Operation Manual
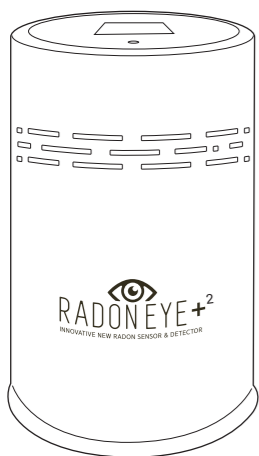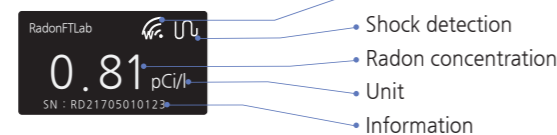
RD200P

FCC ID : 2AC7Z−ESPWROOM02
FCC ID : QECGWBMD0X

NRPP Approved Device
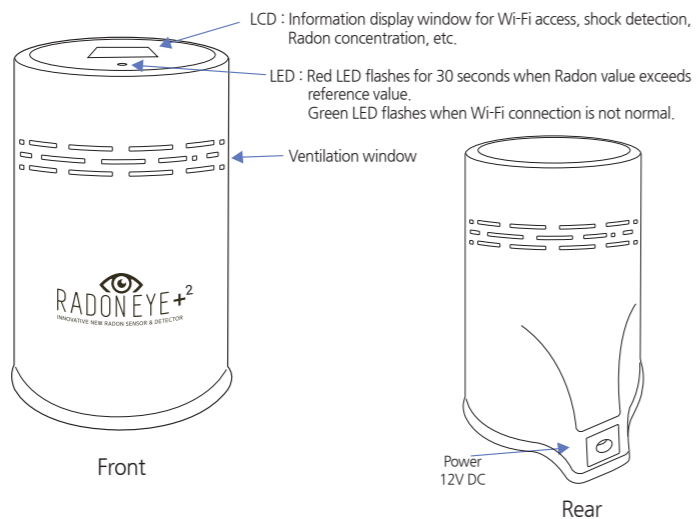CR8306

Smart Radon Gas Detector

RADON EYE +²

? Name and function of each part

Name and function of each part

RadonFTLab
0.81 pCi/l
SN : RD2170510123

- BLE Access
- Shock detection
- Radon concentration
- Unit
- Information

① BLE access : Indicates it is connected with smartphone using BLE communication
② Shock detect sign : It appears when a shock or vibration from outside is sensed, and the measurement stops at the time
③ Radon concentration : Measured value of Radon shown in 10 minute interval
④ Unit of measure : Shown in pCi/l or Bq/㎥. Unit can be changed by smartphone app.
⑤ Information display : SN, peak value, 1/2/7 day and month average, measurement time, pulse count per 10 minute measurement (present value/last value)

- LCD : Information display window for Wi-Fi access, shock detection, Radon concentration, etc.
- LED : Red LED flashes for 30 seconds when Radon value exceeds reference value. Green LED flashes when Wi-Fi connection is not normal.
- Ventilation window

Front

Power 12V DC

Rear

? Radon Eye +²

Radon Eye+² is the world's first IoT smart radon detector that is used in connection with web database based on WiFi. Therefore, Radon Eye+² is suitable for real-time radon monitoring and easy to create Real-Time Radon Map. Manufacturer, Radon FTLab provides web database, radon-net.com, which means the user can access the data every time, everywhere by smart phone, tablet or internet connected desktop PC.

The sensitivity performance of Radon Eye+² is like a standard instrument. It is 20 times higher when it is compared with other general customer's radon detector, so the measurement data is fast and precise. Radon measurement data can be recorded within 1 hour with below 10% error from starting time of measurement and the data will be updated every 10 minutes so the user will get to know the diminishing trend of indoor radon level just within 30 minutes by ventilation or window open.

Radon Eye+² has added temperature & humidity sensor and measurement time recording and extended the measurement range to 255pCi / l.
Radon Eye+² offers free web uploading service at least 2 years.

< Radon Eye VS Radon Eye +² >

| Model	Radon Eye (RD200)	Radon Eye +² (RD200P)
Mobile control	Bluetooth	Wifi, Bluetooth
Sensing factor	Radon	Radon, Humidity, Temperature
Time checking	X	O
Web access	X	O
Mobile notification	X	O
Measurement Range	0.1~100 pCi/l (1 ~ 3,700 Bq/㎥)	0.1~255 pCi/l (1 ~ 9,435 Bq/㎥)
Precision	< 10% at 10pCi/l (370Bq/㎥)	
Accuracy	<±10% (min. error <±0.5pCi/l)	
Data log	max 1year(1hour interval)	
Display	0.96 inch OLED	

⚠ Precautions when using
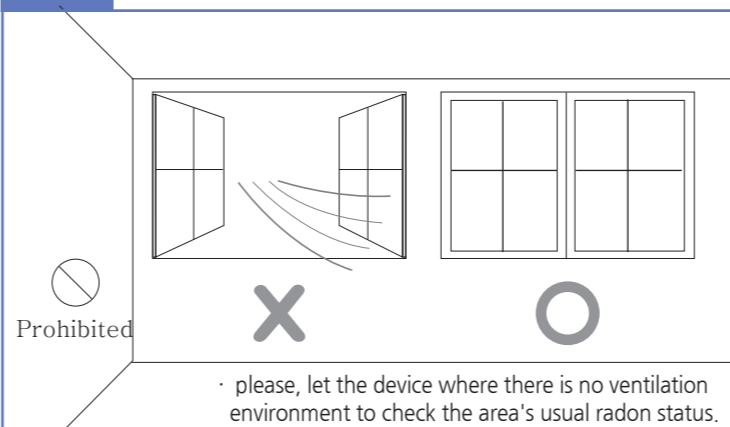
Prohibited

· please, let the device where there is no ventilation environment to check the area's usual radon status.
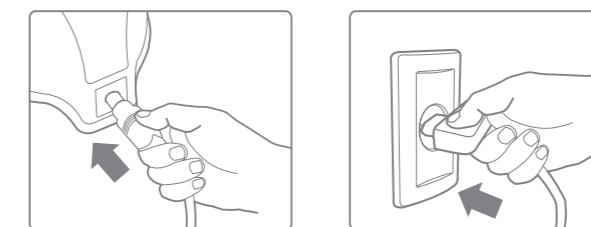
## ⚠ Example of proper installation
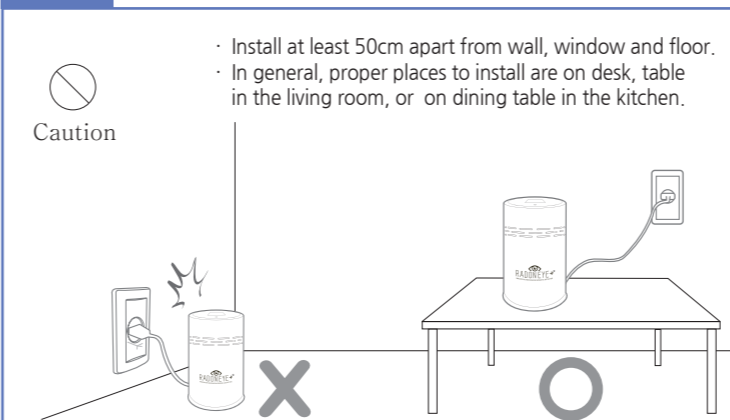
Caution

· Install at least 50cm apart from wall, window and floor.
· In general, proper places to install are on desk, table in the living room, or on dining table in the kitchen.

⊟ To start the device

1. For accurate measurement, close windows and doors tightly.

2. When RADON EYE+² is connected to DC 12V adaptor, measurement starts automatically.

3. After the power is on, the wait time (10 minutes) is indicated by '- -'. When wait time is over, the measured values are displayed from 10 minutes later. Measurements are displayed in 10 minute interval, and saved in 1 hour interval.

RADON EYE+² Actual value
C_device
P_device

---
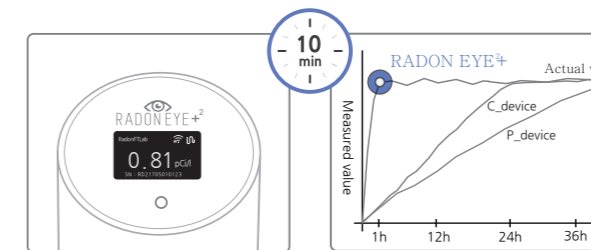
i Precautions before using App.

This is the User's Manual for controlling RADON EYE+² device made in Radon FTLab. Please refer to the detailed manual on the Radon FTLab website (http://RadonFTLab.com) for the equipment and PC program manual.

- Since it is an application that operates on a Wi-Fi base, there may be operational limitations.
- It works properly in Android 4.3 version or iOS 8.0 version or later
- If the distance between the device and the smart device increases, the connection may be lost.
- In the 5G Internet environment, there are restrictions in the use of the product, so please use 2.4G.
- We recommend user to agree to the privacy policy during the app setting stage for trouble-free data transfer.
- Bluetooth and GPS must be enabled before using
- The time in the area where the equipment is installed is applied to the data recorded after app setting/direct connection. The factory default time setting is UTC+09:00.

ON

Bluetooth & GPS function of mobile device should be activated for Radon Eye +² setting
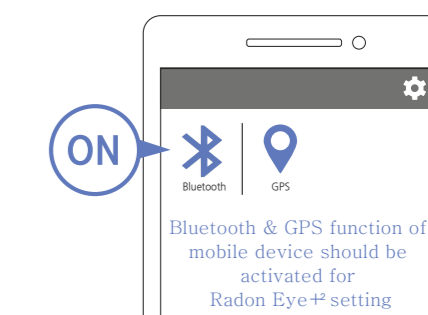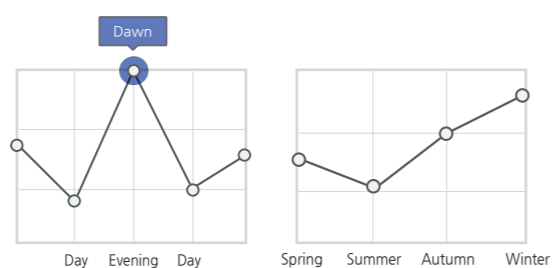

? Product Specifications

- Type : pulsed ion chamber
- First reliable data out : < 60min
- Data interval : 10min update (60min moving average)
- Sensitivity : 0.5cpm/pCi/t at 10pCi/l (30cph/pCi/l)
- Operating range : 10℃ ~ 40℃ (50°F ~ 100°F), RH < 90%
- Measurement range : 0.1 ~ 255 pCi/l (9,435 Bq/㎥)
- Environment reference value 4pCi/l (148 Bq/㎥)
- Precision : < 10% at 10pCi/l
- Accuracy : < ±10% (min. error <±0.5pCi/l) at 10pCi/l
- Interval of measurement value saving : 60 minutes
- Storage capacity : 1 year
- Power consumption : DC12 ± 0.1V, 0.1A (Use 12V DC adapter)
- Size : Φ80(mm) x 120(mm)
- Display : 0.96 inch OLED
- Data communication : Wi-Fi (internet), Bluetooth
- Weight : 520g
- Altitude : Up to 2000 m
- pollution degree : 2
- On November 14, 2018, the 'NRPP Listed Device' process of RD200P had been completed for US radon measurement experts measurement activity.
- Radon Eye Plus 2 is a function upgraded version of Radon Eye Plus that enhances Wi-Fi setup convenience by adding BLE communication to previous Radon Eye Plus products.

503ho, 8, 330beon-gil, Haebong-ro, Danwon-gu, Ansan-si, Gyeonggi-do, Korea

FCC ID : 2AC7Z−ESPWROOM02
FCC ID : QECGWBMD0X
COPYRIGHT (C)FTLAB Co., Ltd ALL RIGHT RESERVED.

Descriptive labeling in accordance with Quality Management and Safety Control Act for Industrial Goods.
Instrument type: RD200P
Instrument name : RADON EYE +²
Kind : For home(indoor) use
Material : ABS
Manufactured date : Indicated separately
Manufacturer : FTLab
· Only the manufacturer or agency will inspect and supply
Country of manufacture : Republic of Korea
Questions : www.radonftlab.com

⚠ Precautions

- Please, Measure in an environment free from vibration.
- Shock or disassembly will cause the equipment to malfunction and will not be included in the warranty. (the unit will display "ERR" message)
- Abnormal data can be measured when using near a strong electromagnetic radiation source such as high voltage transmission line, subway line, Wifi transmitter(1Meter or less), microwave oven(1M or less) ('OVER' message)
- Use only indoors. No waterproof.
- Use the provided DC 12V adapter.
- Continuous use in an environment with relative humidity of 90% or higher is prohibited.
- A warning message may be sent to the set mobile device when it is higher than the set radon concentration.
- Proper operating temperature range is 10℃ ~ 40℃ (50°F ~ 100°F)
- The warranty period is one year after purchase.
- Accurate measurement value of the average radon level can be obtained when the house is empty for 1 or 2 days.
- Reliable value can be obtained about 1 hour after start of the measurement.
- Radon concentration in the house is generally high at dawn and low at daytime, so continuous measurement for more than 24 hours is necessary.

Dawn

Day Evening Day
Spring Summer Autumn Winter

Daily radon concentration   Seasonal radon concentration

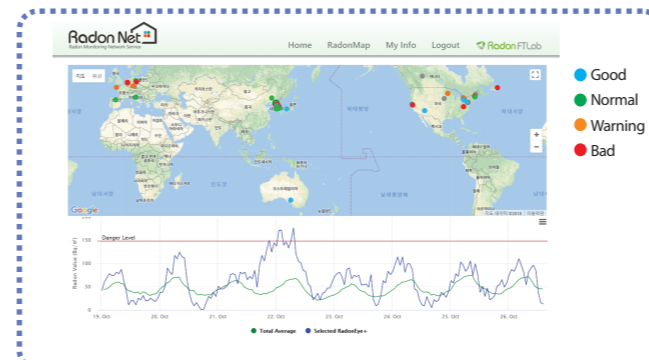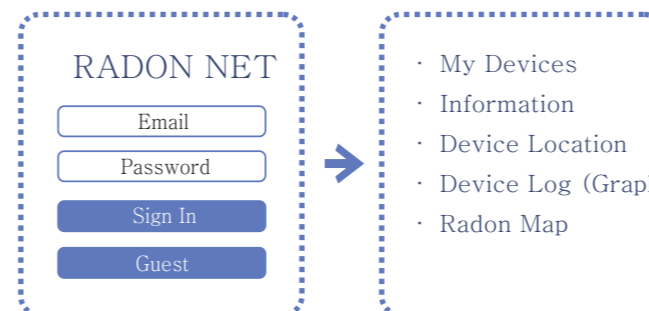<Radon concentration fluctuation graph>

? Radon ?

1. Radon is a colorless, odorless and tasteless radioactive gas.
Radon, a gas originating from radium which is generated by the collapse of uranium in soil, is everywhere on earth. It penetrates indoors mainly from the ground or building materials. The gases that cause sick house syndrome and other noxious gases luckily smell. Urban gas and LPG were deliberately smelled. However, radon does not smell nor can be seen. And no matter how many years have passed, it is constantly released from the wall, ceiling and floor.

2. Radon is 8 times heavier than air and is easily concentrated in the house.
Radon has the half-life of 3.8 days and makes alpha decay. The alpha particle emitted from radon has the smallest penetration power among the radiation rays and can not penetrate even a single piece of paper, but its destructive power is so great that the cells are damaged if they are directly impacted by radon, even having a nickname of "silent murderer". This is why radon detection sensor is absolutely needed in home.

3. Radon gas causes lung cancer.
Three causes of modern female lung cancer are passive smoking, ultrafine particles and radon. When radon gas enters the lung through breathing, alpha particles released from radon damage the lung cells. Since once destroyed lung cells are not regenerated, prolonged exposure to high concentration of radon gas will increase the likelihood of lung cancer. Therefore, the United States Environmental Protection Agency(EPA) designated Radon as a must be managed hazardous gas for healthy life.

? RADON NET

RADON EYE+² provides Remote Radon Monitoring Network Service. You can check radon value in the web browser by registering the registration key which is given when you access the radon-net.com website when setting the app. You can also check the local radon value at any time through Radon Map.

RADON NET
- Email
- Password
- Sign In
- Guest

→

- · My Devices
- · Information
- · Device Location
- · Device Log (Graph)
- · Radon Map

Radon Net
Home RadonMap Info Logout
● Good
● Normal
● Warning
● Bad

? Q&A

1. What should I do under condition of no Wi-Fi around available?
A : RADON EYE Plus2 automatically starts measuring when power is simply connected, so all you need to do is just select 'Connected Devices' menu in your smartphone application even if you don't have a Wi-Fi

2. Tell me how to set up an app. when errors.
2.1. RadonEye Plus2 you are trying to set is not on the list.
A (iPhone) : Switch Bluetooth off and on to update the list again.
A (Android) : Click the "Rescan" button to update the list again.

2.2. The Wi-Fi list displayed on the app. does not contain the desired Wi-Fi I'd like to connect to.
A : Click the 'refresh' icon to update the Wi-Fi list. for your reference, 5GHz Wi-Fi is not supported and will not appear in the list.

2.3. If 'Wi-Fi settings failed' is displayed when next button is clicked after entering the Wi-Fi information.
A : If the green LED on RadonEye Plus2 keeps blinking and Wi-Fi connection is not successful, please check if Wi-Fi password is entered correctly and internet connection status of the Router.

2.4. If the message 'RadonEye Plus2 registration failed' is displayed when the button is clicked after entering the Wi-Fi information,
A : Smartphone should also be Internet-connected through Wi-Fi / LTE / 3G
Check the Internet connection status of the smart device and proceed with setting under this circumstance.

2.5. If other cases of setting failure
A : Check the Wi-Fi and GPS connection on your smartphone, then turn the device off and on and run.

3. How can I change RadonEye Plus2 wifi connection that's been already set into previous wifi place?
A : If you have Wi-Fi in your environment, you can set it up again and use it easily by clicking 'Main'-'Sub Menu'-'Network'

4. It continues to show the high concentration figure, Is it out of order?
A : In this case, leave it in a well ventilated location for about two days and try to measure the low concentration at veranda, indoor air quality, and high concentration in sequence

1. App Installation & Wi-Fi Setting

⚠ Please check if Wi-Fi is connected alright.
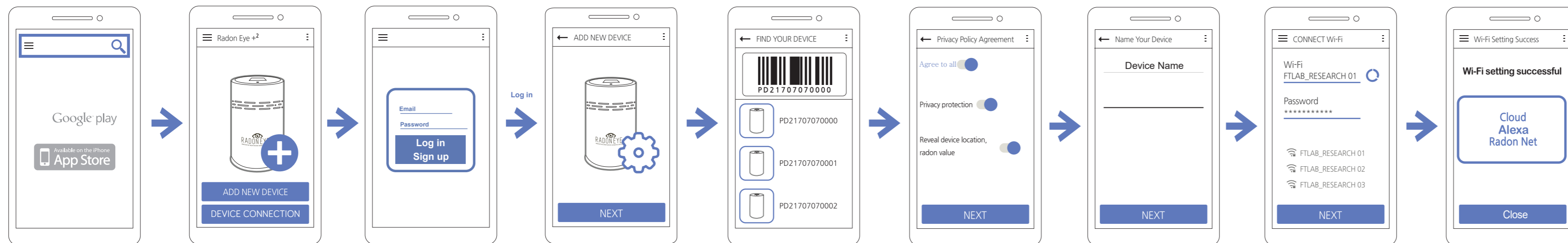
Search 'Radoneye plus2' App
(Note : This is not 'Radoneye plus' App)

Google play
App Store

App Execution Screen
Radon Eye +²

ADD NEW DEVICE
DEVICE CONNECTION

① ADD NEW DEVICE : To set up RADON EYE+² to connect with Wi-Fi The set up RADON EYE+² will be registered in the smart device.

② DEVICE CONNECTON : Directly connect to RADON EYE+² having no network setting and check data

New Members Screen
Log in

Email
Password
Log in
Sign up

① Need to activate GPS and Bluetooth

Add New Device
← ADD NEW DEVICE
NEXT

① Check the serial number shown in the bottom of the device

② Select device from the list.

Select Device
FIND YOUR DEVICE
PD21707070000
PD21707070000
PD21707070001
PD21707070002

Accepting Privacy Policy Statement
← Privacy Policy Agreement

Agree to all
Privacy protection
Reveal device location, radon value
NEXT

① Privacy protection (required)

② Reveal device location, radon value (select)

Setting Installed Location and Number
← Name Your Device
Device Name
NEXT

① Device Name : Enter directly within 20 characters

② In case of push alarm, it is shown as the set information

Wi-Fi Setting
← CONNECT Wi-Fi
Wi-Fi
FTLAB_RESEARCH 01
Password
****
FTLAB_RESEARCH 01
FTLAB_RESEARCH 02
FTLAB_RESEARCH 03
NEXT

① Wi-Fi to be connected to RADON EYE+²

② Enter Wi-Fi password

⚠ RADON EYE+² does not support 5GHz Wi-Fi

Wi-Fi Setting Successful
Wi-Fi Setting Success
Wi-Fi setting successful
Cloud
Alexa
Radon Net
Close

---

2. Sub-menu Setting in App Main Menu

Main Screen
Radon Eye +²
Room1
PD21707070000 ①
② Network ③ Alarm ④ Cloud ⑤ Delete
ADD NEW DEVICE
DEVICE CONNECTION

① Activate sub-menu by clicking arrow button
② Network : To reset network
③ Alarm : To set Daily Alarm and Warning Alarm
④ Cloud : Real time data can be checked from outside
⑤ Delete : To delete selected device from the list

③ Push Alarm Setting
← Push Alarm Setting
Daily Enable 19 o'clock
Warning Enable
NEXT

• Daily Enable : Measured value is sent by Alarm message at the set time everyday

• Warning Enable : When measured value is higher than the set value, Alarm message is sent

④ To Use Cloud
← Cloud Data
Room1 : RD21707070000
Time   Value   Temp
Avg   Min   Max
Day Week Month Year All

• Real time data can be checked remotely without connecting RADON EYE+²

⑤ Delete
Radon Eye +²
Room1
PD21707070000
Do you want to delete the selected device from the list?
YES   NO
ADD NEW DEVICE

• To delete selected device from the list

⑥ AI Speaker
Radon Eye +²
Radon Net
Log in
File Load
What is Radon?
Radon Net(RMNS)
AI Speaker ⑥

• With the success of Wi-Fi setup, RADON EYE+² can use the affiliated AI voice service

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3. App Features and the Use

Radon Eye +²
OPERATION SETTING
① ② ③
④
⑤ 0.51
⑥
⑦ Clear ⑧ Data Reload ⑨ Save As

Radon Eye +²
pCi/l Bq/m³ Avg Min Max
day Week Month Year All
S/N : RD21707070000
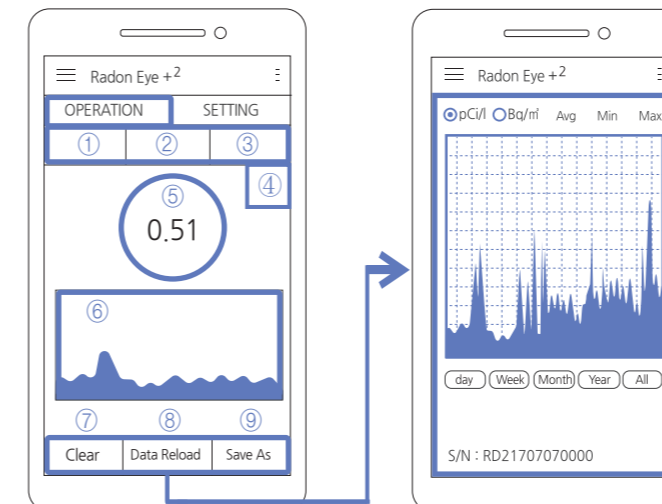
Features of 'OPERATION' Screen

① Displays the measurement time

② Peak Value / 1day Average / 2day Average / 7day Average / 1Month Average
  - Peak Value : The maximum value of the measured radon value
    (The value is displayed after 1 hour from the device plugged in)
  - 1/2/7 day Average : Average value of radon data measured for 1/2/7 day
    (From the time 1/2/7 day after the measurement time, it is displayed alternately with Value)
  - 1Month Average : Average value of radon data measured for 1month
    (From the time 1month after the measurement time, it is displayed alternately with Peak Value, 1/2/7day Average)

③ Temperature & humidity

④ Status Display Window
  -Icon at the top : Smartphone <-> RadonEye+² Device connection status
  -Icon at middle : Wi-Fi Connection Status on RadonEye+²
  -Icon at bottom : Showing status when the instrument is unstable or not in proper condition

⑤ Measured Radon Value Display Window
  -The radon value measured by RADON EYE+²is updated in 10 minute interval

⑥ Measured Radon Value Graph
  -The values measured by 1 hour interval in the device is saved in log value and shown in graph(maximum 24 values)
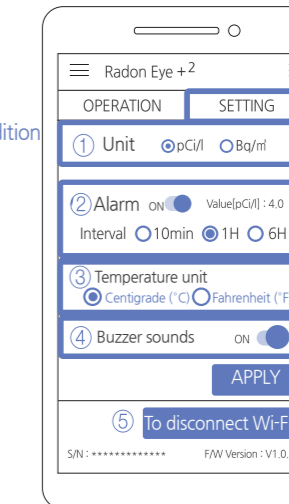 -When checking the whole data, Detailed analysis is possible through MORE DATA in the upper right corner

⑦ Clear button : To initialize the data saved in RADON EYE+³ device

⑧ Data Reload button : To retrieve the data saved in RADON EYE+² device
  -Possible to output in pCi/l or Bq/m³ values through Radio button
  -Zoom In, Zoom Out are possible
  -Possible to set display period using buttons in the bottom

⑨ Sava As button : To save the data in the device retrieved through Data Reload as a txt file in smartphone
  ※ The location of the file to be saved in smartphone
  · Android smart devices : File Manager -> ₩Radon FTLab folder
  · iPhone PC connection : iTunes -> File sharing-> App -> RadonEye Plus2 - Document

'SETTING' Screen
Radon Eye +²
OPERATION SETTING
① Unit pCi/l Bq/m³
② Alarm on Value[pCi/l] : 4.0
  Interval 10min 1H 6H
③ Temperature unit
  Centigrade (°C) Fahrenheit (°F)
④ Buzzer sounds ON
APPLY
⑤ To disconnect Wi-Fi
S/N : •••••••••••• F/W Version : V1.0.1

① Selecting Unit
  - To change the unit of the radon value in RADON EYE+²

② To select Alarm Use/Not-use
  - Display in LED of RADON EYE+²
  - Interval : The interval of LED display when alarm status is maintained

③ To select temperature unit
  - To select Centigrade(°C) or Fahrenheit(°F)

④ Buzzer sounds
  - Mute during connection and setting

⑤ To disconnect Wi-Fi
  - To disconnect Wi-Fi from RADON EYE+²
  - Cloud and Radon Net cannot be used, and data can be checked only through direct connection