



# NADAC C

ULTRA LOW NOISE AUDIO CLOCK

## USER MANUAL

MASTER FIDELITY

[www.master-fidelity.com](http://www.master-fidelity.com)

First of all, thank you for choosing

**NADAC C**

**ULTRA LOW NOISE AUDIO CLOCK !**

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## 1. Important Safety and Installation Instruction

## 1.1 Important Instructions to Prevent Possible Fire, Electric Shock and Other Personal Injury


**WARNING** – The following are basic precautions that should be followed when using electrical products. Please read the following information very carefully before attempting any installation and use. Failure to follow instructions strictly may result in damage to the unit, resulting in fire, electric shock, or personal injury.

- 1) Read all of the safety instructions thoroughly. Read the installation instructions and understand the explanations of all graphic symbols used in the manual and on the unit before using this unit.
- 2) This unit is not equipped with a power supply cord. The user should use a power supply cord with a grounding connection according to the latest standards of the country or region of use in accordance with all local codes and ordinances. This unit must be grounded properly, otherwise it could malfunction, breakdown or cause electrical shock. This unit should be grounded using a power cord with the smallest ground resistance, proper current rating and shortest length to reduce the risk of electric shock or malfunction.


**DANGER** – This warning cannot be overstated: Improper connection of this unit-grounding can result in the risk of an electric shock. Do NOT use power cords that are inconsistent with local power outlet standards for a grounded 3 prong power cord with 2 blades and 1 earth ground. Also do not use an adapter that defeats the function of the equipment-grounding conductor (earth ground). If you are in doubt as to whether this unit is properly grounded, check with a qualified serviceman or electrician prior to use.

**THE DEVICE MUST BE GROUNDED** – Do not remove any protective grounding or shielding connections of signal cables to avoid ground loops. Any such removal or disconnection is not advised by MASTER FIDELITY and will result in the invalidation of electromagnetic compatibility certification, safety certification, and warranty terms.



- 3) Do not use this unit in a damp environment or close to any exposed water sources.
- 4) Care should be taken so that objects do not fall on this unit and liquids are not spilled into any opening on the enclosure. Liquids spilled on this unit or inside this unit could result in electrical shock, malfunction or unit breakdown.
- 5) This unit installation height should be within 2 meters from the ground.



**CAUTION**  
**RISK OF ELECTRIC SHOCK**  
**DO NOT OPEN**



**CAUTION:**  
**TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.**

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

**WARNING:**  
**TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.**

- 6) Whether this unit is installed in a rack or placed in another location, the user shall provide good ventilation with adequate heat dissipation.
- 7) This unit should be located away from heat sources such as radiators, heat registers, or other equipment that produces direct or indirect heat.
- 8) This unit should be serviced by qualified service personnel when:
  - A) The power supply cord or plug has been damaged.
  - B) Objects have fallen on this unit, or liquid has spilled into this unit.
  - C) This unit has been exposed to rain.
  - D) This unit does not appear to be operating normally or exhibits a marked change in performance.
  - E) This unit has been dropped, or the enclosure damaged.
- 9) The power-supply cord(s) of this unit should be unplugged from the AC outlet when this unit is expected to be left unused for long periods of time.

When unplugging the power cord(s), do not pull on the cord(s), but grasp them by the plug. Protect the power cord(s) from being walked upon or pinched- particularly at plugs interfaces at the AC receptacles and the point where they attach to this unit.
- 10) **WARNING** - Do not place objects on the power supply cord(s), or place this unit in a position where anyone could trip over, walk on, or roll anything over cord(s). Do not allow this unit to rest on or be installed over cord(s) of any type. Improper installations of this type create the possibility of a fire hazard and/or personal injury.
- 11) Do not attempt to service this unit beyond that described in the user maintenance instructions. All servicing should be referred to qualified professional service technical.

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**Under no circumstances** will MASTER FIDELITY, its owners, directors, officers, employees or agents be liable to the user or any persons near the equipment in use, for any consequential, incidental, indirect or direct loss or damages including loss of time, loss of business, loss of profits, loss of data or other resulting loss from the use of or inability to use any MASTER FIDELITY products.

## 1.2 Static Electricity Danger Notice

Please be aware that this device contains fragile electronic components which may be damaged or even completely destroyed by static electricity. It is imperative to take all necessary precautions to avoid discharging static electricity when touching any connectors on this device.

## 1.3 Product Safety Compliance

This unit has been tested and verified to comply with the following safety regulations:

1) European Union (CE): **Verification of LVD Compliance**

**Applicable standard:** EN 62368-1:2014/A11:2017 Audio/video, information and communication technology equipment - Safety requirements - Part 1: Safety requirements (IEC 62368-1:2014, modified).

2) Japan (PSE): **Verification of Safety**

**Applicable standard:** IEC 62368-1:2014; J62368-1 (H30).

## 1.4 Product EMC Compliance

This unit has been tested and verified to comply with the following EMC regulations:

1) European Union (CE): **Verification of EMC Compliance**

**Applicable standard:** EN 55032: 2015, EN 55035: 2017, EN 61000-3-2: 2014 and EN 61000-3-3: 2013

EN 55032: 2015 Electromagnetic compatibility of multimedia equipment - Emission requirements.

EN 55035: 2017 Electromagnetic compatibility of multimedia equipment - Immuni requirements.

EN 61000-3-2: 2014 Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current  $\leq 16$  A per phase).

EN 61000-3-3: 2013 Electromagnetic compatibility (EMC) - Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current  $\leq 16$  A per phase and not subject to conditional connection.

2) United States (FCC):

**Applicable standard:** FCC CFR Title 47 Part 15 Subpart B Section 15.107 and Section 15.109.

Federal Communications Commission - Electronic Code of Federal Regulations (e-CFR);

Title 47. Telecommunication; Part 15. Radio frequency devices; Subpart B. Unintentional radiators;

Section 15.107. Conducted limits and Section 15.109. Radiated emission limits.

3) Japan (PSE):

**Applicable standard:** J55032 (H29) Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement.



**Electromagnetic Compatibility Notices:** MASTER FIDELITY **NADAC C** complies with Class B of FCC regulations.

**FCC Class B notice**

This unit complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This unit may not cause harmful interference.
2. This unit must accept any interference received, including interference that may cause undesired operation.

## 1.5 Environmental Limits

### Parameter Limits

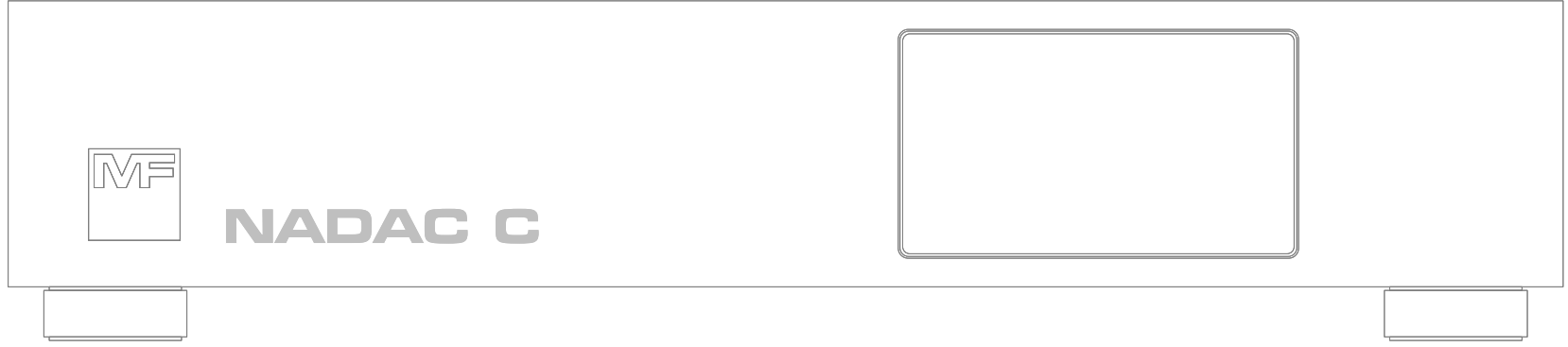
Operating Temperature +5°C to + 45°C with the maximum rate of change not to exceed 10°C per hour.

Non-Operating Temperature -40°C to +70°C.

Non-Operating Humidity 95%, non-condensing @ 30°C.

# NADAC C

ULTRA LOW NOISE AUDIO CLOCK



## 2. Overview

## 2.1 Overview

Starting with the introduction of CDs in the 1980s, digital recording products and their playback devices have entered the homes of audio enthusiasts. To date, various digital audio carriers (CDs, SACDs, digital audio files, etc.), playback devices and software (CD players, computers and playback software, digital-to-analog converters, etc.), and different resolution audio formats continually update the music software, hardware, and systems of audio enthusiasts.

As digital audio essentially consists of voltage signal fluctuations at constant time intervals, controlling and ensuring the 'constancy' of these intervals is key to ensuring the quality of digital audio. The opposite of 'constancy' in time intervals is 'jitter'. In the decades of development of digital audio technology, overcoming clock jitter has been an inescapable and crucial challenge on the path to higher sound quality. The performance of clock jitter in digital or digital-analog hybrid audio circuits varies with each digital device's quality and is further compounded by the quality differences of multiple digital devices in a system. The negative impact of clock jitter on subjective listening typically results in blurred sound imaging, loose and weak bass, and high frequencies that lack transparency and depth. Many audio enthusiasts are acutely aware of this.

Thus, for decades, numerous audio equipment manufacturers have been striving to reduce clock jitter. Typical technical approaches include improving each device's clock synchronization (e.g., phase-locked loop circuits or crystal oscillators) or developing independent synchronization reference devices - the master clock.

Now, a master clock is generally considered a standard device in a Hi-End system for playing digital audio sources. Having a master clock in one's system has been a long-held desire for many audio enthusiasts.

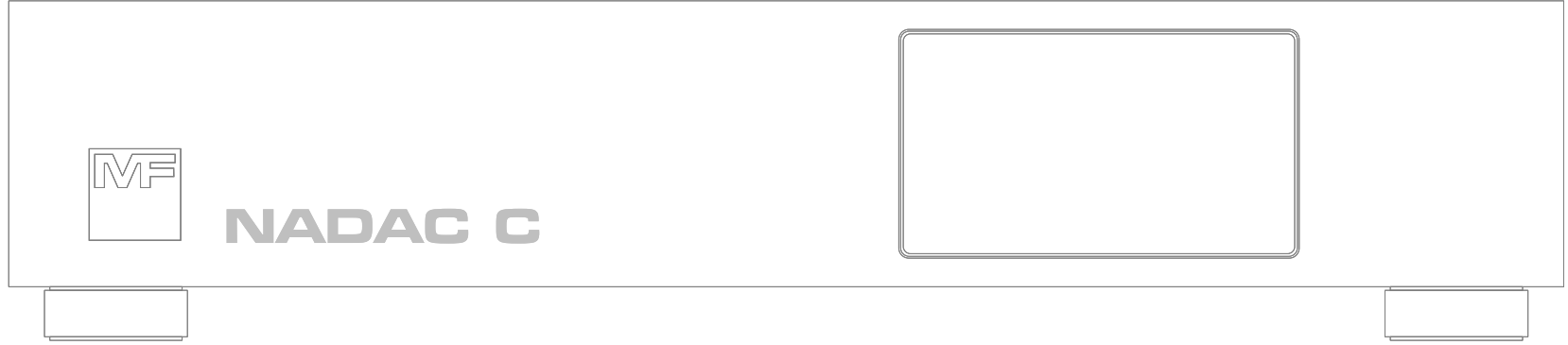
To this end, MASTER FIDELITY has launched the ultra-low noise audio clock - **NADAC C**.

MASTER FIDELITY designates the **NADAC C** as the principal clock in top-tier audiophile systems (Hi-End) with stringent sound quality requirements, employing the following technological and craftsmanship measures:

- The crystal core uses SC-Cut crystals, which are highly stable. After 120 days of pre-aging screening, it ensures that the final product's crystal oscillators all meet MASTER FIDELITY's quality standards.
- All key paths use hydrocarbon ceramic printed circuit boards with high Tg (glass transition temperature) and low DF (dissipation factor).
- The resistors, capacitors, and other passive components used in the distribution output circuit are all high-performance models suitable for pulse applications. This ensures perfect transmission and driving of the 10 MHz synchronization signal, as well as excellent cable driving capabilities. This minimizes jitter introduced by cable transmission and jitter triggered by the load circuit.
- In addition to the crystal oscillator itself using a constant temperature system, the clock signal distribution circuit also uses an ultra-low noise constant temperature reference with an expanded current power system. This ensures the purity of the 10 MHz signal after it is distributed and outputted.
- Due to the non-integer multiple relationship between the 10 MHz frequency and the audio clock frequency, MASTER FIDELITY has adopted a multi-stage phase-locked structure for the word clock section of the **NADAC C**. This ensures extremely high frequency precision and excellent jitter performance when converting from 10 MHz to the Word Clock. This implies that in the **NADAC C**, there isn't just a single crystal oscillator. Instead, there's a high-quality voltage-controlled crystal oscillator in the audio frequency (Word Clock) generator, used for audio frequency point synthesis with a jitter level of 100 femtoseconds (10 Hz-100 kHz jitter bandwidth). The 10 MHz serves as a reference for the audio frequency points, ultimately achieving high precision and low jitter.
- Equipped with a dedicated clock output port providing an external synchronization source for MERGING + NADAC.

In summary, **NADAC C** not only has an excellent oscillator itself but also possesses high-quality transmission characteristics through its overall design. This is why **NADAC C** can ensure that the synchronization signals delivered to each digital device in the system are of high quality.

We hope this **NADAC C** will bring a new level of enjoyment to your music listening.



## 3. Front Panel



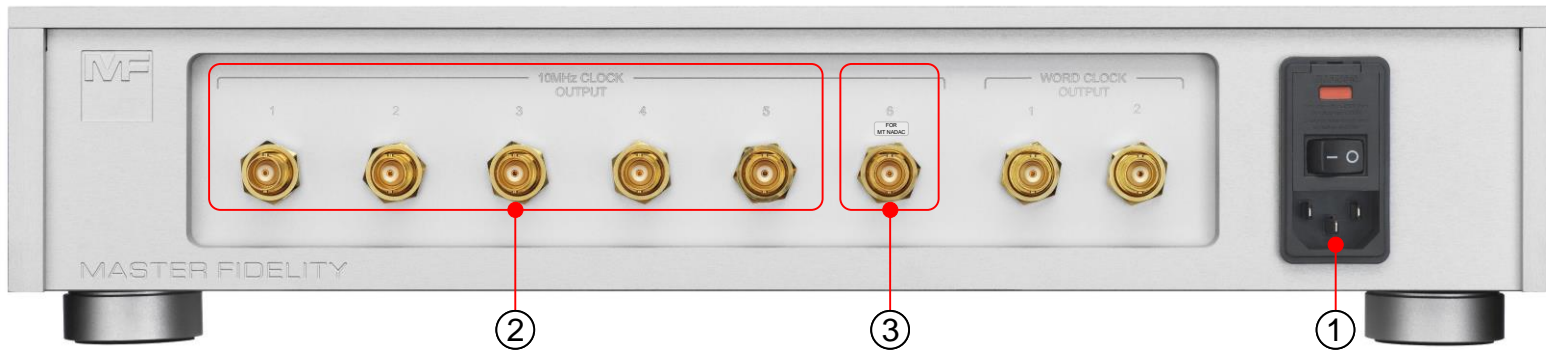
### 3.1 Touchscreen

#### ① Touchscreen

**NADAC C**'s all working status display and working parameter setting are completed through this touchscreen.



## 4. Rear Panel



#### 4.1 AC Power Connector, AC Power Switch and Fuse

##### ① AC Power Connector, AC Power Switch and Fuse

This is an AC power input socket according to IEC 60320 C14 specification with power switch and single fuse. The AC power input voltage is 100 V to 240 V, and the frequency is 50 or 60 Hz.

**NOTE:** The type of fuse used here should be slow-blow, with an size of 5 x 20 mm.

#### 4.2 10 MHz and 625 kHz Clock Output Connector

##### ② 10 MHz Clock Output Connector

Five 10 MHz clock output connectors. Connector specification is BNC, nominal impedance is 50 ohm, can perfectly compatible with 75 ohm impedance.

##### ③ 625 kHz Clock Output Connector

To provide a high-precision external clock source for audio devices that require a 625 kHz clock (such as the previous Merging + NADAC), MASTER FIDELITY has modified the 6th port of the 10 MHz clock output of the **NADAC C** to a 625 kHz clock output. The connector for this output is BNC with an impedance of 75 ohms.





### 4.3 Word Clock Output Connector

#### ④ Word Clock Output Connector

Two word clock output connectors. Connector specification is BNC, nominal impedance is 75 ohm, can perfectly compatible with 50 ~ 200 ohm impedances.

The rates supported by the word clock are:

When the base rate is 44.1 kHz, is

44.1 (1 fs) / 88.2 (2 fs) / 176.4 (4 fs) / 352.8 (8 fs) / 705.6 (16 fs) / 1411.2 (32 fs) kHz;

When the base rate is 48 kHz, is

48 (1 fs) / 96 (2 fs) / 192 (4 fs) / 384 (8 fs) / 768 (16 fs) / 1536 (32 fs) kHz.



## 5. Touch Screen

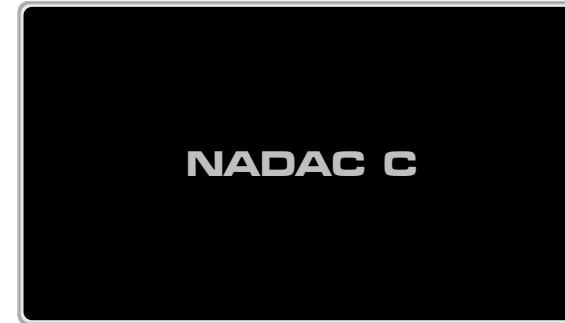
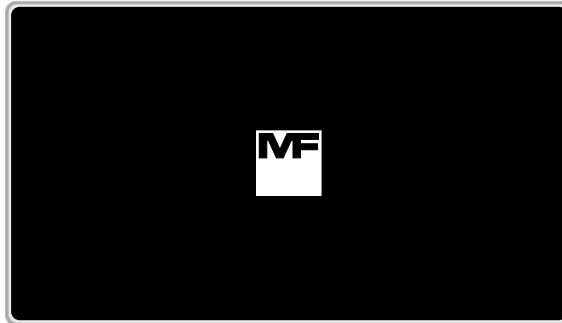
## 5.1 Touch Screen

The display used by **NADAC C** is a 5-inch color LCD touch screen, the area of the display is 109.5 (W) x 61.5 (H) mm, the dot matrix is 854 (RGB) x 480.

## 5.2 Boot Page

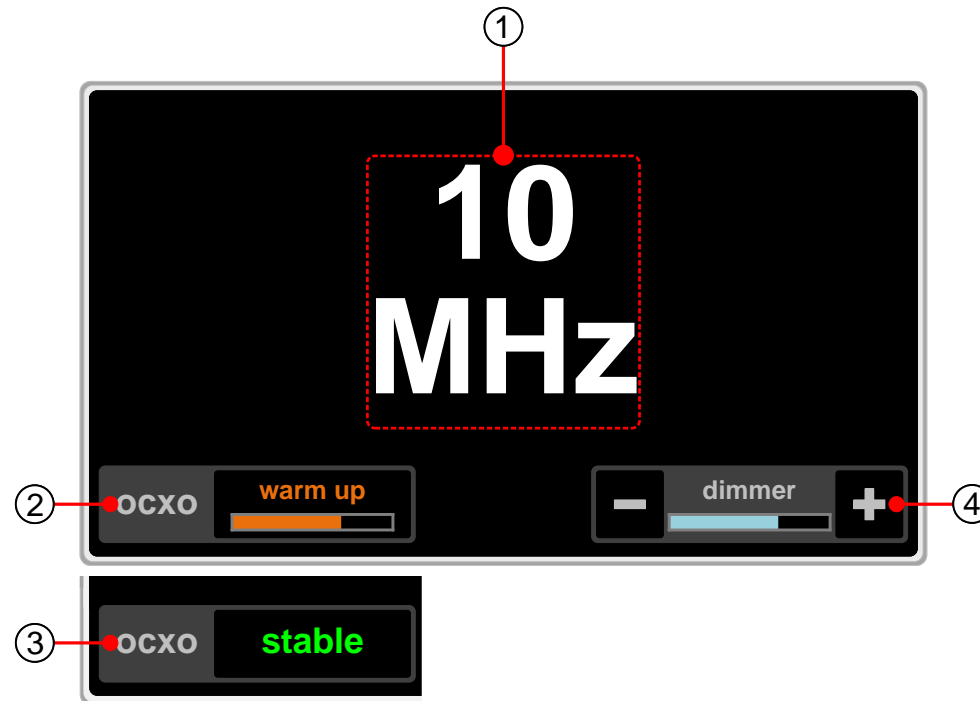
When the **NADAC C** is powered on, it will display the boot page for six seconds.

The boot page is divided into two pages, the first page is the MASTER FIDELITY logo, and the second page is the device name.



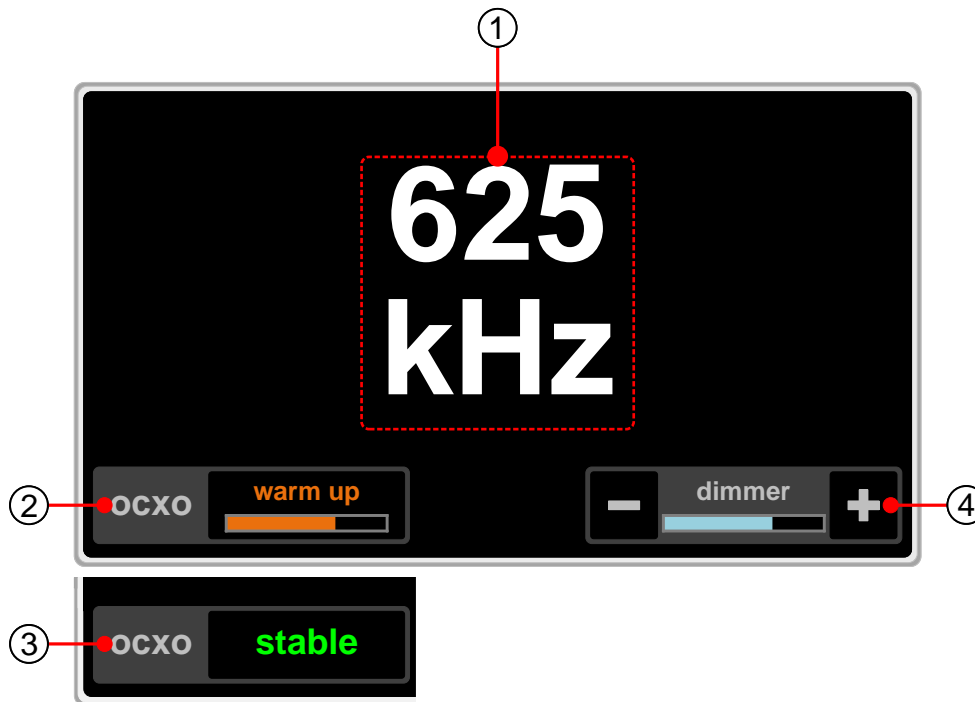
### 5.3 Working Page

After the six second boot page is displayed, the touchscreen will enter the display of the working page. The work page is divided into three types: 10 MHz, 625 kHz, and word clock. The following are the instructions for each area of the 10 MHz work page.



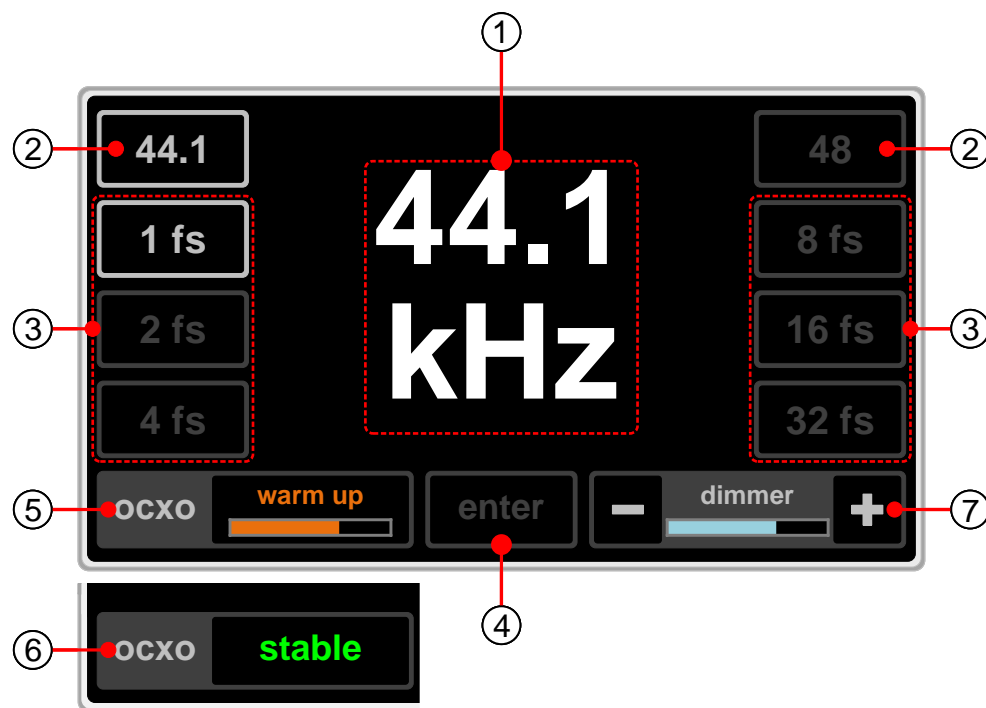
- ① **NADAC C** 10 MHz clock output rate.
- ② **NADAC C** working status display box - a status indication of the warm up process.
- ③ **NADAC C** working status display box - a status indication of entering stable operation.
- ④ Dimmer box for adjusting screen brightness.

The following are the instructions for each area of the 625 kHz work page.



- ① **NADAC C** 625 kHz clock output rate.
- ② **NADAC C** working status display box - a status indication of the warm up process.
- ③ **NADAC C** working status display box - a status indication of entering stable operation.
- ④ Dimmer box for adjusting screen brightness.

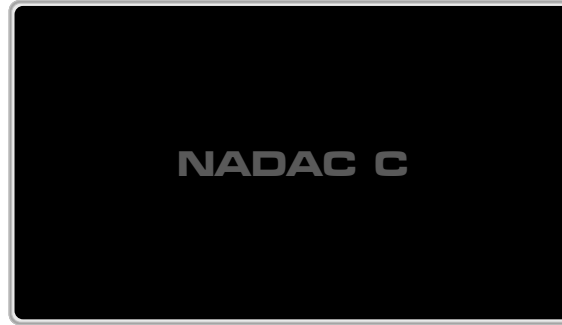
The following are the instructions for each area of the word clock work page.



- ① **NADAC C** the currently set output rate.
- ② Base rate option box.
- ③ rate multiplier option box.
- ④ Selected parameter confirmation box (enter).
- ⑤ **NADAC C** working status display box - a status indication of the warm up process.
- ⑥ **NADAC C** working status display box - a status indication of entering stable operation.
- ⑦ Dimmer box for adjusting screen brightness.

## 5.4 Listening Page

To avoid being disturbed by excessive display information while enjoying music, users can set the **NADAC C**'s screen to the simplest page, which only shows the device name. On this page, the device name is displayed at a very dim brightness (equivalent to a screen dimmer brightness value of 1) and is not adjustable. We call this screen page the "**Listening Page**".





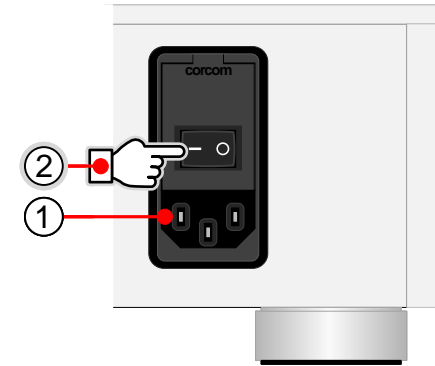
## 6. Operating



## 6.1 Connect to AC Power

① Plug in the AC power cord here. The connector on the end of the AC power cord that plugs into the **NADAC C** should comply with IEC-60320 C14, and the connector on the end that plugs into the power outlet should comply with the safety regulations of the country or region in which it is located.

**CAUTION:** The ground terminal of the **NADAC C** AC power connector is connected to the metal case. For the personal safety of users, the power cord of **NADAC C** must be plugged into an AC power outlet with a safety ground terminal!

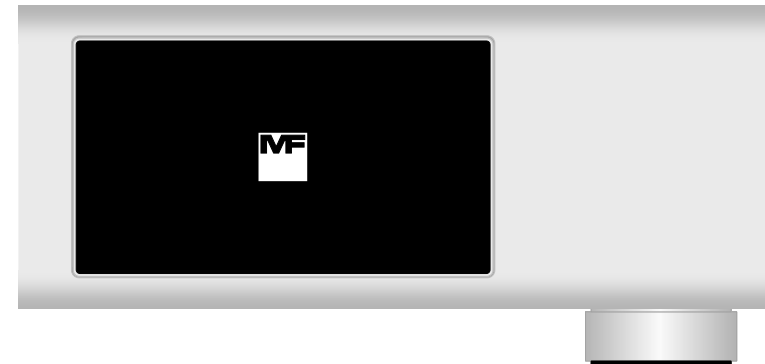


## 6.2 Boot

② Press the power switch on the rear panel to power on the **NADAC C**.

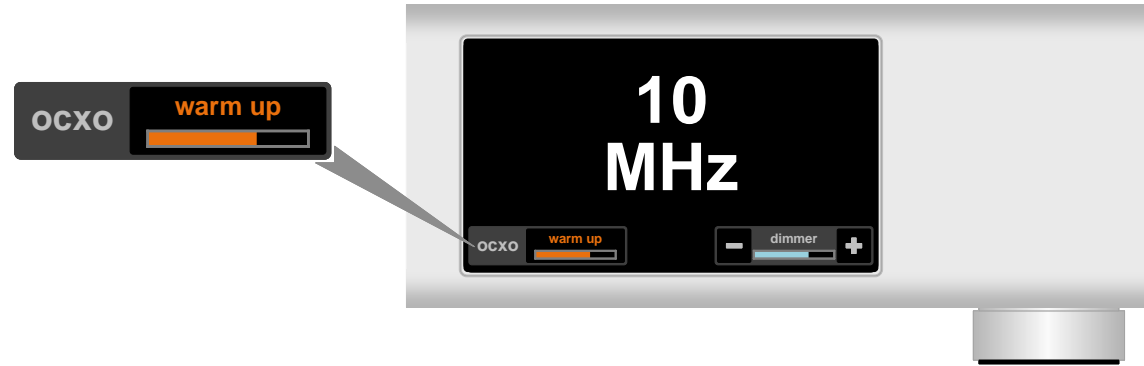
The MASTER FIDELITY logo and the device name (next page) will be displayed on the touch screen.

After six seconds, the boot page will be converted to the work page. At this time, the settings and parameters displayed on the work page, including the brightness of the screen, are the state from the last shutdown.



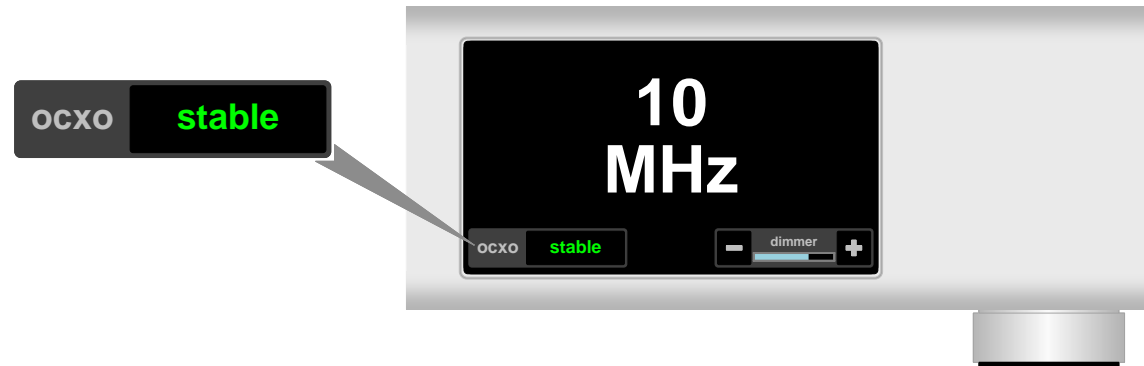
### 6.3 Warm Up

After booting into the working page, the **OCXO** display box in the lower left corner of the page displays the orange **warm up** progress bar.



The warm up time of the **NADAC C** will vary depending on the ambient temperature. Typically, the warm up time is approximately three hours at an ambient temperature of 25 C°.

When the warm up is completed, the **OCXO** display box will change to the green "stable" word, indicating that the **NADAC C** has entered a stable working state.



## 6.4 Notes on Warm Up

### NOTE:

During the warm up process of **NADAC C**, the output of its clock signal is unstable. At this time, if the **NADAC C** is connected to the system as the clock source, because the output signal has a large jitter, it will not help improve the sound quality, but will also bring about negative effects. Therefore, be sure to connect it to the system after the **NADAC C** display enters a stable working state.

### NOTE:

Unless the **NADAC C** is not going to be used for an extended period of time, we recommend that you do not power off the **NADAC C** after each use. Doing this will help keep the **NADAC C** at a constant temperature, eliminating the three-hour or so warm up process every time you power up the **NADAC C**, ensuring that every time you turn on your audio system, you can immediately play with the best sound quality.

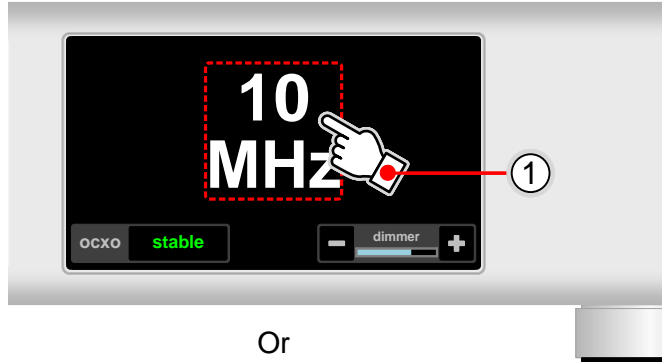
### CAUTION:

Do not move or subject the **NADAC C** to vibrations while the power is on (whether during warm up or into steady operation). Because such external force can easily lead to the damage of the constant temperature crystal oscillator of **NADAC C**'s internal core components!!!

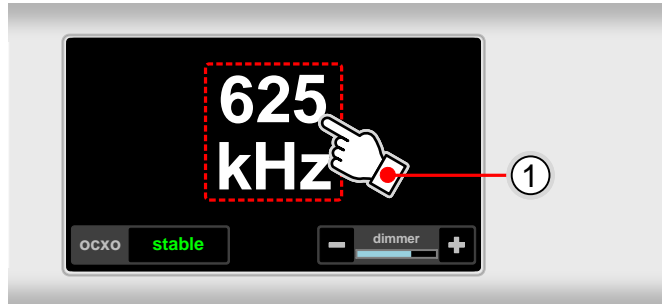
Moreover, the damage caused by this reason is not covered by the warranty!!!

## 6.5 Select the Displayed Work Page

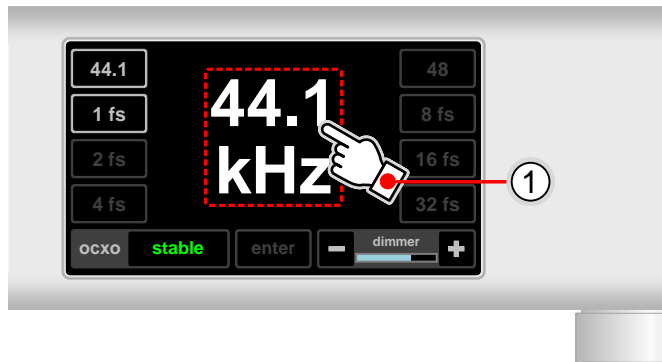
- ① Double-click on the clock rate display area in the middle of any current work page.



Or

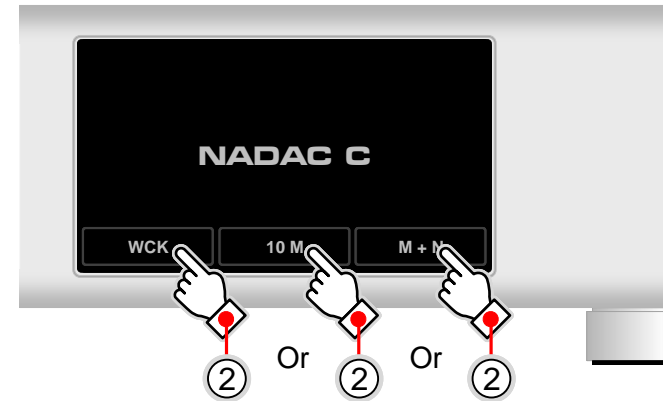


Or



The screen will enter the selection page of the work page as shown below.

- ② Click the selection button of a work page at the bottom of the selection page.



The screen will then enter the work page corresponding to the selected button.

### Explanation:

Button WCK is for the word clock.

Button 10 M is for the 10 MHz clock.

Button M + N is for the 625 kHz clock. M + N stands for MERGING + NADAC, indicating that this clock rate is specifically for NADAC by Merging Technologies.

### Note:

The outputs for 10 MHz, 625 kHz, and a preset word clock rate exist simultaneously, independent of the currently displayed work page.

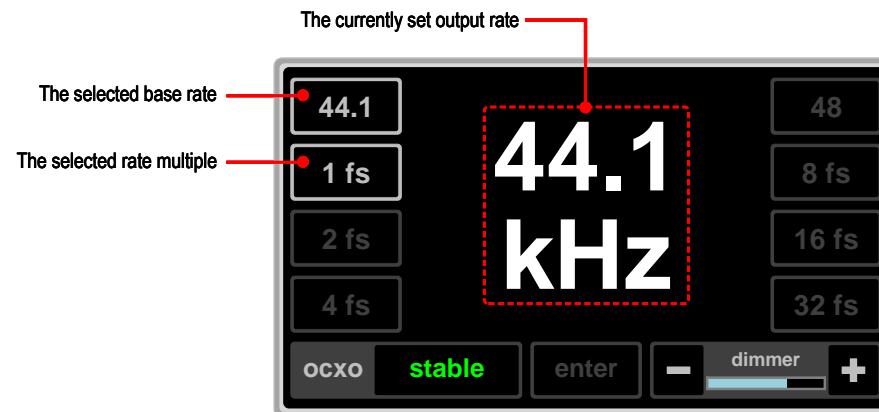
Selecting a work page on the screen is only to meet the user's monitoring needs.

### 6.6 Word Clock Output Rate Settings

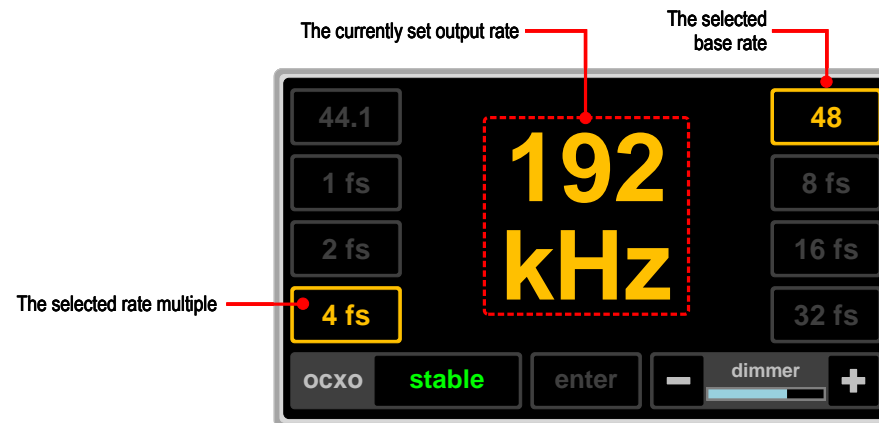
Since the 10 MHz and 625 kHz clock signal of **NADAC C** is a constant output after boot and does not need to be set, only the output rate of the word clock can be selected and set on the working page.

### 6.7 On-Screen Display of Word Clock Rate

If the current setting is a base clock rate of 44.1 kHz, then the **currently set base output rate**, **base rate option box**, and **rate multiple option box** on the touchscreen are all white. The right figure shows the screen display when the output rate is set to 44.1 kHz.



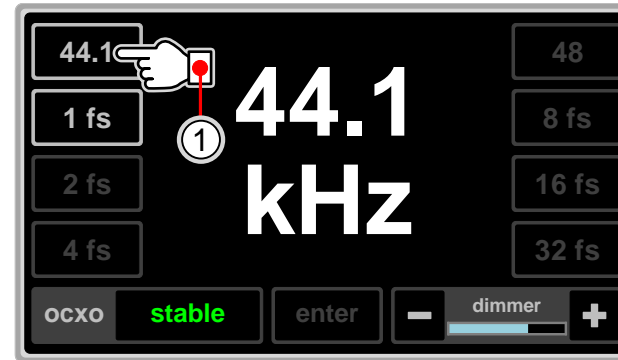
If the current setting is a base clock rate of 48 kHz, then the **currently set base output rate**, **base rate option box**, and **rate multiple option box** on the touchscreen are all yellow. The right figure shows the screen display when the output rate is set to 192 kHz.



## 6.8 Select Different Magnification Settings with the Same Base Clock Rate

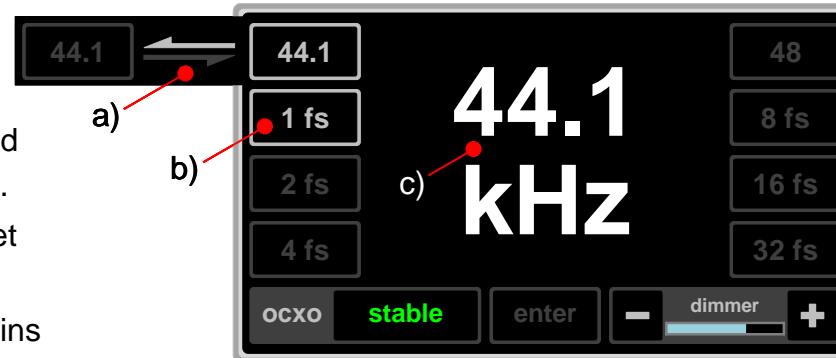
- For Instance, Changing From 44.1 kHz to 352.8 kHz

- ① Click on the **44.1** option box.



The screen will display the status shown on the right:

- The **44.1** option box are displayed alternately in light grey / dark gray.
- The **1 fs** option box previously set remains unchanged.
- The currently set output rate remains unchanged.



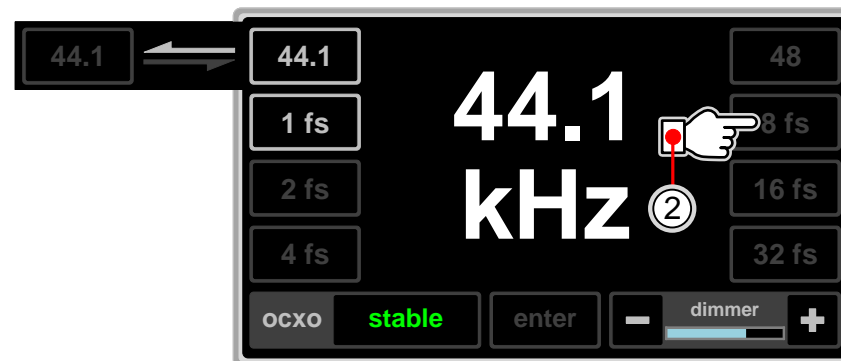
### A few notes about the operation:

After selecting an option box, you can click another option box again to change the last selection.

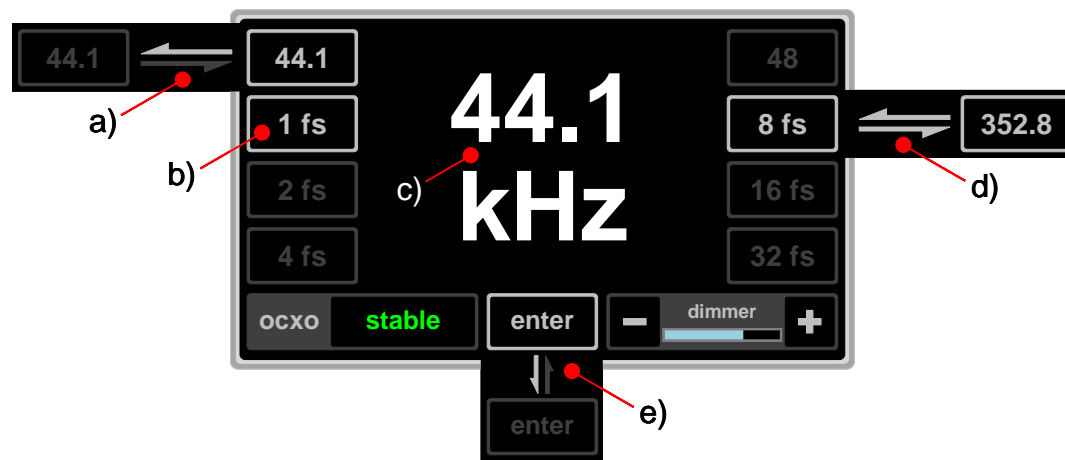
**NADAC C** always displayed alternately the last selected option box to wait for the next action.

If the option box does not receive an instruction for the next action within five seconds of the start of the alternate display, the alternate display will stop. **NADAC C** will remain the original setting without any changes.

- ② While the **44.1 option box** is displayed alternating light grey / dark gray, click on the **8 fs option box**.



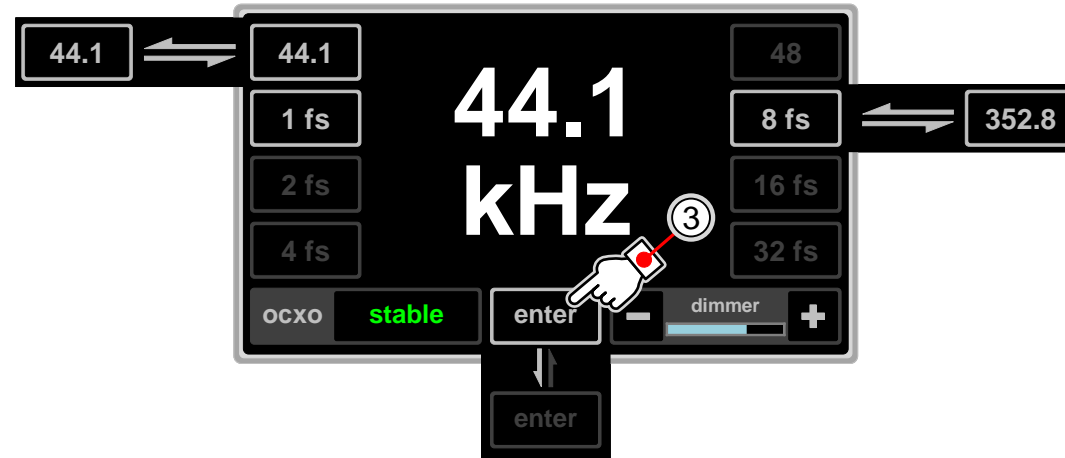
The screen will display the status shown on the right:



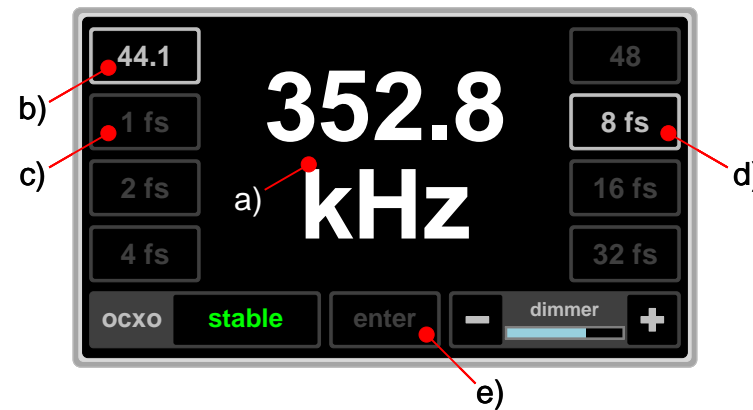
- a) The **44.1 option box** will continue to display alternate between light grey / dark gray.
- b) The **1 fs option box** previously set remains unchanged.
- c) The currently set output rate remains unchanged.
- d) The **8 fs option box** will alternate in light grey with the multiple (**8 fs**) and its actual rate (**352.8**).
- e) The **enter option box** will display alternate between light grey / dark gray.

**Note:** When select different multiple for the same base rate, you can also skip step ① and go directly to step ②, the alternate display of the **44.1 option box** and **enter option box** can also be activated here.

- ③ While the **44.1** option box, **8 fs** option box and **enter** option box is displayed alternating, click on the **enter** option box.



The screen will display the status shown on the right:



- The currently set output rate is change to **352.8 kHz** in white.
- The **44.1** option box stops light / dark gray alternating, and is always displayed in light gray.
- The **1 fs** option box changed to dark gray.
- The **8 fs** option box stops alternating, and is always displayed in light gray.
- The **enter** option box stops alternating, and is always displayed in dark gray.

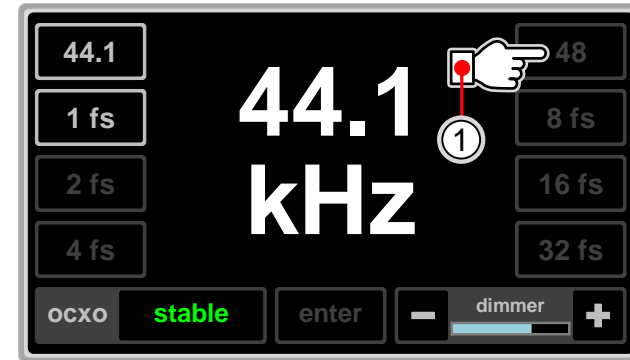
The word clock output rate change from **44.1 kHz** to **352.8 kHz** is complete.



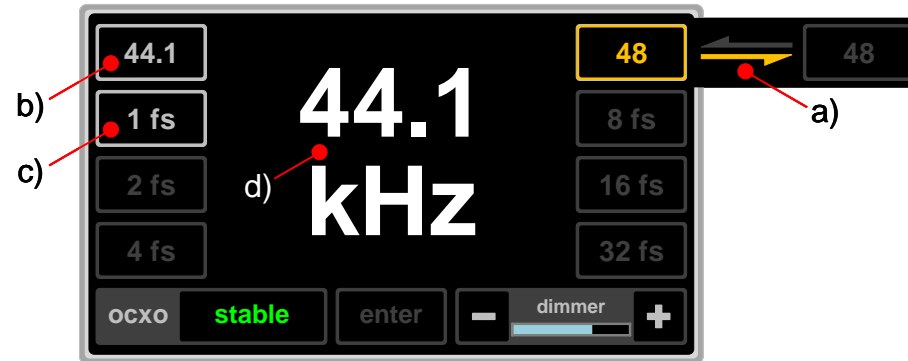
### 6.9 Select Different Magnification Settings with the Different Base Clock Rate

- For Instance, Changing From 44.1 kHz to 192 kHz

- ① Click on the **48 option box**.



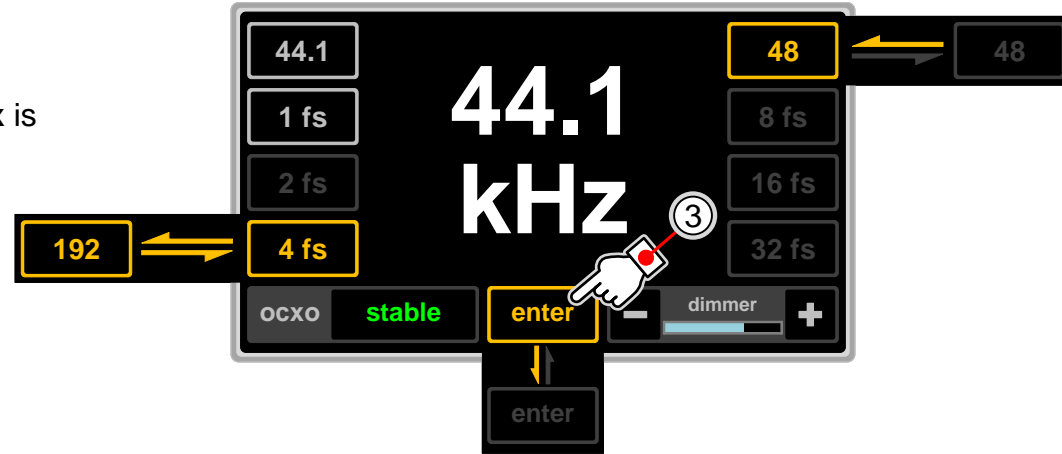
The screen will display the status shown on the right:



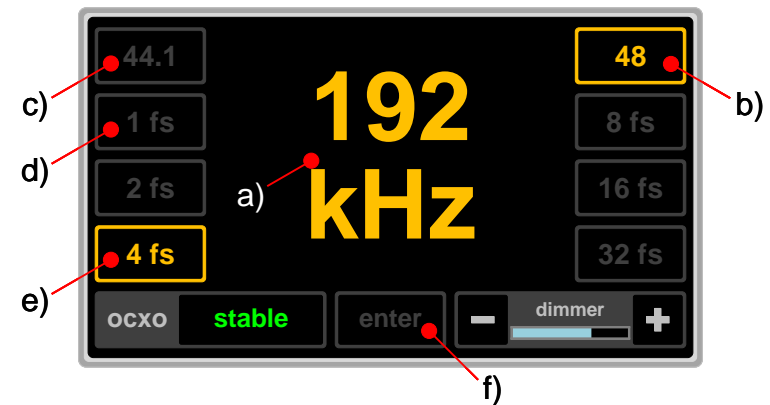
- a) The **48 option box** are displayed alternately in yellow / dark gray.
- b) The **44.1 option box** previously set remains unchanged.
- c) The **1 fs option box** previously set remains unchanged.
- d) The currently set output rate remains unchanged.



- ③ While the **48 option box**, **4 fs option box** and **enter option box** is displayed alternating, click on the **enter option box**.



The screen will display the status shown on the right:

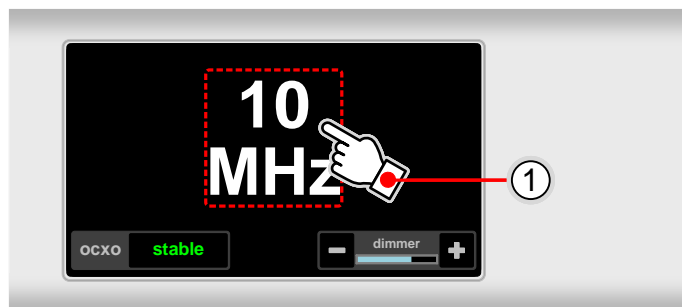


- a) The currently set output rate is change to **192 kHz** in yellow.
- b) The **48 option box** stops yellow / dark gray alternating, and is always displayed in yellow.
- c) The **44.1 option box** change to dark gray.
- d) The **1 fs option box** change to dark gray.
- e) The **4 fs option box** stops alternating, and is always displayed in yellow.
- f) The **enter option box** stops alternating, and is always displayed in dark gray.

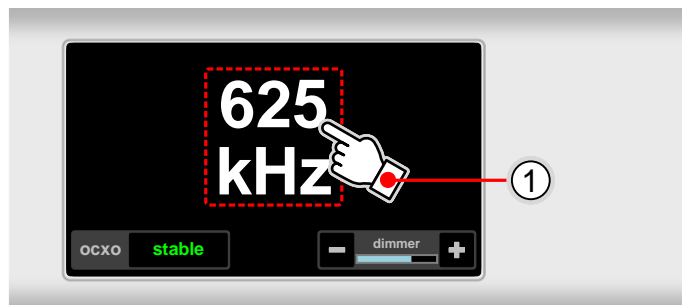
The word clock output rate change from **44.1 kHz** to **192 kHz** is complete.

## 6.10 Enter the Listening Page and Return to the Work Page

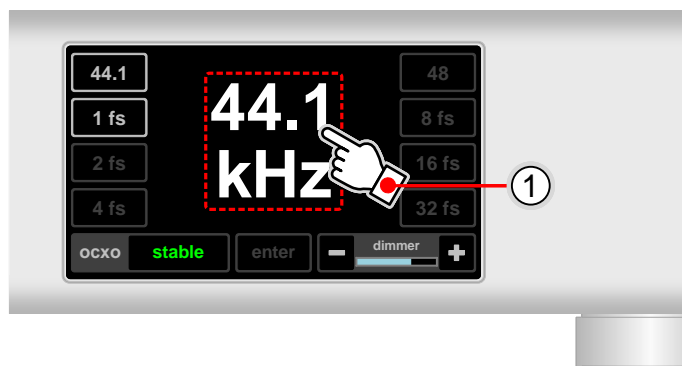
- ① Click on the clock frequency display area in the middle of any current work page.



Or



Or



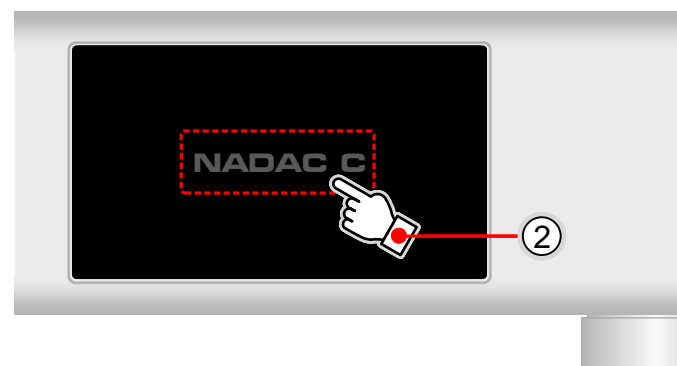
The screen will enter the listening page as shown below.



In the listening page, the brightness of the **NADAC C** characters is preset to dimmer brightness value 1 and is fixed, not adjustable.

- ② Click in the middle of the **NADAC C** area on the listening page to return to the work page before entering the listening page..

Double-click in the middle of the **NADAC C** area on the listening page to enter the selection page of the work page .



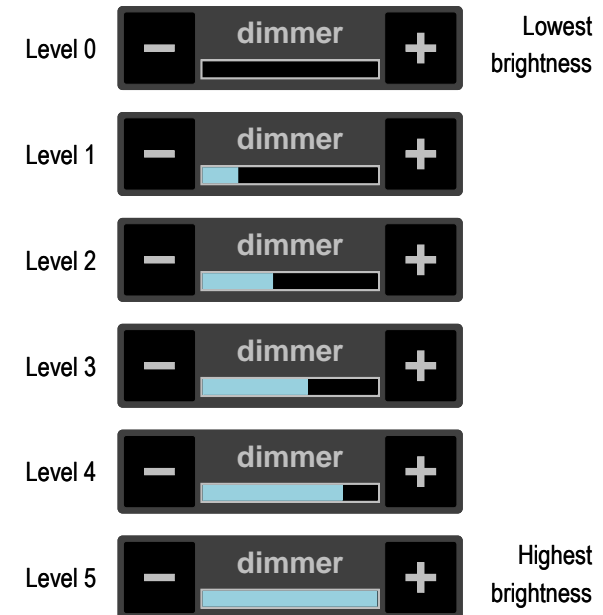
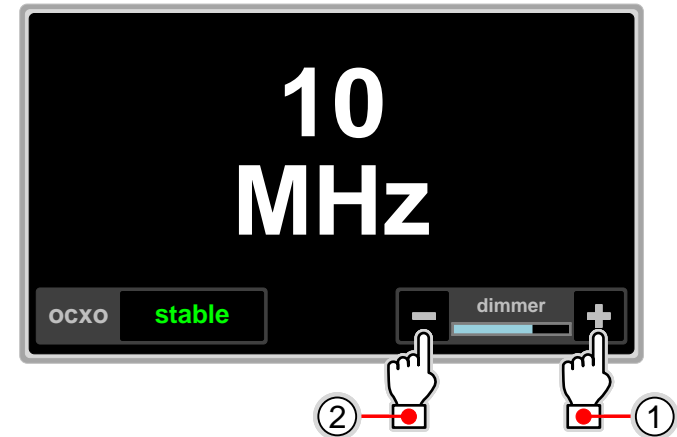
## 6.11 Adjustment of Screen Brightness

The brightness of the touch screen are divided into six levels from the darkest to the brightest, which can be adjusted by pressing + or - of the dimmer at the bottom right of the any work page.

- ① Press the plus sign successively to increase the brightness of the screen.
- ② Press the minus sign successively to reduce the brightness of the screen.

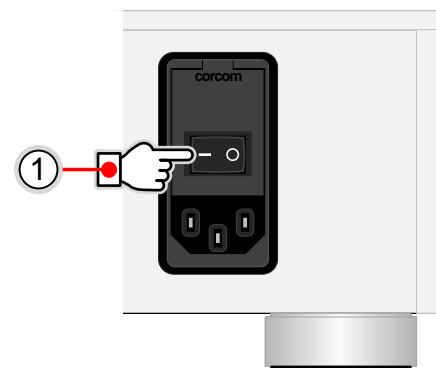
**Note:** To adjust the brightness step by step, you must press + or - successively. If it is kept pressed, **NADAC C** will recognize it as being pressed only once.

The brightness bar on the dimmer is displayed in six levels. Level 0 is the lowest brightness (the dimmer brightness bar only lights the left end one lattice), and level 5 is the highest brightness (the dimmer brightness bars are all lit).



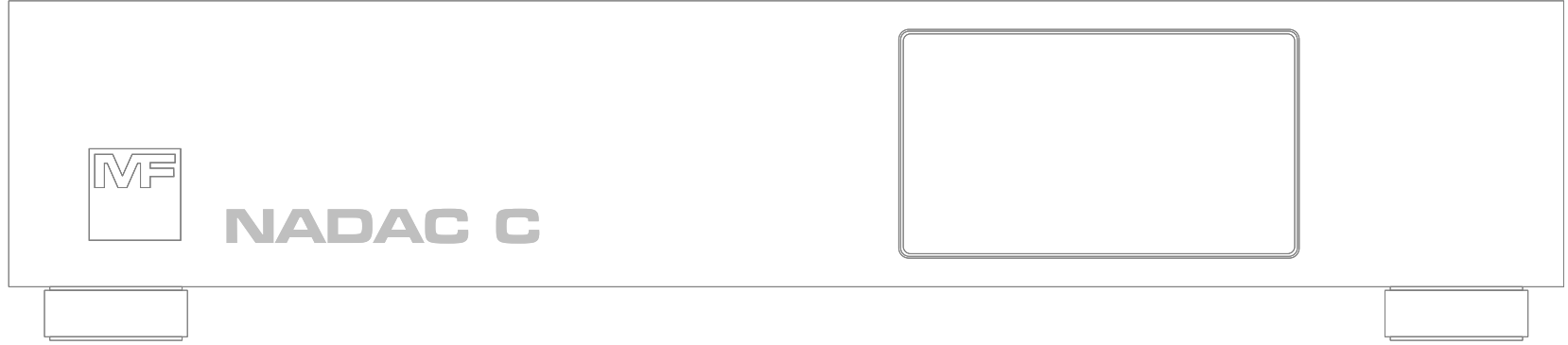
## 6.12 Shutdown

- ① Press the power switch on the rear panel to power off.



### REMIND AGAIN:

Unless the **NADAC C** is not going to be used for an extended period of time, we recommend that you do not power off the **NADAC C** after each use. Doing this will help keep the **NADAC C** at a constant temperature, eliminating the three-hour or so warm up process every time you power up the **NADAC C**, ensuring that every time you turn on your audio system, you can immediately play with the best sound quality.



## 7. Specifications

## 7.1 General Specifications

### Power Supply

Voltage and Frequency	AC 100 - 240 V, 50 / 60 Hz
Power Consumption	Maximum < 25 W; Stable 6 W (Typical)
Connectors	IEC 60320 C14
Fuse	0.5 A, 5 x 20 mm Slow Blow

### Dimensions and Weight

Dimensions	435 mm (W) x 95 mm (H) x 390 mm (D)
Weight	9.2 kg

## 7.2 Core Parts Specifications

### Crystal

Core Crystal Architecture	Selected High Stability Pre - Aged SC-Cut Crystal
Ageing	The crystal has been pre-aged for not less than 120 days before assembling the crystal oscillator, and the secondary aging after assembling into a finished crystal oscillator.



## 7.3 Clock Output Specifications

### 10 MHz Clock Output

Output Frequency	10 MHz
Output Waveform	Square Wave (AC-Coupled)
Waveform Duty Cycle	50%
Output Power	+ 13 dBm @ 50 ohm Load
Output Jitter (Typical)	66 femtosecond @ 10 Hz ~ 100 kHz Bandwidth
Short-Term Stability (Typical)	Tau = 1E-13 @ 1 second
Phase Noise (Typical)	- 122 dBc @ 1 Hz; - 140 dBc @ 10 Hz; - 150 dBc @ 100 Hz; - 155 dBc @ 1 kHz; - 160 dBc @ 10 kHz; - 160 dBc @ 100 kHz; - 160 dBc @ 1 MHz
Output Rise Time	800 picosecond
Frequency Accuracy (Factory Calibration)	< 10 ppb
Connectors	6x BNC
Output Nominal Impedance	Recommend 50 ohm (75 ohm can be accept)

### Word Clock Output

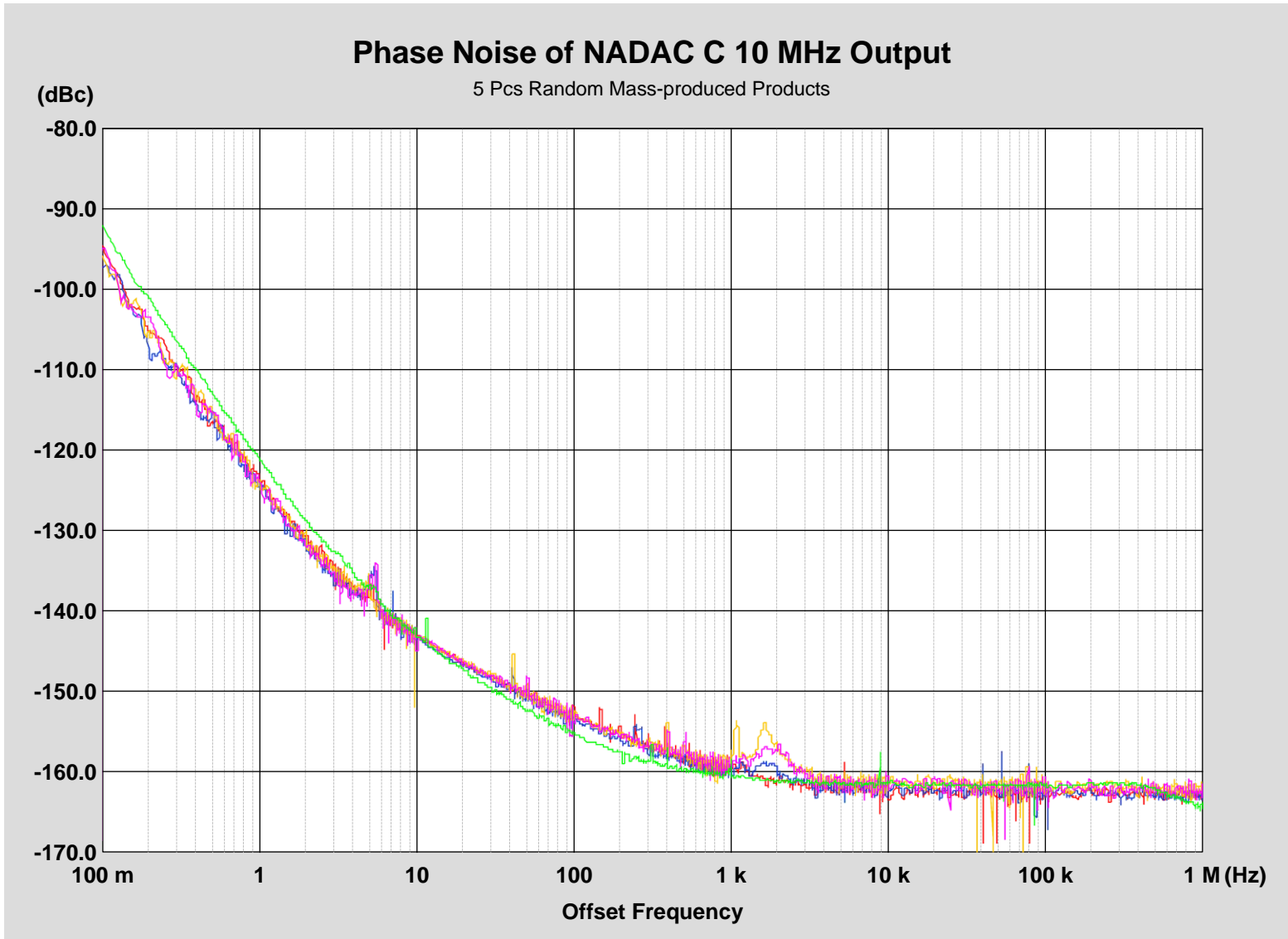
Output Frequency	44.1 kHz, 88.2 kHz, 176.4 kHz, 352.8 kHz, 705.6 kHz, 1411.2 kHz and 48 kHz, 96 kHz, 192 kHz, 384 kHz, 768 kHz, 1536 kHz
Output Waveform	CMOS
Waveform Duty Cycle	50%
Output Amplitude	> 2.2 V @ 75 ohm Load
Output Jitter (Typical)	250 femtosecond @ Carrier 1536 kHz, 10 Hz ~ 100 kHz Bandwidth
Output Rise Time	600 picosecond
Frequency Accuracy (Factory Calibration)	< 10 ppb
Connectors	2x BNC
Output Nominal Impedance	75 ohm (Compatible with 50 ~ 200 ohm)

## 625 kHz Clock Output

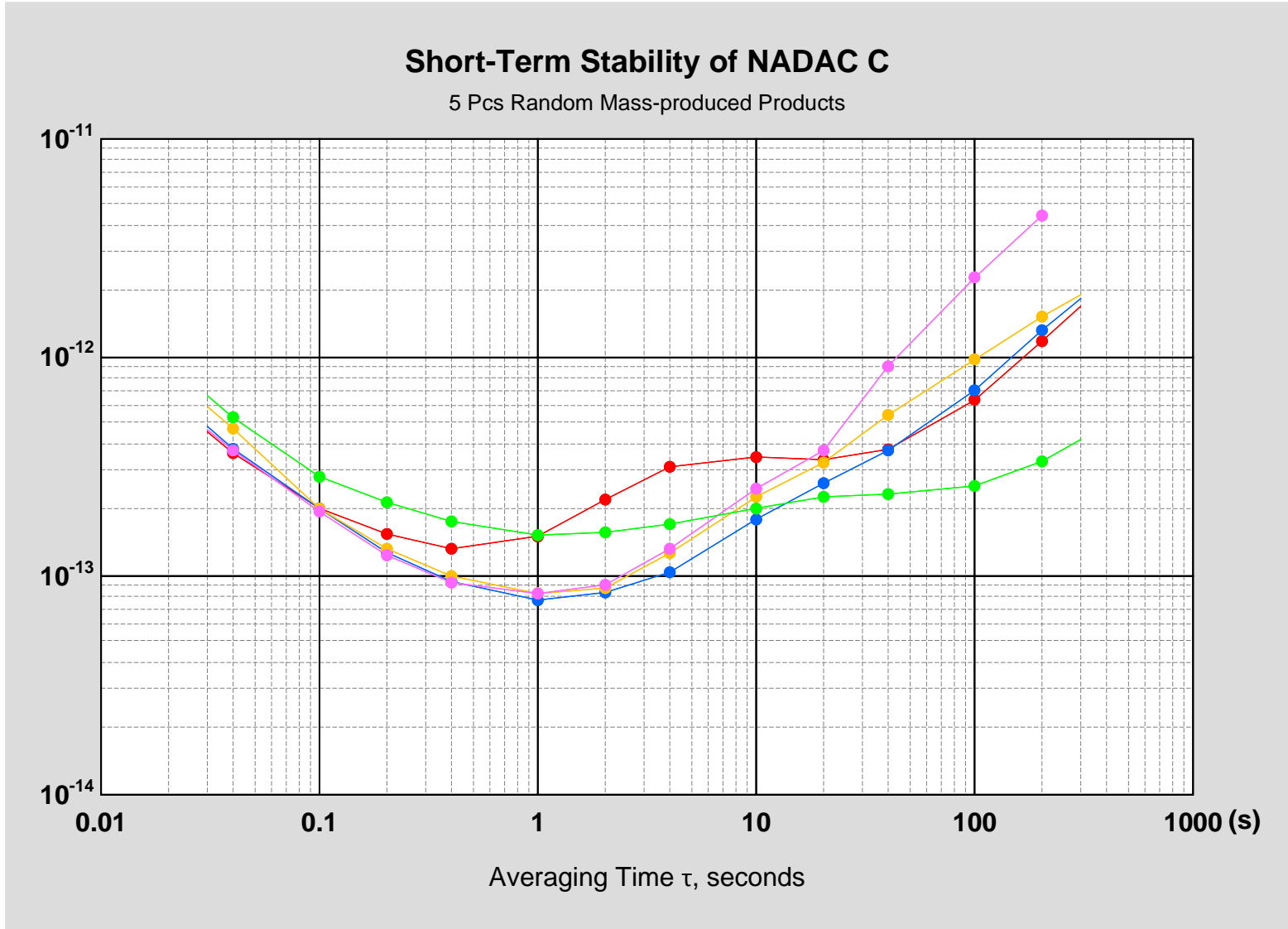
Output Frequency	625 kHz
Output Waveform	CMOS
Waveform Duty Cycle	50%
Output Amplitude	> 2.2 V @ 75 ohm Load
Output Jitter (Typical)	100 femtosecond @ 10 Hz ~ 100 kHz Bandwidth
Output Rise Time	800 picosecond
Frequency Accuracy (Factory Calibration)	< 10 ppb
Connector	1x BNC (6th port using 10 MHz clock output)
Output Nominal Impedance	75 ohm

*Specifications are subject to change without notice.*

### 7.4 Phase Noise of NADAC C 10 MHz Output



7.5 Short-Term Stability of NADAC C



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