Pen-type electronic pipette with smartphone APP

Pen-type electronic pipette with wireless communication function

pipetty Smart APP (Dedicated application)

pipetty Smart App

# Operation Manual

Operation Manual Ver. 1.0.1

Firmware Ver. 6.0.2

Application Ver. 1.0.1.0

2020.12.28

pipetty Smart App

# Index

# 1 Overview

## 1.1 About this Operation Manual

Please read this Operation Manual before using this product for the first time.
We recommend that print this Operation Manual and store it near the product.
This manual is for pipetty Smart or pipetty Pro Android ™ smartphone apps only.
Compatible with ver.1. *. *. * software (application) and ver.PP-6. *. *, ver.PS-6. *. * software (device).

## 1.2 Notes on using the application

### 1.2.1 About application

【Note】

- The log file is output as the operation result and does not guarantee the dispensed volume. Depending on the usage conditions, there may be a difference between the log file and the actual dispensed volume.
- This application display does not have a tracking function. Therefore, we cannot guarantee that the pipetting portion will be wrong due to the work.
- We are not responsible for any trouble or damage caused by using this application.
- The screen images in this manual are examples of use, so the contents may differ depending on the actual input contents.

### 1.2.2 About connection

【Note】

- In connection, when used around a wireless LAN, other wireless devices, around devices that emit radio waves such as microwave ovens, in places with many obstacles, or in other environments with poor radio wave conditions, the connection may be interrupted frequently, or communication may be lost. The speed may be extremely reduced, or an error may occur.
- If you repeatedly charge the battery without using it up, a phenomenon called the “memory effect” occurs in which the discharge voltage drops, and the connection may be interrupted or the communication speed may drop even after charging.
- For other precautions regarding wireless communication, please read the pipetty series Operation Manual.

### 1.2.3 About Installation

The following system is required for installation.

| | |
|---|---|
| OS | Android™8.1 ~ |

# 2 Features

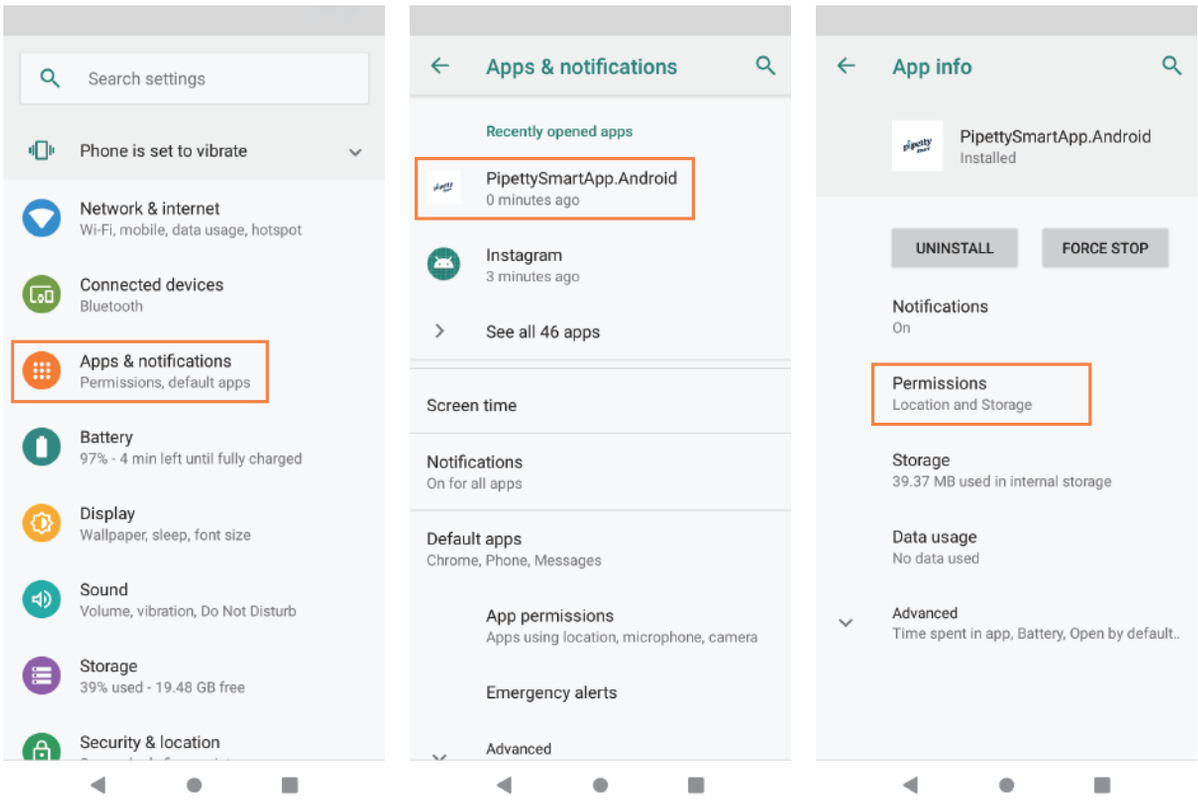
The "pipetty Smart App" which is interlocking with a pen-type electric pipette with a wireless communication function supports reduce researcher’ s burden and make efficient operation by the reduce time required for switching between difference volume pipettes, mode switching, dispensing volume switching and experiment log saving.

# 3 Setup

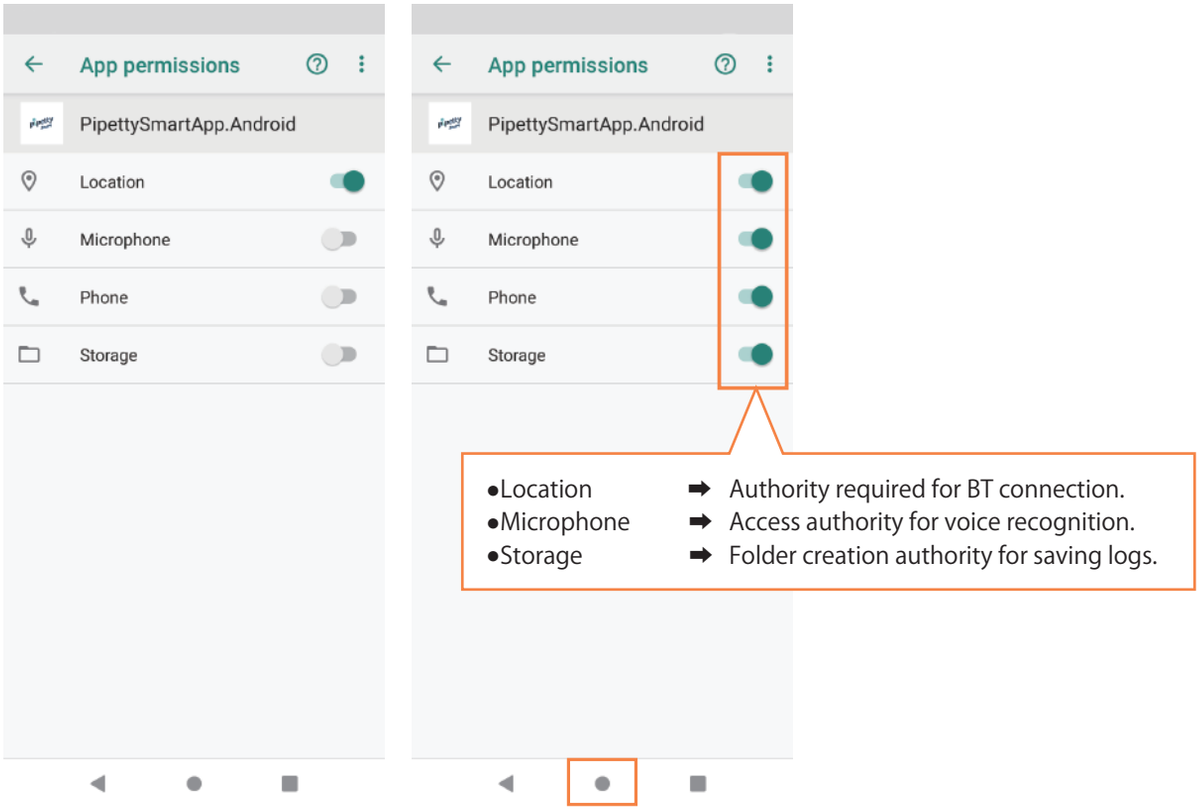
The application can be downloaded from the "Google Play ™" link on our website.
[ URL：https://www.icomes.co.jp/product/pipetty-smart/ ]

## 3.1 Setting APP permissions

* It is necessary to turn on the application permission from "Settings" on the smartphone start menu, "Apps and notifications" ⇒ "pipettySmartApp.Android" ⇒ "Permissions".



Turn on "Storage", "Microphone", and "Location" in APP permission screen.
After completing the settings, tap ● "Close" on the smartphone.



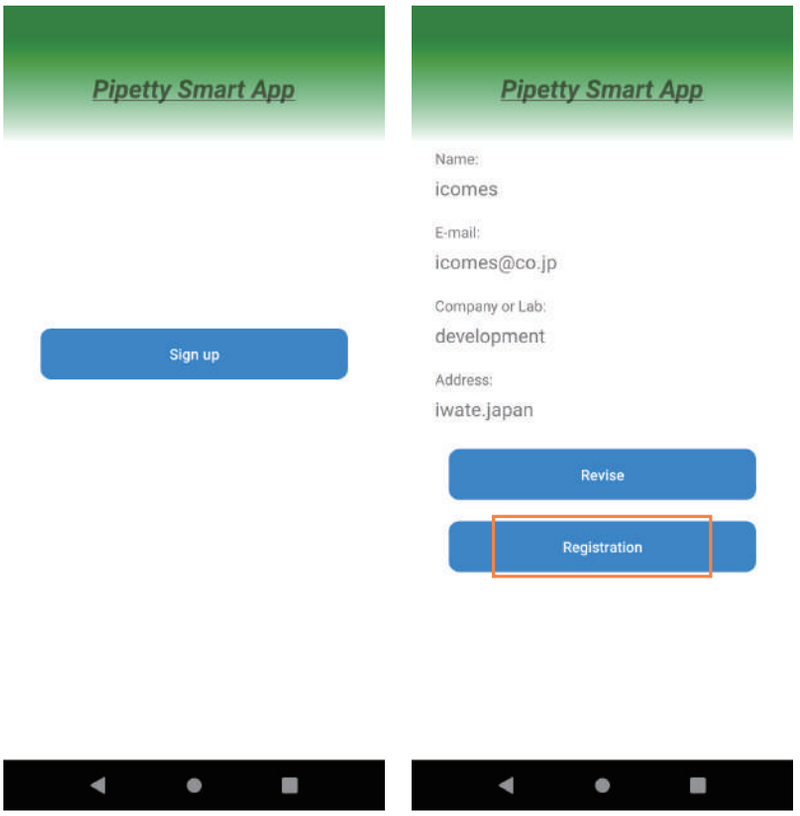
# 4 Start the program

## 4.1 How to start

( 1 ) On smartphone
Tap the "pipetty Smart" icon.


## 4.2 Startup screen (Signup screen)

When you run pipetty SmartApp, the startup screen (Registration screen) shown below is displayed.
Proceed the User registration by inputting information from this startup screen.
User registration is optional, but please be aware that if you do not register the necessary information, we may not be able to provide the service you desire.



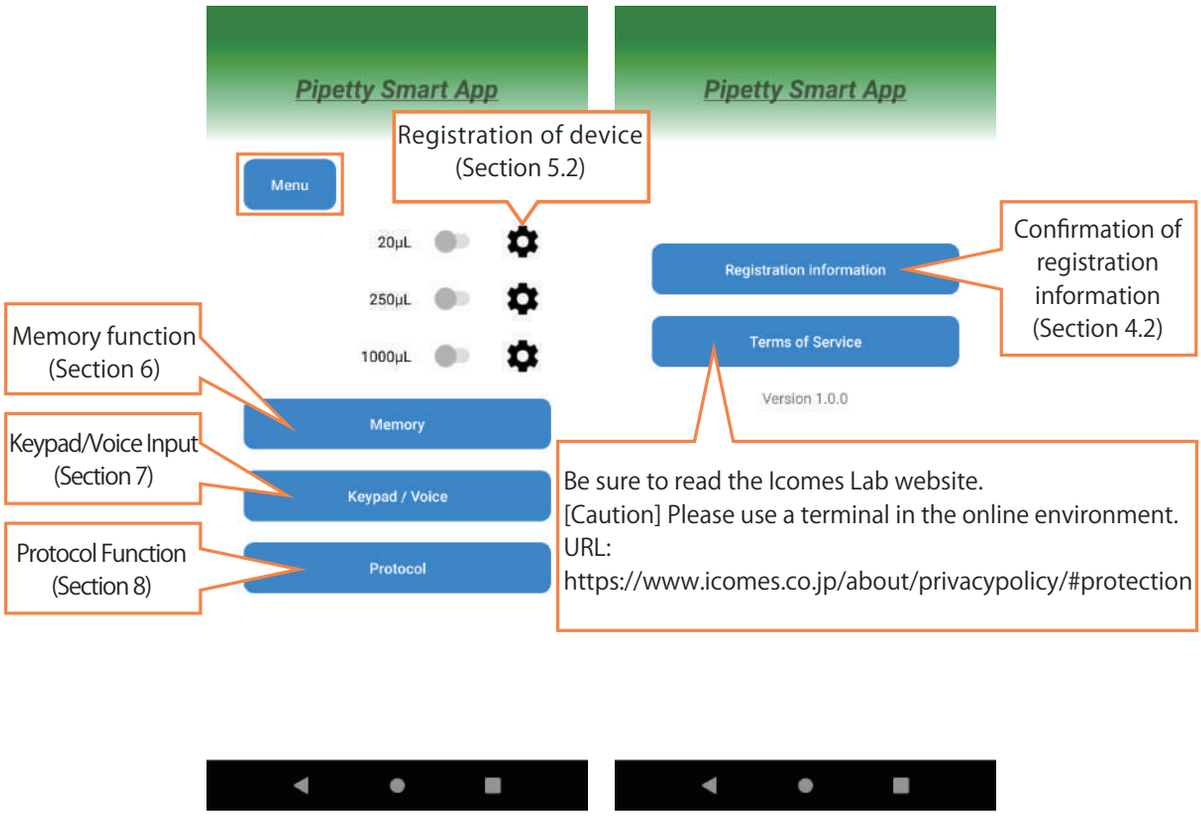

Tap "Registration" to complete registration and move to the "Main" screen.

* Icomes Lab Co., Ltd. handles personal information obtained from customers in compliance with the Personal Information Protection Law and in accordance with the personal information protection policy.
Regarding protection of personal information, tap "Menu" ⇒ "Terms of Service" to open "About protection of personal information" on Icomes Lab Website, so be sure to confirm the contents.

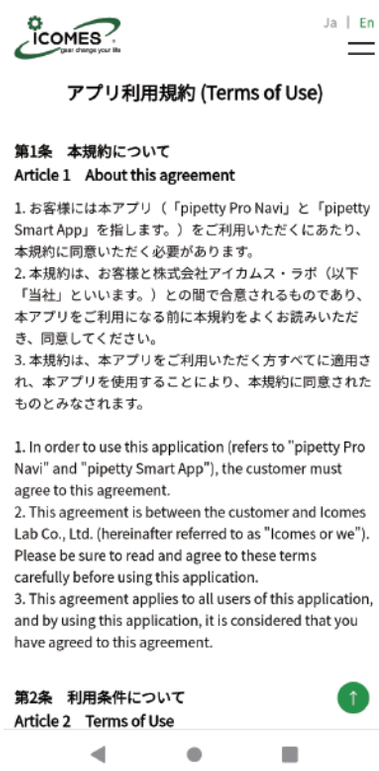
## 4.3 Main screen

Description

●When you tap Menu, "Registration information" The "Terms of Service" screen will be displayed.



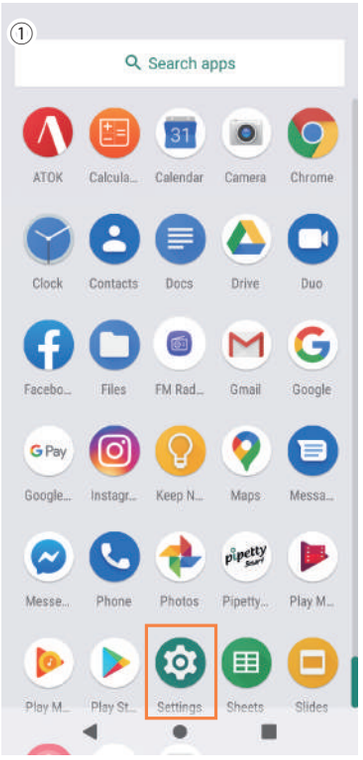

Please be sure to read "About the protection of personal information".

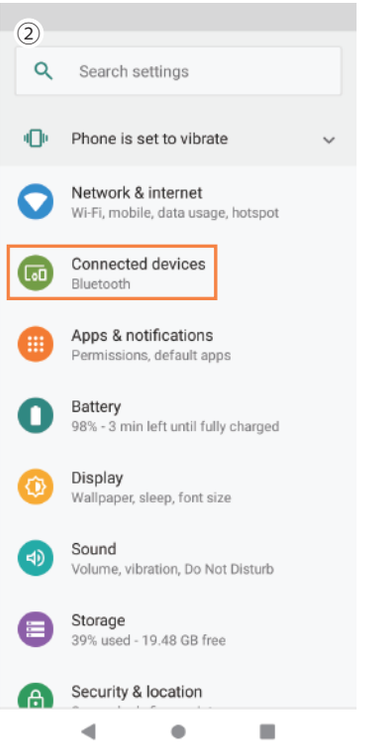


# 5 Connection

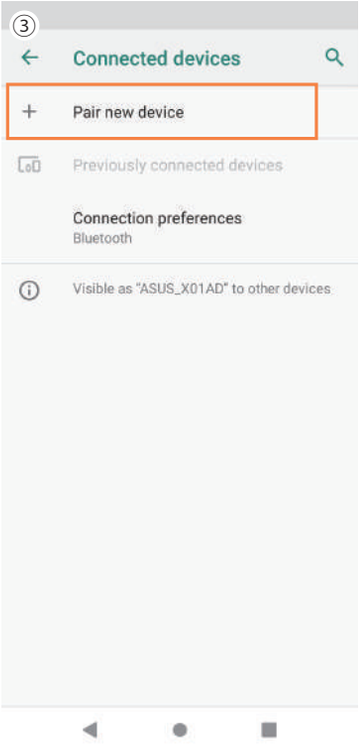
## 5.1 Registration of device in Smartphone

In order to use pipetty SmartApp, need to register pipetty device in smartphone.
①Open "Settings" in the start menu of the smartphone.
②Open "Settings" in the start menu of the smartphone.

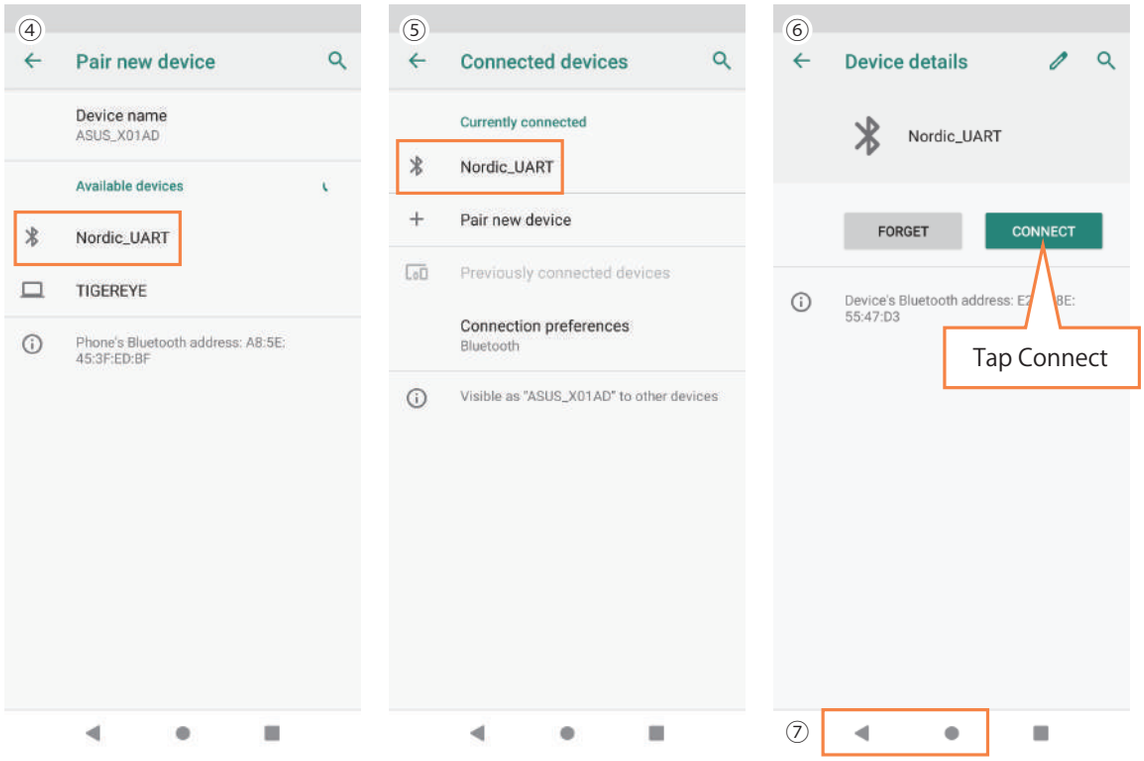



③On the connected terminal (Bluetooth), tap "Pair with new device".
* At this time, turn on the pipetty device (the display screen of the pipetty is flashing for mode selection").



④"Nordic_UART" is displayed as "Available device" on the pairing screen with the new device.
⑤ "Nordic_UART" Tap to switch to the connected terminal screen, and "Nordic_UART" is displayed in "Currently connected terminals". (Pairing completed)
⑥Tap “Nordic_UART” to switch to the detailed screen of the terminal and “Connect” will be highlighted.

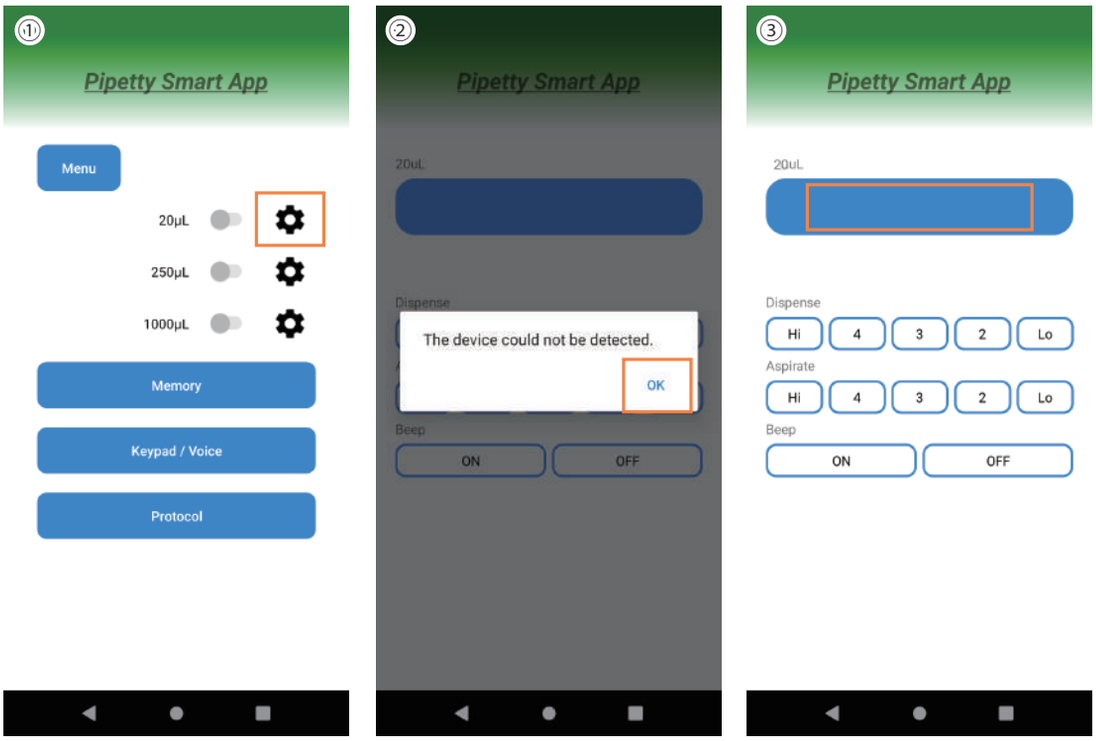



⑦Complete the pairing of pipetty and smartphone by "Back" or "Close" on the smartphone.

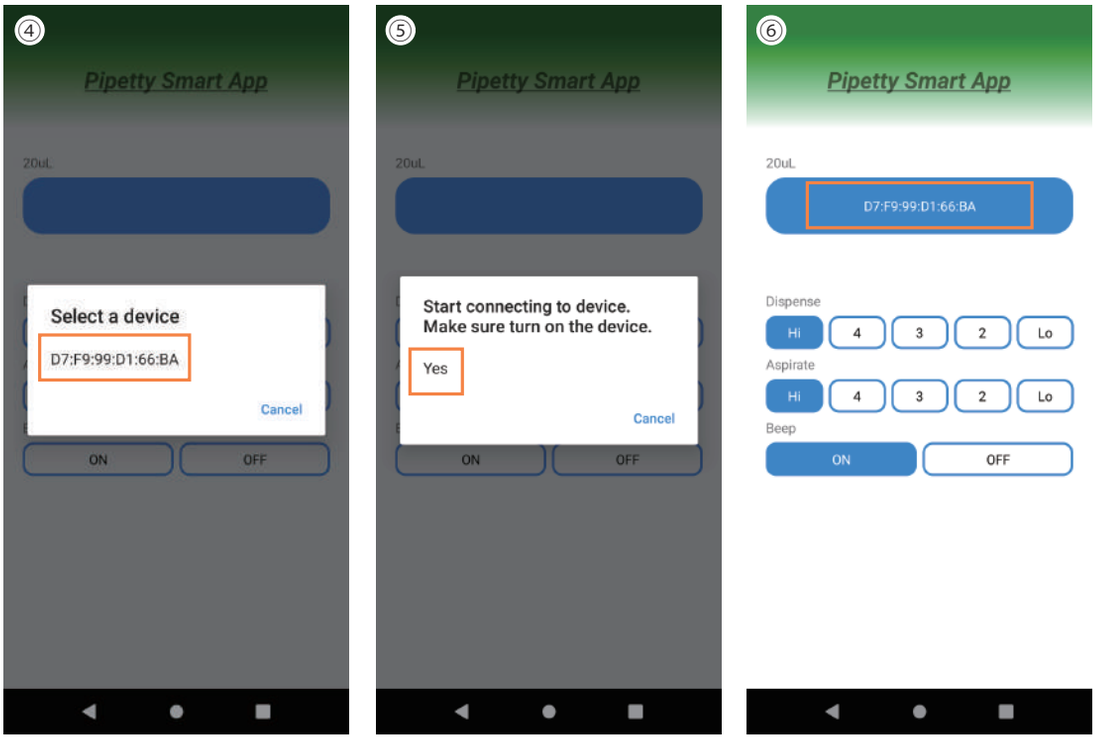
## 5.2 Registration of device in APP

Register the paired device in pipetty Smart App.
Register the device (20 µL, 250 µL, 1000 µL) and the application side with same volume.

【Registration procedure (Registration example: pipetty 20µL)】
①Tap the setting of 20µL display on the Main screen.
②If it is first setting, "Incorrect pipette information" is displayed, so tap "OK".
③Tap the information field of the device to register.




④Confirm the MAC address to register from Select a device and tap it.
⑤Confirm the connection preparation (make sure pipetty device is turned on), then tap "Yes".
⑥Confirm that the MAC address is registered in the information field.



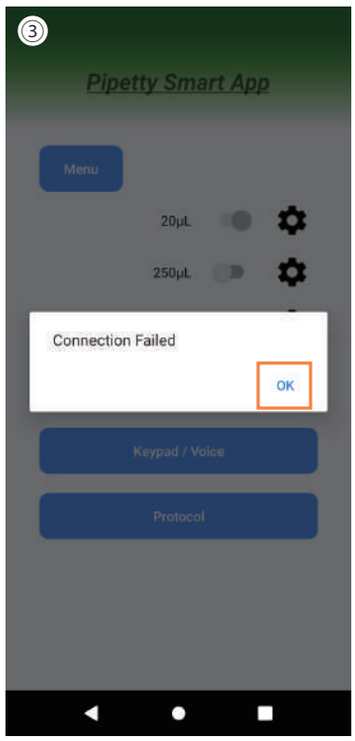
(Fig.1)

【How to confirm pipetty Number】
pipetty device Number can confirm by pressing the DOWN button while pressing the PUSH button while the mode selection is flashing.
The lower 6 digits of the MAC address are saved in the shipping state.
Also, can check the lower 6 digits of the factory-set MAC address by pressing the UP button while pressing the PUSH button.

Note: Cannot be displayed while connected to the application.

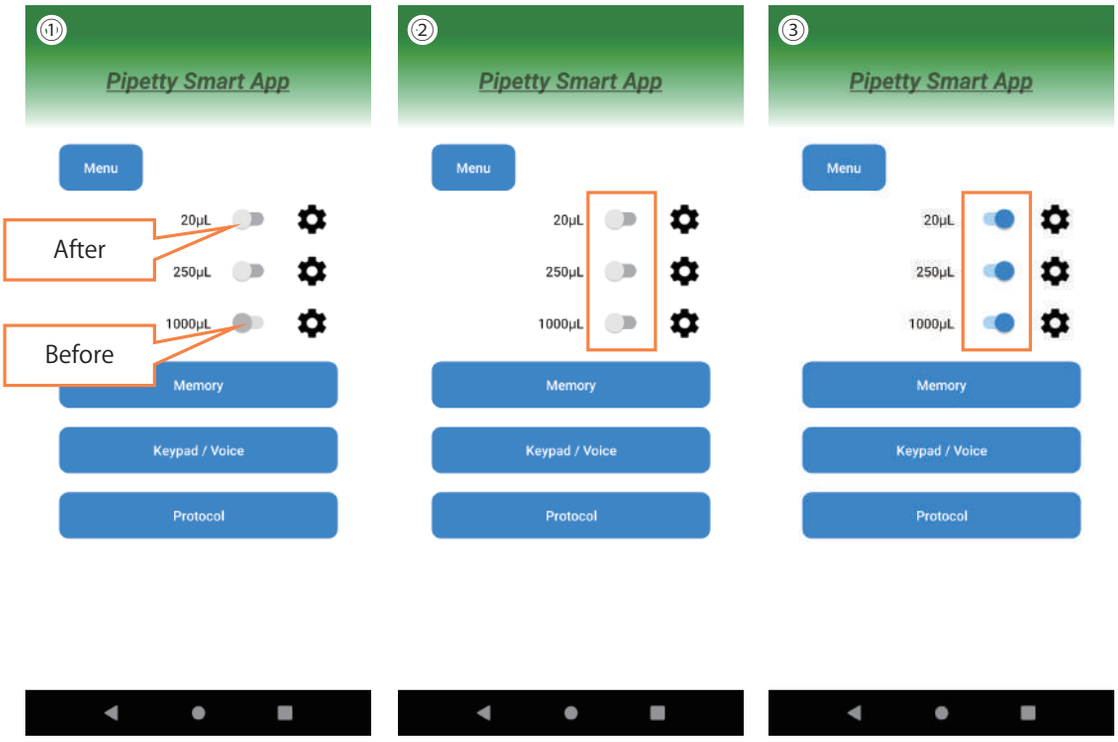
【About error messages】
●If the connection destination is incorrect
① When selecting a connection, if the device is incorrect, the following display will appear. Tap "OK" to reselect.
● If the pipetty is not turned on
(2) (3) The following display also appears when the pipetty is turned off. Turn on the pipetty and tap "OK" to reselect.





【Register multiple pipetty Smart device 】
By registering up to 3 devices that are paired, can switch between capacities, modes, and dispensing volumes.
* Please note that cannot register multiple items with the same capacity device.

After registering 20μL, 250μL and 1000μL respectively, the screen will be as shown below.
①The button color will change when device registration is completed.
②③ When you tap the capacity button and the button turns blue, the operation is ready.

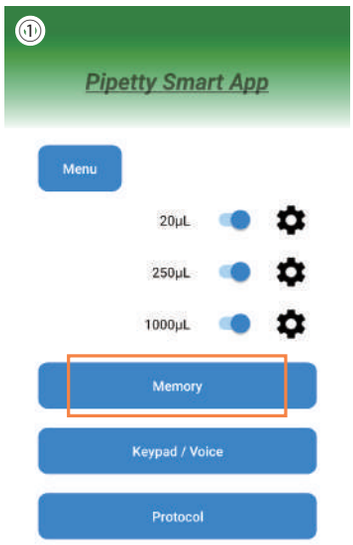


# 6 Memory

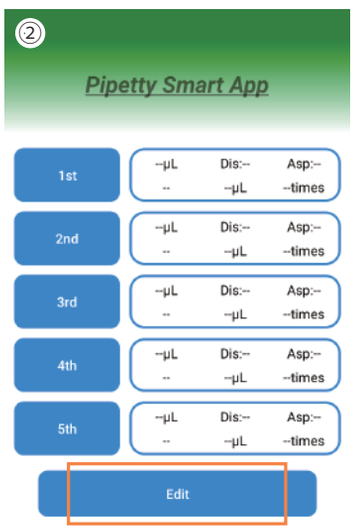
Up to 5 types of dispensing settings can be stored in memory.
By storing frequently used dispensing settings in memory, do not need to set every time.

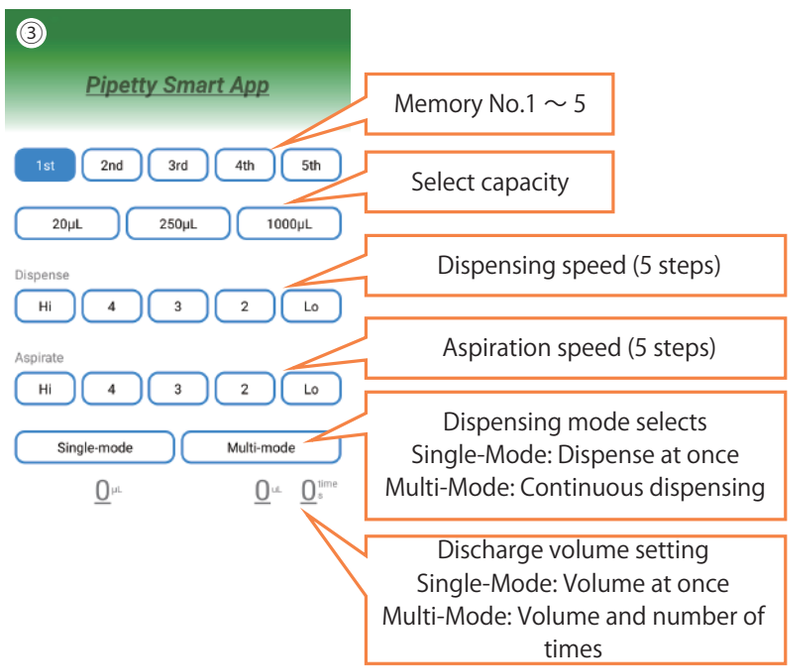
## 6.1 How to register Memory

①Tap "Memory"




②To register from the Memory screen, tap "Edit" to enter the memory No. registration screen in ③.

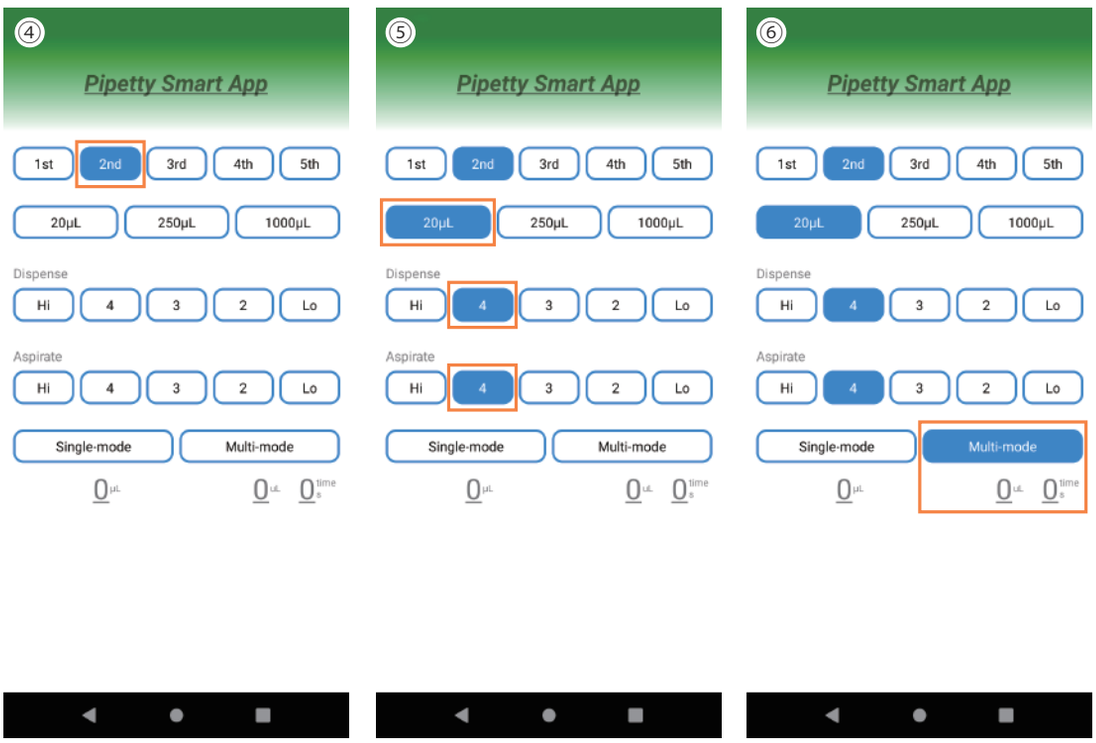



* [Settings decimal point of dispensing volume]
  - 250μ → 1.0-99.9 can be set. (However, the device display is up to 19.9)
  - 1000μ → 5.0-99.9 can be set. (Same as above)

Display on the device is up to 19.9, but the application can set and operate up to 99.9 after the decimal point.

④ Tap 2nd to register the dispensing setting in memory No.2
[Registration example: 20 µL, Dispense speed 4, Aspiration speed 4, Muiti-Mode, 1.5 µL, 6 times]
⑤Volume 20µL, Dispense speed 4, Aspiration speed 4, select⑥ Muti-Mode

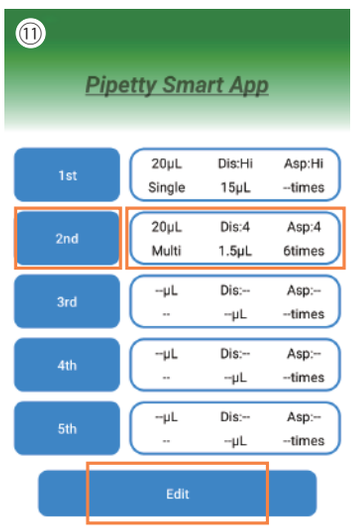



⑦⑧⑨Tap the number of Multi-Mode dispensing volume µL and the number of times Time to input
(input example: Dispense 1.5 µL 6 times)

⑩After confirming the completion of input, tap “Return” ◀ to complete the dispensing setting registration and return to the Memory screen.




⑪The registered dispensing volume is displayed, and tap the corresponding memory No.2, The setting volume will be transferred to the device.





(Fig.1)

* Other memory No. inputs can be set from "Edit" as well.

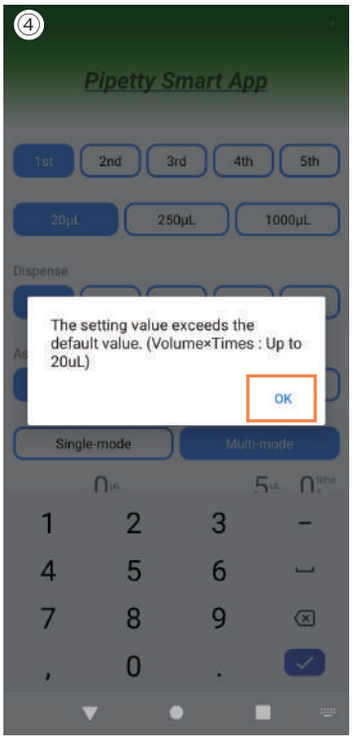
【Error message】

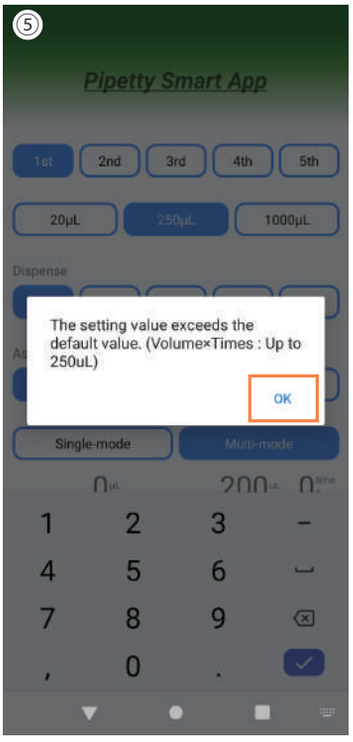
● Incorrect memory entry

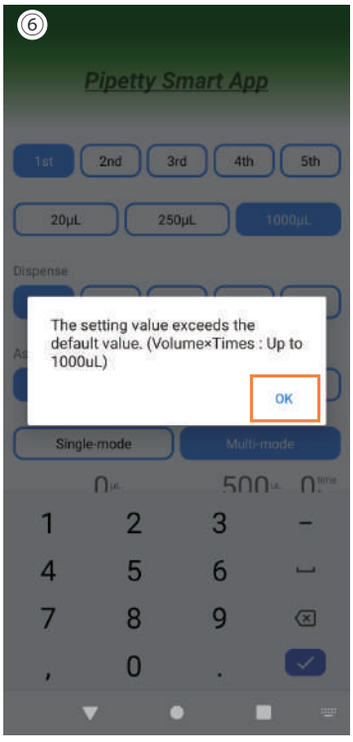
①②③→When the input value of Volume is incorrect




④⑤⑥→When the input value is incorrect (Volume × number of times exceeds the specified value)



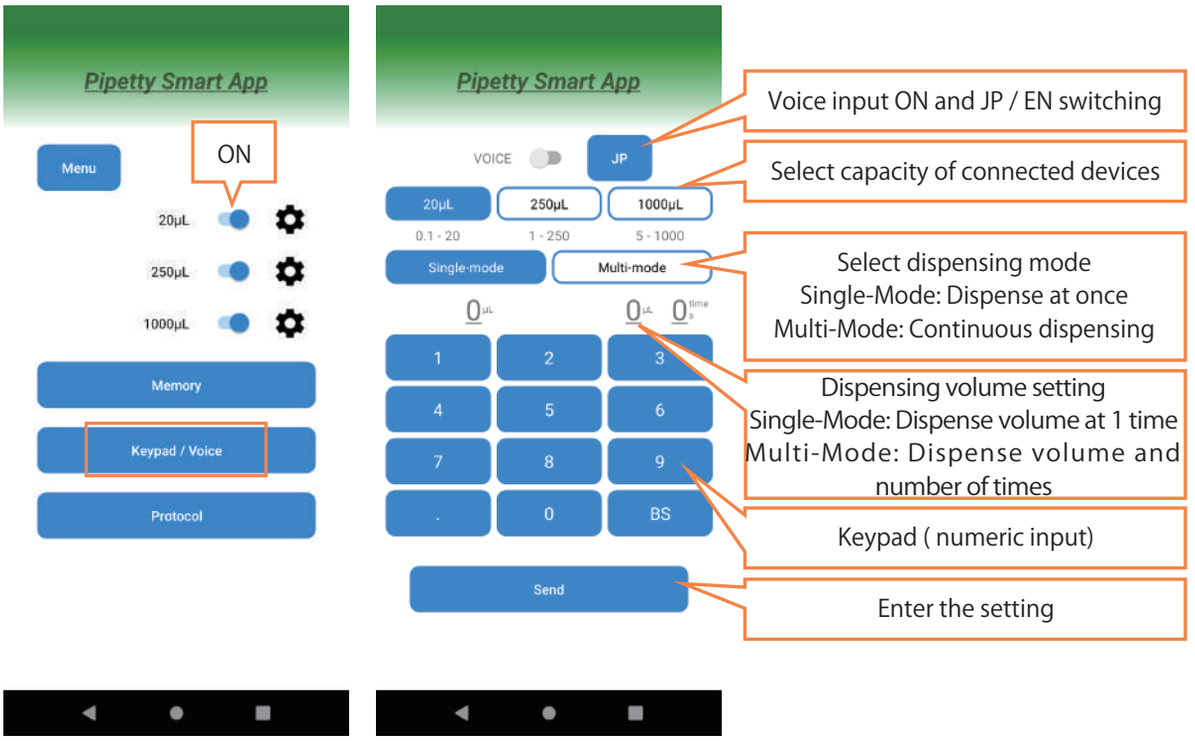
●In case of connection error

⑦ When the device is not turned on or when the main screen switch (blue) is not turned on

# 7 Keypad/Voice

Keypad input on the screen and voice input (Japanese / English) to set and enter the volume, dispensing mode, and dispensing volume of pipetty.

## 7.1 How to use Keypad




[Keypad input registration example: 1000μL, Single-Mode, 500μL]
①Tap 1000μL capacity and select Single-Mode in dispensing mode
②When tap the number part of the dispensing volume setting, the number disappear, and can proceed input.

* [Settings below the decimal point of dispensing volume]
  ●250 μ → 1.0 - 99.9 can be set. (However, the display of device is up to 19.9)
  ●1000 μ → 5.0 - 99.9 can be set. (Same as above)
The display on device is up to 19.9, but the application can set and operate up to 99.9 after the decimal point.

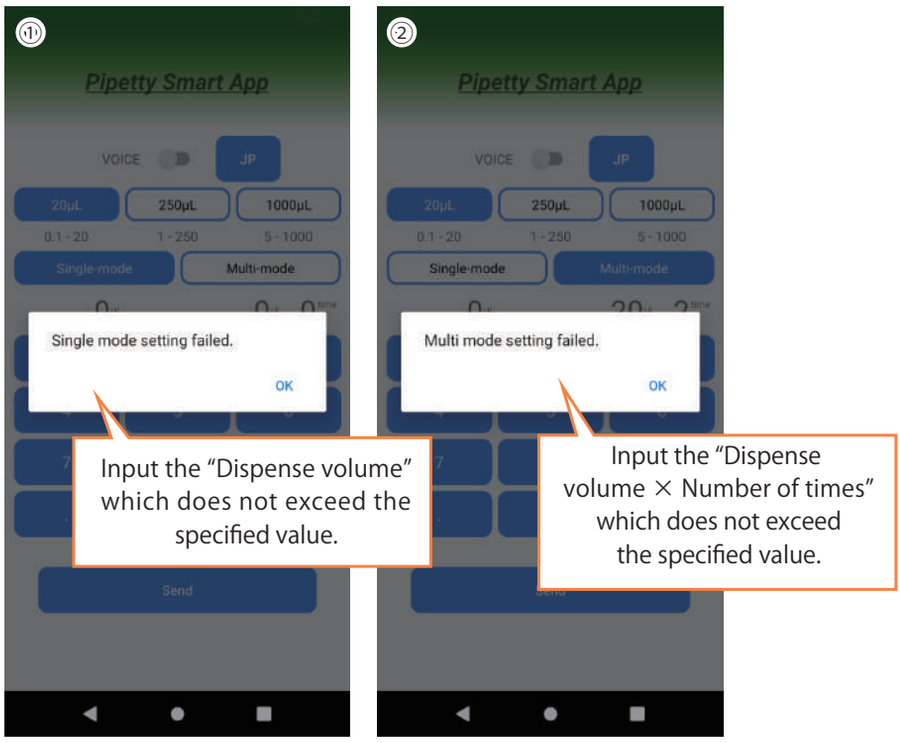
③ After inputting a numerical value on the keypad, tap "Send" to transfer to device.



(fig.1)

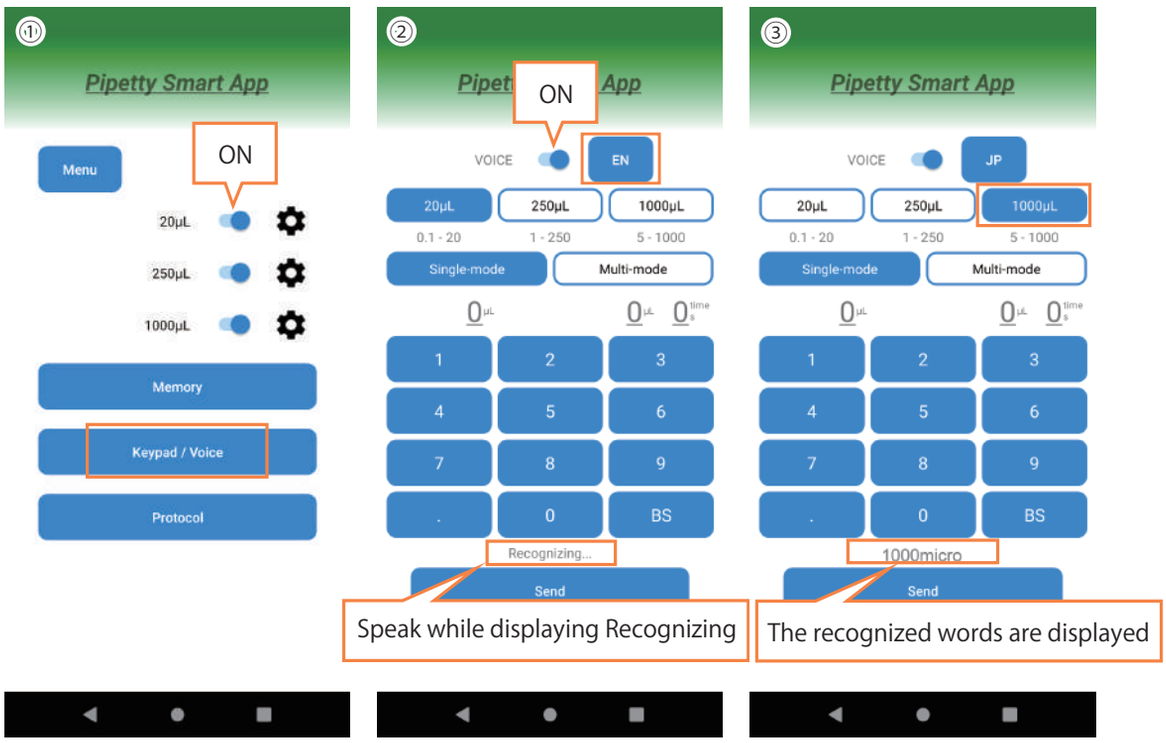
* Tap the "Back button" on the smartphone to reset the entered information.

[Error messages]
● If the keypad value is entered incorrectly
① When the input value of Volume is incorrect
②When Volume × number of times exceeds the specified value

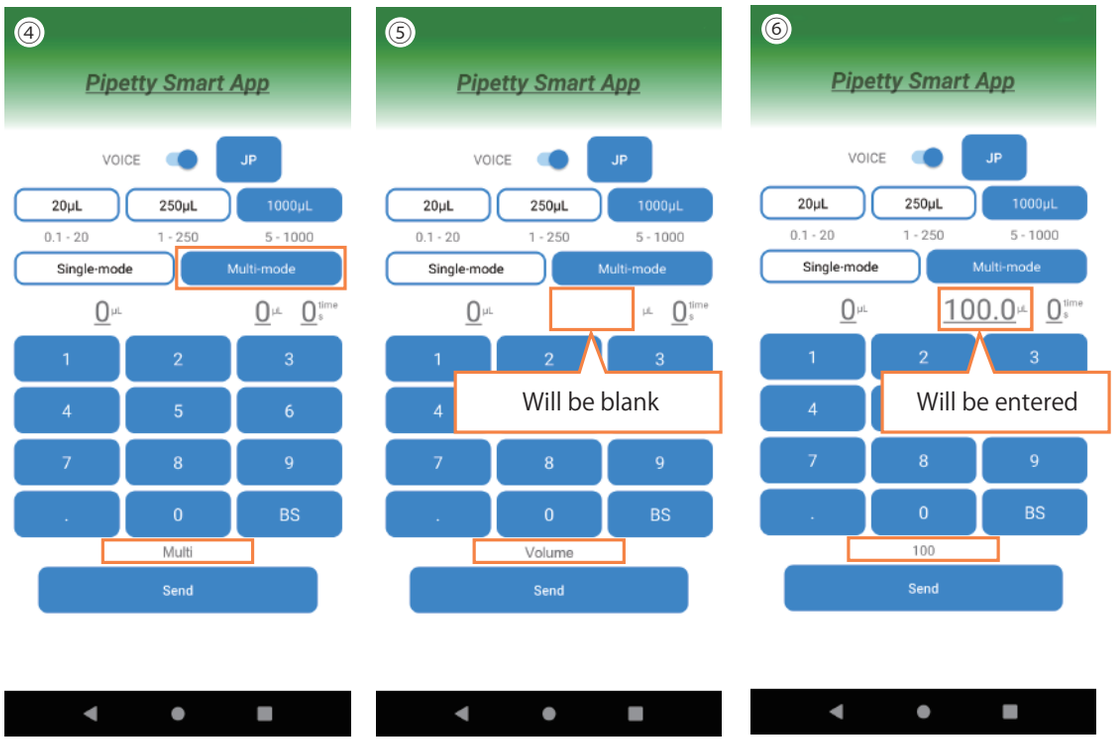


## 7.2 How to use Voice input

[Voice input (Japanese)]
①Turn on the capacity button from the Main screen
②Turn on the VOICE button and tap "JP (Japanese)".
[Input example: Capacity 1000 µL, Multi-mode, 100 µL, when inputting voice for setting 5 times (Japanese)]
③Speak "1000 micro" into the microphone of your smartphone.
→The recognized words are displayed as a keypad and the capacity switches to 1000 µL.




④When you speak "multi", the keypad is displayed, and it switches to Multi-mode.
⑤The setting of the dispensing volume is called “volume” .
⑥When the value is blank, speak the value “100” . When recognized, the dispensing volume in µL is displayed.

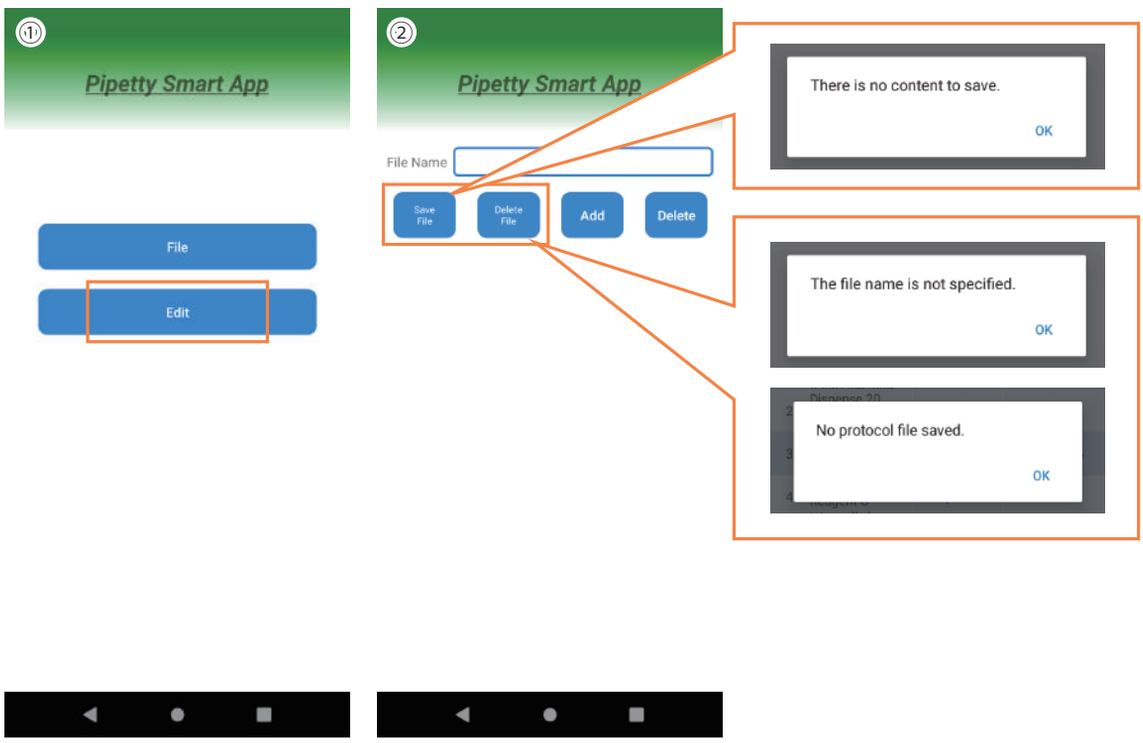


⑦ It can also specify the number of dispenses in the same way.
⑧The numerical value is called "5".
⑨When you say “Send” after completed the input, the data will be transferred to device.

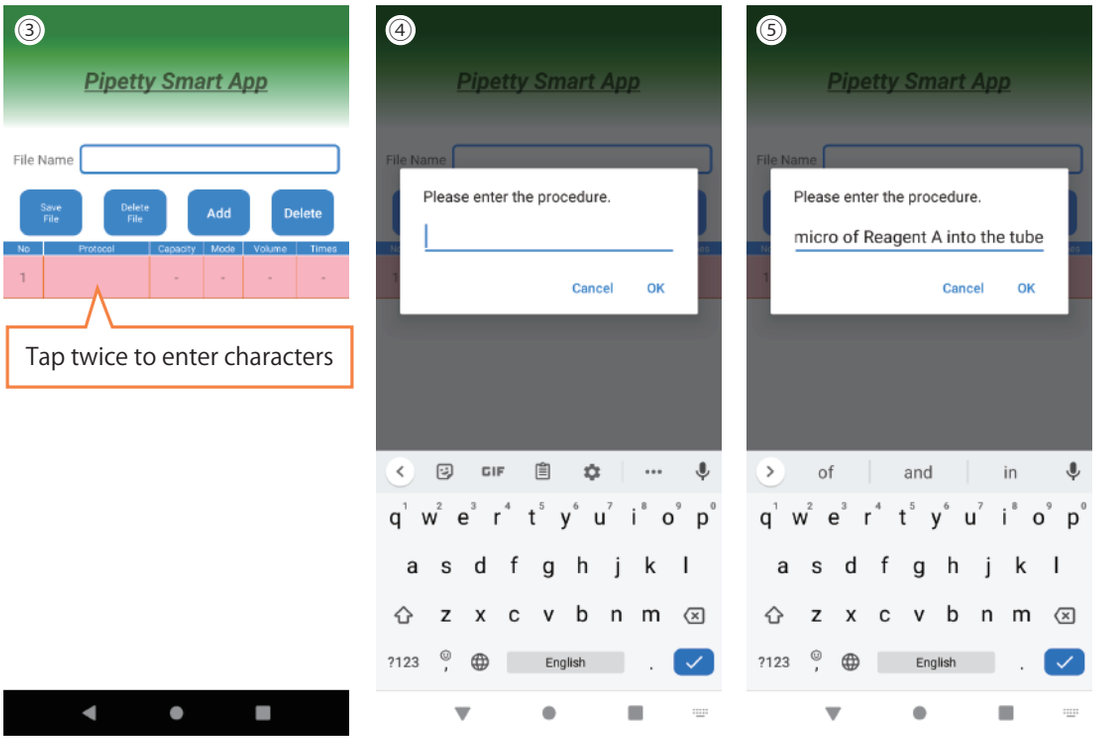

# 8 Protocol

## 8.1 Edit

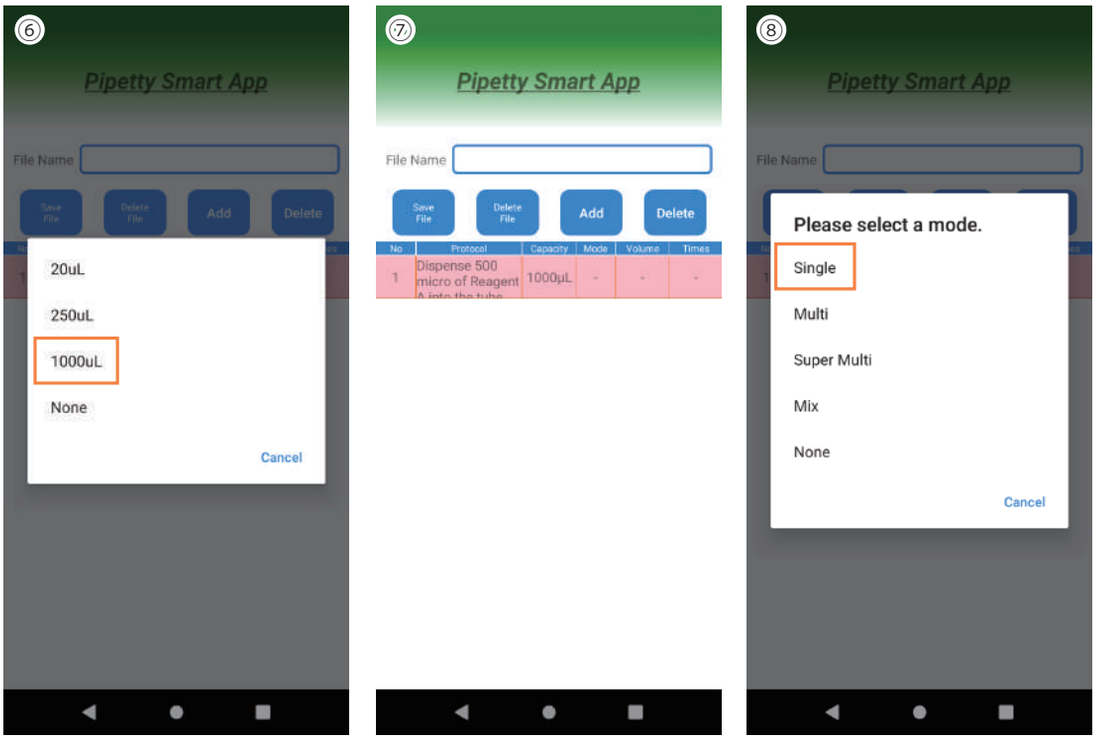
Create and input protocol files and edit.
①Tap "Edit" to open the edit screen.
②If there is no target file for "Save File" and "Delete File", an error will be displayed.



③ - ⑤Tap “Add” to add items and create the required protocol.



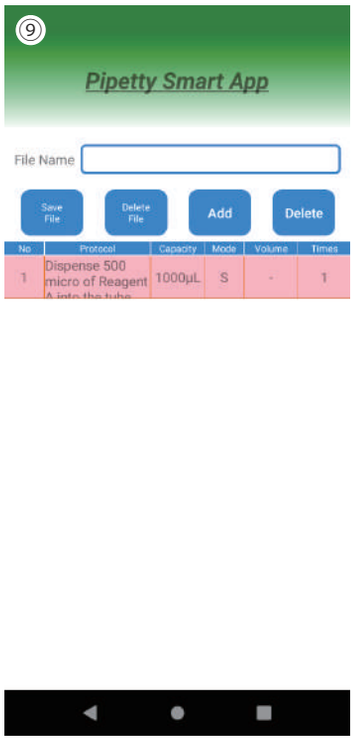

⑥ - ⑧Select ” Capacity” and “Mode”

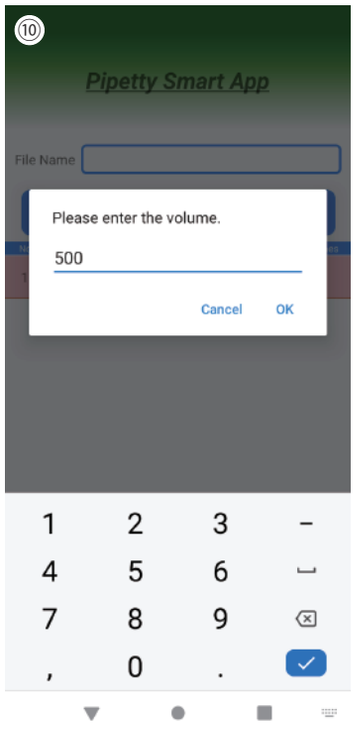



* [Select Mode]
” Single” → Quantitative dispensing operation “Multi” → Equal volume continuous dispensing operation
“Super Multi” → Different volume continuous dispensing operation
” Mix” → Mixing (Pipetting) operation “None” → No selection (When do not run device)

* [Selecting the number of times]
Only "Multi" can select the number of times.
"Mix" repeats aspiration and dispensing while pressing the operation button of device. (One-time operation)

⑨ - ⑪Then enter the “Volume (Dispensing volume)” . Single mode is automatically set to once.



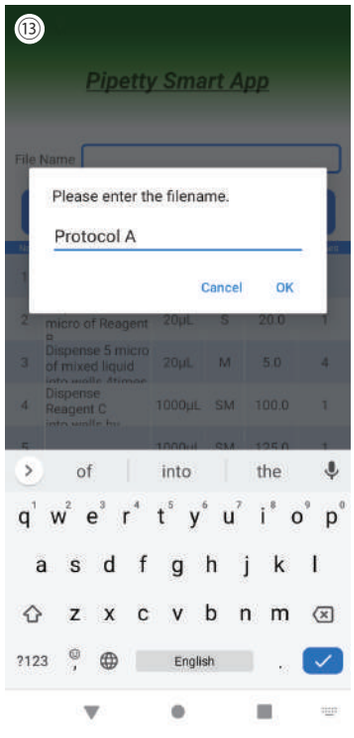


* [Settings below the decimal point of dispensing volume]

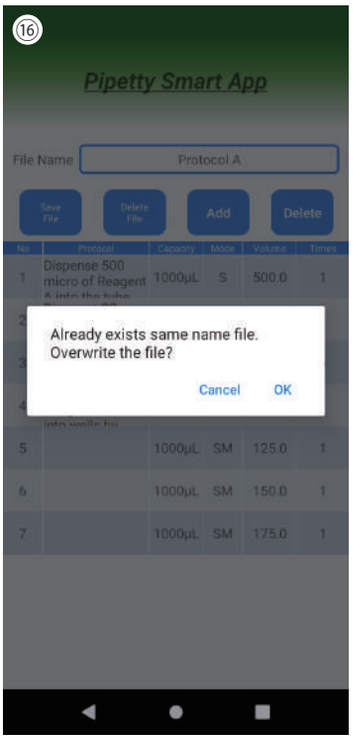
- 250 µ → 1.0 - 99.9 can be set. (However, the display of device is up to 19.9)
- 1000 µ → 5.0 - 99.9 can be set. (Same as above)

The display on device is up to 19.9, but the application can set and operate up to 99.9 after the decimal point.

⑫Continue tapping “Add” to add necessary items and input.
(* In the case of Super Multi mode, enter the volume to be dispensed into each item once.)
⑬After entered the file name, "Save File" is enabled.

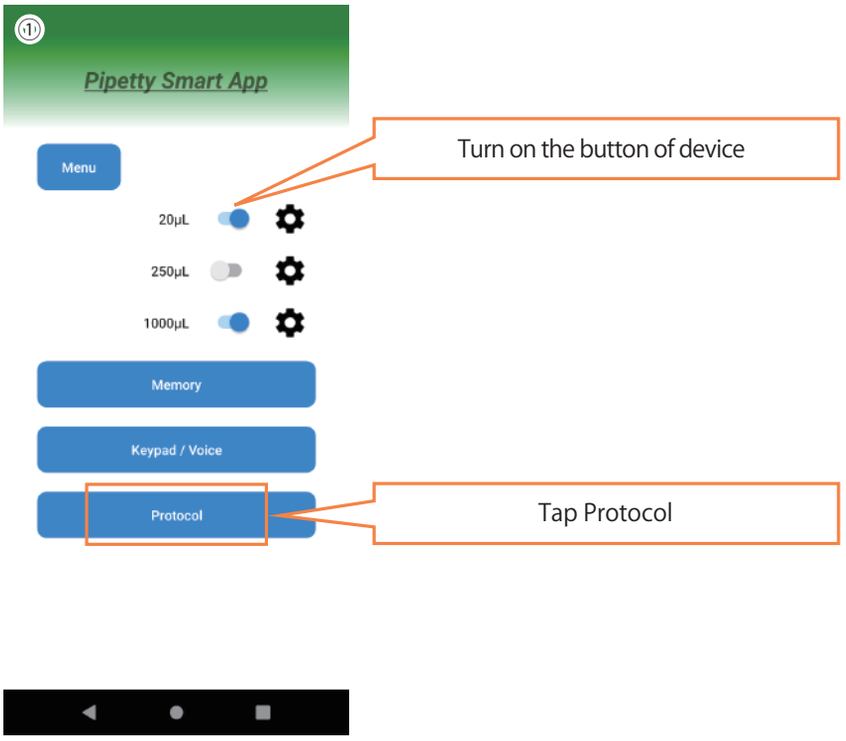




⑮Tap "Save File" to complete and save to a file.
⑯ If the same file name exists, a confirmation screen for overwriting will be displayed.
OK ⇒ Overwritten
Cancel ⇒ Please enter a new name

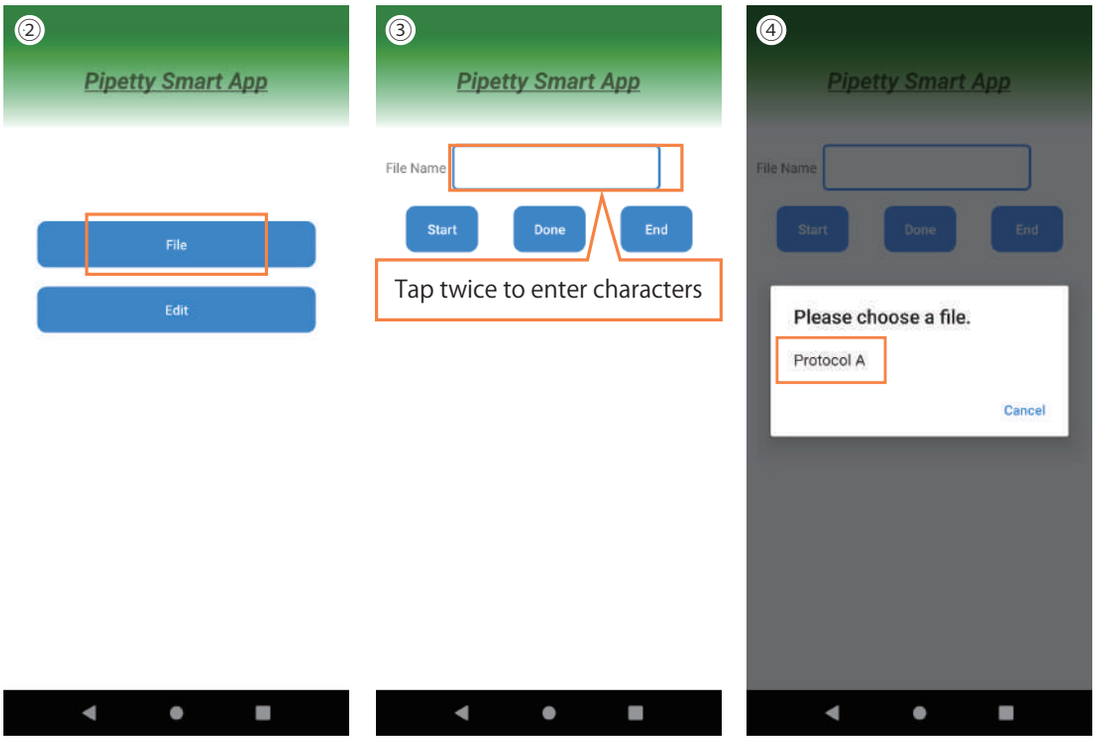




## 8.2 File (Call protocol file)

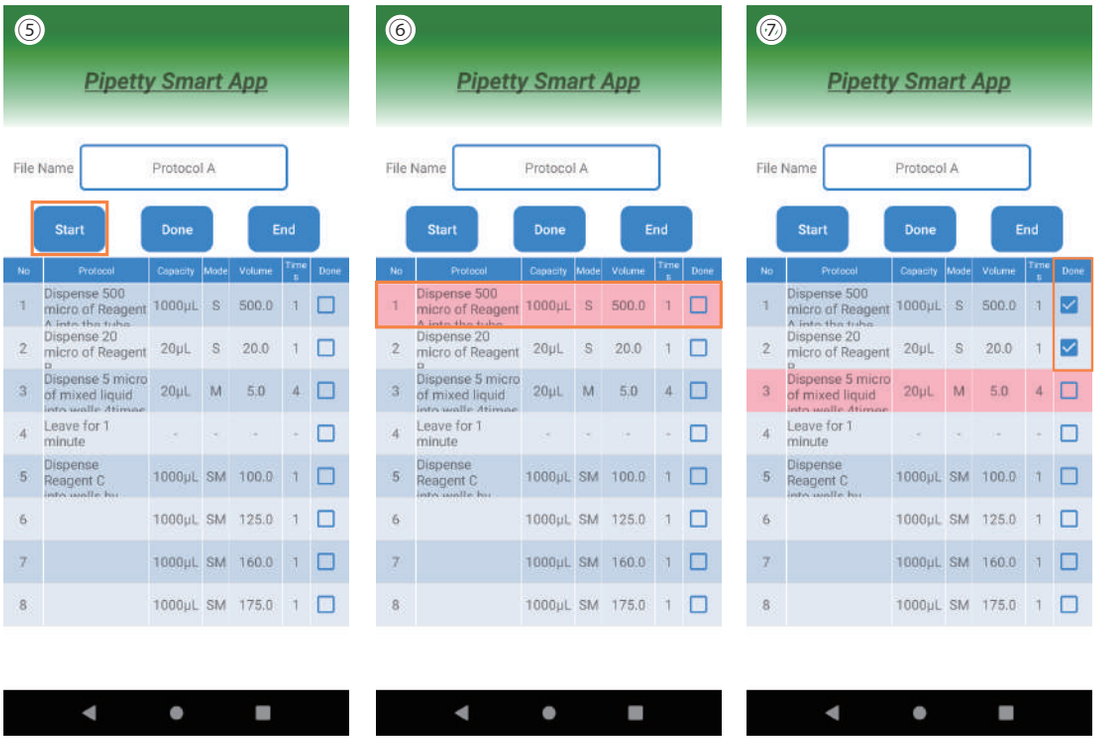
Calls the entered protocol file and transfers it to device. (Example: Protocol 1)
①Before opening File, turn on the connection button.



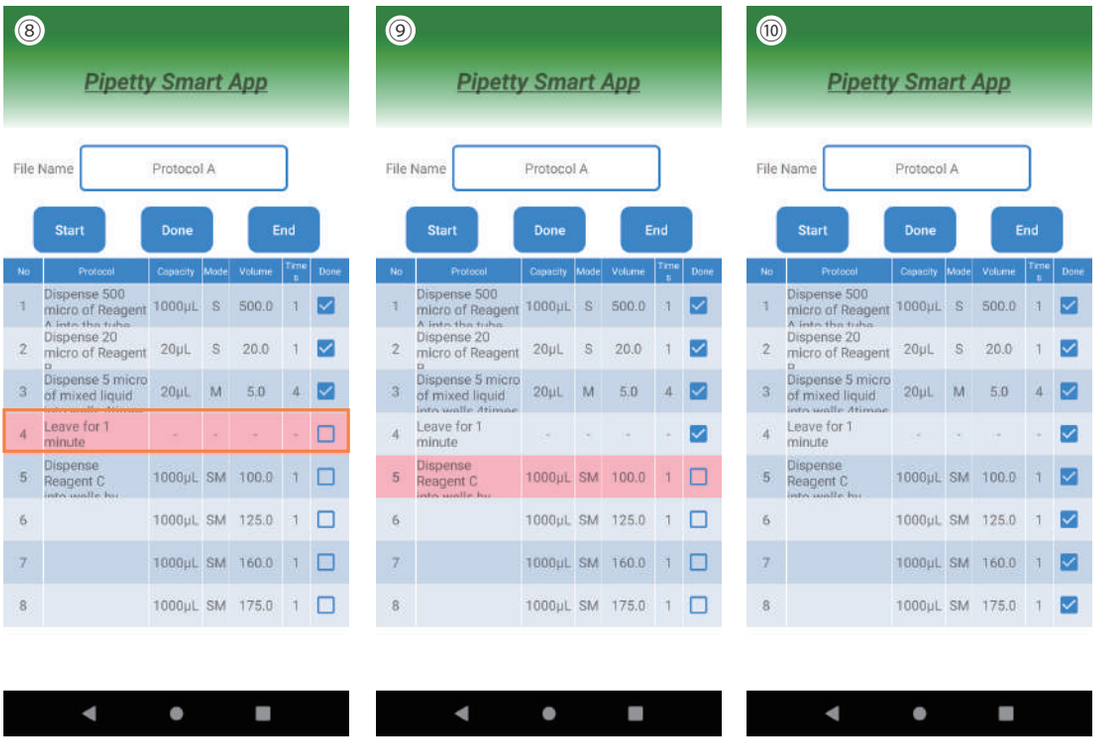
②Tap File first. And tap③ "File Name" twice to display ④"Please select a file".



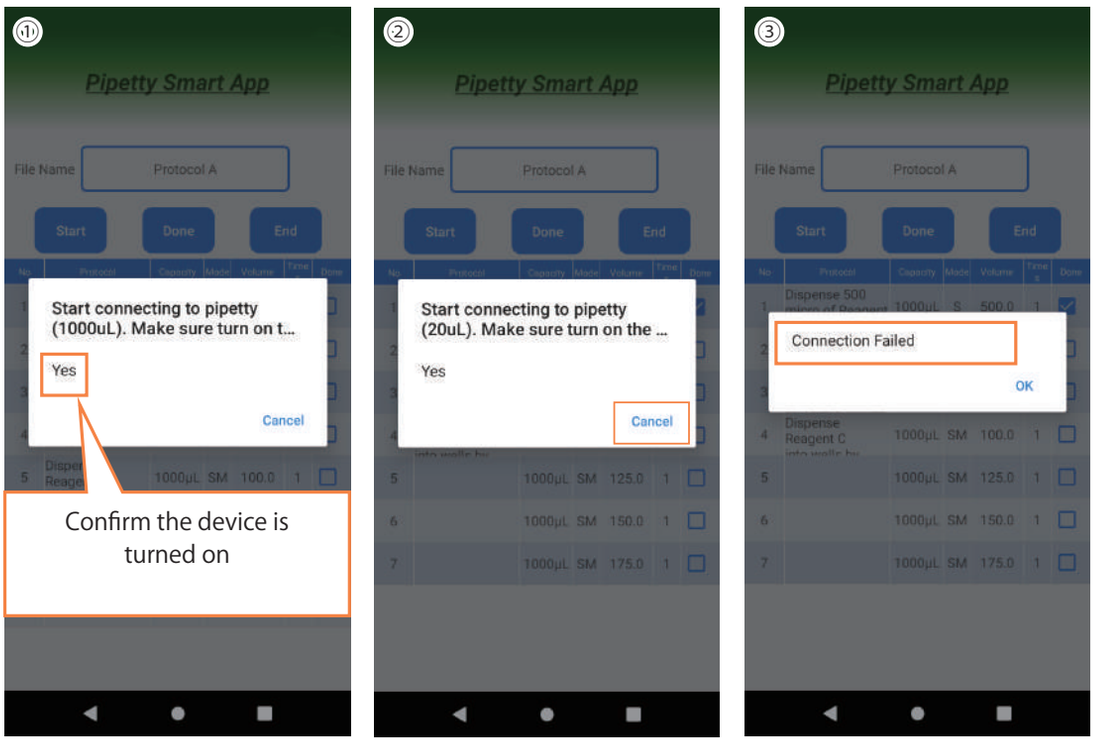

⑤Select the specified file and tap “Start” to start the protocol.
Press the PUSH button on device, and after operation in item 1 is complete, check mark will appear in "Done".



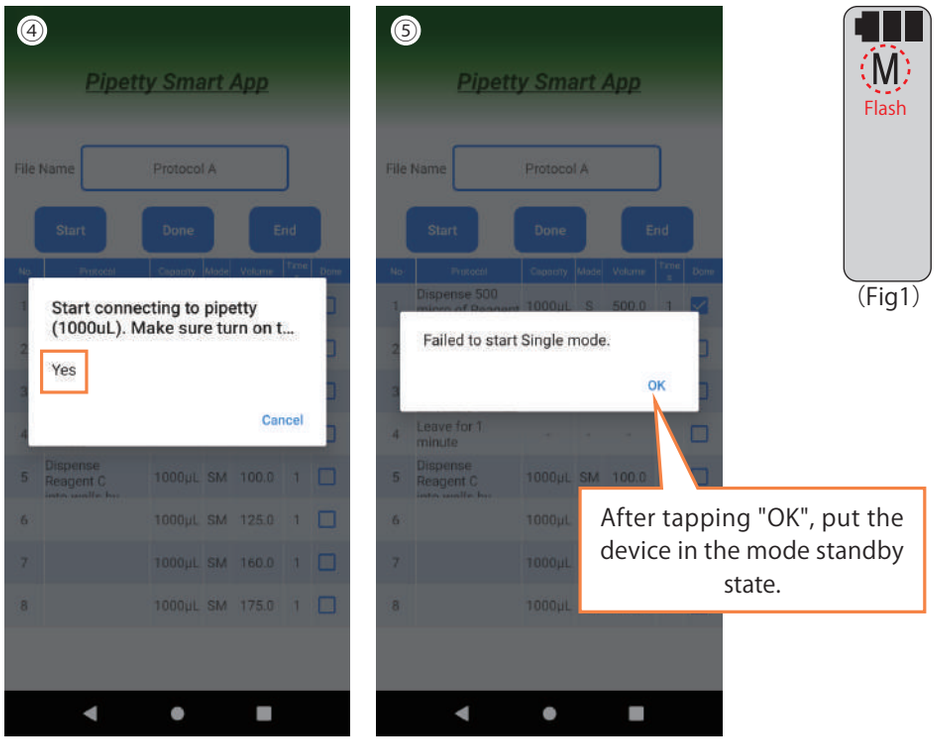
⑧If enter only the protocol characters as in No. 4, tap "Done" manually. ⑨A check mark is added and be able to proceed to the next section.
⑩When the last check mark is completed, a PDF file will be output as a record in the log file in the smartphone.
* If operation canceled in the middle of the protocol, a PDF file that records the time until the check mark is output.




[Display of popup]
①If the following message is displayed during protocol operation, press the "PUSH" button on device to turn on.
②When Cancel is selected,③ "Failed to connect device" is displayed and the screen returns to the protocol screen. If so, start the protocol over again.



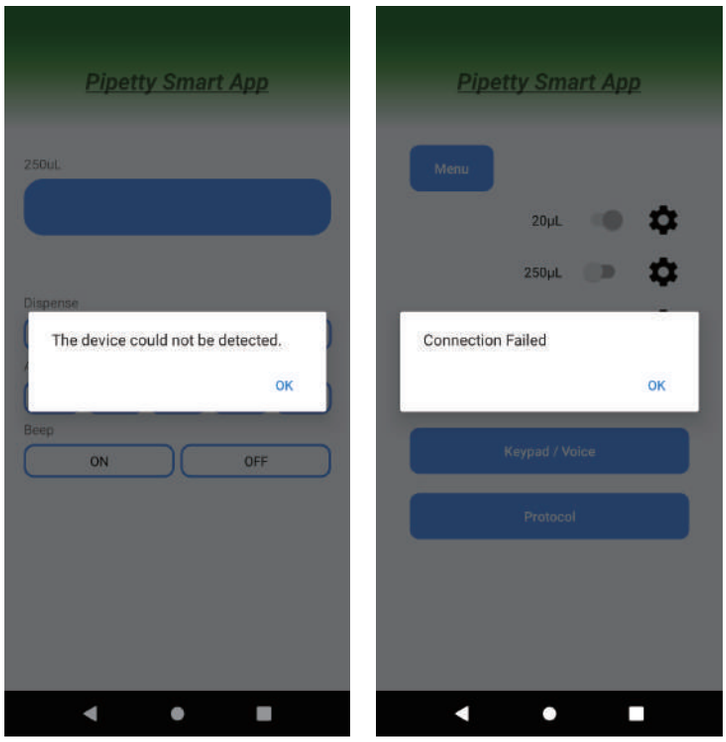
④If the following message appears while the protocol is operating, and the message⑤ "... mode start failed" appears after tapping "Yes", the device may not in the mode selection state. Set the device to standby state and try the protocol again.




(Fig1)

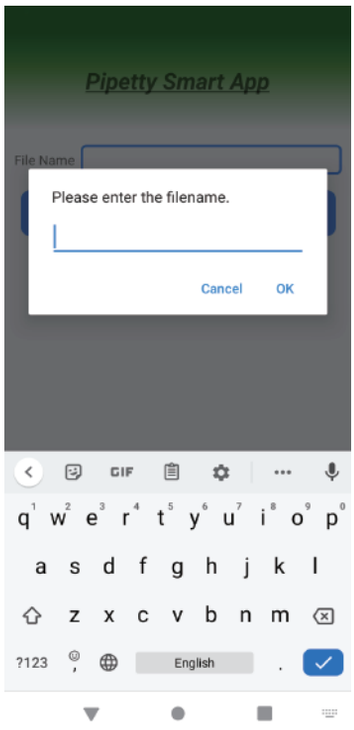
[In case communication is interrupted]

●If “Incorrect pipette information” or “Failed to connect” is displayed on the application screen, please try again from Section 5.2 (pipetty Smart registration).
In that case, please remove the battery from device once, and re-insert it.

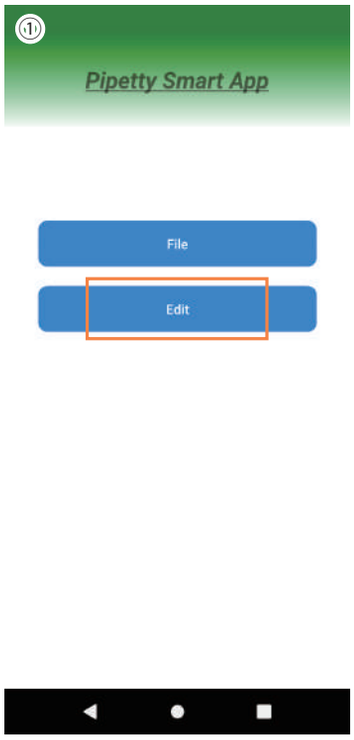


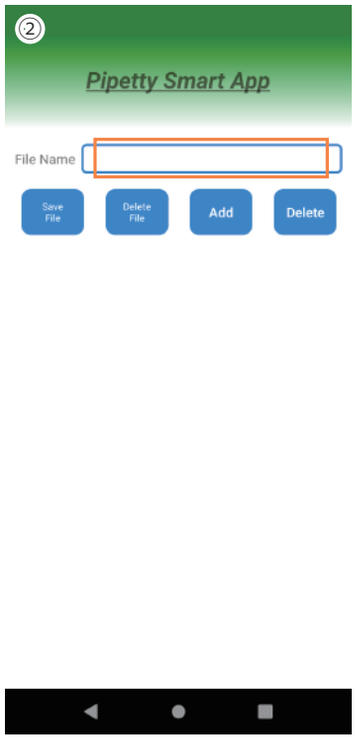
## 8.3 Modify the protocol file

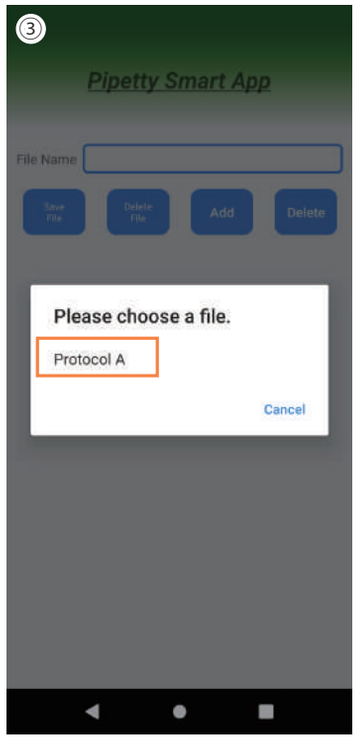
When need to modify the item of the called file, tap Edit and "Tap File Name" twice.
*If tap only once, the screen "Enter file name" will appear, and the protocol file will be created. Return with Cancel and tap twice to try again.



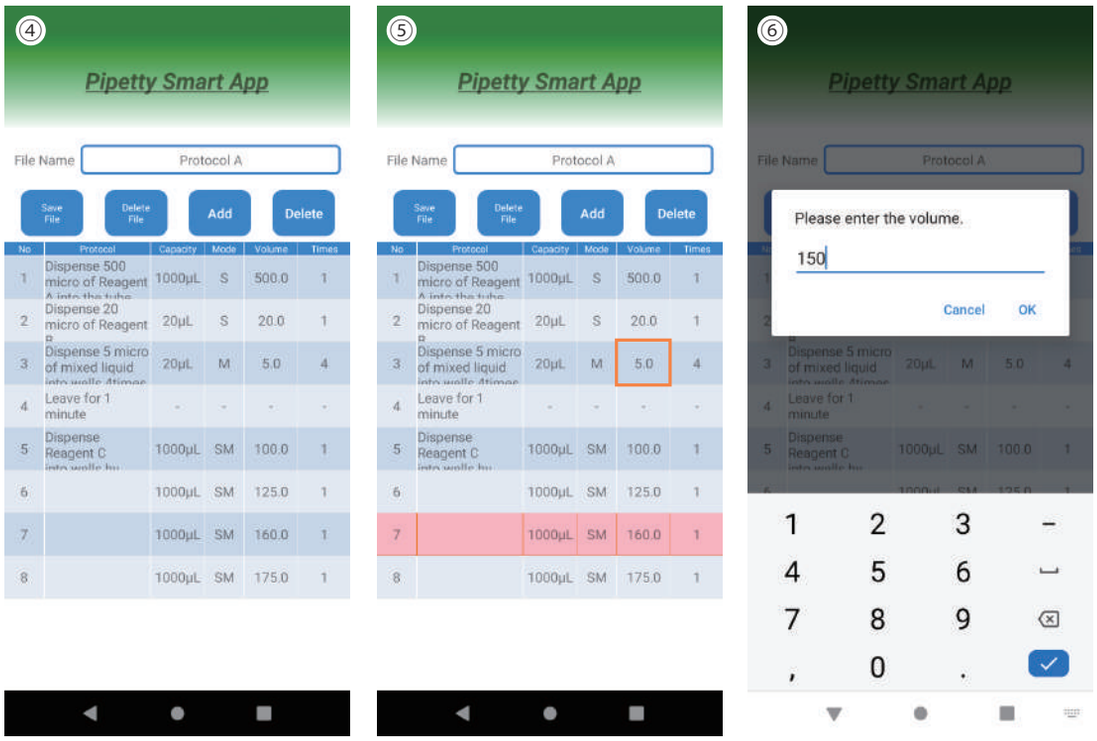

[File modification]
①Tap Edit.
②Tap the File Name field twice.
③Tap the file name need to modify.



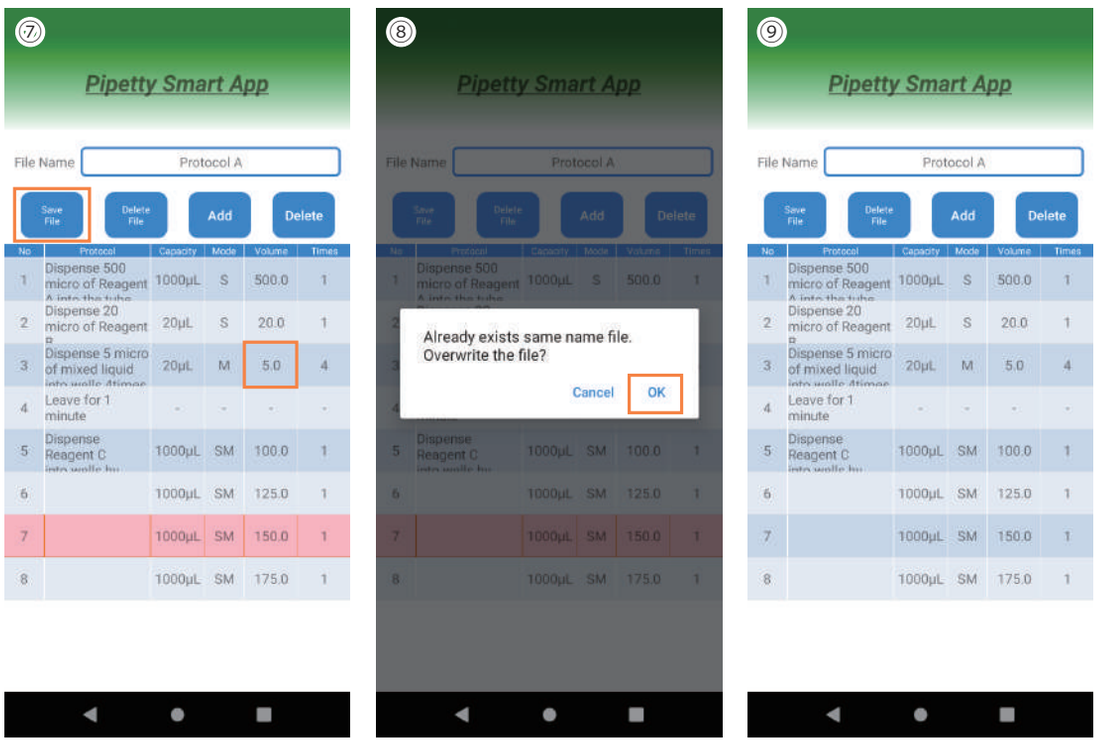



④ The selected protocol is displayed.
⑤Tap twice on the part need to modify. (Example: Volume in Section 7 changed from 160 to 150 µL)
⑥Enter the value to be modified.




⑦Confirm that the value has been changed, and tap "Save File".
⑧A confirmation message for overwriting the file will be displayed. OK ⇒ Overwrite.
If set a new file name, Cancel ⇒ Return, tap the File Name field once to enter a new name, and tap OK (⑨ is the correction completion screen)



# 9 Logging function

In the logging function mode, basic operations are performed by device, and only the operation results are recorded in the log.

## 9.1 Log files

Operation result log is from the shared storage in the smartphone file.
The execution result log is output as a pdf file to the shared storage
\ Android \ data \ jp.co.icomes.pipettysmartapp \ files \ PipettySmartApp
in the smartphone file. The following is the output of the operation result by the protocol of 8.2.

Protocol A

| No | Protocol | Capacity | Mode | Volume | Times | EndTime |
|---|---|---|---|---|---|---|
| 1 | Dispense 500 micro of Reagent A into the tube | 1000μ L | Single | 500.0 | 1 | 2020/06/03 11:17:37 |
| 2 | Dispense 20 micro of Reagent B | 20μ L | Single | 20.0 | 1 | 2020/06/03 11:17:51 |
| 3 | Dispense 5 micro of mixed liquid into wells 4times | 20μ L | Multi | 5.0 | 4 | 2020/06/03 11:18:08 |
| 4 | Leave for 1 minute | - | - | - | - | 2020/06/03 11:18:09 |
| 5 | Dispense Reagent C into wells by 100,125,150, 175 micro | 1000μ L | SuperMulti | 100.0 | 1 | 2020/06/03 11:18:15 |
| 6 | | 1000μ L | SuperMulti | 125.0 | 1 | 2020/06/03 11:18:17 |
| 7 | | 1000μ L | SuperMulti | 160.0 | 1 | 2020/06/03 11:18:19 |
| 8 | | 1000μ L | SuperMulti | 175.0 | 1 | 2020/06/03 11:18:26 |

The following operations are saved as the operation result log.
○ Protocol (Item) ○ Capacity (Device volume) ○ Mode ○ Volume (Dispensing volume)
○ Times (Number of times) ○ End Time (Completion recording time)
* EndTime is output for the part with the "Done" check mark on protocol operation.

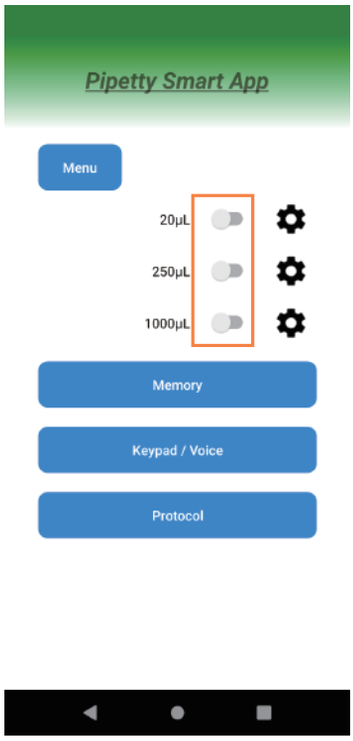
[File storage destination for protocol and memory registration]
Shared storage \ Android \ data \ jp.co.icomes.pipettysmartapp \ files \ PipettySmartApp.

【Notes】
Depending on the smartphone model, the "Protocol file", "Memory file", and "Log file" may not be viewable from the PC. In that case, please restart your smartphone or tablet device.

【Notes】
If an error (Err004) is displayed on device during aspiration, the device has exceeded the normal operating temperature range, so suspend the operation and place the device in a cool place for a certain period of time or change the dispensing volume.

# 10 Complete the operation

After completed the operation, return to main screen and tap button of used capacity to disconnection.




# 11 Troubleshooting

If the problem cannot be solved by the following method or if any other abnormality occurs, please contact us or distributor.

| Problem | Inferred factors | Solutions |
|---|---|---|
| Cannot connect to device | No battery inserted in device | Insert the battery |
| | The device display is not the mode setting screen | Switch the display of device t o the mode setting screen (initial screen) |
| | Low battery | Replace with a charged battery |
| | Battery has memory effect | After discharging the battery on the 1st scale as a guide, repeat charging 2-3 times. |
| | Battery has reached cycle life | Replace with a new battery |
| | Battery is inserted in the opposite direction | Insert the battery correctly |
| | No location permissions in Smartphone | Setting location information authority of smartphone |
| Easy to disconnect | Low battery | Replace with a charged battery |
| | Battery has memory effect | After discharging the battery on the 1st scale as a guide, repeat charging 2-3 times. |
| | Battery has reach | Replace with a new battery |
| | Affected by peripherals | Check if there is any influence of other wireless communication |

| Problem | Inferred factors | Solutions |
|---|---|---|
| Easy to disconnect | The device and smartphone are too far apart | Reduce the distance between device and the smartphone |
| | There is a wall or other shield between device and the smartphone | Make sure there is no obstruction between device and smartphone |
| | The timing to operate is early | Operate according to the display of the application |
| Cannot find protocol data / log data | Storage settings are hidden in Smartphone | Show storage settings of Smartphone |
| Cannot input voice | No microphone authority | Set microphone permission on Smartphone |
| Cannot create folder | There is no permission for storage (Create log) | Set storage permissions on Smartphone |
| “Incorrect pipette information” is displayed | Incorrect settings or device selection | Check the device capacity and MAC address and try again in Section 5.2. |
| “Connection failed” is displayed | Device is not turned on | Press the PUSH button to turn on |
| | Low battery | Replace with a charged battery |
| | Problems on the smartphone side | Retry the "pipetty smartphone registration" in section 5.1. |

## Customer Support

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