



MCDA-112

Series 2

Ultra-Low-Jitter Studio Master Clock And 1x12 Clock Distribution Amplifier



OPERATING AND MAINTENANCE MANUAL

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MCDA-112 FEATURES

- Switchable for use as master clock source or 1X12 clock DA
- Accepts AES3, AES11 Word and Super Word Clock inputs
- Generates standard sample rates of 44.1, 48, 88.2, 96, 176.4 or 192 kHz
- Displays input sample rates of 32, 44.1, 48, 88.2, 96, 176.4 and 192 kHz
- Divide-Down ultra-low jitter clock with exceptional stability
- Loop-thru inputs
- Switchable input termination
- 12 isolated 75-ohm BNC Word or Super Word outputs
- Front panel control locking system
- Quiet, internal linear power supply
- Attractive and rugged 1RU package INPUTS

SAFETY INFORMATION

To reduce risk of electric shock, do not remove covers. There are no user-serviceable items inside. Please refer servicing to qualified personnel.

UNPACKING

Examine all shipping cartons for external damage and retain all damaged cartons for inspection by the carrier. Examine all equipment for any sign of damage. Do not connect AC mains power to a unit which appears to be damaged. Contact the carrier to file a damage claim.

INSTALLATION LOCATION

This equipment must be installed in a location meeting the environmental conditions specified below. Adequate cooling must be provided if units are to be operated in high temperature locations. Exposure to liquid and condensation must be avoided.

GROUNDING

This equipment is connected to earth through the center conductor of the AC mains cable. Proper grounding protects operators from electric shock, and it must be maintained whenever the unit is connected to AC.

ELECTROMAGNETIC COMPATIBILITY

This unit complies with electromagnetic requirements described in 89/336/EC and FCC Part 15. This unit does not generate undue electromagnetic interference, and is adequately protected against electromagnetic interference so that it can operate properly.

MAINTENANCE

This unit requires no maintenance other than periodic wiping with a soft dry cloth to remove any dust or contaminating substances. Do not use solvents for cleaning.

DECLARATIONS OF CONFORMITY

Class A Equipment – FCC Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules.

CE Declaration of Conformity

ATI Audio Inc., West Berlin, New Jersey 08091 USA, declares that all Model MCDA-112 units are in conformity with the following EU regulations and amendments:

Low Voltage (LVD) 73/23/EEC and 93/69/EEC

Electromagnetic Compatibility (EMC): 89/336/EEC and 92/31/EEC and 93/68/EEC

This equipment is also in conformity with the following standards and documents:

Safety: EN 60950:2001 (Class I Equipment)

Safety of laser products: EN 60825-1:1994 and A11 and A2, EN60825-2:2000

EMC: EN55103-1/-2:1996, electromagnetic environments E2 and E4.

West Berlin, NJ USA, 31 July 2009



President

AIR TEMPERATURE AND HUMIDITY

Normal operation of this unit is warranted under ambient conditions defined by EN 60721-3-3, set IE32, value 3K3. The most important conditions of this standard are ambient temperature +5 to +40°C, relative humidity 5% to 85% (with no ice or condensation), absolute humidity 1 to 25 g/m3 and rate of temperature change <0.5°C per minute. Care should be taken to avoid operation outside these limits or erratic operation may result.

DESCRIPTION

The ATI Model MCDA-112 can function as an ultra-low jitter studio master clock or as a 1X12 clock distribution amplifier. When used as a studio master clock, the MCDA can generate an exceptionally stable 44.1, 48, 88.2, 96, 176.4 or 192 kHz clock reference for the purpose of synchronizing all of your connected digital equipment. This single clock source assures a trouble-free digital workflow throughout your digital studio or facility. The output clock format can be either Word Clock or Super Word Clock, and this signal is available on all 12 of the MCDA's individually isolated outputs.

If you prefer to use another source for your reference clock, the MCDA-112 can function as a 1X12 clock distribution amplifier. It can accept an AES3 audio signal, an AES Word Clock, or a Super Word Clock as an input, and will output either Word Clock or Super Word Clock from its 12 BNC output connectors. Since the purity of the clock reference is critical to the quality of the finished audio product, ATI has taken steps to assure that the MCDA-112 generates the lowest jitter clock reference available. The MCDA-112's internal reference is derived from a 24 MHz precision oscillator and divided down to achieve an ultra-stable signal, rather than multiplying up from a base reference as in other units.

The MCDA-112 has both Input and Loop-thru outputs to allow downstream equipment to be fed from the input signal. When no downstream equipment is connected, the inputs should be terminated via the front panel Input Termination switch.

When fed from an external reference signal, the MCDA-112 will indicate the clock frequency of the input signal from 32 through 192 kHz.

A front panel lock switch protects all settings. The MCDA-112 retains all of its settings, even if power is removed.

INPUTS

Incoming AES/EBU formatted digital audio data, AES11, word clock or super word clock is applied to individual input transformers. Input termination resistors at 75 ohms for BNC inputs or 110 ohms for XLR inputs can be switched in or out of the circuit with the front panel Input Term switch. Inputs should always be terminated unless they are looped thru to another device or a second MCDA input. The last device or input should always terminate the line.

OUTPUTS

All outputs, numbered 1 through 12, are live at all times. Outputs contain either Word Clock or Super Word Clock and do not contain AES audio. (For AES audio Distribution Amplifiers, see our Models DDA-106BNC, DDA-106XLR, DDA-212BNC and DDA-212XLR.)

It is not necessary to terminate unused outputs, as each is individually isolated. Cable routing should be kept clear of AC lines and other noise-producing wiring, especially when working at Super Word clock rates.

FRONT PANEL DISPLAYS AND SWITCHES



POWER

Indicates that low voltage DC is applied to the input of the voltage regulators.

EXTERNAL CLOCK FORMAT SELECT

When using an external clock source as a reference, the MCDA-112 accommodates a variety of input formats, as listed:

- Word Clock—Input through the 75 ohm BNC Input connector on the rear of the unit.
- Super-Word Clock—Input through the BNC connector on the rear of the unit.
- AES3—A standard AES/EBU signal. Input through the XLR connector at the rear of the unit, the AES3 audio signal is removed and the source timing pulse is used for the reference.
- AES11—AES11 is an AES signal containing only sync information.

When using an external input, use the EXTERNAL CLOCK FORMAT button to select the format input to the unit.

The XLR input is 110 ohms, transformer balanced, and accepts a minimum level of 0.2 volt peak-to-peak. The BNC input is 75 ohms, unbalanced, and accepts a minimum of 0.1 volt peak-to-peak.

Both XLR and BNC inputs contain loop-through outputs for the purpose of looping the input signal to additional equipment. If the MCDA-112 is the last (or only) device to be fed by your external clock source, be sure to terminate the input using the front panel INPUT TERM button.

SAMPLE RATE

When Clock Source switch is set to Internal, selects internal generator sample rate. (Note that the MCDA does not generate 32 kHz sample rate.) When the Clock Source switch is set to External, indicates sample rate of the external input from 32 kHz through 192 kHz. Input sample rate is not indicated when working from Super Word clock.

OUTPUT CLOCK FORMAT

Indicates either Word Clock or Super Word Clock format present at all 12 outputs. Press the SELECT button to toggle the setting. Output clock format can be switched between Word Clock and Super-Word Clock. Word Clock is the precise AES signal, as indicated on the Sample Rate display. Super-Word Clock is a multiple of this frequency, used for compatibility with some other devices.

INPUT TERM

Indicates whether the input termination is Off or On. Press the INPUT TERM button to toggle the setting.

CLOCK SOURCE

When set to Internal, the MCDA-112 generates the clock reference and applies it to all outputs. When set to External, the MCDA-112 accepts an external clock or AES input and applies this reference to all outputs.

FRONT PANEL LOCK

The FRONT PANEL LOCK button is a feature on all Series 2 products. It is intended to reduce the possibility of inadvertent changes to front panel settings. When Front Panel Lock is enabled all front panel buttons are disabled, with the exception of the Front Panel Lock button itself. To enable Front Panel Lock, press and hold the Front Panel Lock button for three seconds. When the CLOCK SOURCE lamp stops flashing, the front panel controls are disabled. To re-enable the front panel buttons, press and hold the Front Panel Lock button for three seconds. When the CLOCK SOURCE lamp stops flashing, the front panel controls are reactivated.

REAR PANEL



ETHERNET PORT

The Ethernet Port on the rear panel is intended for future use and has no function at this time.

AC MAINS VOLTAGE

All Series 2 models can operate from either 110VAC or 220-240VAC. Voltage selection is set at the factory via jumpers on the main motherboard near the AC power connector. For 110VAC operation (factory default, unless unit is ordered for 220-240VAC), jumpers are placed between PAD 1 and PAD 2. For 220-240VAC operation, these jumpers are removed and a new jumper is installed between PAD 2 and PAD 3. Silkscreen legends on the motherboard identify these jumpers.

POWER SUPPLY

Power transformer primary windings are paralleled for 115VAC or wired in series for 230VAC. Internal jumpers allow field modification if necessary. See below for voltage conversion instructions.

INSTALLATION

LOCATION

To avoid addition of jitter (timing variations) to the output clock signals, which could cause noise and distortion or loss of synchronization in the recovered audio, avoid locating the MCDA-112 in close proximity to a high energy, high frequency switching type power supply or a power amplifier that utilizes a switching supply. If possible, do not power both devices from the same AC power line.

Expensive components start to die at internal temperatures above 70°C (158°F). We recommend that you maintain rack temperatures below 50°C (122°F) to prevent excessive internal temperature buildup.

POWER

If it is necessary to convert a unit wired for 115VAC to 230VAC operation, unplug the unit from the power source, remove the cover mounting screws and locate the jumpers next to the power transformer. Clip the jumpers 1-2 and 3-4 (don't unsolder), jumper from 2-3 carefully soldering together the free ends of 2-3 previously clipped. This procedure is recommended to avoid soldering damage to the multi-layer PC board.

WIRING

XLR inputs for external clock sources require special controlled impedance, 110 ohm, low loss, foil shielded, twisted pair cables. Standard audio cable is not recommended except for runs of only a few feet. Belden and most other cable manufacturers offer special digital audio cabling for this application. BNC connectors use 75-ohm coax (RG59). Select a cable for losses less than 20dB at 12MHz (for data rates up to 96kHz) at the maximum distance you require. Keep cable length as short as possible, especially when working with Super Word clock rates.

MCDA-112 SPECIFICATIONS

INPUTS

CONNECTORS

XLR female for AES3, BNC for Word Clock and Super-Word Clock

LEVEL

XLR 0.2Vp-p minimum; BNC 0.1Vp-p minimum

IMPEDANCE

Transformer isolated, balanced and floating, XLR 110 ohms, BNC 75 ohms; input terminations may be switched in or out via front panel control

CLOCK

Filtered and reconstructed from external input signal with dual mode PLL

SYNC FREQUENCY

22 to 216kHz

OUTPUTS

SYNC OUT CONNECTORS

12 x BNC

LEVEL

5 V TTL unloaded

IMPEDANCE

75 ohms, unbalanced

LOOP-THRU

XLR-M and BNC

INDICATORS

EXTERNAL CLOCK FORMAT

AES, Word Clock or Super-Word Clock

SAMPLE RATE

32, 44.1, 48, 88.2, 96, 176.4 or 192 kHz

OUTPUT CLOCK FORMAT

Word Clock or Super-Word Clock

INPUT TERMINATION

Terminated or Off

CLOCK SOURCE

Internal or External

POWER

Internal Supply, 115/230VAC $\pm 10\%$, 50/60Hz, 10VA, IEC320 3 pin connector

SIZE

1 RU Package, 19" (48.3cm) W x 1.75" (4.5cm) H x 8.5" (21.6cm) D

WEIGHT

7 pounds (3.2 kg) net; 9 pounds (4.1 kg) shipping weight

WARRANTY

Limited, One Year Warranty

One Year Limited Warranty

DaySequerra warrants ATI products to be free from defects in materials and workmanship to its original owner for one (1) year from the date of purchase. DaySequerra will repair or replace such product or part thereof that upon inspection by DaySequerra, is found to be defective in materials or workmanship subject to conditions contained herein.

ATI products are sold worldwide, through a network of authorized ATI dealers and distributors. This Warranty is for the sole benefit of the original purchaser of an ATI product, purchased directly from an authorized ATI dealer or distributor, is restricted to such original purchaser, and shall not be transferred to a subsequent purchaser of the product. Proof of purchase in the form of a bill of sale or receipted invoice substantiating that the product was purchased directly from an authorized ATI dealer or distributor and is within the warranty period must be presented to obtain warranty service. Removal or alteration of the original ATI serial number from a product automatically renders that product warranty null and void.

A Return Authorization Number must be obtained from DaySequerra in advance of return. Parts or product for which replacement is made shall become the property of DaySequerra. The customer shall be responsible for all costs of transportation and insurance to and from the DaySequerra factory, and all such costs will be prepaid.

DaySequerra shall use reasonable efforts to repair or replace any product covered by this limited warranty within thirty days of receipt. In the event repair or replacement shall require more than thirty days, DaySequerra shall notify the customer accordingly. DaySequerra reserves the right to replace any product that has been discontinued from its product line with a new product of comparable value and function.

This warranty shall be void in the event a covered product has been damaged, or failure is caused by or attributable to acts of God, abuse, accident, misuse, improper or abnormal usage, failure to follow instructions, improper installation or maintenance, alteration, or lightning, power fluctuations and other incidental or environmental conditions. Further, product malfunction or deterioration due to normal wear is not covered by this warranty.

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