

FREND™ AP System

User Manual



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This product is sold all over the world. Customer support services vary for each geographical region.
When the FRENTMD AP is shipped, information will be included that lists the appropriate telephone numbers, fax numbers and email addresses from which support for your geographical region can be most readily obtained.

FRENTMD AP User Manual

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Introduction

A word of caution before using

 **Note: Recommended storage conditions are as follows:**

-Temperature : 10~40℃

 Caution

When the following message is displayed on LCD with beep sound, turn off power switch immediately. There is a thermoregulator inside this equipment. If this thermoregulator is broken down, it can cause a fire.

Abnormal State
Tube = 60.1℃

 Biohazard

- The cartridge should be inserted into the instrument within the stipulated time.
- The instrument should be used in a clean environment.
- Ensure the specimen is not contaminated by any foreign material or contain fibrin clots.
- Human specimens and controls should be considered potentially infectious.

Introduction

Cleaning & Maintenance

Clean the surface of FRENTM AP instrument with a damp cloth.
If liquid spills on FRENTM AP, turn off the power immediately and wipe dry.

FRENTM AP does not need regular maintenance. To troubleshoot problems with FRENTM AP, contact Technical Support.

Important!

Never disassemble or service FRENTM AP by yourself.

Unauthorized repairs may damage FRENTM AP or alter its functionality, which will void your warranty. Contact ivdst@nanoentek.com or your local distributor to arrange for service.

Always wipe surfaces with ethanol-soaked paper towels.

Do not directly spray ethanol anywhere on FRENTM AP.

Avoid exposing FRENTM AP to UV light.

UV light may degrade components, including plastic. Damage from UV exposure is not covered under the manufacturer's warranty.

Introduction

Warranty

NanoEntek provides 1 year warranty service for defects of material and workmanship.

If any defects occur in FREND™ AP, NanoEntek provides repair services for the defective parts at its discretion.

The following defects, however, are specifically excluded:

1. Defects caused by improper operation.
2. Repair or modification done by anyone other than NanoEntek or an authorized agent.
3. Damage caused by substituting alternative parts.
4. Use of fittings or spare parts supplied by anyone other than NanoEntek.
5. Damage caused by accident or misuse.
6. Damage caused by disaster.
7. Corrosion caused by improper solvent or sample.

For your protection, FREND™ AP instruments being returned must be insured against possible damage or loss. NanoEntek cannot be responsible for damage incurred during shipment of a defective instrument. It is recommend that you save the original packing material in which the instrument was shipped. This warranty is limited to the replacement of defective products.

For any inquiry or request for repair service, please contact **ivdst@nanoentek.com** or your local distributor.

Introduction

Safety

Precautions

Review and follow the safety instructions below:

- If water or other material enters the instrument, adaptor, or power inlet, disconnect the power cord and contact a service person. For operating environment, refer to Product Specifications.
- Do not touch the main plug or power cord with wet hands.
- Always ensure that the power supply input voltage matches the voltage available at your location.
- This instrument is air-cooled and its surfaces may become hot during operation.
- During installing, leave a space of more than 10 cm (4 inches) around the instrument and do not place any objects between the instrument and the walls.
- Do not install the instrument on a slant or a place prone to vibrations, which induces the risk of instrument malfunction or damage of the instrument.
- Never insert any objects into the air vents of the instrument as this could result in electrical shock, personal injury, and equipment damage.
- Plug the power cord firmly into the wall outlet and AC adapter.
- To avoid potential shock hazard, make sure that the power cord is properly grounded.
- Be sure to position the equipment such that it is easy to disconnect.
- Turn off the instrument before unplugging the power cord and/or moving the instrument.
- If the instrument is dropped or broken, disconnect the power cord and contact a service person. Disassembly of case will void warranty.
- Use only authorized accessories (adaptor, power cord, and USB drive).

Warning!

Class A equipment is intended for use in an industrial environment. In the documentation for the user, a statement shall be included drawing attention to the fact that there may be potential difficulties in ensuring electromagnetic compatibility in other environments, due to conducted as well as radiated disturbances.

Introduction

Consignes de sécurité

Examinez et suivez les consignes de sécurité ci-dessous :

- N'installez pas l'instrument dans un endroit humide comme une serre ou un incubateur pour éviter un risque de choc électrique. Si de l'eau ou tout autre matériau pénètre dans l'instrument, l'adaptateur, ou l'entrée d'alimentation, débranchez le cordon d'alimentation et contactez un technicien de service. Pour l'environnement d'exploitation, reportez-vous aux spécifications du produit.
- Ne touchez pas la fiche ou le cordon d'alimentation principale avec les mains mouillées.
- Assurez-vous toujours que la tension d'entrée d'alimentation correspond à la tension disponible dans votre endroit.
- Cet instrument est refroidi à l'air de sorte que ses surfaces peuvent devenir chaudes pendant le fonctionnement.
- Lors de l'installation de l'instrument, laissez un espace de plus de 10 cm (4 pouces) autour de cet instrument et ne placez aucun objet entre l'appareil et le mur.
- N'installez pas l'instrument sur une pente ou un endroit soumis à des vibrations, ce qui induit le risque de dysfonctionnement ou d'endommagement de l'instrument.
- N'insérez jamais aucun objet dans les orifices d'aération de l'instrument, car cela pourrait entraîner un choc électrique, des blessures chez les utilisateurs et des dommages d'équipement.
- Branchez le cordon d'alimentation fermement dans la prise murale et l'adaptateur secteur aussi.
- Pour éviter un risque potentiel de commotion électrique, assurez-vous que le cordon d'alimentation est correctement mis à la terre.
- Assurez-vous de positionner l'instrument de telle sorte qu'il soit facile de débrancher l'instrument.
- Éteignez l'instrument avant de débrancher le cordon d'alimentation et / ou de déplacer l'instrument.
- Si l'instrument est cassé ou qu'il soit tombé, débranchez le cordon d'alimentation et contactez un technicien de service. Ne démontez pas l'instrument et la garantie sera annulée en cas de démontage.
- Utilisez uniquement les accessoires autorisés (l'adaptateur, le cordon d'alimentation, et le lecteur USB).

Prudence !

Le produit de classe A est conçu pour l'utilisation dans un environnement industriel. Dans la documentation de l'utilisateur, la déclaration doit être incluse pour attirer l'attention sur le fait qu'il peut y avoir des difficultés potentielles pour assurer la compatibilité électromagnétique dans d'autres environnements, en raison des perturbations rayonnées et.

Introduction

Safety Symbols

Review and follow the safety instructions below:

Symbol	Definition
	Caution, warning, Consul accompanying documents
	Protective earth (Ground)
	CE marking
	UK Conformity Assessment
	Meets FCC requirements per 21 CFR Part 15 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. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference in which case the user will be required to correct the interference at his own expense.
	Catalogue number/Reference number
	Biohazard
	For prescription use only CAUTION: Federal (The U.S.) law restricts this device to sale by or on order of a physician.
	This product conforms to UL 61010-1, CAN/CSA C22.2 No.61010-1 "Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use, Part 1: General Requirements." Instruments bearing the TUV symbol are certified by TUV Products Services to be in conformance with the applicable safety standard for the US and Canada
 www.nanoentek.com/eifu.php	Consult Instructions for Use An electronic instructions for use (eIFU) indicator (website address) may accompany the symbol when used to indicate an instruction to consult an eIFU.
	Serial number
	Manufacturer
	Date of Manufacturer
	In vitro diagnostic medical device
	Electric input

Introduction

Safety Symbols

Symbol	Definition
	Keep dry Keep away from rain
	Fragile, handle with care
	This way up
	General symbol for recover/recyclable
	Disposal of your old appliance. 1. When this crossed-out wheeled bin symbol is attached to a product it means the product is covered by the European Directive 2012/19/EU. 2. All electrical and electronic products should be disposed of separately from the municipal waste stream via designed collection facilities appointed by the government or the local authorities. 3. The current negative consequences for the environment and human health. 4. For more detailed information about disposal of your old appliance, please contact your city office, waste disposal service or visit our website, www.nanoentek.com
US Corporation	US Corporation
European Corporation	European Corporation
EC REP	Authorized representative in the European Community
UK Representative	Authorized representative in United Kingdom
CH REP	Authorized representative in Switzerland
BRH	Authorized representative in Brazil

Introduction

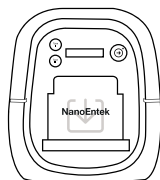
Product Components

The FRENTM AP System is an automated pretreatment instrument that performs incubation and sample injection onto the cartridge before testing with the FRENTM System.

AP System is shipped with the following components. Please check all items listed below when the instrument is delivered.

If any part is missing or damaged, contact your local distributor or E-mail ivdst@nanoentek.com.

1 FRENTM AP 1EA



2 Adaptor/Power code 1SET



3 User manual 1EA



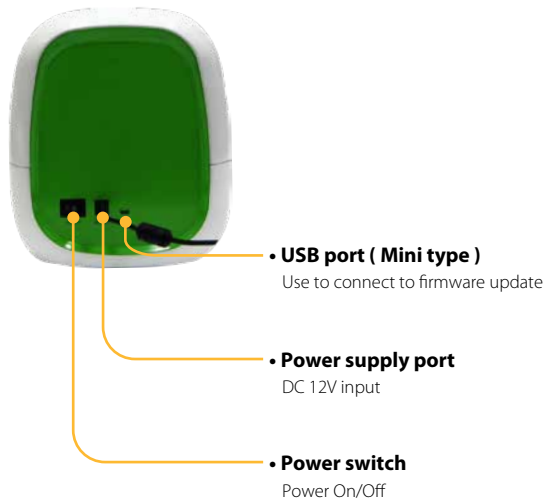
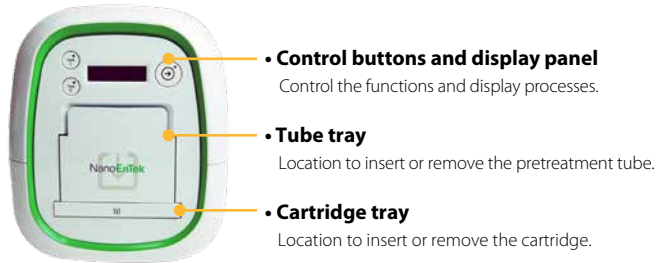
4 Quick manual 1EA



Introduction

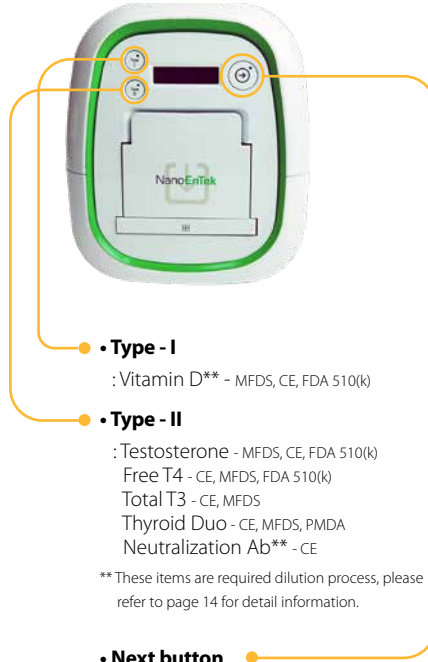
Device Description

The front and rear view showing various parts of the AP system is shown below:



Introduction

Button & Function



** These items are required dilution process, please refer to page 14 for detail information.

Proceed to next step or long press to cancel the operation during the sample preparation.

Operation

Operation Procedure

Process Summary

1. Type I

: Step 1 ~ Step 12

2. Type II

: Step 1~5, 7~12

* except Neutralization Ab item

- 1 Turn on the FREND™ AP.



- 2 "Select test type" is displayed on the screen. Then press the "Item type" button. ("Type I" or "Type II" button)



" **Preparing**" is displayed on the screen during warming up. After completing warming up,

" **Ready**" is displayed on the screen. The FREND™ AP is ready to use.

- 3 Press "NEXT" button to get the cartridge tray out-position, with "Insert cartridge" displayed on the screen. Place a cartridge on the cartridge tray.



- 4 Press "NEXT" button, to get the cartridge tray in-position.



Caution

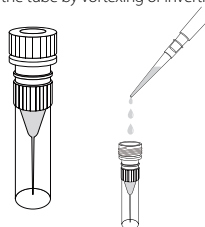
If you don't place a cartridge on the tray, the process will not go to next step.

- 5 Then the pretreatment tube tray automatically comes out.



- 6 **Step 6 is for the items that require dilution procedure, like Vitamin D.**

Drop 35 μ L specimen in the Dilution tube. Mix the specimen and buffer in the tube by vortexing or inverting.



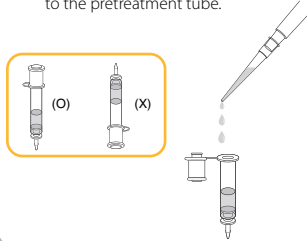
Operation

Operation Procedure

Tip!

When you need 70 μL , drop 35 μL two times.

- 7** Transfer 70 μL [mixture (Type I)
specimen (Type II)]
to the pretreatment tube.



⚠ Caution

Once specimen is added in the pretreatment tube, Do not invert the tube.

- 8** Insert the pretreatment tube in the tube hole. If the tube is inserted well, red light will be on.



⚠ Caution

Do not press the pretreatment tube too hard.

- 9** Press "NEXT" button to get the pretreatment tube tray in-position. The first incubation step will be started. The second incubation step starts once the first incubation step is done.



Time remaining is displayed on the screen.

- 10** Once all the incubation steps are done, the cartridge tray will be ejected automatically.



⚠ Caution

If you don't take out the cartridge on the tray, the process will not go to next step.

- 11** Take out the FREND™ cartridge from the tray, then press "NEXT" button. The cartridge tray will be inserted and the pretreatment tube tray will come out. Discard the pretreatment tube.



- 12** Insert the FREND™ cartridge into FREND™ System.



Setup

Menu mode

1. Menu mode enter and exit

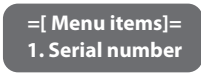


After turning on FREND™ AP, press and hold  (Next button) until beep sound.



If you press and hold  (Next button) until beep sound on main screen, menu mode will be ended.

2. Serial number display



Display serial number

Press  (Next button) to check.



Press  (Next button) to move Menu mode

3. Pre-treatment process end alarm



Set up the alarm function after ending all Pre-treatment process.

Press  (Next button) to check.



Select "Enable" or "Disable" using  Type-I button or  Type-II button.

If you press  (Next button), setting will be saved and moved to Menu mode with beep sound.

Setup

Menu mode

4. Internal temperature monitoring

Display Internal temperature of Tube tray and Cartridge tray

= [Menu items] =
3. Temperature

Press  (Next button) to check.

Tube : 37.0 °C (48)
Plat : 37.0 °C (56)

Press  (Next button) to move Menu mode

Tube : 36 ~ 48°C (##) Display → Tube tray temperature

Plat : 36 ~ 48°C (##) Display → Cartridge tray temperature

 **Note:** *The setting temperature may be different from the actual temperature due to heat loss. If the temperature falls outside of temperature range, please contact sales or technical support. The number inside the blank (##) can vary depending on each AP setting.*

5. Version display

= [Menu items] =
4. Version

Display Version
Press  (Next button) to check.

4. Version
H/W : 1.0 F/W : 1.0

Press  (Next button) to move Menu mode

H/W → Display Hardware version

F/W → Display Firmware version

Maintenance

Trouble shooting

**=Abnormal State=
Tube = 60.1 °C**

If the temperature of pretreatment tube or cartridge rises above 60°C, warning message will be displayed with beep sound.

In this case, turn off power switch immediately and request after-sales service.

If a thermoregulator is broken down, it can cause burn of fire.

**=Dropping Error=
Please, restart !**

When the sample of tube is not dropped enough on the cartridge, Error message will be displayed with beep sound.

Throw away the prepared tube and restart using new Pre-treatment tube.

**Progression
-Cancel-**

If you want to cancel the test, press  (Next button) more than 3 seconds.

Maintenance

General Specification

- Normal
Environmental
Conditions

Electrical rating : 100 - 240V~, 1.7A

Frequency : 50 / 60Hz

Electric input : DC 12V, 5A, 60W

Dimension : 195mm x 230mm x 210m (W x L x H)

Weight : 4.0Kg

Display : 16 x 2 line characters LCD

Operating condition : Temperature 20°C ~ 30°C, Humidity 10% ~ 80%

Storage condition : Temperature 10°C ~ 40°C, Humidity 10% ~ 80%

Technical Support

Technical Support

Visit the our Website at www.nanoentek.com for :



- Technical resources, including manuals, FAQs, etc.
- Technical support contact information
- Additional product information and special offers.

For more information or technical assistance, please call or email.



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FREND™

AP System

NESMU-FAP-001EN(V.0.6)



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