



Antelope 10MX Rubidium Atomic Master Clock User Manual

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User Manual



10MX Rubidium Atomic Master Clock

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BEFORE YOU BEGIN



Thank you for purchasing the 10MX Rubidium Atomic Clock from Antelope Audio! 10MX is the premier member of the Isochrone product line. It offers the most stable clocking reference available for audio professionals and is perfectly suited for mastering, mixing, post-production, live sound, and film-scoring applications. 10MX employs the latest advancements of Antelope Audio's industry-leading Atomic and Acoustically Focused Clocking (AFCTM) Technologies to maintain the digital audio system stability and preserve the highest level of sonic integrity.

The Antelope Audio 10MX multiple atomic outputs allow up to 10 devices to be clocked simultaneously over BNC Outputs of 10MHz. The unit can also be used as a master clock with 4 outputs up to 768 kHz via BNC, 2 via AES, and 2 via S/PDIF. The intuitive software control panel enables flawless management, connecting via a USB port. This complete world-class solution is conveniently housed in an elegant 1U chassis. Should you ever find yourself struggling, do not hesitate to contact our [Customer Support](#) team over the phone, live chat, and our ticket system. You can also visit [Antelope Audio on YouTube](#) and explore our video tutorials or join the [Antelope Audio](#) Users Facebook group and ask for advice. The [Knowledge Base](#) is also a good source of information.

Enjoy working with 10MX!

Best wishes,

Team Antelope

MANDATORY ONLINE ACTIVATION

Please note that the mandatory device activation procedure requires an active Internet connection on your computer. Activating an Antelope device offline is not possible.

Step 1: Install the 10MX Launcher/Control Panel (macOS & Win) Download and install the 10MX Launcher/Control Panel application for Windows or macOS from [here](#).

Open and install the Launcher/Control Panel by following the steps in the installation wizard.



Step 2: Activate your 10MX

Once the installation is completed, start the application. You will be prompted to create an Antelope ID directly from the application. Fill out the necessary information and click Continue. If you already have an active Antelope ID, click on Use existing Antelope ID.

Bear in mind, that your Antelope ID is different and has no relation to your user profile on www.antelopeaudio.com.

Sign in using your credentials. If you have just created your Antelope ID, do not forget to activate it using the link in the e-mail you have just received.

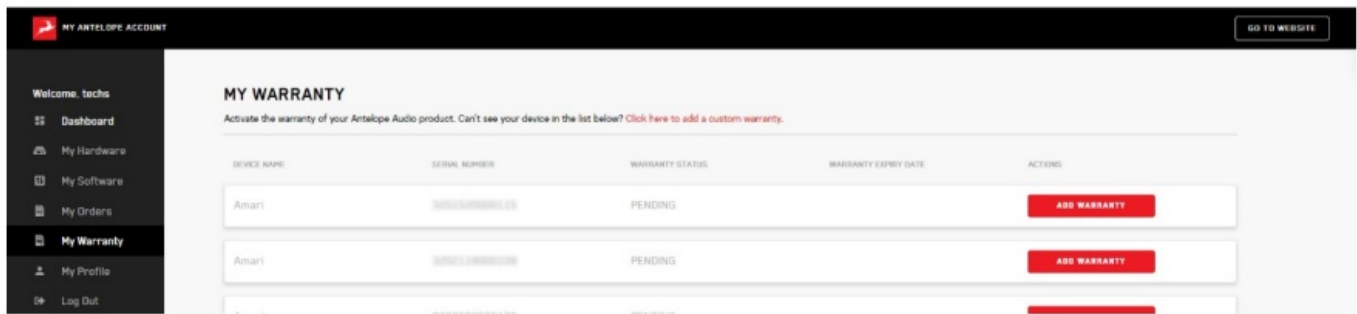
After successfully signing in to your Antelope ID, you will be asked to fill in additional information concerning your recent purchase.

Once you have filled in the required information, click Done. You can now begin using your 10MX.

ACTIVATE YOUR PRODUCT WARRANTY

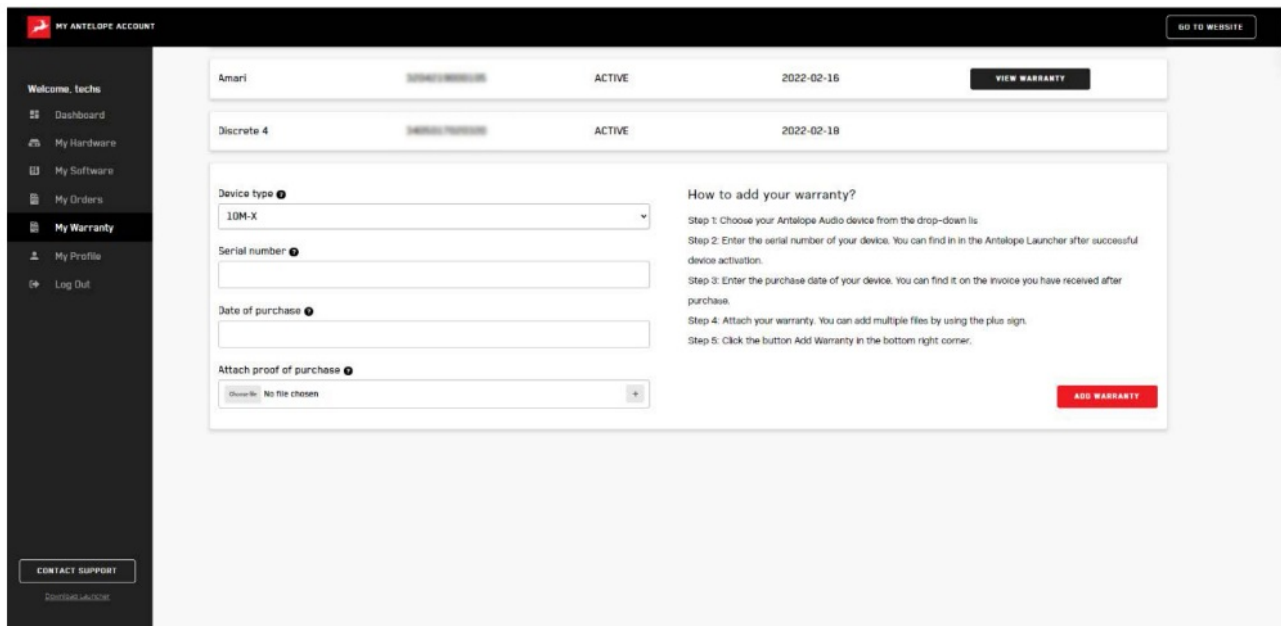
You will be required to activate your product warranty from the My Warranty tab in My Antelope Account. To

activate your product, click on the text that sends you to the page where you can add a custom warranty.



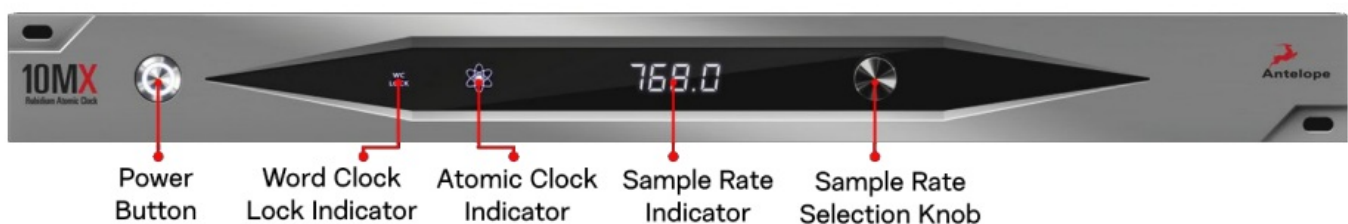
On the following screen, you will be asked to enter information about your new device and to attach your warranty. Select your device from the list under Device type and add a serial number. You can find it on the back side of your device's rack ears. After entering the serial number enter the date of purchase.

The last step is to attach your warranty. You can add multiple files (up to five) by using the plus sign. Acceptable formats are .pdf, .jpg, .png, .jpeg, .heif, and the size limit is 7 MB per file. Once you have completed the steps click Add Warranty.



After successfully completing the process, you can click on View Warranty to see if your file has been uploaded correctly.

FRONT PANEL EXPLAINED



Power Button

Toggles standby/operation state. When the device is powered on an illuminated ring will glow around the power button.

Word Clock Lock Indicator

Indicates if the 10MX is locked to an external source.

Atomic Clock Indicator

This indicates that the Atomic Module is engaged and warmed up. When the device is powered on, this icon will pulsate during the warm-up state as the Rubidium Oscillator is heating up.

When the device is fully warmed, the LED will glow steadily.

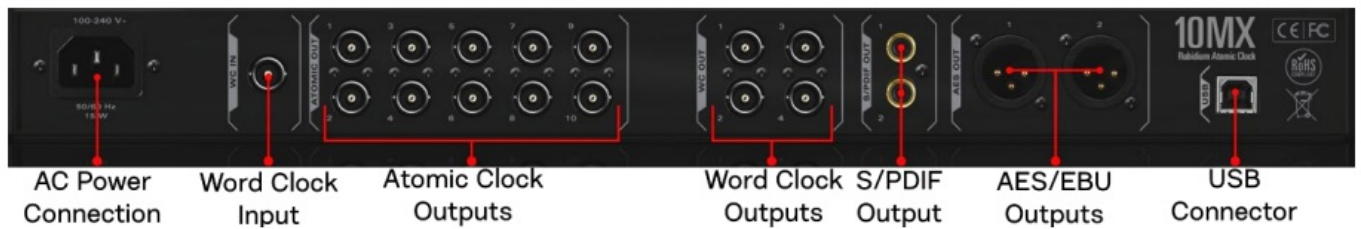
Sample Rate Indicator

Indicates the current sample rate of the master clock. When using DA mode, the indicator blinks if no source is present.

Sample Rate Selection Knob

Use to cycle through the available sample rates. Press to select the sample rate of your choice. Press and hold to enter/exit DA mode.

REAR PANEL EXPLAINED



AC Power Connection

The IEC connection supports inputs of 100 – 240 V~. This lets the device automatically accommodate mains voltages in any country.

Word Clock Input

BNC Connector used to accept World Clock references.

Atomic Clock Outputs

BNC Outlets for the 10MHz Atomic Clock signal. For best results, cables should not exceed 6 meters (20 feet) in length. Longer cables will work but may result in increased jitter and clock errors.

WC Outputs

Word Clock outputs. The sample rate of these outputs always matches the sample rate shown on the front panel frequency display.

S/PDIF Output

These outputs provide S/PDIF clocking reference up to 192 kHz.

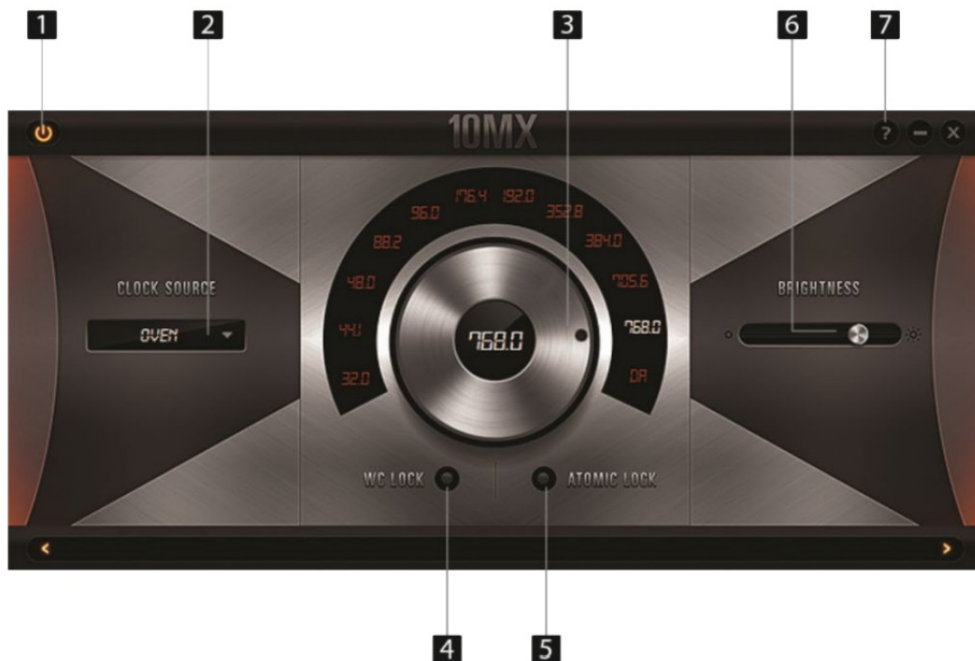
AES/EBU Outputs

These outputs provide AES/EBU clocking reference up to 192kHz.

USB Connector

Allows connection to PC and MAC for Control Panel control and firmware updates. The PC/ Mac control panel application can be found [here](#).

CONTROL PANEL



The PC/Mac Control Panel application acts as a remote control and firmware updater for 10MX. It offers the following functionality:

1. Power Button
Toggle the unit on or off.
2. Clock Source Selector
Choose the clock source. 'Oven' is the internal clock. 10MX can also receive timing references over S/PDIF, AES/EBU, and Word Clock connections.
3. Sample Rate Selector
Choose the device sample rate.
4. Word Clock Lock Indicator
Indicates if the 10MX is locked to an external source.
5. Atomic Clock Indicator
This indicates that the Atomic Module is engaged and warmed up. When the device is powered on, this icon will pulsate during the warm-up state as the Rubidium Oscillator is heating up. When the device is fully warmed, the LED will glow steadily.
6. Screen Brightness Slider
Adjust the unit's screen brightness.
7. Help Button
Displays Control Panel version, hardware version, device serial number, and firmware version. You can also launch the Firmware Update wizard to check for and initiate firmware updates.

CUSTOMER SUPPORT INFORMATION

Antelope Audio Customer Support can be reached by the following means:

Online

Visit support.antelopeaudio.com

Phone

We are there for you around the clock, 21 hours/day, Monday to Friday.

North America +1-916-238-1643 01:00 a.m. – 10:00 p.m. (EST)

International +44 19 2593 3423 06:00 a.m. – 03:00 a.m. (GMT)

Pour le Support francophone: +44 20 3389 8108 09:00 a.m. – 17:30 p.m. (GMT+1)

Live Chat

Live Chat is available during the following hours Monday to Friday

International 06:00 a.m. – 06:00 p.m. (GMT)

Note: If you're trying to reach us outside working hours, we advise you to file a ticket in our customer support system or leave a voice message.

Additional Resources

- The [Antelope Audio YouTube channel](#) is home to various tutorial videos and endorser content that you may find helpful and inspiring.
- The [Antelope Audio Users Facebook group](#) lets you interact with fellow users and some of our employees. Note, however, that it is not meant to be a support group. Please contact our customer support team for such inquiries.
- The [Knowledge Base](#) in our Customer Support section is an often overlooked source of troubleshooting information, answers to commonly asked questions, and Antelope's know-how.

MY ANTELOPE AUDIO PRODUCT ISN'T WORKING.

WHAT SHOULD I DO?

If you can't find a solution on your own, please get in touch with us so we check if you are having a hardware-related issue. If this is the case, we'll guide you through the repair process. If the product should be returned, an RMA number will be issued so we can begin the procedure.

What's an RMA number?

Issuing an RMA (Return Merchandise Authorization) number is required for any factory service or repair procedure. Please, don't attempt to send us your device without receiving an RMA number first, as the device will be returned and not serviced.

How do I get an RMA number?

The Antelope Audio Customer Support team is in charge of issuing RMA numbers. Visit support.antelopeaudio.com and get in touch.

After your RMA has been issued, you will receive an email with instructions on how to proceed.

RMA shipping information

Alongside the product, you are returning please, include a letter containing your full name, shipping address, RMA number issued by our technical support team, and a note with short information about the technical issue.

Please use the original box if possible, because a worn-out one will surely not protect your product sufficiently on its way to the Antelope Audio HQ. Additional cushioning materials in multiple layers between the unit and the box walls to prevent shock, vibration, and various tears and scratches.

Please remove any labels or old shipment markings it may have and ensure you add your shipping address inside the box in case the original shipment label becomes illegible during transportation.

The shipping costs are covered by the owner of the product. Antelope Audio will not cover any local customs charges.

We recommend using a courier service of your choice (e.g. DHL, UPS, FedEx). The package should be insured for its real value, marked as fragile and a tracking number should be provided. We do not recommend using standard mail delivery services.

Please, don't forget to add the RMA number, issued by Antelope Audio technical support, on all shipping paperwork.

Antelope Audio cannot be held responsible for undelivered packages – lost or damaged on the way to the Antelope Audio HQ. For damage claims, please contact your shipping service provider of choice.

Antelope Audio cannot cover any repair costs for product damages due to poor packaging.

LIMITED WARRANTY POLICY

This is a non-transferable voluntary Limited Product Warranty provided to end-customers who have purchased Antelope Audio-branded hardware product (hereinafter referred to as "Product") from an authorized Antelope Audio re-seller.

For customers covered by consumer protection laws or regulations in their country of purchase or, if different, their country of residence, the benefits conferred by Antelope Audio's Limited Warranty are in addition to, and not instead of, rights and remedies conveyed by such consumer protection laws and regulations and it does not exclude, limit or suspend buyer's rights arising from consumer law. Consumers have the right to choose whether to claim service under the Antelope Audio Limited Warranty or under their consumer law rights.

All claims made under the Antelope Audio Limited Warranty will be governed by the terms set out in this warranty document.

Warranty Coverage

Antelope Audio warrants that the Product will be free from defects in material and workmanship for the period of 1 (one) year commencing on the date of purchase of the Product by the end-customer from the authorized Antelope Audio's re-seller.

Except where explicitly prohibited by applicable local law, this warranty is limited to the original purchaser and is non-transferable. This warranty provides you with specific legal rights and you may have additional rights that vary under local laws.

In general, this warranty means your Antelope Audio hardware product will operate in accordance with published technical specifications, as specified by its datasheet, and in the operating environment for which it was intended for the length of the warranty period. This version of the warranty applies to products purchased on or after January 1, 2018. For prior versions of the Antelope Audio limited warranty, please contact customer service.

Limited Factory Refurbished (B-stock) Warranty

Antelope Audio warrants products sold as "B-stock, Factory Refurbished or Open Box" to be free from defects in materials (unless otherwise stated in the product description) and workmanship. Only products purchased from an authorized dealer or directly from Antelope Audio are covered by this Warranty.

The Limited Factory Refurbished (B-stock) Warranty is valid for the period of 6 (six) months, commencing on the date of purchase of the Product if local regulations do not require otherwise.

All warranty terms contained hereunder apply also to the B-stock Warranty unless otherwise specified.

Remedies

Antelope Audio's entire liability and your exclusive remedy for any Antelope Audio Product that is not operating in accordance with its published technical specifications is at Antelope Audio's discretion:

1. to repair the Product at Antelope Audio's expense using new or equivalent-to new refurbished parts in good working condition; or
2. to replace the Product at Antelope Audio's expense with a product with equivalent functionality formed from new and/or equivalent-to new refurbished parts in good working condition, or
3. to refund the price paid. Should Antelope Audio decide to refund the price paid, it may deduct from the paid Product's price any damages caused to the Product; where, within fourteen (14) days of the expiration of the warranty period, (i) Antelope Audio has received written notice of any nonconformity; (ii) after Antelope Audio's written authorization, customer has returned the nonconforming product to the designated place; and (iii) Antelope Audio has determined that the Product is nonconforming and that such nonconformity is not the result of any of the exclusions designated below.

These warranty obligations are conditioned upon the hardware being returned to the original place of purchase, or another place as directed by Antelope Audio, with the original sales receipt attached. You will be required to pay shipping and handling charges for returning the product. You may be required to pay any other applicable tariffs, duties, taxes, or other fees with regard to returning the products.

Any repaired or replacement Product will be warranted for the remainder of the original warranty period.

Obsolete or Discontinued Products

An obsolete or discontinued product will be repaired or replaced with the same product if available. If Antelope Audio is unable to replace your obsolete or discontinued product with the same product, Antelope Audio will replace the obsolete or discontinued product, in its sole discretion, with a product having similar function and capacity.

Obsolete or Discontinued Products

An obsolete or discontinued product will be repaired or replaced with the same product if available. If Antelope Audio is unable to replace your obsolete or discontinued product with the same product, Antelope Audio will replace the obsolete or discontinued product, in its sole discretion, with a product having similar function and capacity.

The warranty does not apply to any Products which have been subject to misuse, neglect, accident or modification or which have been soldered or altered such that they are not capable of being tested under normal test conditions.

This warranty does not cover (i) any counterfeit products, i.e. Products that Antelope Audio, at its sole discretion, determines were not manufactured by Antelope Audio or any of its authorized manufacturing partners; (ii) Products purchased from a person or entity which is not an authorized dealer or re-seller of Antelope Audio; (iii) Products sold "as is" or "with all faults", to the extent permitted by local law.

This warranty is not valid in case any manufacturer label(s), serial numbers, date stamp(s), or warranty sticker(s) has been altered or removed from the Product.

Limitation of Liability

ANTELOPE AUDIO SHALL NOT BE LIABLE FOR ANY SPECIAL, INCIDENTAL, INDIRECT, OR CONSEQUENTIAL DAMAGES WHATSOEVER, INCLUDING BUT NOT LIMITED TO LOSS OF PROFITS, REVENUE, OR DATA (WHETHER DIRECT OR INDIRECT) OR COMMERCIAL LOSS FOR BREACH OF ANY EXPRESS OR IMPLIED WARRANTY ON YOUR PRODUCT EVEN IF Antelope Audio HAS BEEN ADVISED PREVIOUSLY OF THE POSSIBILITY OF SUCH DAMAGES. Some local laws do not allow the exclusion or limitation of special, indirect, incidental or consequential damages, so this limitation or exclusion may not apply in your jurisdiction.

ANTELOPE AUDIO WILL NOT ASSUME OR AUTHORIZE ANY OTHER PERSON TO ASSUME FOR IT ANY OTHER LIABILITY IN CONNECTION WITH ITS PRODUCTS.

Data Recovery

In the event of data loss using Antelope Audio storage devices, Antelope Audio is not responsible for backing up or recovering any data that you may have lost.

No Other Warranties

No Antelope Audio employee, dealer, re-seller, or other agent is authorized to make any modification, extension, or addition to this warranty.

How to Make a Warranty Claim

Valid warranty claims should be processed through your point of purchase. Please also verify the return policy directly with the retailer where you purchased your product. Any warranty claims that cannot reprocess through your original point of purchase should be addressed directly to Antelope Audio. Our customer service contact information can be found on the web or in the documentation included with your Product.

Returning Your Product

In the event that you need to return your Antelope Audio products for repair or replacement, Antelope Audio will provide you with a Return Merchandise Authorization Number (RMA#) as well as return instructions. Do not return your product without prior approval from Antelope Audio. Any product returned without a valid unique RMA# will be refused and returned to the sender at the sender's expense. To avoid problems at the time of receipt, clearly write your RMA# on the outside of the package and include a copy of your RMA confirmation mail within the package.

In certain situations, for in-warranty units, we may (entirely in our opinion) offer you a temporary replacement unit, provided that we have much in stock in your state. To request a temporary replacement unit, a valid credit card must be provided to secure the new replacement unit for shipping prior to Antelope Audio receiving the defective

one.

Request a Return Material Authorization Number (RMA#)

Please follow these steps to obtain an RMA number:

(i) For end-user customers, submit a claim online at: support.antelopeaudio.com. For business-to-business (B2B) / Direct customers of Antelope Audio please email us at techsupport@antelopeaudio.com

(ii) A valid proof of purchase is required for RMA processing (i.e. receipt, invoice, etc). Antelope Audio will provide you with the RMA number within 2 working days as of the claim submission date.

RMA Return Addresses

We have multiple RMA receiving locations worldwide. Your RMA confirmation will specify the specific return address you must use when sending your RMA package. Any packages received at an unauthorized location may be refused and returned to the sender at the sender's expense.

Products Lost or Damaged During Transit

The original packaging material should be used to pack the product for return; if the original packaging is not available, you should use such materials that provide the same or greater protection to the product. All packages that arrive with any external damage or appear inadequately packed will be refused and returned to the sender at the sender's expense. We are not responsible for damage incurred during shipping to our RMA receiving locations or for lost or stolen products.

Company information

Antelope Audio is the trade name, under which the company Elektrosfera Ltd., registered under the legislation of the Republic of Bulgaria with UIN: 131052590, is doing business and is worldwide known. Elsewhere in this document where the trade name Antelope Audio is used shall refer to Elektrosfera Ltd., with the address of management: Tsarigradsko Shose Blvd., 7th km, Building of BIC IZOT, floor 6, Mladost region, Sofia, Bulgaria.

If any term hereunder is held to be illegal or unenforceable, it shall be severed from this warranty and the legality or enforceability of the remaining terms shall not be affected.

SAFETY NOTES

To reduce the risk of electrical shocks, fire, and related hazards:

- Do not remove screws, cover, or cabinet. There are no user-serviceable parts inside. Refer servicing to qualified service personnel.
- Do not expose this device to rain, moisture or spillover of liquid of any kind.
- Should any form of liquid or a foreign object enter the device, do not use it. Switch off the device and then unplug it from the power source. Do not operate the device again until the foreign object is removed, or the liquid has completely dried and its residues are fully cleaned up.
- Do not handle the power cables with wet hands!
- Make sure the device is switched off when plugging/unplugging it to/from the power source.
- Avoid placing things on the cabinet or using the device in a narrow and poorly ventilated place which could affect its operation or the operation of other closely located components.
- If anything goes wrong, turn off the device first and then unplug the power. Do not attempt to repair the device yourself. Consult authorized service personnel or your dealer instead.
- Do not install near any heat sources such as radiators, stoves, or other apparatus (including amplifiers) that produce heat.
- Do not use harsh chemicals to clean your unit. Clean only with specialized cleaners for electronic equipment.
- Connect all your devices before powering your unit.

- This unit is connected via its power cord to the main safety earth.
- Never operate the unit without this earth connection.
- DC power supply cable should be routed so that it is not likely to be walked on or squeezed by items placed upon or against it.
- To completely turn off the device, unplug the power cable first from the outlet and then from the rear panel of the unit.
- Both occasional and continued exposure to high sound pressure levels can cause permanent ear damage via headphones and monitors.
- Your unit should always be un-racked when traveling or in a flight case.
- The device is designed to operate in a temperate environment, with a correct Operating Temperature of 0-50° C, 32-122° F.

TECHNICAL SPECIFICATIONS

Phase Noise (SSB)

1Hz \leq -70 dBc/Hz

10Hz \leq -87 dBc/Hz

100Hz \leq -114 dBc/Hz

1kHz \leq -130 dBc/Hz

10kHz \leq -140 dBc/Hz

Short-Term Stability

t=1s \leq 3E-11

t=10s \leq 1.6E-11

t=100s \leq 8E-12

Time drift in a 24-hr period:

Warm-Up Time

8 – 10 minutes (depends on ambient temperature)

Word Clock Input

1 x Word Clock Input @ 75 Ohms 3Vpp on BNC 44.1 – 384kHz

Maximum shock

withstanding

Non-operating, flight case mounted:

100m/s² (~10.2 g*), 11 msec half-sine pulse per IEC 60068-2-27:2008

Non-operating, in original packing:

300m/s² (~30.6 g*), 5 msec half-sine pulse per IEC 60068-2-27:2008

* g – gravitational acceleration

Outputs

Word Clock: 4 x BNC

AES/EBU: 2 x XLR

S/PDIF: 2 x RCA

Word Clock Outputs

4 x Word Clock Outputs @ 75 Ohms 3Vpp on BNC 44.1 – 768 kHz square wave signal

USB I/O

USB 2.0 Hi-Speed; Data stream up to 480Mbps/384kHz, Type B

Clocking System

4th Generation Acoustically Focused Clocking

64-bit DDS

Oven-Controlled Crystal Oscillator

Clock Stability

<+/-0.0 2 PPM, oven-controlled at 64.5 °C

Atomic Reference Type


Rubidium Ultra-Stable Resonance-Controlled Master Oscillator

Frequency

10 MHz

Frequency Accuracy
 Better than $\pm 5 \times 10^{-11}$ @25°C (± 0.05 PPB)
 Aging
 Daily* $\pm 2.5 \times 10^{-11}$
 Monthly* $\pm 1 \times 10^{-10}$
 Yearly $\pm 1 \times 10^{-9}$
 (*After 1 day & 1 month of operation respectively)
 Atomic Clock Outputs
 10 x BNC Sinusoidal, 10MHz, 75 Ohm, 1Vpp typical (unload)
 Sample Rates (kHz)
 32, 44.1, 48, 88.2, 96, 176.4, 192, 352.8, 384, 768
 Word Clock Specs
 TTL Level, 75 Ohm Output Impedance
 USB
 USB 2.0 Full-Speed, Type B, only for control
 Operating Temperature
 0-50°C, 32-122°F
 Weight
 2.8 kg/6.17 lb
 Dimensions
 482.6 (W) x 228 (D) x 44 (H) mm
 19 (W) x 9 (D) x 1.73 (H) inch
 Power Supply
 AC
 Power Consumption
 15 W
 Humidity
 30 – 80% RH non-condensing
 Power Supply Input
 10MX User Manual
 100 – 240 V~
 System Requirements
 Windows
 OS: Windows 7/8/8.1/10
 Disk Space: Minimum 512 MB available disk space
 USB: 1x USB 2.0 Port
 Required USB bandwidth (for firmware update): 80%-90%
 CPU: Intel or AMD equivalent CPU with at least 2GHz operating frequency
 Memory (RAM): 4GB Minimum (8GB or more Recommended)
 MAC
 OS X: 10.9/10.10/10.11/10.12 (Sierra Recommended)
 Disk Space: Minimum 512 MB available disk space
 USB: 1x USB 2.0/3.0 Port
 Required USB bandwidth: 80%-90%
 Memory(RAM): 4GB Minimum (8GB or more recommended)
 CPU: Intel Core 2 Duo (Minimum) Intel Core i3™ or higher (Recommended)
 Additional Info: Internet connection required for product activation.

Documents / Resources

	<p> Antelope 10MX Rubidium Atomic Master Clock [pdf] User Manual 10MX, Rubidium Atomic Master Clock, 10MX Rubidium Atomic Master Clock, Atomic Master Clock, Master Clock, Clock </p>
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