issued to you, as well as specific shipping instructions, should you wish our factory to repair your **RossGear** product. A temporary replacement, if required, will be made available for a nominal charge. Any shipping costs incurred, will be the responsibility of you, the customer. All products shipped to you from **Ross Video Limited**, will be shipped collect.

RossGear Terminal Equipment product advice is available, without charge, for the life of this equipment.
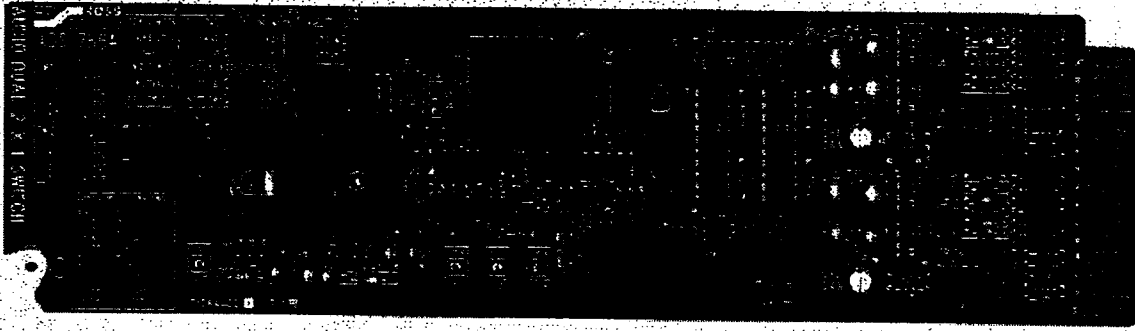
Introduction

The ADS-7864 Analog Audio Switch provides a convenient and economical solution when systems require switching of analog audio.

Each card has 4 inputs and two 4X1 crosspoints. The card can be configured for 4X2, 4X1, dual 2X1 or 2X1 operation.

Each switch is controlled by an optional control module (RMC-8120 OR RMC-8120-1) or by GPI contact or logic level.

Indicator lights are provided to show the status of each crosspoint.

When used with option control module (RCM-8120 or RCM-8120-1), the last crosspoint selected will be saved to non-volatile memory for power failure protection.

The ADS-7864 Analog Audio Switch is also compatible with Leitch* 880-series frames.

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* Leitch is a trademark of Leitch Technology Corporation.

Features

- Switches analog audio
- 4 mono or two stereo inputs
- 4 outputs (2 per switch)
- Can be configured as a 4X2 *or* dual 2X1
- Controllable by the RMC-8120 module or GPIs
- When controlled by remote module, last crosspoint selected is saved to non-volatile RAM.
- Economical cost per switch
- Indicators for status of each crosspoint
- Fits Ross 7800 Series and Leitch[†] 880 Series audio frames
- 5 year transferable warranty

Installation

To install:

1) *Cables* - Connect the input and output cables. The connectors on the rear of the frame are marked for distribution amplifiers having eight outputs. However, the ADS-7864 has four inputs, four outputs, and two GPI/Remote Module inputs. Following the markings on the back of the audio chassis, connect the cables as per the following table.

MARKING ON BACK OF CHASSIS	ADS-7864 DESIGNATION
IN A	IN 1A
OUT A1	IN 2A
OUT A2	OUT 1A
OUT A3	OUT 1B
OUT A4	NO CONNECT
IN B	IN 2A
OUT B1	IN 2B
OUT B2	OUT 2A
OUT B3	OUT 2B
OUT B4+	GPI/PANEL 1
OUT B4-	GPI/PANEL 2

[†] Leitch is a trademark of Leitch Technology Corporation.

2) *Set the mode of operation* - The ADS-7864 can be configured in many ways. Consult the table on the following page, and the description of the jumpers to select an appropriate mode of operation for your instantiation.

   a) *Board Mode* – JP1 (BOARD MODE) is used when the ADS-7864 is being controlled by an RCM-8120 or RCM-8120-1 module. One module can control up to 10 switches (one master, 9 slaves). With JP1 in the MASTER position, the ADS-7864 will be the master card. With JP1 in the SLAVE position, the ADS-7864 will be a slave card. This jumper is ignored when the ADS-7864 is set for GPI control.

   b) *Control* – JP3 (CONTROL) is used to tell the card if it will be controlled by a remote module or by GPI. Set it to the PANEL position for control by an RCM-8120 or RCM-8120-1 remote control module. Set JP3 to the GPI position for GPI control of the card.

   c) *Crosspoint Mode* – JP5 (XPOINT MODE) is used to put the card in 4X1 or 2X1 mode. Moving JP5 to the 4X1 position puts the card in 4X1 mode. Moving JP5 to the 2X1 position puts the card in 2X1 mode.

   d) *Panel Type* – JP7 (PANEL TYPE) is used to tell the card what type of control module is connected to it. This jumper is ignored when the card is in GPI mode. Put JP7 in the 4 BUTTON position when connecting the card to an RCM-8120 module. Put JP7 in the 2 BUTTON position when connecting the card to an RCM-8120-1 module.

   e) *Switch 2 Control* – JP2 (SW2 CONTROL) allows you to slave crosspoint 2 on the ADS-7864 to crosspoint 1. With JP2 in the NORM position, crosspoint 2 is controlled normally via OUT 4B- (GPI/PANEL2). Moving JP2 to the FW 1 position, crosspoint 2 will track crosspoint 1.

   f) *Switch 2 2X1 mode* – JP4 (SW2 2X1 MODE) is only used when JP5 is in the 2X1 position. With JP4 in the INPUT 3&4 position, crosspoint 2 will select between inputs 3 and 4. With JP4 in the INPUT 1&2 position, crosspoint 2 will select between inputs 1 and 2.

   g) *GPI Type* – JP6 (GPI TYPE) is only used when JP5 is in the 2X1 position, JP2 is in the FOLLOW 1 position, and JP3 is set to GPI. This allows edge triggering of GPI's by putting JP6 in the EDGE position. If in the LEVEL position, GPI's will be level sensitive.

MODE	JP 3 CONTROL	JP 5 XPOINT MODE	JP 2 SW2 CONTROL	JP 4 SW2 2X1 MODE	JP 6 GPI TYPE	JP 7 PANEL TYPE	NOTES
DUAL 2X1 GPI MODE	GPI	2X1	NORM	INPUT 3&4	N/A	N/A	GPI 1 (BNC 4) controls OUT 1 (selects IN GPI 2 (BNC 6) controls OUT 2 (selects IN
2X2 GPI MODE	GPI	2X1	NORM	INPUT 1&2	N/A	N/A	GPI 1 (BNC 4) controls OUT 1 (selects IN GPI 2 (BNC 6) controls OUT 2 (selects IN
DUAL 2X1 GPI TRACKING MODE	GPI	2X1	FW 1	INPUT 3&4	LEVEL	N/A	GPI 1 (BNC 4) controls OUT1 (selects IN AND OUT 2 (selects IN 3 or IN 4)
2X1 GPI WITH 2 OUTPUTS	GPI	2X1	FW 1	INPUT 1&2	LEVEL	N/A	GPI 1 (BNC 4) controls OUT 1 and OUT 2 outputs set to the same input, either IN 1 or
EDGE TRIGGERED 2X1 GPI	GPI	2X1	FW 1	AS REQUIRED	EDGE	N/A	An edge on GPI 1 selects the first input. A GPI 2 selects the second input.
4X1 GPI MODE	GPI	4X1	N/A	N/A	N/A	N/A	GPI's are binary encoded, OUT 2 tracks O
4X2 PANEL MODE	PNL	4X1	NORM	N/A	N/A	4 BUTTON	Requires 2 RCM-8120 modules.
4X1 PANEL MODE	PNL	4X1	FW 1	N/A	N/A	4 BUTTON	Requires 1 RCM-8120 module, OUT 2 tra
DUAL 2X1 ONE PANEL MODE	PNL	2X1	NORM	AS REQUIRED	N/A	4 BUTTON	Requires 1 RCM-8120 module. OUT 2 ca configured via JP4 to select between IN 1 3&4.
DUAL 2X1 TWO PANEL MODE	PNL	2X1	NORM	AS REQUIRED	N/A	2 BUTTON	Requires 2 RCM-8120-1 modules. OUT 2 configured via JP4 to select between IN 1 3&4.
2X1 PANEL WITH 2 OUTPUTS	PNL	2X1	FW 1	AS REQUIRED	N/A	2 BUTTON	Requires 1 RCM-8120-1 module. OUT 2 c configured via JP4 to select between In 1& 3&4.

NOTES ON GPI OPERATION

LEVEL SENSTIVE GPI CONTROL:

In GPI mode, the card can work 2 ways. The first way is as a dual 2X1 switch. The second way is as a 4X1 switch. There are two GPI input connections. The first input of each 2X1 switch is selected unless the GPI input is grounded. A ground or low logic level will cause the second input to be selected. In 4X1 mode, the GPIs are binary encoded.

GPI shields can be tied together.

1) *4X1 GPI Operation* - When using the card in 4X1 GPI mode, the GPIs are binary encoded:

GPI 1	GPI 2	OUT 1	OUT 2
Open	Open	IN 1A	IN 1A
Short	Open	IN 1B	IN 1B
Open	Short	IN 2A	IN 2A
Short	Short	IN 2B	IN 2B

2) *2X1 GPI Operation* - In 2X1 mode, there are 4 modes of operation: Dual 2X1, 2X2, Dual 2X1 Tracking, and 2X1 with 2 outputs. These modes are described below. For GPI control in 2X1 modes, the RCS-8120 is available from Ross. This optional module has 2 dual push button switches on it. It can control both GPIs on the ADS-7864. The RCS-8120 fits into the Ross MRP-8120 Control Panel (which can hold a total of 5 modules), or is mounted in desk with the optional in desk mounting adapter DCA-8120.

a) Dual 2X1 Mode:

Set:
JP4 = GPI   JP6 = NORM
JP5 = 2X1   JP7 = INPUT 3&4

GPI 1	GPI 2	OUT 1	OUT 2
Open		IN 1A	
Short		IN 1B	
	Open		IN 2A
	Short		IN 2B

b) 2X2 Mode:

Set:
JP4 = GPI   JP6 = NORM
JP5 = 2X1   JP7 = INPUT 1&2

GPI 1	GPI 2	OUT 1	OUT 2
Open		IN 1A	
Short		IN 1B	
	Open		IN 1A
	Short		IN 1B

c) Dual 2X1 Tracking Mode:

Set:
JP4 = GPI   JP6 = FW 1
JP5 = 2X1   JP7 = INPUT 3&4

GPI 1	GPI 2	OUT 1	OUT 2
Open	X	IN 1A	IN 2A
Short	X	IN 1B	IN 2B

X = don't care

d) 2X1 Mode with Dual Outputs:

Set:
JP4 = GPI   JP6 = FW 1
JP5 = 2X1   JP7 = INPUT 1&2

GPI 1	GPI 2	OUT 1	OUT 2
Open	X	IN 1A	IN 1A
Short	X	IN 1B	IN 1B

X = don't care

EDGE TRIGGERED GPI CONTROL:

For situations where it is required to edge trigger the GPI's, there are two methods to control the ADS-7864. Edge triggering looks for a negative going edge on the GPI input. The pulse used must be at least 3 fields in duration (about 50 ms). Since a pulse is used, the best way to control equipment is with one dedicated GPI per crosspoint. This way, in the event of a loss of power to the controlling equipment (i.e. an automation system), it can set the ASS-7864 to a known crosspoint.

The first method is to use the GPI inputs on the RCM-8120 or RCM-8120-1 control module. The control modules have one GPI for each input on the ADS-7864. This allows automation systems to control the card, while still allowing for manual over ride. It must be noted that the remote control module MUST be active for the GPI's to take effect. For more information on this method of edge triggered GPI control, see the RCM-8120/RCM-8120-1 owners manual.

The second method is to put the ADS-7864 into edge triggered GPI mode. Since the ADS-7864 only has two GPI inputs, the card will only work in this mode when switch 2 is set to follow switch 1 (JP 2 set to FOLLOW 1). Thus a negative going edge on GPI 1 (OUT 4B+) will select the first input, and a negative going edge on GPI 2 (OUT 4B-) will select the second input.

In edge triggering mode, the ADS-7864 uses its non-volatile memory to store the last selected cross points. This is extremely useful in mobile applications and where frequent power down of equipment occurs.

The ADS-7864 will work in one of two ways when controlled by negative going GPI edges.

1) 2X1 Follow Mode:

        Set:

JP1 – N/A	JP2 – FOLLOW 1	JP3 – GPI	JP4 – INPUT 3&4
JP5 – 2X1	JP6 – EDGE	JP7 – N/A	

GPI 1	GPI 2	OUT 1	OUT 2
↓		IN 1A	IN 2A
	↓	IN 1B	IN 2B

2) 2X1 Mode with Dual Outputs:

        Set:

JP1 – N/A	JP2 – FOLLOW 1	JP3 – GPI	JP4 – INPUT 1&2
JP5 – 2X1	JP6 – EDGE	JP7 – N/A	

GPI 1	GPI 2	OUT 1	OUT 2
↓		IN 1A	IN 1A
	↓	IN 1B	IN 1B

Notes on Remote Module Operation:

MRP-8120 panel with RCM-8120-1 and RCM-8120 installed.

The ADS-7864 is part of the Ross family of utility switches, which can be controlled by the optional control modules. Each control module has four push buttons with LED indicators and insertable legends. Up to 10 cards (ADS-7864, AVS-8064 or DSS-8024) can be controlled simultaneously by a single RCM-8120 control module (1 master card, 9 slave cards). Also, up to 3 control modules may be connected to a control bus. In installations where multiple modules are connected to a control bus, selection of the active module is accomplished via a GPI connection on the back of each control module. Care must be taken to have only one module active at a time to avoid bus contention. Non-active modules will indicate the currently selected crosspoint.

The control bus is a single coax cable (or audio/control cable). It originates at the master card (OUT B4+ for cross point 1, OUT B4- for Crosspoint 2). NOTE: crosspoint 1 (OUT B4+) and crosspoint 2 (OUT B4-) cannot share a control module. The control bus may be split at each card or module to loop the control bus to the next module. The control bus provides both power and data communications to the remote modules.

Remote modules may also be connected together via audio/control cable such as Belden 1503A audio/control cable (22 AWG shielded pair).

Remote modules may also be GPI controlled (closed contact or logic low (level or pulse)). Four GPI terminals are provided on the back of each control module, one for each input. For more information, see the User's Manual for the RCM-8120.

When controlling the ADS-7864 with the control module, the last selected crosspoint is saved to non-volatile RAM. This is useful in mobile installations, as the crosspoints do not have to be re-selected after a power down/power up cycle. The non-volatile memory is rated for 1 million write/erase cycles with 40 years data retention.

TYPICAL APPLICATIONS:

4X2 Operation
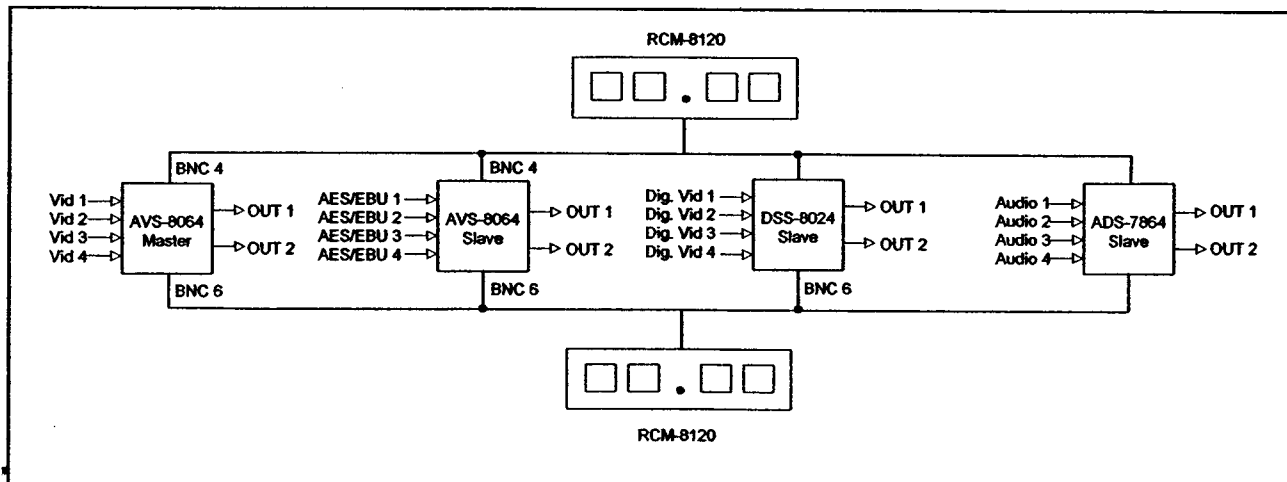
The above diagram shows 4 of the Ross family of utility switches connected to RMC-8120 control modules. The cards are configured for 4X2 remote module operation. The RCM-8120 connected to OUT B4+ or BNC 4 on each card will simultaneously switch crosspoint 1 on each card. The RCM-8120 connected to OUT B4- or BNC 6 on each card will simultaneously switch crosspoint 2 on each card. Jumpers are set as follows:

- JP3 (CONTROL) = PANEL
- JP5 (XPOINT MODE) = 4X1
- JP2 (SW2 CONTROL) = NORM
- JP4 (SW2 2X1 MODE) = N/A
- JP7 (PANEL TYPE) = 4 BUTTON

4X1 Operation
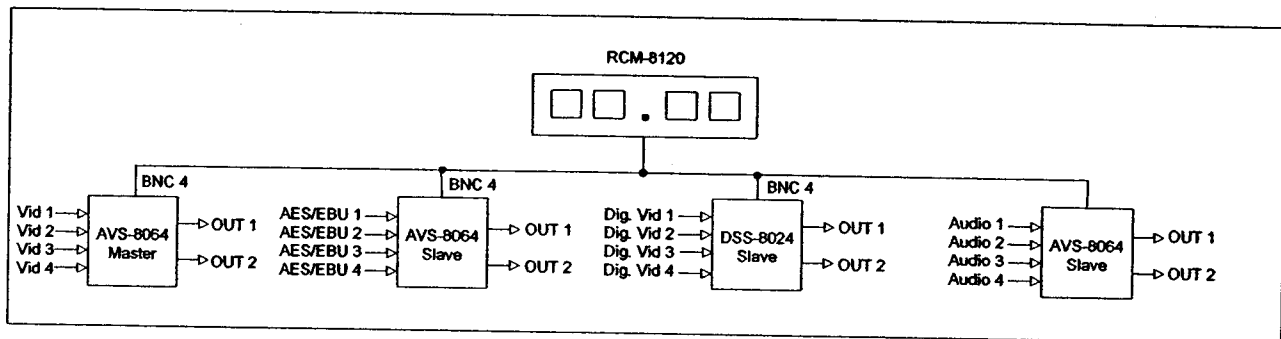
In 4X1 operation, switch 2 on each card is set to follow switch 1 (via JP6 SW2 CONTROL being put into the FW 1 position). Therefore, both crosspoints on each card select the same input. The jumpers are set as follows:

- JP3 (CONTROL) = PANEL
- JP5 (XPOINT MODE) = 4X1
- JP2 (SW2 CONTROL) = FW 1
- JP4 (SW2 2X1 MODE) = N/A
- JP7 (PANEL TYPE) = 4 BUTTON

2X1 Operation

Control with the RMC-8120 module: The RCM-8120 has 4 buttons. When the ADS-7864 is configured for 2X1 operation with this module, the 2 left buttons control output 1 and the 2 right buttons control output 2.

2X1 Operation
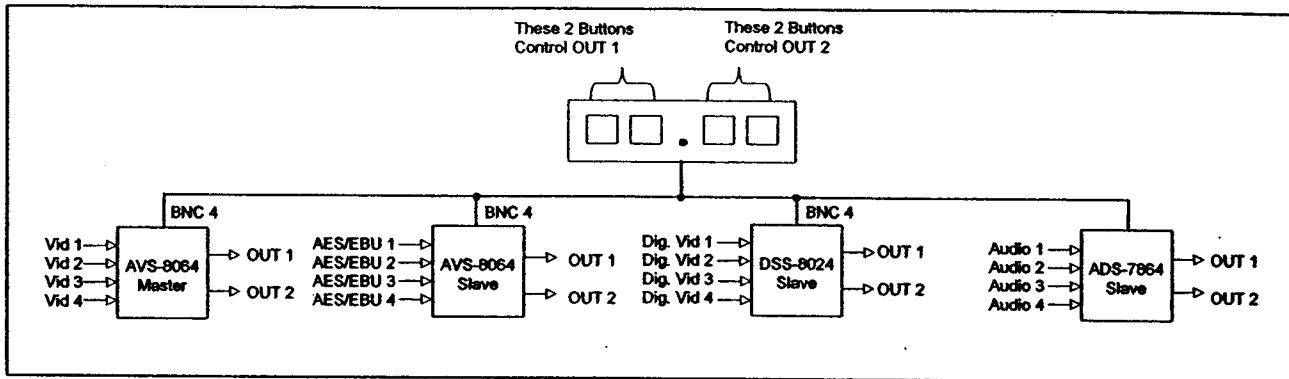
In the above diagram, we will assume that the utility switches (ADS-7864, AVS-8064 and DSS-8024) are configured as follows:

- JP3 (CONTROL) = PANEL
- JP5 (XPOINT MODE) = 2X1
- JP2 (SW2 CONTROL) = NORM
- JP4 (SW2 2X1 MODE) = INPUT 3&4
- JP7 (PANEL TYPE) = 4 BUTTON

The 2 left buttons on the RCM-8120 control crosspoint 1 on each card. They will select IN 1 or IN 2 for OUT 1. The 2 right buttons will control crosspoint 2 on each card. They will select IN 3 or IN 4 for OUT 2.

Moving JP7 (SW2 2X1 MODE) to the INPUT 1&2 position will force crosspoint 2 to select either IN 1 or IN 2. This would provide independent control of the same 2 input signals (i.e. 2X2).

Control with the RCM-8120-1

The RCM-8120-1 is a variation of the RCM-8120 control module. It only has 2 buttons. To operate the ADS-7864 in dual 2X1 mode would require 2 RCM-8120-1 modules.

2X1 Operation
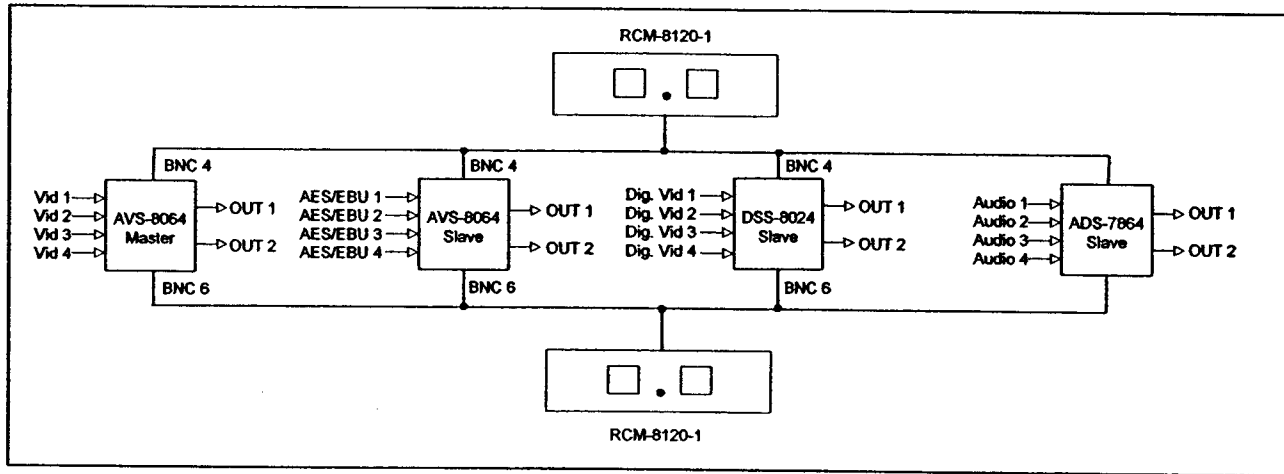
In the above diagram, the RCM-8120-1 module connected to OUT B4+ or BNC 4 will control crosspoint 1 on each utility switch (ADS-7864, AVS-8064 and DSS-8024). The RCM-8120-1 module connected to OUT B4- or BNC 6 will control crosspoint 2 on each utility switch.

The jumpers on each card are set as follows:

- JP3 (CONTROL) = PANEL
- JP5 (XPOINT MODE) = 2X1
- JP2 (SW2 CONTROL) = NORM
- JP4 (SW2 2X1 MODE) = INPUT 3&4
- JP7 (PANEL TYPE) = 2 BUTTON

Notes on connecting multiple remote modules to a control bus:

Up to 3 control modules can be connected to a control bus. However, to avoid bus contention, only 1 module may be active at a time. Active modules have a red LED on the front of the panel lit up. Non-active modules will continue to indicate the currently selected crosspoint. Pressing buttons on a non-active module will have no effect on the utility switch connected to the module.

To select which module is active, a GPI (closed contact or logic level) must short the module GPI. On the back of each module is a 3-pin connector for the GPI. Shorting pins 1 and 2 together, or bringing pin 1 to a low logic level, will enable the module.

In installations where 2 modules are connected to a control bus, the RCS-8120 may be connected to the 2 remote modules to select which module is active. The RCS-8120 has 2 dual push button switches, so one RCS-8120 can control 4 RCM-8120 modules.

Multiple Modules
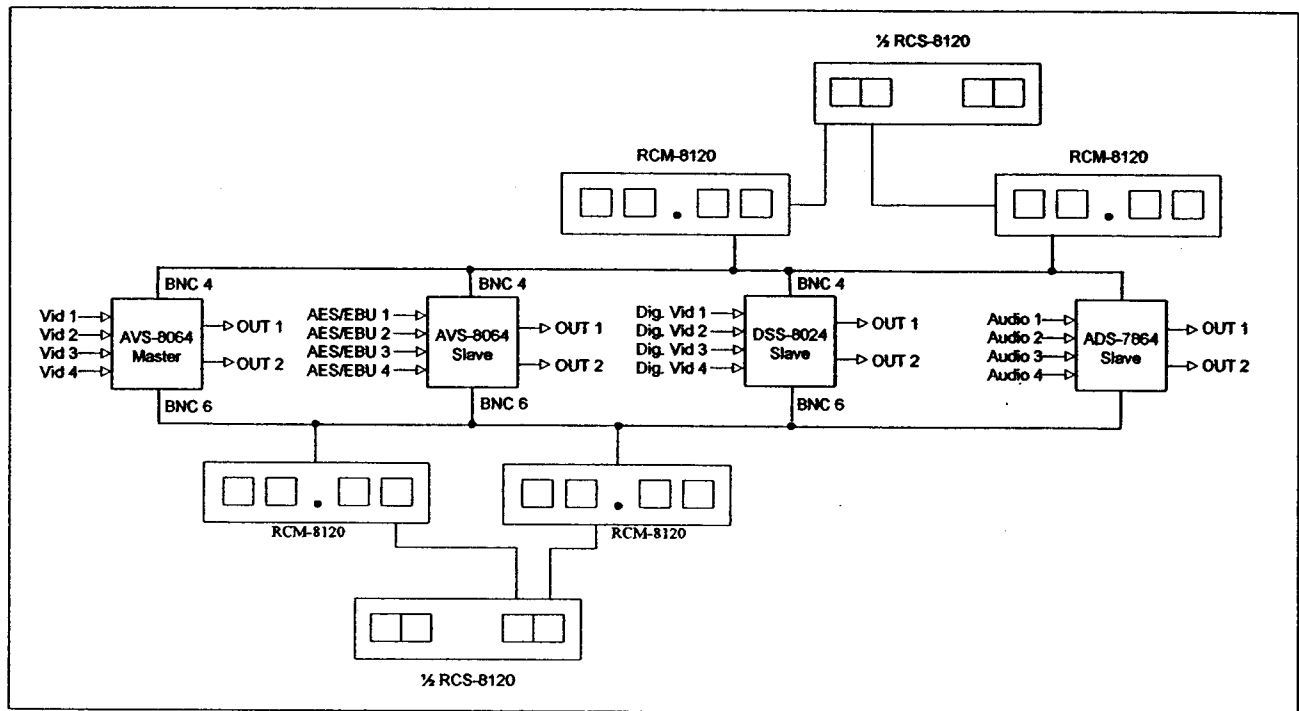
Operation

Other than the GPI/panel inputs, there are no operational controls on the board.

The front edge of the module has several LED indicators to show the current status of the unit. The meaning of the indicators when lit is as follows:

SW1:

1	IN 1A is currently selected
2	IN 1B is currently selected
3	IN 2A is currently selected
4	IN 2B is currently selected

SW2:

1	IN 1A is currently selected
2	IN 1B is currently selected
3	IN 2A is currently selected
4	IN 2B is currently selected

Circuit Description

All four inputs employ identical circuits so only input 1A is described.

The input stage, U5, performs the function of converting the balanced input signal into an unbalanced (single ended) signal for further processing.

This stage is unique because it functions exactly as if the amplifier had a floating transformer input. This means that it responds only to the voltage difference between the two input lines and ignores any imbalance to ground. This gives the distribution amplifier the very desirable ability to accept any out-of-balance input signal and produce a perfectly balanced output. As a consequence, it also has an exceptional ability to reject common mode hum and noise over the whole audio band.

The input circuit includes diodes to protect the amplifier against damaging input noise spikes.

The input selection is provided by integrated circuit U2. It is controlled by microcontroller U7. The mode of operation is set via jumpers JP1, JP2, JP3, JP4, JP5, JP6, and JP7. The microcontroller saves the last selected crosspoint in eeprom U8. U8 is rated for 1 million write/erase cycles with 40 years data retention. The microcontroller also drives U6A, which decodes the crosspoint selection and displays it on DS1, DS2, DS3, or DS4.

Q1, Q2, Q3, Q8, and Q9 provide the panel/GPI communication. The panel/GPI line is routed through a solid state relay (made out of U15, U16 and associated components) to provide isolation to the communications bus should a slave card lose power.

The positive line outputs are driven by unity-gain stage U10B. These circuits are designed to be very stable and not oscillate at any normal line load. The negative output stage U10A operates in a similar manner.

The power input voltage of approximately +/- 20 volts is reduced to +/- 10 volts by regulators U11 and U13. This lower voltage powers the input and gain stages while the output stages are fed directly from the power supply. The + 10 volt rail also feeds U14, which provides the +5 volts for the logic circuits

Alignment

The only alignment controls provided are setting unity gain. To adjust the CH1 Gain control, you will need to set up a very accurate method of measuring gain. Follow the same instructions for CH2 Gain.

1. Apply a 1 kHz tone at 0 dBu to input 1A.

2. Connect OUTPUT 1A to your measurement equipment.

3. Select INPUT 1A with your control module or GPI. Adjust RV1 so that the output is 0 dBu +/- 0.02 dBu.

4. Connect OUTPUT 2A to your measurement equipment.

5. Select INPUT 1A with your control module or GPI. If the card is set up as a 2X1, you may have to move the input test signal to INPUT 2A, and select that input.

6. Adjust RV2 so that the output is 0 dBu +/- 0.02 dBu..

7. Seal RV1 and RV2. Disconnect the test set up.

ADS-7864 AUDIO DUAL SWITCH
7864A-001
Bill Of Materials

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Item	Quantity	Reference	Part	DESCRIPTION		PART NUMBER
1	1	J1	CON\30P\156\E	NOT A BOUGHT PART		-------
2	2	O2,O56	TOOL\0.125	TOOLING HOLE,0.125 DRILL	THL	-------
3	1	CR7	NVCR 0.3	NO VALUE,DIODE,0.3 PITCH	THL	-------
4	1	JP8	NVH3	NO VALUE,HDR,3P,1 ROW,M	THL	-------
5	5	TP1,E1,TP2,TP3,TP4	NVTP	NO VALUE,TEST POINT	THL	-------
6	4	C11,C13,C30,C41	22p	CAP,CER,100V,2%,22p	THL	201-220
7	2	C6,C5	39p	CAP,CER,100V,2%,39p	THL	201-390
8	2	C19,C44	68p	CAP,CER,100V,2%,68p	THL	201-680
9	21	C3,C4,C7,C9,C12,C14,C15, C16,C17,C18,C20,C21,C24, C25,C28,C29,C31,C37,C40, C43,C45	100n	CAP,GLAS,100n	THL	225-100
10	2	C22,C36	4u7	CAP,TANT,4u7	THL	250-007
11	5	C32,C33,C34,C35,C42	6u8	CAP,TANT,25V,6u8	THL	250-008
12	1	C23	1u	CAP,TANT,35V,1u0	THL	250-009
13	8	C1,C2,C8,C10,C26,C27,C38, C39	100u 250-010	CAP,TANT,10V,100u	THL	250-010
14	1	Y1	12MHz 335-031	XTAL,12.000MHz,PAR	THL	335-031
15	2	CR10,CR11	1N4733ATR	DIODE,ZENER	THL	360-012
16	8	CR1,CR2,CR3,CR4,CR5,CR6, CR8,CR9	1N5240B	DIODE,ZENER,10V,500mW,5%	THL	360-039
17	8	DS1,DS2,DS3,DS4,DS5,DS6, DS7,DS8	361-027	LED,T-3/4,YEL,PCB MNT,90DEG	THL	361-027
18	1	MP1	365-001	EJECTOR,PCB	THL	365-001
19	2	F4,F3	500mA 390-018	FUSE,500mA,125V,FAST ACTING,SUBMIN	THL	390-018
20	2	F2,F1	170mA 390-027	FUSE,170mA,60V,PTC,RESETABLE	THL	390-027
21	7	JP1,JP2,JP3,JP4,JP5,JP6, JP7	403-013-03	HDR,3P,1 ROW,PL.23,BL.1,LL.1,M	THL	403-013-03
22	3	L1,L2,L3	4u7 440-023	IND,4.7uH,1/4W,20%	THL	440-023
23	1	U13	MC7805CT	REGULATOR,POSITIVE VOLTAGE	THL	500-015
24	1	U12	MC7905CT	REGULATOR,NEG,VOLTAGE	THL	500-020
25	1	U17	LM78L05	REGULATOR,POS,VOLTAGE	THL	500-024
26	1	U6	74HC139	DECODER/DEMULT,DUAL,2-4 LINE	THL	500-052
27	1	U1	DS1232	MICROMONITOR CHIP 'WATCHDOG'	THL	504-062
28	2	U3,U14	74HCT238	DECODER/DEMUX,3-8 LINE	THL	504-099
29	2	U10,U16	NE5532N	OP-AMP,DUAL,INT-COMP,LO-NOISE	THL	504-129
30	4	U5,U9,U11,U15	SSM-2143P	RECEIVER,-6dB DIFFERENTIAL,LINE	THL	504-130
31	2	U2,U4	SSM2404P	SWITCH,AUDIO,QUAD,SPST	THL	504-376
32	1	U8	M24C01-BN	EEPROM,SERIAL,1K	THL	504-421
33	7	JPPLUG1,JPPLUG2,JPPLUG3, JPPLUG4,JPPLUG5,JPPLUG6, JPPLUG7	603-005	JUMPER,2-POS,LOW PROFILE		603-005
34	4	SCRWU12,NUTU12,SCRWU13, NUTU13	650-012	NUT,HEX		650-012
35	2	RV1,RV2	10K 1T	TRIMPOT,1/4 DIA,1T,10K	THL	710-008
36	1	PCB	7864-001	1 R/U AUDIO DUAL 2X1 SWITCH -------	PCB	7864-001-02
37	1	K1	HE722A2400	RELAY,REED,24V,10W,200V,DPST	THL	790-014
38	1	U7	8064E-001-01 AT89C52-12JC	MICROCONTROLLER,8-BIT,16MHz,CMOS	THL	8064E-001-01
39	4	R15,R16,R52,R53	20K 1%	RES,1/4W,1%,20K	THL	814-200
40	4	R2,R8,R44,R46	52K3 1%	RES,1/4W,1%,52K3	THL	814-523
41	8	R17,R19,R20,R21,R54,R56, R61,R62	33R	RES,1/2W,5%,33R	THL	825-330
42	2	R4,R22	560R	RES,1/2W,5%,560R	THL	826-560

ADS-7864 AUDIO DUAL SWITCH   Revised: July 14, 2000
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Item	Quantity	Reference	Part	DESCRIPTION	PART NUMBER	
43	2	R35,R47	750R	RES,1/2W,5%,750R	THL	826-750
44	2	R10,R48	2K2	RES,1/2W,5%,2K2	THL	827-220
45	2	R40,R26	2K7	RES,1/2W,5%,2K7	THL	827-270
46	2	R36,R27	3K3	RES,1/2W,5%,3K3	THL	827-330
47	2	R31,R24	5K1	RES,1/2W,5%,5K1	THL	827-510
48	2	R14,R60	9K1	RES,1/2W,5%,9K1	THL	827-910
49	14	R12,R13,R18,R23,R25,R28, R29,R33,R37,R38,R49,R55, R58,R59	10K	RES,1/2W,5%,10K	THL	828-100
50	6	R1,R5,R39,R41,R42,R50	12K	RES,1/2W,5%,12K	THL	828-120
51	2	R32,R30	47K	RES,1/2W,5%,47K	THL	828-470
52	2	R11,R34	100K	RES,1/2W,5%,100K	THL	829-100
53	8	R3,R6,R7,R9,R43,R45,R51, R57	10K 0.5%	RES,1/4W,0.5%,10K	THL	840-059
54	1	SCKTU7	860-017	SOCKET,44P,PLCC	THL	860-017
55	2	Q1,Q10	MPS3638A	TRANSISTOR,P-N-P	THL	950-010
56	6	Q2,Q3,Q4,Q6,Q7,Q9	2N3904	TRANSISTOR,N-P-N	THL	950-016
57	2	Q5,Q8	2N3906	TRANSISTOR,P-N-P	THL	950-018
58	2	WSHRU12,WSHRU13	960-015	WASHER,SPRING,4-40		960-015

Specifications

Specifications are subject to change without notice.

Audio Inputs:

Audio Inputs: 4 mono or 2 stereo
Input Impedance: >35KΩ, balanced
Max Input Level: 24 dBu
Common Mode Rejection: >60 dB 20Hz to 20kHz

Audio Outputs:

Number Of Outputs: 4 (two per switch)
Max Output Level: +24 dBu
Output Impedance: 66Ω
Output Isolation: >70dB
S/N Ratio: >-92 dB relative to +8 dBu

Performance:

Gain: Factory set for 0 dB (+/-0.04 dB)
Frequency response: +/-0.02 dB to 10kHz, typically -0.07 dB @ 20kHz
Total Harmonic Distortion + Noise: <0.03%
Intermodulation: <0.035% (SMPTE)
Interchannel Crosstalk: >88 dB relative to +8 dBu

Power Consumption:

NOTE: Be sure to check the power supply rating for the frame you will be installing this card into and ensure that you do not exceed the power supply ratings for either rail. It is suggested that when a mixture of the AVS-8064, DSS-8024, and ADS-7864 are run from a common bus, the ADS-7864 be put into slave mode.

	+20V rail	-20V rail	Total Power
GPI Mode	45mA	30mA	1.6W
Slave Mode (Any number of panels)	40mA	30mA	1.5W
Master Mode (1 Panels, no slave cards)	55mA	30mA	1.8W
For Each Additional Remote Panel Add	16mA		
For Each Additional Slave Card Add	8mA		

Other:

5 Year Transferable Warranty

Ordering Information

ADS-7864	Analog Audio Switch (Dual 2X1 / 4X2)
AVS-8064	AES/Analog Video Switch (Dual 2X1 / 4X2)
DSS-8024	Digital Serial Switch (Dual 2X1 / 4X2)

RCM-8120	Remote Control Module (four buttons)
RCM-8120-1	Remote Control Module (two buttons)
RCS-8120	Remote Control Selector
DCA-8120	In Desk Mounting Adapter for RCM-8120 or RCS -8120
MRP-8120	Rack Panel (Mounting for 5 modules)
BPM-8120	Blank Panel (cover plate)

PS-7813	Universal Power Supply (85-250 volts) Two recommended for AFR-7812
AFR-7814C	Audio DA Mounting Frame 1 RU, Holds 4 Modules
AFR-7812C	Audio DA Mounting Frame 2 RU, Holds 12 Modules
CRB-7110	Card Retaining Bracket (for mobile installations)
EXT-7200	Module Extender Board

All Ross Video Limited terminal equipment frames include one power supply. An optional redundant power supply may be in all two-rack unit frames if required. One User's Manual is supplied with each frame.