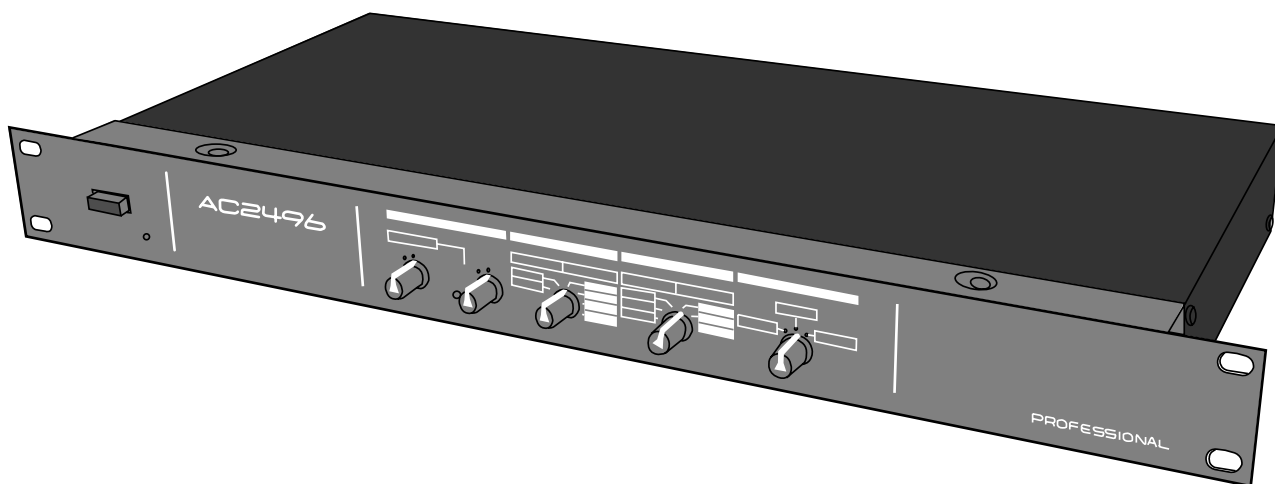


Owner's Manual

Eight channel AD Converter for 24bit / 96kHz

AC2496



Introduction

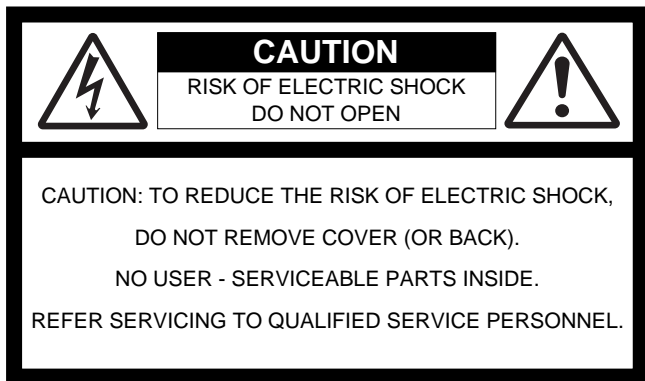
The Fostex Model AC2496 is a 24 bit/96kHz compatible (compatible only to S/P DIF) professional-use 8 channel A/D converter that converts analog input signals to digital signals (adat or S/P DIF). It can be utilized to increase the number of inputs of Fostex digital multirecorders D1624/D2424 and for substituting inputs of digital mixers and personal computers.

Functions of the Model AC2496 can be extended according to the application by employing an optional Model 8355 (AES/EBU card) and Model 5045 (8 channel AD card).

When the 8355 is installed in an AC2496, it is possible to transmit 24 bit/96kHz digital signals (8 channels) which is otherwise impossible to transmit in ADAT IN/OUT.

If a 5045 is installed, the 8 channel analog inputs of the AC2496 can be extended to 16 channels.

Fostex



"WARNING"

"TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE."

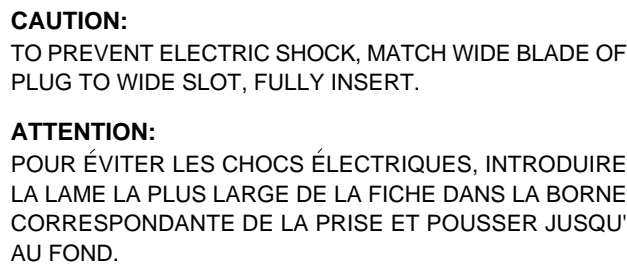
SAFETY INSTRUCTIONS

1. Read Instructions - All the safety and operating instructions should be read before the appliance is operated.
2. Retain Instructions - The safety and operating instructions should be retained for future reference.
3. Heed Warnings - All warnings on the appliance and in the operating instructions should be adhered to.
4. Follow Instructions - All operating and use instructions should be followed.
5. Water and Moisture - The appliance should not be used near water - for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, and the like.
6. Carts and Stands - The appliance should be used only with a cart or stand that is recommended by the manufacturer.



An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.

7. Wall or Ceiling Mounting - The appliance should be mounted to a wall or ceiling only as recommended by the manufacturer.
8. Ventilation - The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings; or, placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



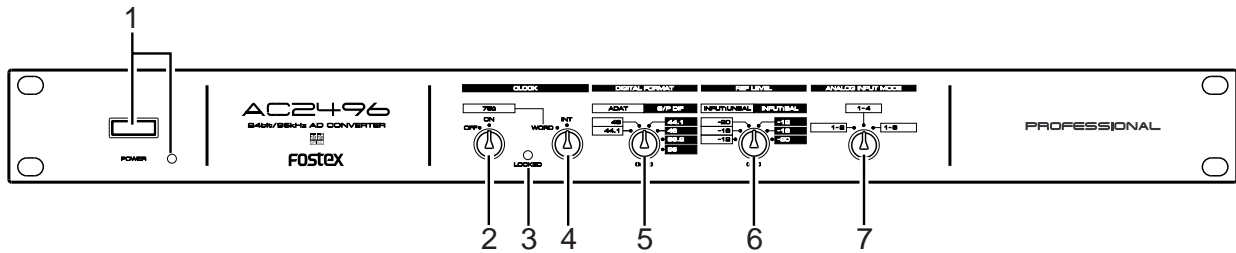
The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

9. Heat - The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat.
10. Power Sources - The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.
11. Grounding or Polarization - The precautions that should be taken so that the grounding or polarization means of an appliance is not defeated.
12. Power Cord Protection - Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.
13. Cleaning - The appliance should be cleaned only as recommended by the manufacturer.
14. Nonuse Periods - The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.
15. Object and Liquid Entry - Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
16. Damage Requiring Service - The appliance should be serviced by qualified service personnel when:
 - A. The power supply cord or the plug has been damaged; or
 - B. Objects have fallen, or liquid has been spilled into the appliance; or
 - C. The appliance has been exposed to rain; or
 - D. The appliance does not appear to operate normally or exhibits a marked change in performance; or
 - E. The appliance has been dropped, or the enclosure damaged.
17. Servicing - The user should not attempt to service the appliance beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

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Names and functions of each section



1. Power switch/Power LED

The main power switch for the AC2496.
The power LED (green) will light when power is switched ON.

2. WORD IN termination switch

This must be switched ON when input signals from WORD IN is to be terminated by 75 ohms.

3. LOCKED indicator

This will light up when the CLOCK switch is set to "WORD" and locked onto the external WORD clock.

4. Clock switch

This is for setup of the AC2496 operating clock.

"INT"	Operates by the AC2496 crystal.
"WORD"	Synchronizes with the external WORD clock.

5. Digital format selecting switch

This selects the digital output format (adat, S/P DIF or AES/EBU). It can also be selected to 44.1kHz, 48kHz, 88.2kHz or 96kHz (44.1/48kHz only for adat output).

6. Reference level selecting switch

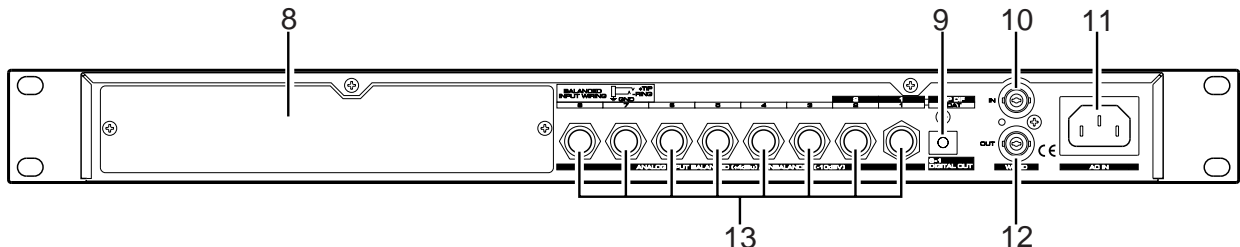
This switch selects the reference level (all channels simultaneously) of the analog input (balance or unbalance). Both balance and unbalance can be selected to -20dB/-18dB/-12dB (Refer to <Notes> on the next page).

7. Analog input mode selecting switch

This switch becomes effective when the DIGITAL FORMAT switch is set to "adat" and if the optional Model 8355 has been installed; the signal applied to the analog input connector can be assigned to the desired channel. In general, these are selected in accordance to the number of BUSS OUT of a connected analog mixer.

<Notes on switching>

Always switch off the main power to the AC2496 before changing the various selecting switches. If the switches are manipulated with the main power switched on, it could create noise.



8. Blank panel

This blank panel is removed when installing the optional Model 8355 (AES/EBU card) or the Model 5045 (8 channel AD card). In regards to installation of the options, refer to the manual included with the cards.

9. DIGITAL OUT 1-8 connectors (Optical)

Digital equipment provided with optical DIGITAL IN are connected here. The type of digital signals (adat or S/P DIF) selected by the DIGITAL FORMAT switch will be output here.

10. WORD IN connector (BNC type)

The WORD clock signal from external digital equipment is input here to match the phase with digital equipment provided with WORD OUT.

11. AC IN connector

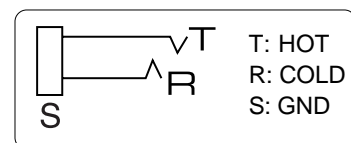
The AC cable included with the AC2496 is connected here.

12. WORD OUT connector (BNC type)

The AC2496 WORD clock signal for external digital equipment is output here.

13. Analog input connector (TRS phone jack)

This is connected to BUSS OUT (or GROUP OUT) of the analog mixer (Refer to <Note> on the next page). These connectors can accept both balanced (+4dBu) and unbalanced (-10dBV) analog signals.



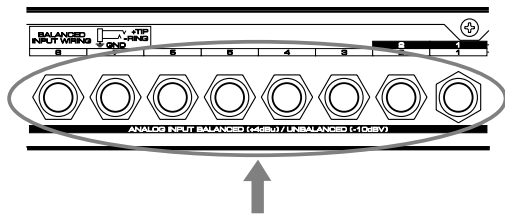
<Notes when connecting cables>

When plugging or unplugging the interconnecting cables, be sure to do so after switching off the power to the AC2496.

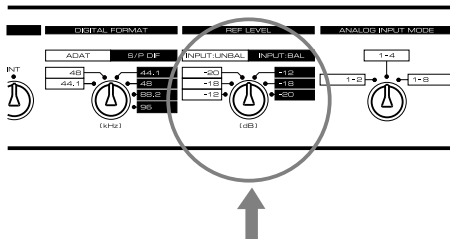
Main features of the AC2496

The AC2496 is a professional use high quality 24 bit, 96kHz compatible 8 channel A/D converter for converting analog signals to digital signals. Conversion to digital signals can be selected for S/P DIF or adat, depending on the application. Furthermore, by installing the option, it will be possible to also output AES/EBU format digital signals so it can be used to extend the number of digital multirecorder analog inputs and to substitute the inputs of digital mixers and audio cards in personal computers.

- **Balanced/unbalanced compatible input connectors**
Stereo phone jacks that comply to both balanced (+4dBu) and unbalanced (-10dBV) lines are employed for the analog inputs (1-8).



- **Reference level can be set to match the input**
The reference level can be set to match the analog input (balanced or unbalanced line). The reference level can be chosen from three different levels: -12dB, -18dB or -20dB. All channels can be switched simultaneously.

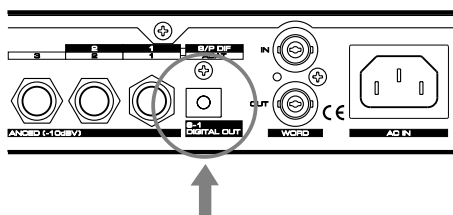


<Notes when setting the reference level>

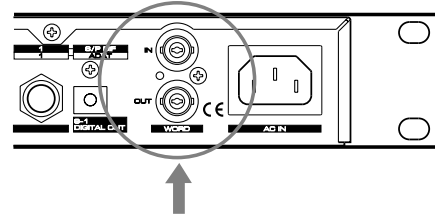
Be sure to match the equipment level for both balanced and unbalanced lines in regards to both the reference level and the analog input connector of connected equipment.

For example, if it is used with the REF LEVEL switch set to balanced line reference level, digital clipping and low S/N signal may result if an unbalanced input is connected to the input connector.

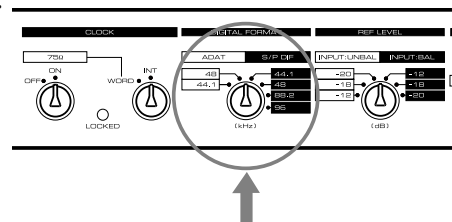
- **Optical digital output connector (DIGITAL OUT)**
Adat or S/P DIF digital signals (by switch) can be output from the optical (square) digital output connector. This can be connected to external digital equipment provided with input connectors for adat or S/P DIF signals.



- **Includes with WORD in/out connector**
Synchronizing external equipment with the WORD clock is possible by utilizing this WORD IN/OUT connector.



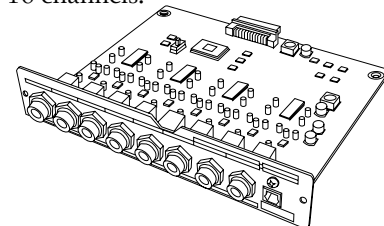
- **Selecting various digital formats**
Four different digital formats can be selected: 24 bit/44.1kHz, 24 bit/48kHz, 24 bit/88.2kHz and 24 bit/96kHz. When outputting adat digital signals, however, it will be limited to 24 bit/44.1kHz and 24 bit/48kHz.



- **Options available for extending functionality**
Two exclusive options are available for the AC2496 which further extend the AC2496's capabilities.

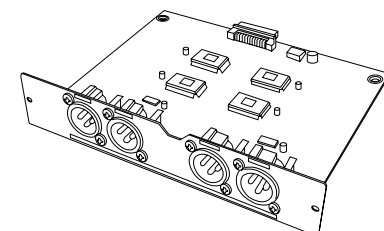
Model 5045 (8 channel AD card)

This is an 8 channel AD card for extending the AC2496 analog inputs to 16 channels.



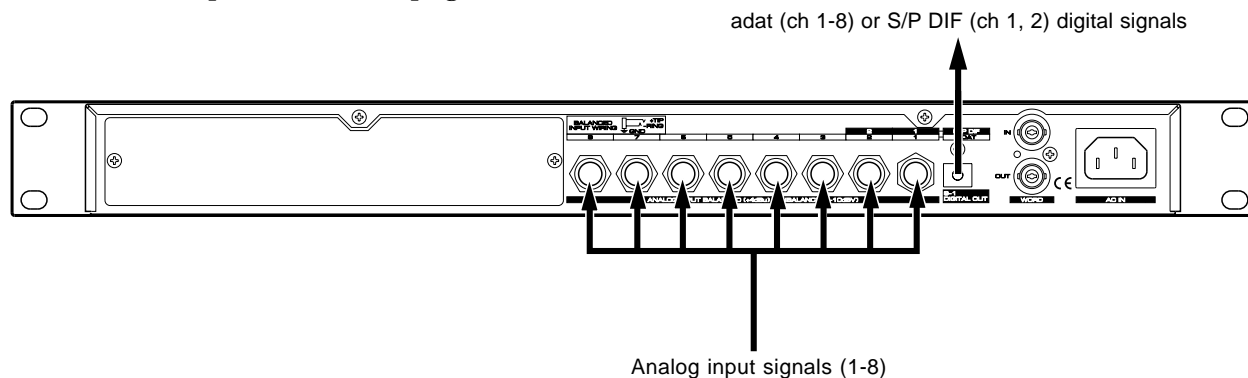
Model 8355 (8 channel AES/EBU card)

This is an 8 channel AES/EBU card for converting the analog input signal to AES/EBU digital signals. This card makes it possible to transmit 24 bit/96kHz digital signals that could not be output in adat format.



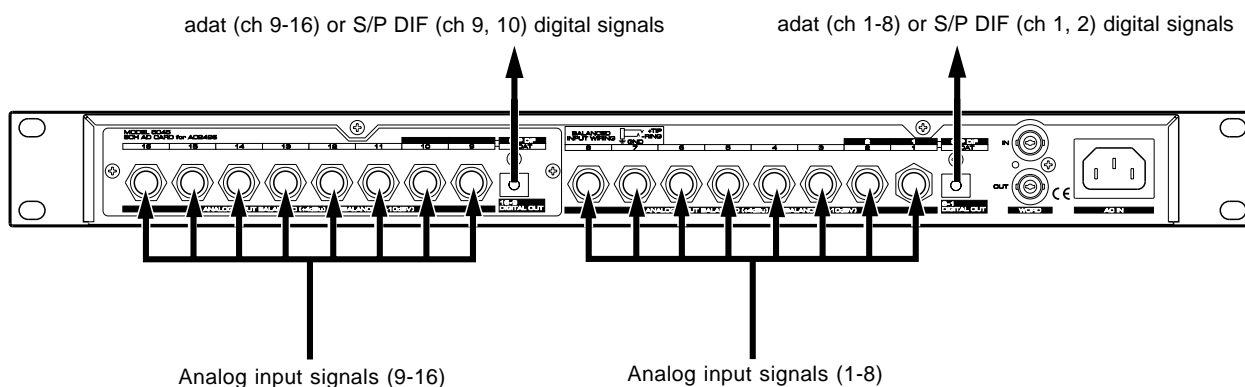
• AC2496 without the option installed

In a stock AC2496 without the option installed, analog input signal (1-8) is input as shown below and output after converting to adat (ch1~8) or S/P DIF (ch1, 2) digital signals. For other application methods, please refer to pages 7 and 8.



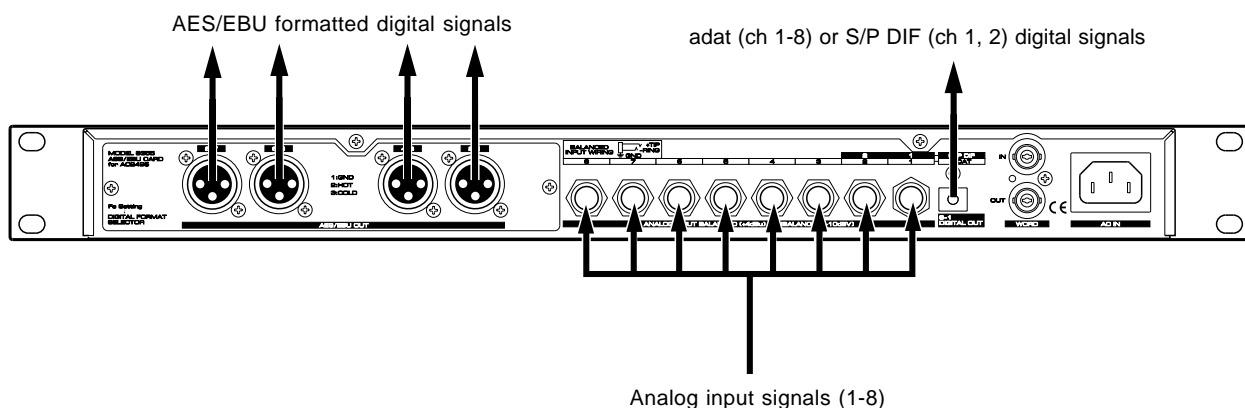
• AC2496 with the Model 5045 installed

When the 5045 (8 channel AD card) is installed in the AC2496, the analog inputs will be extended as shown in the schematic below enabling connection of 8 to 16 channels of input signals. Digital signals from channels 1-8 and 9-16 will be output (at output of adat digital signals) from each digital output connector (optical). For other applications, please refer to page 9.



• AC2496 with the Model 8355 installed

When the 8355 (8 channel AES/EBU card) is installed in the AC2496, in addition to adat (or S/P DIF) digital signals, AES/EBU formatted digital signals can be output as shown in the schematic below. For other applications, please refer to page 10.

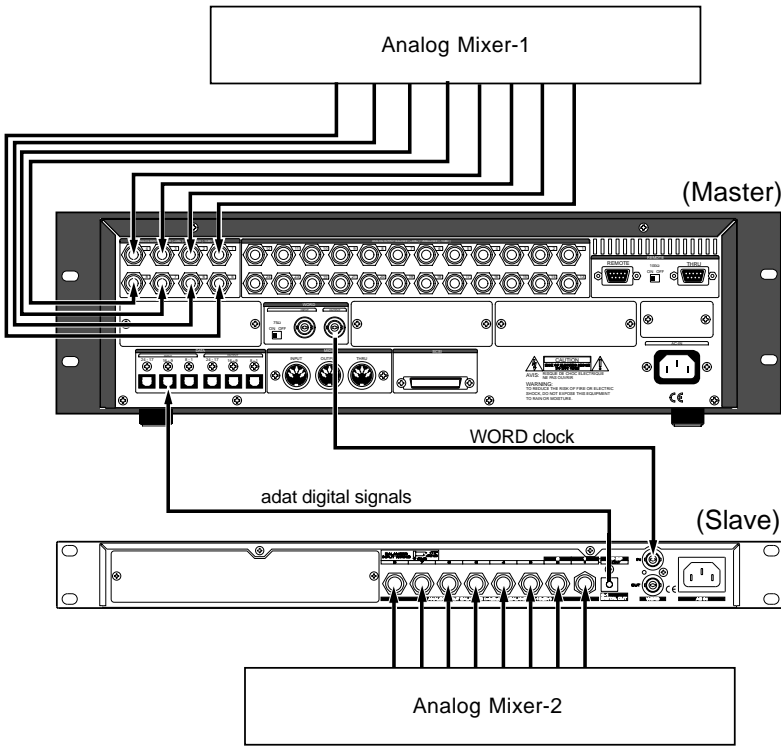


Application examples as an Analog-adat converter

As an example in using AC2496 as an analog-adat converter, here it is connected to a Fostex digital multirecorder D2424 to enable 16 track simultaneous recording. The analog mixer in the connecting example below will be for 8 BUSS OUT.

• Connecting example for 16 track simultaneous recording

This example demonstrates a standard AC2496 and 16 channels of analog signals being recorded simultaneously. In this example, the analog signals (1-8) from analog mixer 1 are input to ANALOG INPUT 1-8, while the signals (1-8) from analog mixer 2 connected to AC2496 are converted to adat digital signals and input to DATA INPUT 9-16 (or 17-24). Sixteen track simultaneous recording is possible with this procedure.

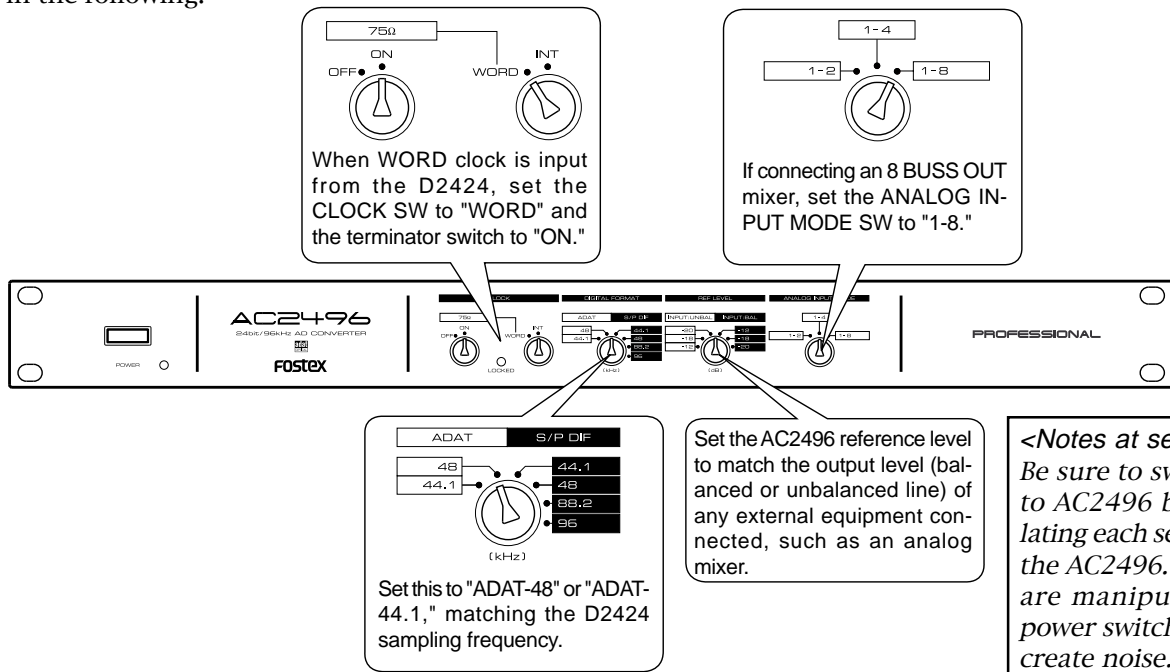


<CAUTION>
 If it is to be connected to a digital recorder -- a D2424 in this case -- having a WORD OUT port as shown in the example, it must always be connected to WORD IN of the AC2496 and WORD clock signals input from the digital recorder.
 Also, if WORD clock is to be input to AC2496, be sure to set the recorder clock in the "asynchronous mode." Refer to the recorder Manual for details. If WORD clock cannot be input, set the recorder in the "synchronous mode" and the AC2496 CLOCK switch to "INT."

<Notes when making connections>
 When connecting external equipment to AC2496, be sure to switch off power to AC2496. Noise could be created if cables are plugged in or out while the power is on.

• Setup of the AC2496

If the AC2496 is to be used as an analog-adat converter as shown in the previous example, set it up as explained in the following.



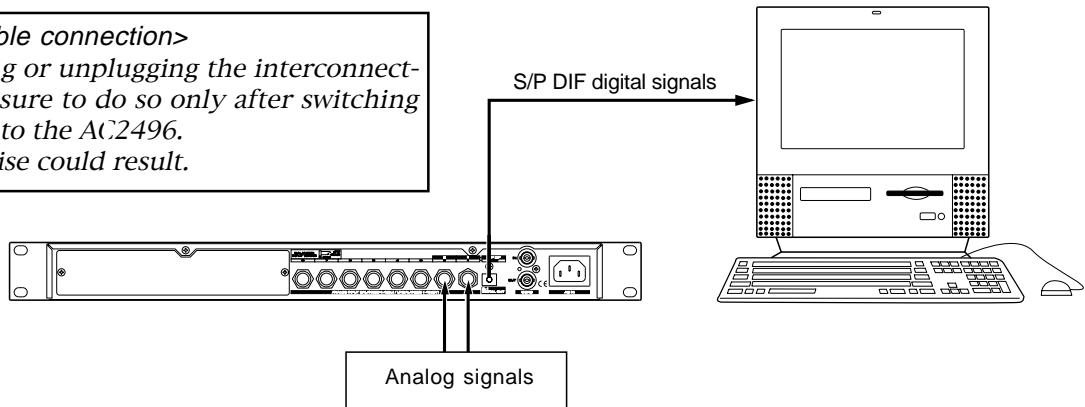
<Notes at setup>
 Be sure to switch off power to AC2496 before manipulating each selector switch of the AC2496. If the switches are manipulated with the power switched on, it could create noise.

Application examples as an Analog-S/P DIF converter

- Connection example when substituting the input of personal computers (audio card)

An example using an AC2496 as an analog-S/P DIF converter connected to the audio card installed in a personal computer for converting the analog audio signal to S/P DIF digital signal and recorded.

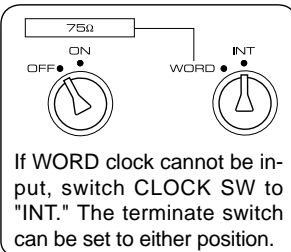
<Notes on cable connection>
 When plugging or unplugging the interconnecting cables be sure to do so only after switching off the power to the AC2496. Otherwise, noise could result.



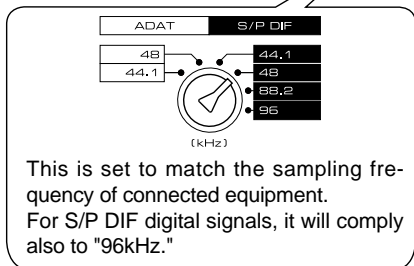
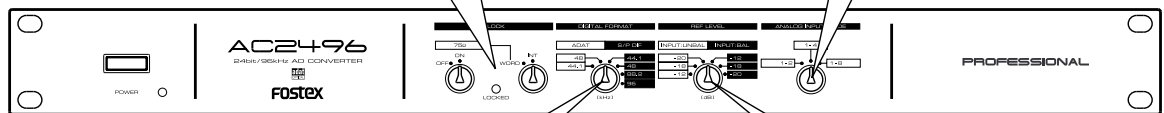
- Setup of the AC2496

When the AC2496 is to be used as an Analog-S/P DIF converter, it must be setup as explained below.

<Notes on setup>
 When changing the select switches of AC2496, be sure to do so only after switching off power to AC2496. Should the switches be manipulated with power on, it could create noise.



This switch will have no affect at output of S/P DIF digital signals.

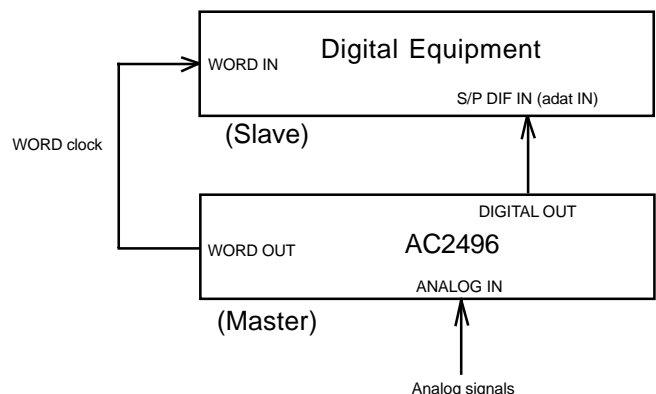


The AC2496 reference level should be set to match the analog signal output level that is connected.

Using the AC2496 as a digital master

In the explanations up to this point, the AC2496 was used as the slave. In other applications, the AC2496 can be used as the master.

As shown in schematic at right, by applying WORD clock from the AC2496 WORD OUT port to digital equipment installed with WORD IN, such equipment can be synchronized with the AC2496 WORD clock.



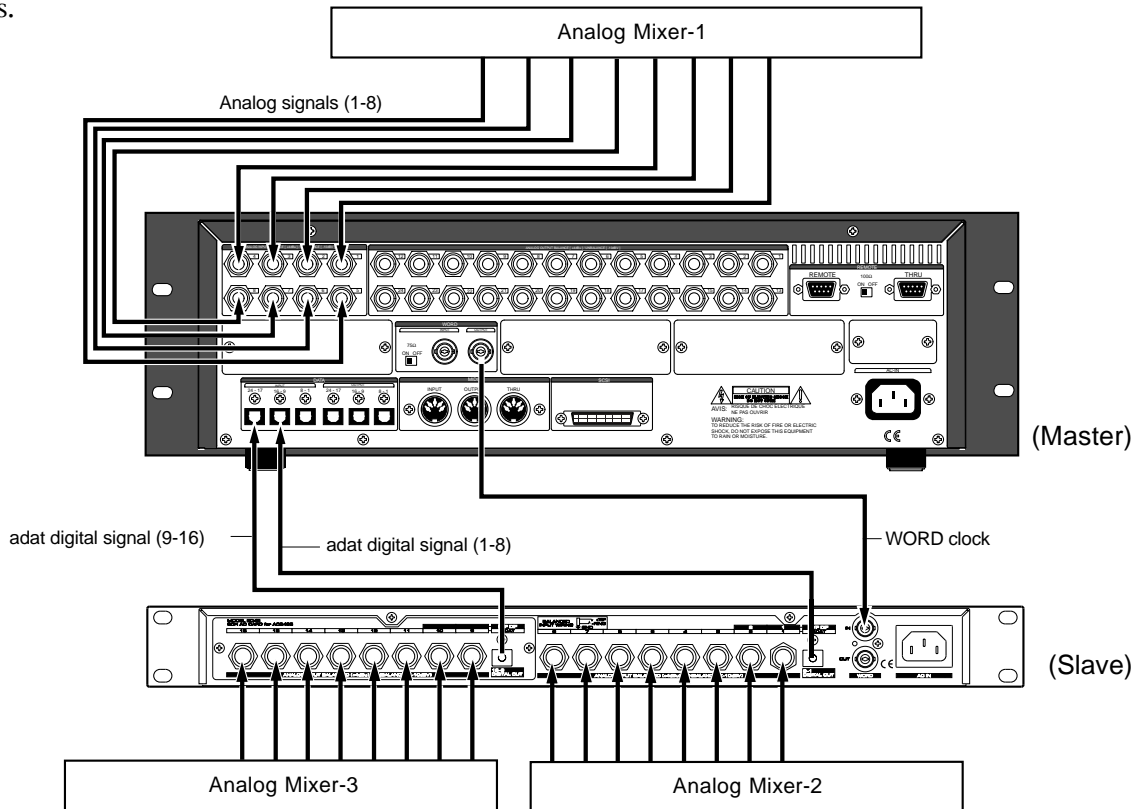
<Note>
 When using the AC2496 as the master, set its switch to "INT" and the external digital equipment to "sync mode."

Extension example after installing a Model 5045

The 8 analog-input channels of the AC2496 can be extended to 16 channels by installing an optional Model 5045 8ch A/D card. Such an installation enables 24 track simultaneous recording by using a D2424 as shown in example below.

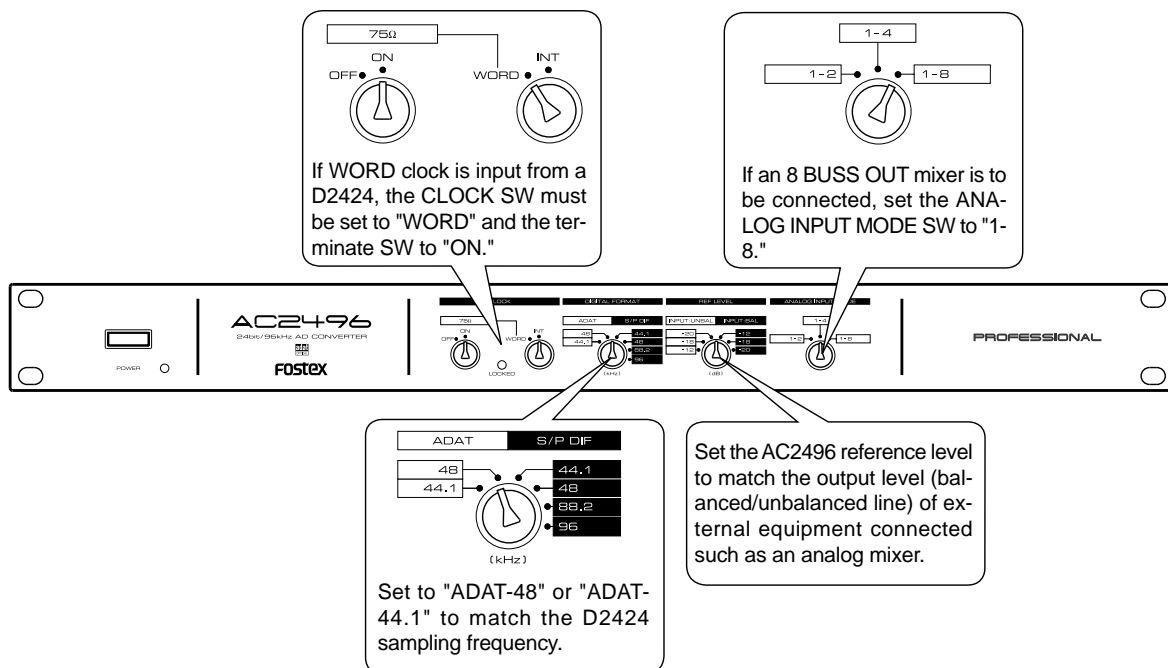
• Connecting example for 24 track simultaneous recording

This is an example of installing a Model 5045 in an AC2496. Twenty four channels of analog signals can then be recorded simultaneously. In this example, analog signals (1-8) from analog mixer 1 are input to ANALOG INPUT 1-8, while signals from analog mixer 2/3 (1-8, 9-16) connected to the AC2496 are converted to adat digital signals and applied to DATA INPUT 9-16 and 17-24. Using this procedure, it is possible to simultaneously record 24 tracks.



• Setup of the AC2496

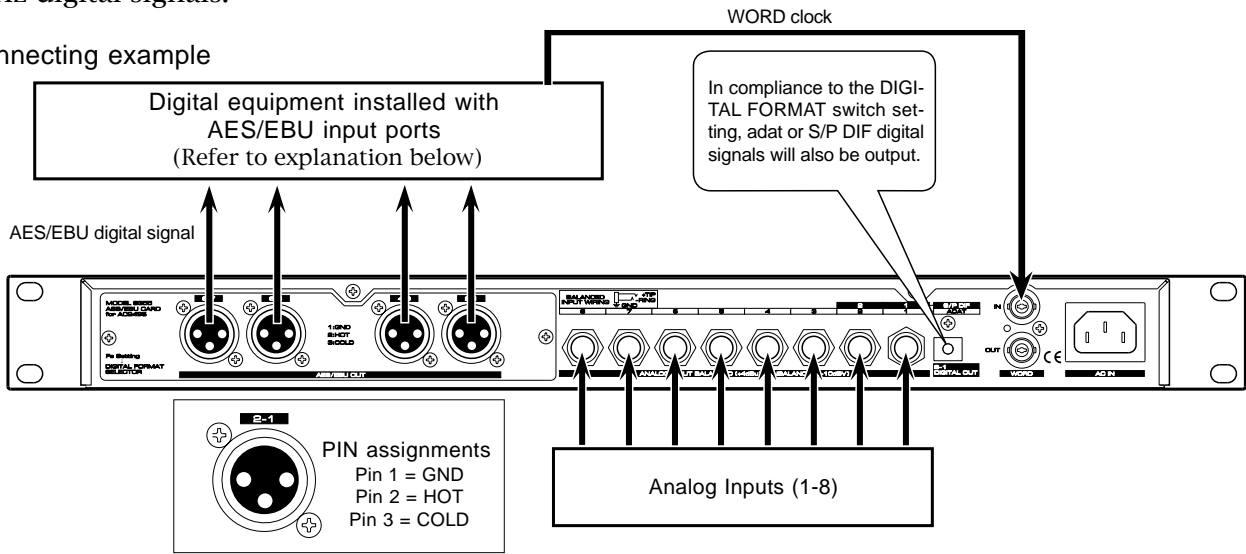
The same as the previous example, when using an AC2496 as an Analog-adat converter, it must be setup as follows:



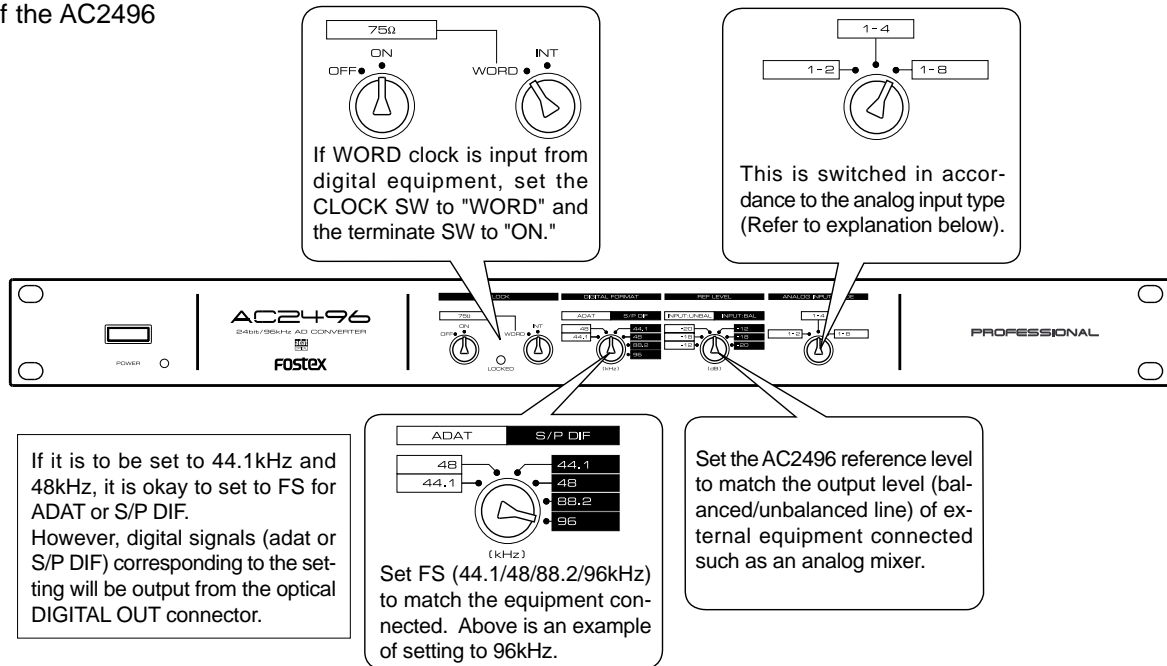
Extension example after installing a Model 8355

When the optional Model 8355 (8ch AES/EBU card) is installed, the AC2496 can be utilized as an analog-AES/EBU converter. Unlike the previous example, this setup can output 24 bit 88.2kHz/24 bit 96kHz digital signals.

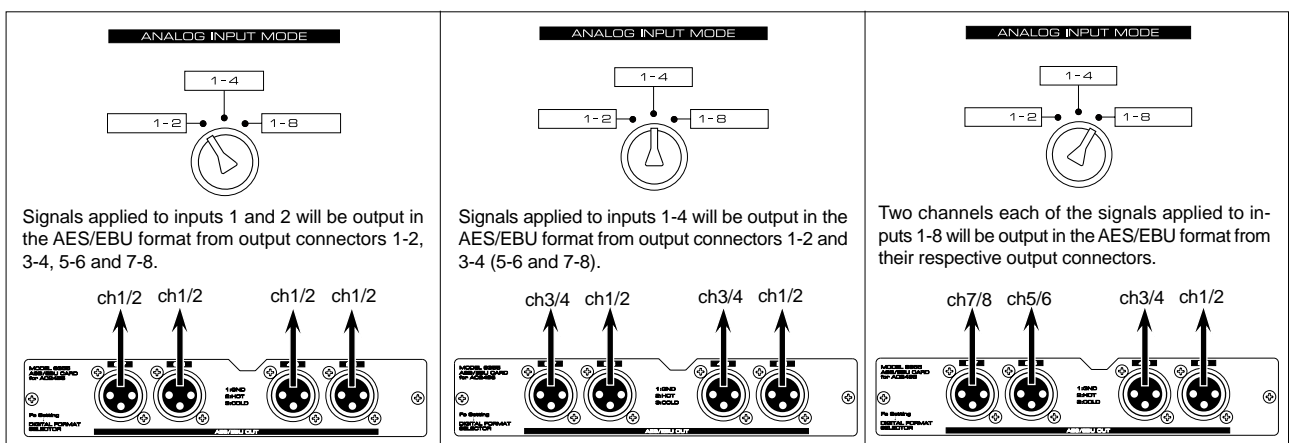
• Connecting example



• Set of the AC2496




The AES/EBU format output signals are output from each connector as shown below in compliance to the front panel setting ANALOG INPUT MODE switch.



Specifications (AC2496 / 5045 / 8355)

Input/output:	0dBu = 0.775Vrms, 0dBV = 1Vrms
Reference level:	-12dB / -18dB / -20dB switchable Balanced (+4dBu) / Unbalanced (-10dBV) Switchable

- ANALOG input (AC2496 / 5045)
 - Connector : \varnothing 6mm TRS phone jack (balanced)
 - Input Impedance : 10k Ω or more
 - Standard Input Level : +4dBu (balanced)
: -10dBV (unbalanced)
 - DIGITAL output (AC2496 / 5045)
 - Connector : Optical
 - Output Format : IEC 60958 (S/P DIF)
: Alesis Proprietary Multi Channel Optical Digital Interface (adat)
 - AES/EBU output (8355)
 - Connector : XLR-3-31 type (Pin 2: Hot)
 - Output Format : IEC 60958 (AES/EBU)
 - WORD input (AC2496)
 - Connector : BNC type
 - Input Level : TTL level (included 75 Ω terminate switch)
 - WORD output (AC2496)
 - Connector : BNC type
 - Output Level : TTL level
 - Sampling Freq./Quantization : 24bit / 44.1kHz, 24bit / 48kHz, 24bit / 88.2kHz, 24bit / 96kHz
(88.2/96kHz: S/P DIF output only)
 - A/D : 24bit 128 times, over sampling, Delta-Sigma
 - S/N : 110dB (TYPICAL)
 - Total Harmonic Distortion : 0.002% (TYPICAL)
 - Power Supply (AC2496) : 120VAC 60Hz, 230V ~ 50/60Hz (AC inlet type)
 - Power Consumption (AC2496) : 18W
 - Dimensions (AC2496) : 482 (W) x 44 (H) x 220 (D) mm
 - Weight (AC2496) : 2kg
- To facilitate product improvement, specifications and appearance are subject to change without notice.
- Adat and the  symbol are trademarks of Alesis Corporation.

Declaration of EC Directive

This equipment is compatible with the EMC Directive (89/336/EEC) - Directive on approximation of member nation's ordinance concerning the electromagnetic compatibility and with the Low Voltage Directive (73/23/EEC) - Directive on approximation of member nation's ordinance concerning electric equipment designed to be used within the specified voltage range.

The Affect of Immunity on This Equipment

The affect of the European Specification EN50082-1 (coexistence of electromagnetic waves - common immunity specification) on this equipment are as shown below.

* In the electrical fast transient/burst requirements, surge, conducted disturbances by radio-frequency fields, power frequency magnetic field, radiate electromagnetic field requirements and static electricity discharging environment, this could be affected by generation of noise in some cases.

FOSTEX DISTRIBUTORS LIST IN EUROPE

* Including non-EU countries.

* underlined: contracted distributors (as of August, 2000)

<AUSTRIA>

NAME: A TEC Audio-u. Videogeraete VertriebsgesmbH.
ADD: Im Winkel 5, A-2325 Velm, Austria
TEL: (+43) 2234-74004, FAX: (+43) 2234-74074

<BELGIUM>

NAME: EML Sound Industries NV
ADD: Bijvennestraat 1A, B3500 Hasselt, Belgium
TEL: (+32) 11-232355, FAX: (+32) 11-232172

<DENMARK>

NAME: SC Sound ApS
ADD: Malervej 2, DK-2630 Taastrup, Denmark
TEL: (+45) 4399-8877, FAX: (+45) 4399-8077

<FINLAND>

NAME: Noretron Oy Audio
ADD: P. O. Box 22, FIN-02631 Espoo, Finland
TEL: (+358) 9-5259330, FAX: (+358) 9-52593352

<FRANCE>

NAME: Musikengro
ADD: ZAC de Follieuses, B. P. 609, 01706 Les Echets, France
TEL: (+33) 472 26 27 00, FAX: (+33) 472 26 27 01

<GERMANY>

NAME: Studio sound & Music GmbH
ADD: Industriestrasse 20, D-35041 Marburg, F. R. Germany
TEL: (+49) 6421-92510, FAX: (+49) 6421-925119

<GREECE>

NAME: Bon Studio S. A.
ADD: 6 Zaimi Street, Exarchia, 106.83 Athens, Greece
TEL: (+30) 1-3809605-8, 3302059, FAX: (+30) 1-3845755

<ICELAND>

NAME: I. D. elrf. electronic Ltd.
ADD: ARMULA 38 108 REYKJAVIK, ICELAND
TEL: (+354) 588 5010, FAX: (+354) 588 5011

<ITALY>

NAME: General Music S. p. A.
ADD: Via delle Rose, 12 S. Giovanni M. (RN), Italy
TEL: (+39) 0541-959511, FAX: (+39) 0541-957404

<THE NETHERLANDS>

NAME: IEMKE ROOS AUDIO B. V.
ADD: Kuiperbergweg 20, 1101 AG Amsterdam, The Netherlands
TEL: (+31) 20-697-2121, FAX: (+31) 20-697-4201

<NORWAY>

NAME: Siv. Ing. Benum A/S
ADD: P. O. Box 145 Vinderen, 0319 Oslo 3, Norway
TEL: (+47) 22-139900, FAX: (+47) 22-148259

<PORTUGAL>

NAME: Caius - Tecnologias Audio e Musica, Lda.
ADD: Rua de Santa Catarina, 131 4000 Porto, Portugal
TEL: (+351) 2-2086009/2001394,
FAX: (+351) 2-2054760/2087488

<SPAIN>

NAME: Multitracker, S. A.
ADD: C/Garcilaso No.9, Madrid 28010, Spain
TEL: (+34) 91-4470700, 91-4470898, FAX: (+34) 91-5930716

<SWEDEN>

NAME: Professional Television AB
ADD: Kavallerivagen 24, 172 48 Sundbyberg, Sweden
TEL: (+46) 8-59798000, FAX: (+46) 8-59798001

<SWITZERLAND>

NAME: Audio Bauer Pro AG
ADD: Bernerstrasse-Nord 182, CH-8064 Zurich, Switzerland
TEL: (+41) 1-4323230, FAX: (+41) 1-4326558

<UK>

NAME: SCV London
ADD: 3A 6-24 Southgate Road, London N1 3JJ, England, UK
TEL: (+44) 171-923-1892, FAX: (+44) 171-241-3644

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