OPERATING MANUAL



<u>MC-1.1+</u>

AES3 – AES3id – S/P-DIF Digital Audio Format 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 MUTEC 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 MUTEC 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 roomtemperature 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 device contains a self-adapting wide-range power supply supporting the majority of global stan-dard line voltages within a range of 90...250 V, with no need for making adjustments. Make sure that your line-voltage source provides a supply voltage within the specified range. In addition, make sure that the device is properly grounded via the local electric installation.

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!

The unit must be grounded during operation!

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: Resistance to interference:

EN 50081-1, 1992 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 MUTEC 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, MUTEC 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 is the new for international freight charges payable to the device free of charge during the reputed with the additional international freight charges payable. will be returned freight prepaid by MUTEC 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 MUTEC 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 MUTEC GmbH

§3 Waranty 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 MUTEC 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 MUTEC 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 MUTEC 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 MUTEC GmbH in advance.

§5 Repairs

To obtain warranty service, the buyer must call or write to MUTEC 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 MUTEC 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:

MUTEC Gesellschaft fuer Systementwicklung und Komponentenvertrieb mbH Siekeweg 6/8 • 12309 Berlin • Germany • Fon 030-746880-0 • Fax 030-746880-99 • Tecsupport@MUTEC-net.de • www.MUTEC-net.de

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INTRODUCTION

Thank you very much for purchasing the MC-1.1+, Digital Audio Format Converter, from MUTEC!

General Function Description

The MC-1.1+ is a multifunctional, high-performance digital audio format converter for AES3, AES3id and S/P-DIF. Using latest digital audio circuit-ries and low-jitter PLLs, the MC-1.1+ enables to improve and re-stabilize incoming digital audio signals, while converting and splitting those to the corresponding outputs. all audio formats can be processed up to 192.0kHz.

The MC-1.1+ helps you to interconnect devices which use different digital audio formats and incompatible interfaces. The format conversion process does not only the necessary electrical conversion but also a format conversion of the reference signals in compliance with the specifications which are standardized by the Audio Engineering Society (AES) and the International Electrotechnical Commision (IEC).

Dual low-jitter PLL circuitries allow to run two signal paths independently for realtime bidirectional format conversions. Additionally, the MC-1.1+ provides two outputs for each digital audio format which enables the use as signal splitter or distribution amplifier.

Various uni- and bidirectional operation modes, 4-way signal splitting, SCMS processing or signal status detection make the use of the MC-1.1+ possible in a wide range of applications.

Features

- AES/EBU3, AES3/EBUid and S/P-DIF optical/coaxial interfaces in one box.
- Uni- and bidirectional format conversions from 32.0kHz to 192.0kHz between AES3/11 and S/P-DIF.
- Simultaneous format conversion to all output formats while allowing the original signal to pass through.
- Signal improvement by low-jitter audio PLLs.
- AES3/11, AES3id/11id and S/P-DIF optical/coaxial signal splitting.
- SCMS processing and status analyzing.
- NONE-PCM and DTS bitstream detections.
- Easy configurable.
- User's settings will be stored after switching-off.
- Rack space saving 1/2 19" case allows for mounting two devices in one rack unit.
- Built-in international power supply.

Applications

- Interconnection of consumer and professional digital audio devices. Realtime bi-directional signal transfer and format conversion between
- send/returns of digital mixing consoles and effect processors.
- Uni- or bi-directional interconnection of computer-based sound cards with professional digital audio equipment.
- AES3/AES11 and S/P-DIF signal splitting and distribution.
- Digital audio signal refreshing.
- SCMS coding of digial audio productions to protect those against illegal copying.
- S/P-DIF optical/coaxial status analyzing.

The grey boxes contain supplementary informationen 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 inside should be read carefully! These include additional information which are of major importance for the functional descriptions in the text column.



Register your MUTEC Product for Warranty and Support!

We ask you to be so kind to register your MUTEC product through our website immediately after purchasing. This ensures full warranty services over a period of two years after purchasing the product. Moreover, for all registered products we offer to our customers technical support. We also will inform you about product updates and new products which may of interest for you (on voluntary base, of course).

Please regsiter your product at:

www.MUTEC-net.com

> SERVICES, > MUTEC Product Registration

Peripheral MUTEC Products

Format and Sampling Rate Converters with internal Master Clock:

MC-4

The MC-4 is a high-performance digital audio multichannel format and sampling rate converter for ADAT[™], AES3 and S/P-DIF

• MC-6

The MC-6 is a high-performance digital audio dual channel format converter for AES3, AES3id and S/P-DIF.

MC-8 + MC-8.1

The MC-8 and MC-8.1 are 8 channel, high-performance digital audio and sampling rate converters for AES3 and AES3id.

Digital Signal Distribution Amplifier:

MC-2

The MC-2 is a high-performance digital audio and reference sync signal distribution amplifier for AES3/11 and AES3/11 id signals. The unit distribute s and converts between the mentioned AES signals and standards.

Accessories for the MUTEC MC Product Series:

- Optical cables in different lenghts from 0.5 m to 20 m for S/P-DIF and ADAT[™] transfers.
- **—** MW-02/19

Mounting plate to install two MC products side by side into one unit of a 19" rack.

— MW-03/19

Set of two rack mounting angles to install one MC product on the rear side of a 19" rack.

MW-05/19

Set of two rack mounting angles to install one MC product frontally into one unit of a 19" rack.

For all peripheral products please have a look on our website: www.MUTEC-net.com

CONTROL ELEMENTS AND TERMINALS

MC-1.1+ Front Panel



1 POWER

This red LED lights up when the unit is switched on with the rear panel POWER switch.

2 SELECT

Use this key to access the different functional menus.

3 DATA

Use this key to select a function from a specific functional menu.

4 MODE

This function menu allows to select all digital audio format conversion modes available.

5 AUDIO IN

This function menu allows to select the digital audio formats for conversion.

6 SCMS

This function menu offers three different ways to encode the outgoing S/P-DIF optical and coaxial digital audio signals.

7 STATUS

This menu indicates various signal statuses of incoming S/P-DIF optical or coaxial digial audio signals by means of status LEDs.

8 AES3id OUT

These two outputs transmit two AES3id digital audio stereo or blank frame signals in compliance with the AES3id–2001 or AES 11–1997/2003 standards. The output impedance is 75Ω (BNC connectors, female).



MC-1.1+ Rear Panel

1 S/P-DIF OUT

These four S/P-DIF outputs, available as 2 x optical (»OP«) and 2 x coaxial (»CO«) interfaces, transmit an optical S/P-DIF and an unbalanced electrical S/P-DIF digital audio or blank frame signal in compliance with the IEC 60958 standard. The coaxial interface impedance is 75Ω . (cinch connector), the optical interface offers a Toshiba ToslinkTM connector, EIAJ standard.

2 AES3/11 OUT

These two outputs transmit a balanced digital AES3 audio or AES11 blank frame signal compliant with AES3–1992 (R1997) and AES11–1997/2003. The output impedance is 110 Ω (XLR connectors, male).

Refer to the OPERATIONS chapter for more information.

For detailed specifications on all terminals, refer to the »Pin Assignment of the Connectors« and »Technical Data« in the chapter APPENDIX.

CONTROL ELEMENTS

3 AES/EBU IN

This input receives a balanced AES3 digital audio or AES11 blank frame signal compliant with AES3–1992 (R1997) and AES11–1997/2003. The input impedance is 110 Ω (XLR connector, female).

4 S/P-DIF IN

These two S/P-DIF inputs, available as optical (»OP«) and coaxial (»CO«) interfaces, can receive an optical S/P-DIF and an unbalanced electrical S/P-DIF digital audio or blank frame signal in compliance with the IEC 60958 standard. The coaxial interface impedance is 75 Ω . (cinch connector), the optical interface offers a Toshiba ToslinkTM connector, EIAJ standard.

5 AES3id IN

This receives an AES3id digital audio or AES11id blank frame signal in compliance with the AES3id–2001 standard. The impedance of both connector is 75 Ω (BNC connectors, female).

6 MAINS IN, Power Switch + Power Inlet

This is the main switch for switching the device on and off. Be sure to make all connections (especially the supplied power cable) properly before turning on the switch. Heed the SAFETY INSTRUCTIONS at the beginning of this manual.

Connect the supplied power cable here. Make sure that the power switch is turned off before connecting the power cable to this inlet and to the power outlet. Line voltages within the range of 90...260 V with a frequency of 50 or 60 Hz can be applied. The internal power supply will automatically make all necessary adjustments.

INSTALLATION

Content of the Box

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

1 x MC-1.1+ 1 x Power cable 1 x Manual

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.

The device can be mounted into a standard 19" rack and will require 1 unit. In this case, the rubber feet cannot be attached. Install the device so that one unit of rack space is left free both above and below the device to allow for sufficient ventilation! The mounting depth including the terminals is 160 mm/6.7". Another 60 mm/2.4" should be added for the required cables.

Additional slide-in rails on the rack inside are recommended for safe installation. This will also avoid long-term mechanical deformation of the housing.

Wiring the AES/EBU and S/P-DIF Interfaces

Connect the AES/EBU interfaces with the help of balanced electrical cables equipped with XLR connectors on both ends. The specifications stipulate a specific cable resistance of 110Ω (ask your retailer for a confirmation of this value when purchasing the cables).

Connect the coaxial S/P-DIF interface with the help of unbalanced electrical cables equipped with cinch connectors on both ends. The specifications stipulate a specific cable resistance of 75 Ω (ask your retailer for a confirmation of this value when purchasing the cables).

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

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

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!

Especially when working with high AES3/11 clock rates well shielded clock lines are imperative to avoid increased radiation! Standard cables are normally useable for clock rates up to 50.0kHz. Special shielded cable material should be used for transfer of higher clock rates.

Since some manufacturers offer optimized cables for the transmission of digital S/P-DIF and AES3/11 signals, it is a good idea to ask your retailer for specific cables.



OPERATION

Selecting Function Menus and setting Functions

The device is fully operated using the two toggle switches at the front panel.

- 1 Switching the MENU key toggles between different basic function menus.
- 2 Switching the SELECT key activtes individual functions within one function menu.





Safety Instructions

For safety reasons, be sure to read the SAFETY INSTRUCTIONS and INSTALLATION chapters before first powering-up!

We also recommend reading the CONTROL ELEMENTS AND TERMINALS chapter for information on how to connect MC-1.1+!

Menus



Functions

Steps of Operation

- 1 First press on »MENU« or »SELECT« key enables the last selected function within the last selected function menu. The corresponding LED is beginning to flash.
- 2 Every press on »SELECT« button will select a new function within a menu. The LED of the selected function flashs accordingly. After the LED stops flashing, the funcition is activated.
- 3 When the needed function is selected, do not press the switches again! After a period of approx. 4 seconds the LED of the selected function stops flashing.

The STATUS area is not accessible by using the »MENU« and »SELECT« keys, because it only informs about different conditions of incoming signals.



down during function selection! After a function is finally selected and the corresponding LED lights constantly again, the digital audio outputs are activated for signal transfer.



User Settings Remain

All user-specific function settings are available furthermore when power is restored.

OPERATING THE MC-1.1+

MODE + AUDIO IN + SCMS Menus

These three function menus are offering access to the whole functionality of your MC-1.1+.

The »MODE« menu allows to select the general conversion option as uni- or bidirectional conversion or the signal splitting mode.

Within the »AUDIO IN« menu you select for the digital audio formats which should be converted. This menu acts in dependency of the »MODE« menu. The system makes sure that only useful combinations of conversion modes and proper audio formats are accessable. Therefore both menus act together in different combinations.

The SCMS wenu (SCMS = Serial Copy Management System) let you encode the S/P-DIF optical + coaxial output signals with three different SCMS status.

The menu »STATUS« is for control of the S/P-DIF inputs only. It is not accessable for adjustments.

General Operation Procedure

The menu of your MC-1.1+ is strictly organized aligned to general handling procedures when inserting the MC-1.1+ into your studio's data stream. Thus, you can split up all of the necessary adjustments in three steps, which leads to the following three guestions for the basic operation of your MC-1.1+:

1) What kind of conversion should be executed \rightarrow MODE?

= Unidirectional conversion, from one format to all others
= Bidirectional conversion, between two formats only
= Signal splitting only

MODE

2) Which digital audio format(s) should be involved as source(s) \rightarrow AUDIOIN?

O AES3	= AES3 between 25.0kHz and 200.0kHz
O AES3id	= AES3id between 25.0kHz and 200.0kHz
O S/P-DIF op 1	= S/P-DIF optical between 25.0kHz and 200.0kHz
O S/P-DIF co ₂	= S/P-DIF coaxial between 25.0kHz and 200.0kHz

3) Which SCMS status is required for the S/P-DIF output signals \rightarrow SCMS?

1 2	
O ORIG	= SCMS status as »original«
0 0 1st	= SCMS status as »first copy«
O O PASS	= SCMS status of the S/P-DIF input signal is looped through
SCMS	

After these general decisions are made, your MC-1.1+ is configured for optimal operation in your set-up! Due to the fact that the system monitors for useful function combinations, maloperation is not possible.

So, let's have a look to the individual functions on the next pages.

Shut-Down of Outputs

All digital audio outputs are shutdown during function selection! After a function is finally selected and the corresponding LED lights constantly again, the digital audio outputs are activated for signal transfer.

Unidirectional Format Conversions

	• • • • • • •		
	AES3	U O ORIG	
O BI-DIR	O AES3id	0 0 1st	🔿 🔿 1st
O SPLIT	O S/P-DIF op 1	O O PASS	O O NONE-PCM
	O S/P-DIF co ₂		O O DTS-CD
MODE		SCMS	STATUS

This setting allows for unidirectional format conversion (see »MODE«, »UNI-DIR«) of an AES3 source signal (see »AUDIOIN«, »AES3«) simultaneously to all available output formats. The SCMS status of the S/P-DIF output signals is set to original (see »SCMS-1«, »ORIG«). Thus, the original input signal is not lost during the conversion process and available for further use!

Within the »AUDIO IN« menu, you can select with the »SELECT« button the other available digital audio inputs. When selecting one of the S/P-DIF inputs, the SCMS status of the input signal will be displayed in the »STATUS« area with the first (»1«) row of LEDs.

To set the SCMS status of the S/P-DIF outputs as »ORIG« or »1st«, enter the SCMS« menu by pressing the »MENU« button repeatedly and select with the »SELECT« button the option prefered. The SCMS settings are made independently of the SCMS status of the incoming S/P-DIF signal. If you want to have the SCMS status of the S/P-DIF outputs equal to this one of the S/P-DIF input signal, select »PASS«.

Further Setting Examples

	O AES3	$\overset{1}{O}$		
O BI-DIR	AES3id	${\color{black}\bullet}$	🔿 1st	🔾 🔿 1st
O SPLIT	O S/P-DIF op ₁	0	O PASS	O O NONE-PCM
	\bigcirc S/P-DIF co $_{\rm 2}$			O O DTS-CD
MODE		sc	MS	STATUS

Unidirectional format conversion from AES3id to AES3, S/P-DIF optical + coaxial, AES3id. The SCMS status of the S/P-DIF outputs is set as first copy.

 UNI-DIR BI-DIR SPLIT 	• AES3 • AES3id • S/P-DIF op_1 • S/P-DIF co_2	 1 2 ORIG O 1st O PASS 	 ¹ ² ORIG O 1st O NONE-PCM O DTS-CD
MODE		SCMS	STATUS

Unidirectional format conversion from S/P-DIF coaxial to AES3, AES3id, S/P-DIF optical + coaxial. The SCMS status of the S/P-DIF outputs is set as first copy. The SCMS status of the S/P-DIF input signal is original.

Bidirectional Format Conversions

O UNI-DIR	AES3	$ \overset{1}{\bigcirc} \overset{2}{\bigcirc} \mathbf{ORIG} $	$ \overset{1}{\bigcirc} \overset{2}{\bigcirc} \mathbf{ORIG} $ $ \bigcirc \mathbf{O} \mathbf{1st} $
O SPLIT	\bigcirc S/P-DIF op ₁ \bigcirc S/P-DIF co ₂	O O PASS	O O NONE-PCM
MODE		SCMS	STATUS

This is a special function of your MC-1.1+! It allows, as shown in the sketch above, to receive an AES3 and AES3id signal simultaneously. The AES3 input signal is converted to AES3id and the AES3id input signal is converted to AES3. The other digital audio outputs are shut down. In this mode, the MC-1.1+ is able to work simultaneously with two different sampling rates.

Any combination of two inputs for bidirectional conversion is possible to select by pressing the <code>»SELECT</code>« button repeatedly within the <code>»AUDIO IN</code>« menu.

When activating a bidirectional conversion option which includes a S/P-DIF input, the SCMS status of the involved S/P-DIF output can be selected in the »SCMS« menu. The »STATUS« menu shows the SCMS, PCM and DTS status of the incoming S/P-DIF signal.

When activating a bidirectional conversion option which includes both available S/P-DIF inputs, the SCMS status of both S/P-DIF outputs can be selected in the »SCMS« menu. Therefore, both S/P-DIF inputs are marked with »1« and »2«. You find this numbering above of the two LED rows of the »SCMS« and »STATUS« sections. Thus, the SCMS status of the S/P-DIF optical output is selected with LED row»1« and the SCMS status of the S/P-DIF coaxial output is selected with LED row»2«.

Correspondingly to this numbering, the »STATUS« menu indicates the SCMS, PCM and DTS status of the incoming S/P-DIF signals.

Further Setting Examples

○ UNI-DIR● BI-DIR○ SPLIT	AES3 AES3id S/P-DIF op ₁	 ¹ ² ORIG O 1st O PASS 	 1 2 ORIG O Ist O NONE-PCM O DTS-CD
MODE		SCMS	STATUS

Bidirectional format conversion between AES3 and S/P-DIF coaxial. The SCMS status of the S/P-DIF coaxial output is set to original . The SCMS status of the S/P-DIF input signal is first copy.



Bidirectional format conversion between S/P-DIF optical and S/P-DIF coaxial. The SCMS status of both S/P-DIF outputs is set to first copy. The status of the S/P-DIF optical input signal is original, the status of the S/P-DIF coaxial input shows a DTS-CD coding.

Signal Splitting Mode

MODE		SCMS	STATUS
	\bigcirc S/P-DIF co $_{\rm 2}$		O O DTS-CD
SPLIT	O S/P-DIF op 1	$\bigcirc \bigcirc PASS$	O O NONE-PCM
O BI-DIR	O AES3id	0 0 1st	0 0 1st
	O AES3	$ \stackrel{1}{O} \stackrel{2}{O} \text{ORIG} $	$\stackrel{1}{\bigcirc} \stackrel{2}{\bigcirc} \mathbf{ORIG}$

This is also a special function of your MC-1.1+! It allows to actively split and distribute up to four input signals to their corresponding double outputs. That means, every input signal is transfered to two format-same outputs. Thus, your MC-1.1+ works as a 4-way digital audio signal splitter. In this mode, the MC-1.1+ accepts different sampling rates at every digital audio input.

SCMS Functions

SCMS (Serial Copy Management System) settings, also know as »copy protection bits«, affect the S/P-DIF optical and coaxial output signals only. The AES3 and AES3id output signals are not affected because the corresponding AES specifications do not define any SCMS encoding. Due to this, the AES3 and AES3id output signals are free of SCMS information.

SCMS functions can be set independently of the SCMS status of an incoming S/P-DIF signal. They are not available using the split mode.

»ORIG«

This function called »Original« sets the outgoing SCMS data-bits to indicate that the signal source is the original master and not a copy. Therefore, devices which are capable of evaluating SCMS data-bits will accept those digital audio signals at their S/P-DIF inputs for recording.

»1st«

This function called »1st Generation« sets the outgoing SCMS data-bits to indicate that the signal source is a copy. Therefore, devices capable of evaluating SCMS data-bits will not accept those digital audio signals at their S/PDIF inputs for recording. Due to this, valuable recordings, sounds or commercial material will be protected against illegal copying.

»PASS«

This function transmits all SCMS information received at the active S/P-DIF input/s to all S/P-DIF outputs without any modification.

STATUS Area

The STATUS area provides information on various signal status of incoming S/P-DIF optical or coaxial digial audio signals. Incoming AES3 or AES3id signals will be not evaluated by this function because of the lack of the corresponding status bits within these data streams.

»ORIG«

This status LED indicates when the incoming digital audio signal of the active S/PDIF input is SCMS-encoded as original source.

»1st«

This status LED indicates when the incoming digital audio signal of the active S/PDIF input is SCMS-encoded as 1st copy.

»NONE-PCM«

This status LED indicates when the incoming digital audio signal of the active S/PDIF input is a none-standard PCM data stream, e.g. AC-3, MPEG, etc.

»DTS-CD«

This status LED indicates when the incoming digital audio signal of the active S/PDIF input is a DTS-CD bitstream (DTS = Digital Theatre System).



APPENDIX

Pin Assignment of the Connectors

Mains



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

AES/EBU XLR Output



- Audio ground 1
- a conductor (hot / +) 2
- b conductor (cold / -) 3

S/PDIF Cinch Input/Output



- Audio signal 1
- 2 Audio ground

BNC Input/Output for AES3id



- Signal 1
- 2 Ground



AES/EBU XLR Input



- 1 Audio ground
- a conductor (hot / +) b conductor (cold / -) 2
- 3

S/PDIF Optical Input/Output TOSLINK Standard



1 Optical signal



Technical Data

S/P-DIF OPTICAL AUDIO INPUT (OP)			
Interfaces	1 x Toshiba Toslink™, EIAJ RC-5720		
Format, Resolution	IEC 60958, 16–24 bits		
Lock range	22.0kHz to 216.0kHz		
S/P-DIF COAXIAL AUDIO INPUT ((CO)		
Interface	1 x Coaxial (Cinch/RCA female), unbalanced, input impedance 75Ω , 200 mV –7 V		
Format, Resolution	IEC 60958, 16–24 bits		
Lock range	22.0kHz to 216.0kHz		
AES3 AUDIO INPUT			
Interface	1 x XLR female, transformer balanced, input impedance 110Ω , $200 \text{ mV} - 7.0 \text{ V}$		
Format, Resolution	AES/EBU 3 – 1992/2003 + AES/EBU 11 – 1997/2003, 16 – 24 bits		
Lock range	22.0kHz to 216.0kHz		
AES3id AUDIO INPUT			
Interface	1 x BNC, 200 mV-7 V, unbalanced, input impedance 75 Ω		
Format, Resolution	AES3id-1995/2001, 16-24 bits		
Lock Range	22.0kHz to 216.0kHz		
S/P-DIF OPTICAL AUDIO OUTPUT	Г (ОР)		
Interface	1 x Toshiba Toslink™, EIAJ RC-5720		
Format, Resolution	IEC 60958, 16–24 bits		
Transmitted audio clock rates	22.0kHz to 216.0kHz		
S/P-DIF COAXIAL AUDIO OUTPU	т (СО)		
Interface	1 x Coaxial (Cinch/RCA female), unbalanced, 0.5Vpp @ 75 Ω , output impedance 75 Ω , buffered		
Format, Resolution	IEC 60958, 16–24 bits		
Transmitted audio clock rates	22.0kHz to 216.0kHz		
AES3 AUDIO OUTPUT			
Interface	1 x XLR male, transformer balanced, 3.5 Vpp @ 110 Ω , output impedance 110 Ω , buffered		
Format	AES/EBU 3 – 1992/2003 + AES/EBU 11 – 1997/2003, 16 – 24 bits		
Transmitted audio clock rates	22.0kHz to 216.0kHz		
AES3id AUDIO OUTPUT			
Interface	1 x BNC, 1.0 V, unbalanced, input impedance 75Ω		
Format, Resolution	AES3id-1995/2001, 24 bits		
Transmitted Clock Rates	22.0kHz to 216.0kHz		
SIGNAL PROCESSING			
Digital Audio Format Conversion	AES3, AES3id, S/P-DIF (optical + coaxial) in every combination and direction		
SCMS copy bit	Generation of original, 1st generation, SCMS pass-thru functionality		
S/P-DIF signal analyzing	Automatic detection of SCMS original + 1st generation status; none-PCM and DTS detection		
POWER SUPPLY			
Туре	Internal, switching power supply		
Input voltage	90V–264V (automatic adjustment), 47Hz–440Hz		
Power consumption	max. 10W		
SYSTEM UNIT COVER			
Cover size/material/color	196 x 42 x 156mm without connectors (WxHxD), aluminium sheet 1mm, black		
Front panel size/material	198 x 44 x 2mm (WxHxD), aluminium		
Weight	~650g		

