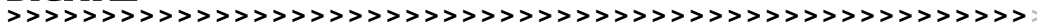


CHANGING FORMAT

multichannel aa

DIGITAL AUDIO FORMAT CONVERTER
(ADAT™ ↔ AES/EBU) AND
SAMPLING RATE CONVERTER



SAFETY INSTRUCTIONS

General instructions

To reduce the risk of fire or electrical shock, do not expose this appliance to rain or moisture, direct sunlight or excessive heat from sources such as radiators or spotlights. No user serviceable parts are inside. Repair and maintenance must be carried out by qualified personnel authorized by MUTECH GmbH! The unit has been designed for operation in a standard domestic environment. Do NOT expose the unit and its accessories to rain, moisture, direct sunlight or excessive heat produced by such heat sources as radiators or spotlights! The free flow of air inside and around the unit must always be ensured.

Initial operation

Prior to the initial operation of the unit, the appliance, its accessories and packaging must be inspected for any signs of physical damage that may have occurred during transit. If the unit has been damaged mechanically or if liquids have been spilled inside the enclosure, the appliance may not be connected to the mains or must be disconnected from the mains immediately! If the unit is damaged, please do NOT return it to MUTECH GmbH, but notify your dealer and the shipping company immediately, otherwise claims for damage or replacement may not be granted. If the device is left in a low-temperature environment for a long time and then is moved to a room-temperature environment, condensation may occur on the inside and the exterior. To avoid short-circuits and flashovers, be sure to wait one or two hours before putting the device into operation.

Power supply

The unit has been designed for operation in a standard household environment. Before you attempt to operate the unit, please make sure that your local voltage matches the voltage required by the unit! In addition, make sure that the device is properly grounded via the local electric installation!

Continent	Mains voltage + Frequency	Mains fuse
Europe	220V - 230V, 50Hz	230V
USA, Canada, Japan	115V, 60Hz	115V
Australia	240V, 50Hz	230V

The fuse holder can be found on the rear of the unit, just below the compartment marked »230 V (115 V)«. Use the fuse holder to adjust the required mains voltage. Ex factory, the unit is normally equipped with a 230-V mains fuse. If the unit needs to be adjusted to 115 V, the fuse must be replaced as described in the appendix section »Replacing the mains fuse«.

Please use the enclosed power cord (see packaging) to connect the unit to the mains. Switch the unit off before you attempt to connect it to the mains. Connect the power cord to the unit, then to a standard 3-pin mains outlet. To draw the power cord, never pull on the cable but on the mains plug! For information on the power-inlet wiring, refer to the »Wiring of connectors« section in the appendix. Disconnect the device from the mains when not using it for an extended period!



This symbol, a flash of lightning inside a triangle, alerts you to the presence of uninsulated dangerous voltage inside the enclosure - voltage that may be sufficient to constitute a risk of shock.



This symbol, an exclamation mark inside a triangle, alerts you to important operating or safety instructions in this manual.

Declaration of Conformity

We herewith confirm that the product complies with the European Commission's standards on electromagnetic compatibility.

Interference emission: EN 50081-1, 1992
Resistance to interference: EN 50082-1, 1992

Presupposed as operation condition is that all clock outputs are connected with high-quality and good shielded BNC 75 ohms cable.

WARRANTY REGULATIONS

§1 Warranty

MUTECH GmbH warrants the flawless performance of this product to the original buyer for a period of two (2) years from the date of purchase. If any failure occurs within the specified warranty period that is caused by defects in material and/or workmanship, MUTECH GmbH shall either repair or replace the product free of charge within 90 days. The purchaser is not entitled to claim an inspection of the device free of charge during the warranty period. If the warranty claim proves to be justified, the product will be returned freight prepaid by MUTECH GmbH within Germany. Outside Germany, the product will be returned with the additional international freight charges payable by the customer. Warranty claims other than those indicated above are expressly excluded.

§2 Warranty transferability

This warranty is extended exclusively to the original buyer who bought the product from a MUTECH GmbH specialized dealer or distributor, and is not transferable to anyone who may subsequently purchase this product. No other person (retail dealer, distributor, etc.) shall be entitled to give any warranty promise on behalf of MUTECH GmbH.

§3 Warranty regulations

The return of the completed registration card, or online registration on one of the websites specified below, is a condition of warranty. Failing to register the device before returning it for repair will void the extended warranty.

- The serial number on the returned device must match the one stated on the registration card or entered during online registration. Otherwise, the device will be returned to the sender at the sender's expense.
- Any returned device must be accompanied by a detailed error description and a copy of the original sales receipt issued by a MUTECH dealer or distributor.
- The device must be returned free of shipping expenses and in the original package, if possible; otherwise, the sender has to provide comparably protective packaging.
- The sender is fully responsible for any damage or loss of the product when shipping it to MUTECH GmbH.

§4 Limitation of warranty

Damages caused by the following conditions are not covered by this warranty:

- Damages caused by every kind of normal wear and tear (e.g. displays, LEDs, potentiometers, faders, switches, buttons, connecting elements, printed labels, cover glasses, cover prints, and similar parts).
- Functional failure of the product caused by improper installation (please observe CMOS components handling instructions!), neglect or misuse of the product, e.g. failure to operate the unit in compliance with the instructions given in the user or service manuals.
- Damage caused by any form of external mechanical impact or modification.
- Damage caused by the user's failure to connect and operate the unit in compliance with local safety regulations.
- Damage caused by force majeure (fire, explosion, flood, lightning, war, vandalism, etc.).
- Consequential damages or defects in products from other manufacturers as well as any costs resulting from a loss of production.

Repairs carried out by personnel which is not authorized from MUTECH GmbH will void the warranty. Adaptations and modifications to the device made with regard to national, technical, or safety regulations in a country or of the customer do not constitute a warranty claim and should be set with MUTECH GmbH in advance.

§5 Repairs

To obtain warranty service, the buyer must call or write to MUTECH GmbH before returning the unit. All inquiries must be accompanied by a description of the problem and the original buyer's invoice. Devices shipped to MUTECH GmbH for repair without prior notice will be returned to the sender at the sender's expense. In case of a functional failure please contact:

MUTECH Gesellschaft fuer Systementwicklung und Komponentenvertrieb mbH
Siekeweg 6/8 • 12309 Berlin • Fon 030-746880-0 • Fax 030-746880-99 • tecsupport@mutec-net.de

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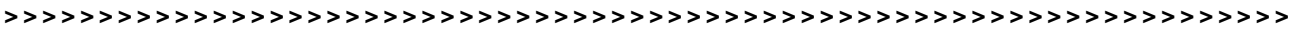
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INTRODUCTION

Thank you for purchasing the digital audio format and sampling rate converter FORMAT CHANGER multichannel aa from MUTECH GmbH.

General function description

The FORMAT CHANGER multichannel aa from our SMART DIGITALs Series helps you interconnect digital audio devices with different transmission formats and connecting elements. The standard version is equipped with ADAT™ and AES/EBU formats (8-channels).

The format-only conversion involves not only the necessary electrical conversion but also a format conversion of the signals, in compliance with the specifications standardized by Alesis Corp. and the Audio Engineering Society (AES). The signal from the selected input is converted in its format and simultaneously sent to both output interfaces. Additionally, the unit allows for the bi-directional interconnection of inputs and outputs (X mode), which makes it possible to convert audio signals simultaneously in both directions.

In parallel to the format conversion, the FORMAT CHANGER multichannel aa can also convert the sampling rate of the incoming audio signal, with reference to an external Word or Super Clock signal - in real time and on all eight channels. What is more, it also allows for the conversion of sampling rates in combination with the bi-directional interconnection of input and output formats. In this case, the unit can be synchronized either to the ADAT™ signal or to the audio/blank-frame signal applied to either one of the freely selectable AES/EBU channel pairs.

Basically, all operating modes allow you to process signals with a sampling rate ranging from 32 kHz to 50 kHz (in compliance with the ADAT™ format specifications) or from 32 kHz to 108 kHz (AES/EBU) with a word length of up to 24 bits (linear, input and output). When synchronized externally, the FORMAT CHANGER multichannel aa offers a Varispeed function for the frequency ranges mentioned above.

Various operating statuses can be controlled visually by means of status LEDs. In all operating modes, constant jitter, level and edge compensation is applied to all outgoing signals.


Features

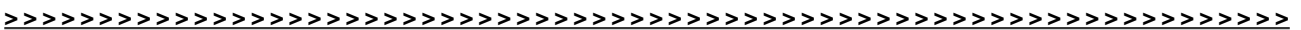
- Conversion of the two standardized digital audio formats ADAT™ and AES/EBU.
- Interface conversion: OPTO - 25-pin D-Sub (electrical).
- Simultaneous format conversion on both outputs with one audio input selected as the signal source.
- Bi-directional format conversion between both formats - even in sync to incoming ADAT™ or AES/EBU signals.
- External synchronization to Word/Super Clock, ADAT™ and AES/EBU signals.
- Varispeed-compatible with frequencies from 32 kHz through 50 kHz (ADAT™ format) or 32 kHz through 108 kHz (AES/EBU format).
- Hard-bypass of sampling rate converter allows format-only conversion.
- Muting of all outputs for test purposes.
- Monitoring of various signal and device statuses by means of status LEDs.
- Jitter, level and edge compensation applied to all outgoing signals.
- Last function selected is retained after power-down.

Applications

- Realtime format and sampling rate conversion.
- Integration of non-synchronizable devices into digital studio environments.
- Integration of 8-channels effect processors with bi-directional signal conversion.
- Jitter reducing and signal stabilization.
- Clock extraction.
- Signal distribution.

The grey boxes contain supplementary information for the corresponding sections in the text columns. The content of the individual box refers to the description in the text column beside the box.

 **Boxes which contain a triangle with an exclamation mark in the inside should be read carefully!**
These include additional information which are of major importance for the functional descriptions in the text column.





CONTROL ELEMENTS

FORMAT CHANGER multichannel aa Front Panel



1 POWER

This red LED lights up when the unit is switched on with the rear-panel POWER switch (on condition that the adjusted voltage matches your local voltage).

2 INPUT MODE

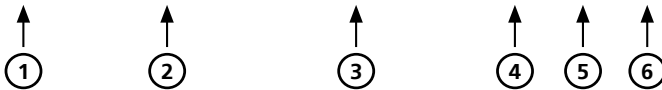
Use this rotary control to select the conversion mode of your choice.

3 STATUS

Indicates various device statuses by means of status LEDs.

Refer to the OPERATIONS chapter for more information.

FORMAT CHANGER Multichannel aa Rear Panel



1 WC/SC (Word Clock/Word Clock x256, so-called Super Clock)

This input receives a Word Clock or Word Clock x256, so-called Super Clock, signal (automatic differentiation) for the synchronization of the FORMAT CHANGER multichannel aa. The incoming clock signal is processed electrically and immediately sent to the WC/SC output for the synchronization of connected devices. If no external clock signal is applied, the WC/SC output provides the sampling rate of the incoming digital audio signal as the Word Clock frequency. The input/output impedance is 75Ω, the input impedance can be disabled internally.

2 AES/EBU IN + OUT

This interface receives/transmits digital AES/EBU audio signals based on the specifications of the standard AES 3-1992. To save space the interface is on a 25-pin D-Bus male connector. The pin assignment of the connector is compatible with Yamaha, Mackie, AKAI and others, too. The input/output impedance is 110Ω..

3 ADAT™ IN + OUT

These inputs/outputs receive/transmit digital ADAT™ signals (optical) based on the specifications of Alesis Corp. (Toshiba Toslink™ connector, EIAJ standard).

4 230 V (115 V)

This compartment houses the mains fuses, which must be inserted in accordance with the local voltage used for operating the unit! See also the safety instructions, in particular, the chapter OPERATION, and the section »Replacing the Mains Fuse« in the appendix.

For detailed specifications on all terminals, refer to the PIN ASSIGNMENT OF THE CONNECTORS and TECHNICAL DATA sections in the appendix.

CONTROL ELEMENTS

5 POWER switch

Mains power switch. Be sure to connect the unit properly to the mains by using the enclosed power cord and select the country-specific mains voltage by inserting a mains fuse of the correct type and rating (5) before you attempt to operate the unit. Please read the safety instructions.

6 Mains connector

Use this receptacle to connect the enclosed power cord. Be sure to set the POWER switch to OFF and insert a mains fuse of the correct type and rating, before you connect the power cord to the unit and/or wall outlet.

The section »Pin Assignment of the Connectors« in the appendix provides you with information on how to wire the various connecting elements.




INSTALLATION

Content of the Box


The unit was packed carefully. Nevertheless we recommend to check the content directly after opening the package:

- 1 x FORMAT CHANGER multichannel aa
- 1 x Power cable
- 4 x Rubber feets
- 1 x Manual
- 1 x Registration card

 **Additionally the condition of the packaging material and the device should be checked carefully. If there are any damages please refer to SAFETY INSTRUCTIONS, Initial Operation, and WARRANTY REGULATIONS.**

Placing the Device

The unit should be set up as closely as possible to the devices to which it will be connected, so as to avoid excessive cable lengths. Use the 4 rubber feets enclosed with the appliance and stick them symmetrically on the bottom side of the unit to protect the enclosure and supporting surface from being damaged. When the unit is installed in a rack, the rubber feets should not be used to save space!


 **Before installing the unit finally the section SAFETY INSTRUCTIONS located at the beginning of this manual should be read.**

For 19" rack installation MUTEK offers an optional set of rack ears (MW-01/19 order no. 8020-005). Install the device so that one unit of rack space is left free above the device to allow for sufficient ventilation! The mounting depth including the terminals is 180 mm/7.07". Another 150 mm/5.9" should be added for the required cables.

Never expose the device and accessories to rain, moisture, direct sunlight, or excessive heat produced by radiators, heaters, or spot lights! Sufficient air circulation in the environment of the device must be ensured!

Wiring the Word Clock Interfaces

To allow for the synchronization of signals, the interfaces of all devices involved must be properly connected to each other, so as to ensure a logical signal flow. Always be sure to connect the Word Clock outputs of the FORMAT CHANGER multichannel aa to the corresponding input of the devices you wish to synchronize! Cable lengths should be kept as short as possible to minimize signal losses and/or interferences!

 **It is imperative that the lengths of all cables connected are largely the same, as this is the only way to ensure that all devices will be synchronized in phase (exception: cable tolerances).**

Please make sure that the cable used has a resistance of 75Ω, in compliance with the specifications! If a cable with a different resistance is used, a dramatic deterioration of the signal quality can be the result! In this case, the perfect synchronization of all devices involved could be impaired.

For the transmission of Word Clock signals electrical, unsymmetrical cables with a resistance of 75Ω and BNC connectors on both ends are used. Typically, such cables are marked »RG-59U, RG59B/U«.

Additionally, you should make sure that the Word Clock inputs to be connected to the FORMAT CHANGER multichannel aa's outputs have a 75Ω terminating resistor! Most Word Clock inputs allow for enabling/disabling the termination with a so-called »termination-switch«, which may be located on the outside or inside of the device.

For devices which have no termination of the Word Clock input, e.g. RME Hammerfall with Word Clock i/o or Alesis BRC, you can use an additional BNC-T piece to terminate the input. Plug the T piece with its center connector into the input of the receiving device. Then, connect the cable coming from the FORMAT CHANGER multichannel aa to one of the lateral connectors, and the other connector of the BNC-T piece to a 75Ω resistor forming the BNC termination.

Basically, you should avoid »looping through« Word Clock leads by means of passive BNC-T pieces to preserve the signal quality, as level drops will be the result. If there is no other way to wire your set-up, please make sure that all Word Clock inputs (except for the last device in the chain) have their terminations disabled! In a serial Word Clock chain only the last clock input should have a termination! Never connect more than three devices in series to one output!

We recommend using high-grade cables with a good shielding for your clock signal leads, in particular, if you need to transmit Word Clockx256 (so-called Super Clock) signals over greater distances. In any case, a length of max. 10 meters (approx. 30feet) should never be exceeded!

MUTEC offers optical cables of various lengths that have been specifically tested for the transmission of S/PDIF and ADAT™ signals (retailers and distributors only)!



We advise you not to buy 25pin D-Sub cables from your computer retailer! Even though such cables may look similar to 25pin D-Sub AES/EBU cables, they may be wired differently!

MUTEC assumes no liability for damages resulting from the use of improperly wired cables!

Wiring the AES/EBU and ADAT interfaces

ADAT™

Connect the optical ADAT™ interfaces with the help of Toshiba TOSLINK™-compliant optical fiber cables. Here, you can use both plastic and glass fiber-based cables. When using plastic fiber cables, lengths of 10 meters should not be exceeded, so as to ensure the reliable transmission of signals. Glass fiber cables can transfer data reliably even over greater distances.

AES/EBU

Connect the AES/EBU interface with the help of an electrical 25-cond. cable equipped with 25-pin D-Sub connectors. The specifications stipulate a specific cable resistance of 110Ω (when purchasing the cable ask your retailer for a confirmation that the cable will perform flawlessly in your specific application).

A prerequisite for a flawless performance is to feed in the AES/EBU data in the form of a master clock and ensure that the AES/EBU channels are in sync and use the same sampling rate as the ADAT™ format!

If the incoming audio signal is interrupted or the system detects an increase in the error rate, the status LED ERROR MUTE in the STATUS area lights up, while the ADAT™ INPUT or AES/EBU INPUT LED goes out. At the same time, all audio outputs and the WC/SC output are muted to protect your monitor speakers or headphones from damage caused by erratic level fluctuations.



Parameters in functional area: Format conversion + Sampling rate conversion

Please note that the ADAT™ input accepts only clock signals from 32 kHz to 50 kHz, in compliance with the ADAT™ specifications! If clock signals outside this range are applied, the FORMAT CHANGER multichannel aa assumes that an error has occurred and mutes all outputs. The ERROR MUTE LED in the STATUS area starts flashing, all other LEDs go out.

If you select the AES/EBU format on the input side, you can feed in external clock signal from 32 kHz to 108 kHz. Since the ADAT™ format is limited to 50 kHz, as explained above, the ADAT™ format is limited to 50 kHz, as explained above, any clock signal outside this range will not be converted to ADAT™! In this mode, the FORMAT CHANGER multichannel aa works exclusively as an AES/EBU sampling rate converter.

As a result, the FORMAT CHANGER multichannel aa can also be set up at a remote site, e.g. at the place where it allows for the shortest connection possible between the devices involved.

Functional Area: Format conversion + Sampling Rate Conversion

ADAT™ EXTERN, AES/EBU EXTERN

The first two functions in this area are roughly the same as the first two functions from the functional area described above, however, combine the format conversion with a sampling rate conversion that depends on an external clock signal.

You can feed in both Word Clock and Word Clock x256 signals, the input stage distinguishes automatically between the two variants. The status LED EXTERN SYNC in the STATUS area lights up as soon as a usable signal is applied. In this mode, the digital audio input signal (ADAT™ or AES/EBU) is synchronized to the sampling rate of the incoming Word Clock signal, converted in its format and sent to both audio outputs - irrespective of its original sampling rate!

A Word Clock signal present at the WC/SC input is routed in parallel to the WC/SC output for the synchronization of other equipment. For reasons determined by the system any Word Clock x256 signal applied here will also be output as a Word Clock signal!

If you wish to route the incoming clock signals to other equipment as well, you need to lift the ground of the WC/SC input before. Please follow the instructions given in the appendix, section »Ground-lift«.

If the incoming clock signal is interrupted, the status LED ERROR MUTE in the STATUS area lights up, while all other LEDs go out. At the same time, all audio outputs and the WC/SC output are muted to protect your monitor speakers or headphones from damage caused by erratic level fluctuations.

AES/EBU ↔ ADAT™ EXT AES/EBU

Basically, this function provides a bi-directional operating mode that has the inputs and outputs interconnected in a crosswise pattern. The benefit compared to the same function in the format-only conversion area is that the AES/EBU input signals can have different sampling rates! You can select one of the four AES/EBU channel pairs as your clock reference and synchronize all the other signals to it. For this purpose, the main board inside the unit carries a slide switch that allows you to select the channel pair of your choice. Please follow the instructions given in the appendix, section »Selecting an AES/EBU Channel Pair as Clock Reference«.

AES/EBU ↔ ADAT™ EXT ADAT™

This function also provides a bi-directional operating mode, which allows for different sampling rates of the AES/EBU input signals. However, the AES/EBU channels are not synchronized to an AES/EBU channel pair, but depend on the clock frequency of the incoming ADAT™ signal. You can feed in digital AES/EBU audio signal with sampling rates from 32 kHz to 108 kHz (please note that in the case of ADAT™ signals, the range of sampling rates available on the output side cannot exceed the specified ADAT™ range).

TEST MUTE

This function mutes all outputs of the FORMAT CHANGER multichannel aa, which includes not only the digital audio outputs but also the WC/SC output. Use the function to configure your equipment set-up, so as to identify possible problems caused by interconnected signals or interference.



STATUS Area

This area provides you with information on various operating statuses of your FORMAT CHANGER multichannel aa.

ADAT™ INPUT, AES/EBU INPUT

These LEDs light up as soon as a usable signal is applied to the selected audio input. When the unit is set to one of the bi-directional conversion modes (ADAT™ ↔ AES/EBU, AES/EBU AUDIO, AES/EBU ADAT™), both LEDs light up, as long as the corresponding signals are applied simultaneously.

EXTERN SYNC

This LED lights up whenever a usable Word or Super Clock signal is present at the WC/SC input.

TEST MUTE

This LED lights up when the rotary control is set to its mid-travel position (TEST MUTE). In this case, all other LEDs go out.

ERROR MUTE

Whenever a clock or audio signal is interrupted or the incoming audio signal suffers from an increased error rate, the FORMAT CHANGER multichannel aa mutes all of its outputs (ERROR MUTE LED lights up), so as to protect your monitoring speakers or headphones from damage caused by erratic level fluctuations. WC/SC output for the synchronization of other devices. Now, the digital audio input signal selected for processing in the AUDIO INPUT area is sent to all three audio outputs; it has the same sampling rate as the audio or blank-frame signal used for synchronization and is totally independent of the original sampling rate!signal for existing SCMS data. For this purpose, the FORMAT CHANGER multichannel aa has two red status LEDs marked ORIG and 1st, which indicate the current SCMS status of the incoming audio signal. This function works independently of the general operating mode of the unit.



STATUS area





APPENDIX

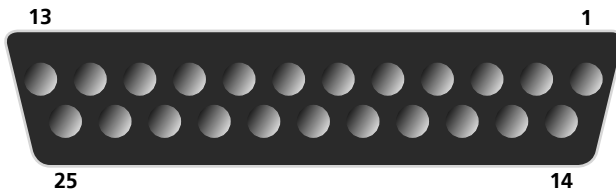
Pin Assignment of the Connectors

MAINS



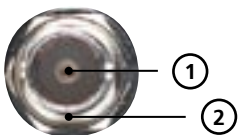
- 1 Live, phase (brown; USA: black)
- 2 Protective earth (green/yellow; USA: green)
- 3 Neutral (blue; USA: white)

AES/EBU IN + OUT



PIN	SIGNAL	PIN	SIGNAL
1	IN 1/2 (hot)	14	IN 1/2 (cold)
2	IN 3/4 (hot)	15	IN 3/4 (cold)
3	IN 5/6 (hot)	16	IN 5/6 (cold)
4	IN 7/8 (hot)	17	IN 7/8 (cold)
5	OUT 1/2 (hot)	18	OUT 1/2 (cold)
6	OUT 3/4 (hot)	19	OUT 3/4 (cold)
7	OUT 5/6 (hot)	20	OUT 5/6 (cold)
8	OUT 7/8 (hot)	21	OUT 7/8 (cold)
9	NC	22	Frame GND
10	Frame GND	23	Frame GND
11	NC	24	Frame GND
12	Frame GND	25	Frame GND
13	Frame GND		

BNC-OUTPUT



- 1 Signal
- 2 Ground

Replacing the Mains Fuse



Disconnect the power cord from both the wall outlet and the unit before you attempt to replace the mains fuse!

Make sure that the fuse holder is inserted completely down to the bottom of its socket and that the compartment is fully closed!



Use a small, flat-blade screwdriver to open the compartment that houses the fuse holder. Carefully pull out the fuse holder from its socket. Turn it by 180° and re-insert it into its socket. After closing the compartment, the second mains voltage marker must be visible through the window in the compartment cover.

Ground-lift of Word Clock Input

Place the unit, front panel towards you, on a table and remove the steel-plate cover after unscrewing the six screws holding it. Locate the BNC jacks on the rear of the unit (see WC/SC) and follow them all the way inside the enclosure. Locate the DIP switch next to the BNC connectors (standard position: »ON«). Carefully set the switch to position »OFF« to lift the ground of the Word Clock input.



CAUTION! Disconnect the unit from the mains before opening!

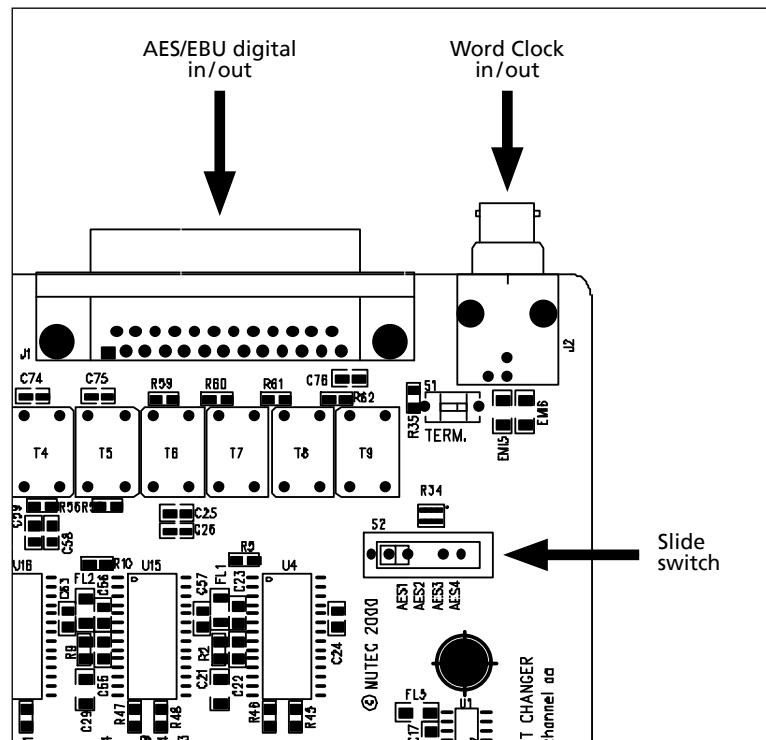


Remount the steel-plate cover thoroughly before you attempt to operate the unit!

Selecting an AES/EBU Channel Pair as Clock Reference

Place the unit, front panel towards you, on a table and remove the steel-plate cover after unscrewing the six screws holding it. Locate the Sub-D-25 female connector on the rear of the unit (see AES/EBU in-out) and follow it all the way inside the enclosure. About 2cm behind that connector you will find a slide switch on the pc board, which is marked »AES1« - »AES4«. As a standard, this switch is set to »AES1«. Use this switch to adjust the channel pair to which you wish to synchronize your FORMAT CHANGER multichannel aa.

Please refer to the illustration below to locate the switch.



APPENDIX

Technical Data

ADAT OPTICAL INPUT (8 CHANNELS)	
Interfaces	1 x Toshiba Toslink™, EIAJ RC-5720
Format	Alesis ADAT™
Resolution	16–24 bits
Lock range	32.0kHz to 50.0kHz
AES/EBU INPUT (8 CHANNELS)	
Interface	1 x Sub-D 25 connector, transformer balanced, input impedance 110Ω, 200mV–7V
Format	AES/EBU 3–1992 + AES/EBU 11–1997
Resolution	16–24 bits
Lock range	32.0kHz to 108.0kHz
ADAT OPTICAL OUTPUT (8 CHANNELS)	
Interface	1 x Toshiba Toslink™, EIAJ RC-5720
Format	Alesis ADAT™
Resolution	16–24 bits
Transmitted audio clock rates	Every clock rate from 32.0kHz to 50.0kHz
AES/EBU OUTPUT (8 CHANNELS)	
Interface	1 x Sub-D 25 connector, transformer balanced, 3,5Vpp @ 110Ω, buffered
Format	AES/EBU 3–1992 + AES/EBU 11–1997
Resolution	24 bits
Transmitted audio clock rates	Every clock rate from 32.0kHz to 108.0kHz
WORD CLOCK INPUT	
Interface	1 x BNC, 200mV–7V, unbalanced, input impedance 75Ω + 1MΩ, switchable
Lock range	32.0kHz to 108.0kHz; 8.0MHz to 13.0MHz, automatic selection
WORD CLOCK OUTPUT	
Interface	1 x BNC, 3,5V@75Ω, unbalanced, buffered
Transmitted audio clock rates	Every clock rate from 32.0kHz to 108.0kHz + 8.0MHz to 13.0MHz
SIGNAL PROCESSING	
Format conversion	8 channels digital format and electrical conversion between ADAT™ and AES/EBU; 8 channels sampling rate conversion
Samplerate conversion ratio	1:3 to 3:1
Dynamic range	128dB
External synchronisation	Word Clock + Word Clock x 256; All digital audio inputs (clock extraction); Fully varispeed compatible
SCMS copy bit	Detection original + 1. generation; setting + removing
POWER SUPPLY	
Type	Internal power supply
Input voltage	115V/230V (switchable), 50-60 Hz
Power consumption	max. 12W, removable power cord (IEC320/C13 aligned)
SYSTEM UNIT COVER	
Cover size/material / color	196 mm x 42 mm x 156 mm (WxHxD); aluminium sheet; black
Front panel size/material	198 mm x 44 mm x 2 mm (WxHxD), 7.8"; aluminium anodized
Weight	~ 1550 g
OPTIONS	
D25-XLR/4I-06Y	Adapter: Sub-D 25 to 4xXLR connector (4xfemale), 110Ω; 0.6m; item-no. 8065-001
D25-XLR/4O-06Y	Adapter: Sub-D 25 to 8xXLR connector (4xmale), 110Ω; 0.6m; item-no. 8065-005
D25-XLR/8IO-06Y	Adapter: Sub-D 25 to 8xXLR connector (4xfemale, 4xmale), 110Ω; 0.6m; item-no. 8065-010
D25-XLR/8IO-3Y	Adapter: Sub-D 25 to 8xXLR connector (4xfemale, 4xmale), 110Ω; 3m; item-no. 8065-015
D25-XLR/8IO-5Y	Adapter: Sub-D 25 to 8xXLR connector (4xfemale, 4xmale), 110Ω; 5m; item-no. 8065-020
	All adapters meet connection standards of Yamaha, Mackie, Apogee, AKAI prof. and others.
MW-01/19	Set of two rack mounting angles, ordering-no. 8020-005
Optical Cables	Optical cables in different lengths from 0.5m to 20m



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