



10MX

Rubidium Atomic Clock

USER MANUAL



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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 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 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,

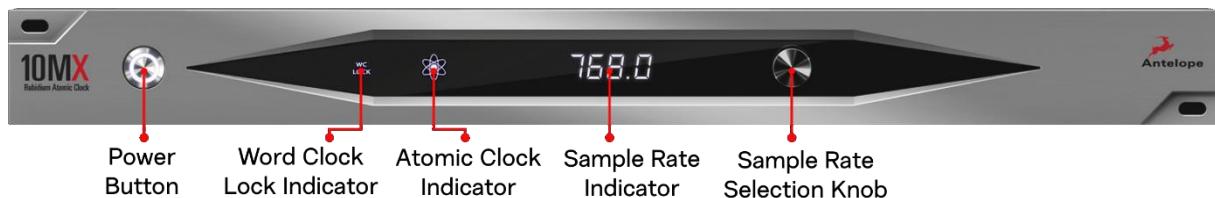
Team Antelope



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.

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

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

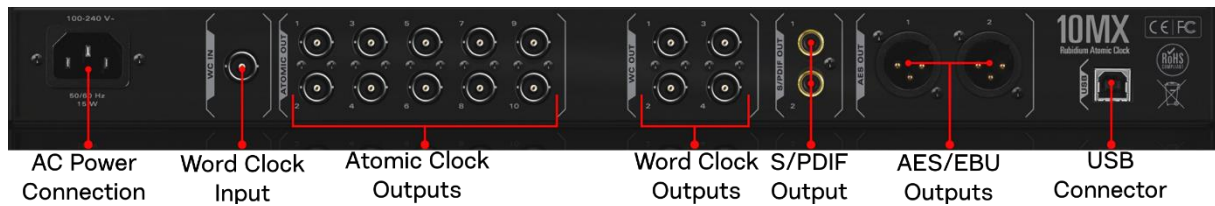
Indicates the current sample rate of the master clock. When using DA mode, the indicator blinks if no source is present.

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 reference.

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

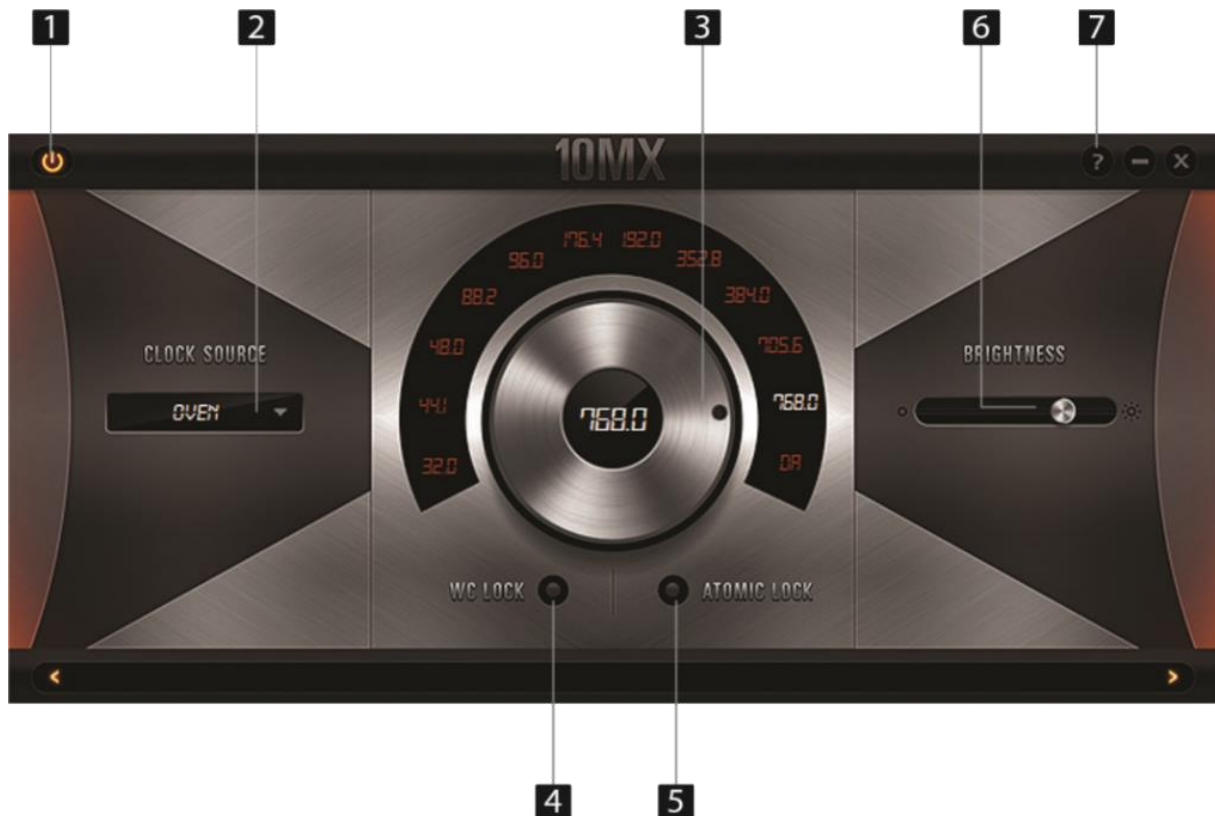
These outputs provide AES/EBU clocking reference up to 192kHz.

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 reference 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

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

US time: 12AM (midnight) – 8PM (CST), Monday – Friday

US Phone Number: [\(916\) 238-1643](tel:+19162381643)

European time: 6AM – 2AM (GMT), Monday – Friday.

UK Phone Number: [+44 1925933423](tel:+441925933423)

Live Chat

US time: 12AM (midnight) – 2PM (CST), Monday – Friday

European time: 6AM – 8PM (GMT), Monday – Friday.

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 which 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 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, a RMA number will be issued so we can begin the procedure.

What's an RMA number?

Issuing a 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 a 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 a 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 from 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 the 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 convened 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 Product by end-customer from 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 data-sheet, 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 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 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 non conformity 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.

Exclusions

This warranty does not cover problems or damage resulting from, but not limited to, any of the following: (i)Wear and tear associated with normal use; (ii)Any modification, abuse, accident, disassembly, misapplication, misuse, negligence, acts of God, accident; (iii)Unauthorized repair or attempted repair by anyone other than Antelope Audio or someone authorized by Antelope Audio to do warranty work; any unauthorized repairs will void this warranty(iv)Any improper operation, maintenance or installation, including any use not in accordance with any supplied product instructions; (v)Connection to any improper voltage supply; (vi)Use of consumables or spare parts not supplied by Antelope Audio, except where such restriction is prohibited by applicable local law; (vii)Any other cause which does not relate to a Product defect in materials or workmanship.

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) Product 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 be reprocessed 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 at our opinion) offer you a temporary replacement unit, provided that we have such on 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 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 enforce ability 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 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 electronics equipment.
- Connect all your devices before powering your unit.
- This unit is connected via its power cord to the mains 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 ≤ -70 dBc/Hz
10Hz ≤ -87 dBc/Hz
100Hz ≤ -114 dBc/Hz
1kHz ≤ -130 dBc/Hz
10kHz ≤ -140 dBc/Hz

✓ ✓ Short-Term Stability

t=1s ≤ 3E-11
t=10s ≤ 1.6E-11
t=100s ≤ 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 ±5E-11 @25C (±0.05 PPB)

✓ ✓ Aging

Daily* ±2.5E-11
Monthly* ±1E-10
Yearly ±1E-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

100 – 240 V~