OPERATING MANUAL



MC-2

AES3 & AES11 Distribution Amplifier and Converter

MUTEC part no. 8015-055

MUTEC
Professional A/V Technology
Germany

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 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 device contains a self-adapting wide-range power supply supporting the majority of global standard 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:	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
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 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.com • www.mutec-net.com

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INTRODUCTION

Thank you very much for purchasing MC-2, AES/EBU Signal Distribution Amplifier and Format Converter, from MUTEC!

About this Manual

The structure of this manual refers to the normal process of installing MC-2 in a standard audio studio environment. Thus the chapters are ergonomically sorted to provide a fast set-up. Before first power-on we recommend to read the chapters INTRODUCTION and BRIEF INSTRUCTIONS to get to know the general functionality of MC-2 and to reach a fast system integration.

The chapter OPERATION describes individual functions which enable the adaption of MC-2 to every studio environment. The chapters APPLICATION EXAMPLE and APPENDIX include descriptions of favorable studio set-ups as well as all technical information.

If there are any uncertainties when operating the units which can not be cleared up by the content of this manual, please feel free to contact your local dealer or MUTEC directly. All contact details are included in chapter WARRANTY REGULATIONS located at the beginning of the manual.

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 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.de

>SERVICES, >MUTEC Product Registration

General Function Description

MC-2 is a high-performance digital audio and reference sync signal distribution amplifier and format converter for AES/EBU and AES/EBU ID signals.

MC-2 comes basically as an AES/EBU distribution amplifier. Additonally AES/EBU ID interfaces are available as input and outputs. Using latest PLL and conversion techniques, MC-2 processes reference signals aligned to AES3/AES11 and AES3 ID including all clock rates between 32 kHz and 192 kHz. Each interface standard offers one input whereas AES/EBU can be distributed to 6 outputs and AES/EBU ID to 2 outputs.

Various operation modes enable the use of MC-2 in a wide range of applications. An input reference signal will be distributed to all outputs simultaneously. In this process, an electrical conversion between the AES/EBU and the AES/EBU ID interfaces will be done automatically.

A supplied AES3 signal can be format converted to AES11 in realtime and distributed through all outputs. If the original AES3 signal is needed furthermore, the first output of the according interface standard can be switched to pass the original signal separately.

The voltage of the outputs of the AES/EBU ID interface can be switched from standard 1 V to 3 V to enable longer cable runs.

All functions can be set convenient from the front panel with help of a simple user interface. The device is shipped in a rugged aluminium housing and meets CE, UL and FCC, part 15, specifications.

Features

- **AES/EBU and AES/EBU ID interfaces in one box.**
- **Supports all audio-related clock rates between 32 kHz and 192 kHz.**
- **Signal improvement by low-jitter PLLs.**
- **Conversion from AES3 to AES11.**
- **Detects and monitors all studio sampling rates between 32 kHz and 192 kHz.**
- **Reference pass functionality.**
- **Input lock detection.**
- **All interfaces meet the specifications of the according AES and AES ID standards.**
- **Simple user interface.**
- **Built-in international power supply.**

Applications

- AES/EBU and AES/EBU ID reference signal distribution.
- AES/EBU and AES/EBU ID digital audio signal distribution.
- Reference signal and digital audio signal refreshing.
- Signal conversion between AES/EBU and AES/EBU ID.
- AES3 to AES11 conversion.
- Clock rate indication of AES/EBU and AES/EBU ID signals.
- Line extension for e.g. theater or broadcast installations.
- Output expansion for e.g. MUTEC's iCLOCK, iCLOCK dp, iD, iD dp, MC-3 SMART CLOCK, MC-3.1 SMART CLOCK SD, MC-3.2 SMART CLOCK HD and other clock generators.

Peripheral MUTEC Products

Reference Clocks and Master Clocks for Synchronization:

- iCLOCK + iCLOCKdp
  iCLOCK and iCLOCKdp are synchronizable, high-precision clock generators which are designed to be the reference in digital audio and video studios as well as broadcast and television stations. For further details please visit:

  www.iCLOCK-NET.de

- MC-3
  The MC-3 SMART CLOCK is an universal digital audio master clock generator. The unit provides different high-stable and Ultra low-jitter clock signals for synchronization of various digital audio devices.

- MC-3.1
  The MC-3.1 SMART CLOCK SD is an universal digital audio and SD video sync master clock generator. The unit provides different high-stable clock signals for simultaneous synchronization of digital audio and SD video devices.

- MC-3.2
  The MC-3.2 SMART CLOCK HD is an universal digital audio and SD/HD video sync master clock generator. The unit provides different high-stable clock signals for simultaneous synchronization of digital audio and SD/HD video devices.

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.

Cables for Digital Audio:

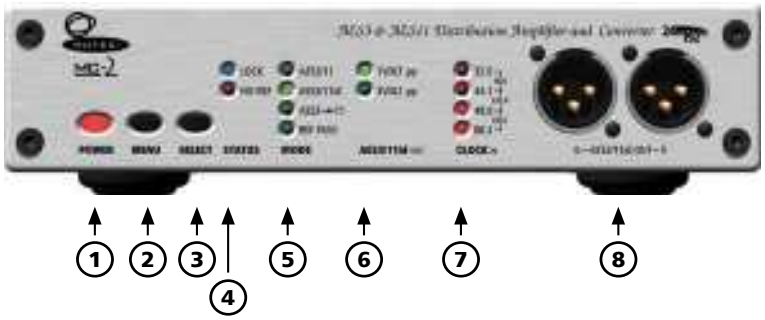
- MW-05/19
  Set of two rack mounting angles to install one MC product frontally into one unit of a 19" rack.

- MW-03/19
  Set of two rack mounting angles to install one MC product on the rear side of a 19" rack.

- MW-02/19
  Mounting plate to install two MC products side by side into one unit of a 19" rack.

CONTROL ELEMENTS

MC-2 Front Panel



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

2 SELECT
The toggle switch selects one of the two functional areas available.

3 DATA
Use this toggle switch to select a function from a specific functional area.

4 STATUS
This area indicates the status of the internal low-jitter PLL.

5 MODE
This area enables the selection of the reference input as well as the needed conversion mode.

6 AES/EBU ID OUT
This function enables to select two different output voltages for the AES/EBU ID outputs.

7 CLOCK IN
This status area indicates the clock rate of the current incoming reference signal.

8 AES/EBU OUT 5+6
These are AES/EBU signal distribution outputs no. 5+6.

Refer to the OPERATIONS chapter for more information.

MC-2 Rear Panel



1 AES/EBU ID OUT 1+2
These outputs transmit digital AES/EBU ID blank frame reference or audio signals in accordance with the specifications of the standards AES3 ID – 1995/2001. The output impedance is 75 Ω (BNC connector, female).

2 AES/EBU OUT 1–4
These outputs transmit balanced digital AES/EBU blank frame reference or audio signals in accordance with the specifications of the standards AES3–1992/2003 and AES11–1997/2003. The output impedance is 110 Ω (XLR connectors, male).

3 AES/EBU IN
This input receives balanced digital AES/EBU blank frame reference or audio signals in accordance with the specifications of the standards

The AES/EBU ID input terminal is standardly isolated from ground to avoid interference from the connected clock line. If this does not comply with the electrical studio purposes, the ground connections can be linked permanently by setting jumpers on the mainboard. Refer to the »Connecting the AES/EBU ID Input to Ground« section in the appendix for a short instruction.

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

AES 3 – 1992/2003 and AES 11 – 1997/2003. The input impedance is 110 Ω (XLR connector, female).

4 AES/EBU ID IN
This input receives balanced digital AES/EBU blank frame reference or audio signals in accordance with the specifications of the standards AES 3 ID – 1995/2001. The input impedance is 75 Ω (BNC connector, female) and can be switched off internally for chaining devices, see the »Switching-off the Termination of the AES/EBU ID Input« section in the appendix.

5 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-2
1 x Power cable
4 x Rubber feet
1 x Manual

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.

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.

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!

Wiring the AES/EBU and AES/EBU ID 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 AES/EBU ID interfaces with the help of unbalanced electrical cables equipped with BNC connectors on both ends. The specifications stipulate a specific cable resistance of 75Ω (ask your retailer for a confirmation of this value when purchasing the cables).

Especially when working with high AES/EBU 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 AES/EBU and AES/EBU ID signals, it will be a good idea to ask your retailer for specific cables.

OPERATION

Selecting Function Areas and setting Functions

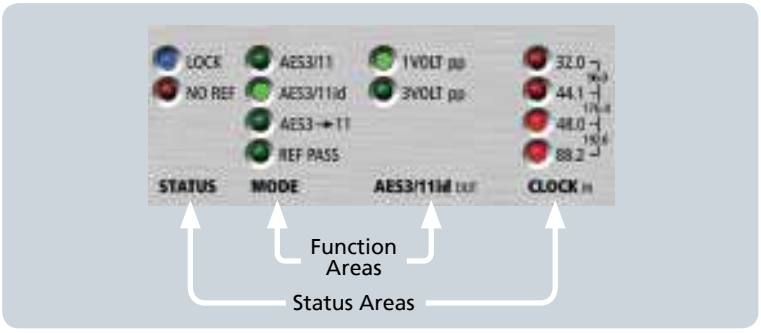
The device is fully operated using the two toggle switches at the front panel.

1 Switching the SELECT switch selects between different basic function areas.
2 Switching the DATA switch selects between the individual functions within one function area.

For safety reasons, be sure to read the SAFETY INSTRUCTIONS and INSTALLATION chapters before first powering-up!
We also recommend reading the CONTROLS AND TERMINALS chapter for information on how to connect MC-2!



SELECT + DATA operation



Function Areas + Status Areas



Functions

Steps of Operation

1 First press on SELECT or DATA switch enables the last selected function within the last selected function area. The corresponding LED is beginning to flash.
2 Every press on DATA switch will select a new function. The LED of every selected function will flash accordingly and the corresponding function is available at once.
3 When the needed function is selected, do not press the switches again! After a period of approx. 4 seconds the LED in front of the selected function will stop flashing.

The STATUS area is not accessible by using the SELECT and DATA switches, because it only informs about different conditions of incoming digital audio signals.

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

MODE Function Area

The function area MODE includes six different operation modes for signal distribution which are accessible by repeatedly pressing the DATA switch. One or more LEDs will light for the corresponding mode, respectively for combinations of modes. During the signal distribution process, the status of the internal PLL circuit will be displayed in the status area STATUS. Furthermore the clock rate of the incoming reference signal will be analyzed and reported in the status area CLOCK IN. During all distribution and conversion processes, the status bit settings of the incoming signal will be not affected.

The factory default setting is AES/EBU.

AES/EBU
This function distributes an incoming AES/EBU reference signal alinged to AES3 or AES11 directly to all AES/EBU and AES/EBU ID outputs simultaneously. The internal PLL circuit is stabilizing and de-jittering, the output driver stages are refreshing the incoming signal. The output level of the AES/EBU ID outputs can be selected in function area AES/EBU ID OUT.

AES/EBU + AES3 → 11
This function combination distributes an incoming AES/EBU reference signal as described above. Additionally this function converts an digital audio signal (AES3) which is supplied at the AES/EBU input into an digital reference sync signal (aligned to AES11). A real format conversion is carried out during this process!

AES/EBU + AES3 → 11 + REF PASS
This combination of three functions distributes and converts an incoming AES/EBU reference signal as described under „AES/EBU" and „AES/EBU + AES3 → 11". Additionally the system outputs the original incoming signal at AES/EBU output no. 1 (marked as „1/PASS") while all other outputs are carrying the converted AES11 sync signal.

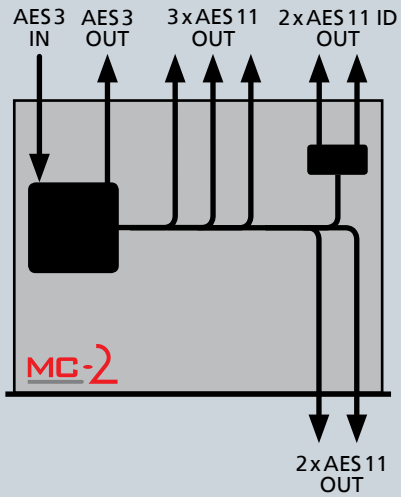
AES/EBU ID
This function distributes an incoming AES/EBU ID reference signal alinged to AES3 ID directly to all AES/EBU ID and AES/EBU outputs simultaneously. The internal PLL circuit is stabilizing and de-jittering, the output driver stages are refreshing the incoming signal. The output level of the AES/EBU ID outputs can be selected in function area AES/EBU ID OUT.

AES/EBU ID + AES3 → 11
This function combination distributes an incoming AES/EBU ID reference signal as described above. Additionally this function converts an digital audio signal (AES3) which is supplied at the AES/EBU ID input into an digital reference sync signal (aligned to AES11). A real format conversion is carried out during this process!

AES/EBU ID + AES3 → 11 + REF PASS
This combination of three functions distributes and converts an incoming AES/EBU ID reference signal as described under „AES/EBU ID" and „AES/EBU ID + AES3 → 11". Additionally the system outputs the original incoming signal at AES/EBU ID output no. 1 (marked as „1/PASS") while all other outputs are carrying the converted AES11 sync signal.

Example

In a studio environment the only sync reference is a digital audio signal. This signal should be available for a DA converter. But at the same time sync reference signals are needed for devices which should to be synchronized to e.g. the digital mixing desk. In this case the »AES/EBU + AES3 → 11 + REF PASS« function helps to make the digital audio signal available for the DA converter, while having a sync reference based on the phase relationship of the digital audio signal available for synchronization of the other devices to the mixing desk.



AES3: Digital Audio Signal
AES11: Sync Reference Signal (converted out of AES3)

»AES/EBU + AES3 → 11 + REF PASS« Function

AES/EBU ID OUT Function Area

This function area enables to change the output level of the AES/EBU ID outputs from 1V peak–peak, which is the standard aligned to AES3 ID, to 3V peak–peak. The level change can be activated in all operation modes of MC-2.

The factory default setting is 1 VOLTPP.

Example

This function can be useful if AES3 ID signals need to be transfered about very long distances to ensure to have enough signal level for the input circuits of the receiving devices available.

STATUS Status Area

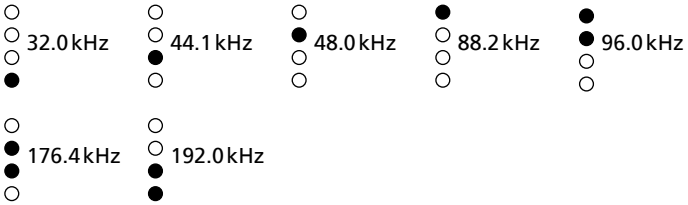
This area displays the status of the internal low-jitter PLL circuit.

LOCK
When the LOCK LED lights, the PLL circuit is locked to the external digital audio or sync reference signal. This signal will be processed and transfered like described previously to all corresponding outputs. The four LEDs of the CLOCK IN status area will display the clock rate of the reference signal.

NO REF
When the NO REF LED lights, the PLL circuit is not locked to an external digital audio or sync reference signal. This can be caused by a missing or absent reference as well as by an extremely unstable or interrupted reference signal. All outputs are muted, no LED of the CLOCK IN status area will light.

CLOCK IN Status Area

This area displays the clock rate of the incoming digital audio or sync reference signal. The following rates are supported and will be analyzed

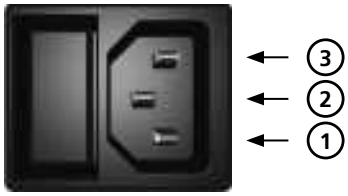


These indications are only available if the internal PLL circuit is locked stably to the external reference signal and the corresponding blue LOCK-LED lights permanently.

APPENDIX

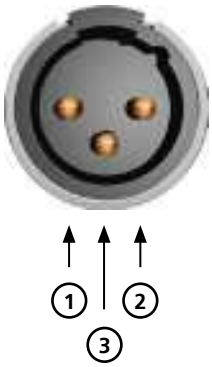
Pin Assignment of the Connectors

Mains



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

AES/EBU XLR Output



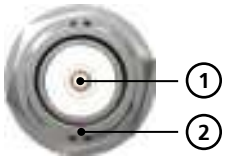
1 Ground
2 a conductor (hot / +)
3 b conductor (cold / -)

AES/EBU XLR Input

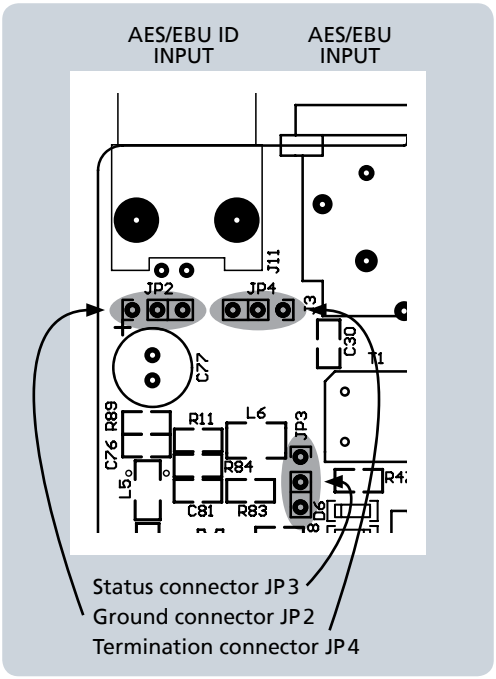


1 Ground
2 a conductor (hot / +)
3 b conductor (cold / -)

AES/EBU ID BNC Input/Output



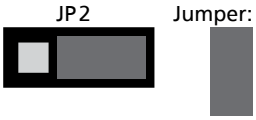
1 Signal
2 Ground



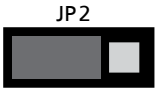
Connecting the AES/EBU ID Input to Ground

CAUTION! Disconnect the unit from the mains before opening! Remount the aluminium cover thoroughly before you attempt to operate the unit!

When MC-2 is shipped, the BNC-based AES/EBU ID input is isolated from ground.



Setting the jumper one pin forward in direction to the housing's leftside (viewed from the front panel) will connect the BNC input connector to ground.

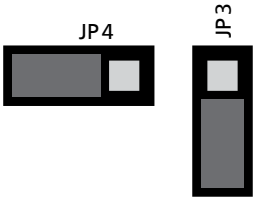


This setting is also necessary when switching-off the termination (see below)!

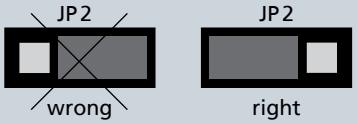
Switching-off the Termination of the AES/EBU ID Input

CAUTION! Disconnect the unit from the mains before opening! Remount the aluminium cover thoroughly before you attempt to operate the unit!

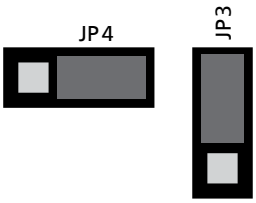
When MC-2 is shipped, the BNC-based AES/EBU ID input is terminated internally with 75Ω. Therefore, two jumpers are put on two 3-pin sockets, JP4 for termination and JP3 for status.



When moving the jumpers of the sockets JP3 and JP4 to switch-off the AES/EBU ID input termination, the input hast to be connected to ground simultaneously!



Moving the jumpers of each socket in the opposite position will switch of the 75Ω ter-mi-nation of the AES/EBU ID input.



Technical Data

AES/EBU INPUT	
Interface	1 x XLR female, transformer balanced, input impedance 110 Ω, 200 mV – 7.0 V
Format	AES3 – 1992/2003 and AES11 – 1997/2003
Resolution	16 – 24 bits
Lock range	Every digital audio clock rate from 32.0kHz to 192.0kHz
AES/EBUid INPUT	
Interface	1 x BNC female, unbalanced, input impedance 75 Ω, 200 mV – 7.0 V
Format	AES3id – 1995/2001
Resolution	16 – 24 bits
Lock range	Every digital audio clock rate from 32.0 kHz to 192.0 kHz
AES/EBU OUTPUTs 1 – 6	
Interface	6 x XLR male, transformer balanced, 3.5 Vpp @ 110 Ω, output impedance 110 Ω, buffered
Format	AES3 – 1992/2003 and AES11 – 1997/2003
Resolution	16 – 24 bits
Transmitted audio clock rates	Every digital audio clock rate from 32.0kHz to 192.0kHz
AES/EBUid OUTPUTs 1 + 2	
Interface	2 x BNC female, unbalanced, 1.0 / 3.0 Vpp @ 75 Ω, output impedance 75 Ω, buffered
Format	AES3id – 1995/2001
Resolution	16 – 24 bits
Transmitted audio clock rates	Every digital audio clock rate from 32.0kHz to 192.0kHz
SIGNAL PROCESSING	
Signal processes	AES/EBU to AES/EBUid + AES/EBUid to AES/EBU electrical conversion Signal stabilization and refreshing by low-jitter PLL
Clock rate analyzing	Automatic clock rate detection of the incoming reference signal between 32.0 kHz and 192.0 kHz in all operation modes.
POWER SUPPLY	
Type	Internal, switching power supply
Input voltage	90 V – 260 V (automatic adjustment), 47 Hz – 440 Hz
Power consumption	max. 10 W
SYSTEM UNIT COVER	
Cover size / material / color	196 x 42 x 156mm without connectors (W x H x D), aluminium sheet 1mm, black
Front panel size / material	198 x 44 x 2mm (W x H x D), aluminium
Weight	~ 1210g