DENSO

Barcode/2D code
Handy Terminal

BHT-M60
BHT-M70
BHT-M80
Software User's Manual A13

Preface

This manual provides information and instructions for using software unique to BHT-M60/M70/M80 Android13 (hereinafter referred to as BHT). See this manual if BHT is updated from an earlier version of Android to Android13. Refer to the BHT Hardware User's Manual for basic usage of the BHT, and the API Reference Manual for software application development.

This manual applies to the OS versions described below.

Version	Description	BHT-M60 (*1)	BHT-M70 (*2)	BHT-M80 (*3)
1st	First issue	1.00.00	1.00.00	1.00.00
2nd(*4)	Removed supplement "Next release or later." 12. Barcode Reading Settings Menu 17. License(BHTLicense) 19. BHT OCR	1.00.01	1.00.01	1.00.01

(*1) Model: BHT-M60-QW-A13, BHT-M60-QWG-A13
(*2) Model: BHT-M70-QW-A13, BHT-M70-QWG-A13
(*3) Model: BHT-M80-QW-A13, BHT-M80-QWG-A13
(*4) The following apps will be released the next release or later. For information about the release date, contact for inquiries.
    * BHT DMS
    * BHT Remote
    * BHT Security Package

■ Note
   Use the SDK version same as the OS version used for application development.

■ Abbreviations
   BHT   Handy Terminal produced by DENSO WAVE
   CU   Communication Unit

■ Related manuals

- BHT Hardware User's Manual
- BHT API Reference Manual
- BHT Browser for Android
- BHTRemote User's Manual
- ADF Script User's Guide
- DeviceManagementSystem Manual
- BHT SQRC Settings manual
- Major update procedure from Android 10 to Android 13 Manual

■ For inquiry and latest information

For the latest information on this manual and DENSO WAVE products, visit the DENSO WAVE website at:
https://www.denso-wave.com/en/adcd/index.html

More information is available from our special website "QBdirect:" for the registered users at:
Visit the link above to learn more about this site including user registration.
https://www.denso-wave.com/en/adcd/member/entry.php

Customer Registration and Inquiries

Customer Registration

To allow us to provide our customers with comprehensive service and support, we request that all customers complete a Member Registration form. Registered members will be offered the following privileges.

The latest upgrade information

Free exhibitions and event information for new products

Free web-information service "QBdirect"

"QBdirect" Service Contents

Information search service (FAQ)	Offers detailed information on each product.
Download service	Offers downloads of repair modules for the latest BHT Series systems or software, and sample programs.
E-mail inquiries	Product related queries can be sent by e-mail.

Please note that these privileges may be subject to change without prior notice.

◆ How to register

Access the URL below and follow the instructions provided.

https://www.denso-wave.com/en/adcd/member/entry.php

Inquiries

You can contact us at either of the following depending on contents:

◆ Technical inquiries (QBdirect)

BHT product programming method

Product set-up method, usage

Other technical questions

Inquires relating to the above can be made at our exclusive web site "QBdirect" for registered users.

Access the link below to log on or register.

https://www.denso-wave.com/en/adcd/login/

Contents

1. Outline

1.1. Application Implementation Steps

The following steps describe a typical process from purchase of a BHT to implementation of a business application using the BHT.

Step 1: Confirm that the BHT works properly.

      Download the latest system update package file from the website and update BHT.

      Refer to the Operator's Guide or Hardware User's Manual.

      ↓

Step 2: Determine a set-up procedure considering the application environment and develop applications for the BHT.

      Refer to"2 Set-up of BHT" in this manual for how to set up the BHT.

      Refer to the "API Reference Manual" for how to develop applications.

      Refer to the "1.3. Usage Precautions" for precautions when using BHT.

      ↓

Step 3: Perform a pre-test assuming operation.

      If the device is connected to the Internet, the Google software may automatically update during the test, which may change device behavior.

      Refer to the "1.3.2. Precautions for automatic updates of Google software."

      ↓

Step 4: Prepare a manual that explains how to set up the BHT and how to use the applications created.

      ↓

Step 5: Set up the BHT basic configuration (common settings) by following instructions in this manual.

      ↓

Step 6: Set up the environment-dependent configuration (such as an IP address).

      ↓

Step 7: Start operations.

1.2. System Components

This section illustrates the hardware and BHT software components required for the BHT barcode data collection system.

1.2.1. Hardware Components

In addition to the BHT, the following hardware and software are required for the BHT barcode data collection system. The required hardware varies depending on the type of communication used.

[example] BHT-M80
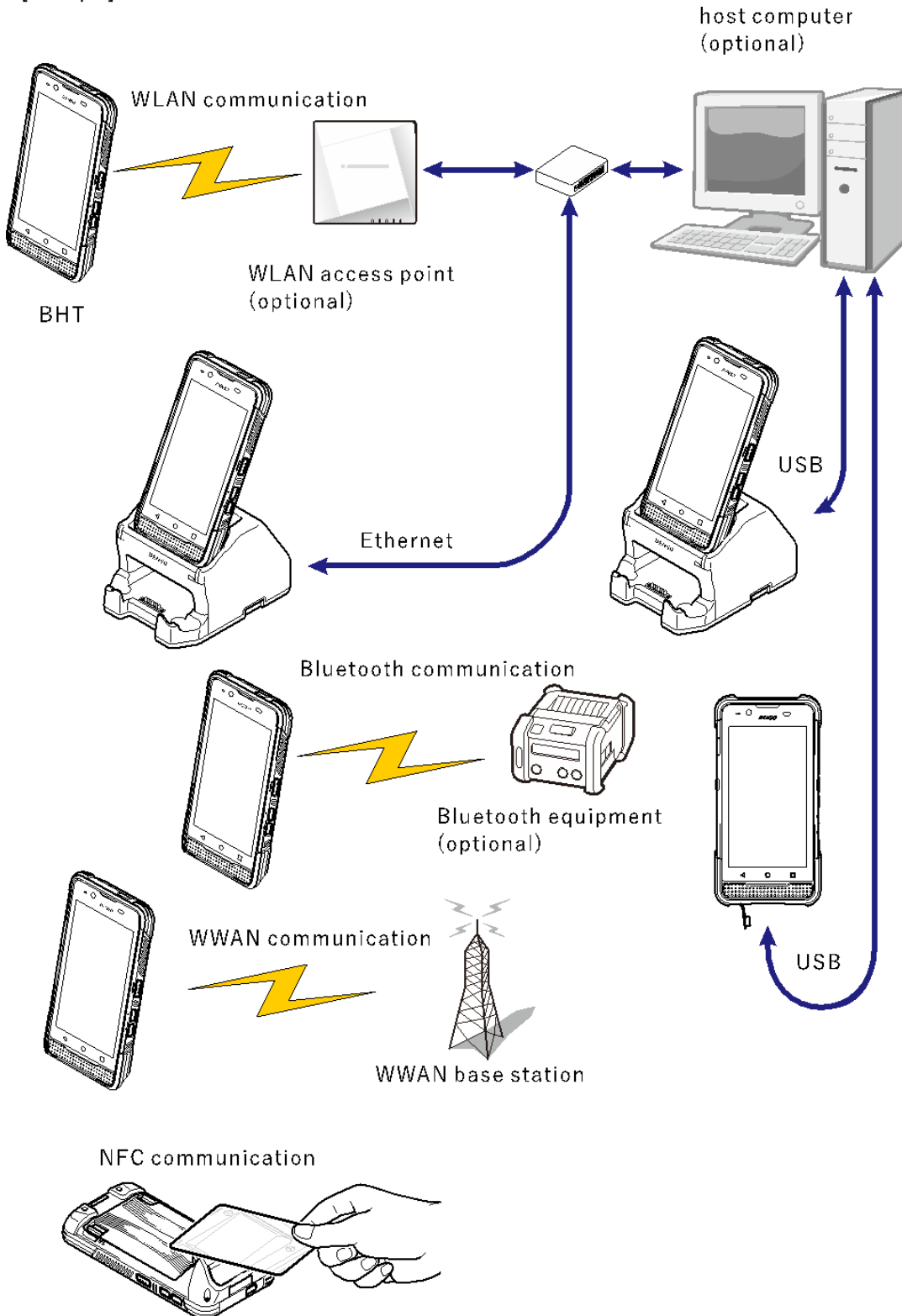
＊ Please refer to the BHT Hardware User's Manual for information such as model number.

1.2.2. Software Components
[1] BHT operating system (OS)
Android13

[2] Application program development environment
Refer to the BHT API Reference Manual.

1.2.3. Corresponding Model List
BHT have various options by model as shown in the table below.
Please check the options of your model and refer to the next chapter and subsequent for supported functions.

✓：Mounted   - : Not mounted

Model	Barcode	LTE/GPS	Camera	Keyboard	GMS
BHT-M60-QW-A13	2D	–	Rear	✓	✓
BHT-M60-QWG-A13	2D	✓	Rear	✓	✓
BHT-M70-QW-A13	2D	–	Rear	✓	✓
BHT-M70-QWG-A13	2D	✓	Rear	✓	✓
BHT-M80-QW-A13	2D	–	Rear/Front	–	✓
BHT-M80-QWG-A13	2D	✓	Rear/Front	–	✓

*Refer to the major update manual for the list of models that can be updated from A10 to A13.

1.3. Usage Precautions

■ Ensuring stable operations by the periodical resetting

Android may cause memory leaks (insufficient memory) when used over long periods.

Resetting the BHT regularly (power off to on, or Reboot) in the application created (once a day etc.) or as daily routine is recommended for ensuring stable BHT operation.

For example, call a reset function in the application at the end of daily work or at scheduled update. Refer to the BHT API Reference Manual for how to program a reset function.

■ Rechargeable battery

All data including data stored in the BHT RAM, data being edited, and setting information may be lost if the BHT is left with the drained battery, if the BHT is left for a long period with the battery removed, or if the battery is incorrectly replaced. By executing the factory reset and Enterprise reset, all data in the BHT Flash such as file data, and setting information will be erased. (Refer to "3.6 Resetting to the Factory Default (FactoryReset) and Enterprise reset ".) Therefore, backing up any important data in your PC is strongly recommended.

– Caution –	The date and time will be initialized if the RAM data is lost.
	Certificate authentication for HTTPS or wireless LAN may fail if the date and time is incorrect.
	Be sure to verify that the date and time is correct after replacing the battery.

■ Data loss during data writing

Data loss may occur if the battery is removed before a data is actually written to the Flash.

Turn off the power or completely execute the hot swap procedure (*1) before replacing the battery.
Periodically synchronize data if an application is used to write data.

Reference website:
https://developer.android.com/reference/java/io/FileDescriptor
FileOutputStream.getFD().sync();

(*1) Hot swap procedures
Hot swapping state can be kept during 5 minutes after removing the battery, when the sub-battery remains fully charged. Hot swapping will fail if you remove the battery and insert it after 5 minutes or more, or when the sub-battery is not fully charged. In this case, the BHT will be in the power off state (shutdown state), and the BHT will restart the next time the power key is pressed, and the pop-up shown below will be displayed.
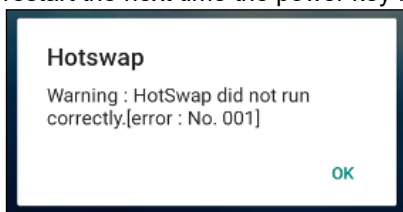
■ Applications produced by DENSO WAVE

DENSO WAVE applications are used in various BHT features.

Do not uninstall these apps unless you have a specific reason to do so.

For information about DENSO WAVE applications, refer to 3.15.2. Applications produced by DENSO WAVE.

■ Screen lock

If any of Pattern/PIN/Password is set in **Settings** ⚙ **| Security** 🔒 **| Screen lock**, some functions are limited by the Android specification until the screen lock is released after starting the BHT.
If necessary, unlock the screen or change the screen lock setting to None or Swipe.

■ File save destination

No other app can access the app-specific directory in internal storage.
  [Internal Storage]/Android/data/[Each app directory]
If you want to share files with other apps, specify shared storage as the destination.

1.3.1. Network Precautions

■ Wireless LAN

There are a few things to keep in mind when using wireless LAN.
Refer to **6.1.4. Useful Information & Tips**.

■ When using Proxy-Configured Network

Turn on **15.2.2.15 Browser (WebView) settings** "Proxy connection" when using a network that has a proxy configured.

■ When using Proxy Auto-Config

As ProxyHandler must always be activated if using Proxy Auto-Config, disable ProxyHandler battery optimization in **Settings** ⚙ | **Apps** ⠿ | **See all xx apps** | **three dots menu | Show system | ProxyHandler | App battery usage | Optimized**.

ProxyHandler battery optimization disable setting can be automatically kitting with BHTSetting.
For details, refer to **15.2.2.11 Battery Optimization**.

■ Network Device Priority

BHT connects to network with a network device in the following order of preference if multiple network devices are enabled.

Wired LAN > WLAN > Mobile Network

If BHT connects to a Wired LAN while connecting to a WLAN/Mobile Network, the WLAN/Mobile Network will be disconnected.

■ When using on a network that cannot communicate with servers on the Internet

Some Android features require communication with specific servers on the Internet.
Therefore, some functions may behave differently when used in the following networks.

・Networks that restrict connection destinations such as proxy.
・Closed network with no Internet connection
・Chinese networks
etc.

Changes in behavior	Suggestion for workaround
The status of the connected network shown in **Settings** ⚙	**Network & Internet** 🛜	**Internet**	**Wi-Fi** is not "Connected" but "Limited connection". * There is no difference in behavior, only the display is different.	Using the Ping transmission function of the WLAN Manager (Refer to 6.2.5. Ping Transmission Function) to confirm the proper communication with a target destination.
The date and time are not updated automatically when "Set time automatically" is enabled in **Settings** ⚙	**System** ⓘ	**Date & time** 🕐.	Try the SNTP function. (Refer to 3.11. SNTP Function)
Mobile network disconnects frequently.	Disable "WWAN recovery function" in BHTSetting and retry. (Refer to 15.2.2.1. WWAN)
Downloading a file on local network sometimes fails with BHTBrowser.	Enable "Force download with BHTBrowser" to ON in the BHTBrowser settings and retry. (Refer to BHT Browser for Android Reference Manual)

1.3.2. Precautions for automatic updates of Google software

Google software on Android is automatically upgraded and modified by Google when the device is connected to the internet. Using a software version suitable for your environment is recommended as software updates may change the device operation.

For information on changes due to Google software updates, please refer to the help on each Google application or at the Google website.

Google software is automatically updated in two ways:

・**Google Play Store**

  Automatic updates occur when the device is connected to the Internet.

    Refer to **1.3.2.1 Updating applications with Google Play Store**

・**Google Play System Update**

  Automatic updates occur while the device is connected to the Internet and logged into the Google account.

    Refer to **1.3.2.2 Updating the system with Google Play System Update**

According to the following guidelines, managing the device software version and preventing unintentional update is recommended for stable operation.

■ **Pre-Testing notes:**

To stabilize the device evaluation state, preventing Google software from automatic updates is recommended before connecting to the Internet.
If an Android feature or Google application doesn't work well, updating the application or the Google Play System may also help.
If necessary, try to update the Google software to be used.

■ **Kitting notes:**

To prevent unintentional software updates during kitting or operation, disabling automatic update as same as pre-test is recommended, software necessary to be updated should be updated manually.

1.3.2.1 Updating applications with Google Play Store

Google apps like Chrome and Gboard are updated by the Google Play Store app.
Once the device is connected to the Internet, the Google Play Store app will automatically update them.
Please refer to Google's website for detailed conditions of automatic updates.

References website: Google Play Help
https://support.google.com/googleplay/work/answer/9350374

Methods for the automatic update prevention from Google Play Store, and manual update of any application are as follows.

■ How to prevent automatic updates from the Google Play Store

Automatic updates from Google Play Store can be prevented by using one of the flowing methods.

● If not using Google Play Store in operation

Disable the Google Play Store app.
For details on the settings, refer to "**15.2.2.10 Disable the app**."

● If using Google Play Store in production

Turn off automatic updates in Google Play Store settings.
However, the Google Play Store itself may update automatically even if turned off.

[1] Disconnect the device from the network to prevent it from being automatically updated before configuration.

[2] Open App info of the Google Play Store app.
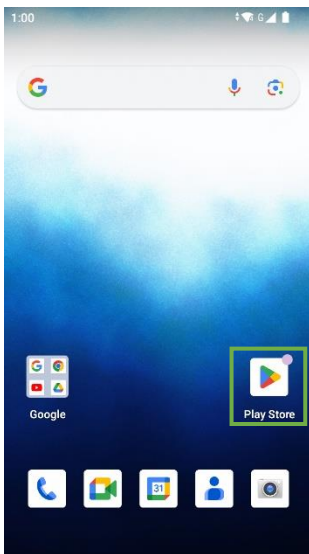
long press icon
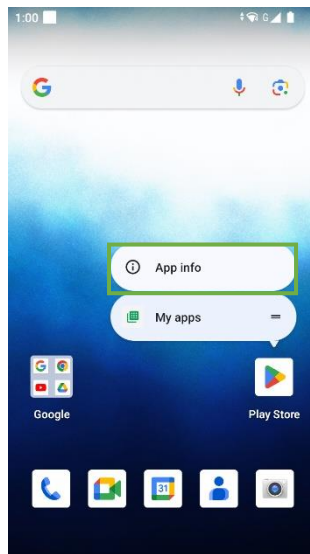
[3] Clear storage of the Google Play Store app.
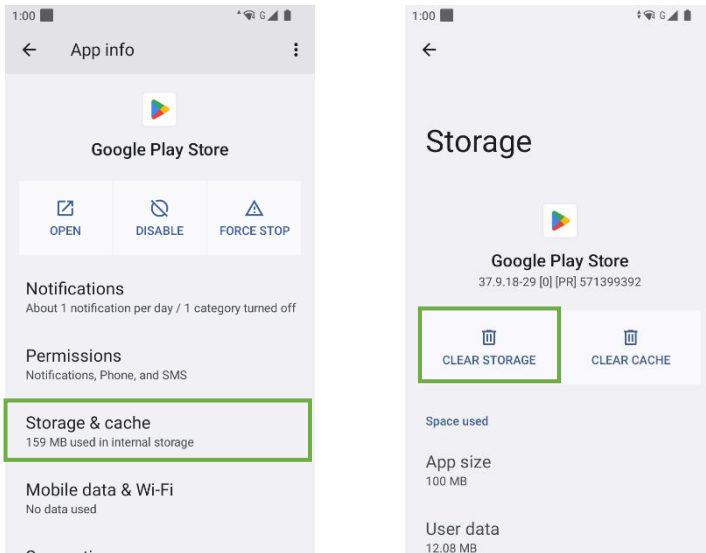
[4] Run the Google Play Store, select Settings, and check "Don't auto-update apps" in the "Auto-update apps" menu.
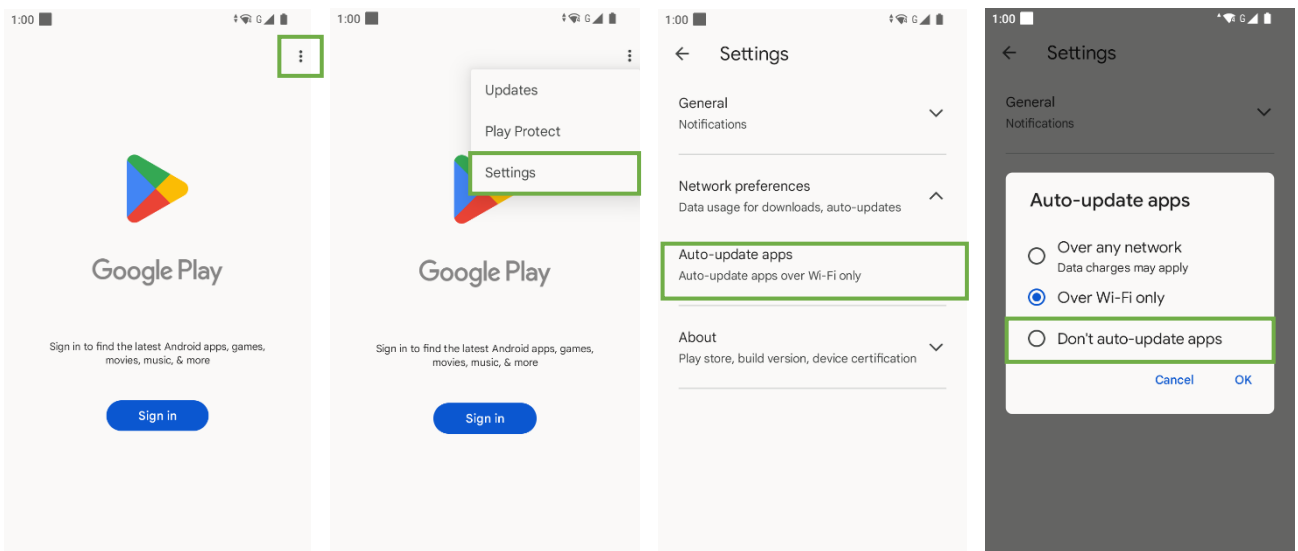
■ How to update applications manually from Google Play Store

Applications updatable from Google Play Store can be set to only be updatable manually by specifying in the menu.

[1] Connect the device to the Internet.
   Please wait for Google play update to be completed.
   The Google play menu will be changed after the update is completed.

[2] Select "Update" from the menu then select "Update" for the specified app.
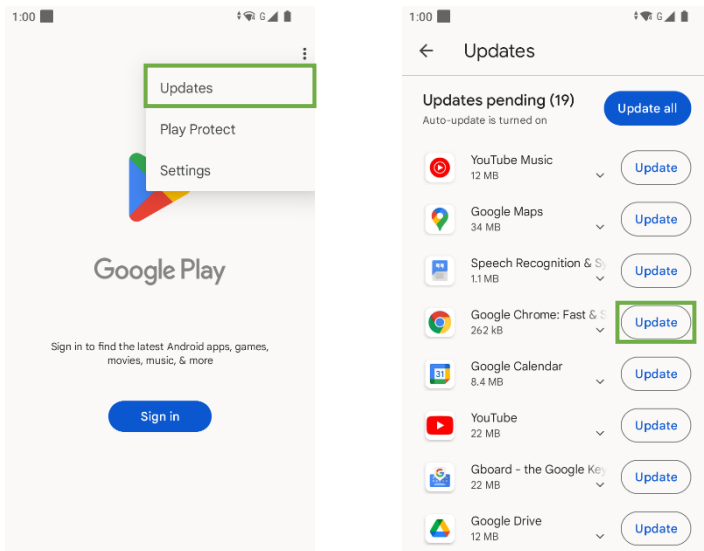
| – Note – | The screen and operation methods may differ depending on the version of Google Play on the device. |

1.3.2.2   Updating the system with Google Play System Update

If the device is logged into Google account, Google Play System Update automatically updates the device system.
Methods for the automatic system update prevention of Google Play, and manual update are as follows.

■ How to prevent Google Play System Update from running automatically

To prevent the automatic update, follow the steps below to log out of Google account.

[1] Tap **Settings** ⚙ **| Passwords & Accounts** 👤 then select the account that you are logged into.

[2] Tap REMOVE ACCOUNT to log out.

■ How to run Google Play System Update manually

To update applications that are not in the Google Play Store, try Google Play System Update.
Google Play System Update can be run manually by following the steps below.

[1] Connect the terminal to the Internet.

[2] Tap **Settings** ⚙ **| Passwords & Accounts** 👤 **| Add account | Google** then log into any Google account.

[3] Tap **Settings** ⚙ **| About phone** 📱 **| Android version | Google Play system update** then follow the on-screen instructions to update.

2.   Set-up of BHT

This chapter explains how to set up the BHT efficiently and effectively.

2.1.   BHT Operations that Delete Data

The data stored in the BHT is deleted after the following operations. In order to ensure stable operations, the BHT must be set up to restore or recover the deleted data.

Refer to the table below for data existence in memories when executing the operations.

	Suspend/ Resume (Refer to 3.3)	Power OFF/ON (Refer to 3.1,3.2)	System update (Upgrading version) *1 (Refer to 3.5)	Enterprise reset (Refer to 3.6.2)	Erase all data (factory reset) (Refer to 3.6.1)	Enterprise reset for MDM (Refer to 3.6.3)
Data in the microSD card folder	✓	✓	✓	✓	✓	✓
Data in the Flash	✓	✓	✓	-	-	-
StartupSettings folder *3	✓	✓	✓	✓	-	-
Applications produced by DENSO WAVE	✓	✓	✓	✓	✓	-*5
Application to be installed by user	✓	✓	✓	-*2	-*2	-*2
Setting of Applications produced by DENSO WAVE *4	✓	✓	✓	-	-	-
Setting of application to be installed by user	✓	✓	✓	-	-	-
RAM (Information on an action in operation)	✓	-	-	-	-	-

✓ : Data retained

–: Data erased

*1 System version upgrade between Android13 is supported. It also supports upgrading from Android10 to 13. Downgrading the system version is not supported. For the upgrade procedure and notes, refer to the manual "Major update procedure from Android 10 to Android 13".

*2 It can be re-installed automatically using the BHT set-up supporting function. For details, refer to the next section and subsequent.

*3 StartupSetting folder (Internal shared storage/StartupSettingsData) for user

*4 Some setting values of BHTSetting are different from the specifications on the right. For details, refer to "15.1.3 Setting Values".

*5 It can be installed later using the Enterprise reset for MDM feature. For details, refer to "3.6.3 Enterprise reset for MDM".

2.2. Support Functions for BHT Set-up

The BHT provides the following support functions to easily accomplish the set-up.

	Functions or tools	Outline
1	Start-up function	This function installs user application of folder in the specific folder and runs a specified application at the Enterprise reset and when resetting. For details, refer to "3.7 Start-up Function".
2	Enterprise reset	This function backs up files for setting (such as application, xml） stored in the specific folder. It also installs a user application in the specific folder, runs a specific application, and imports the setting of specific device automatically after resetting to the factory default. For details of the operation procedure of Enterprise reset, refer to "3.6 Resetting to the Factory Default (FactoryReset) and Enterprise reset ".
3	Enterprise reset for MDM	Install the DENSO WAVE applications after the MDM kitting. For details, refer to "3.6.3 Enterprise reset for MDM."
4	BHTSetting	It is a kitting support tool of setting value. Efficient and safe kitting is possible by kitting and exporting the necessary setting values in the operation on the master terminal and importing the export file with multiple BHTs. It can also be used to back up and restore settings in operation. Please refer to 15. BHTSetting for details.
Functions to import/export setting values of BHT special devices and applications. (Please use BHTSetting for more convenient and safe use.)		
5	Reading	This function imports/exports the read setting value. For details, refer to "12.7 Management of Setting Values".
6	Application Launcher	This function imports/exports the setting value of application launcher. For details, refer to "11.5.3 Import/Export",

3. Basic Operation

3.1. Power ON

Power on the BHT by pressing and holding the power key (⏻) (M60 is the bottom center of the keypad, M70/M80 is the top) for more than 1 second. After a starting animation appeared, the BHT is turned on and displays the Lock screen. The Home screen appears by swiping the Lock screen from bottom to top.

Lock screen   Home screen

– Point –	Do not press and hold the battery and its cover (M60) excessively or too hard; otherwise, the power key or the BHT might become damaged.

– Note –	If the BHT does not start correctly by pressing the BHT power key (⏻),or if an unexpected screen appears, try the following. 1. Press the power key twice. 2. From the pop-up menu, turn off the power, press the power key again for at least 1 second, then turn on the power. 3. Press and hold the power key for approximately 12 seconds to force a reboot. * Do not press the power key when the restart starts. If you keep pressing the power key during the startup process, some data such as date and time may be lost. 4. Remove the battery once and leave it for about 30 minutes to discharge the sub-battery. After installing the battery again, press the power key for at least 1 second to turn the power on.

3.2. Power OFF

If the power key (⏻) is pressed and held for 1 second or more, the following pup-up menu will appear. When "Power off" is tapped, the BHT is turned OFF (in the shutdown state). If you would like to turn ON the BHT after that, power ON the BHT following the instruction in "3.1. Power ON".
If you tap "Restart", the BHT is turned OFF in the same manner when "power OFF" is tapped, and then starts up automatically.

– Note –	-	Note that data which are not saved in the storage, such as the internal storage and SD card may be erased. If you are using a user application, finish the operation, and then tap "power OFF" or "Reboot".
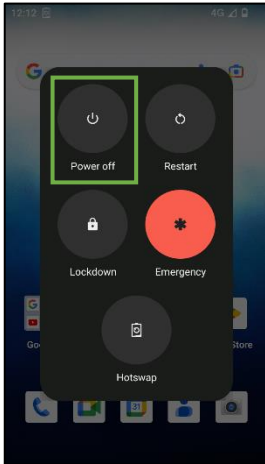
3.3. Suspend (Sleep) Resume

To minimize power consumption and prevent unintended operation, suspend (sleep) BHT if you are not actively using it. When BHT enters suspend (sleep) state, the system is in a power-saving status, meaning that the BHT will not respond to screen touch, and that keys and buttons will also be unavailable until the BHT is unlocked.

If the power key (⏻) is pressed swiftly or if any operation is not done during the sleep time that has been set, the BHT will be transferred to the suspend (sleep) state. To resume the BHT, press the power key (⏻) swiftly.

– Point –	Power consumption in the suspend (sleep) state is in accordance with the Android standard specifications.
	The BHT transits to the display off state after a certain period of sleep time has elapsed and then transits to the power saving state (Doze mode, etc.) depending on the running application settings or the power saving settings.

3.4. Hot Swapping

BHT supports the "hot swapping" function that enables the battery change without rebooting BHT.

— Note —   Data may be damaged when the battery is removed at a timing other than Step 4 described below if the data synchronization during file writing and the file end process are not correctly executed.

Before using the hot swapping function, be sure to check the following.

- A new battery that will be exchanged must be charged sufficiently.
- The notification icon 🖾 is not displayed in the status bar, or notification message "Hotswap not available" is not displayed in the notification area.
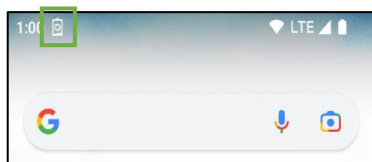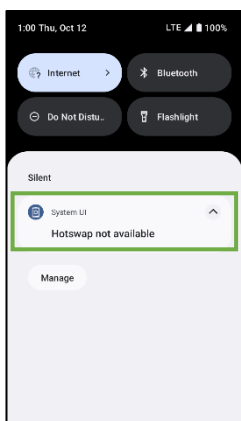
status bar   notification area

Executing hot swapping function with the following procedure:

[1] When the BHT is in the suspend state, push the power key to display the Home screen.
   Press and hold the power key for more than 1 second so as to display the pop-up menu, and then, tap the "Hot swap."
[2] Tap "OK" when the confirmation message "Do you want to perform HotSwap?" is displayed (*1). The screen display
   will be OFF and the red LED turns on.
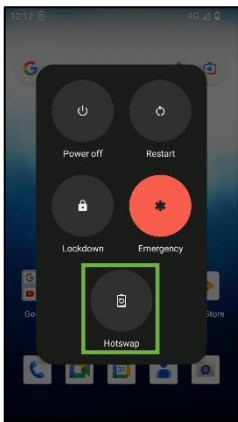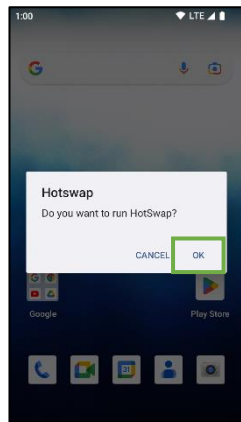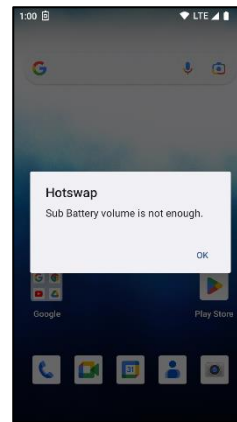
| Step [1] | Step [2] | (*1)Error screen |

[3] Wait until the red LED turns off. (*2)
[4] Replace the battery in 5 minutes after the battery removal. (For the M60, replace the battery after removing the battery
   cover plate) (*3)
[5] Make sure that the battery is fully inserted. (For the M60, reinstall the battery cover.)
[6] By pressing the power key, resume the BHT.

─ **Point** ─

(*1) If the "Sub Battery volume is not enough" error message is displayed

Wait for the notification icon on the status bar or "Hotswap not available" to disappear in the notification area, perform hot swapping once again.

(*2) If the red LED will not turn off after 60 seconds

By pressing the power key and perform hot swapping once again on the standby screen.

(*3) Hot swapping state can be kept during 5 minutes after removing the battery, when the sub-battery remains fully charged.

Hot swapping will fail if you remove the battery and insert it after 5 minutes or more, or when the sub-battery is not fully charged. In this case, the BHT will be in the power off state (shutdown state), and the BHT will restart the next time the power key is pressed, and the pop-up shown below will be displayed.
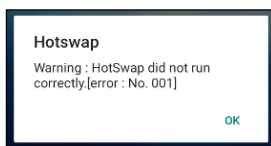
3.5. System Update

A system can be updated by specifying a package file for updating system stored in the SD card or the internal storage. There are two types of package files: full update packages and incremental update packages from one previous version.

For details about how to upgrade from Android 10 to Android 13 and notes, refer to the manual "Major update procedure from Android 10 to Android 13".

3.5.1. Execution of Update
Update the system as described below.

[1] Copy a package file to the internal storage or SD card.
[2] **Swipe up on the home screen** | **Settings** ⚙ | **System** ⓘ | **System updates**, and then the system update application starts up.
[3] Select the copied package file from the list and tap Start to execute the update.
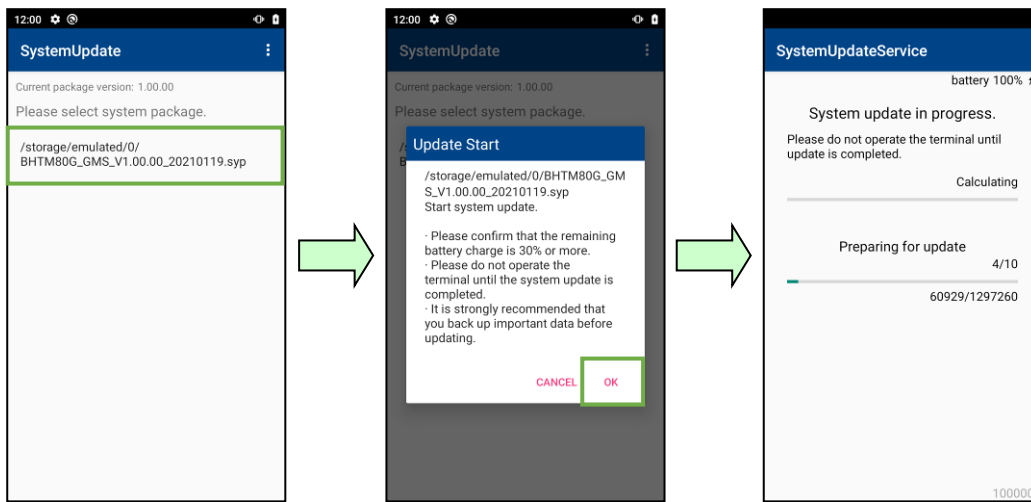
[4] When the update is completed, the system displays a dialogue indicating that the system update is completed. The package version of the updated terminal is displayed in the dialog. Tap OK to terminate the application.
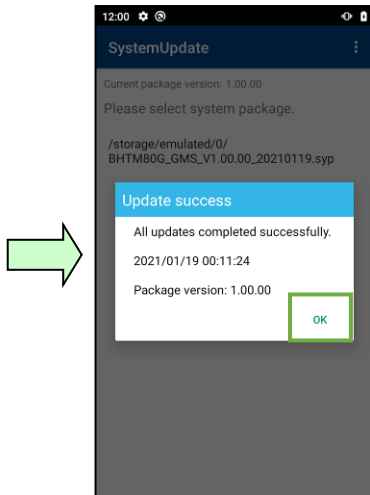
― **Point** ―
- Version down is not supported.
- Backing up important data before update is strongly recommended.
- Terminate all applications before stating the update.
- Please make sure that you have sufficient free storage space.
- To prevent the battery from running out of power during system update, start the update with the battery at least 30% remaining and installed in the charging cradle.
- Do not turn off the BHT during the system update.
- Do not operate the BHT until the system update is completed.
- It may sometimes take time for the system update.
- The BHT may need to reboot several times by the time the system update is completed. After rebooting, a dialogue such as the home application selection screen may be displayed. In this case, wait until the update is completed without operating BHT.

3.5.2. Incremental Update

It is possible to update using incremental update system packages from a specific version.

To determine if the system package is an incremental update system package,
check if the filename of the system package contains the word "Incremental".
If the file name includes the version to be updated and the version does not match the current version,
an update error will occur.
   XXX_Incremental_XXX_From_[version to be updated]_XXX.syp

For the update procedure, see **3.5.1 Execution of Update.**
Before executing step [3], make sure that "**Current package version**" displayed at the top of
the System Update application screen matches the version to be updated.

— **Point** —	- Only incremental update package files from one previous version are provided. For updating from other versions, please use the full update package files. - For incremental updates, the file size and update time of the system update package depends on the amount of change from the previous version. - The format of the package file name may change in the future.

3.5.3. Menu Button

Tap Menu ⋮ button, and an option menu is displayed.
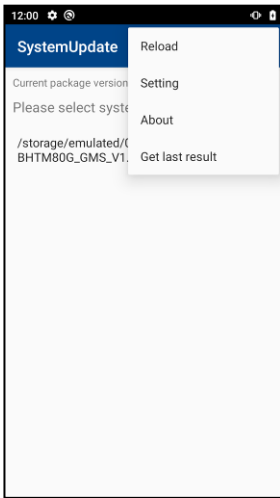
Item	Description
Reload	Updates the package file list displayed on the screen to the latest state.
Setting	Displays a system update setting menu.
About	Displays the version information of the system update application.
Get last result	Displays the previous system update result.

3.5.4. Settings

The system update process can be set.
For the stable update, use of the default setting values is strongly recommended.

Item	Description
Check battery charge	At the start of update, selects whether to check the battery level.
	When checking the battery level, the remaining battery level must be at least 30% or an update error will occur.
	Checking is recommended in order to prevent an update failure caused by the battery drain during the system update.
Use internal storage	Selects the storage for creating an intermediate directory for update.
	When it is checked, update using an internal storage. When it is unchecked, use an SD card to update.
	Checking is recommended in order to prevent an update failure caused by insertion/removal or damage of an SD card.

— Point —
- Even when the battery level is not checked, update the system with the BHT set in the charging cradle.
- Update the system after securing the sufficient data capacity of the selected storage.

3.5.5. Error Code

When an error occurs during the system update, an error dialogue is displayed.
If any error is not cleared even if the following actions are taken, check the error code and consult with the system administrator.

Code	Description	Action
1001 1002	The battery level is insufficient.	Please charge the battery to 50% or more with the charging cradle and start updating.
1010	A package file does not exist.	Check that a correct package exists in the BHT. If it exists, a package file inside the BHT may be damaged. When an SD card is used, the SD card may be damaged. In this case, place the package file in the internal storage correctly, and then retry.
1011	An extension of a package file is not correct.	
1043	Invalid package file.	
1044	Failure to read the package.	
1061 1062	Required file does not exist.	
1063	Failed to check the package.	
1021	SD card has not been inserted.	Check that an SD card has been inserted. When an SD card is not used, select setting in the menu button and check" Use internal storage ".
1040 1051	Storage data capacity is insufficient.	Secure the sufficient data capacity for update and retry. Twice as large data capacity as that of the package file is required as a target.
1080 1082	Not applicable BHT is used.	The currently used BHT (model) is not used for the specified system package. Please check the following, place the correct system package file to the BHT and retry. - The terminal is the target model of the package file. - The version of the terminal is the version to be updated.
1041 1092 1095 2022 2030 2040 2072 2082 4011	The status of an application required for the update is incorrect.	A required application may not be correctly installed in the BHT. Execute the following in turn. - Reboot the BHT, and then retry. - Reset to the factory default, and then retry. (Refer to 3.6 Resetting to the Factory Default (FactoryReset) and Enterprise reset .)
3040	Updating by person other than an owner	Only owners can carry out the system update. When the multi user mode is used, switch the user to the owner, and then retry.
E001	The system update service has not been installed.	Required applications may not be correctly installed in the terminal. Execute the following in turn. - Reboot the BHT, and then retry. - Reset to the factory default, and then retry. (Refer to 3.6 Resetting to the Factory Default (FactoryReset) and Enterprise reset .)
E002	The old version of the system update service is used.	
E003	The old version of the system update application is used.	
E004	The system update service does not respond.	
E008	Failed to check disabled of the System Update API.	
E005	The system update service has already been in operation.	If the update has already been in operation from another application, wait until it is completed. If this code is indicated even though the system is not updated, reboot the BHT, and then retry.
E006	The previous update result does not exist	This code is indicated when the update result is confirmed even though the system has never been updated. If this code is indicated after the update, reboot the BHT, and then retry.

E007	The System Update API is disabled by Administrator.	After releasing the prohibited state of the API for updating the OS, and then retry. (Refer to 15.2.2.6 API Disable)
XXXX	Errors other than the above (Including the case when an error dialogue is not displayed)	Execute the following in turn. - Reboot the BHT, and then retry. - Replace the package file in the internal storage correctly, and then retry. - Insert or remove a BHT battery, and then retry.

3.6. Resetting to the Factory Default (FactoryReset) and Enterprise reset

3.6.1. Resetting to the Factory Default (FactoryReset)

Swipe up on the home screen | **Settings** ⚙ | **System** ⓘ | **Reset options** ↺ and "Erase all data (factory reset)".
Then tap "Erase all data", "Erase all data".

SetupWizard is set.

SetupWizard is completed.   Startup function starts.   Startup function is completed.
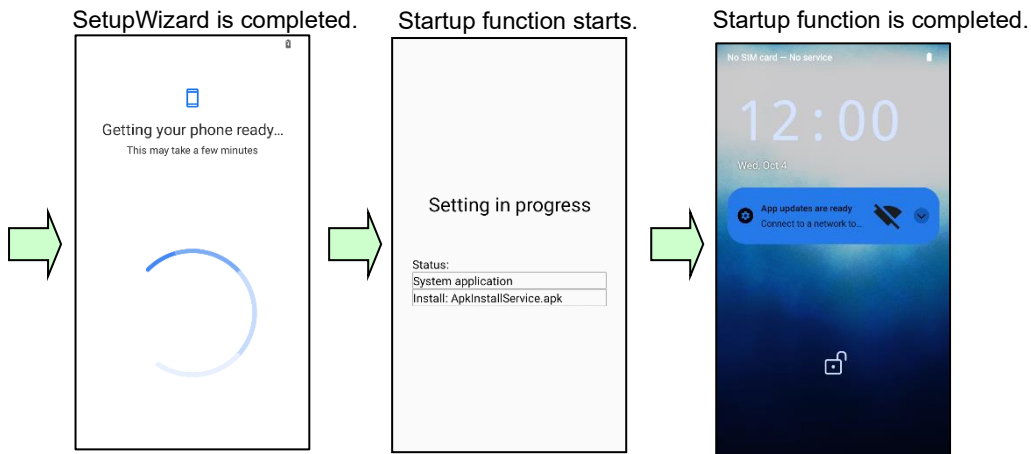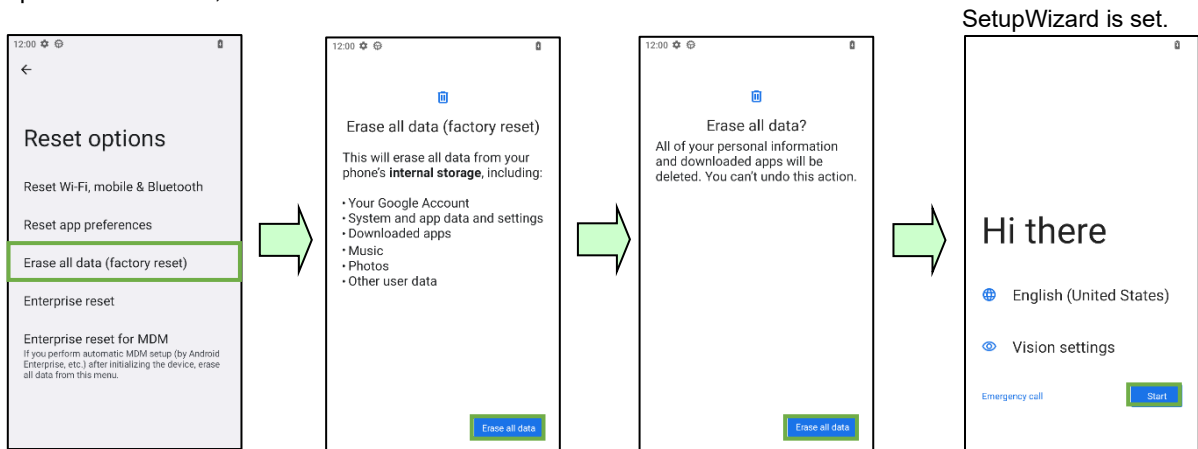
– Point –   - Before resetting to the factory default, it is strongly recommended that important data be backed up.

Please avoid inadvertent screen operation from SetupWizard completion screen to Start-up function completion. It may fail the resetting process. For details, refer to "3.7.6 Precaution on Start-up Function".

3.6.2. Enterprise reset

Swipe up on the home screen | **Settings** ⚙ | **System** ⓘ | **Reset options** 🕙 and "Enterprise reset". Then tap "Erase all data", "Erase all data".

SetupWizard is set.

SetupWizard is completed.   Startup function starts.   Startup function is completed.
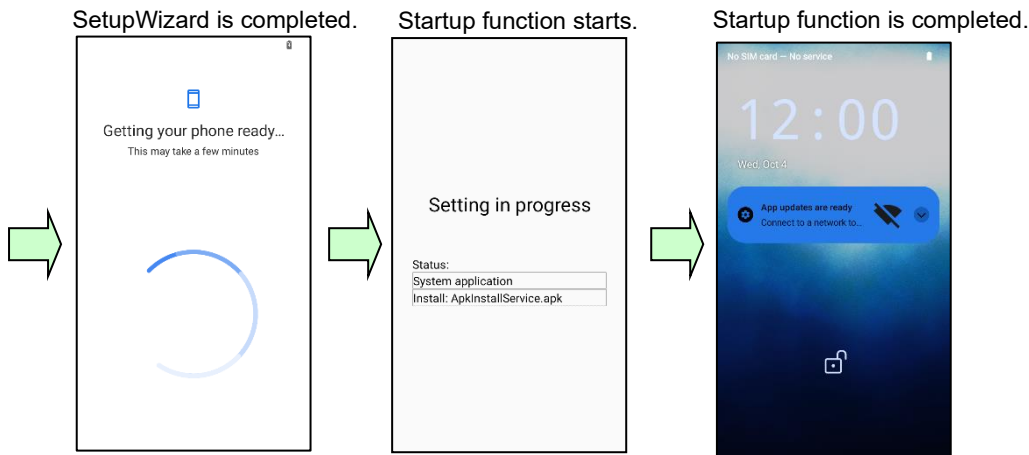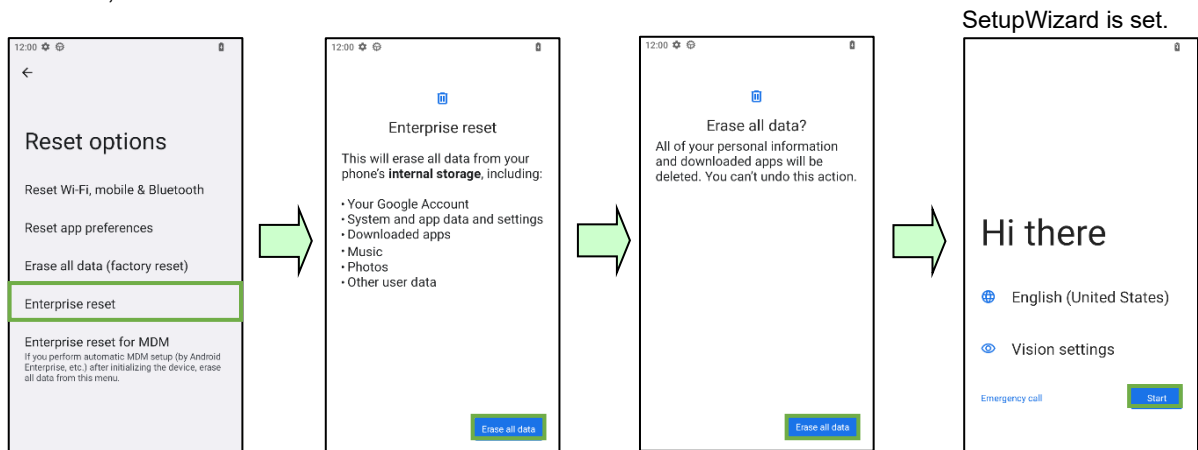
| **– Point –** | - Before executing Enterprise reset, it is strongly recommended that important data be backed up. |

After backing up /StartupSettingsData/Setup folder and /StartupSettingsData/Startup folder, and resetting to the factory default, install and execute an application in the folder to start up the automatic setting and an application to operate. For details, refer to "3.7 Start-up Function".

Please avoid inadvertent screen operation from SetupWizard completion screen to Start-up function completion. It may fail the resetting process. For details, refer to "3.7.6 Precaution on Start-up Function."

- It is recommended not to set "Set screen lock" of Setup Wizard. If set, the screen lock must be unlocked manually when the Startup function is running, and the Startup function will not be completed automatically.

3.6.3. Enterprise reset for MDM

To perform MDM kitting utilizing the Android Enterprise features, install the DENSO WAVE applications by following the steps below.

1. Tap "Enterprise reset for MDM" | "Erase all data (for MDM)"
   ・Denso Wave applications will not be installed at this time.
2. Start SetupWizard
3. Install MDM Client
   ・Refer to MDM specifications for details.
4. Applying MDM Settings (Server Sync)
   ・Some MDMs restrict installation of unauthorized applications or delete unauthorized applications.
     Set the necessary settings by checking the MDM specifications to install the Denso Wave applications.
5. Tap "Enterprise reset for MDM" | "Install pre-installed apps"
   ・The Denso Wave applications are installed.

Swipe up on the home screen | **Settings** ⚙ | **System** ⓘ | **Reset options** 🕔 and "Enterprise reset for MDM" | "Erase all data (for MDM). Then tap "Erase all data", "Erase all data".
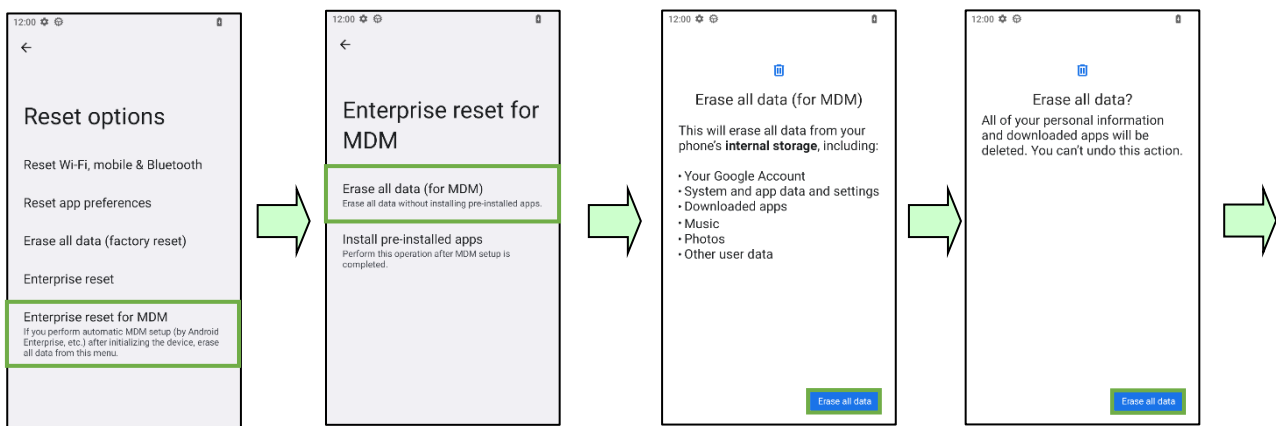
SetupWizard is set.　Install MDM Client.　SetupWizard is completed.　Applying MDM Settings.
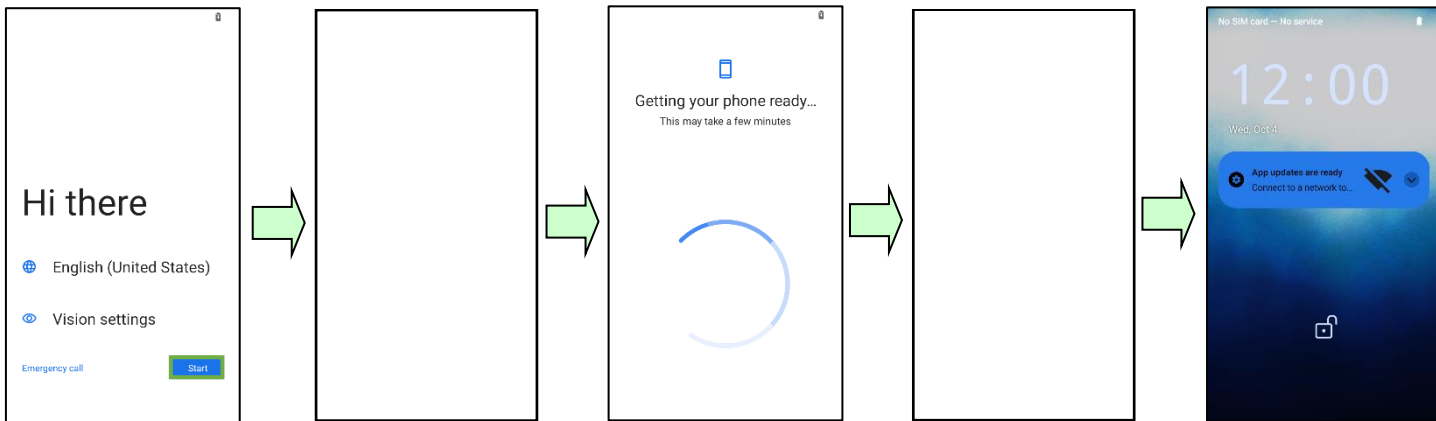
‒ Point ‒　- Before resetting, it is strongly recommended that important data be backed up.

Swipe up on the home screen | **Settings** ⚙ | **System** ⓘ | **Reset options** 🕐 and "Enterprise reset for MDM" | "Install pre-installed apps".

Startup function starts.　　　　Startup function is completed.
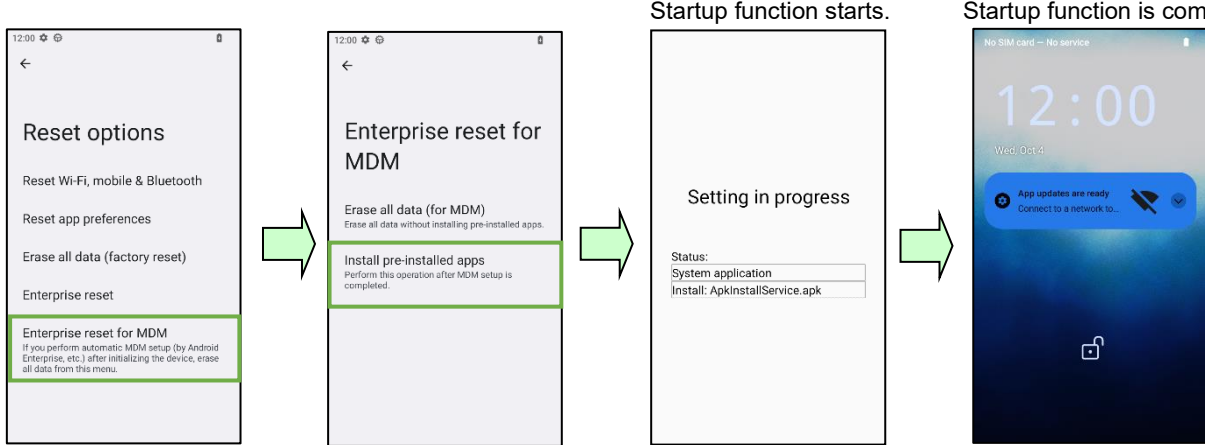
3.7. Start-up Function

The following functions make the set-up easier.

Functions to be executed when resetting

Function	Outline
Automatic set-up (../Setup)	Installs programs such as applications located in the "Internal shared storage/StartupSettingsData/Setup" and automatically runs an application specified in the setting xml file. Waiting for the finish of the automatically running application, runs next application automatically. Runs the set-up application. Automatically sets reading and application launcher according to the setting file. For details of the setting files, refer to "3.7.2 Setting xml File".
Automatic execution of application (../Startup)	Installs programs such as applications located in the "Internal shared storage/StartupSettingsData/Startup" and automatically runs an application specified in the setting xml file. Without waiting for the finish of the automatically running application, runs next application automatically. Runs the operation application.
Administrator function cancellation	Cancel for administrator can be done at reset. ✓ Skip user Setup / Startup of Startup function. ✓ Clear the ApplicationLauncher administrator mode login password. ✓ Release device owner authority. ✓ Allow safe mode. Operation method: Reset the function with [left trigger] key and [right trigger] key held down, until the BHT is turned on (the start-up movie is displayed.). For details of the cancel, refer to "3.7.5 Administrator function cancellation".

Resetting types and Start-up function

Resetting types	Start-up function			
	(1) Install the system app.	(2) Set up the system.	(3) Automatic set-up (../Setup)	(4) Automatic execution of application (../Startup)
Factory Reset	✓	✓	–	–
Enterprise reset	✓	✓	✓	✓
Enterprise reset for MDM	–	–	–	–
Reboot	–	–	–	✓
System update	–	–	–	✓

– Note –　　Please note the following when updating the system using the system update API.

It is recommended to implement the automatic execution of the application after updating the system with the system update API according to the example in the "System Update API" chapter of the "API Reference".

If the application is set to run automatically with the Startup (../Startup) function, the application will run automatically on both. We recommend implementation and operation verification that does not cause any problem even if automatic execution is performed multiple times.

3.7.1. Processing Flow

The processing flow of Enterprise reset is described as below.

(1) Install the system app.
   after finishing SetupWizard,
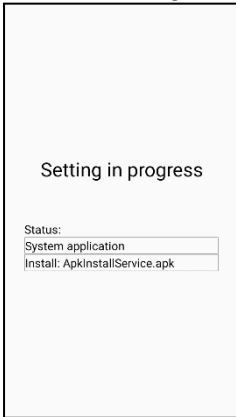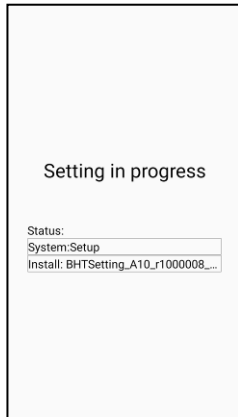
Setting in progress

Status:
System application
Install: ApkInstallService.apk

(2) Set up the system.

Setting in progress

Status:
System:Setup
Install: BHTSetting_A10_r1000008_...

Reboot

(3)-1 Install../Setup app.

Setting in progress

Status:
User:Setup
Install: Test1.apk

(3)-2 Run ../Setup app.
   automatically.

Test1

Hello World!

Reboot
as needed.

(4)-1 Install ../Startup app.

Google

Google   Play Store
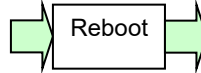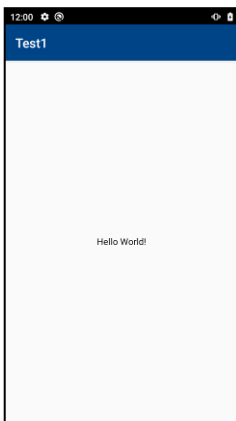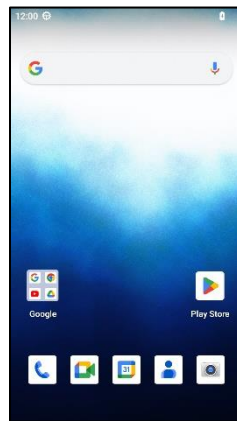
(4)-2 Run ../Startup app.
   automatically.

Test2

Hello World!
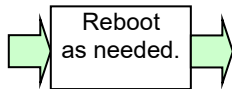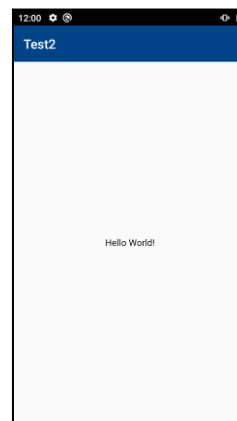
* There is no screen display while processing (4)-1/2../Startup.
"S" icon is displayed in the notification area during processing.
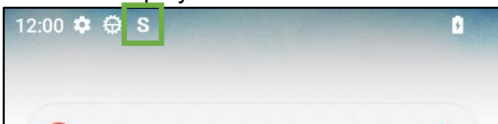
3.7.2. Setting xml File

This file specifies application/service that are automatically running at the automatic set-up (../Setup) and the automatic execution of application (../Startup). Specified applications/services are executed in order as described. Created xml files are stored in each folder. File names are optional. When there is more than one file, they are processed in ascending order of the file name.

xml file format

Name			Parameter name		
	xml element		xml element		
	tag		tag	Attribute: name	Attribute: value
xml file information	Information	Format version	string	FormatVer	(e.g.) 1.00.00
Common settings	Common	Reboot	boolean	Reboot	false/true *1
		Waiting time before application execution (sec)	int	WaitTime	Specify the time to wait before executing the application. The unit is seconds. Default: 0
Automatic execution	set	-	-	AutoExec	-
		Package name	string	-	(e.g.) com.densowave.test1
		Package name/ service name			(e.g.) com.densowave.test3/.Test3Service

*1: When there is more than one xml file in the folder, the system will reboot if even one item specifies reboot (true).

(e.g.)

```
<?xml version='1.0' encoding='utf-8' standalone='yes' ?>
<Settings>
    <Information>
        <string name="FormatVer">1.00.00</string>
    </Information>
    <Common>
        <boolean name="Reboot" value="true"/>
        <int name="WaitTime" value="5"/>
    </Common>
    <set name="AutoExec">
        <string>com.densowave.test1</string>
        <string>com.densowave.test2</string>
        <string>com.densowave.test3/.Test3Service</string>
        <string>com.densowave.test4/.Test4Service</string>
    </set>
</Settings>
```

3.7.3. Applications to be Executed by Automatic Set-up (../Setup)

3.7.3.1 Terminating Application

Start-up function monitors the start-up/termination with the process list of applications that is run on the device.
finish() and finishAndRemoveTask() that are used when finishing Activity app. do not terminate the process itself, but just end Activity. That is to say, only Activity will be invisible. (The process will be deleted by GC(Garbage Collection) later if RAM becomes insufficient.)
The application process can be terminated by adding the following codes when finishing the application.

```
protected void onDestroy() {
    super.onDestroy();
    android.os.Process.killProcess(android.os.Process.myPid());
}
```

The service application terminates the process when it is finished. Therefore, it is not necessary to add the codes especially.

3.7.3.2 When the Automatically Executing Application Starts up Another Application

To execute Start-up, start-up App (a) specified in the setting xml file contained in the automatic set-up (../Setup) and wait for the finish of this App (a). Therefore, when App (a) starts up App (b), Start-up function moves to the next process at the finish of App (a) regardless of the finish of App (b). If it is required to wait for the finish of App (b), App (a) should finish after waiting for the finish of App (b).

3.7.3.3 Specify restart in configuration xml file
Please do not restart with the application that is executed by automatic setup. It will be in the state where the restart is repeated. Specify reboot in the configuration xml file.

3.7.4. Broadcasting: System Setting Completed

The following will be broadcast after the reboot of "3.7.1 Processing Flow- (2) Set up the system" or "(3)-2 Run ../Setup app. automatically."

com.densowave.startupsettings.intent.action.SYSTEM_SETUP_COMPLETED_INCLUDE_STOPPED
(With Intent.FLAG_INCLUDE_STOPPED_PACKAGES)

An application that starts up after receiving this broadcasting can be created. Note that a user application has not yet been installed after rebooting "(2) Set up the system" of Factory Reset and Enterprise reset. Install an application at "(3)-1 Install ../Setup app." and specify the reboot after "(3)-2 Run ../Setup app. automatically."

3.7.5. Administrator function cancellation

At the time of a reset, the administrator function can be cancelled.
If a reset is executed while the [left trigger] key and [right trigger] key are pressed and the [left trigger] key and [right trigger] key are pressed until the power is started up (the start-up movie is displayed), the password entry screen is displayed.
In "Cancel password of Startup" (15.2.2.5 Disable Enterprise Reset) of BHTSetting, enter the password set by the administrator.
The password can also be entered with the [M1], [M2], [SCAN], and [Trigger] keys.
Cancel each function from the list.
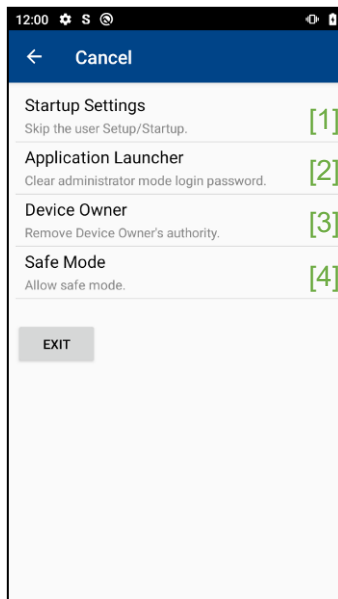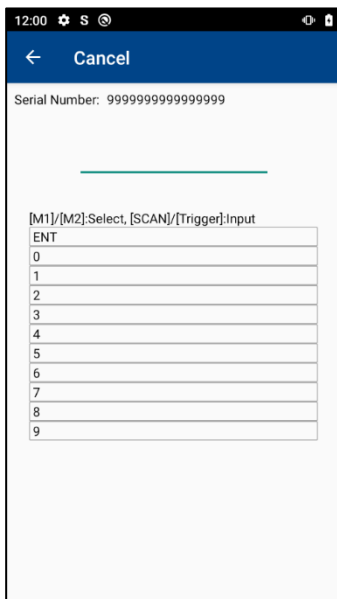
[1]	Skip user Setup / Startup of Startup function.
[2]	Clear the ApplicationLauncher administrator mode login password.
[3]	Remove Device Owner's authority.
[4]	Allow safe mode.

3.7.6. Precaution on Start-up Function

(1) Do not reboot during the Start-up and when using a power key or removing a battery. This may not complete the processing correctly. If you reboot during the Start-up, execute Enterprise reset and try the Start-up again.

(2) If there is any problem as the Android specification during the execution of application, reboot this application. Create an application in consideration of the data structure that will not cause any problem even if the already set value is set again using this application.

(3) After completing the Startup function, check that the application is installed. If the application is not installed, execute Enterprise reset and Factory Reset, and then execute Startup processing again.
[Installation failure screen example]   [Installation success screen example]
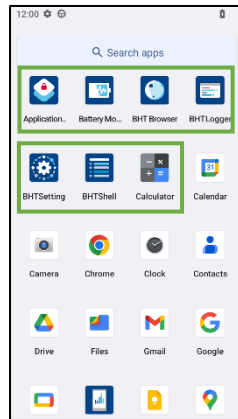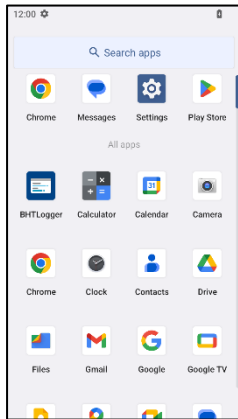
3.8. (Touch Panel) Screen

3.8.1. Brightness of Screen

Swipe up on the home screen | **Settings** ⚙ | **Display** 🔅 | **Brightness level** .

Drag a slider to right (increasing the brightness of screen) or to left (decreasing the brightness of screen) to adjust the brightness of the screen. When using a built-in sensor of BHT to adjust the back light automatically, turn ON the "**Adaptive brightness**". You can also use a short-cut button on the **quick settings** menu to adjust the luminance.
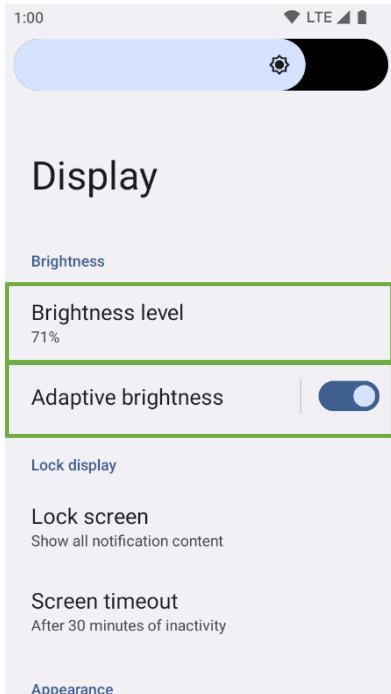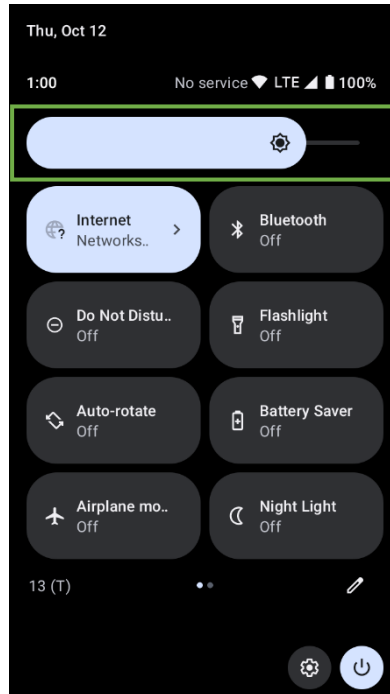
Settings   **Quick settings**

– Point –	- Dim the screen to save the battery power,
	- The screen will be brighter in a bright environment if the automatic brightness control is enabled, resulting in increased power consumption of the battery.

3.8.2. Screen Rotation

By default, the screen of BHT is rotated automatically when the BHT is turned sideways.
Rotate the screen in either of the following procedure.

- Rotation by settings

 Swipe up on the home screen | **Settings** ⚙ | **Display** ◑ .

 To disable the rotating function, tap **"Auto-rotate screen"** to turn it off. To enable the rotating function, tap **"Auto-rotate screen"** to turn it on.
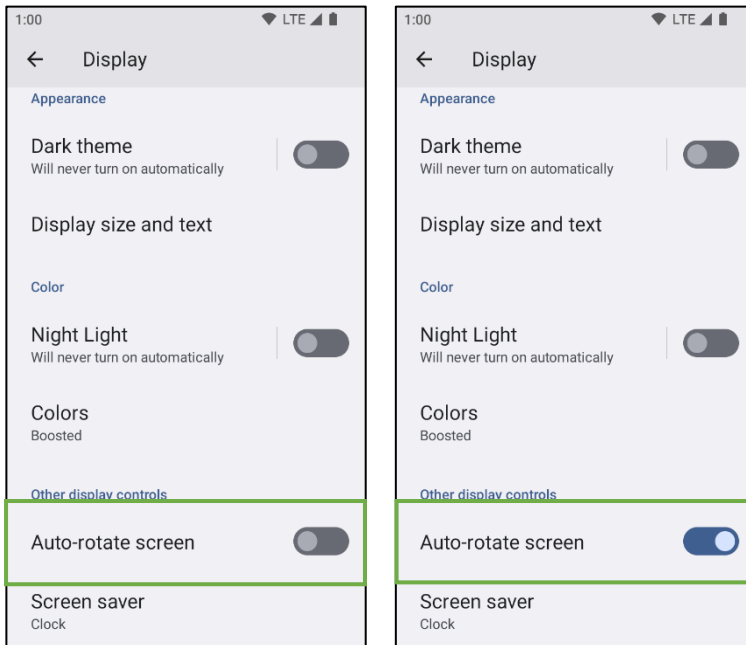
- Rotation by quick settings

 1) Swipe down from the top of the screen with finger to open the **quick settings**.

 2) Tap the **Auto-rotate** and the current screen orientation is fixed. If you tap it again, the screen function returns to the auto-rotate.
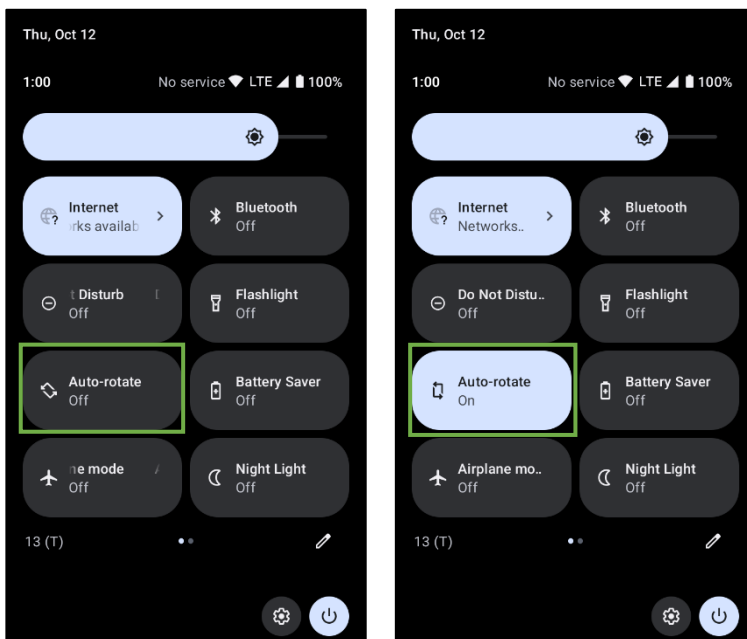
● Erasing Auto-rotate screen option from the setting items on the display will be able to minimize the possibility of incorrect turning ON of the auto-rotate function.

Swipe up on the home screen | **Settings** ⚙ | **Accessibility** 👤 | **System controls** to turn off the "Auto-rotate screen". Doing so will prevent the

"Auto-rotate screen" option from being displayed on the **Settings** ⚙ | **Display** 🔆 .

1:00 📶 LTE	1:00 📶 LTE	1:00 📶 LTE
← Accessibility	←	← Display
Interaction controls		After 30 minutes of inactivity
Accessibility Menu Off / Control device via large menu	**System controls**	**Appearance**
Switch Access Off / Control device with switches	System navigation 3-button navigation	Dark theme Will never turn on automatically ⬤
Timing controls	Power button ends call ⬤	Display size and text
System controls	Auto-rotate screen ⬤	**Color**
Vibration & haptics On		Night Light Will never turn on automatically ⬤
Captions		Colors Boosted
Live Caption Automatically caption media		**Other display controls**
Caption preferences		Screen saver Clock

– Point –	The auto-rotate function is not supported on the home screen, by all application lists and special applications.

– Point –	Enable Auto-rotate to save the battery power consumption.

3.8.3. Screen Timeout Settings on the Display

Swipe up on the home screen | **Settings** ⚙ | **Display** ☀ | **Screen timeout**.

Select the Screen Timeout of the display

1:00 ◆ LTE ◢ ▮	1:00 ◆ LTE ◢ ▮
←	←
Display	**Screen timeout**
Brightness	○ 15 seconds
Brightness level 71%	○ 30 seconds
Adaptive brightness 🔵	◉ 1 minute
Lock display	○ 2 minutes
Lock screen Show all notification content	○ 5 minutes
Screen timeout After 1 minute of inactivity	○ 10 minutes
Appearance	○ 30 minutes
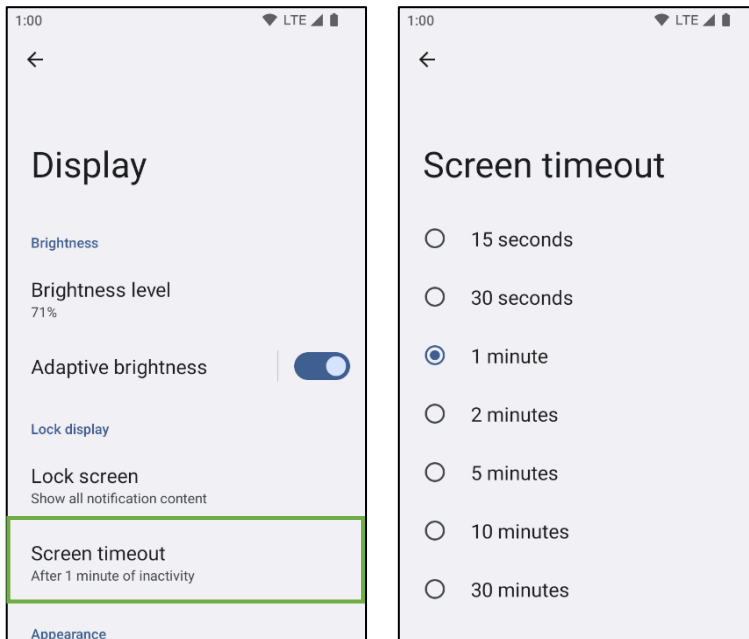
– Point –	Shorten the transit time to sleep mode to save the battery power consumption.

– Point –	The power consumption in the suspend (sleep) mode is in accordance with the Android standard specifications.
	The BHT transits to the display off state after a certain period of sleep time has elapsed and then transits to the power saving state (Doze mode, etc.) depending on the running application settings or the power saving settings.

3.9. Key

3.9.1. Key Layout

BHT-M80

BHT-M70

BHT-M60
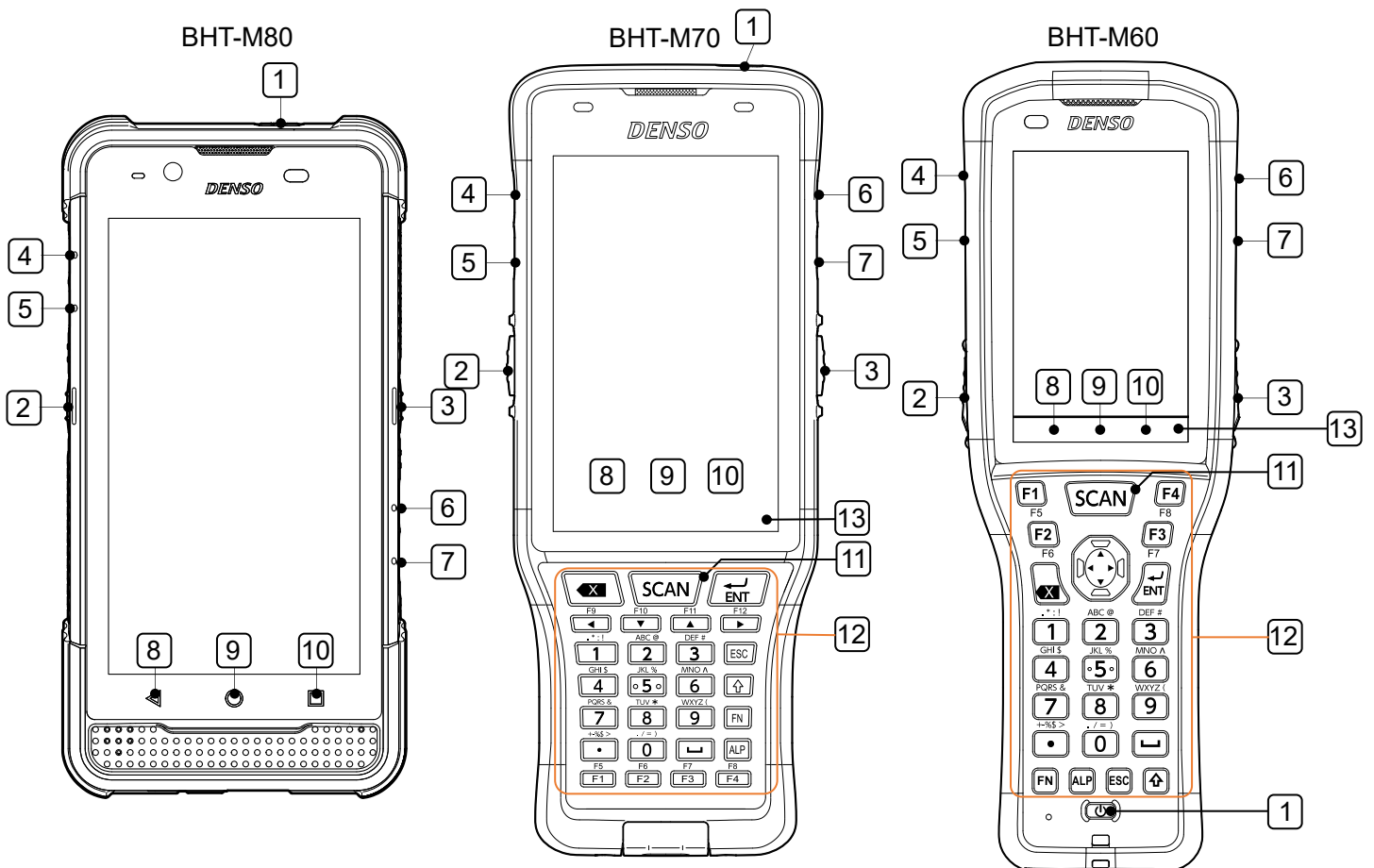
No.	Key	Function
1	Power key	Powers ON/OFF.
2	Left trigger key	Reads barcodes. (*1)
3	Right trigger key	Reads barcodes. (*1)
4	M1 key	Volume up (*1)
5	M2 key	Volume down (*1)
6	M3 key	Function has not been assigned. (*1)
7	M4 key	Function has not been assigned. (*1)
8	Back key	Goes back the previous screen. Closes an active application and a keyboard.
9	Home key	Displays the home screen.
10	Application switching key	Switches applications.
11	[SCAN] key	Reads barcodes. (*1)

	Keyboard	Enters characters and so on.
12	[1] - [0], [.] key	Enters characters and numbers.
	[␣] key	Enters a space.
	F1 - F4 key	Executes a function.
	[▲],[▼],[◀],[▶] key	Moves a cursor.
	[BKSP] key	Deletes a character in front of a cursor.
	[ENT] key	Fixes entered data.
	[ESC] key	Enters an ESC code. Functions in the same way as Back key.
	[⇑] key	Being in a shift state while it is pressed down.
	[FN] key	Switches to the function mode. (*2)
	[ALP] key	Switches to the alphabet mode. (*2)
13	Keyboard key(*3)	Switches keyboards.

For details of each key, refer to "BHT API Reference Manual".
(*1) Functions by default are described. Key functions are assigned according to the key remap function that will be described later.
(*2) The key feature is available only if Hard Keyboard IME or Multi-Tap function described later is used.
(*3) This key is displayed if these are more than 2 keyboards in the on-screen keyboard list.

3.10. Date and Time

By default, date and time are synchronized when they are connected to the internet or the mobile network.
The time zone is synchronized when it is connected to the mobile network.

When setting date, time, and time zone manually, follow the procedure described below by selecting

Settings ⚙ | **Display** 🔆 | **Date & time**

①   Disable [Set time automatically].
②   Disable [Set time zone automatically].
③   Set the date with [Date].
④   Set the time with [Time].
⑤   Set the time zone with [Time zone].
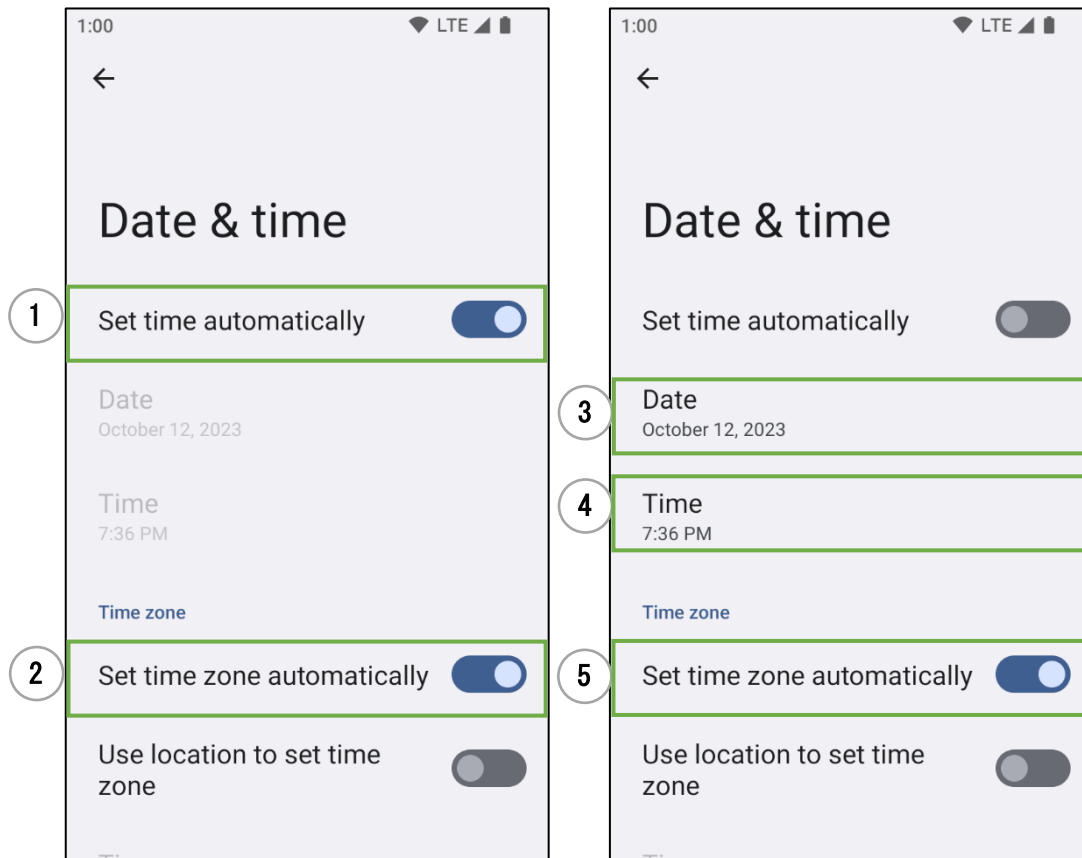
– Note –	LTE not supporting model does not apply to the automatic time zone setting.
	When the automatic date & time setting is set OFF, time inconsistency may occur.
	At that time, set the automatic date & time setting ON or set the time periodically.

3.11. SNTP Function

With the SNTP function, you can set the date and time at any time interval from any SNTP server. It can be used to synchronize the date and time on a server in your company's network. See the table below for a comparison with when "Set time automatically" in the previous section is enabled.

Item	"Set time automatically" is enabled	SNTP Function
SNTPServer	Fixed	any SNTP server
synchronization interval	Fixed	Select from 30min, 60min, 6hour, 24hour

3.11.1. Screen and settings
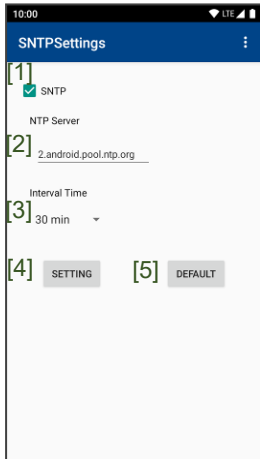
No.	Title	Description	Default value
[1]	SNTP	It enables or disables the SNTP function. * When the SNTP function is enabled, "Set time automatically" for date and time is disabled.	disables
[2]	NTP Server	URL or IP address of the SNTP server	2.android.pool.ntp.org
[3]	Interval	synchronization interval.Select from 30min, 60min, 6hour, 24hour	30min
[4]	SETTING	Save the settings. If SNTP is enabled, the screen will be closed and the first synchronization process will be executed.	—
[5]	DEFAULT	Returns the NTP server and interval values to their default values	—

3.11.2. Enabling the SNTP function

Follow these steps:

[1] Swipe up on the home screen | SNTPSettings to start up.
[2] Tap SNTP to enable it.
[3] Enter the URL or IP address of the SNTP server.
[4] Select a value for Interval.
[5] Tap the SETTING button.
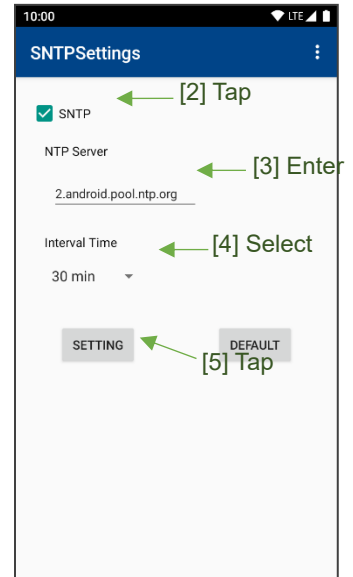
– Note –	・For models without LTE, set the time zone manually before enabling SNTP. ・If you cannot connect to the specified SNTP server, the date and time will not be synchronized

3.11.3. Disabling the SNTP function

Follow these steps

[1] Swipe up on the home screen | SNTPSettings   to start up.
[2] Tap SNTP to disable it.
[3] Tap the SETTING button.
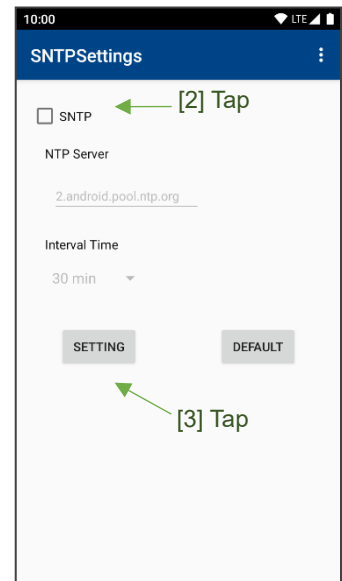
3.12. Image Capture

To implement the image capture, press M2 key (by default) at the left side of BHT and power key (M60 is the bottom center of the keypad, M70/M80 is the top) at the same time and hold it down for 1 to 2 seconds.

Captured image will be stored in the ¥Pictures¥Screenshots in the main storage of the BHT.

3.13. Data Communication through USB Connection

BHT is able to connect with external terminals with the USB terminals, charge, and transmit data using the USB Type-C cable or the cradle.

3.13.1. Connection procedure
- For the connection to USB Type-C cable and the cradle, refer to 1.2 System Components.
  * Please refer to the BHT Hardware User's Manual.

3.13.2. Communication procedure
・When connecting the BHT directly to the USB cable
Connect the USB Type-C connector side to the BHT USB port, and connect the computer to the USB cable.

・When connecting the BHT using cradle
Connect the USB Type-C connector side to the USB port on the cradle and connect the computer to the USB cable.
Place the BHT on the Cradle.

USB communication procedure
1) Swipe down the screen from the status bar to display the notification drawer.
2) Tap "USB charging this device via USB" on the notification drawer twice, and the screen for USB connection is displayed.
By default, "No data transfer" is selected.

When you need to access a file on this BHT storage (*1) from the computer, select "File Transfer", and then you can access a file on the BHT storage (*1). (*1) internal storage and SD card (when inserted)

When you need to limit transferable files to video or image files only, select "PTP", and then you can access only video and image files in the DCIM of the BHT storage and Pictures folder.
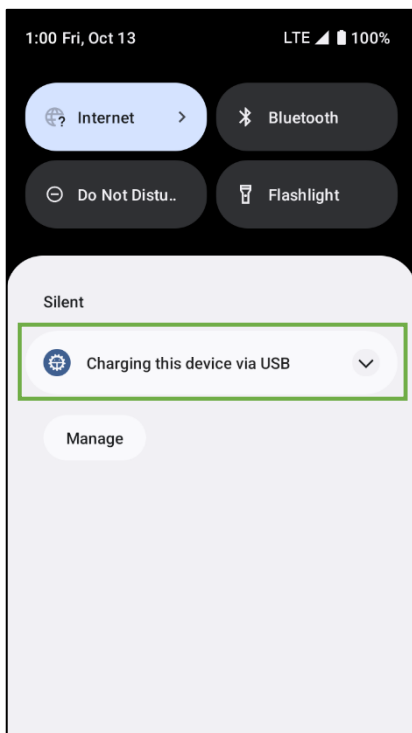
| notification drawer 1st | notification drawer 2nd | USB connection Settings |
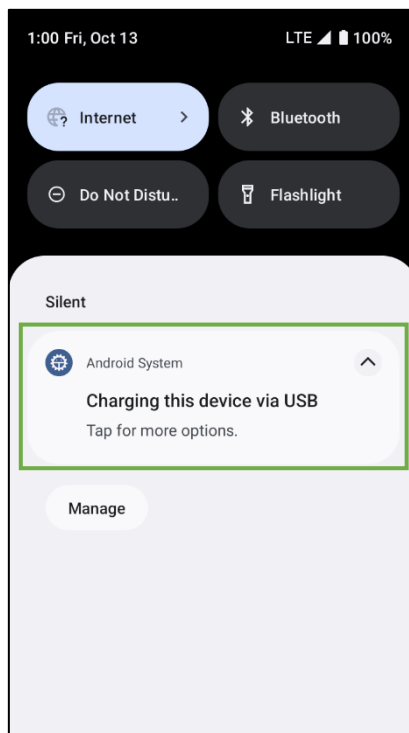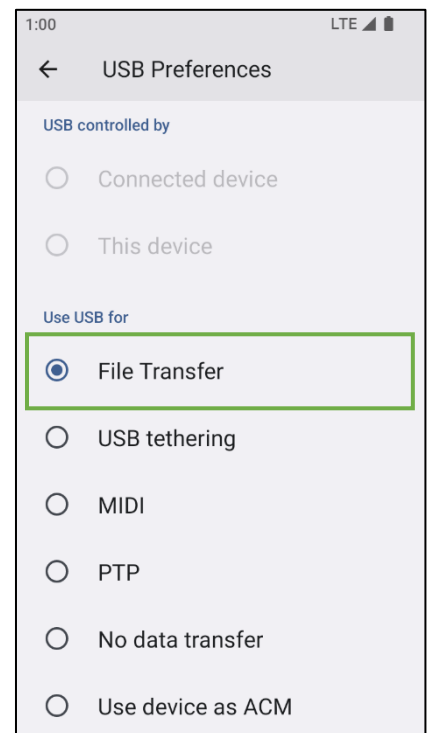
― **Point** ―   The mode set for "Use USB for" in the USB connection setting screen returns to the default "No data transfer" when the USB is disconnected.
If you want to maintain the selected mode, refer to [15.2.2.12 USB] in BHTSetting.

3.14. StatusBar

The left side of the status bar shows **notification icons**, and the right side of the status bar shows **status icons**.
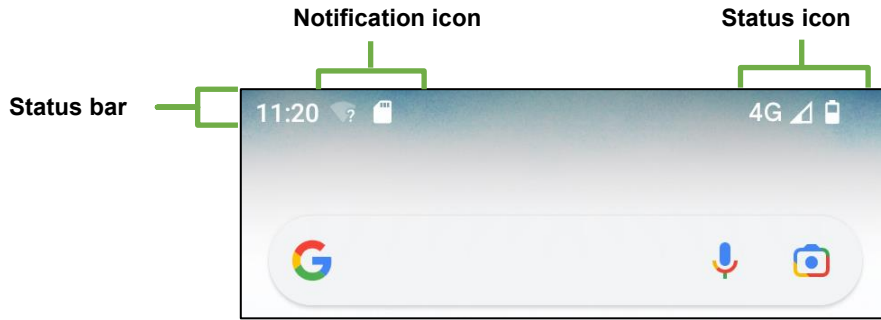
3.14.1. Status Icon

Icon	Description
	Connecting to a Bluetooth device.
	Connecting to a WLAN network. The Wi-Fi standard of the connected access point is displayed on the right side.
	Connecting to LAN.
	Out of mobile network (LTE Supporting model only).
	Connecting to mobile network. A symbol will be shown on the left to indicate the cellular data connection type (e.g. 4G) (LTE Supporting model only).
	WLAN network tethering.
	Airplane mode is active.
	Alarm is active.
	Silent mode (Vibration mode) is active.
	The battery is fully charged.
	The battery is partially drained.
	The battery level is very low and needs charging immediately. (Less than 5%)
	Charging.

The above list shows the main icons.

3.14.2. Notification Icon

Icon	Description
	Scanning access point on WLAN network.
	Downloading data.
	Uploading data.
	SD card insertion.
	Warning message. Open **Notifications Drawer** for more details.
	The phone call has been connected. (LTG Supporting model only)
	There has (have) been missed call(s). (LTG Supporting model only)
	Hotswap not available.
	Startup processing in progress.

The above list shows the main icons.

Detailed contents of the notification icons can be checked by swiping downward from the status bar and displaying the notification drawer.
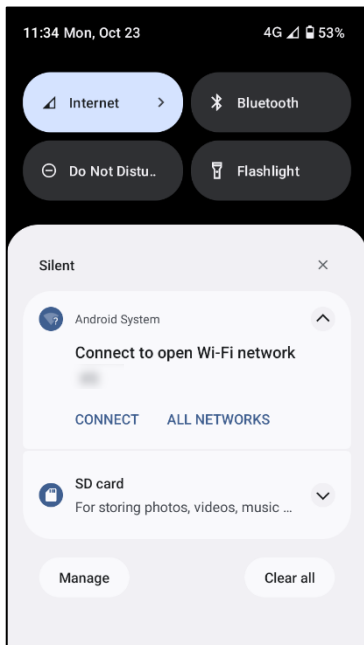
3.15. Application List

3.15.1. Applications Not Produced by DENSO WAVE

Swipe Up From on the home screen, and an application list installed in BHT will be displayed. For details of how to use these applications, refer to the help pages of each application or concerned Website on Google.

Icon	Name	Description
	Calculator	Performs basic calculations and mathematical calcualtions.
	Calendar	Creates and manages events and appointments.
	Camera	Takes pictures and shoots videos.
	Chrome	Web browser
	Clock	Indicates current date and time equipped with alarm, timer and stopwatch functions.
	Contacts	Adds, edits and displays contact information.
	Drive	Searches and browses photos and files on the Google drive.
	Files	Browses and manages files stored in the internal shared storage/ external storage.
	Gmail	Transmits and receives e-mail using Google email account.
	Google	Conducts Google search.
	Google TV	Browses movies and TV.
	Keep Notes	Keeps memorandum.
	Maps	Indicates the current location.
	Meet	Video call and meetings.
	Messages (*1)	Transmits and receives SMS.
	Phone (*1)	Performs voice communication.
	Photos	Displays photos stored in the BHT.
	Play Store	Downloads music, movie and Android apps from the Google Play Store.
	Safety	Save and share emergency info.
	Settings	Configures various BHT settings.

	Sound Recorder	Record voice notes and memos or anything else.	
	YT Music	Plays music stored in the BHT.	
	YouTube	Watches videos on the YouTube Website.	

(*1) LTE supporting models only

– Note – Google applications are automatically updated when connected to the Internet, and their behavior may change. For stable operation, it is recommended to set the guard for automatic update at the time of set-up BHT. Since it depend on Google's specifications, please refer to Google's site etc. as the conditions for automatic update.
Reference:
https://support.google.com/googleplay/work/answer/9350374?hl=en

When not using Google Play Store:Disable Google Play Store
When using Google Play Store:Disable Google Play Store

Depending on the application, it is necessary to connect to the Internet and download usage data.

Google Play Store app disable setting can be automatically kitting with BHTSetting.
For details, refer to 15.2.2.10 Disable the app.

3.15.2. Applications Produced by DENSO WAVE

Icon	Name	Description	Reference
	Application Launcher	Specifies an application to start up and sets restriction so as to operate this application only (application guard).	.11. ApplicationLauncher
	Battery Monitor	An application to display the status of a battery and monitor the status of the battery in the background to display an alert message based on the status of the battery.	16. BatteryMonitor
	BHTBrowser	A browser for the application development that enables JavaScriptAPI allowing BHT device to access it to operate on this browser	BHT Browser For Android
	BHT Logger	Collects BHT log data in the background, packages it, and stores the packaged data in the storage.	14. BHT Logger
	BHTSetting	It is a kitting support tool of the setting value.	15. BHTSetting
	DMS Installer(*1)	BHT DMS Installation application.	DeviceManagementSystem Manual
	BHTShell	A support appliction that can easily call for BHT's special function and Android standard setting function.	9. BHTShell
	HardTest	Performs BHT's hardware tests.	10. HardTest
	ScanSettings	Configures scan settings and confirms the operation.	12. Barcode Reading Settings Menu
	SNTPSettings	Sets date and time through SNTP.	3.11 SNTP Function
	TouchTrigger	An application for touch trigger that is enabled to be operated as a trigger by tapping this (touch trigger) icon displayed on the screen	13. Touch Trigger
	WlanManager	An application for wireless related settings and monitor	6.2. WLAN Manager
	BHTLicense	License registration application.	17. License(BHTLicense)
	BHTRemote(*1)	Remote access tool.	BHTRemote_User's_Manual_EX
	BHTFirewall(*1)	A tool to set the enable/disable of communication of BHT.	BHT SecurityPackage for Android user's manual.
	BHTSecurityManager(*1)	This is a management tool for monitoring security incidents and terminal status, and promptly notifying and responding to the administrator.	BHT SecurityPackage for Android user's manual.
	QuickSettings	This is an application that allows you to turn on/off the device and make simple settings while the operations are suppressed by the application launcher.	18. QuickSettings
	BHT Booster	It is an application that allows you to build and customize operations such as Track record collection and inventory by setting parameters, and perform operations based on the settings.	BHTBooster_Operating_Manual
	BHT OCR	It is an application that can be set OCR parameters.	19. BHT OCR

(*1) Next release or later
Note: Applications produced by DENSO WAVE are available only for owners when the multi-user function is used.

4. Keyboard

4.1. Outline

4.1.1. Character input

Hiding the virtual keyboard allows you to use more screen space.

Hide
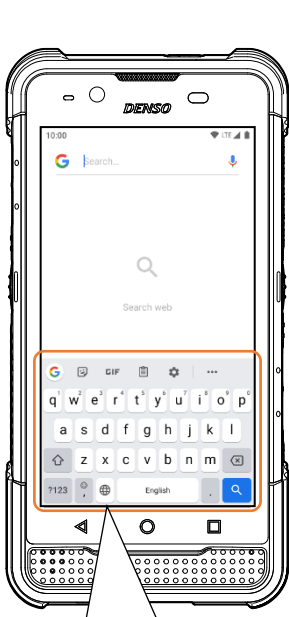
Show

Characters can be input using the virtual keyboard shown on the screen.
(Android default function)

See 4.2. Software keyboard
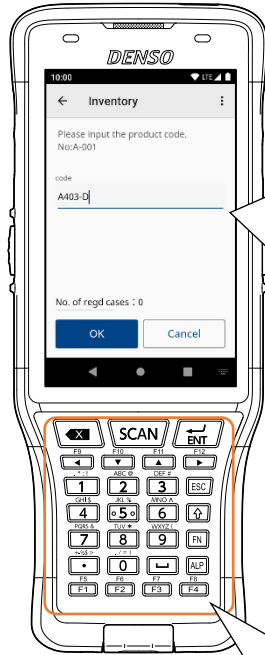
Characters can be input using the keyboard on the terminal. (BHT-M60/M70 only)
Alphabet and numeric can be input.

See 4.3. Multi-tap function
See 4.4. Hard keyboard IME (Past model compatibility function)
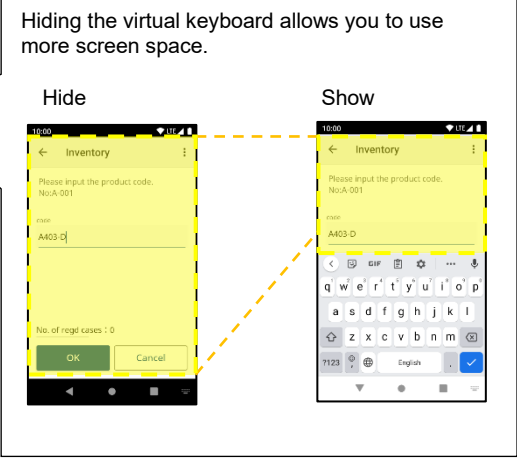
4.1.1. Useful function

Function	Description
4.4. Key remap	Assigns a specific key code or function to a specified key.
4.5. Wake up	Wakes up a BHT from the Scree Off state when a specified key is pressed down.
4.6. Auto repeat	Repeats a key input when a key is long pressed. Repeat input can be disabled in the settings.

4.2. Software keyboard

4.2.1. Usage of Software keyboard

Gboard is the default software keyboard at the timing of ship out. To use Japanese or some language it need connecting internet and downloading the language packs.

We recommend that you make settings so that other Google applications are not automatically updated before connecting internet.
For details, refer to "**1.3.2.1   Updating applications with Google Play Store**."

4.2.2. Selection of Software Keyboard
4.2.2.1 Preparation
To select a software keyboard type you would like to use, **Swipe up on the home screen** | **Settings** ⚙ |
System ⓘ | **Languages & input** 🌐 | **On-screen keyboard**
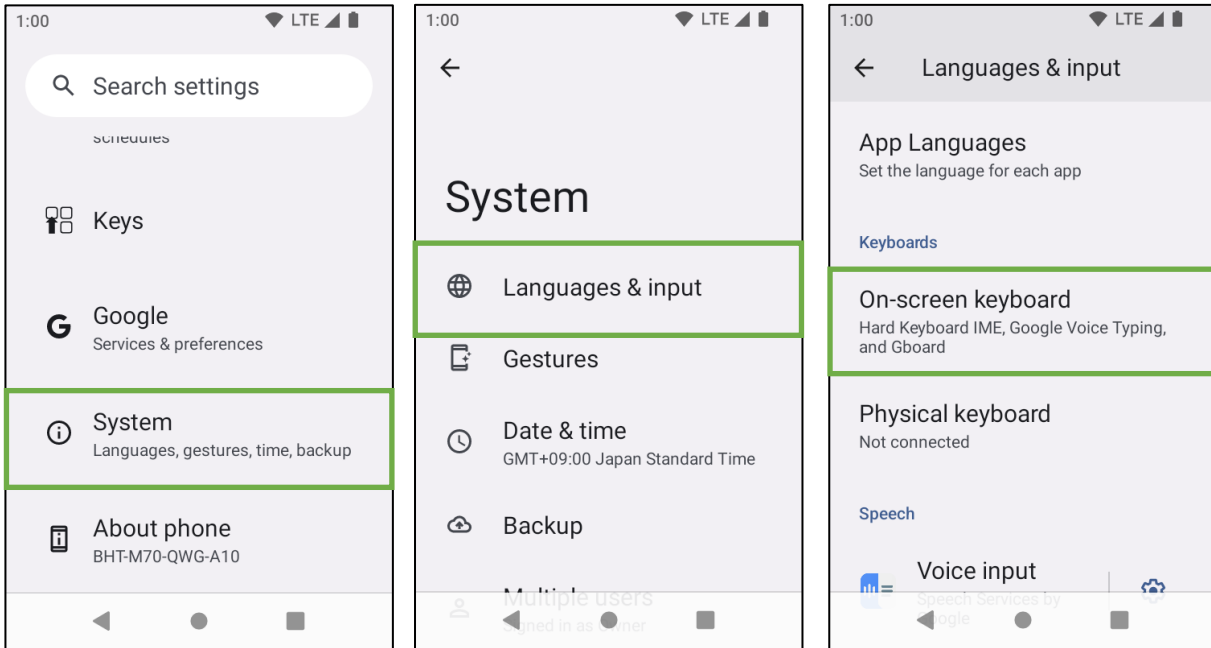
Select and tap a keyboard type you would like to use.
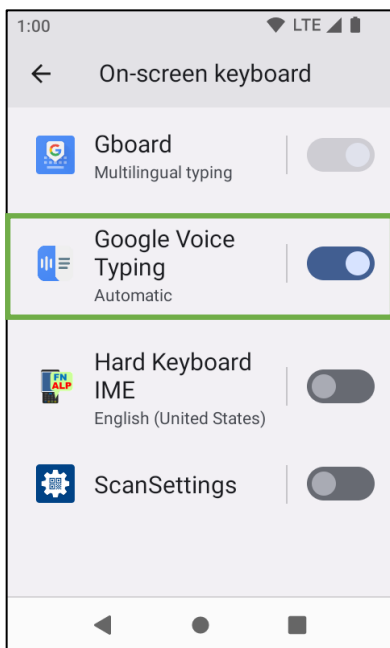
4.2.2.2 Change keyboard

(1) BHT-M80 Change keyboard
Swipe down from the top of the screen under the condition that a cursor appears in the character input field such as search bar, and then select Change keyboard.
Select a keyboard you would like to use.
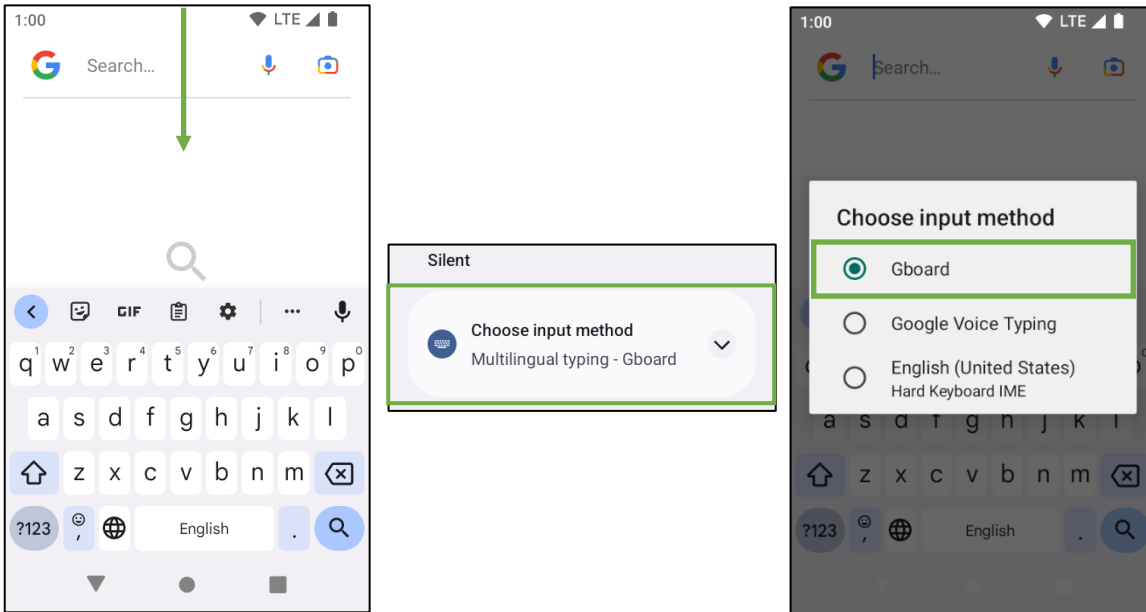
(2) BHT-M60/M70 Change keyboard
Tap the textbox and select keyboard icon on the bottom of the screen.
Select a keyboard you would like to use.
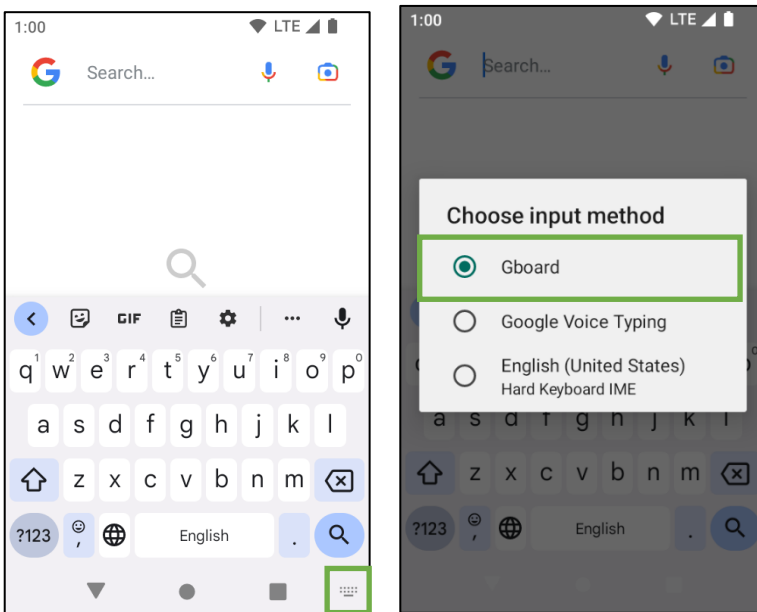
4.3. Multi-Tap function (BHT-M60/M70 only)

Characters can be input using the keyboard on the terminal.

4.3.1. Preparation

The following procedure describe how to use the Multi-tap function.

4.3.1.1 Enable Multi-tap function

The Multi-tap function is disabled by default.
The input function can be enabled in the settings.

＜Terminal Settings＞

1. Select **Settings** ⚙ > > **Keys** 🔡

2. Select [Multi-tap].

3. Toggle switch [Multi-tap] ON to be enabled.
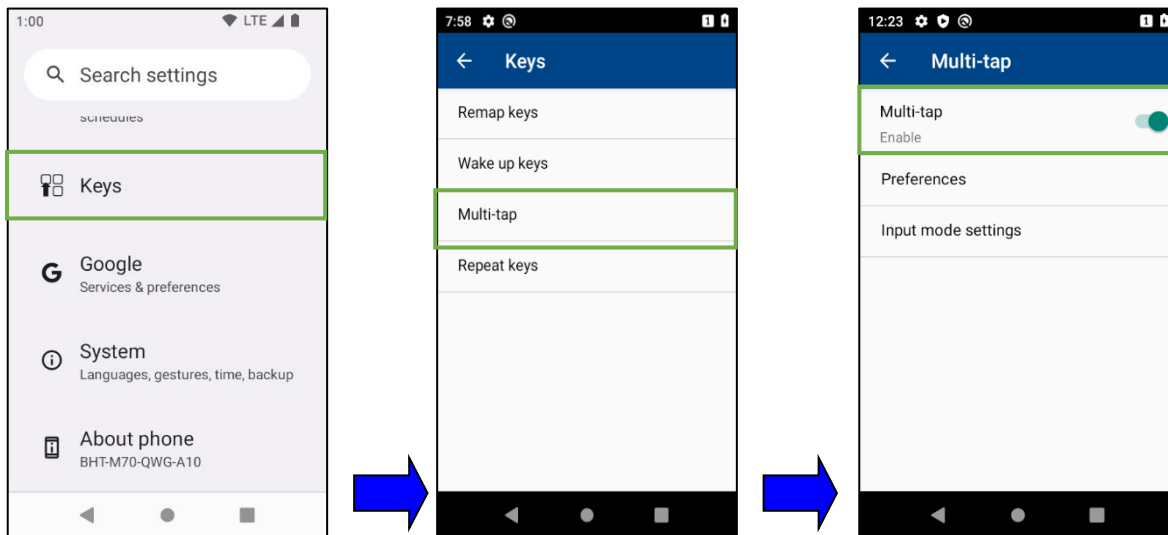
— **Note** —	・The virtual keyboard is hidden by default if the Multi-tap function is enabled. The virtual keyboard can be shown by changing the settings. See "4.3.3 Detailed Settings" for details.	

4.3.1.2 **Virtual keyboard settings**
Set [Gboard] to the virtual keyboard when using the Multi-tap function.
See "4.2.2.2. Change keyboard"

4.3.1.3 **Disable Hard Keyboard IME**
The Multi-tap function cannot be used with [Hard keyboard IME]
Hard Keyboard IME must be disabled if used.

＜Terminal Settings＞

1. Select **Settings** ⚙ > **System** ⓘ > **languages & input** > **On-screen keyboard**.

2. Toggle switch [Hard Keyboard IME] OFF to be disabled.
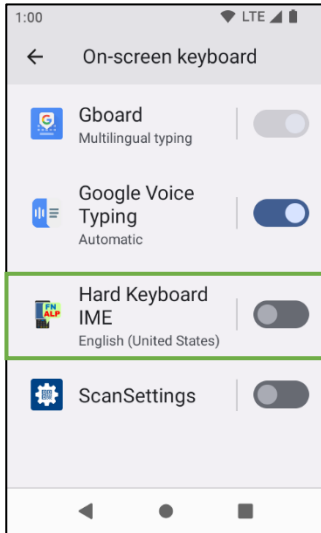
4.3.2. Functions
4.3.2.1　Default Input mode

Input mode can be switched by the [ALP] key on the BHT-M60/M70 keyboard.
By default, input mode switches in the order of numbers, alphabet.

the input mode is changed.([3.14.1. Status Icon])

8:34

If multiple characters are assigned to one key, a character to be input is switchable by pressing down (toggling) the same key multiple times. An entered character is firmly input when another key is pressed or timeout period has elapsed.

Icon	Input mode	Function
1	Numeric mode	A number printed on the key top is entered. Default input mode is numeric mode at startup.
A	Alphabet mode	An aplphabet assigned to the key is entered. For example, [c] is entered when the [2] key is consecutively pressed down three times. An uppercase alphabet is entered when using the shift mode.
あ	Hiragana mode	A Hiragana assigned to the key is entered. Enable this setting only when using Japanese. Disabled by default. For example, [こ] is entered when the [2] key is consecutively pressed down five times. In Hiragana mode, the [.] key at the lower left of the keyboard works as a muddle conversion key. If the [.] key is pressed while an unfinalized hiragana string is being input, the previously input hiragana string is converted in the following order. Lowercase letters　→　voiced point　→　half voiced point　→　undo If a character cannot be converted to lowercase, voiced or half voiced, it will be skipped and the next conversion will be performed. For example, if you press the [.] key while inputting [は], the input character will be converted in the order [は]→[ば]→[ぱ]→[は]. While in Hiragana mode, Gboard's conversion function works. After inputting a character, press the [▼] key or the [F2] key to activate Kanji conversion or predictive conversion.

― Note ―
・In order to perform Kanji conversion, you need to install Gboard's Japanese language pack.
・The operation and setting methods of conversion and dictionary registration functions using Gboard depend on the specifications of Gboard.
・The key code of the conversion key used for Kanji conversion and the operation when the conversion key is pressed depend on the specifications of Gboard.

4.3.2.2   Special input mode (Shift mode, Function mode)

The special input mode is available by pressing the [⇧] key or the [FN] key.
An icon corresponding each mode appears on the upper right of the screen when the input mode changes.
See "BHT API reference manual" for details of each mode.

Icon	Input mode	Funtion
⬆	Shift mode	The shift mode is activated while pressing down the [⇧] key, then all keys in each input mode enters into the shift mode. For example, [!] is entered if the [1] key is pressed while pressing the [⇧] key in numeric mode.
FN	Function mode	The mode transits to the function mode when the [FN] key is pressed. The keys printed in blue on the terminal keyboard can be entered. When the [FN] key is pressed again, the function mode is disabled and returns to the privious input mode. For example, [F5] is enteren if the [F1] key is pressed in function mode.

— Note —   Shift mode is not compatible with the keyboard shortcut input function (*1). To use the keyboard shortcut input function using the [⇧] key, press another key while pressing the [⇧] key.

(*1) An operation to allow executing a specific function by pressing multiple keys simultaneously.

4.3.2.3 Default key table

The default key table for each mode is shown in the table below.
Refer to the BHT API Reference Manual for details.

Key	Input mode		
	Numeric mode	Alphabet mode	Function mode
[1]	1	.*:1	'
[2]	2	abcABC2	`
[3]	3	defDEF3	¥
[4]	4	ghiGHI4	[
[5]	5	jklJKL5	]
[6]	6	mnoMNO6	;
[7]	7	pqrsPQRS7	-
[8]	8	tuvTUV8	=
[9]	9	wxyzWXYZ9	/
[0]	0	,/=0	0
[.]	.	+-%$	.
[␣]	(space)	(space)	(space)

4.3.3. Preferences

All settings for the key input are settable in this menu.
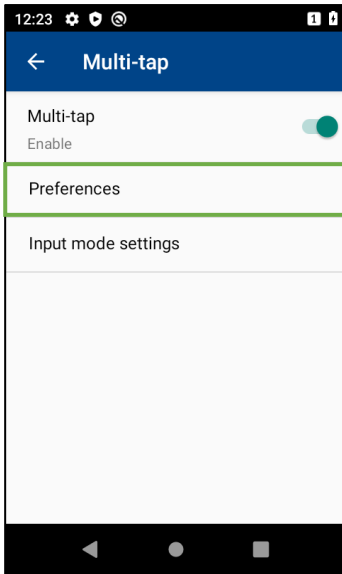
4.3.3.1 Virtual Keyboard

Set the virtual keyboard to show or hide.
Toggle the virtual keyboard toggle switch ON to enable the virtual keyboard.
Default is "Hide".
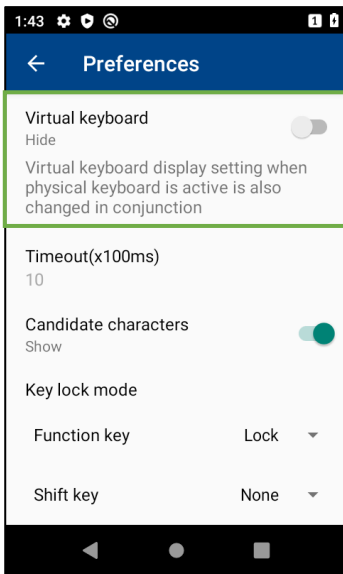
− **Note** −	・The virtual keyboard display setting when the physical keyboard is enabled is also changed accordingly.

4.3.3.2 Key Timeout

Set the timeout period until an input character is determined to be entered.
The timeout period is changeable in the [Timeout(x100ms)] menu.
Settable timeout range is 0 to 100 ms.
"0" cannot be set if "Candidate characters" (See section 4.3.3.3) is set to OFF(Hide).
If "0" is set, timeout is disabled and the key input works infinitely. Default is "10".
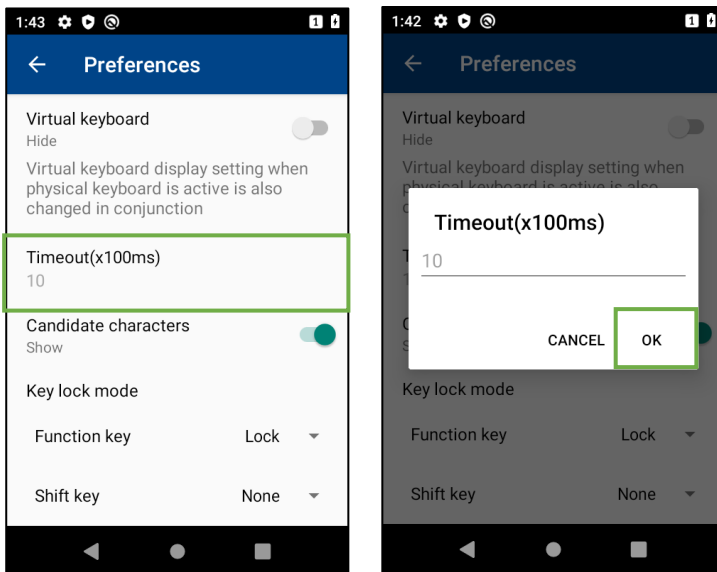
4.3.3.3 Candidate Characters

Set whether to display candidate characters.
Default is ON(Show).
The toggle switch is fixed to ON(Show) if the key timeout period is set to "0". (See section 3.7.4.2)

ON(Show) : Recommended characters are displayed.
A key event is notified each time the candidate character is switched.
OFF(Hide) : Candidate characters are not displayed, and no character is displayed until you confirm the input character.A key event is notified only when an input character is confirmed.
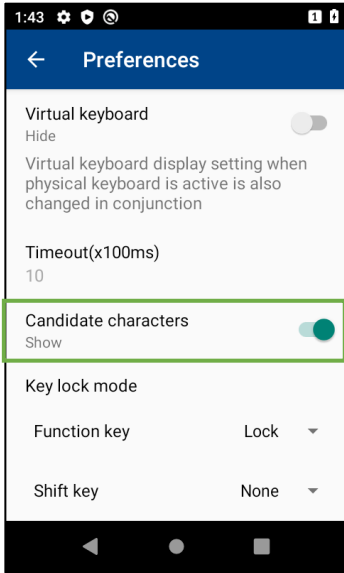
4.3.3.4 Function Key Lock Mode Settings

The operation mode of the function key can be set.
Select an operation mode to be used from the combo box of the Function key menu.
Selectable operation modes and their functions are tabled below.
Default is "Lock".

Operation mode	Description
Lock	The function mode is enabled until the [FN] key is pressed again.
One time	The function mode is enabled only for the next key pressed.
None	The function mode is enabled only while the [FN] key is pressed
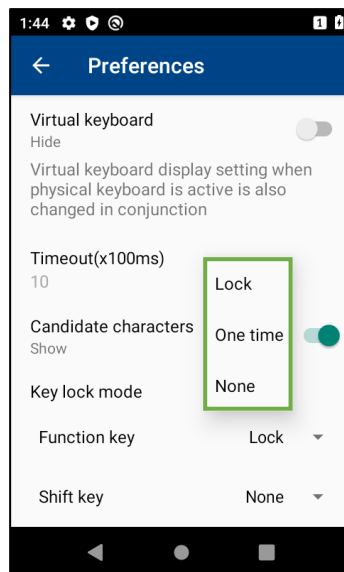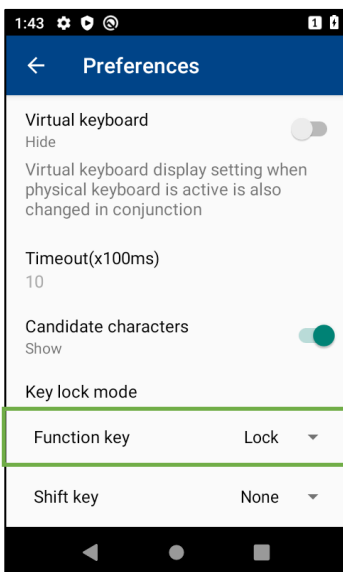
4.3.3.5 Shift Key Lock Mode Settings

The operation mode of the Shift key can be set.
Select the operation mode you want to set from the lock mode pull-down menu.
Selectable operation modes and their functions are tabled below.
Default is "None".

Operation mode	Description
Lock	The shift mode is enabled until the [SF] key is pressed again.
One time	The shift mode is enabled only for the next key pressed.
None	The shift mode is enabled only while the [SF] key is pressed
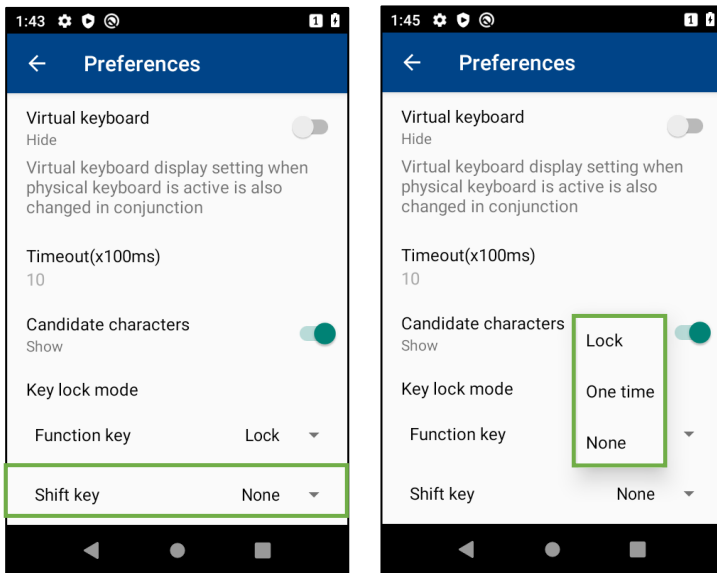
4.3.4. Input Mode Settings

The input mode can be set.
Select [Input mode settings] and toggle any mode ON to be enabled.
The enabled mode is switchable by pressing the [ALP] key.
Numeric mode cannot be disabled as it is required for PIN lock etc.

[Transition method to this screen]
Settings > Keys > Multi-tap > 「Input Mode Settings」
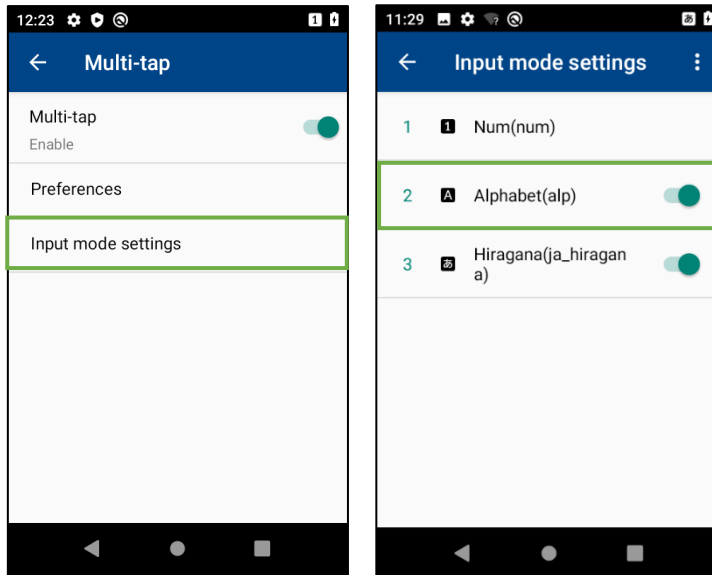
	Note		・If the input destination has restrictions on the input character type, enter in the corresponding input mode.

4.3.4.1 Add input mode

To add an input mode, tap the ⋮ menu then select [Add input mode].
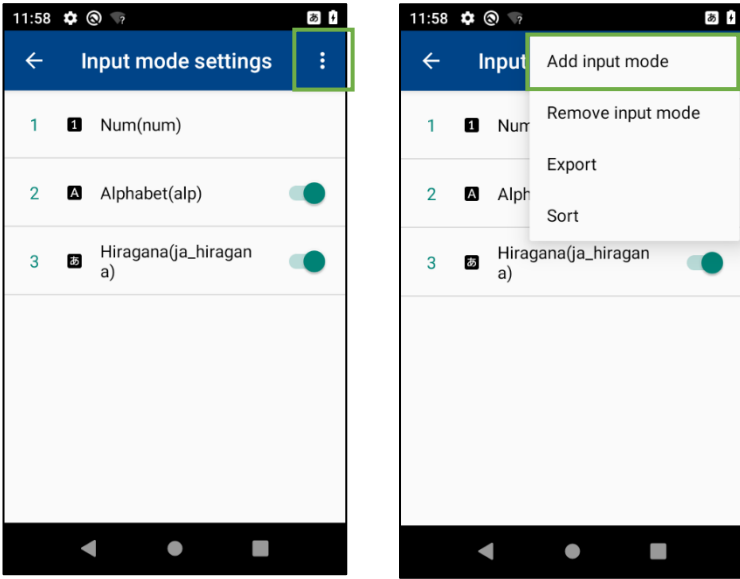
Specify the key table file and icon file to be added.
Both key table and icon file are required when adding input mode.

Icon is displayed in 「3.14.1. Status Icons」 when using input mode.

Only xml and png extensions can be set.
If you add the same input mode name as an input mode that already exists, the behavior and display of the input mode will be overwritten.
Up to 30 input modes can be added.

See "4.3.5. Key table file" for details.
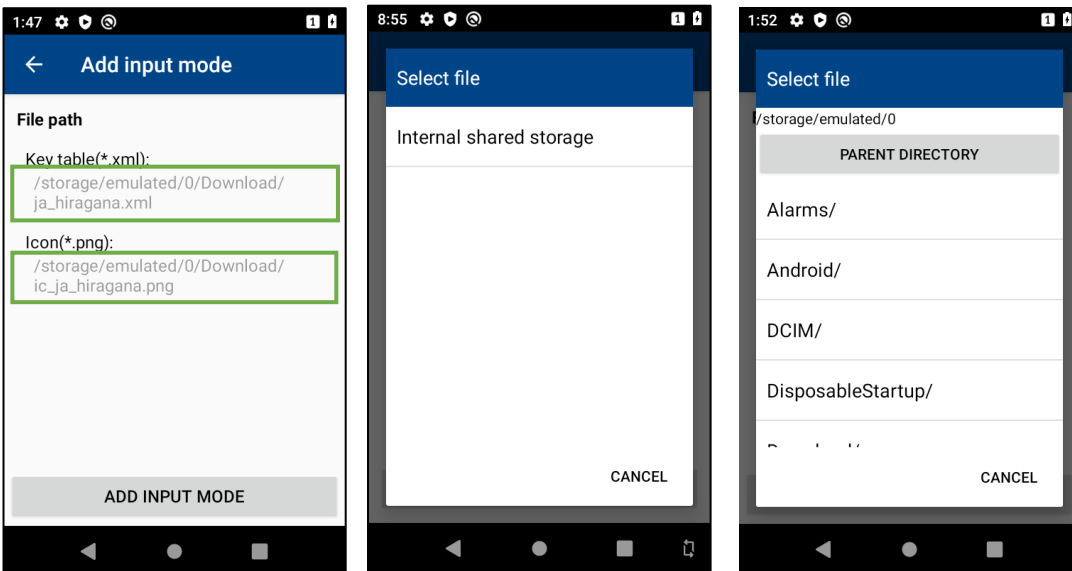
Tap [Add input mode] then a confirmation message appears.
Tap [OK] to start adding an input mode.
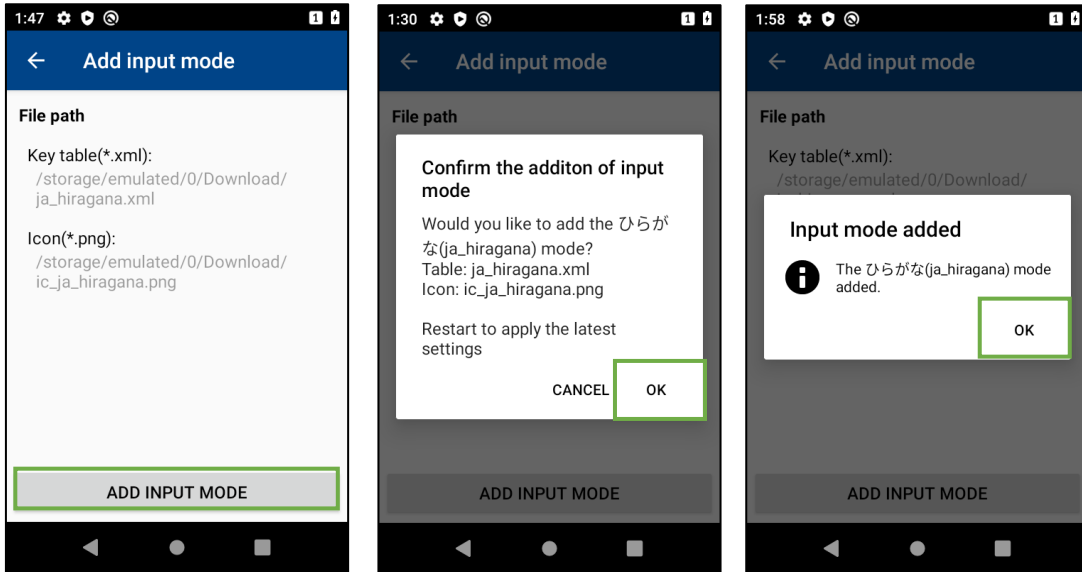
— **Note** —	・Overwriting an existing file does not affect terminal behavior immediately. To reflect in the operation, please restart the terminal. ・To use the newly added mode, enable it in the input mode settings.

4.3.4.2 Remove input mode

The input mode can be removed. Tap ⋮ in the menu then select [Remove input mode].
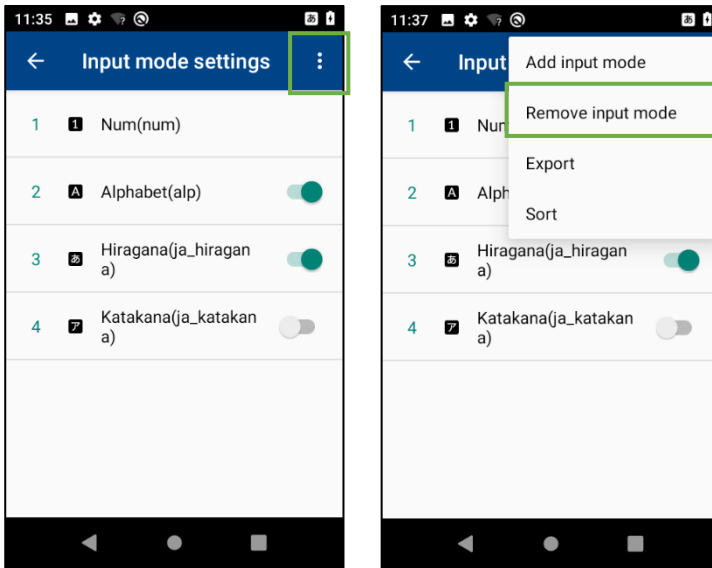
Check the check box of the input mode to be removed then tap 🗑 in the menu. The confirmation message appears. Tap OK to start removing the input mode.
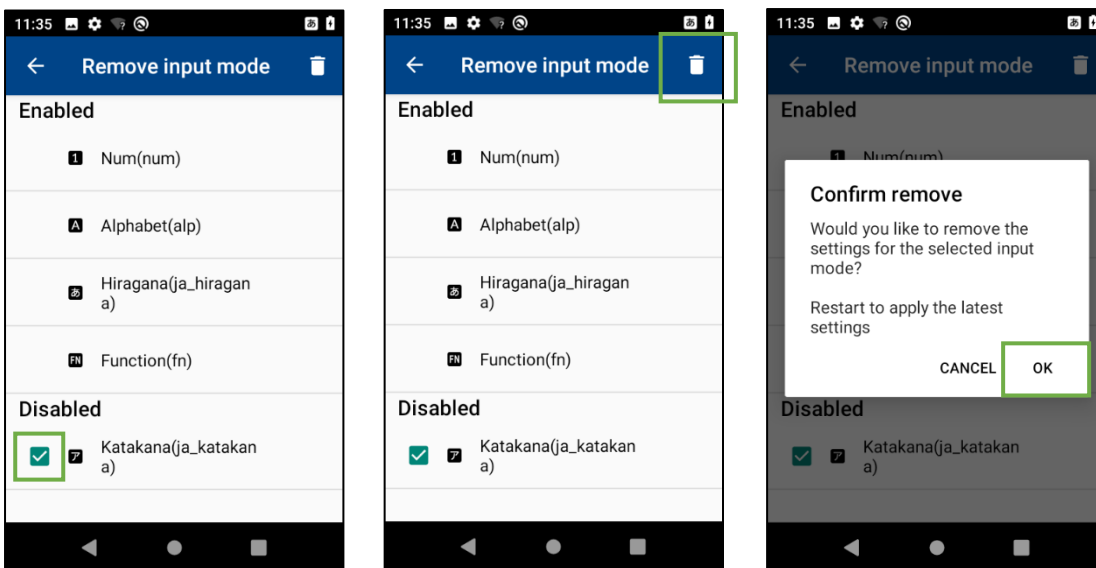
─ **Note** ─ ・The changes does not take effect immediately. To reflect in the operation, please restart the terminal.
・The default (Number, Alphabet, Hiragana, Function) input mode cannot be removed.
・If the default input mode has been overridden, it will revert to the default and set the input mode to disabled.

4.3.4.3 Export

The input mode can be exported. Tap the ⋮ menu then select [Export].
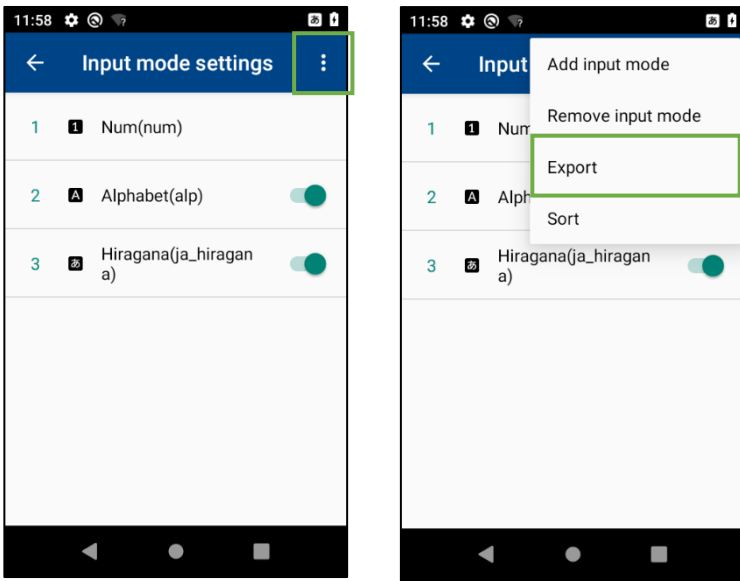
Check the check box of the input mode to be exported then tap ⬇ in the menu.
A confirmation message will be displayed, and if you select OK, the key table file and icon file will be exported.
The export file is 「input mode name.xml」 and 「input mode name.png」 and is saved in 「/internal shared storage/Download/」.
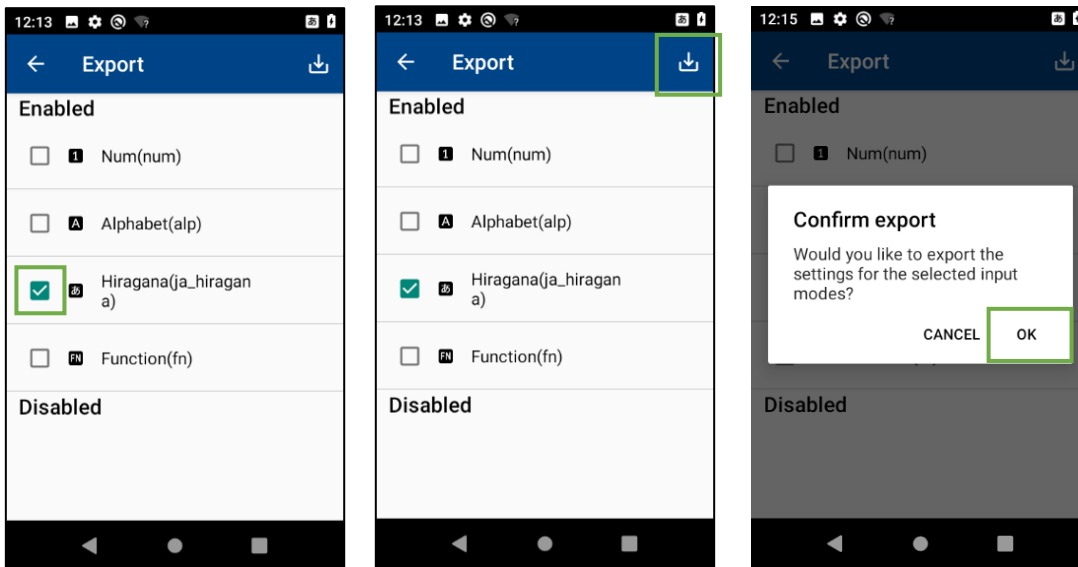
4.3.4.4 Sort

The input modes can be sorted. Tap the ⋮ menu then select [Sort].
Sort corresponds to the order when switching the input mode by pressing the [ALP] key.
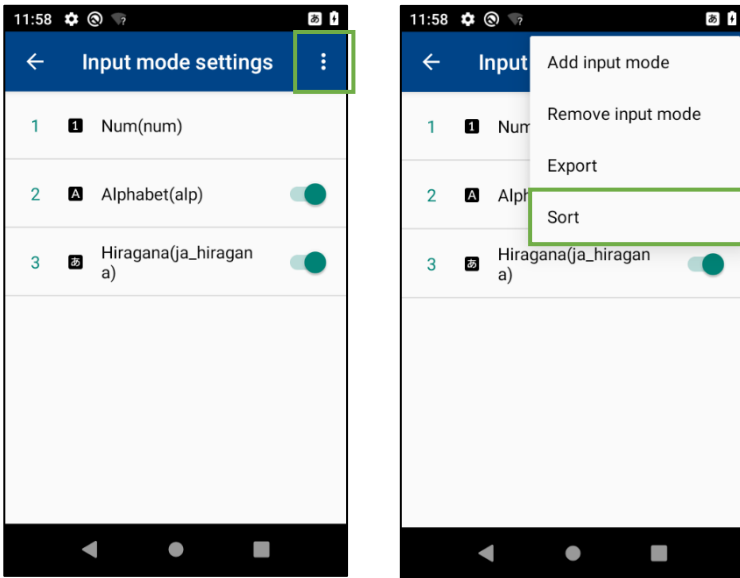
To change the sort order, press and drag the ☰ icon of the input mode to be changed, or hold down the input mode row then drag.
The position of "Num(num)" is fixed at the beginning.
Only the input modes enabled in "4.3.4 Input Mode settings" are sortable.
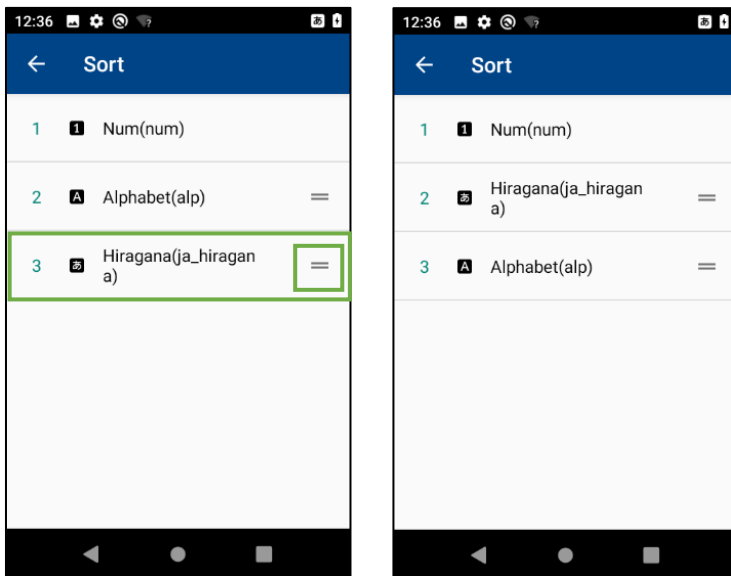
4.3.5.　Key table file

The data structure of the key table file is as follows.

4.3.5.1 Key table file format

XML Description	Setting item name
<?xml version='1.0' encoding='UTF-8' ?>	XML header (Fixed)
<inputMode	Root tag (Fixed)
name="alp"	Input mode name
dispName="Alphabet"	Display name
throughIme="false"	Whether to allow character conversion on the virtual keyboard
>	
<mapping>	Mapping definition
<keyCharacter>	Keycode conversion definition
<targetKeyCode>8</targetKeyCode>	keycode of the key you want to convert
<charcter>	
<altKeyCode>29</altKeyCode>	Keycode after conversion
<shift>false</shift>	Whether to send the Shift key
<letter>あ</letter>	Character after conversion (if specified in character)
<dakuten1>ぁ</dakuten1>	2nd candidate character for dakuten conversion
<dakuten2></dakuten2>	3rd candidate character for dakuten conversion
<dakuten3></dakuten3>	4th candidate character for dakuten conversion
<dakuten4></dakuten4>	5th candidate character for dakuten conversion
</charcter>	
<charcter>	
(<charcter> *repeat as needed)	
</charcter>	
</keyCharacter>	
<keyCharacter>	
(<keyCharacter> *repeat as needed)	
</keyCharacter>	
</mapping>	
</inputMode>	

Change the gray part.
The gray areas are explained below.

Setting item name	Explanation
Input mode name	A name that identifies the input mode can be set. It has the following restrictions. ・Half-width alphanumeric characters (0-9, a-z, A-Z, _) ・More than 1 character and less than 30 characters ・Other than "dnwa_remap" / "dnwa_fn_remap"
Display name	Name displayed in [4.3.4 Input mode setting screen] can be set. It has the following restrictions. ・The number of characters must be 1 or more and 20 or less.
Whether to allow character conversion on the virtual keyboard	Whether to allow character conversion on the virtual keyboard can be set. ・true (prohibited): The conversion function of the virtual keyboard does not work and is entered directly. ・false (allowed): The conversion function of the virtual keyboard works.
keycode of the key you want to convert	Keycode of the key you want to convert, numerically can be set. (Example: Set 8 for KEYCODE_1)
Keycode after conversion	Keycode after conversion, numerically can be set.
Whether to send the Shift key	Set/not set Shift state on key events can be set.

	・true: Operate as if the specified key code is pressed simultaneously with the Shift key. If set to true while alphabet is set in the key code, the entered alphabet will be capitalized. (Example: a→A) ・false: Operate the specified key code as it is.
Character after conversion 　(if specified in character)	When entering characters that cannot be represented by a key code, such as Japanese, characters can be set. Only one character can be set. If you do not use it, leave it unset as shown below. (Example: <letter />)
2nd to 5th candidate character for dakuten conversion	Character to convert by pressing "dakuten" key can be set. Only one character can be set. If you do not use it, leave it unset as shown below. (Example: <dakuten1 />)

4.4. Hard Keyboard IME (Past model compatibility function) (BHT-M60/M70 only)

The keyboard on the terminal can be used to input characters.
Alphabet and numeric can be entered.

The Multi-tap function (See section 4.3) is recommended.

Function	Hard Keyboard IME	Multi-tap function
Input mode	Alphabet/Numeric	Alphabet/Numeric/Hiragana Customizable
Virtual keyboard	Hide	Show/Hide selectable
Kanji conversion, Word registration	Not Available	Available (using the Gboard function)

Hard Keyboard IME cannot be used together with the Multi-tap function.
See 4.3.1.3 Disable Hard Keyboard IME to use the Multi-tap function.

4.4.1. Use Hard Keyboard IME

Use of Hard Keyboard IME enables the switching of entry mode with [FN] key and [ALP] key on the BHT-M60/M70 keyboard.
To use Hard Keyboard IME, select Hard Keyboard IME according to **4.2.2.2. Change keyboard**.
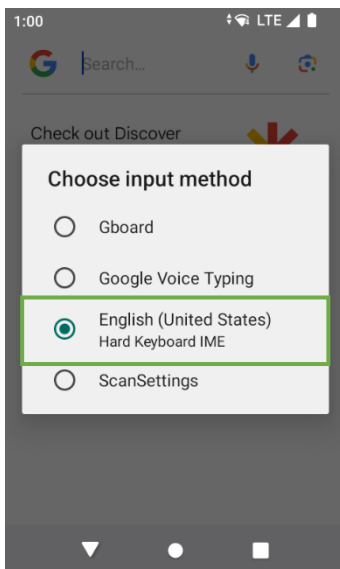
– Note –	Software keyboard cannot be used when Hard Keyboard IME is used.

– Note –	Hard Keyboard IME does not support an external keyboard. Select Gboard when using an external keyboard.

4.4.2. Entering Numeric

The default input mode is numeric. You can enter numbers written on the top of numeric keys.
To enter "120" for example, press the [1], [2], and [0] numeric keys sequentially.
To delete a wrong number entered, press the [BKSP] key to erase it and then re-enter the correct number by using the numeric keys.

4.4.3. Entering Alphabet

In numeric input mode, input mode changes to alphabet mode by pressing [ALP] key.
In alphabet input mode, input mode changes to numeric mode by pressing [ALP] key.
In alphabet input mode, when pressing a numeric key, the alphabet character assigned to the key will be entered.
To enter "a" for example, press [2] numeric key 4 times.
Refer to the BHT API Reference Manual for details.

4.4.4. Key Entry in the Shift Mode

When the [⇧] is pressed, the keypad is switched to the shift mode and other characters can be entered.
To enter "!", for example, press [1] numeric key.
Refer to the BHT API Reference Manual for details.

– Note –   Keyboard shortcuts(*1) are not supported in the shift mode. To use the [⇧] key to enter a keyboard shortcut, hold down the [⇧] key and press the other key.

(*1) A key combination that performs a certain command.

4.4.5. Key Entry in the Function Mode

When the [FN] key is pressed, the keypad is switched to the function mode and other characters or keys can be entered.
To enter [F5] key, for example, press [F1] key.
Refer to the BHT API Reference Manual for details.

4.4.6. Option settings

Tap the **Hard Keyboard IME** from the On-screen keyboard list to change the settings.
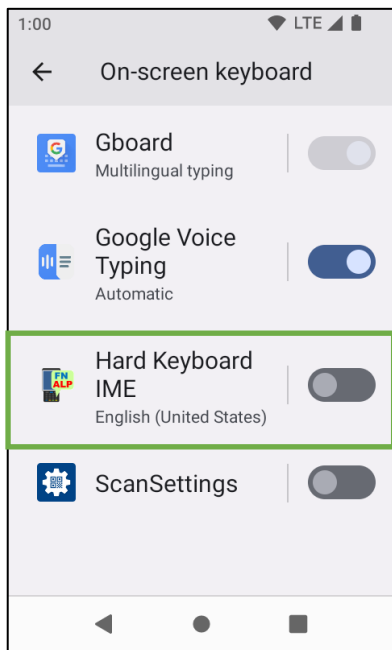
(1) Character input settings in alphabet input mode.
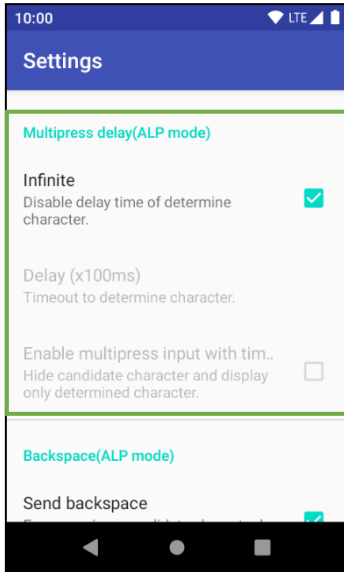
In alphabet input mode, a next candidate character is displayed with pressing same key.
Ex) The candidate characters are changed as follows with pressing [2] key.

   A -> B -> C -> a -> b -> c -> A -> B -> …

You can also hide candidate characters by turning on [Enable multipress input with timeout].
The option settings how to determine a character is written on the following table.

Category		Description
Multipress Delay	Infinite	Set the method of determine an input character if a candidate character is displayed. The default is set to On. On: A candidate character is determined as an input character if another key is pressed. Off: A candidate character is determined as an input character if another key is pressed or if the time set in "Delay (x100ms)" has elapsed.
	Delay (x100ms)	Set the time by 100 milliseconds for determine an input character. The default is set to 3. This setting is available only if "Infinite" is Off.
	Enable multipress input with timeout(*1)	Hide candidate characters. The default is set to Off. This setting is available only if "Infinite" is Off. On: Candidate characters are not displayed and only determined characters are displayed. Use this when you do not want to be notified of key events every time you switch candidate characters, such as when using an emulator. Off: Candidate characters are displayed. A key event is notified each time the candidate character is switched.

– Note –   *1 Sometimes some unexpected character is displayed when you move to another screen before you specify a character in multipress mode. Please specify a character before you move to another screen.

(2) Previous candidate character deletion setting in alphabet input mode.
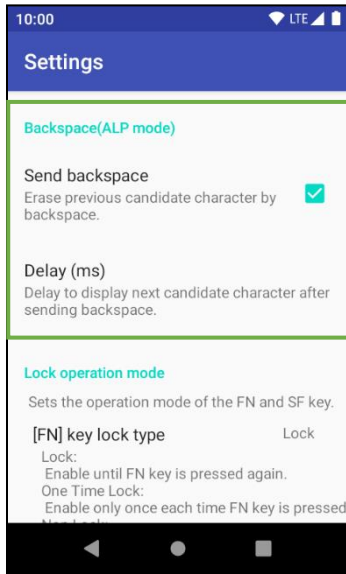
In alphabet input mode, a next candidate character is displayed after deleting a previous candidate character.
Ex) A previous candidate character is deleted as follows with pressing [2] key.

   A -> Delete "A" -> B -> Delete "B" -> C -> Delete "C" -> a -> Delete "a" -> b -> Delete "b" -> …

The option settings how to delete a previous candidate character is written on the following table.

Category		Description
Backspace	Send backspace	Set the method of delete a previous candidate character if the same key is pressed.
		The default is set to Off.
		On: Send a backspace to delete a previous candidate character. Turn this on if the input area cannot be acquired such as when using an emulator. Off: Clear a previous candidate character on the input area.
	Delay (ms)	Set the time by milliseconds until a next candidate character is displayed after backspace transmission. The default is set to 40. This setting is available only when "Send backspace" is On.

  – Note –   When Send backspace is On, candidate characters may not be cleared correctly depending on the state of the destination. In this case, turn Off Send backspace or adjust Delay.

(3) Operation modes of [FN] key and [SF] key

There are three [FN] key operation modes and three [SF] key operation modes.
The key operation modes can be selected are written on the following table.

Key	Entry mode	Operation mode	Description
[FN]key	Function	Lock(default)	The keypad is in the function mode until the [FN] key is pressed again.
		One time	The keypad is in the function mode only once each time the [FN] key is pressed
		Non lock	The keypad stays in the function mode while the [FN] key is held down.
[SF]key	Shift	Lock	The keypad is in the shift mode until the [SF] key is pressed again.
		One time	The keypad is in the shift mode only once each time the [SF] key is pressed
		Non lock(default)	The keypad stays in the shift mode while the [SF] key is held down.

In the option settings, tap the entry mode and select operation mode.
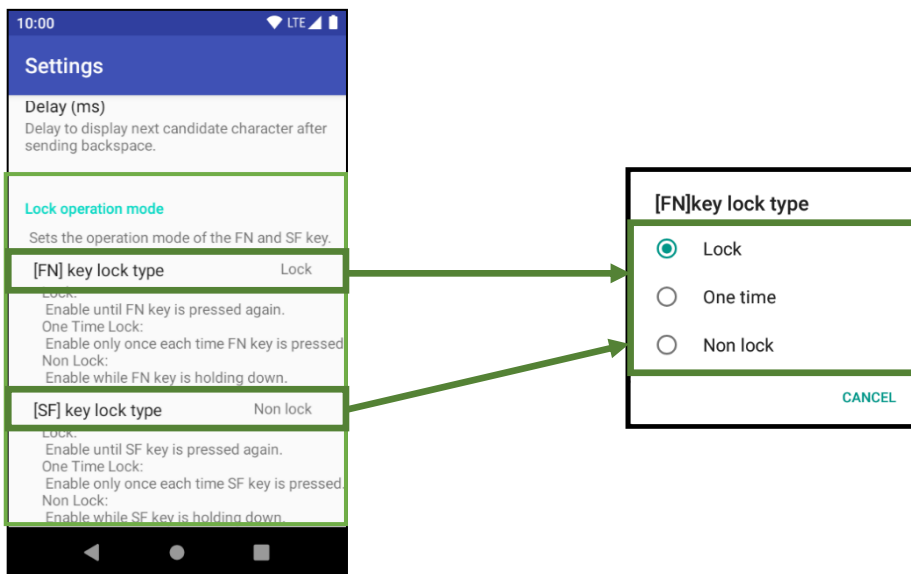
4.5. Key Remap

A specific function can be assigned to each key. If you set a new assignment for a key that has already been assigned, the function assigned before the change will be cancelled.

Swipe up on the home screen | Settings ⚙ | Keys 🔲 | Tap Remap keys.
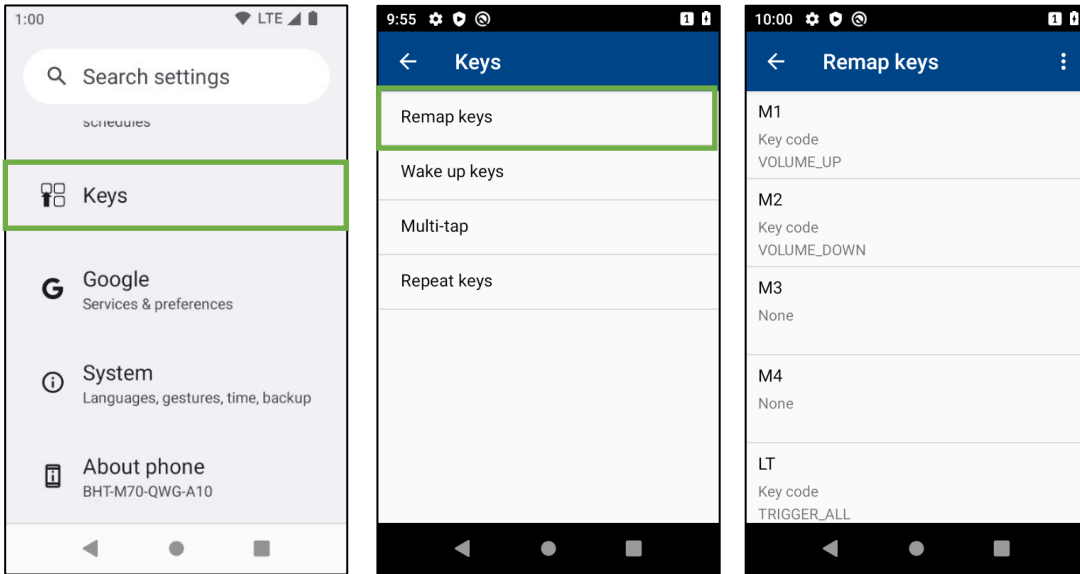
4.5.1. Key code Assignment

Assign a key code to a target key. Tap the target key then select [Key code]. Assignable key code list is shown then select a key code to assign. The key code list can be filtered by tapping 🔍 .
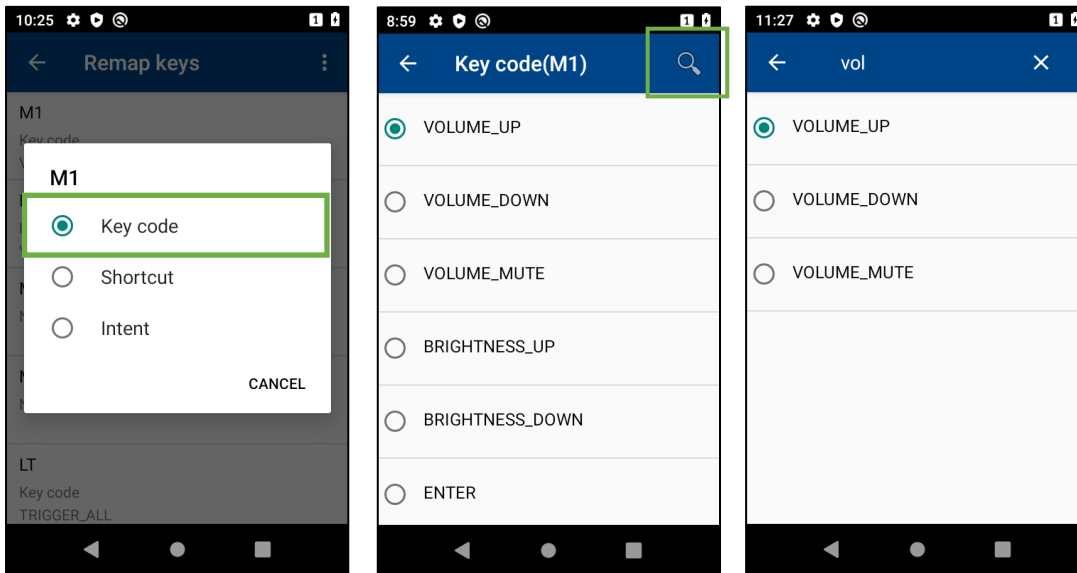
– Note – The BHT-M60/M70 has the following restrictions.
・Only M1 to M4 and SCAN keys can be assigned POWER, TRIGGER_ALL, and TRIGGER_BARCODE.
・F5 to F12 can be used only when 「4.3.Multi-tap function (BHT-M60/M70 only)」 is enabled.
・Key codes 0 to 9, DPAD_LEFT/RIGHT/DOWN/UP, and F1 to F4 cannot be assigned to F5 to F12.

4.5.2.   Shortcut Assignment

Assign an application shortcut function to an applicable key. Tap a key to be assigned and select [Shortcut], and a list of available applications will be displayed. Select an application to assign.
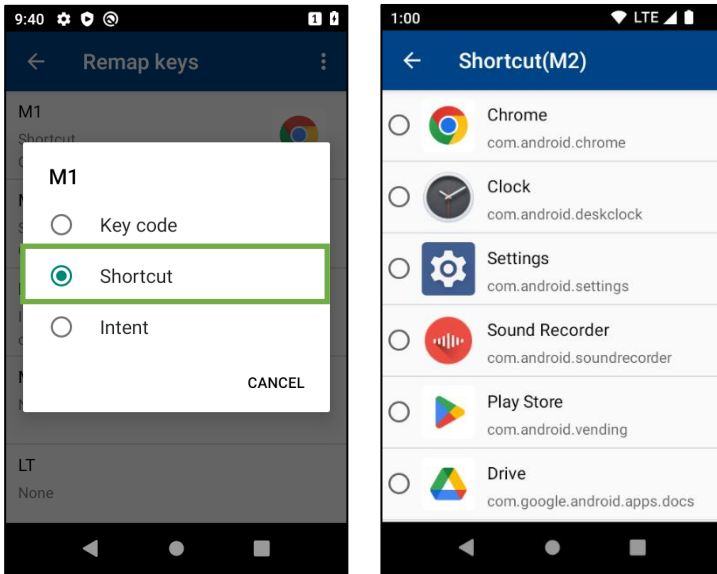
4.5.3.   Intent Assignment

Assign a specified key to send an Intent when the key is pressed down or up.
Tap the key to be assigned then select [Intent].
Intent initial value action is set.
It is possible to specify the application that receives the Press down, Press up action, and intent.
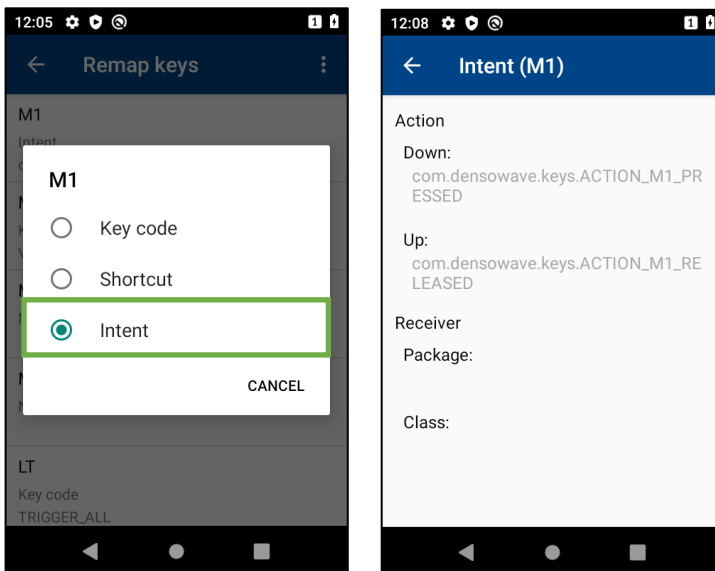
Intent initial actions are as follows.

Key	Operation	Action
M1	Press down	"com.densowave.keys.ACTION_M1_PRESSED"
	Press up	"com.densowave.keys.ACTION_M1_RELEASED"
M2	Press down	"com.densowave.keys.ACTION_M2_PRESSED"
	Press up	"com.densowave.keys.ACTION_M2_RELEASED"
M3	Press down	"com.densowave.keys.ACTION_M3_PRESSED"
	Press up	"com.densowave.keys.ACTION_M3_RELEASED"
M4	Press down	"com.densowave.keys.ACTION_M4_PRESSED"
	Press up	"com.densowave.keys.ACTION_M4_RELEASED"
Left trigger	Press down	"com.densowave.keys.ACTION_LT_PRESSED"
	Press up	"com.densowave.keys.ACTION_LT_RELEASED"
Right trigger	Press down	"com.densowave.keys.ACTION_RT_PRESSED"
	Press up	"com.densowave.keys.ACTION_RT_RELEASED"
[SCAN]	Press down	"com.densowave.keys.ACTION_CT_PRESSED"
	Press up	"com.densowave.keys.ACTION_CT_RELEASED"
↑	Press down	"com.densowave.keys.ACTION_DPAD_UP_PRESSED"
	Press up	"com.densowave.keys.ACTION_DPAD_UP_RELEASED"
↓	Press down	"com.densowave.keys.ACTION_DPAD_DOWN_PRESSED"
	Press up	"com.densowave.keys.ACTION_DPAD_DOWN_RELEASED"
←	Press down	"com.densowave.keys.ACTION_DPAD_LEFT_PRESSED"
	Press up	"com.densowave.keys.ACTION_DPAD_LEFT_RELEASED"
→	Press down	"com.densowave.keys.ACTION_DPAD_RIGHT_PRESSED"
	Press up	"com.densowave.keys.ACTION_DPAD_RIGHT_RELEASED"
F1	Press down	"com.densowave.keys.ACTION_F1_PRESSED"
	Press up	"com.densowave.keys.ACTION_F1_RELEASED"
F2	Press down	"com.densowave.keys.ACTION_F2_PRESSED"
	Press up	"com.densowave.keys.ACTION_F2_RELEASED"
F3	Press down	"com.densowave.keys.ACTION_F3_PRESSED"
	Press up	"com.densowave.keys.ACTION_F3_RELEASED"
F4	Press down	"com.densowave.keys.ACTION_F4_PRESSED"
	Press up	"com.densowave.keys.ACTION_F4_RELEASED"
F5	Press down	"com.densowave.keys.ACTION_F5_PRESSED"
	Press up	"com.densowave.keys.ACTION_F5_RELEASED"
F6	Press down	"com.densowave.keys.ACTION_F6_PRESSED"
	Press up	"com.densowave.keys.ACTION_F6_RELEASED"
F7	Press down	"com.densowave.keys.ACTION_F7_PRESSED"
	Press up	"com.densowave.keys.ACTION_F7_RELEASED"
F8	Press down	"com.densowave.keys.ACTION_F8_PRESSED"
	Press up	"com.densowave.keys.ACTION_F8_RELEASED"
F9	Press down	"com.densowave.keys.ACTION_F9_PRESSED"
	Press up	"com.densowave.keys.ACTION_F9_RELEASED"
F10	Press down	"com.densowave.keys.ACTION_F10_PRESSED"
	Press up	"com.densowave.keys.ACTION_F10_RELEASED"
F11	Press down	"com.densowave.keys.ACTION_F11_PRESSED"
	Press up	"com.densowave.keys.ACTION_F11_RELEASED"
F12	Press down	"com.densowave.keys.ACTION_F12_PRESSED"
	Press up	"com.densowave.keys.ACTION_F12_RELEASED"

4.5.3.1 Assignment of Action (Down)

Sets the action when a key is pressed.
It is possible to select [Down] and edit.
Up to 255 characters can be set for the action.
Setting the action to blank will not send the intent on keypress.
[Action (Up)] and [Action (Down)] cannot be set to blank at the same time.
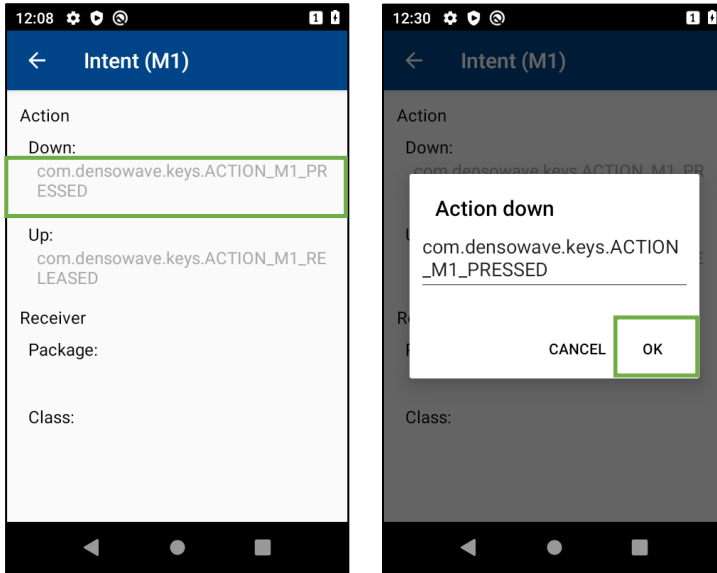
4.5.3.2 Assignment of Action (Up)

Set the action when a key is pressed.
It is possible to select [Up] and edit.
Up to 255 characters can be set for the action.
Setting the action to blank will not send the intent on keypress.
[Action (Up)] and [Action (Down)] cannot be set to blank at the same time.
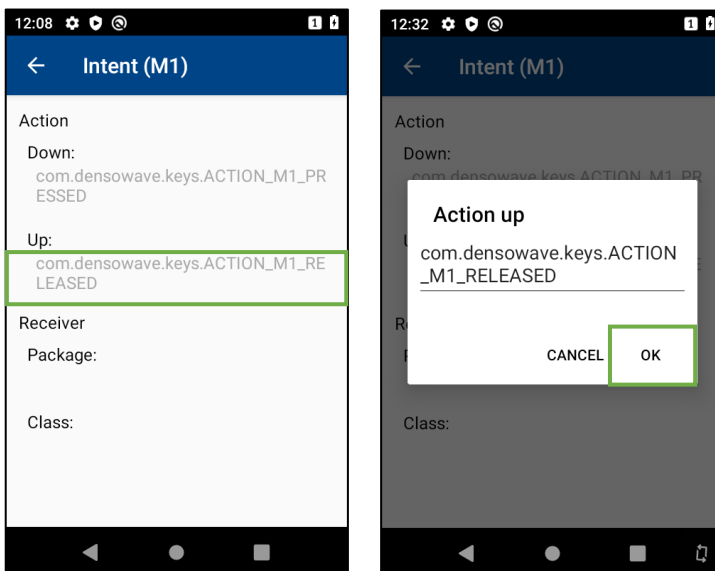
4.5.3.3 Assignment of Receiver package name

Assign the package name of the intent target. To edit the package name, tap the [Package].
[Package] can be set up to 255 characters.
If not specified, it works as an implicit intent.
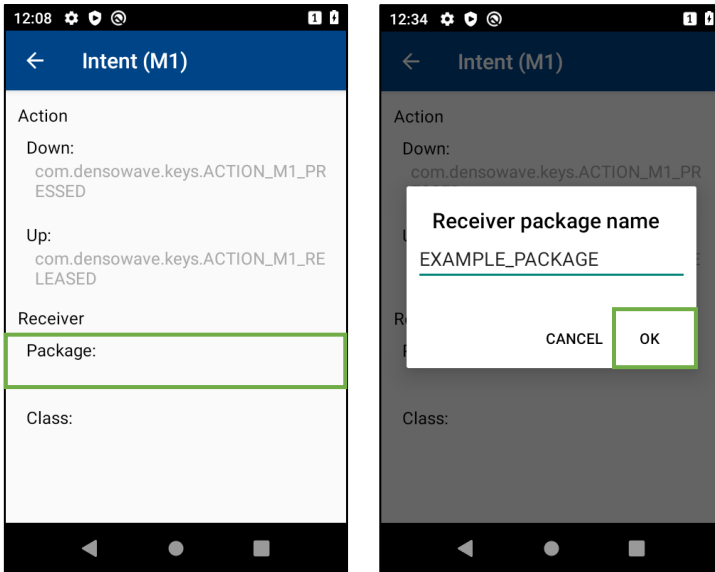
4.5.3.4 Assignment of Receiver class name

Assign the class name of the intent target. [Class] can be selected and edited.
The class name can be set up to 255 single-byte alphanumeric characters.
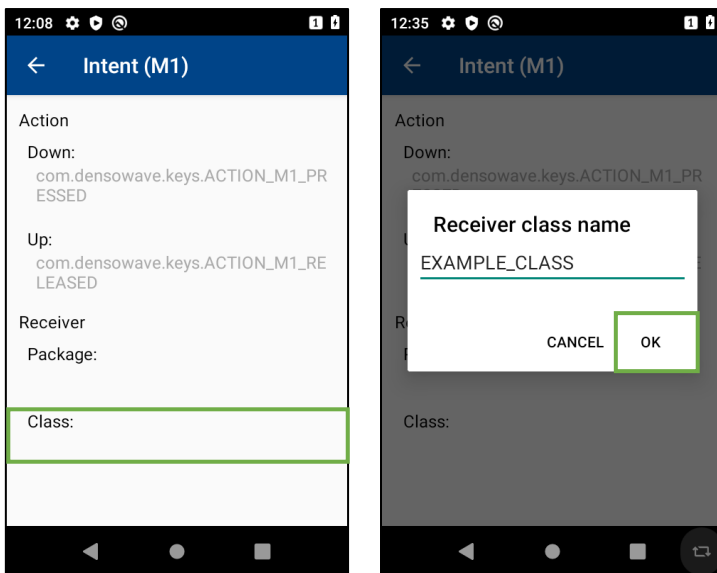
4.5.4. Remove settings

Clear the target key assignment and revert to unassigned. Swipe on the key to unassigned.
Tap [OK] on the confirmation message. The key reverts to unassigned.
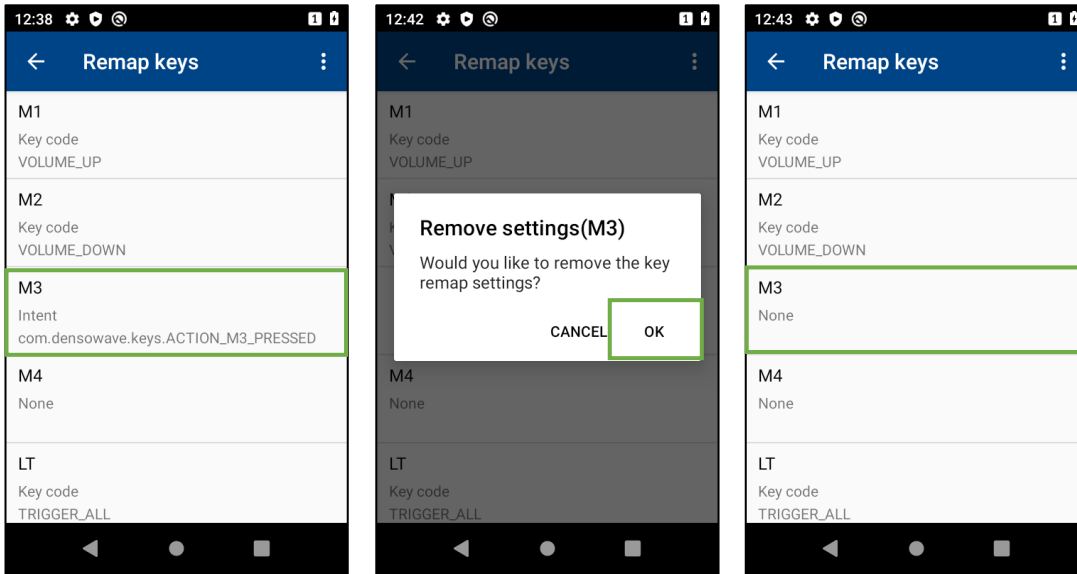
4.5.5.   Reset all settings

Reset all the key assignment, and revert to factory defaults. Tap the menu key ⋮ then select [Reset all settings]. Tap [OK] on the confirmation message. All keys revert to factory default.
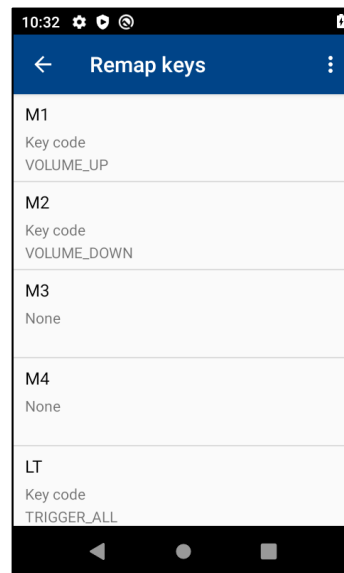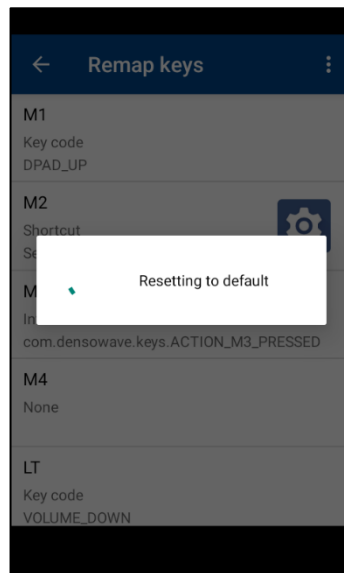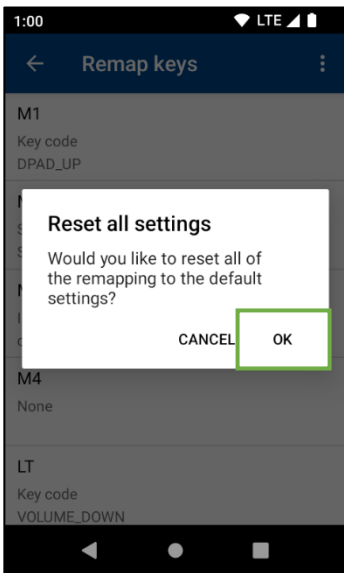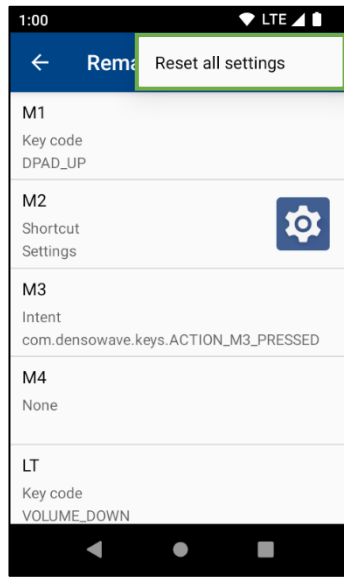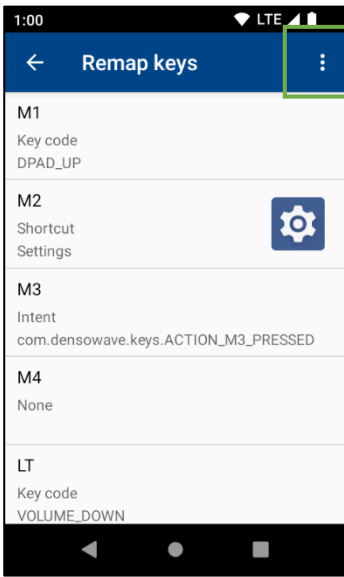
4.6. Wake up

When a magic key or trigger key is pressed, BHT can wake up from Screen Off.
To enable the wake up function, **Swipe up on the home screen** | **Settings** ⚙ | **Keys** 🔲 | **Wake up Keys** .
If a toggle switch of the specified key is turned ON, BHT wake up by pressing the key.
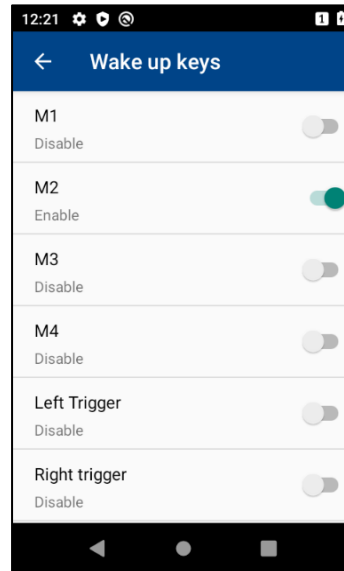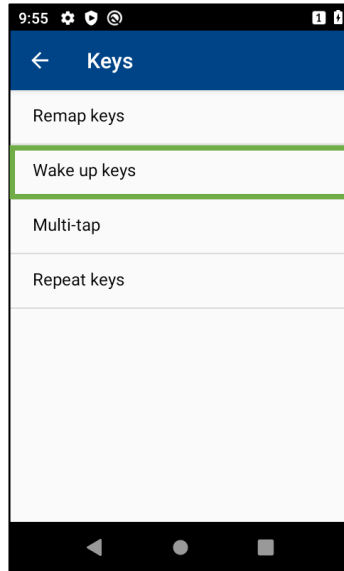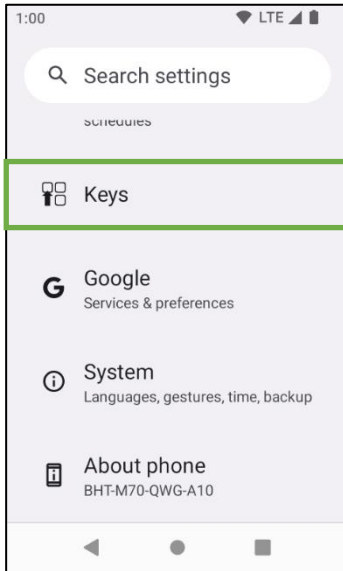
4.7. Auto Repeat

Set the long key press to whether or not it is equivalent to the repeated key press.

To enable Auto repeat function, **Swipe up on the home screen** | **Settings** 🔧 | **Keys** | **Repeat keys** |.
If "Repeat keys" is toggled ON, the repeated key press becomes the same as the long key press.
Default is "Enabled".
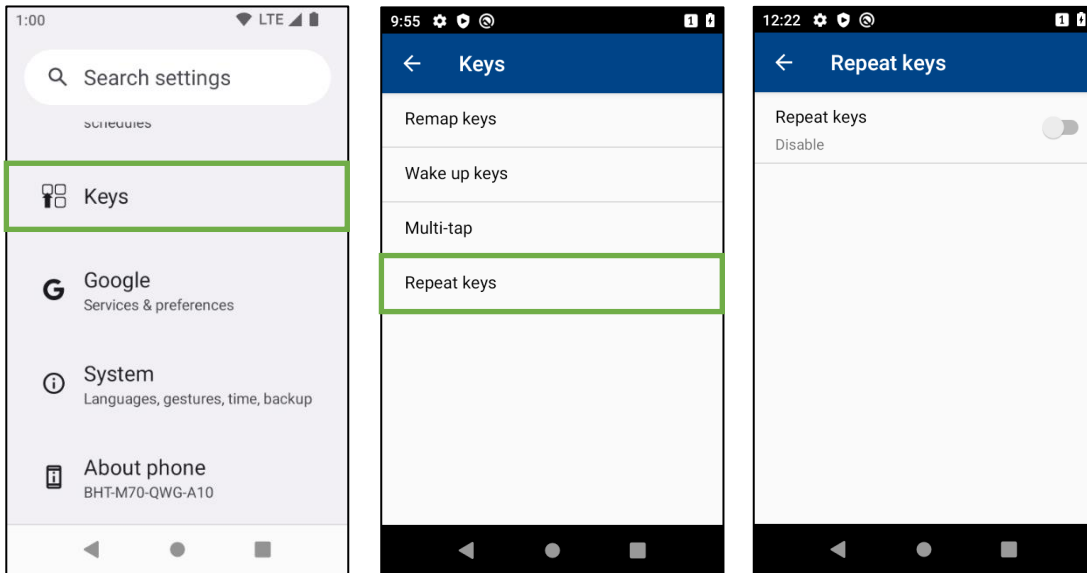
5. Mobile Network (LTE Supporting Model Only)

When the data communication is turned ON for the first time after SIM card is inserted, the BHT is automatically connected to the network of the mobile carrier.

If it is not connected automatically, it is necessary to set APN based on information obtained from MNO and MVNO. Follow the procedures described below by selecting **Swipe Up From Home Screen** | **Settings** 🔧 | **Network & Internet** 📶 | **SIMs** 📇 | **Access Point Names** .

① Tap **+ button** ✛ to display [Edit access point].
② Enter APN settings obtained from the mobile carrier.
③ Tap the **menu button** ⋮ to show the menu.
④ Tap [Save] to save the entered settings.
⑤ Return to [APN] activity and tap an applicable APN radio button.
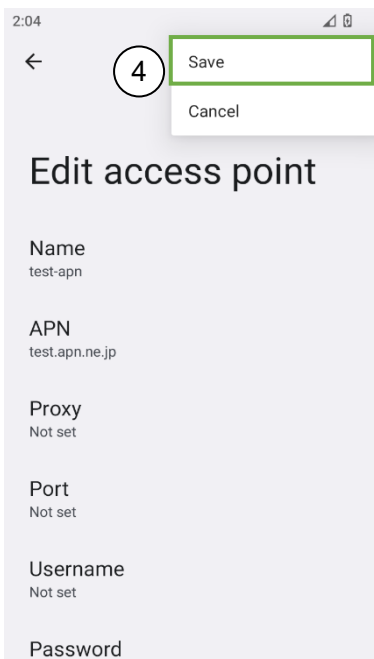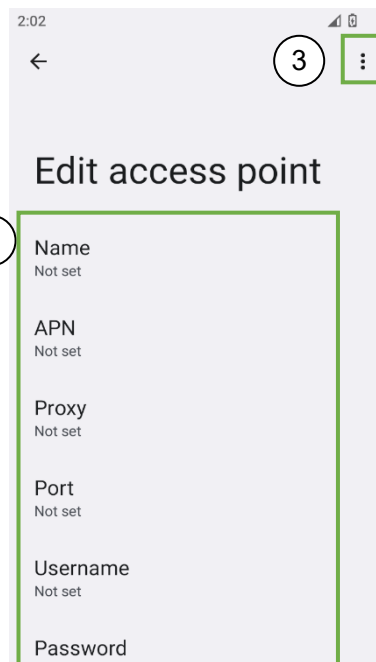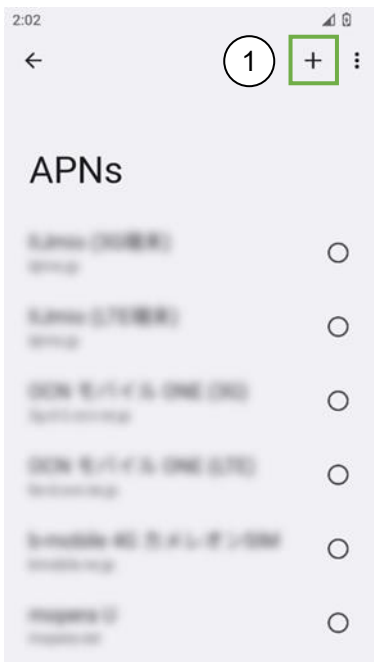
6. WLAN

6.1. WLAN Operation

6.1.1. Connecting to WLAN Network

To connect to WLAN network, follow the steps below.

1) **Swipe up on the home screen** | **Settings** ⚙ | **Network & Internet** 🛜 | **Internet** 🌐 .
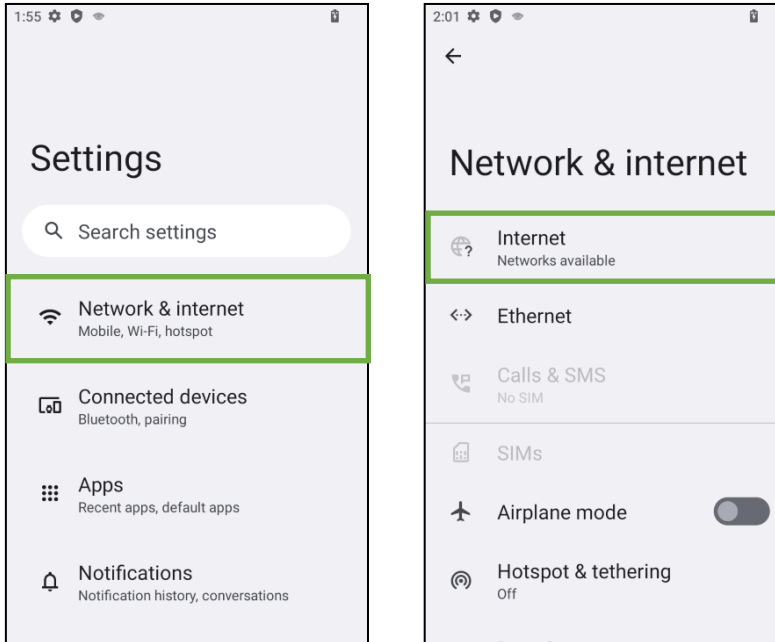
2) When **Wi-Fi** is ON, the BHT scans for available networks. Select a network to be connected from the network list shown.
If the selected network is protected by security, a dialogue prompting a password and credentials for connection is displayed on the BHT. "**Connected**" appears after the BHT is connected to the network.
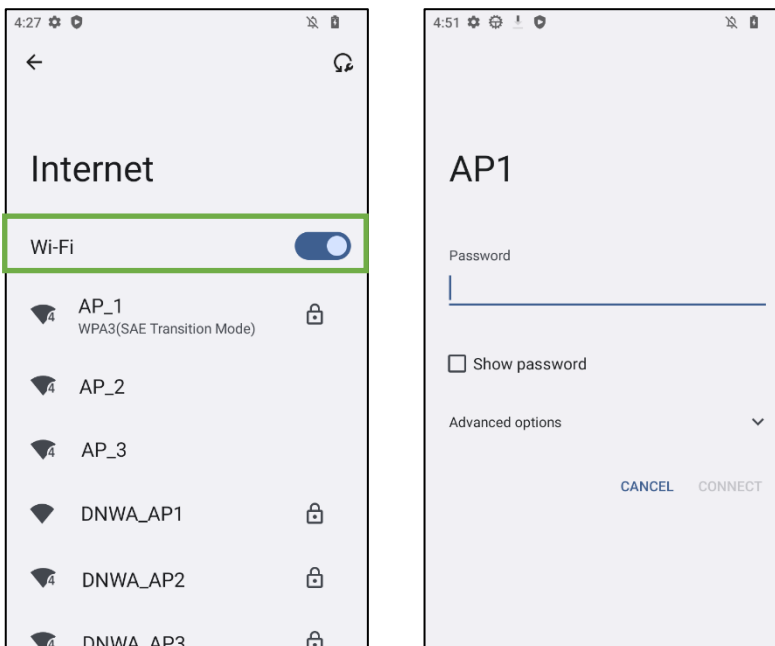
– Note –   The network scan is performed every 10 seconds while this screen is displayed.
Therefore, a screen other than this screen should be displayed on the front when verifying a the WLAN connection in operating environments.

6.1.2. Adding WLAN Network Profile

To connect to a network that does not broadcast SSID (= stealth mode access points) or is in out of network area, manually add a target network profile.

1) **Swipe up on the home screen** | **Settings** ⚙ | **Network & Internet** 📶 | **Internet** 🌐 .

2) Turn on the **Wi-Fi** switch. Then, scroll down the list of available networks and select the **Add network**.
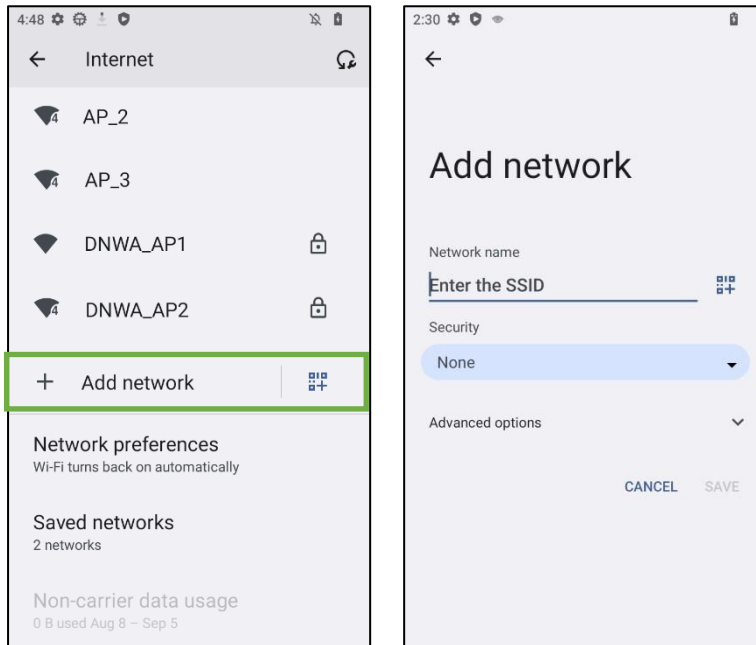
3) Press the **Save** button to confirm the settings after configured the appropriate network settings.

– Note –   To connect to the stealth mode access points, set "Hidden network" to "Yes".
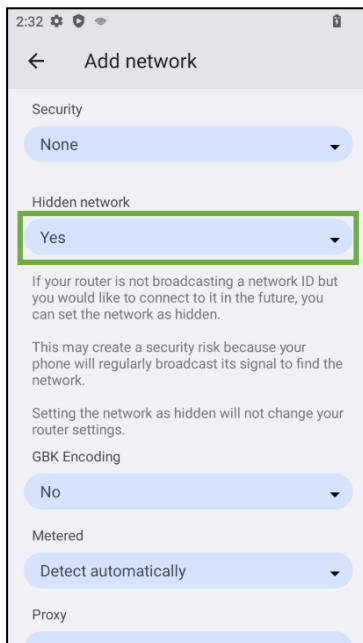
6.1.3. Installing Certificates

Certificates can be installed from either of the following locations. When installing, select **Wi-Fi** for the **Credential use**.

‧ **Swipe up on the home screen** | **Settings** 🔧 | **Security** 🔒 | **More security settings** | **Encryption & credentials** | **Install from storage**

‧ **Swipe up on the home screen** | **Settings** 🔧 | **Network & Internet** 📶 | **Internet** 🌐 | **Network preferences** | **Install certificates**
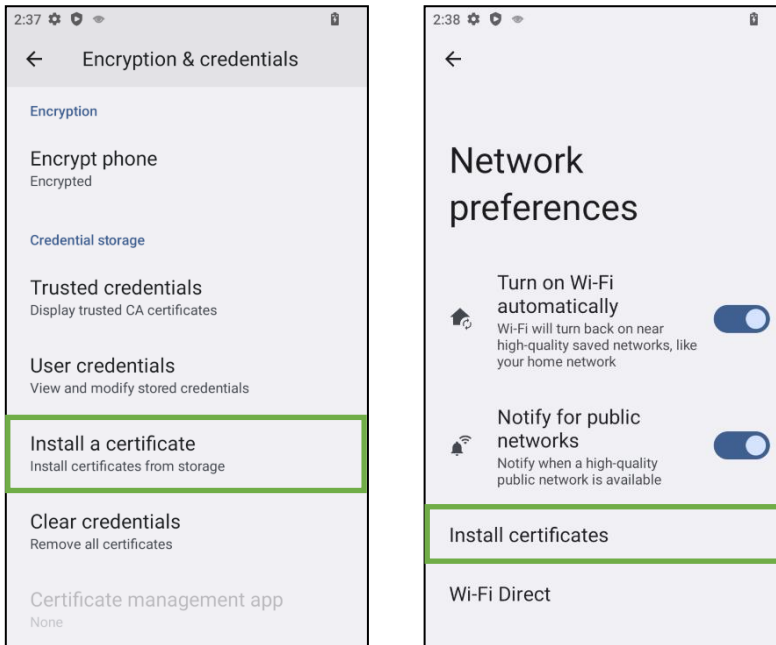
▶ BHT supports the following certificate file extension.

Certificate	Description
CA certificate	X.509 certificate encoded by DER. The file extension is .crt or .cer.
User certificate	X.509 certificate saved in the PKCS#12 key store file type. The file extension is .p12 or .pfx.

6.1.4. Useful Information & Tips

6.1.4.1 Network connection priority

The following conditions, not just signal strength, determine which network to be connected when multiple available networks exist.

- Network frequency band is 5GHz.
- Network has the same profile as a network currently connected.
- Access point currently connected.

Therefore, the BHT may connect to a network that does not have the strongest signal.

6.1.4.2 How to shorten the connection time

The connection time with the access point can be shorten by shortening the scan interval.
For details on how to set the scan interval, refer to **6.2.7 Scan interval settings**.

6.1.4.3 MAC Address used for communication

The function to use randomized MAC addresses for communication is enabled by default to improve user privacy. Therefore, when access is restricted by MAC address filtering on the network side, the BHT cannot connect to a network.

By setting "Use device MAC" in the "Privacy" setting of the network, the device MAC address will be used for communication as before. However, in general, access restriction by MAC address filtering is not recommended because the MAC address used for communication can be spoofed.

Randomized MAC addresses are created for each WLAN profile. Therefore, if multiple profiles are registered on a device, the DHCP server assigns a different IP address for each profile. This may cause IP address exhaustion.

The following procedure shows how to obtain a device MAC address using API.
(1) Select "Use device MAC" in the target network "Privacy" settings.
(2) Register the target network to the network list.
(3) Connect to the network mentioned above.
(4) Get the MAC address with NetworkInterface.getHardwareAddress().

6.1.4.4 When the gateway does not exist on the network

Connection may fail if a non-existing address on the network is set to Gateway.
Set communicable addresses to Gateway when using the BHT in an environment where Gateway does not exist such as a test environment.

6.2. WLAN Manager

6.2.1. Outline

WlanManager 🔧 is a tool to manage the BHT WLAN function.

The current network connection check and advanced settings are available.

6.2.2. Functions

Tap **WlanManager** 🔧. Then WLAN Manager starts up.
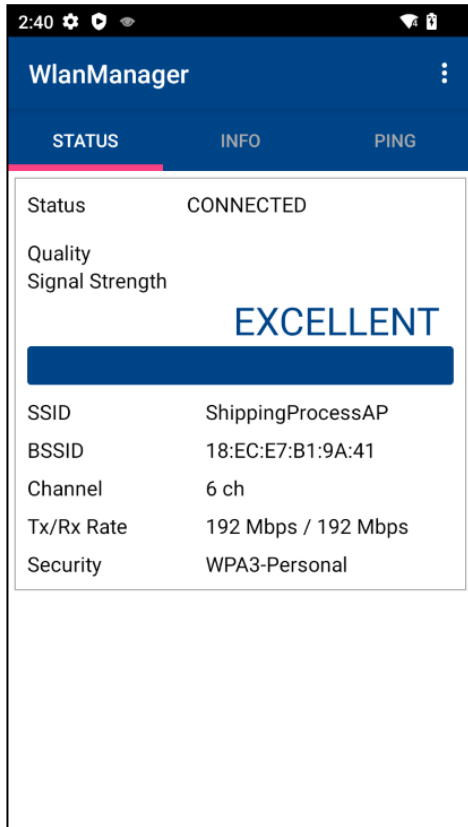
This application enables the following processing.

Item	Description	Reference
STATUS	Displays the wireless communication status.	**6.2.3. Checking Connection Status**
INFO	Displays network information.	**6.2.4. Checking Terminal/Network Information**
PING	Displays the Ping test screen.	**6.2.5. Ping Transmission Function**

Tap **Menu button** ⋮ , and the option menu is displayed.

Item	Description	Reference
Settings	Displays the setting menu to perform the operations below: Changing the network settings Changing the scan interval settings Changing the advanced settings Managing the distribution package	**6.2.6. Network settings** **6.2.7. Scan interval settings** **6.2.8. Advanced settings** **6.2.9. Distribution package**
Import/Export	Displays the BHTSetting start-up screen.	**6.2.10. Import/Export**
Factory Settings	Displays factory settings for WLAN information stored in the device.	**-**
Compatibility View	Switches the signal strength indication of the WLAN Manager to the compatibility view equivalent to the conventional models.	**6.2.11. Compatibility View**
About	Displays the version information of the WLAN Manager.	**-**

6.2.3. Checking Connection Status

Tap **[STATUS]** tab, and the following screen appears.
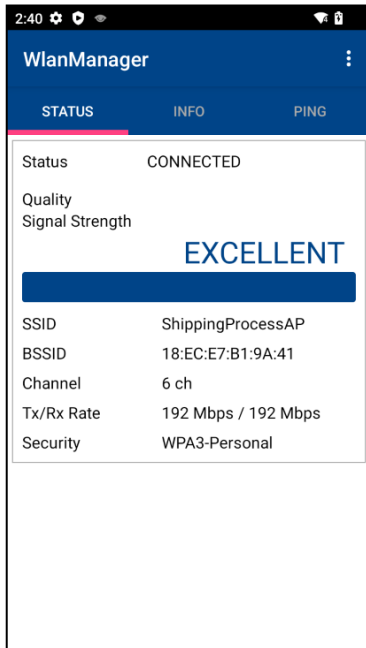
This menu displays the following information.

Item	Description
Status	Displays the WLAN connection status. DISABLE : WLAN disabled status DISCONNECTED : WLAN disconnected status CONNECTED : WLAN connected status
Quality	Displays the overall communication quality with the connected access point EXCELLENT : Excellent communication quality GOOD : FAIR : POOR : Poor communication quality Not Associated : Not connected to the access point. Not opened : WLAN is disabled.
SSID	Displays SSID of connected access point.
BSSID	Displays BSSID of connected access point.
Channel	Displays current communication channel of connected access point.
Rate	Displays current communication speed of connected access point.
Security	Displays security information of connected access point.

6.2.4. Checking Terminal/Network Information

Tap **[INFO]** tab, and the following screen appears.

2:43 ⚙ ⬤ 👁 🛜 🔋 **WlanManager** ⋮ STATUS **INFO** PING **Terminal Information** Country Code Japan MAC Address 00:0A:F5:B6:FF:15 06:A4:59:15:B3:FE **Network Information** IP Type DHCP IP Address 192.168.0.43 Subnet mask 255.255.255.0 Gateway 192.168.0.240 DNS Server1 192.168.0.240 DNS Server2 0.0.0.0 DHCP Server 192.168.0.240 IPv6 Address fe80::4a4:59ff:fe15:b3fe	
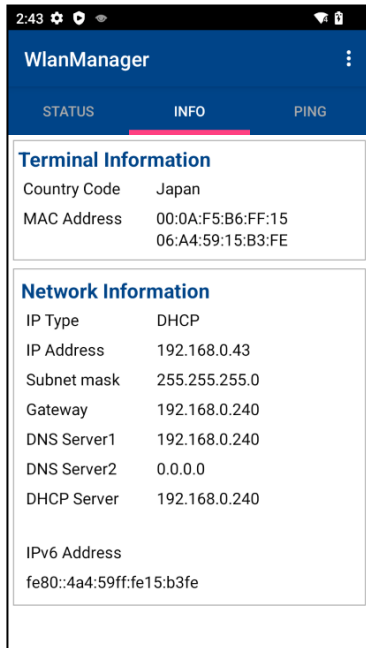
This menu displays the following information.

■BHT Information

Item	Description
Country Code	Displays WLAN country code of BHT (country name, standards organization name).
MAC Address	Displays MAC address of BHT. If the connected network is enabled to use randomized MAC address, the second line will show the randomized MAC address in use.

■Network Information

Item	Description
IP Type	Displays current IP address type (DHCP / STATIC).
IP Address	Displays current IPv4 address.
Subnet mask	Displays current subnet mask.
Gateway	Displays IP address of current default gateway.
DNS Server 1	Displays IP address of current primary DNS server.
DNS Server 2	Displays IP address of current secondary DNS server.
DHCP Server	Displays IP address of currently used DHCP server.
IPv6 Address	Displays current IPv6 address.

6.2.5. Ping Transmission Function

Tap [**PING**] tab, and the following screen appears.

Perform Ping test as follows:

1) Enter **Destination IP.**
2) Tap **START** button.
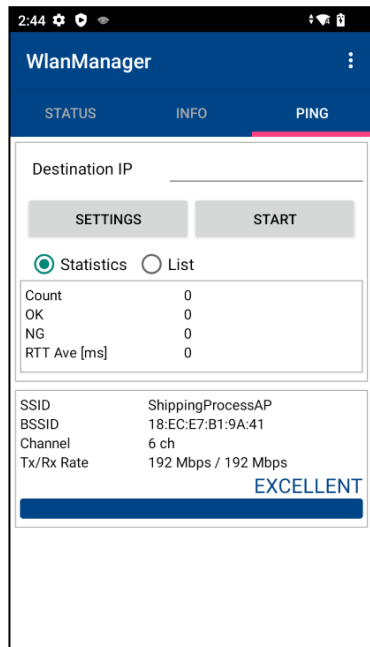
6.2.5.1 Ping Test Performance Result

When the Ping test is performed, the result list appears.
In the list of result, the following information is displayed.

Item	Description
Count	Displays the number of Ping echo request transmission.
OK	Displays the number of Ping echo replies.
NG	Displays the number of errors that occur during the Ping test.
RTT Ave [ms]	Displays the Ping echo replying time.

▶ When the check box of **Statistics / List** is checked, the display changes to the **statistics display** or the **list display**.
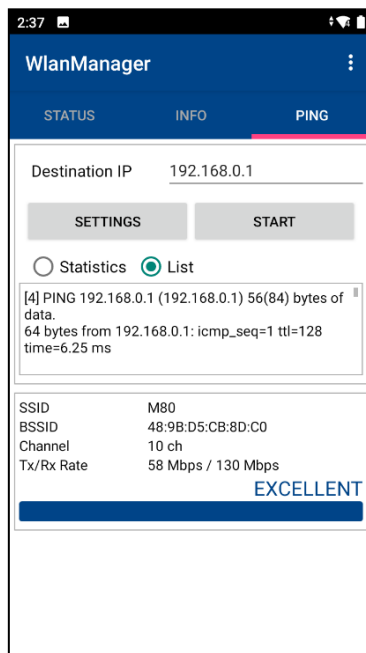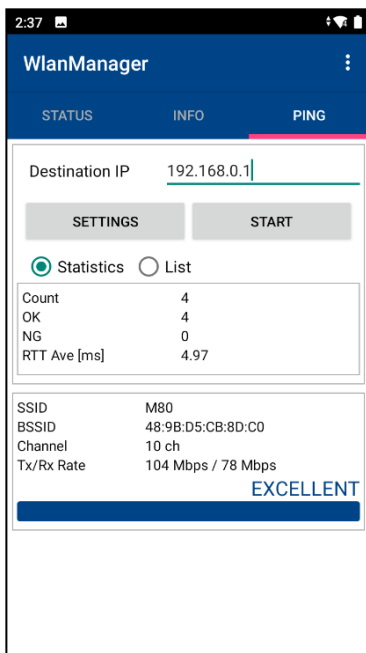
6.2.5.2 Ping Settings Change

Tap **SETTINGS** button on the Ping test menu, and you can change the Ping settings.
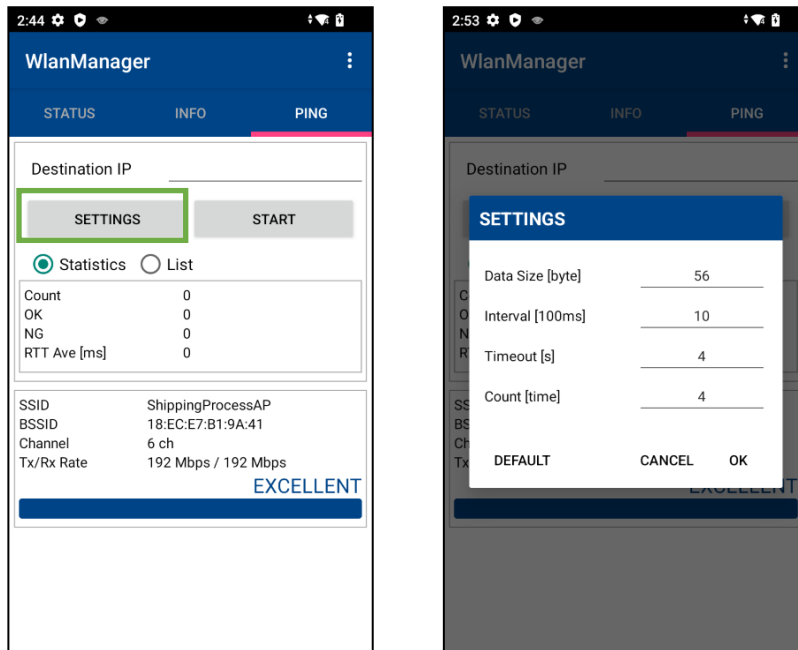
Item	Description	Specifiable range	Default value
Data Size [byte]	Length of Ping echo request data	0 to 65507	56
Interval [100 ms]	Length of interval time of Ping echo request (Unit: 100 ms)	2 to 20000	10
Timeout [s]	Timeout period of Ping echo request (Unit: s)	0 to 2000	4
Count [time]	Number of transmission of Ping echo request When 0 is specified, the number of transmission will be infinite. (Continue to perform until it is suspended.)	0 to 2147483647	4

▶ If you tap the DEFAULT button, the default values are set for each item and the dialogue will be closed.

6.2.5.3 Timing for Transmitting Ping Echo Request

After transmitting Ping echo request, Ping echo replies will be received or the timeout of Ping echo request may occur. Then, wait unit the interval time of the Ping echo request passes, and transmit the next Ping echo request.

<When the ping echo reply is received>

<When the timeout occurs>
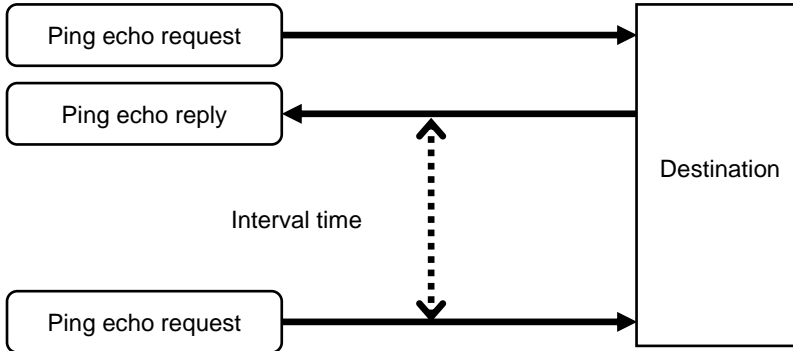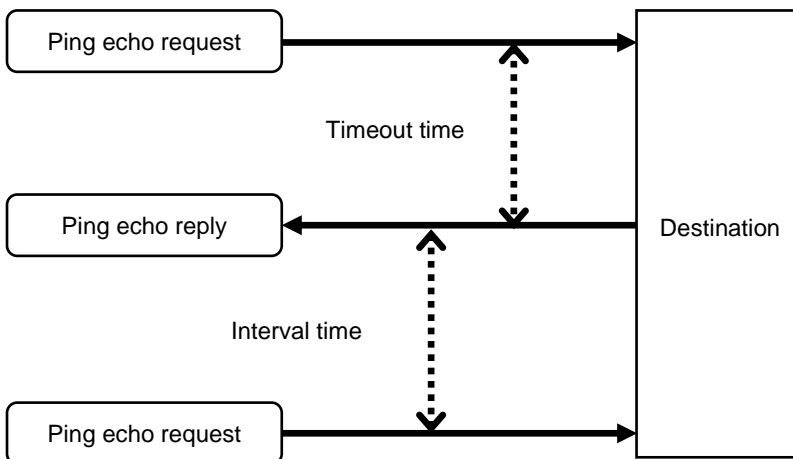
6.2.6. Network settings

This will be a shortcut button to the WLAN network settings.
For the setting procedure, refer to **6.1 WLAN Operation**.

Follow the procedure below to open the network setting screen.

1) In the WLAN Manager, tap Menu button ⦂ .
2) Tap **Settings**.
3) Tap **Network settings**, and the internet screen is displayed.
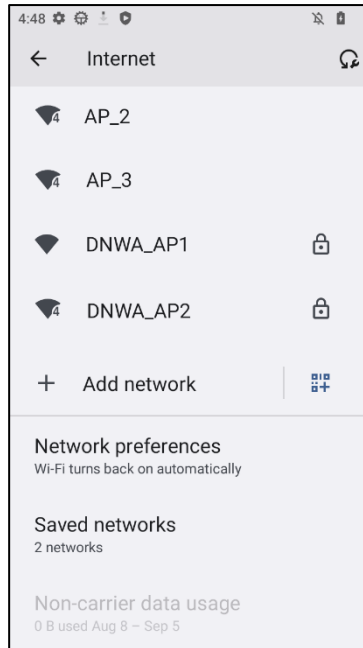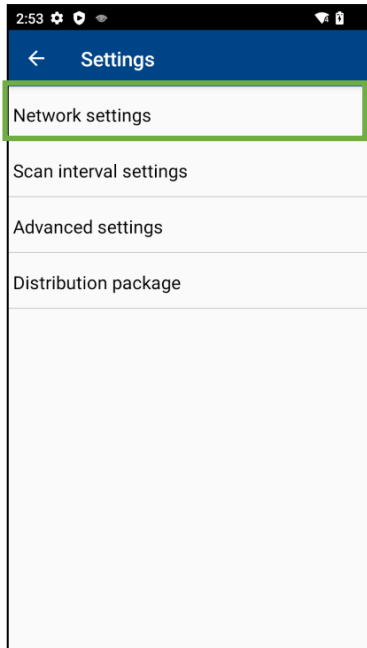
6.2.7. Scan interval settings

The WLAN scan interval can be changed as needed.

The maximum time to reconnect to the access point when the terminal reenters into the access point radio range can be set by changing the scan interval.

Follow the procedure below to change the scan interval.

1) In the WLAN Manager, tap Menu button ⋮.
2) Tap **Settings**.
3) Tap **Scan interval settings** to open the scan interval setting menu.
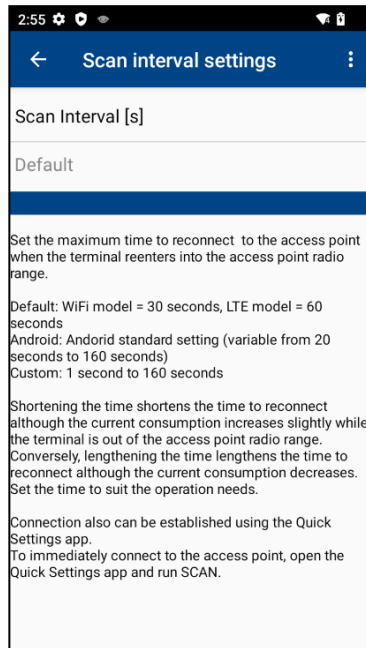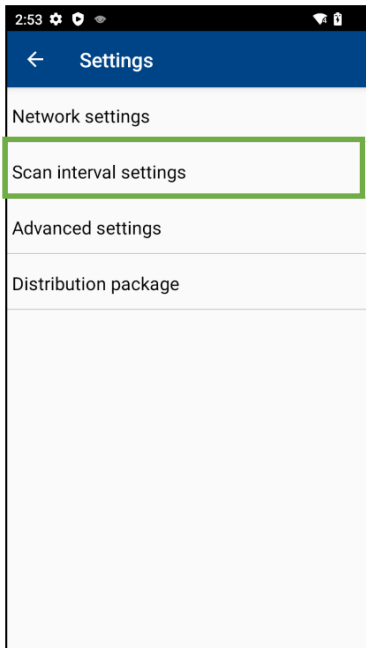
4) Tap **Scan Interval [s]**, the scan interval setting dialog appears.
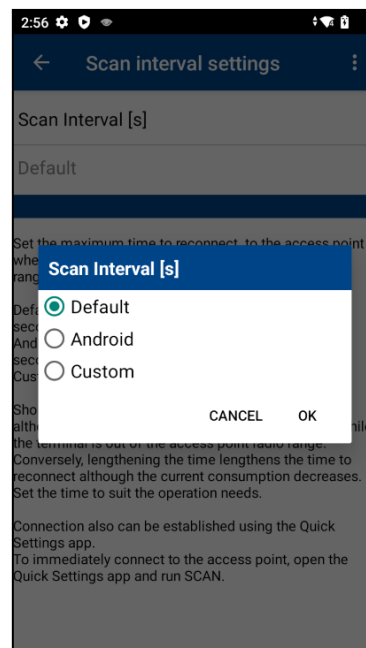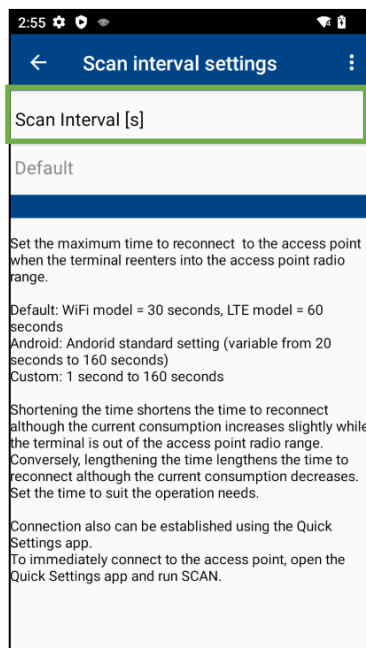
The scan interval can be set as follows.

Value	Description	Specifiable range
Default	Scans with the default settings. The WiFi model is set to 30 seconds and the LTE model is set to 60 seconds.	-
Android	Scans with the Android standard settings. The scan interval varies between 20 and 160 seconds.	-
Custom	Scans at the specified intervals. Enter a value within the specifiable range.	1 to 160 (seconds)

5) Tap [OK] to save the settings.
   Restart is required for changes to take effect. Refer to **6.2.7.1 Reflecting Scan Interval Settings**.
   Until the reboot is performed, "!" icon (values set are still not effective) is displayed.

–Note–	By shortening the scan interval, battery consumption increases slightly while the terminal is out of the radio range. Be sure to set an appropriate value depending on the operating conditions when changing the setting.

–Note–	To connect to a stealth mode access point at a DFS band (W53, W56), set the scan interval to less than 10 seconds.

6.2.7.1 Reflecting Scan interval settings

Execute the reflection of the scan interval settings based on the following procedure.

1) In the scan interval setting menu, tap **Menu** .
2) Tap **Apply**.
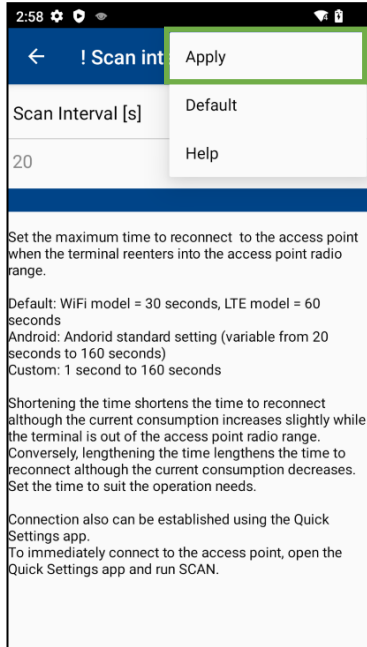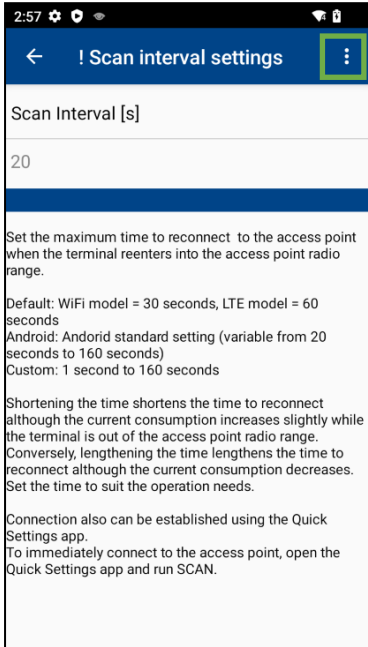
3) On the Reboot selection menu, use either button to move to the next process:

    ▶   OK button   : Performs Reboot to reflect the setting values returned to the default to the operation.

    ▶   CANCEL button : Returns to the scan interval setting menu without executing a reboot.
                         To reflect the setting values returned to the default to the operation, perform Reboot.
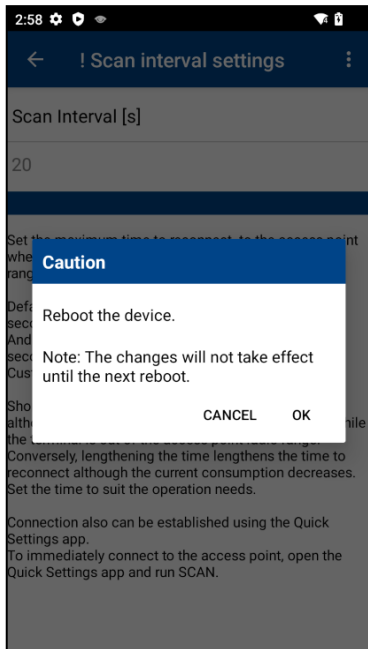
6.2.7.2 Initializing Scan interval settings

Return the scan interval settings to the default based on the following procedure.

1) In the scan interval setting menu, tap **Menu** ⋮ .
2) Tap **Default**.
3) Use either button to move to the next process:

    ▶   OK button   : Returns the setting values to the default and displays the reboot selection menu. Until the reboot is performed, "!" icon (Setting values are not reflected) is displayed.

    ▶   CANCEL button   : Returns to the scan interval setting menu without returning the setting values to the default.

4) On the Reboot selection menu, use either button to move to the next process:

    ▶   OK button   : Performs Reboot to reflect the setting values returned to the default to the operation.

    ▶   CANCEL button   : Returns to the scan interval setting menu without executing a reboot. To reflect the setting values returned to the default to the operation, perform Reboot.

6.2.8. Advanced settings

The Advanced settings menu is used to change further detailed settings for WLAN functions.

Follow the procedure below to change the advanced settings.

1) Tap the WlanManager menu ⸬ .
2) Tap the settings in the menu.
3) Tap the Advanced settings to open the Advanced settings menu.
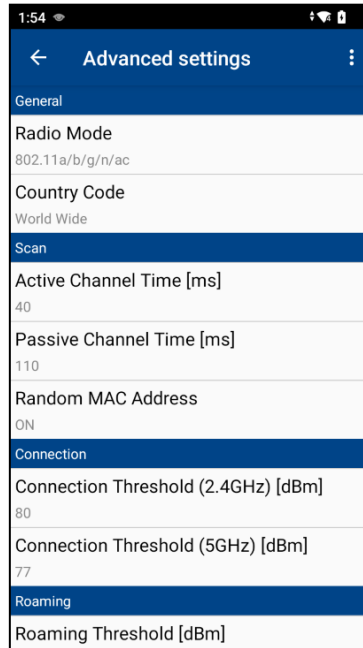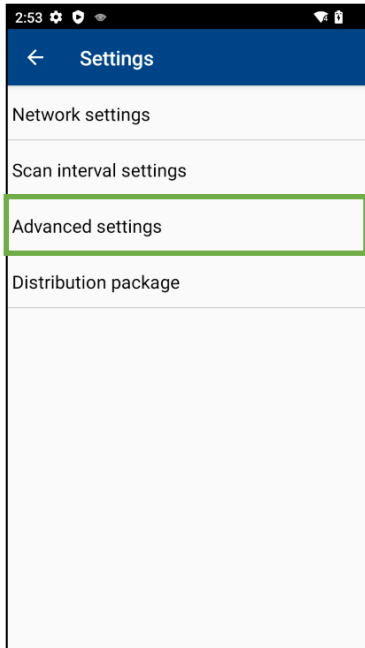
4) Tap each item in the Advanced settings menu to change the settings.
   Restart is required for changes to take effect. Refer to **6.2.8.1 Reflecting Advanced settings**.
   Until the reboot is performed, "!" icon (values set are still not effective) is displayed.

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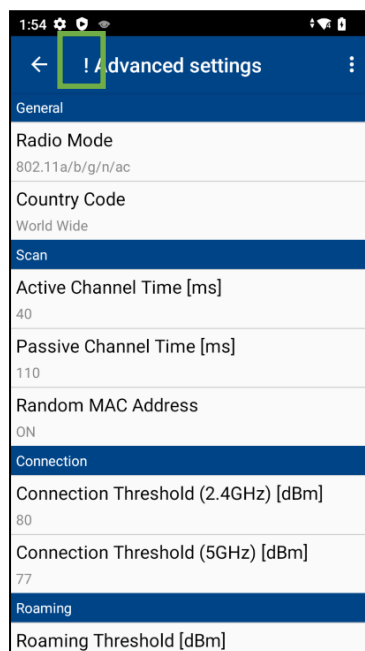
The following settings can be changed in the Advanced settings menu.

Category	Item	Specifiable range	Default value
General	Radio Mode	802.11b 802.11b/g 802.11b/g/n 802.11a 802.11a/n 802.11a/n/ac 802.11a/b/g 802.11a/b/g/n 802.11a/b/g/n/ac	802.11a/b/g/n/ac
	Country Code (*1)	(Various countries)	WorldWide
Scan	Active Channel Time [ms]	0 to 10000	40
	Passive Channel Time [ms]	0 to 10000	110
	Random MAC Address	ON OFF	ON
Connection	Connection Threshold (2.4GHz) [dBm]	73 to 120	80
	Connection Threshold (5GHz) [dBm]	70 to 120	77
Roaming	Roaming Threshold [dBm]	0 to 120	76
	Adaptive FT	ON OFF	OFF
Disconnection	Beacon Lost Count	5 to 100	20
	Retransmission Count	1 to 65535	512
	Disconnection Wait Time [ms]	0 to 30000	10000

(*1) Country code is a device-dependent parameter. For details, see **6.3 WLAN Country Code**.

6.2.8.1 Reflecting Advanced settings

Execute the reflection of the advanced settings based on the following procedure.

1) In the advanced setting menu, tap **Menu** ⁝ .
2) Tap **Apply**.
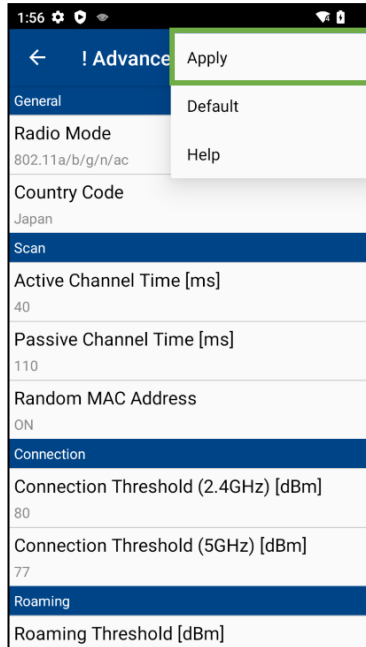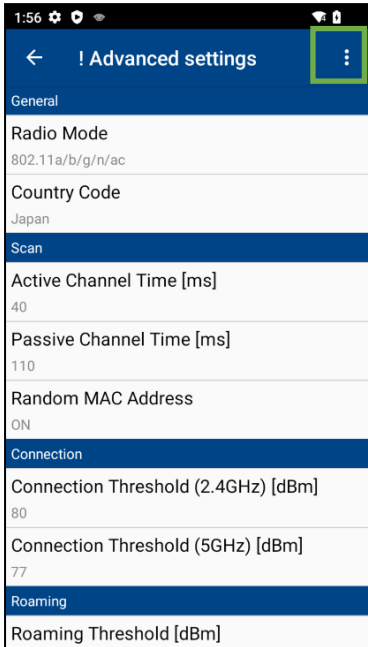
3) On the Reboot selection menu, use either button to move to the next process:
▶   OK button   : Performs Reboot to reflect the setting values returned to the default to the operation.
▶   CANCEL button   : Returns to the advanced setting menu without executing a reboot.
                                      To reflect the setting values returned to the default to the operation, perform Reboot.
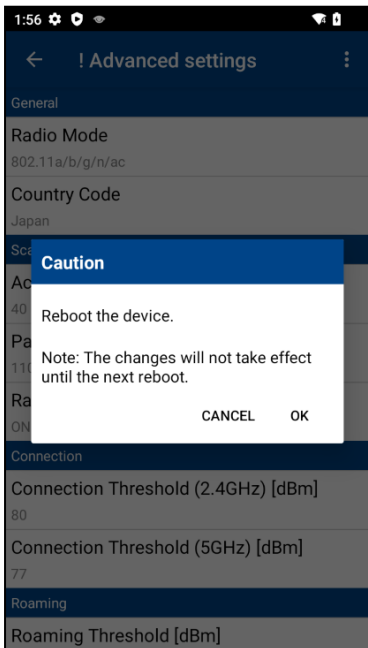
6.2.8.2 Initializing Advanced settings

Return the advanced settings to the default based on the following procedure.

1) In the advanced setting menu, tap **Menu**.
2) Tap **Default**.
3) Use either button to move to the next process:
- ▶ OK button : Returns the setting values to the default and displays the reboot selection menu.
  Until the reboot is performed, "!" icon (Setting values are not reflected) is displayed.
- ▶ CANCEL button : Returns to the advanced setting menu without returning the setting values to the default.

4) On the Reboot selection menu, use either button to move to the next process:
- ▶ OK button : Performs Reboot to reflect the setting values returned to the default to the operation.
- ▶ CANCEL button : Returns to the advanced setting menu without executing a reboot.
  To reflect the setting values returned to the default to the operation, perform Reboot.

6.2.9. Distribution package

By creating a distribution package, the profile settings registered in the terminal can be distributed to other terminals.

After creating the distribution package, if the WLAN export is executed in BHTSetting, the profile settings included in the distribution package will be exported. The profile settings can be copied by importing this exported file to another device.
(Refer to **15. BHT Setting** for details.)

Follow the procedure below to open the distribution package menu.

1) In the WLAN Manager, tap Menu button ⋮ .
2) Tap **Settings**.
3) Tap **Distribution package** to open the distribution package menu.

(When distribution package has not been created)   **(When distribution package has been created)**
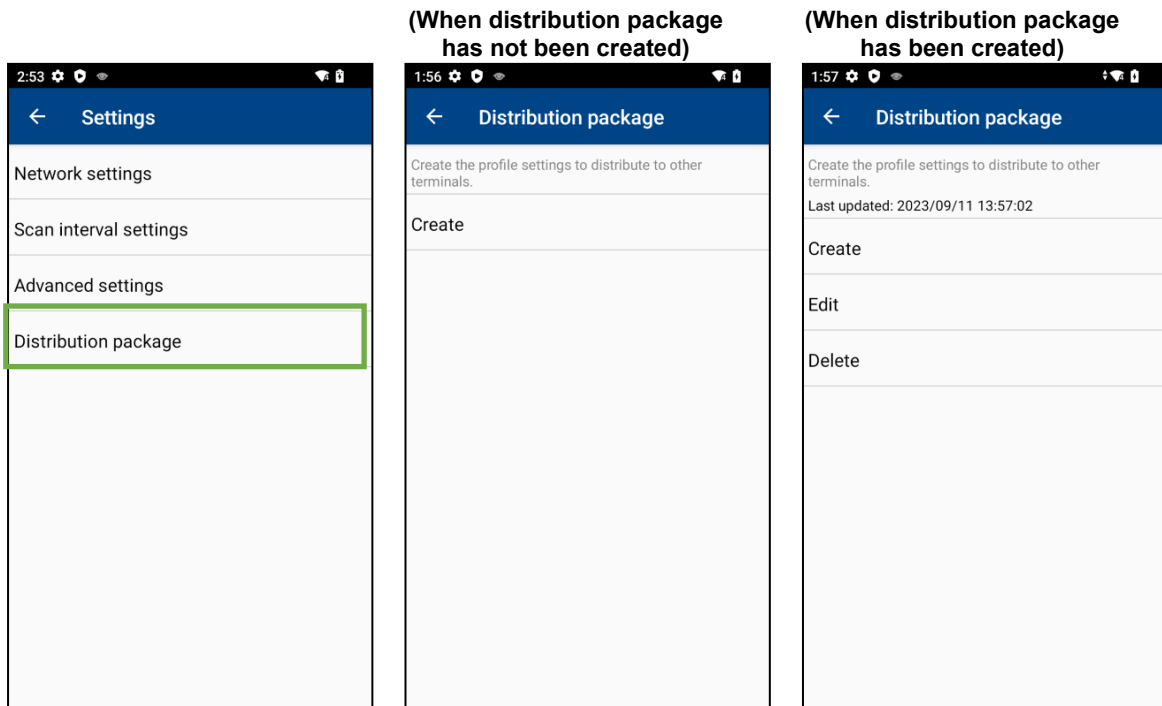
Item	Description
Create	Profile settings distributed to other terminals are created as a distribution package.
Last updated	(Displayed when distribution package has been created) The date and time of the last update of a distribution package saved in a terminal are displayed.
Edit	(Displayed when distribution package has been created) A distribution package saved in a terminal is edited.
Delete	(Displayed when distribution package has been created) A distribution package saved in a terminal is deleted.

6.2.9.1 Creating distribution package

Create a distribution package based on the following procedure.

1) Tap **Create** in the **distribution package** menu.
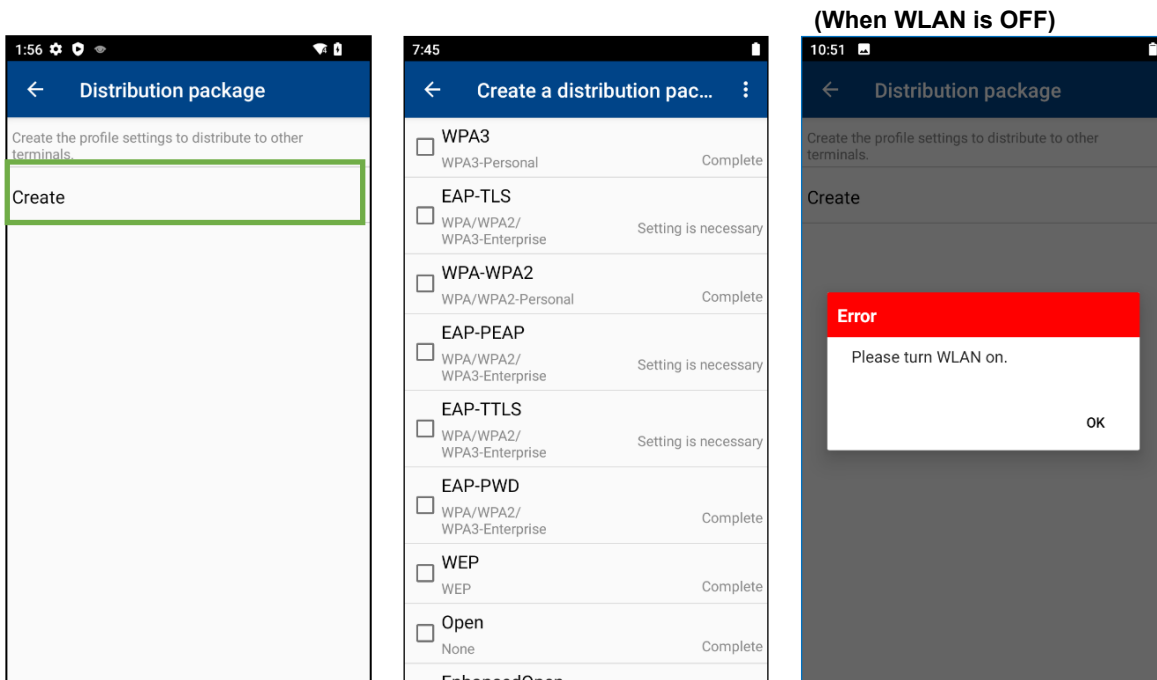
(When WLAN is OFF)

When WLAN is OFF, an error message is displayed at the time of tapping and no distribution package can be created. Execute after turning ON WLAN (Wi-Fi) in the WLAN network settings.

–Note–	When you want to export a status where WLAN is OFF, be careful not to forget to return WLAN to OFF before executing the export after distribution package creation.

2) Select profile settings you want to save as a distribution package from the displayed profile list which has been saved and tap **Save** from the **distribution package creation menu** ⋮ .

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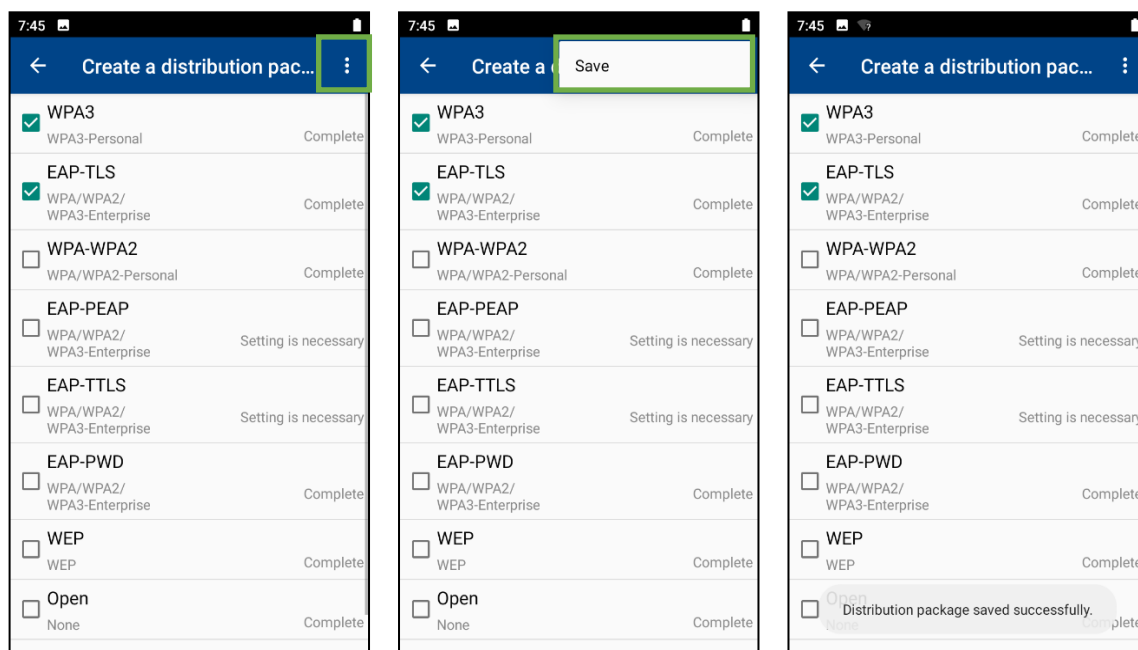
The following contents are displayed for each saved profile:

[1]   [2] WPA3   [3] WPA3-Personal   Complete [4]
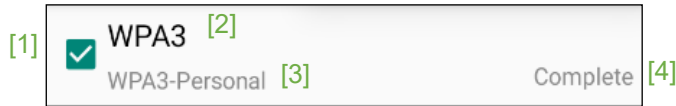
Item	Description
[1] Check box	Selection of whether they will be targets to save as a distribution package can be executed. When the setting completion check has not been completed and when a box is unchecked, the setting dialogue opens.
[2] SSID	SSID of the profile is displayed.
[3] Security	The security setting of the profile is displayed.
[4] Setting completion check	Setting is completed : All items for the setting have been entered. Setting has not been completed : There is not-yet-entered item and setting has not been completed.

Contents of displayed setting dialogue are switched according to security.

Parameter	Security			
	None / Enhanced Open	WEP	WPA/WPA2-Personal	WPA3-Personal
Password	-	✓	✓	✓
Show password	-	✓	✓	✓
Identity	-	-	-	-
CA certificate specification *1	-	-	-	-
CA certificate path	-	-	-	-
User certificate specification *1	-	-	-	-
User certificate path	-	-	-	-
Corresponding screen	None *3	A	B	C

Parameter	Security				
	WPA/WPA2/WPA3-Enterprise *5				
	PEAP	TLS	TTLS	PWD	SIM / AKA / AKA'
Password	✓	✓*4	✓	✓	-
Show password	✓	✓*4	✓	✓	-
Identity	✓	✓	✓	✓	-
CA certificate specification *1	✓	✓	✓	-	-
CA certificate path*2	✓	✓	✓	-	-
User certificate specification *1	-	✓	-	-	-
User certificate path*2	-	✓	-	-	-
Corresponding screen	D	E	F	G	None *3

*1 : When selecting CA certificate and user certificate, a dialogue for selecting certificate will be displayed. Select a folder storing each certificate and specify the certificate.
*2 : When a certificate is specified at export, the certificate file is exported to the file as data. Therefore, at import it is only displayed that the file has already been registered.
*3 : A setting dialogue for these securities will not be displayed because these securities do not have any items to be set.
*4 : When the security is WPA/WPA2/WPA3-Enterprise TLS, enter the password to install the user certificate to the password.
*5 : Profiles with "Trust on First Use" in the CA certificate are not supported.

(A) (B) (C)

(D) (E) (F) (G)

When a saved profile is pressed and held down, the following context menu is displayed.
(If there is no security item, such as password, a menu is unable to be displayed.)
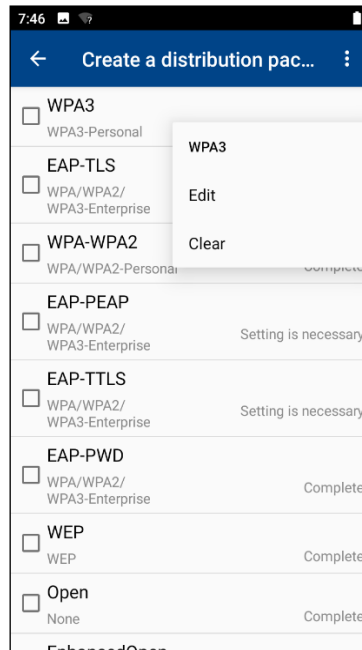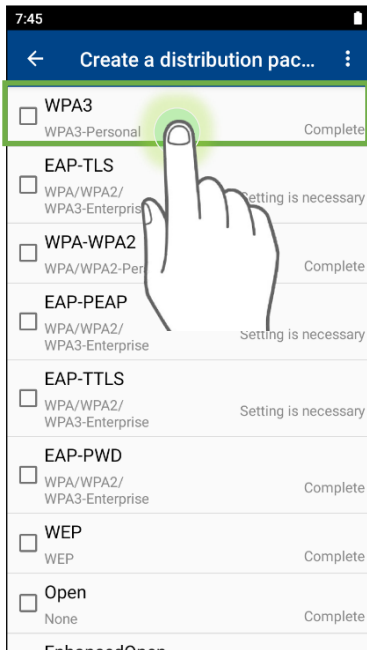
■Edit
   Opens a setting dialogue.
   (For details of the setting dialogue to be displayed, refer to the above table.)

■Clear
   Deletes the set parameters.

6.2.9.2 Editing distribution package

Edit the distribution package saved in the terminal based on the following procedure.

1) Tap **Edit** in the **distribution package** menu.
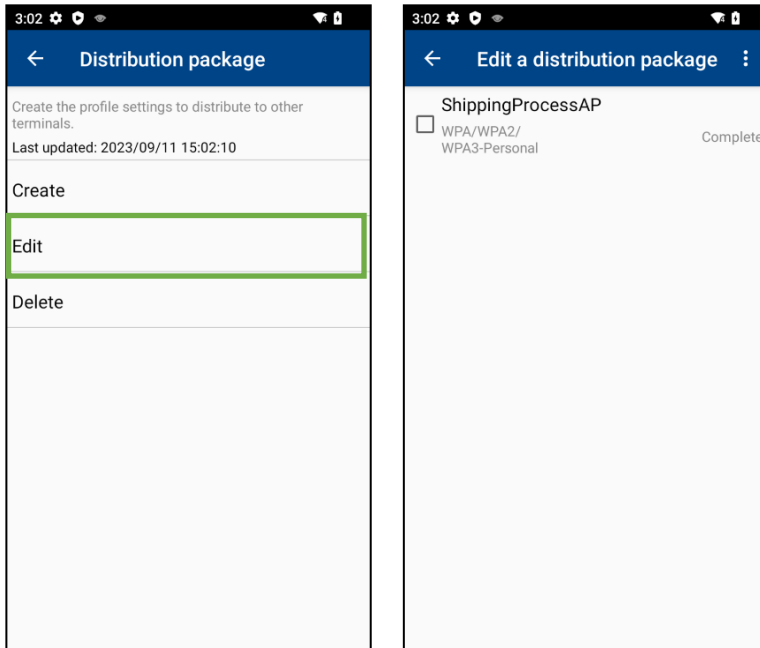
2) The following items can be executed:
  ▸ When you want to save displayed profile settings　: Select the profile settings.
  ▸ When you want to delete displayed profile settings　: Do not select the profile settings.

3) After selecting profile settings from the displayed profile list which has been saved, tap **Save** from the **distribution package editing menu** .
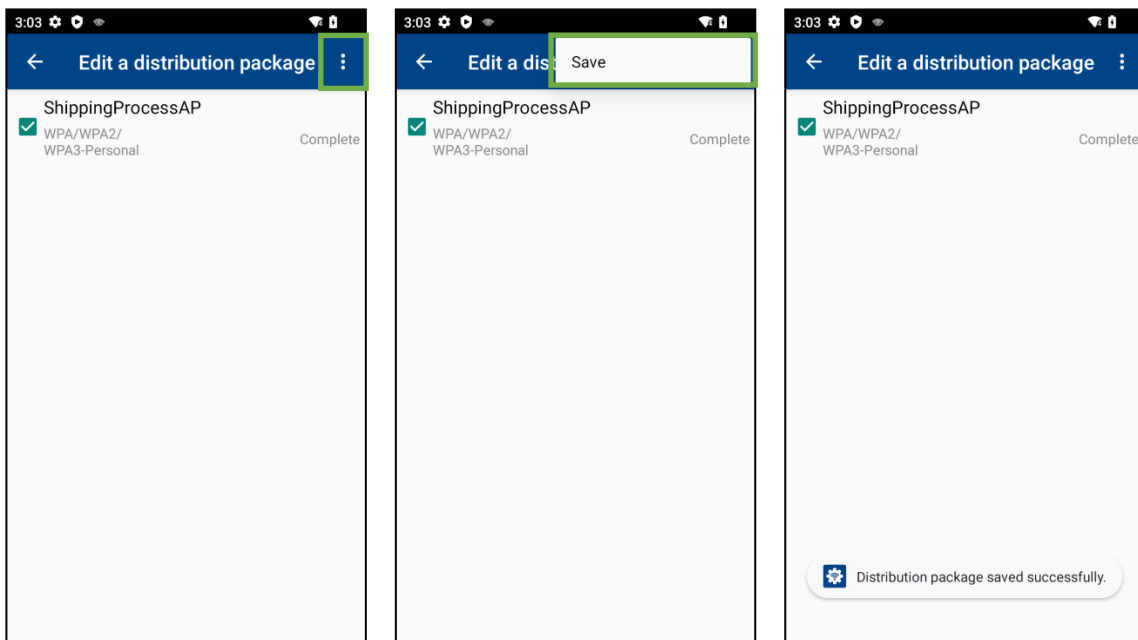
6.2.9.3 Deleting distribution package

Delete the distribution package saved in the terminal based on the following procedure.

1) Tap **Delete** in the **distribution package** menu.
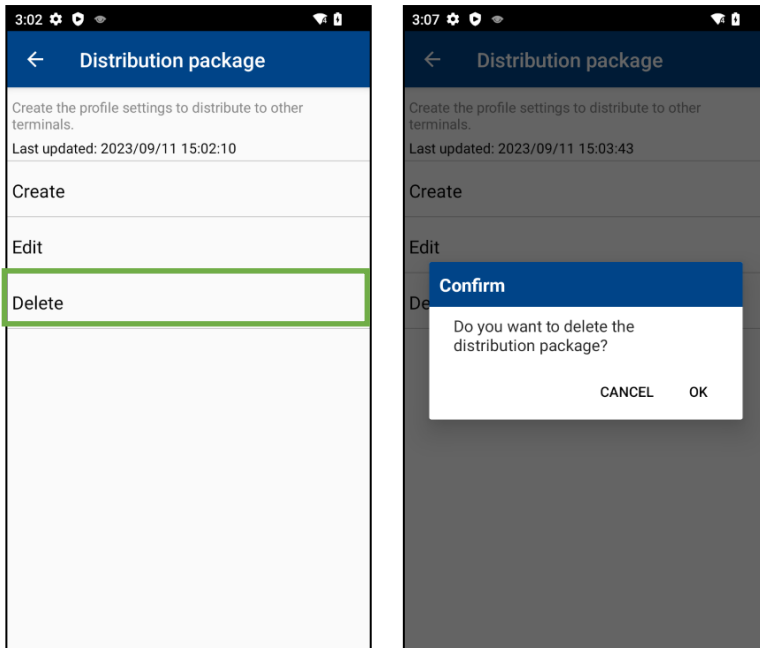
2) If Delete is selected, the following items can be executed:
  ▶ OK button : A distribution package saved in a terminal is deleted.
  ▶ CANCEL button : It returns to the **distribution package** menu without deleting a distribution package.
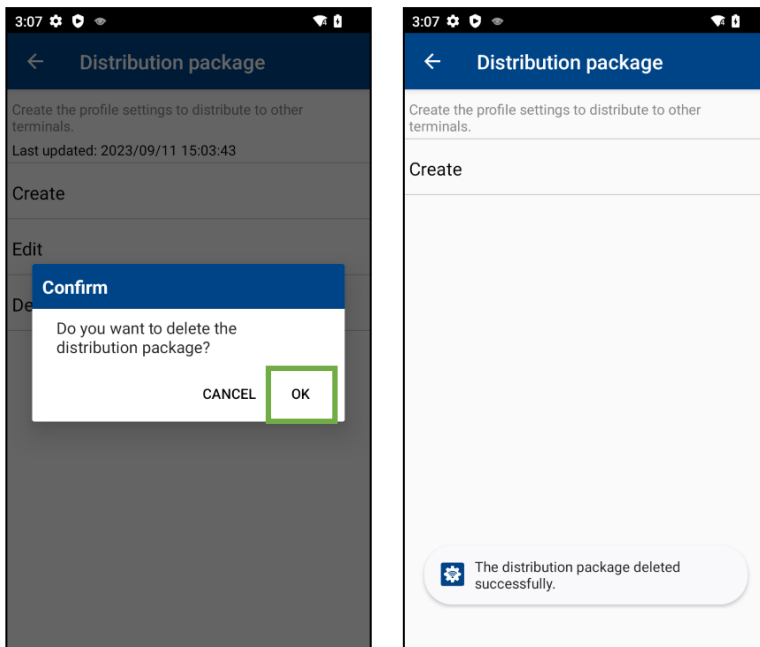
6.2.10. Import/Export

Tap **Import/Export**, and the start-up screen of BHTSetting is displayed.
(It is a shortcut button for BHTSetting started up with BHTSetting 🔵.
For the execution method, refer to **15. BHTSetting**.)
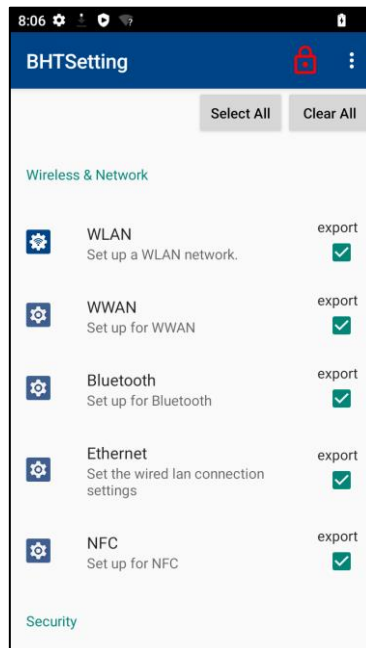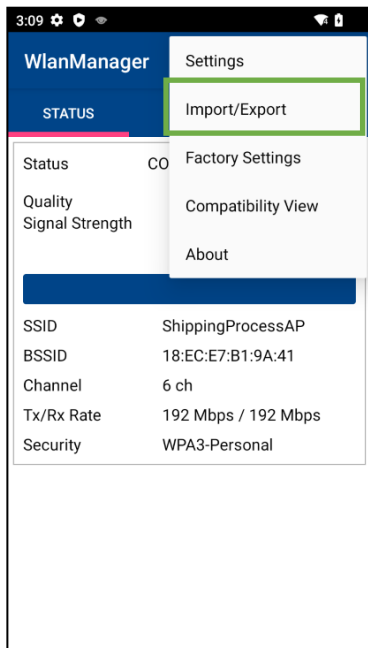
6.2.11. Compatibility View

Activate the Compatibility View mode to switch the signal strength indication to the conventional model view (equivalent to BHT-1700, 1800).

1) Tap **Compatibility View** in **Menu** ⋮ , the Caution dialog appears.
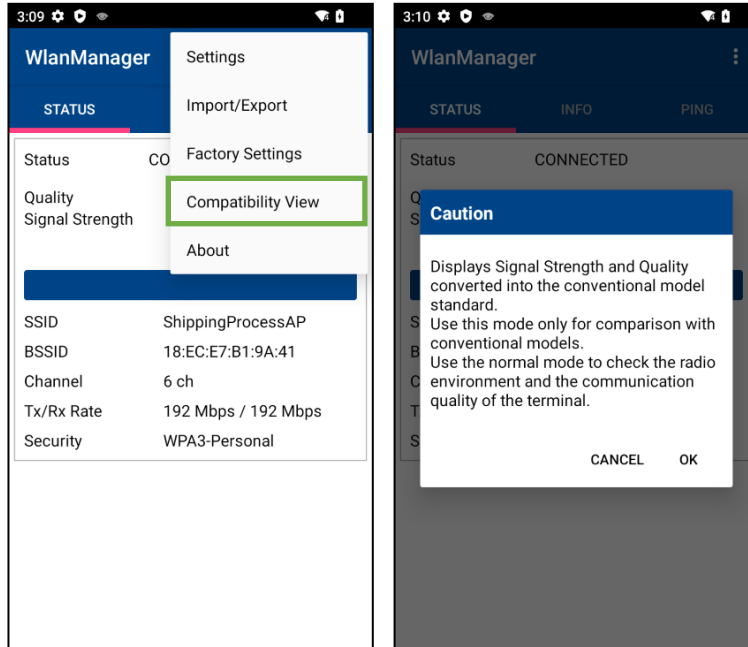
2) Tap OK on the dialog, the signal strength indication in the [STATUS] tab shows in the Compatibility View mode.
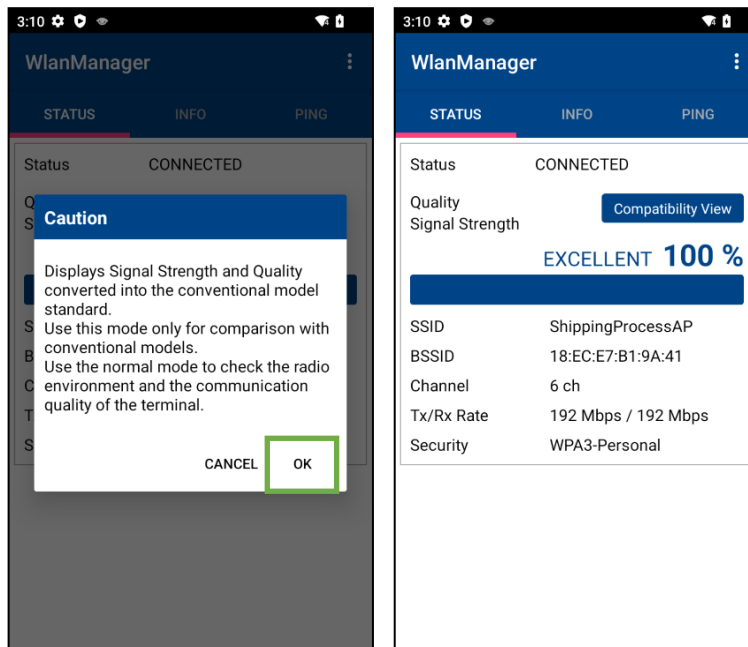
3) To cancel the Compatibility View and return to the Native View, open the **Menu** ⋮ once again and tap the **Native View.**
The screen also returns to the Native View when transited from WlanManager to another screen.
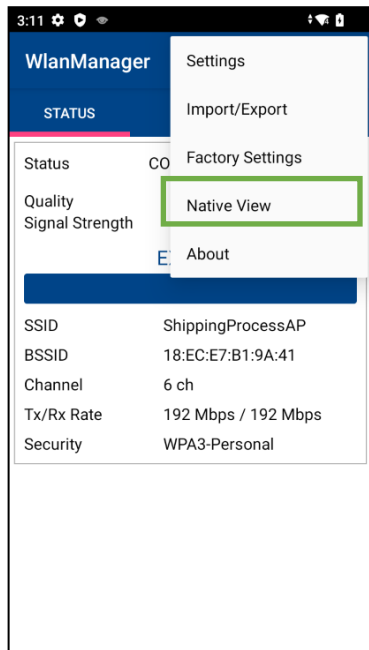
━ **Note** ━	Use the Native View when check the WLAN environments or the communication quality.

━ **Note** ━	The signal strength indication in the [PING] tab cannot be changed to the Compatibility View.

6.3. WLAN Country Code

The channels and transmission output available for WLAN are determined by the law in each country.

Although BHT operates with no violation of law in every country when the WLAN country code is set to "World Wide", the stealth mode connection is available only from ch1 to ch11.

To freely connect to the stealth mode access points, change the country code to the country where BHT is used.

If the WLAN country code is set to "World Wide", the following warning message will be displayed.
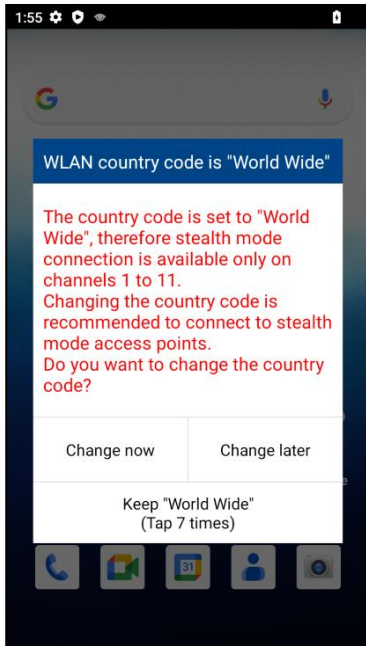
Item	Description
Change now	WLAN country code setting menu will be displayed. The warning message will no longer be shown if the WLAN country code is set to another country instead of "World Wide".
Change later	Close the warning message. The warning message will be shown again, when the WLAN is turned on, the lock screen is released, or a certain time elapses.
Keep "World Wide"	Tap seven times to close the warning message. The warning message will no longer be shown.

6.3.1. WLAN Country Code Setting

Set the WLAN country code as described below.
The WLAN country code set here does not return to the default value at **6.2.8.2 Initializing Advanced settings**.

1) Select the country that uses BHT in the WLAN country code setting menu.
2) Use either button to move to the next process:
   ▶ OK button   : Displays the reboot selection menu. Restart is required for changes to take effect.
   ▶ CANCEL button : Returns to the WLAN country code setting menu.
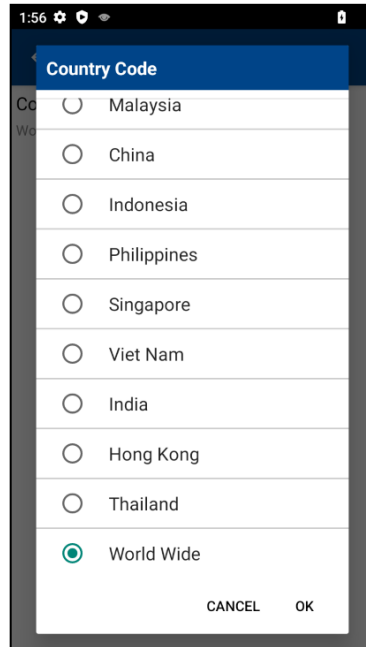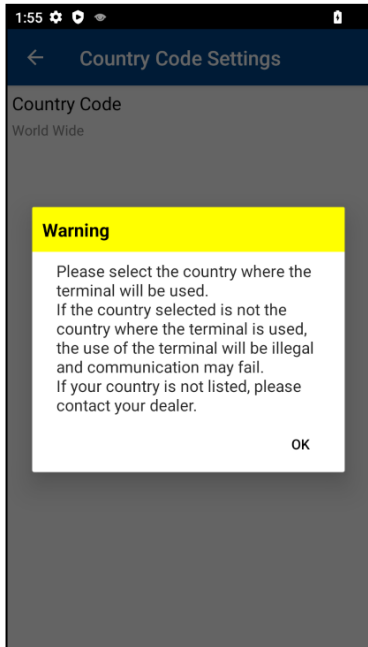
3) On the Reboot selection menu, use either button to move to the next process:
   ▶ OK button   : Performs Reboot to reflect the changed setting value to the operation.
   ▶ CANCEL button : Returns to the WLAN country code setting menu without performing Reboot.
                                 To reflect the changed setting value to the operation, perform Reboot.
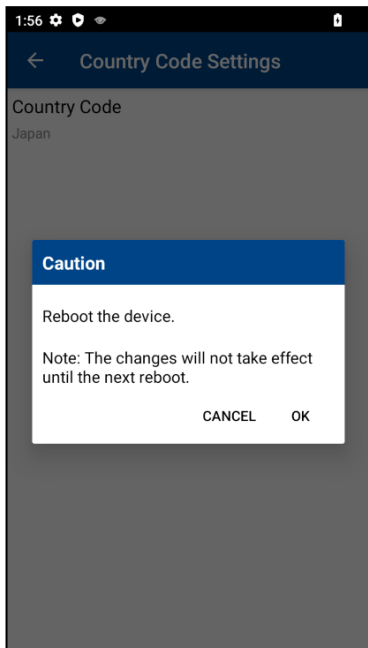
6.4. IP Information File

When the profile information exported from a device is imported to another device, the IP address in the profile imported will be copied if the IP in the profile imported is set to "Static".
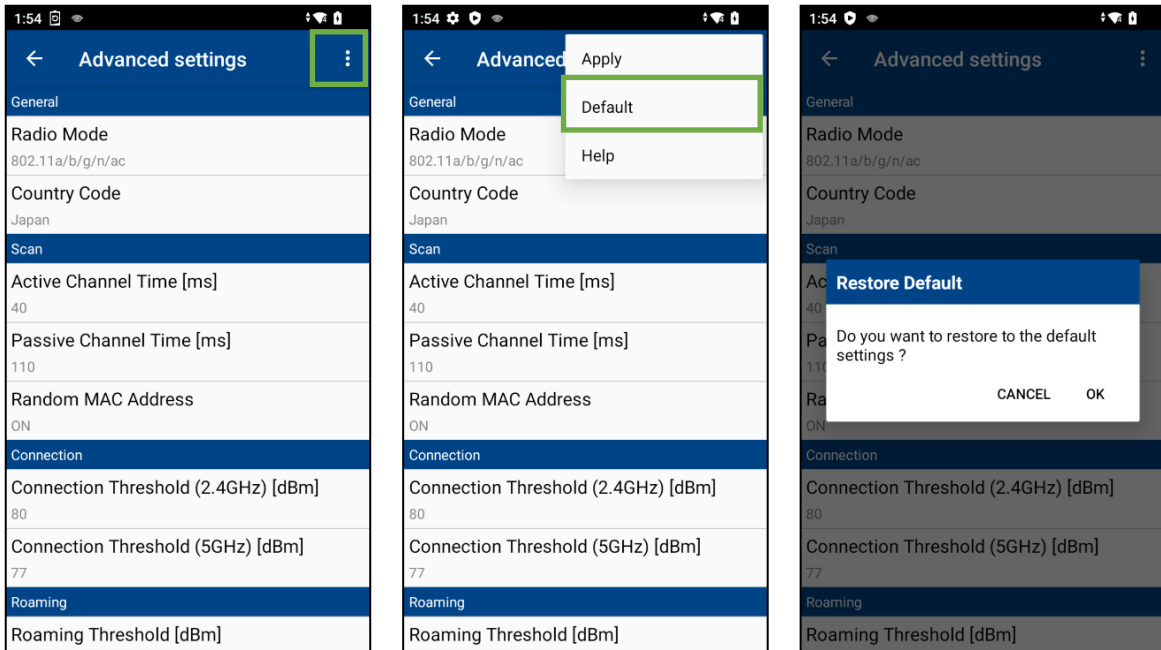If the devices with the same IP address exist in the same network, only one device can communicate.

The IP information in the profile can be changed accordingly for each terminal by preparing the IP information file when the profile is imported as shown in **15. BHTSetting**: **15.2.1.3 Import**.

Write one item in one row in a comma-separated (CSV) format.
Do not write content other than a set value (for example, a title etc.) in a file.
Settings for which No Change has been specified are imported with settings at the time of an export not changed.

Setting item	Description	Settable range	In case of blank
Serial number	Write the serial number of a target terminal. When there is a profile in which the serial number, SSID and security match, settings after this are reflected.	Terminal serial number	Empty string
SSID	Write the SSID of the target profile.	SSID	Empty string
Security	Write the security of the target profile in the corresponding notation below: 　None　: None 　OWE　: Enhanced Open 　WEP　: WEP 　PSK　: WPA/WPA2-Personal 　SAE　: WPA3-Personal 　EAP　: WPA/WPA2/WPA3-Enterprise	None OWE WEP PSK SAE EAP	Error
IP assignment (IP address type)	Write an IP assignment method.	No Change DHCP Static	Error
IP address	Write an IP address. When the IP assignment method is other than Static, it is ignored.	No Change IPv4 address	Empty string
Prefix length (subnet mask)	Write a prefix length. When the IP assignment method is other than Static, it is ignored.	No Change 0-32	0
Gateway address	Write a gateway address. When the IP assignment method is other than Static, it is ignored.	No Change IPv4 address	Empty string
DNS server address (primary)	Write a DNS server address. When the IP assignment method is other than Static, it is ignored.	No Change IPv4 address	Empty string
DNS server address (secondary)"	Write a DNS server address. When the IP assignment method is other than Static, it is ignored.	No Change IPv4 address	Empty string
Proxy settings	Write a proxy setting method.	No Change None Manual Auto	Error
Proxy host name	Write a proxy host name. When the proxy settings are other than Manual, it is ignored.	No Change IPv4 address Host name	Empty string
Proxy port number	Write a proxy port number. When the proxy settings are other than Manual, it is ignored.	No Change 0-65535	0
Proxy exception list	Write a proxy exception list. When setting several ones, put " to the fronts and backs and write comma-separated. When the proxy settings are other than Manual, it is ignored.	No Change IPv4 address Host name	Empty string
Proxy automatic configuration script (PAC URL)	Write a proxy automatic configuration script. When the proxy settings are other than Auto, it is ignored.	No Change URL	Empty string

■　Example of IP information file

Change the IP address of the terminal with serial number 000001 to 192.168.1.128
Change the IP address of the terminal with serial number 000002 to 192.168.1.129

```
000001,SSID1,PSK,Static,192.168.1.128,No Change,No Change,No Change,No Change,No Change,No Change,No Change,No Change,No Change
000002,SSID1,PSK,Static,192.168.1.129,No Change,No Change,No Change,No Change,No Change,No Change,No Change,No Change,No Change
```

7. Bluetooth

BHT lets you configure Bluetooth settings and manage Bluetooth services provided on the remote device.

7.1. Bluetooth Profile

Corresponding BLUETOOTH profile

Generic Access Profile	(GAP)	For device discovery and authentication.
Headset Profile	(HSP)	Describes how a Bluetooth enabled headset should communicate with Bluetooth enabled device.
Serial Port Profile	(SPP)	Profile for serial communication using Bluetooth.
Generic Object Exchange Profile	(GOEP)	Provides a basis for other data profiles.
Object Push Profile	(OPP)	Pushes and pulls objects to and from the push server.
Hands-Free Profile (AG1.5)	(HFP)	Allows using a hands-free device to places and receive phone calls.
Personal Area Networking Profile	(PAN)	Conducts data transmission with Bluetooth using the Bluetooth network capsuled protocol.
Advanced Audio Distribution Profile	(A2DP)	Streams stereo-quality audio to a wireless headset or a speaker.
General Audio/Video Distribution Profile	(GAVDP)	Provides a basis for A2DP and VDP.
Human Interface Device Profile	(HID)	Provides a low latency Bluetooth connection with keyboards or pointing devices.
Phone Book Access Profile	(PBAP)	Transfers phone book objects to a car-kit to display information on incoming call received on BHT or initiate a call.
HID Over GATT Profile	(HOGP)	Connects to a keyboard and a pointing device with low power consumption using Bluetooth Low Energy.
Message Access Profile	(MAP)	Exchanges message objects among vehicles and hands-free devices.
Generic Attribute Profile	(GATT)	Provides a basis of communication using Bluetooth Low Energy.

7.2. Turning ON/OFF Bluetooth

By default, Bluetooth is turned on. Turn it on or off in either of the following procedures.

- How to do by quick setting.
1) Swipe down from the top of the screen to open Quick Settings.
2) Tap Bluetooth to turn on this function.
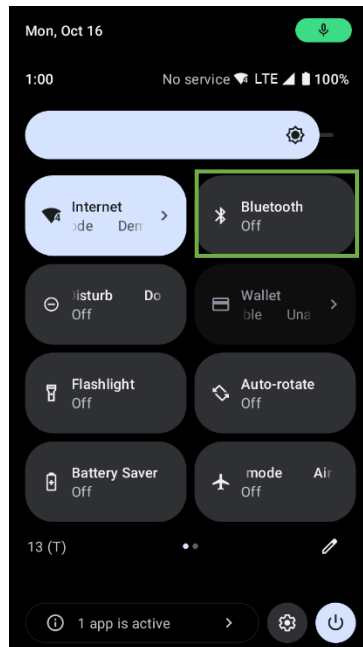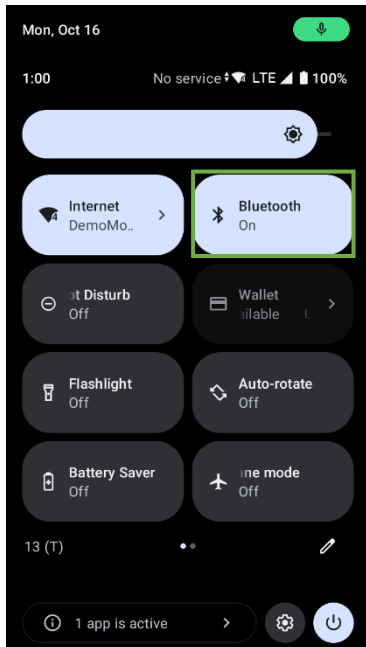
- How to do in the setting menu
1) Swipe Up From Home Screen | **Settings** ⚙ | **Connected devices** 🖴 | **Connection preferences** | **Bluetooth** ✳ .
2) Tap the switch to enable the Bluetooth.
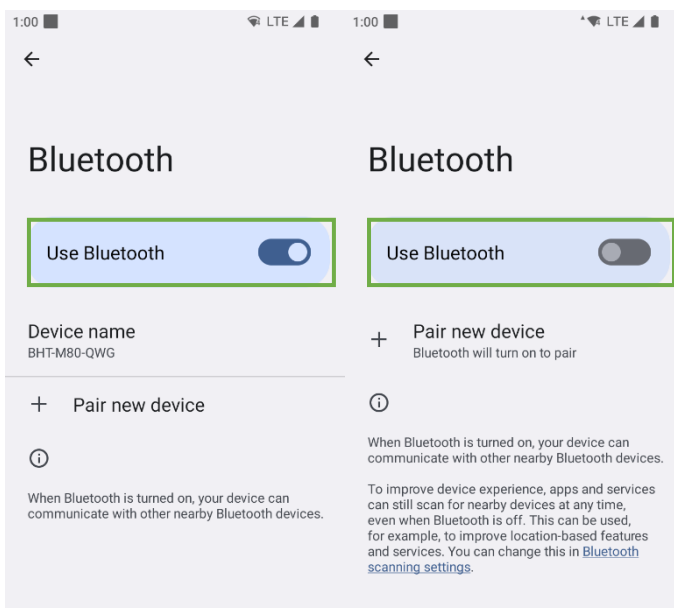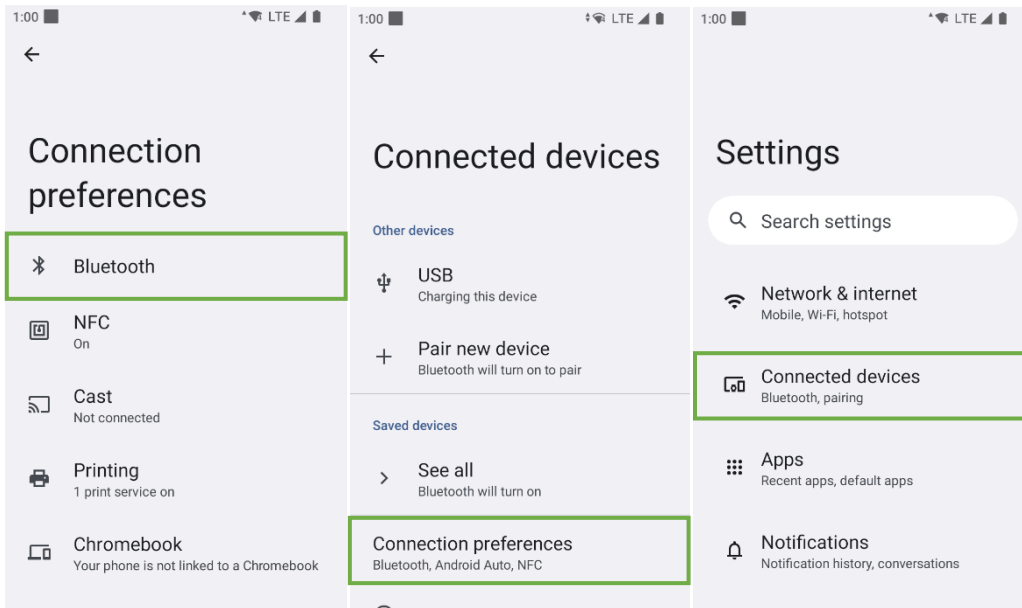
7.3. Renaming Bluetooth Device

Rename the Bluetooth name of this BHT as described below.

1) Tap Menu on the available device screen and select "Rename this device" from the pop-up menu.

2) Type a new name in the field and tap "RENAME".
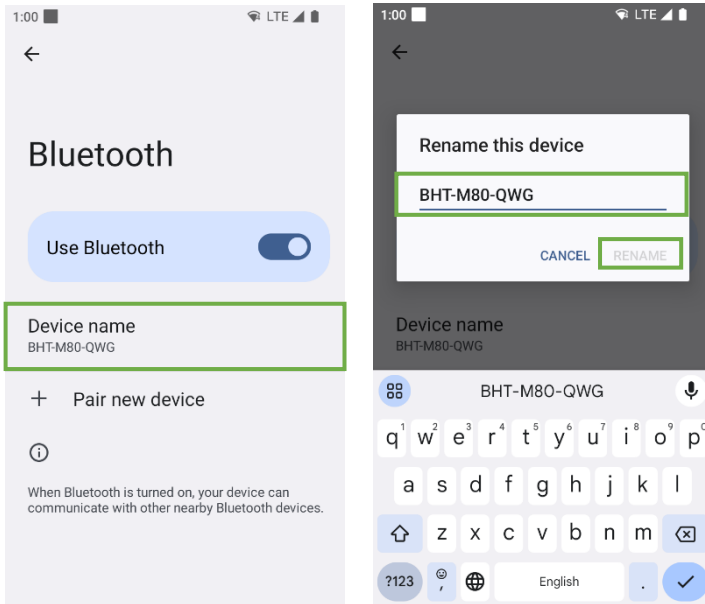
7.4. Pairing Bluetooth Device

1) Swipe Up From Home Screen | **Settings** ⚙ | **Connected devices** 🔲 | **Pair new device** and tap a device to be paired on the list.

2) The Bluetooth pairing window opens. Depending on the pairing settings, it may be necessary to enter a passkey or confirm a passkey assigned to a device to be paired. Select pair setting on the device to be paired.

3) Once the pairing is done, it is listed in the Paired Devices list.
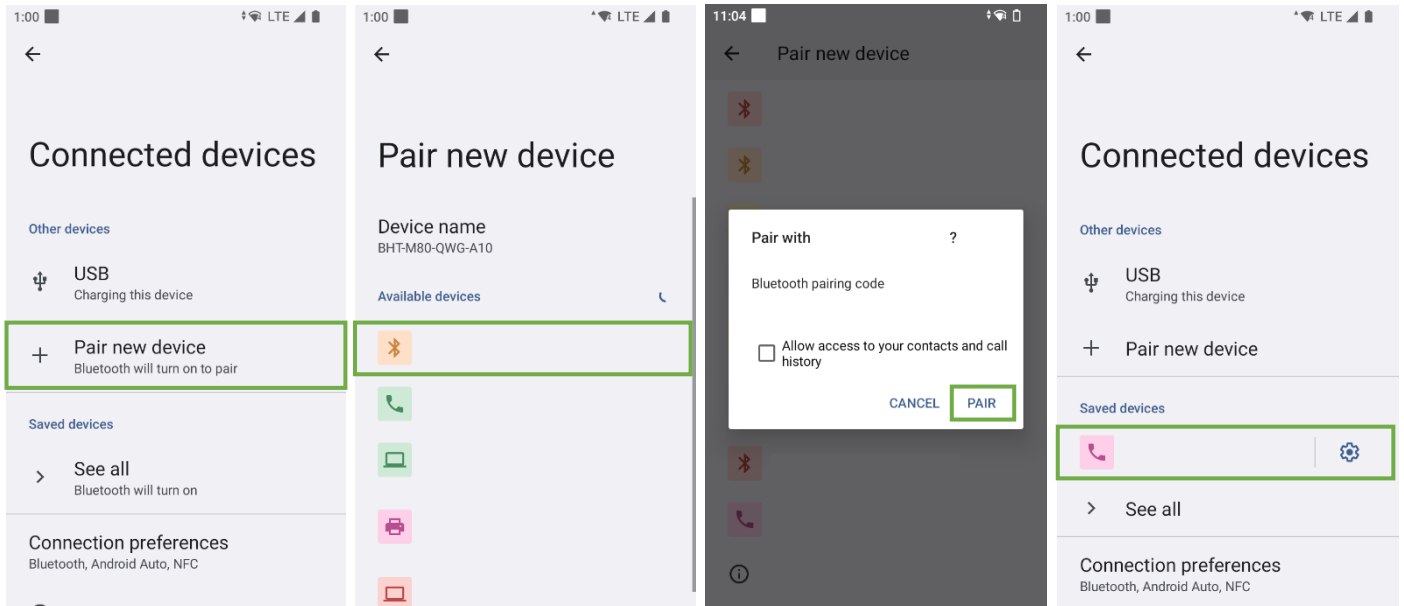
| **– Note –** | The maximum number of devices that pairing is possible is 100. As for over 100, error message is displayed.
When error message is displayed, it can dissolve in the next procedure.

In "Settings" application, tap **Settings** ⚙ | **System** ⓘ | **Reset options** 🕐 . Then tap "Reset Wi-Fi, mobile & Bluetooth" |

7.5. Unpairing Bluetooth Device

Unpair the Bluetooth devices as described below.

1) Tap the settings button next to the paired device on the paired devices list.
2) On the paired device screen, tap FORGET.
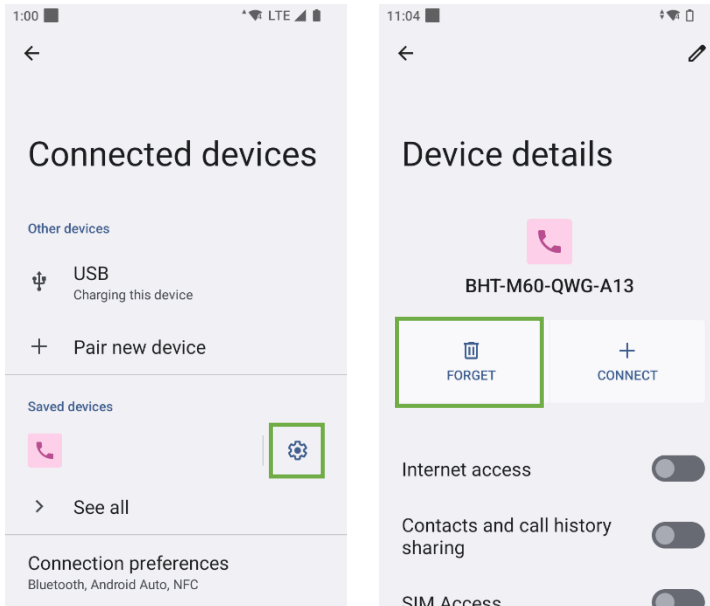
8.   Wired LAN
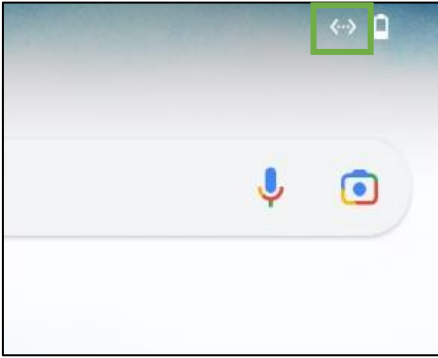
Set the network settings in accordance with the procedure in this chapter.
Set the BHT to LAN CU with the wired LAN device ON, and it can be connected to the network.

When the BHT is connected to the network, the connection icon is displayed on the status bar.

Swipe up on the home screen | **Settings** ⚙ | **Network & Internet** 🛜 |
Ethernet ‹·›, and the Ethernet menu is displayed.

The wired LAN device ON/OFF and the network settings can be changed from the Ethernet menu.

8.1. Wired LAN Device ON/OFF

The wired LAN device is ON by the factory default.
If you tap the Ethernet switch on the Ethernet menu, you can switch the wired LAN device ON/OFF.
If you need to connect to WLAN network and Mobile network with the device set to LAN CU, turn OFF the wired LAN device.
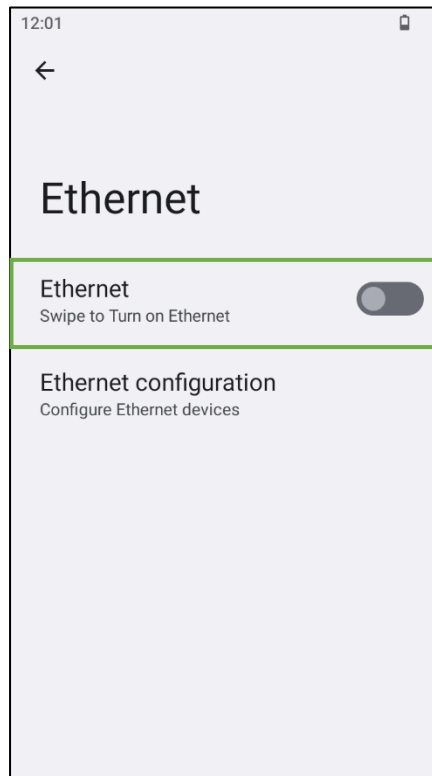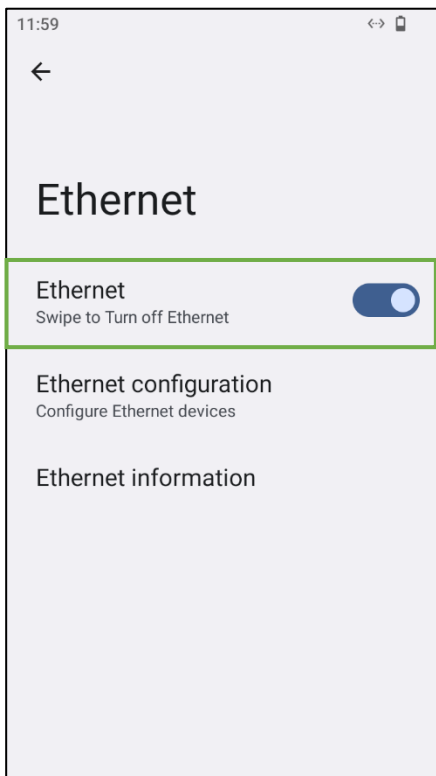
8.2. Ethernet configuration

Tap [Ethernet configuration] button on the Ethernet menu and Ethernet configuration menu is shown.
After proper network settings are entered, press [SAVE] button to set the configuration.
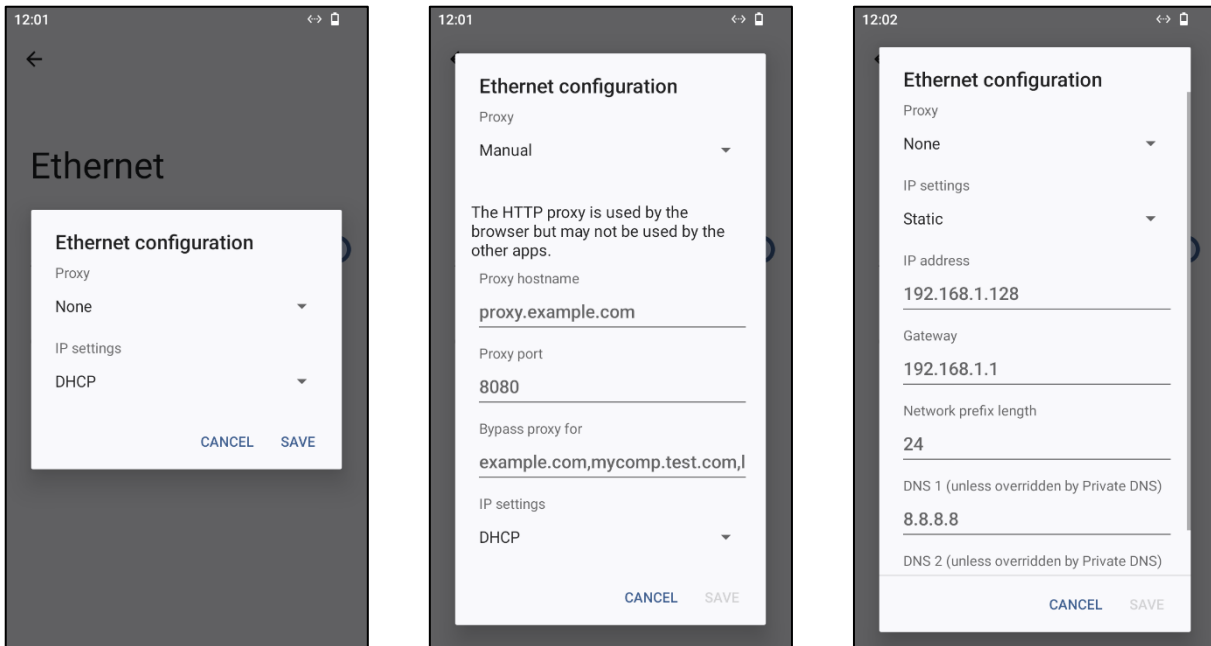
8.3. Ethernet information

While connected the network, Tap [Ethernet information] button on the Ethernet menu and Ethernet information menu is shown, the current network connection information can be checked.
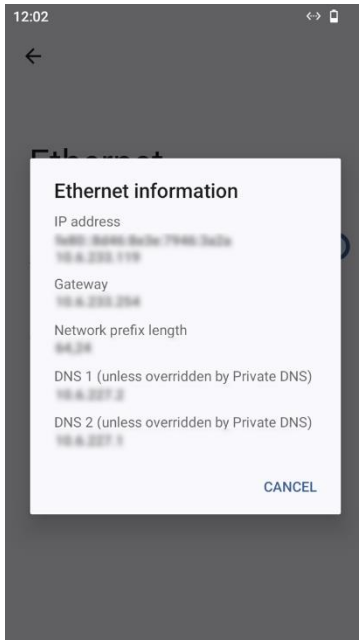
9. BHTShell

It is a support application that can easily call up BHT's unique functions and Android standard setting functions.

9.1. Menu Configuration

TOP menu	Sub menu 1	Sub menu 2	Sub menu 3	Function descriptions	Details
SystemSettings	Settings	-	-	Starts up Android standard setting app.	-
	BHT Setting			Start BHT Setting	15
HardTest	-	-	-	Starts up HardTest app.	10
FileManager	-	-	-	Starts up the file app.	3.15
PowerTools	-	-	-	Displays a list of icons for applications produced by DENSO WAVE.	9.2.1
SystemInfo	Version	-	-	Displays information on various systems such as version information.	9.2.2
	Regulatory Info	View Regulatory Info	-	Displays regulatory information.	9.2.3
	Open source licenses			Displays open source license information.	9.2.4
BHT Logger	-	-	-	Starts up BHT Logger app.	14

9.2. Details of Function

9.2.1. Power Tools
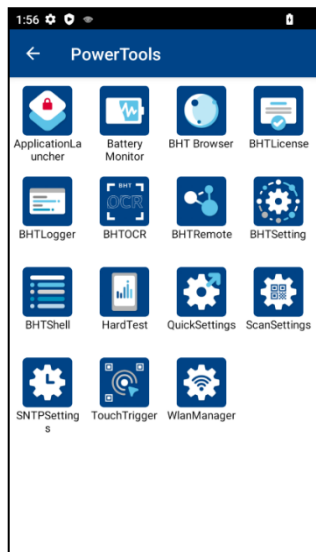
Displays a list of icons for applications produced by DENSO WAVE.

9.2.2. Version
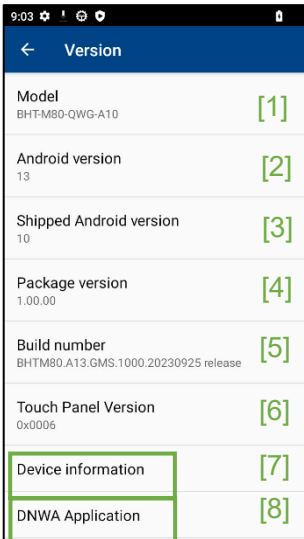
Displays information on various systems such as version information.

[1]	Model	Product model name
[2]	Android version	AndroidOS version
[3]	Shipped Android version	OS version during shipping process
[4]	Package version	Package version
[5]	Build number	Build number of a product
[6]	Touch Panel Version	Touch panel version
[7]	Device information	Device information screen is displayed.
[8]	DNWA Application	Displays a list of applications produced by DENSO WAVE
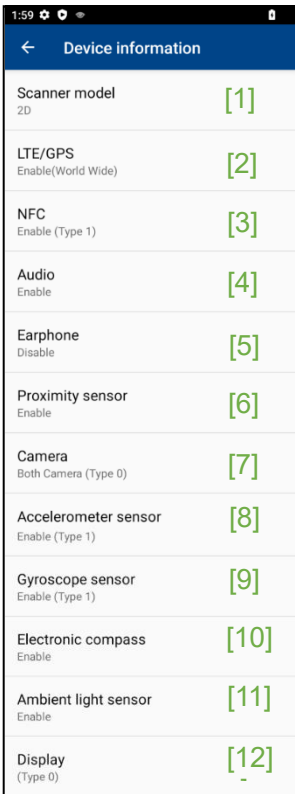
Displays information on various devices.

[1]	Scanner model	Types of mounted scanning module
[2]	LTE/GPS	Mounting/not mounting LTE function
[3]	NFC	Mounting/not mounting NFC function
[4]	Audio	Mounting/not mounting Audio function
[5]	Earphone	Mounting/not mounting earphone function
[6]	Light/proximity sensor	Mounting/not mounting light/proximity sensor
[7]	Camera	Mounting/not mounting camera and mounting area (Rear, front)
[8]	Accelerometer sensor	Accelerometer sensor status (enabled/disabled), and the sensor type
[9]	Gyroscope sensor	Gyroscope sensor status (enabled/disabled) and the sensor type
[10]	Electronic compass	Mounting/not mounting Electronic compass
[11]	Ambient light sensor	Mounting/not mounting Ambient light sensor
[12]	Display	Types of Display

* Audio implies microphone and receiver.
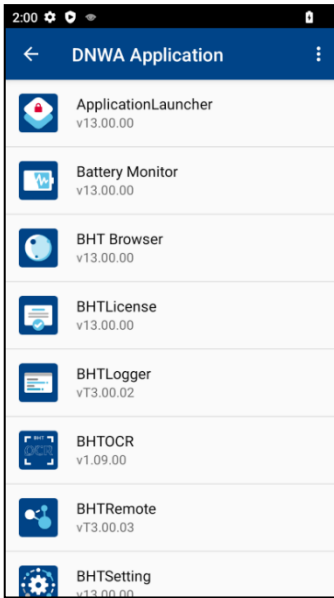
Displays a list of applications produced by DENSO WAVE.

9.2.3. Regulatory Info

Displays regulatory information such as the Technical Conformity Mark.

9.2.4. Open Source Licenses
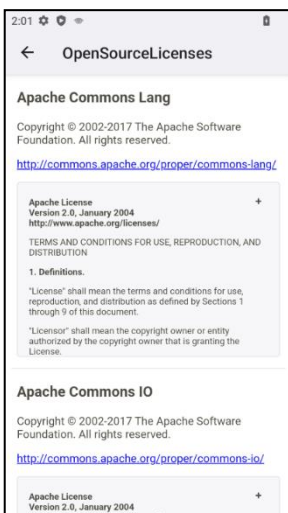
Displays information on open source license used for products.

10. HardTest

This is an application for checking operation of each device in the BHT.

10.1. Menu Configuration

TOP menu	Sub menu	Function description	Details
Input device	Scan 1D/2D Code	Performs 1D/2D code scanning test.	10.2.1
	NFC	Performs NFC scanning test.	10.2.2
	Key	Performs terminal key input test.	10.2.3
	Touch Screen	Performs touch screen operation test.	10.2.4
Display device	LCD	Performs screen display test.	10.3.1
	Backlight	Performs backlight brightness adjustment test.	10.3.2
Audio	Speaker	Performs speaker output test.	10.4.1
	Receiver	Performs receiver output test.	10.4.2
	Earphone	Performs earphone output test.	10.4.3
	Microphone	Performs microphone input test.	10.4.4
Wireless device	WLAN	Starts up WLAN Manager.	6.2
	Bluetooth	Starts up Bluetooth setting screen.	7
	GPS	Performs GPS positioning test.	10.5.1
	E compass	Performs positioning test of azimuth angle.	10.5.2
	LAN	Performs a test for connection to specified IP.	10.5.3
Camera	Rear camera	Performs rear camera operation test.	10.6.1
	Front camera	Performs front camera operation test.	10.6.2
	Camera flash	Performs lighting test of camera's flash light.	10.6.3
RTC	RTC	Performs a test for acquiring the current time.	10.7.1
Battery	Main battery	Performs a test for acquiring main battery information.	10.8.1
Sensor	G Sensor	Performs measurement test using G sensor.	10.9.1
	Geomagnetic Sensor	Performs measurement test using geomagnetic sensor.	10.9.2
	Gyro Sensor	Performs measurement test using gyro sensor.	10.9.3
	Proximity Sensor	Performs measurement test using proximity sensor.	10.9.4
	Light Sensor	Performs measurement test using light sensor.	10.9.5

10.2. Input Device

10.2.1. Scan 1D/2D Code

Launch barcode reading menu on the ScanSetting(Refer to "12.8Test").

10.2.2. NFC
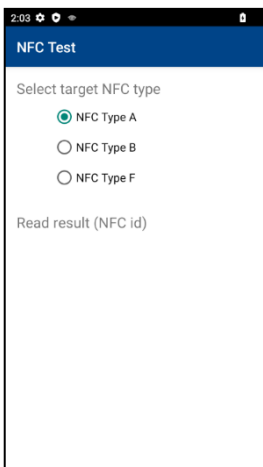
Performs NFC scanning test.

Select an NFC type to be scanned, and NFC card is scanned.

Then, the corresponding NFC id will be displayed on the screen.

* Available only for NFC mounting model

10.2.3. Key
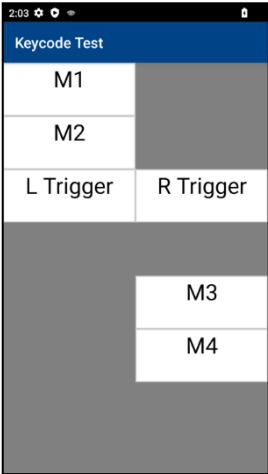
Performs BHT key input test.

Press a key, and a beeper is sounded and the black-and-white indication of the corresponding terminal key is inverted.

(When "SCAN" button is pressed, the BHT body vibrates.)

When all keys are pressed, a test ends and a screen moves to the input device menu screen.

10.2.4. Touch Screen
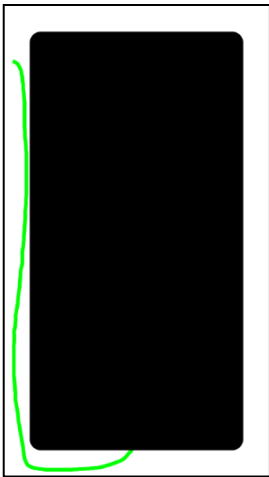
Performs touch screen operation test.

If you swipe outside an area not allowed to be touched (black-painted area), a line will be displayed along the swiped path.

If you touch an area not allowed to be touched, the BHT body will vibrate.

When you swipe the circumference of the area, a test ends and a screen moves to the input device menu screen.

10.3. Display Device

10.3.1. LCD

Performs screen display test.

On the default display, character strings are displayed. When you tap the screen or press ENT key, LED and the screen display are changed as described below.

Tap/ENT	LED	Screen
Default display	Red, lighting	Displays character strings.
1st	Blue, lighting	Turns off all lights.
2nd	Green, lighting	Displays a white screen with its brightness decreased.
3rd	No light	Displays a white screen with its brightness increased.
4th	No light	A test ends, and a screen moves to the display device menu screen.

10.3.2. Backlight
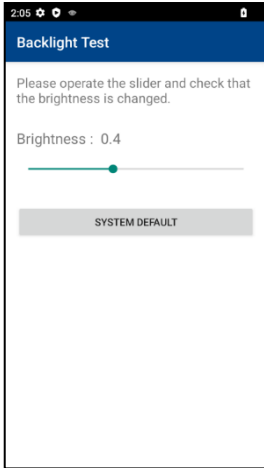
Performs backlight brightness adjustment test.

Move a slider right and left, and the screen brightness is changed.

(SYSTEM DEFAULT button enables you to return the brightness to the one that has been set in the system.)

10.4. Audio

10.4.1. Speaker
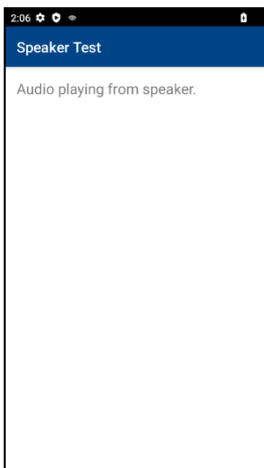
Performs speaker output test.

Ringtone is output from the speaker.

10.4.2. Receiver
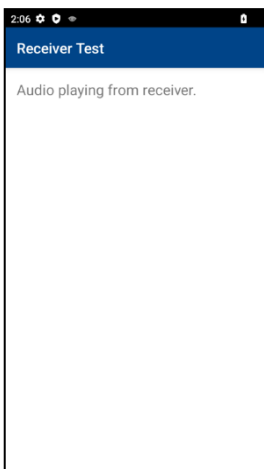
Performs receiver output test.

Ringtone is output from the receiver.

* Available only for receiver mounting model

(For not mounting models, the screen is displayed but sound is not output.)

10.4.3. Earphone
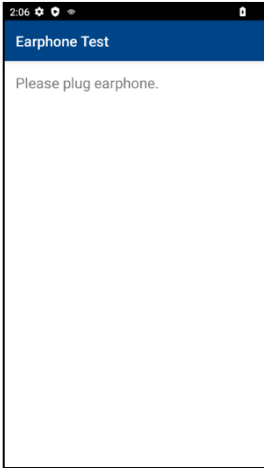
Performs earphone output test.
Ringtone is output from the earphone.

When you pull out an earphone, a test ends and a screen moves to the audio menu screen.

* Available only for earphone mounting model

10.4.4. Microphone
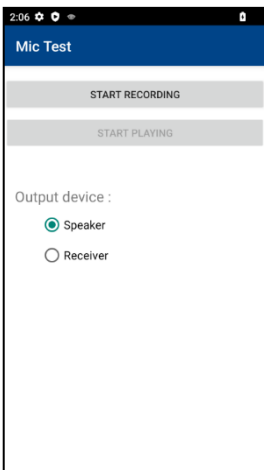
Performs microphone input test.
Records sound and plays it from the specified output device (speaker/receiver).

For recording and playing, the following buttons are used.

Start recording	Starts recording.
Stop recording	Stops recording.
Start playing	Plays the recorded sound.
Stop playing	Stops the playing sound.

* Available only for microphone mounting model

10.5. Wireless Device

10.5.1. GPS
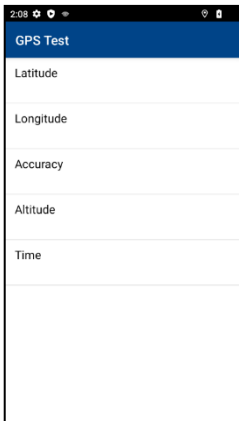
Performs GPS positioning test.

Displays GPS positioning results (latitude, longitude, accuracy, altitude).

* Available only for GPS mounding model

10.5.2. E compass

Performs positioning test of azimuth angle.

Displays an azimuth angle calculated from the measurement values using G sensor and geomagnetic sensor.

10.5.3. LAN

Performs a test for connection to specified IP.

Checks the connection to IP specified by the destination IP address, and displays the result.

10.6. Camera

10.6.1. Rear Camera
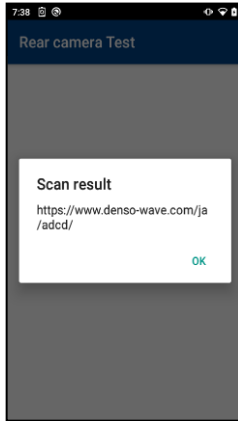
Performs the rear camera operation test.
Starts up the QR Code camera, and scans the QR Code.
Then, displays the contents of codes in the dialogue.

* Available only for rear camera mounting model

10.6.2. Front camera

Performs the front camera operation test.
Starts up the front camera, shoots a photo automatically, and then displays the photo on the screen.

* Available only for front camera mounting model

10.6.3. Camera Flash
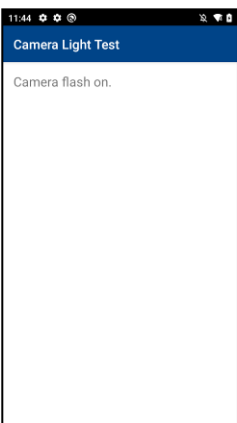
Performs lighting test of camera's flash light.
Turns on the flash light of a camera automatically.

* Available only for camera flash mounting model

10.7. RTC
10.7.1. RTC
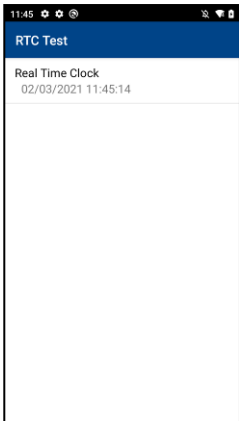
Perform a test for acquiring the current time.

Displays the current time on the screen.

10.8. Battery
10.8.1. Main Battery
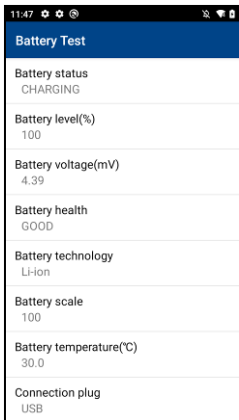
Performs a test for acquiring main battery information.

Displays various information on main battery (battery status, battery level, battery voltage, battery health, battery technology, battery scale, battery temperature, connection plug).

10.9. Sensor
10.9.1. G Sensor
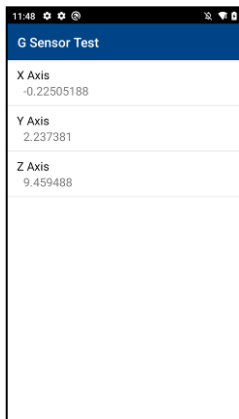
Performs measurement test using G sensor.

Displays the measurement result (X axis, Y axis, Z axis) of G sensor.

10.9.2. Geomagnetic Sensor
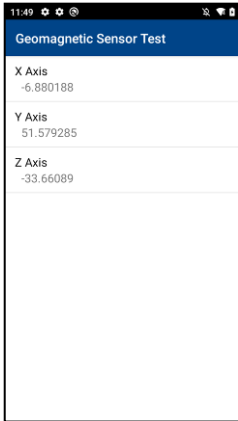
Performs measurement test using geomagnetic sensor.

Displays the measurement result (X axis, Y axis, Z axis) of geomagnetic sensor.

10.9.3. Gyro Sensor
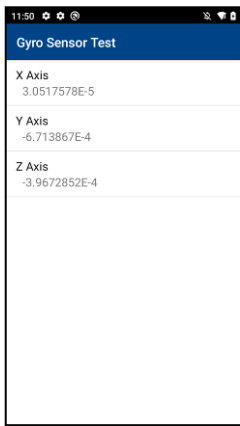
Performs measurement result using gyro sensor.

Displays the measurement result (X axis, Y axis, Z axis) of gyro sensor.

10.9.4.Proximity Sensor
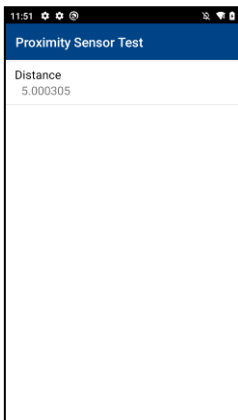
Performs measurement test using proximity sensor.

Displays the measurement result (distance) of proximity sensor.

* Available only for proximity sensor mounting model

10.9.5. Light Sensor
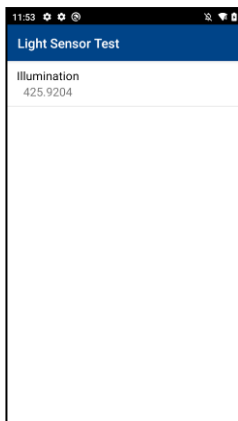
Performs measurement test using light sensor.

Displays the measurement result (X axis, Y axis, Z axis) of light sensor.

* Available only for light sensor mounting model

11. ApplicationLauncher

ApplicationLauncher can limit which apps users use.

Launches the dedicated HOME screen to prevent the use of non-work-related applications and enhance security.
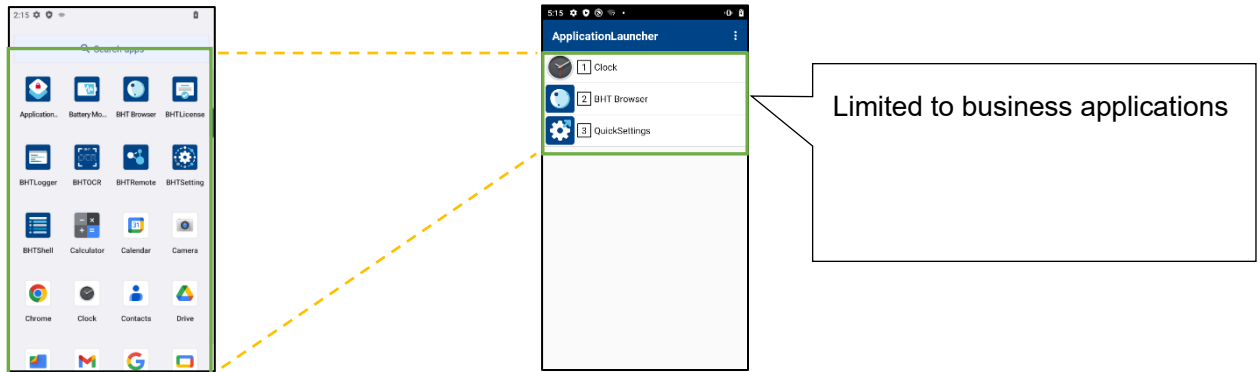
Normal HOME screen

Dedicated HOME screen of ApplicationLauncher

Limited to business applications

There are two modes of enhancing security:
 ・High security mode that limits which apps are allowed to launch.
 ・Kiosk mode that only prevents mis operation.

For more information, see 11.5.4.2. Security.

The application explained in 18.QuickSettings is provided to allow users to change the simple settings such as Wi-Fi ON/OFF while user operation is restricted by ApplicationLauncher.
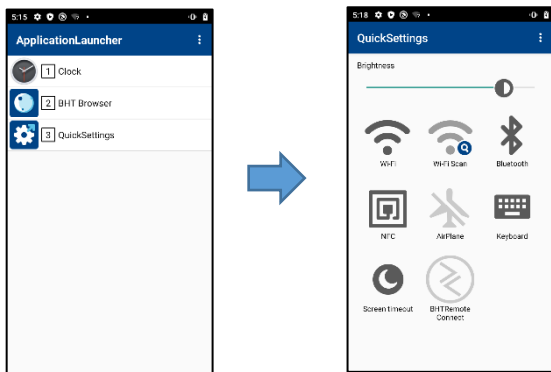
QuickSettings

11.1. Start-up Screen

(1) User mode
(2) Administrator mode

| User mode screen | User mode menu | Administrator mode screen | Administrator mode menu |
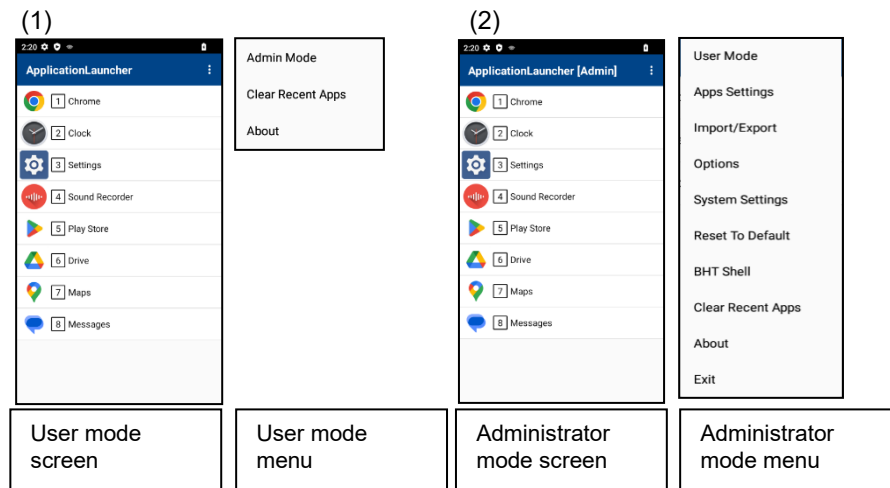
ApplicationLauncher runs in two operation modes: user mode and administrator mode. The default is the user mode. In this mode, users are limited to access to applications.

ApplicationLauncher monitors all application activities in the user mode and stops any non-listed application. In this way, unintended applications will not be able to start up.

In the user mode, this ApplicationLauncher cannot be stopped, and the menu configurations and settings cannot be changed. To perform these operations, enter the password and switch to the administrator mode.

11.2. Initial Settings
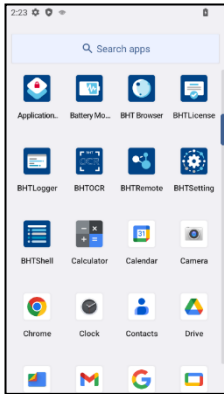
(1) Start-up

To start up the ApplicationLauncher, Swipe up on the home screen and display the application list.

Tap "ApplicationLauncher" from this application list, and the dialogue for confirming the start-up of the Application Launcher will be displayed.

Tap "Cancel" if it started up accidentally, "OK" to start the ApplicationLauncher.

When "OK" is tapped, the Application Launcher starts up. By setting it as the standard home application, the ApplicationLauncher will start up automatically at the next rebooting and subsequent.
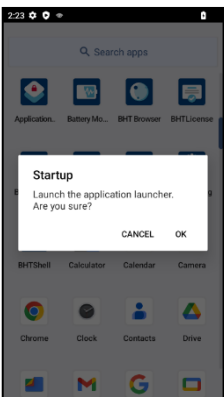
(2) Function settings

As for the Application Launcher operation setting, import it from the import/export screen in the administrator mode, or set it from the "application management" screen and "Options" screen.

If the setting file is stored in the [internal shared storage]/ StartupSettingsData/Setup/ApplicationLauncher/, it will be imported automatically after Enterprise reset.

11.3. Home Screen (List Display Screen)

When reboot the BHT after the initial setting, the home screen (list display screen) of the ApplicationLauncher starts up in the user mode as shown below. In the user mode, only the listed applications permitted by the administrator can be started.
The status bar is shown/ hidden according to the status bar display setting as shown below. (See 11.5.4 Options)
When the status bar is hidden, the status icons (such as battery and wireless LAN) and notification icons (notifications provided by each application) are also hidden.
When swipe down from the top of the screen, the status bar can be displayed temporarily.

Application list

Starting up the number key

Status bar is hidden.   Status bar is shown.
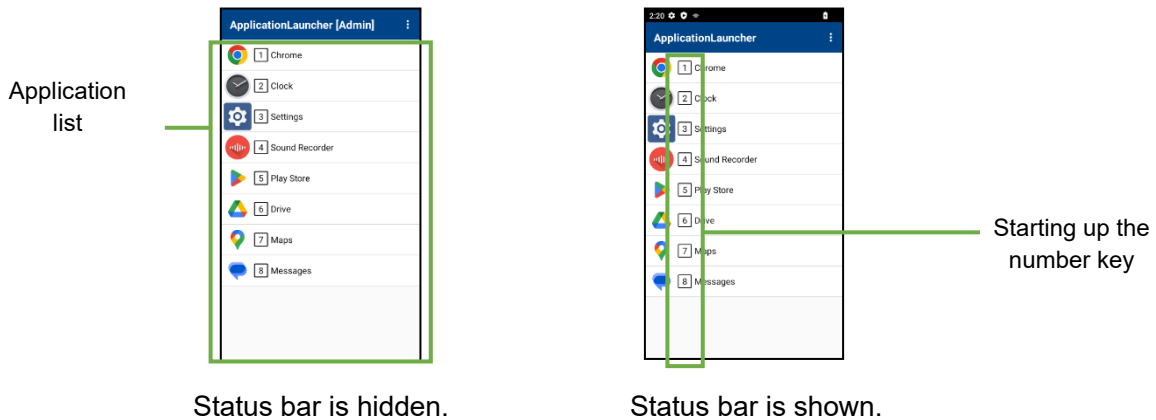
Applications displayed in the application list can be launched using the number keys, up / down keys, and screen tap.
If the registered application is not found, it cannot be displayed on the list on the screen.
If an application already running is started up again, the ApplicationLauncher will pop up the running application task on the uppermost of the screen instead of starting up a new task of the application.

11.4. User Mode
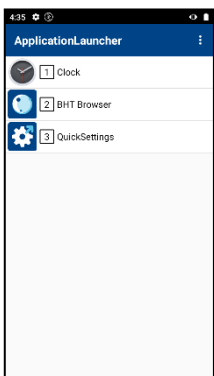
[1] In the user mode, it is not possible to start applications that are not permitted.
[2] The user mode provides the following functions.
[3]

[1]	Admin Mode	Displays the password input dialogue to move to the administrator mode.
[2]	Clear Recent Apps.	Clears the list of application history.
[3]	About	Displays the About screen.

11.4.1. Admin Mode
Tap the "Admin mode" on the menu, and to move can the administrator mode. To move to this mode, enter the password that has already been set. If the password does not match, the right-side screen will appear.

If the automatic setting file import is not set at the first time start-up, password will be null.
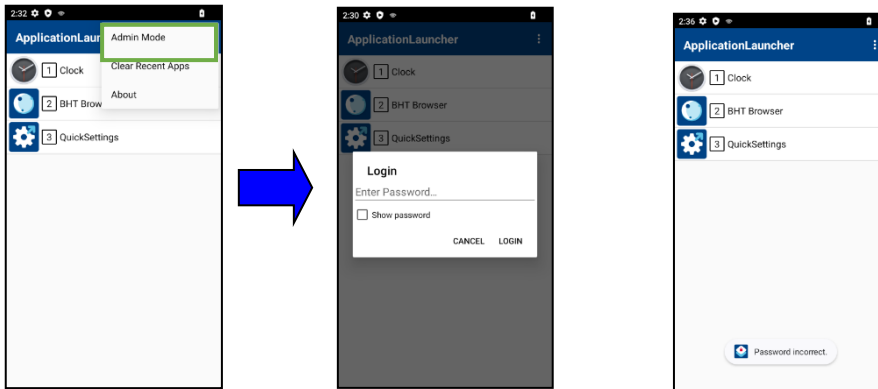
11.4.2. Clear Recent Apps
Tap the "Clear Recent Apps" in the menu and clear all application history.

11.5. Administer Mode
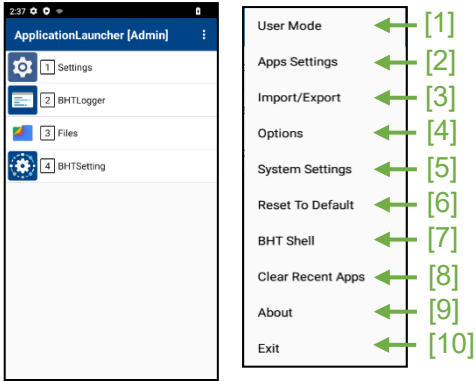
The administrator mode does not limit the operation of application.
The administrator mode provides the following functions.

[1]	User Mode	Shuts down the administrator mode and moves to the user mode.

[2]	Apps Settings	Manage applications.
		- Whitelist
		   Set the application to be displayed on the home screen (list display screen) and the
		   application to allow startup.
		- AutoStart
		   Set up an application to be started automatically when launching this
		   ApplicationLauncher.

[3]	Import/Export	Enables to output the settings file of this ApplicationLauncher to an optional folder. Also enables to select the optional file and read the settings.
[4]	Options	Sets the operations (such as password and status bar settings) of this ApplicationLauncher.
[5]	System Settings	Starts up the Android settings application.
[6]	Reset to Default	Reset the ApplicationLauncher to the default settings.
[7]	BHT Shell	Starts up the BHT Shell application.
[8]	Clear Recent Apps	See "11.4.2. Clear Recent Apps" of the user mode menu.
[9]	About	Displays the About screen.
[10]	Exit	Shuts down this ApplicationLauncher.

— **Note** —   * 1 Do not turn off the power of the terminal within 15 seconds after starting the application launcher. The application launcher may not be closed correctly the next time it is started.

11.5.1. User Mode
Tap "User mode" from the administrator menu to exit administrator mode and switch to user mode.

11.5.2. Apps Settings
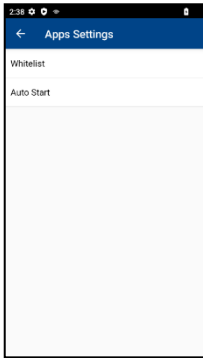
App settings can manage applications used in administrator mode and user mode.

To move to this screen
- Tap "Apps Settings" from the administrator mode menu.

Whitelist:
Set the application to be displayed on the home screen (list display screen) and the application to be allowed to startup.

AutoStart:
Set up an application to be started automatically when launching this application launcher.

11.5.2.1 Whitelist
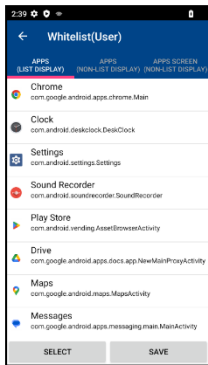
Register an application allowable to be started up.

To move to this screen
- Tap "Apps Settings"- "Whitelist"- "User"- "APPS(LIST DISPLAY)" from the administrator mode menu.

The whitelisting methods are listed below.

Registration Category	Target select method	User mode screen display
APPS(LIST DISPLAY)	Select from the installed app list	Yes
	Select from the user-created list (User Specified)	Yes
APPS(NON-LIST DISPLAY)	Specify the installed apps	No
APPS SCREEN (NON-LIST DISPLAY)〉	Directly enter the display names	No

*For notes on whitelists, see in "11.9.1 Notes on Whitelist Registration".

`User Specified` allows users to set a specific launch method of application (Package name, launch action, desired data URI, etc.) depending on the intended use.

A shortcut to a website can be created and registered as a User Home screen as shown below.
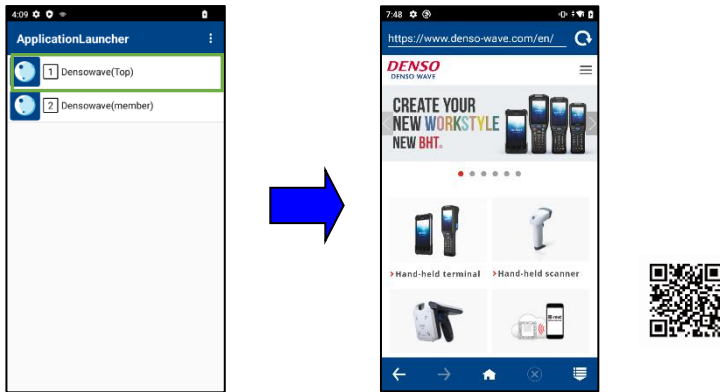
(1)APPS(LIST DISPLAY)
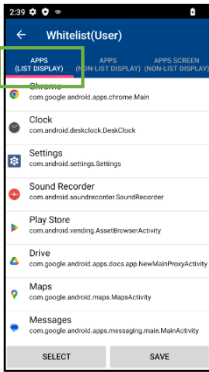
APPS(LIST DISPLAY) can set the application to be displayed on the home screen (list display screen) from the installed applications.

To move to this screen
< For administer mode >
     - Tap "Apps Settings"- "Whitelist"- "Administrator" from the administrator mode menu.
< For user mode >
     - Tap "Apps Settings"- "Whitelist"- "User"- "APPS(LIST DISPLAY)" from the administrator mode menu.

    *When an uninstalled application is set by Import etc. of the setting file, it will be displayed as "Not installed" in grayed out.
    *If the user-specified command is incorrect, the grayed out message `Incorrect Command` appears.
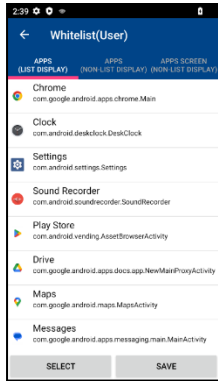
Pressing "SELECT" button enables to move to the application selection screen.
Applications with checked boxes at the left of icon are applicable.
When a box is unchecked, this application is not applicable.
Press the Save button, and the selection is fixed, and the applications for display are saved.
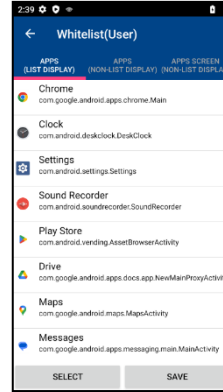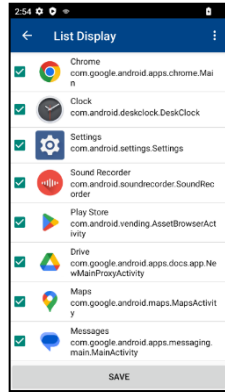
From the menu on the top right of the screen, tap "Select All" to check all the apps displayed in the list. Tap "Deselect All", all the checks will be unchecked.
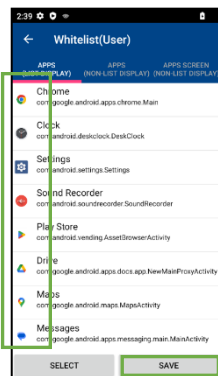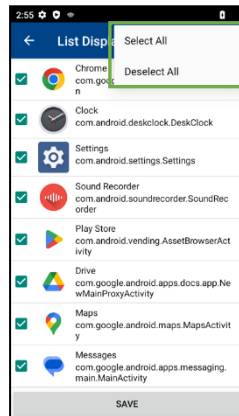
Holding the application icon pressed and dragging it up or down enables to change the display position of the application.
Pressing Save button when the display order will be saved.
* Press an "icon", not an application name.
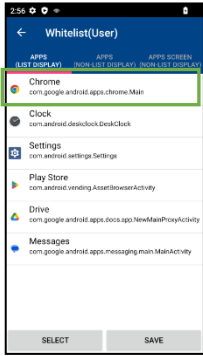
If you want to edit the app name displayed on the home screen,
When you tap the application for which you want to edit the application name, the display name edit screen is displayed.

Enter a name in the display name and press the OK button to save the display name of the app.
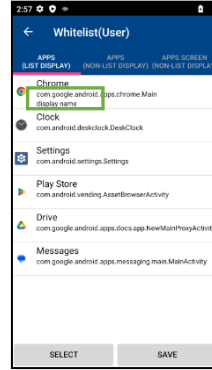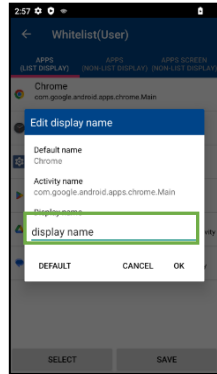
The name set for the name displayed on the home screen is displayed.
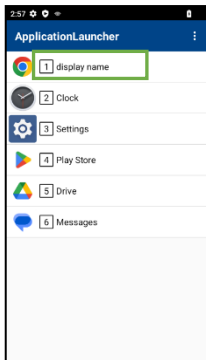
When return the display name to the default name for each application, tap the default button on the edit screen.
The default name is automatically entered.
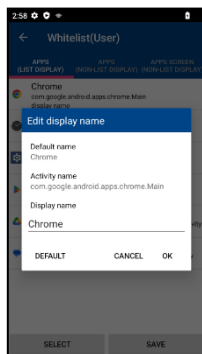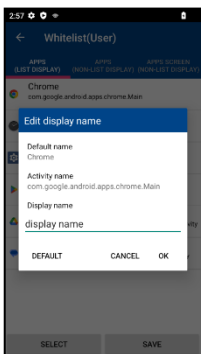
(2)APPS(NON-LIST DISPLAY)
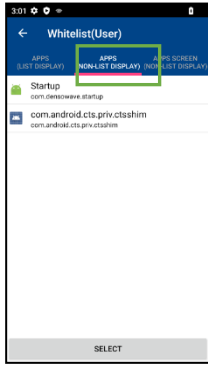
Register apps that are allow to start from apps installed on your device.

To move to this screen
- Tap "Apps Settings"- "Whitelist"- "User"- "APPS(NON-LIST DISPLAY)" from the administrator mode menu.
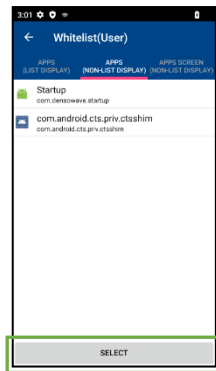
Pressing "SELECT" button enables to move to the application selection screen.

Applications with checked checkbox to the left of the icon are eligible for whitelisting.
Applications that unchecked will be deleted from whitelist targets.
Pressing "SAVE" button, the application selected will be save as whitelist targets
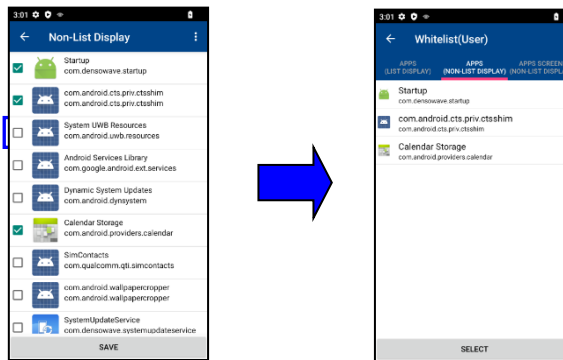
From the menu on the top right of the screen, tap "Select All" to check all the apps displayed in the list. Tap "Deselect All", all the checks will be unchecked.
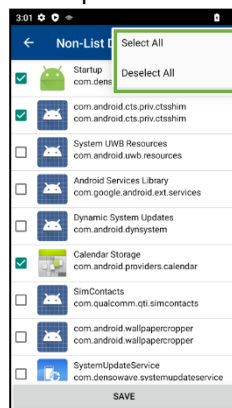
When the application set to "APPS(NON-LIST DISPLAY)" is uninstalled

"APPS(NON-LIST DISPLAY)" is managed only for installed applications,
so if the application it set up is uninstalled, the display will be moved to
"APPS SCREEN(NON-LIST DISPLAY)" .

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(3)APPS SCREEN(NON-LIST DISPLAY)
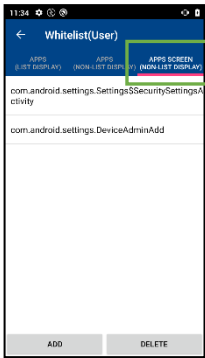
Apps that are allowed to start can be registered on a screen-by-screen basis.

To move to this screen
- Tap "Apps Settings" - "Whitelist"- "User"- "APPS SCREEN(NON-LIST DISPLAY)" from the administrator mode menu.
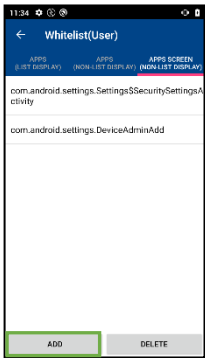
Pressing "ADD" button and registering the screen name, it can add to the permission list.
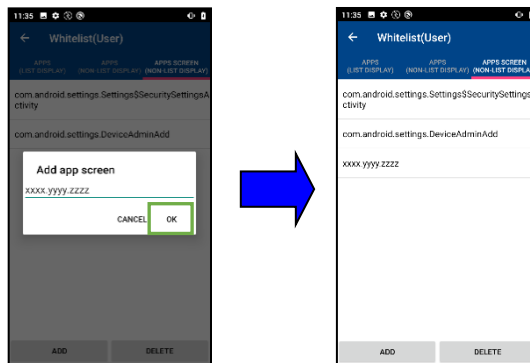
DELETE button at the bottom of the screen transitions to the deletion screen. Checking application and Press "DELETE" button can be delete the application from the permission list.
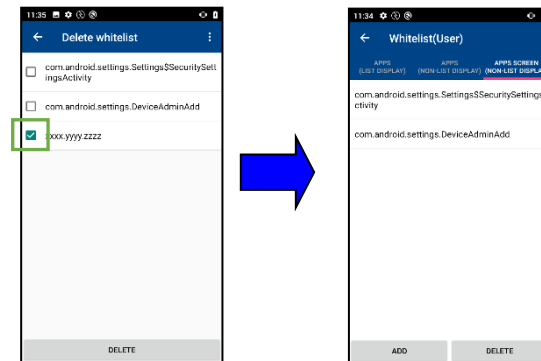
(Reference) How to find the name of screen to allow

As an example of how to find the name of the screen of which the application was stopped by the operation monitoring, the following methods are available.

(Premise)
The PC on which Android Studio is installed can be used.

(Method)
① USB connection to BHT to PC where Android Studio is installed.
② Activate the application it wants to check from the application launcher in BHT, transition to the corresponding screen.
   →An application with a corresponding screen is stopped at operation monitoring.
③ Check logcat in Android Studio and find the following log of CloseDeniedAppService.
   ((Stopped application name)   is terminated)
④ Screen name stopped by action monitoring before the log of ③ is output to the log.
   ([activity: (Stopped screen name)])

(Log output example)
        D current top app info :: [pid: 7281]
          [processName: com.android.settings] [package: com.android.settings]
            [activity: com.android.settings.homepage.SettingsHomepageActivity]

        I com.android.settings(pid: 7281) is terminated.

11.5.2.2 AutoStart

From the installed applications, set up the application to be started automatically when launching this application launcher.
*Only the application displayed on the home screen (list display screen) can be set.

To move to this screen
- Tap "Apps Settings"- "Auto Start"- "User" from the administrator mode menu.

*When an uninstalled application is set by Import etc. of the setting file,
 "Not installed" is displayed in grayed out.
*If the user-specified command is incorrect, the grayed out message `Incorrect Command` appears.
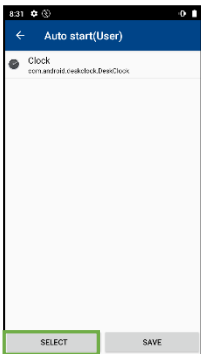
Pressing "SELECT" button enables to move to the application selection screen.
Applications which have checked boxes at the left of icon are applicable.
When a box is unchecked, this application is not applicable.
Press the Save button, and the selection is fixed, and the displayed applications are saved.
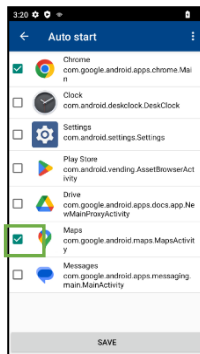
From the menu on the top right of the screen, tap "Select All" to check all the apps displayed in the list. Tap "Deselect All", all the checks will be unchecked.

- 153 -
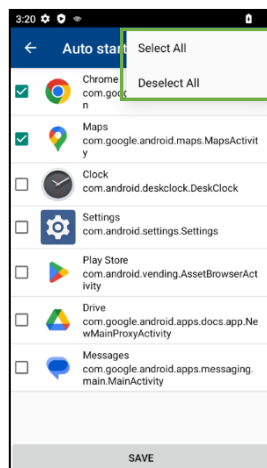
11.5.3. Import/Export

Import or export the current ApplicationLauncher setting with the XML file form.

To move to this screen
- Tap "Import/Export" from the administration mode menu.

11.5.3.1 Import
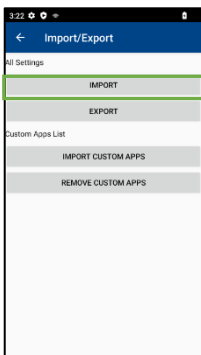
- Tap the Import button, and the file selection dialogue is displayed.
- Select a file by moving to the path of a file to be imported.
* Refer to "11.6. Settings File (XXXXXX.xml)" for the import file.

11.5.3.2 Export
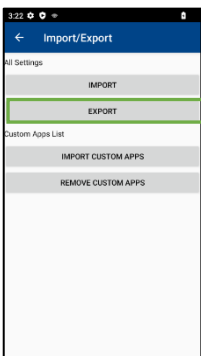
- Tap the export button to display the output destination selection dialog box.
- Enter the file name to be output in the input field at the bottom of the dialog.
- Move to the path where export the file and tap the "OK" button.
* Refer to "11.6. Settings File (XXXXXX.xml)" for the export file.

11.5.3.3 Import Custom APPS
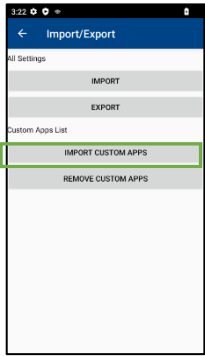
- Tap the IMPORT CUSTOM APPS button to display the `Select file` dialog.
- Move to the path where the importing file is stored, and select the file.
- Tap the "OK" button in the import confirmation dialog.
* Refer to "11.7. User-specified Settings File (XXXXXX.xml)" for the import file.
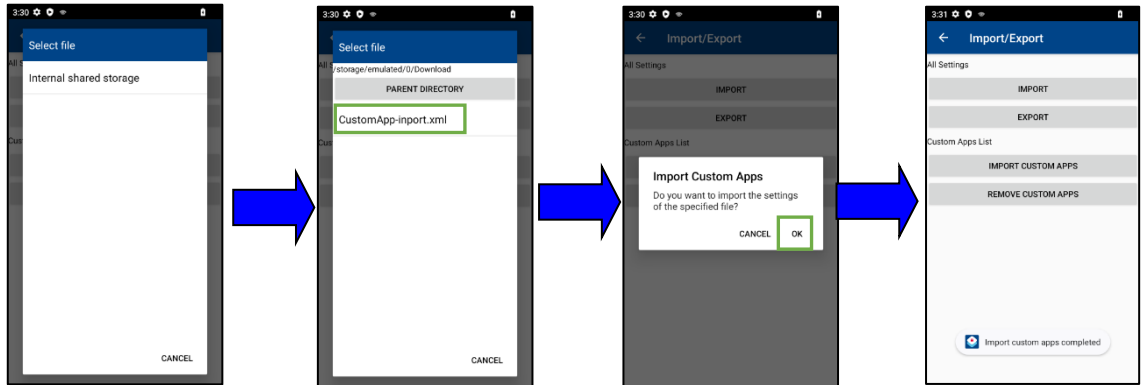
11.5.3.4 Remove Custom APPS
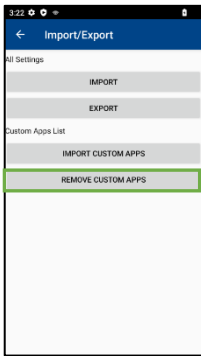
- Tap the `REMOVE CUSTOM APPS` button, the confirmation dialog appears.
- Tap the "OK" button in the confirmation dialog.
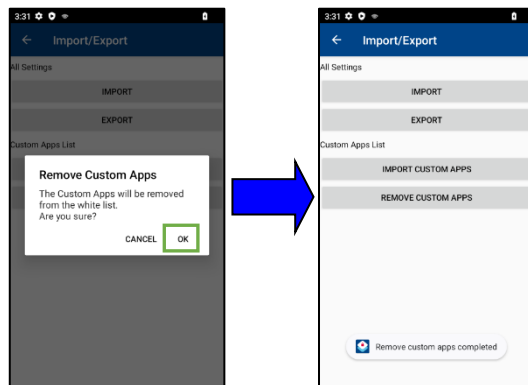
━ Note ━   -`REMOVE CUSTOM APPS` deletes all registered user specifications.

11.5.4. Options
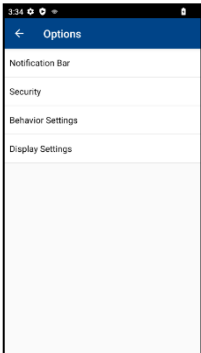
Changes the setting of this ApplicationLauncher.

To move to this screen
- Tap "Options" from the administrator mode menu.

11.5.4.1 Notification Bar
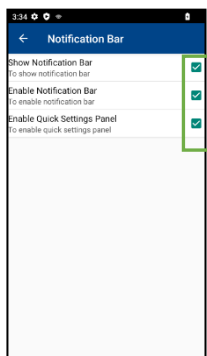
Show Notification Bar:
Controls show/hide of the notification bar when this ApplicationLauncher home screen (list display screen) is displayed.
* This setting is operable only when the ApplicationLauncher home screen (list display screen) is displayed.

           Check ON: Shown (Default)
           Check OFF: Hidden

The notification bar at the top of the screen (in the green frame of the left image) is not displayed.
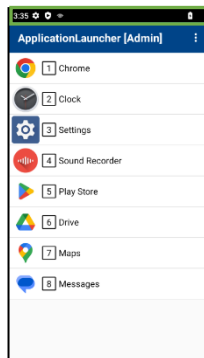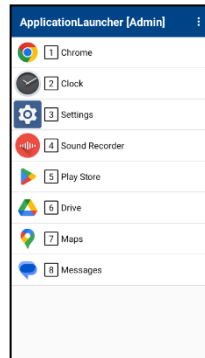
Notification bar is shown.   Notification bar is hidden.

Enable Notification Bar:
Controls enabling or disabling to swipe down the notification bar on all the screen.
* This setting is also operable when an application other than ApplicationLauncher starts up and is in use.
      * Display of notification area and quick settings panel
          Check ON: Enabled (Default)
          Check OFF: Disabled
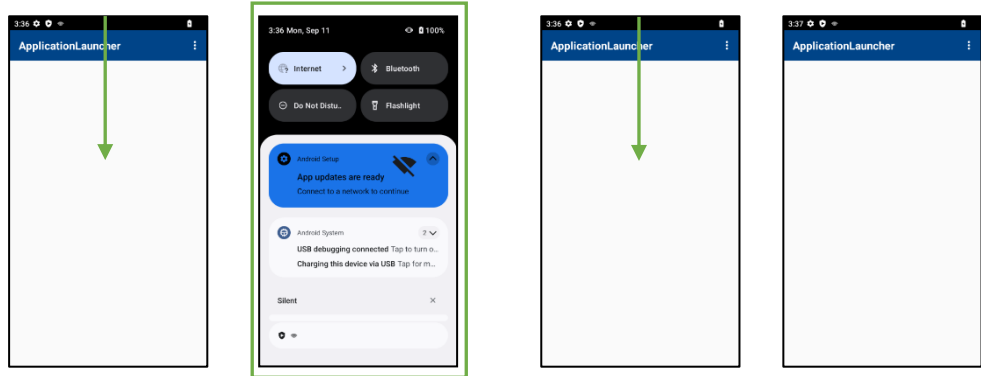
Notification bar is enabled.   Notification bar is disabled.

Swipe down to display the notification area (the green frame area in the right image).

The notification area doesn't appear when swipe down.

Enable Quick Settings Panel   :
Controls enabling or disabling to swipe down the quick settings panel in the notification area.
* This setting is also operable when an application other than ApplicationLauncher starts up and is in use.
      * Display of quick settings panel
          Check ON: Enabled (Default)
          Check OFF: Disabled
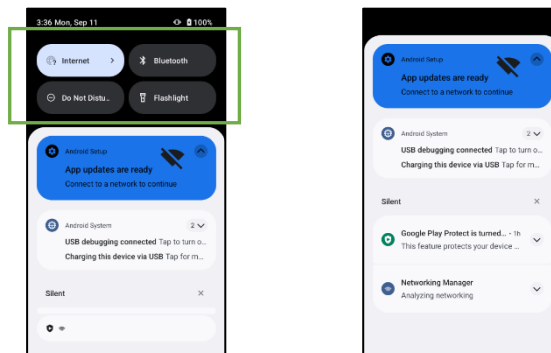
The Quick Settings panel (the green frame of the left image) does not appear.

QuickSettingPanel is enabled.   QuickSettingPanel is disabled.

When use "Privacy" (Settings> Display> Lock screen> Privacy) of the Android standard setting application should be aware of the following points.

— Note1 —	Depending on the Enable notification bar setting, the privacy setting value is changed.
	Enable: Show all notification content
	Disable: Don't show notifications at all
— Note2 —	If exit ApplicationLauncher and change the home app, the settings will change to the following.
	Privacy: Show all notification content
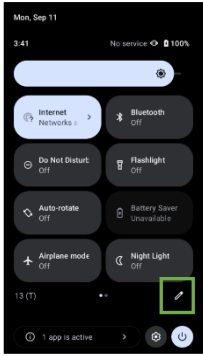
In order to change the setting to permit the operations of the settings change panel displayed in the notification area, operate as described below:

- Display the quick settings panel with the setting enabling the notification bar "enabled".
- Tap " ✏ " on the upper screen.
- "Edit" screen is displayed. Then, press and hold an icon to disable its operation.
- The display of "Drag to add titles" on the lower area of the screen is changed to the display of "Drag here to remove".
- Move the icon to "Drag here to remove" keeping your fingers pressing, and then leave your fingers.
- After the operation is completed, tap "←" at the left of "edit" and finish editing.
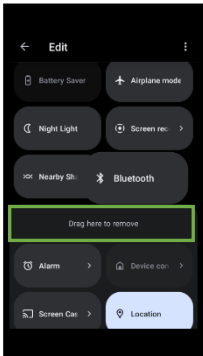
Implementing the above procedure enables to hide an icon to disable its operation.
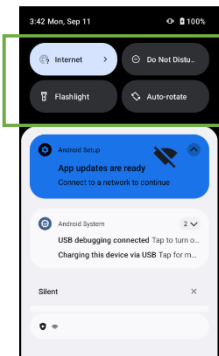
11.5.4.2 Security
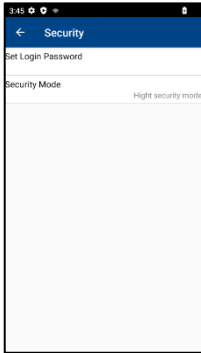
Make security settings.

Set Login Password:
Sets a password to login the administrator mode.
* When "Show password" is checked, the entering password can be checked.
   Default: None

Password specifications
Types of characters: alphanumeric symbols
Number of characters: 0 to 50 characters
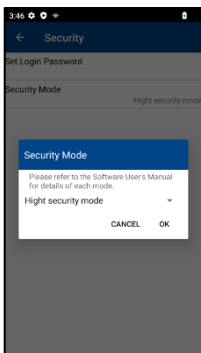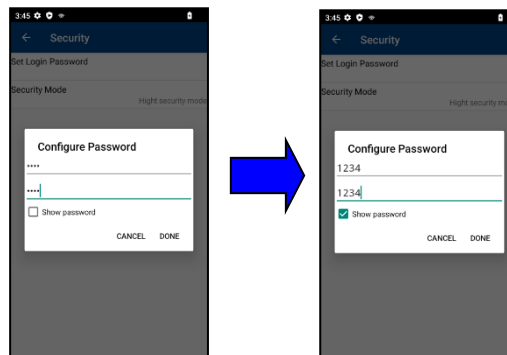
Security Mode
Sets which security mode the ApplicationLauncher to operate in.
Choose from the following security modes:
　　　　・High security mode
　　　　・Kiosk mode

Security Mode	Description
High security (Default)	This mode limits which apps (screens) are allowed to start. Monitor and stop the app if it is not on the whitelist. Therefore, you need to set it to a whitelist in all cases, such as when launching another application from a business application. See 11.5.2.1 Whitelist for details.
Kiosk	This mode only prevents accidental operation (does not monitor or stop). This simplifies things like setting up whitelists compared to high security.

11.5.4.3 Behavior Settings
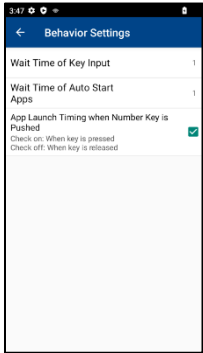
Sets the operation at this ApplicationLauncher.
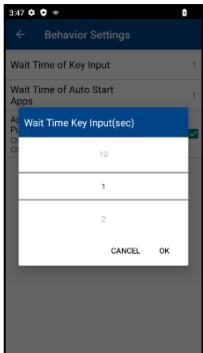
Wait Time of Key Input:
Time until the application starting number is determined. (Default: 1 sec.)

When 10 or more applications are registered, 2 digits are required to start up the application with number key. To start up "1" application, enter "01" or enter "1" and then wait for the specified time.
To start up "11" application, enter "11".
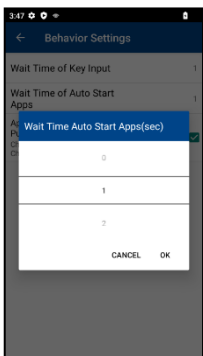
Wait Time of Auto Start Apps:
Time until the application registered for automatic startup starts. (Default: 1 sec.)

After ApplicationLauncher starts, wait for the set number of seconds and start the app that has been set to auto start.

Refer to "11.5.2.2 AutoStart" for how to set automatic startup.

Example:
Operation when the clock is set in the auto-startup app and the autostart wait time is set to 20 seconds
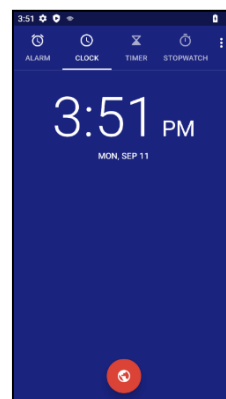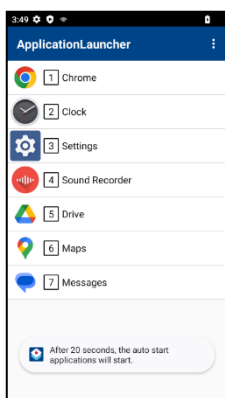
Notify that it will start automatically after waiting 20 seconds.

After 20 seconds, the clock starts automatically.
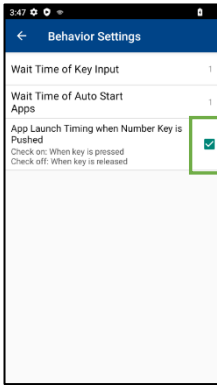
App Launch Timing when Number Key is Pushed :

Controls the application start timing when pressing the number keys on the Home screen.

       Check ON: Triggered when a key is pressed (Default)

       Check OFF: Triggered when a key is released

11.5.4.4 Display settings
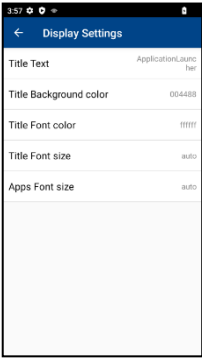
Set the display in this application launcher.
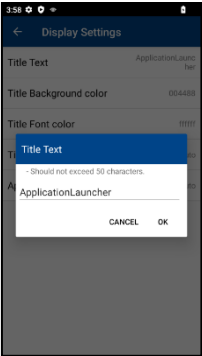
Title Text:
User mode screen header title string. (Default:ApplicationLauncher)

Maximum of 50 characters.

  * This setting value is not applied to the administrator mode.
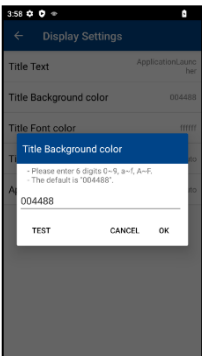
Title Background color:
User mode screen header title background color. (Default: 004488)
Specify the RGB color code in hexadecimal.
For an example of the color code setting value, refer to "(Reference) Color code setting example" on the next page.

  * This setting value is not applied to the administrator mode.
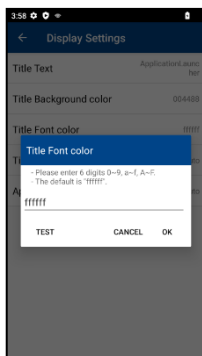
Title Font color:
User mode screen header title text color. (Default: ffffff)
Specify the RGB color code in hexadecimal.
For an example of the color code setting value, refer to "(Reference) Color code setting example" on the next page.

  * This setting value is not applied to the administrator mode.

This is an example of a typical color code that can be specified by the title background color and title text color.

Color	Color code (hexadecimal)	Sample
White	ffffff	
gray	808080	
black	000000	
Red	ff0000	
Green	00ff00	
Blue	0000ff	
yellow	ffff00	
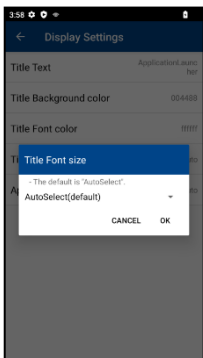
Title Font Size:
User mode screen header title font size. (Default: AutoSelect)

* This setting value is not applied to the administrator mode.
* The font size by this setting value is not affected by the settings such as the font size of the Android standard setting application.
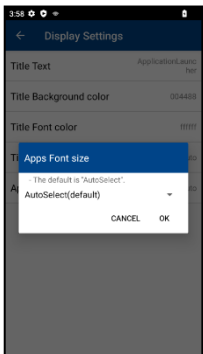
Apps Font Size:
application launcher home screen apps font size. (Default: AutoSelect)

* This setting value is applies to both user mode and administrator mode.
* The font size by this setting value is not affected by the settings such as the font size of the Android standard setting application.

11.5.5. System Settings

Tap the "System Settings" on the administrator menu, and the Android setting application starts up.

11.5.6. Reset To Default

Tap the "Reset to Default" on the administrator menu, and the check dialogue is displayed.
Tap "OK" on the check dialogue, and settings which have been done for this ApplicationLauncher are deleted and reset to the default setting.

11.5.7. BHT Shell

Tap "BHT Shell" on the administrator menu, and the BHT Shell application starts up.

11.5.8. Clear Recent Apps

Refer to "11.4.2 Clear Recent Apps".

11.5.9. Exit

Tap "Exit" on the administrator menu, and the ApplicationLauncher is shut down.

Exit [Restrictions]

Do not shut down the ApplicationLauncher from the menu other than this one, because failures described below may occur.

- As an unregistered application cannot exit, an application not registered in ApplicationLauncher cannot be used.
- Swiping down the notification bar (displaying the notification area and quick setting panel) cannot be operated.

If the following operations are executed, for example, this failure may occur depending on the settings for operation.

- Swipe up on the home screen | **Settings** 🔅 | **Apps** ⠿ to open the "Default apps". Select a home application other than that for the application Launcher.
- Swipe up on the home screen | **Settings** 🔅 | **Apps** ⠿ | **All apps** | **ApplicationLauncher** 🔵 to open, and then tap the "FORCE STOP" button.

■ **Corrective measures**

If the operation described above is done unintentionally, find "ApplicationLauncher" icon 🔵 from the home application selected as the home application instead of ApplicationLauncher, and start up the ApplicationLauncher.

To use another home application, log-in to the administrator mode, tap "Exit" from the administrator menu to close this ApplicationLauncher, and select the home application once again.

11.6. Settings File (XXXXXX.xml)

The settings file does not exist by default. It can be output to an optional path by exporting it from "Import/Export" of the ApplicationLauncher administration menu.
If the setting file is stored in the [internal shared storage]/ StartupSettingsData/Setup/ApplicationLauncher/, it will be imported automatically after Enterprise reset.
The settings file can be applied by importing it from "Import/Export" of the ApplicationLauncher administration menu.

— Note —	Mode login password of the administrator is encrypted / decrypted to maintain security. Because so, it cannot be customized with the settings file.

11.6.1. ApplicationLauncher Settings File Example

XML Description	Contents
<?xml version='1.0' encoding='UTF-8' standalone='yes' ?>	XML header (Fixed)
<Launcher>	Route tag (Fixed)
<string name="AdminPassword">FuErr6pFhpIYDF1qYbw4nw==</string>	Encrypted login password
<boolean name="ShowStatudBar" value="false" />	Show/hide status bar
<boolean name="EnableStatudBar" value="false" />	Enable/disable status bar
<boolean name="EnableKeyUpBehavior" value="true" />	App launch timing when number key is pushed
<boolean name="EnableQuickMenu" value="true" />	Enable/disable quick settings panel
<int name="WaitTimeofKeyInput" value="10" />	Key input waiting time
<int name="WaitTimeofAutoStart" value="10" />	Auto start apps waiting time
<set name="DisplayAppsName">	User mode registration application
<string>com.google.android.apps.photos.home.HomeActivity</string> <string>com.android.calendar.AllInOneActivity</string> <string>com.android.contacts.activities.PeopleActivity</string> <string>com.android.deskclock.DeskClock</string> <string>com.google.android.dialer.extensions.GoogleDialtactsActivity</string> <string>com.google.android.gm.ConversationListActivityGmail</string>	Activity name
</set>	
<set name="DisplayAdminAppsName">	Administrator mode registration application
<string>com.google.android.apps.chrome.Main</string> <string>com.android.settings.Settings</string> <string>com.android.vending.AssetBrowserActivity</string> <string>com.cyanogenmod.filemanager.activities.NavigationActivity</string> <string>com.google.android.apps.docs.app.NewMainProxyActivity</string> <string>com.google.android.apps.messaging.ui.ConversationListActivity</string>	Activity name
</set>	
<set name="AutoStartAppsName">	Auto starting application
<string>com.google.android.apps.photos.home.HomeActivity</string> <string>com.android.calendar.AllInOneActivity</string> <string>com.android.contacts.activities.PeopleActivity</string> <string>com.android.deskclock.DeskClock</string> <string>com.google.android.dialer.extensions.GoogleDialtactsActivity</string> <string>com.google.android.gm.ConversationListActivityGmail</string>	Activity name
</set>	
<set name=" PermittedAppsName ">	Activation permission list

<string>com.android.settings.DeviceAdminAdd </string> <string>com.android.settings.Settings$SecuritySettingsActivity </string>	Activity name
</set>	
<map name="CustomUserAppsList">	User Specified App List
<CustomApp>	
<string name="Key">1</string>	User Specified Item ID
<string name="title"> Open Google in Chrome</string>	User-specified title
<string name="command">am start -p com.android.chrome -a android.action.intent.VIEW -d https://google.co.jp</string>	Shell command to run
</CustomApp>	
<CustomApp>	
<string name="Key">2</string>	
<string name="title"> Open the BHTSetting app</string>	
<string name="command">am start -p com.densowave.bhtsetting -n com.densowave.bhtsetting/.activity.TopActivity</string>	
</CustomApp>	
</map>	
<int name="PackageVersionCode" value="1000903"/>	Settings file version
<map name="DisplayAdminAppsLabel">	Administrator mode application display name
<string key="com.android.settings.Settings">System settings</string> <string key="com.google.android.apps.chrome.Main">Web browser</string>	Display name
</map>	
<map name="DisplayAppsLabel">	User mode application display name
<string key="com.android.soundrecorder.SoundRecorder">Recorder</string> <string key="com.android.settings.Settings"> System settings </string> <string key="com.google.android.apps.chrome.Main"> Web browser </string>	Display name
</map>	
<string name="HomeTitle">ApplicationLauncher</string>	Title text
<string name="HomeTitleBgColor">004488</string>	Title background color
<boolean name="EnableCloseDeniedAppService" value="true" />	Security mode
</Launcher>	

- Reference -   This settings file can perform the same operation by copying it to another BHT.

11.6.2. Setting Value List

Item	Setting value	Default
AdminPassword	Administrator login password encrypted by AES. Number of maximum input characters from GUI: 50 words.	""
ShowStatusBar	Showing/hiding the status bar.	true
EnableStatusBar	Enabling/disabling the status bar.	true
EnableKeyUpBehavior	App launch timing when number key is pushed true: Triggered when a key is pressed false: Triggered when a key is released	true
EnableQuickMenu	Enabling/disabling the quick settings panel.	true
WaitTimeofKeyInput	Key input waiting time. Minimum value: 1 Maximum value: 10	1
WaitTimeofAutoStart	Auto start apps waiting time Minimum value: 0 Maximum value: 60	1
DisplayAppsName	Activity class name of the application registered in the user mode home screen (list display screen).	""
DisplayAdminAppsName	Activity class name of the application registered in the administrator mode home screen (list display screen).	""
AutoStartAppsName	Activity class name of application to be automatically started in user mode.	""
PermittedAppsName	Activity class name of the white list.	""
DisplayAdminAppsLabel	Application name in the administrator mode home screen (list display screen).	""
DisplayAppsLabel	Application name in the user mode home screen (list display screen).	""
CustomUserAppsList	List of user-specified apps	""
PackageVersionCode	Format version of setting value file ∗ Do not change the value of this item.	
HomeTitle	User mode screen header title string.	"ApplicationLauncher"
HomeTitleBgColor	User mode screen header title background color.	"004488"
HomeTitleFontColor	User mode screen header title text color.	"ffffff"
HomeTitleFontSize	User mode screen header title font size.	"auto"
HomeAppFontSize	ApplicationLauncher home screen application list font size.	"auto"
EnableCloseDeniedAppService	Security mode true: High security mode false: Kiosk mode	true

11.7. User-specified Settings File (XXXXXX.xml)

User-specified settings can be applied by importing the ApplicationLauncher settings file from "Import / Export" in the Application Launcher administration menu, or by importing the user-specified setting file.

* Refer to "11.6. Settings File (XXXXXX.xml)" for details of the application launcher settings file.

11.7.1. User-specified Settings File Format

XML Description	Contents
<?xml version='1.0' encoding='UTF-8' standalone='yes' ?>	XML header (Fixed)
<CustomAppPreferences>	Route tag (Fixed)
<CustomApp> <string name="key">1</string> <string name="title">Densowave(Top)</string> <string name="command"> am start -p com.densowave.bhtbrowser -a android.intent.action.VIEW -d https://www.denso-wave.com/ja/adcd/index.html</string> </CustomApp>	Index (1 ~ 99) If the same key is specified, title and command are overwritten. Title text displayed on the Home screen (20 characters maximum) Command specified when starting the application Executable only if the command starts with "am start".
<CustomApp> … </CustomApp>	
</CustomAppPreferences>	

- Reference -   Import fails if '<' is included in the title or command string.

                   Do not use '<' in the title or command string.

■Command syntax

Example 1: URL Shortcut

           1   2
am start -p com.densowave.bhtbrowser -a android.intent.action.VIEW -d https://www.denso-wave.com/ja/adcd/index.html

1: The package name of the web browser application to be used
2: A website URL to be displayed

For more information about command syntax, see `Specifying the intent argument` on the website linked below.
https://developer.android.com/studio/command-line/adb?hl=ja#IntentSpec

11.7.2. User-specified Settings File Example

XML Description	Contents
<?xml version='1.0' encoding='UTF-8' standalone='yes' ?>	XML header (Fixed)
<CustomAppPreferences>	Route tag (Fixed)
<CustomApp> <string name="key">1</string> <string name="title">Densowave(Top)</string> <string name="command">am start -p com.densowave.bhtbrowser -a android.intent.action.VIEW -d https://www.denso-wave.com/en/adcd/index.html</string> </CustomApp>	Densowave website
<CustomApp> <string name="key">2</string> <string name="title">Densowave(member)</string> <string name="command">am start -p com.densowave.bhtbrowser -a android.intent.action.VIEW -d https://www.denso-wave.com/en/adcd/member/entry.php</string> </CustomApp>	Densowave website membership registration
</CustomAppPreferences>	

- Reference -   The setting file can be copied to another BHT to register the same user-specified settings.

■Usage Flow

Import the configuration file
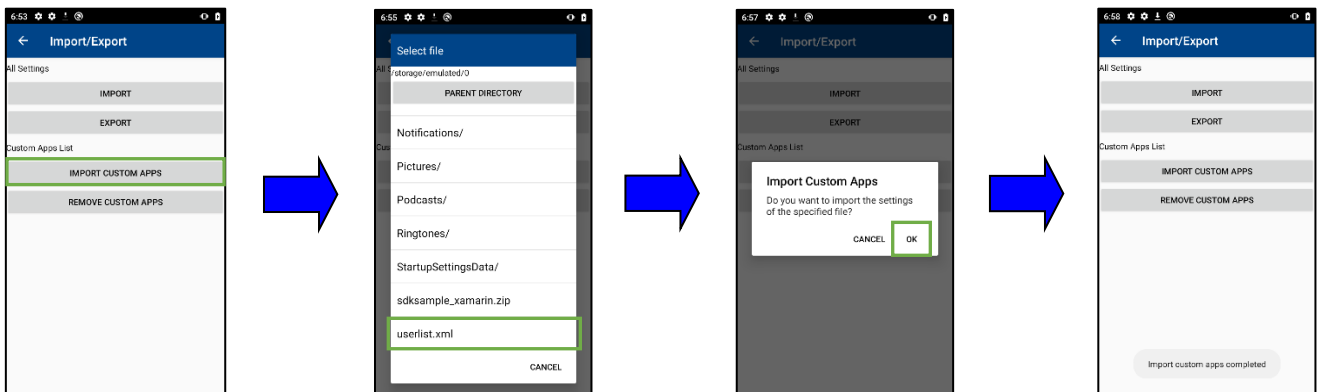
By whitelisting the imported configuration files, the websites in the above example can be set as the home screens in the user mode and administrator mode as well as other launchable apps.

By tapping each user-specified application, the web browser can be opened with the target website opened.

11.8. Logs

Application launcher outputs log file. The log file is output to [internal shared storage] /Android/data/com.densowave.applicationlauncher/files/.

The output file is as follows.
When the file size reaches 1 MB, it switches to the next file.

applauncherlog_X.log
  X: Automatic numbering from 1 to 5

When multiple files, in the following files can check the latest log number.
  applaunchertmp

The contents output to the log are as follows.

Action	Log message
User mode menu - "Admin Mode"- Login success	login administrator mode
User mode menu - "Admin Mode"- Login failed	login error
Admin mode menu - "User Mode"	logout administrator mode
Admin mode menu - "Exit"	exit ApplicationLauncher
Administrator password change	password change
Stop unregistered application	kill:(stop app's package name),(stop app's activity name)

11.9. Notes

11.9.1. Notes on Whitelist Registration

It may not be the behavior expected if the application is not registered in the whitelist. Typical examples are listed below.

① When calling application B from application A

If it is configured to call another application from the application, it is necessary to register not only the original application but also the called side application in the same way.

Example)
When registered "BHT Shell" application only:
BHT Shell 📘 | 4 Power tools | BHT Browser 🌐 to opened, Because BHT Browser is an unregistered application, it will be terminated.

■ Corrective measures
Register the BHT shell and BHT browser in the whitelist:
BHT Shell 📘 | 4 Power tools | BHT Browser 🌐 to opened, since both applications are registered as authorized applications, they can be used without be terminated.

Pre-registration of applications called from the setting application

The following applications are called from the Android standard setting application, so when use them, they are needed to be registered in the whitelist.

package name	function	With icon
com.google.android.gm	Gmail	✓
com.google.android.documentsui	Files	
com.google.android.deskclock	Clock	✓
com.google.android.apps.maps	GoogleMaps	✓
com.google.android.googlequicksearchbox	QuickSearchBox	✓
com.android.htmlviewer	HtmlViewer	✓

*Please register from the whitelist registration screen below.
With icon : "APPS(LIST DISPLAY)"   (11.5.2.1 (1))
No icon   : "APPS(NON-LIST DISPLAY)"   (11.5.2.1 (2))

② If the application requires authorization approval

If the application is using Android's special privilege, since the authority confirmation dialog is displayed, the following activities are needed to be registered in the whitelist.

Authority	Activity name	Note
App authority	com.android.permissioncontroller.permission.ui.GrantPermissionsActivity	
Device administrator	com.android.settings.applications.specialaccess.deviceadmin.DeviceAdminAdd	
Unknown sources	com.android.packageinstaller.PackageInstallerActivity com.android.settings.Settings$ManageAppExternalSourcesActivity	
All file access	com.android.settings.Settings$ManageExternalStorageActivity com.android.settings.SubSettings	

*Please register from "APPS SCREEN(NON-LIST DISPLAY)" on the whitelist registration screen. (11.5.2.1(3))

③ Pre-registration of applications called from BHT DMS

When using BHT DMS, the following Android standard application is needed to be register in the whitelist.

Screen	Activity name	Note
Application install	com.android.packageinstaller.PackageInstallerActivity	

*Please register from "APPS SCREEN(NON-LIST DISPLAY)" on the whitelist registration screen. (11.5.2.1(3))

④ Pre-registration of applications called from WlanManager

To use the Wi-Fi setting screen of Android standard from WlanManager, the following Android standard application is needed to be registered in the whitelist.

Screen	Activity name	Note
Wi-Fi settings	com.android.settings.Settings$WifiSettingsActivity	
Advanced setting	com.android.settings.SubSettings	
FileManager	com.android.documentsui.DocumentsActivity	
Saved networks	com.android.settings.SubSettings$SavedAccessPointsSubSettings	
WLAN Direct	com.android.settings.Settings$WifiP2pSettingsActivity	

*Please register from "APPS SCREEN(NON-LIST DISPLAY)" on the whitelist registration screen. (11.5.2.1(3))

⑤ Pre-registration of applications called from FileManager

When using FileManager, the following Android standard application is needed to be registered in the whitelist.

Screen	Activity name	Note
FileManager	com.android.documentsui.FilesActivity	

*Please register from "APPS SCREEN(NON-LIST DISPLAY)" on the whitelist registration screen. (11.5.2.1(3))

11.9.2. Caution when importing the application launcher settings while Application Launcher is in the user mode.

1. Add "Activity", which is shown when importing, in the Apps screen (No list) by referring to Section 11. Application Launcher: 11.5.2.1 White list in User's Manual.

The above "Activity" must be added to both the white lists, the list (*1) that enables all activities of the application and the list (*2) that enables the specific Activities.

*1: See Section 11.5.2.1 White list: Apps screen (with list) in User's Manual.
*2: See Section 11.5.2.1 White list: Apps screen (No list) in User's Manual.
Example: when importing the settings using the BHTSetting GUI.
Set the following values to each "Apps screen" as shown below.

Apps screen (with list):
"com.densowave.bhtsetting.activity.TopActivity"

Apps screen (No list):
"com.densowave.bhtsetting.activity.ProgressActivity"

2. Reboot the BHT for the application launcher settings imported to take effect.
If using BHTSetting to import, check the box "Reboot after import (Default is checked) to reboot.

If using Application Launcher API to import (see Section 7.2. Import in Programing Manual), perform restart using API (see Section 4.2.2 Restart in Programing Manual).

11.9.3. Caution when starting / closing the application launcher.

To start or close the application launcher, wait at least 15 seconds before turning off the device.
The next time you start your device, it may not switch to the intended Home application.

For details on how to start / exit, refer to "11.2. Initial Settings" and "11.5. Administrator Mode".

11.9.4. Caution when kitting.

It is recommended to use the export / import function of BHT Setting when kitting the settings of the application launcher.
Reflect the setting value of the application launcher → Restart the terminal → Start the application launcher → Automatically start the business application.

For details, refer to "15. BHTSetting" and "15.2.2.16 BHTSetting".

11.10. Error Indication

Condition of occurrence	Displayed message	Solution
User mode		
Password is not correct.	Password incorrect.	Please enter the correct password
Administrator mode		
There is no BHT Shell application.*	BHT Shell is not found.	Please contact the administrator
A file name is not entered.	Please specify a file name.	Please specify a file name
An unreadable file is referred to.	Can not read files of this path.	Please specify the file of the readable path
A path which cannot be written is specified.	Can not write files to this path.	Please specify a writable path
File name exceeds 80 characters	The file name should not exceed 80 characters.	Please specify a file name with 80 or fewer characters
Passwords do not match.	The inputted passwords do not match.	Please make the input password the same
A value other than the color code was specified for the background color and text color settings.	Please input the 6-digit color code.	Please enter the 6-digit hexadecimal (0-9, a-f, A-F characters).

* This message is displayed when an unrecoverable error occurs. Please contact the administrator.

12. Barcode Reading Settings Menu

The Barcode Reading Settings menu is an application that make settings for reading barcodes, two-dimensional codes and OCR.
The settings made in this application can be used (Load profiles or override settings) in another application.

12.1. Outline

Single-symbol Scan:
  Reading the each code and each notifies the application as it reads.

Multi-symbol Scan:
  Reading several pieces of code at once time and notifies the application of the results.
  Multi-symbol Scan is supported sorting and output of read codes and specifying the code order.
  Multi-symbol Scan can make improvement efficiency a working of entering multiple data.
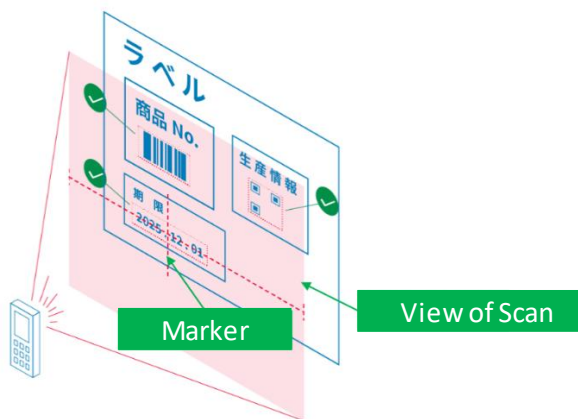
There are differences in the behavior of some settings between Single-symbol Scan and Multi-symbol Scan. The operating specifications for Multi-symbol Scan are shown in the table below.

Contents	Description
Symbology	Only code types with a check(✓) in the "12.2. Readable Code Species" of the page can be read.
Trigger mode	Only auto off, trigger release and one shot are supported.
Multi-symbol Scan symbology settings: Check Digit Validation	[Note] Check digit verification is not performed.A code whose check digit verification result is NG is always read. (Coded species) ITF, STF, Codabar, Code 39
Multi-symbol Scan symbology settings: GS1 Databar Related	Stacked code reading is not supported.
Multi-symbol Scan symbology settings: QR Code	It does not support model1 and model2 related connected read modes.
Multi-symbol Scan symbology settings: QR Code Related	If the output order of the Multi-symbol Scan is "specified code order," the version specification is ignored. *If the output order of the Multi-symbol Scan is other than the above, the specified version of the code is read.
Multi-symbol Scan symbology settings: DataMatrix Related	If the output order of the Multi-symbol Scan is "specified code order," all code number specifications are ignored. *If the output order of the Multi-symbol Scan is other than the above, the specified code number is read.
Multi-symbol Scan symbology settings: First and Second Digit Designations Related	The first and second digit specifications for the following code types are valid only when the output order of the Multi-symbol is "specified code order." (Coded species) ITF, STF, Codabar, Code 39, Code 93, Code 128,GS1 Databar, GS1 Databar Limited, GS1 Databar Expanded, QR model1 and model2, Micro QR, rMQR, DataMatrix, PDF 417, Micro PDF 417
Notification Settings	The success note can not be changed. *When set to sound a notification tone, a system-specific success tone sounds regardless of the setting.

12.2. Readable Code Types

Readable code types for each model are listed below.

	Symbologies	Single-symbol Scan	Multi-symbol Scan
Barcode	EAN-13 UPC-A	✓	✓
	EAN-8	✓	✓
	UPC-E	✓	✓
	ITF	✓	✓
	STF	✓	✓
	Codabar	✓	✓
	Code39	✓	✓
	Code93	✓	✓
	Code128	✓	✓
	GS1-128(EAN128)	✓	✓
	GS1 Databar	✓	✓
	GS1 Databar Limited	✓	✓(*1)
	GS1 Databar Expanded	✓	✓(*1)
Two-dimensional code	QR Model1, 2	✓	✓(*2)(*3)
	Micro QR	✓	✓(*3)
	rMQR	✓	✓(*3)
	SQRC	✓	
	iQR	✓	
	Data Matrix	✓	✓(*4)
	PDF417	✓	✓
	Micro PDF417	✓	✓
	Maxi Code	✓	
	Aztec	✓	
	GS1-Composite	✓	
Other	Multi-line code	✓	
	OCR	✓	✓

(*1) Stacked code is not supported.
(*2) Split mode is not supported.
(*3) If the output order specification is "Output in order of specified read code type," versions are ignored.
(*4) If the output order specification is "Output in order of specified reading code type," code numbers are ignored.

12.3. Functions

Barcode reading menu can make selecting barcodes, two-dimensional codes, OCR reading settings, and output the read data as keyboard input (keyboard wedge).
The main features are listed in the table below.

Function	Description
Read settings (Single-symbol Scan / Multi-symbol Scan)	Scan settings for reading barcodes, two-dimensional codes, and OCR, Decode settings, Symbol settings, and Notification settings. Settings can be saved as setting files. Setting files can be imported and exported.
Keyboard wedge	Scanning result can be used as a keyboard input. (Output Settings)
SQRC configuration tool linkage	Settings for using SQRC can be configured in conjunction with the SQRC configuration tool.
Bluetooth scanner linkage	Bluetooth scanner can be connected to handle data read by the scanner in the same way as the terminal reads data.

12.3.1. Application feature

In Barcode Scanner Settings, enable/disable the following items to enable various functions.

■   Enable Scan
Turn on the switch to allow barcode reading.
When the switch is off, barcode reading is prohibited. The default is disabled.

When barcode reading is permitted, this menu reads in the background and the result of reading can be output with a keyboard wedge. (Output as a keyboard wedge requires output settings.)

Even if barcode reading is allowed, the API built into the application gives priority to read control.
When an application uses the API to grant read permission, read control is transferred to the application and the settings set in the API are used to read.
When an application uses the API to prohibit reading, read control is transferred to this menu, and reading is performed using the settings set in this menu.

■   Prefer this setting
If this check box is checked, the settings set in this menu, except for the read permission setting, will take precedence over the settings set in the application using the API.
The default is off. (Settings set by the application using the API take precedence.)

■   Start configuration mode
With the switch on, you can communicate with the computer and set the SQRC management code and encryption key.
When the switch is off, normal setup menu operation occurs. The default is off.
For more information, see the BHT SQRC Configuration Manual.

■   BluetoothSPP
Check to accept SPP connection requests from Bluetooth scanners.
Uncheck to have normal settings menu behavior.
When connected, the data read by the Bluetooth scanner will be output according to the settings specified in the output settings.

12.4. Setting menu (Common)

12.4.1. Scan Settings

Select [Scan settings] at the barcode scanner settings, and the scan settings menu starts up.

2D

← Scan settings	
Trigger mode	Auto off
Light mode	Auto
Marker mode	Normal
Sensor off delay time(x100ms)	
Power off delay time(ms)	
Trigger response fast mode	☑
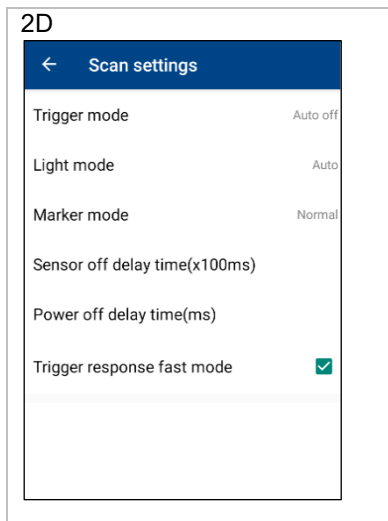
■ Trigger mode

Select a trigger mode from Auto off/Momentary/Alternate/Continuous/Trigger release/One shot..
Default: Auto off mode.

2D
Trigger mode
Auto off
Momentary
Alternate
Continuous
Trigger release
One shot
CANCEL
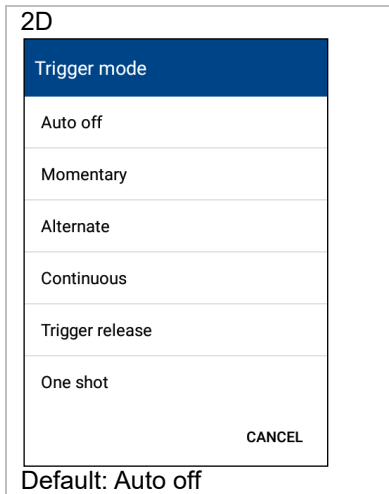
Default: Auto off

Auto off (Default)
  The illumination LED turns ON when the trigger key is pressed, and turns OFF when the trigger key is
  released or a code is read. The illumination LED turns ON continuously for a maximum of 5(1D,
  2D)/10(2D Long) seconds while the trigger key is held down.
  The BHT can read a code while the illumination LED is turned ON. When a code is read successfully or
  the code reading is disabled, the BHT cannot read a code any longer.
  When the illumination LED turns OFF after 5 seconds has elapsed since the trigger key is pressed, press the
  trigger key again to read a code.
  In the case of Multi-symbol Scan, if the code is read until the specified number of readings is completed, the
  lighting LED will be extended by up to 5 seconds. The lighting LED turns off when the specified number of
  codes is read.

Momentary
  Only while the trigger key is held down, the illumination LED turns ON and the BHT can read a code.
  In the case of Multi-symbol Scan, Trigger mode is operated as "Auto off".

Alternate
  The illumination LED turns ON when the trigger key is pressed. Even if the trigger key is released, the
  illumination LED still turns ON. When the code device file is closed or the trigger key is pressed again, the
  illumination LED turns OFF.
  The BHT can read a code while the illumination LED is turned ON.
  The illumination LED turns ON and OFF alternately by pressing the trigger key.
  In the case of Multi-symbol Scan, Trigger mode is operated as "Auto off".

Continuous
  When this reading mode is selected, the illumination LED turns ON regardless of the trigger key until the
  code device file is closed. The BHT can read a code while the illumination LED is turned ON.
  In the case of Multi-symbol Scan, Trigger mode is operated as "Auto off".

Trigger release
  The aimer (*1) illuminates when the trigger key is pressed. When the trigger key is released, the illumination
  LED turns ON and the BHT starts reading a code. The BHT goes into waiting state when a code is read or
  after the reading time has elapsed. Aiming restarts when the trigger key is pressed again during reading.
  This mode is used to read a specific code, and an aimed label in an area where codes are closely spaced.
  (*1) The marker functions as an aimer for the BHT equipped with the marker. The illumination LED functions
  as an aimer for the BHT not equipped with the marker.
  In the case of Multi-symbol Scan, if the code is read until the specified number of readings is completed, the
  lighting LED will be extended by up to 5 seconds. The lighting LED turns off when the specified number of
  codes is read.

One shot

The illumination LED turns ON when the trigger key is pressed, and turns OFF when a code is read. The illumination LED turns ON continuously for a maximum of 5 seconds even if the trigger key is released.

The BHT can read a code while the illumination LED is turned ON. When a code is read successfully or the code reading is disabled, the BHT cannot read a code any longer.

When the illumination LED turns OFF after 5 seconds has elapsed since the trigger key is pressed, press the trigger key again to read a code.

In the case of Multi-symbol Scan, if the code is read until the specified number of readings is completed, the lighting LED will be extended by up to 5 seconds. The lighting LED turns off when the specified number of codes is read.

-Reference- When the BHT is suspended, no reading is performed and the lighting LED light is turned off. After resuming BHT, press the trigger key again to read. (However, if the trigger mode setting is continuous, reading will resume after resume.)

■ Light mode
Select the LED lighting operation from Auto/Always ON/OFF.
Default: Auto.

2D
Light mode
Auto
Always ON
OFF
CANCEL
Default: Auto
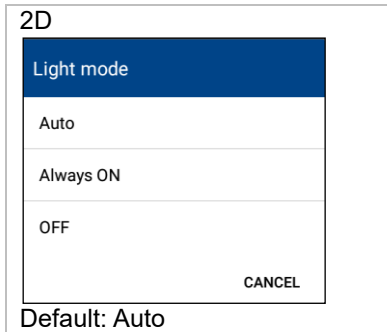
Auto
　The LED lighting while reading is controlled automatically.
Always ON
　The LED lighting while reading is turned ON.
OFF
　The LED lighting is not turned ON.

■ Marker mode
Select the marker ON mode from Normal/Ahead/Disable. Default: Normal.

2D
Marker mode
Normal
Ahead
Disable
CANCEL
Default: Normal
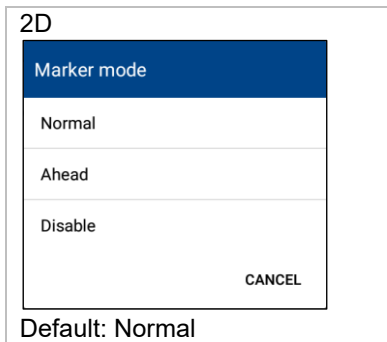
Normal
　The marker while reading is turned ON.
Ahead
　The marker is turned ON for 30 seconds not only while reading but also while reading is enabled.
Disable
　The marker is not turned ON.

■ Sensor off delay time (x 100ms)
Set the time (× 100 milliseconds) from when the scanning light goes out after scanning is completed until the sensor power of the barcode scanner is turned off. Default: 100 (10 seconds).
If reading is started when the sensor power of the barcode scanner is still ON after reading is completed, the time required to start reading will be shortened. However, increasing this setting also increases power consumption.

```
2D
┌─────────────────────────────────┐
│ Sensor off delay time(x100ms)   │
├─────────────────────────────────┤
│ 100                             │
│                                 │
│            CANCEL      OK        │
└─────────────────────────────────┘
Default: 100 (10 seconds)
```
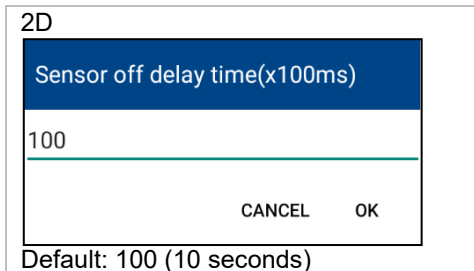
■ Power off delay time (ms)
Set the time in milliseconds until the barcode scanner module is turned off since the barcode reader disabled. Default: 0
If the barcode reader enabled by an application when the barcode scanner module's power is still ON, the processing time of enabling barcode reader will be short. However, the power consumption will increase as this setting.

```
2D
┌─────────────────────────────────┐
│ Power off delay time(ms)        │
├─────────────────────────────────┤
│ 0                               │
│                                 │
│            CANCEL      OK        │
└─────────────────────────────────┘
Default: 0
```
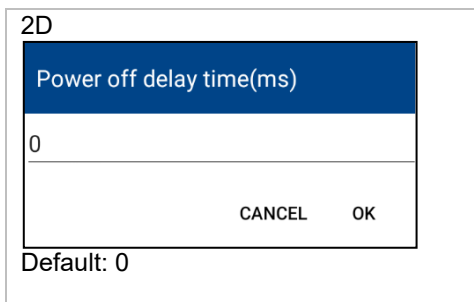
■ Trigger response fast mode
When it checked, the trigger key response is faster. Default: OFF
This setting only works for the trigger's key from physical keys.
In addition, barcode reading may start when you are not pressing the trigger key, depending on the external environment and any other conditions. If such an issue will be occurred, please set this setting OFF.

- Reference -   The sensor off delay time, power off delay time, and trigger response fast mode affect all applications using the barcode function.

12.4.2. Decode Settings
Select [Decode settings] at the barcode scanner settings, and the setting menu related to decode starts up.

```
┌─────────────────────────────┐
│ 2D                          │
│ ┌─────────────────────────┐ │
│ │ 10:54 ⚙ ◉        ◑ 🔋   │ │
│ │ ← Decode settings       │ │
│ │                         │ │
│ │ Same barcode interval   │ │
│ │ time(x100ms)         10 │ │
│ │                         │ │
│ │ Decode level          4 │ │
│ │                         │ │
│ │ Invert decode    Disabled│ │
│ │                         │ │
│ │ Point scan mode  Disabled│ │
│ │                         │ │
│ │ Point scan(Multi-symbol)│ │
│ │                 OCR only │ │
│ │                         │ │
│ │ Reverse decode   Disabled│ │
│ │                         │ │
│ │ Charset           UTF-8 │ │
│ │                         │ │
│ │ RSS margin level     ISO/│ │
│ │            IEC24724:2006 │ │
│ │                         │ │
│ │ Add-On Decode level      │ │
│ │                 Disabled │ │
│ └─────────────────────────┘ │
└─────────────────────────────┘
```
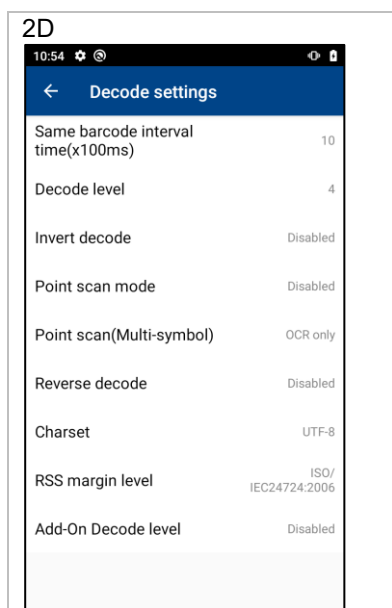
■ Same barcode interval time
The BHT has a function for preventing from reading the same label again after reading barcodes by momentary, alternate and continuous modes. When it is required to read the same data again with these modes, keep on illuminating the light at the place where barcodes or anything like that does not exist for a period specified by this setting value.

0.1 to 25.5 seconds can be set at intervals of 100 ms.　Default: 1 second (10 x 100 ms)

```
┌─────────────────────────────┐
│ 2D                          │
│ ┌─────────────────────────┐ │
│ │ Same barcode interval   │ │
│ │ time(x100ms)            │ │
│ │                         │ │
│ │           9             │ │
│ │                         │ │
│ │          10             │ │
│ │                         │ │
│ │          11             │ │
│ │                         │ │
│ │    CANCEL      OK       │ │
│ └─────────────────────────┘ │
│ Setting range: 0 - 255      │
│      (x 100 ms)             │
│ Default: 10 x 100 ms        │
└─────────────────────────────┘
```
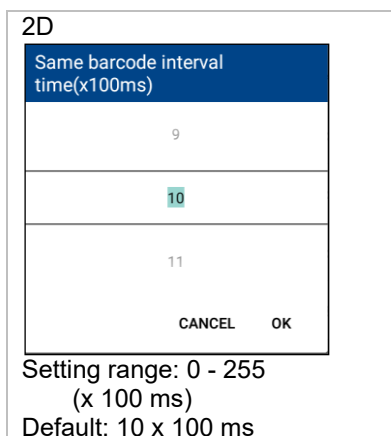
■ Decode level
The barcode reading quality level can be set. Lowering the level increases the barcode reading efficiency, however, misreading probability of poor-quality barcodes (broken or dirty barcodes) also increases. In contrast, raising this level decreases the barcode reading efficiency, and also decreases misreading probability of poor-quality barcodes.

The level can be selected from 1 to 9. The default level is set to 4.

```
2D
┌──────────────────────────────┐
│ Decode level                 │
├──────────────────────────────┤
│                              │
│              3               │
│                              │
│              4               │
│                              │
│              5               │
│                              │
│          CANCEL    OK        │
└──────────────────────────────┘
Setting range: 1 - 9
Default: 4
```
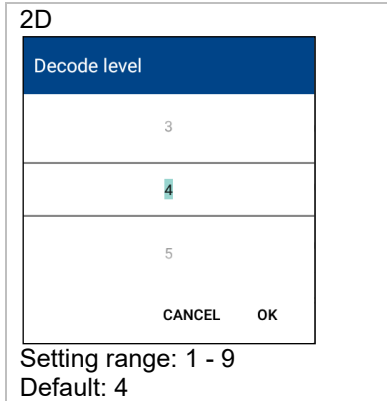
■ Invert decode
Enables to read the black-and-white inverted codes.

```
2D
┌──────────────────────────────┐
│ Invert decode                │
├──────────────────────────────┤
│ Disabled                     │
│                              │
│ Enabled(Auto)                │
│                              │
│ Enabled(Inverted only)       │
│                              │
│                  CANCEL      │
└──────────────────────────────┘
Default: Disabled
```
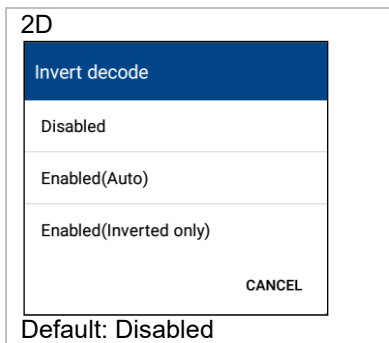
Disabled
Disables to read black-and-white inverted codes.

Enabled (Auto)
Automatically determines and reads both black-and white inverted and not inverted codes.

Enabled (Inversion only)
Reads only black-and-white inverted codes.

- Reference-	Reading by Auto setting may take longer than reading of normal code without reading black-and-white inverted codes or reading of black-and-white inverted codes.

■ Point scan mode
Enables/disables the point scan reading.　　Default: Disabled

When the Point Scan is enabled, a code can be read by aiming it at the center cross section of the laser light marker beam. A code cannot be read in the point scan mode, for example, if there is no code within the cross section or if unable to detect the marker beam due to external light. This scan mode can be used only when the marker mode is enabled.
When Point Scan2 is enabled, if there is no code on the cross or the marker cannot be detected due to external light, etc., the code near the marker is read. Point Scan2 is recommended for reading codes on mobile device display.
Also, if the marker mode setting is prohibited for both point scan and point scan 2, it will be invalid.

2D
Point scan mode
Disabled
Point Scan
Point Scan2
CANCEL

Default: Disabled
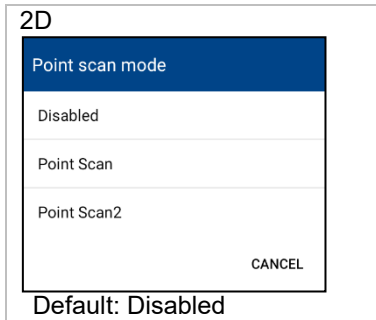
■Point scan(Multi-symbol)

Selecting the point scan range for Multi-symbol Scan.　　Default: OCR only.

2D
Point scan(Multi-symbol)
All
OCR only
CANCEL

Default: OCR only

Point scan mode
Disabled
Enabled
CANCEL
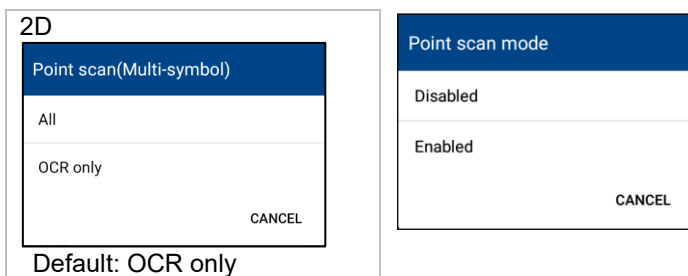
■ Reverse decode
When the function for reading mirror image 2D code is set to ON, reading of a 2D code viewed from the reverse side is enabled.

2D
Reverse decode
Disabled
Enabled
CANCEL

Default: Disabled
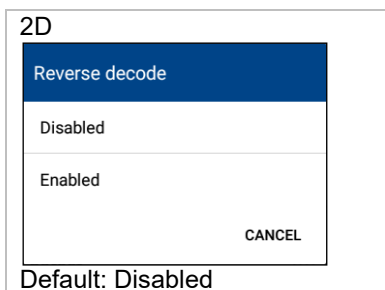
- Reference -　Enabling the mirror image 2D code reading may increase time for reading 2D codes.

■ Charset
Selects the encoding method of barcodes.
Select an encoding method from any of the following alternatives, or specify an encoding method other than below with character string directly.

UTF-8 / UTF-16 / UTF-16BE / UTF-16LE / ISO-8859-1 / Shift-JIS / GB2312 / Big5 /EUC-KR

Charset
⦿ UTF-8
○ UTF-16
○ UTF-16BE
○ UTF-16LE
○ ISO-8859-1
○ Shift-JIS
○ GB2312
○ Big5
○ EUC-KR
○
CANCEL   OK

Default : UTF-8

■ RSS margin level

GS1 DataBar Limited Specifies the margin level for the code.

ISO / IEC24724: 2011 makes it readable only if the right guard bar contains 5 module spaces.

2D
RSS margin level
ISO/IEC24724:2006
ISO/IEC24724:2011
CANCEL
Default: ISO/IEC24724:2006

■ Add-On decode level

If you do not want to lose digits when reading the EAN add-on, specify the add-on width check level.

If 0 (prohibited) is specified, only the specified add-on can be read.

The higher the level, the wider the gap add-on will be readable, but it can take longer to read.

2D
Add-On Decode level
Disabled
Level 1
Level 2
Level 3
Level 4
CANCEL
Default: Disabled

12.4.3. Data Edit Settings
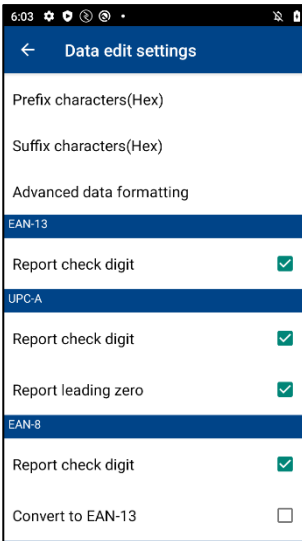
Select [Data Edit Settings] at the barcode scanner settings, and the setting menu related to the edit of read data starts up.

■ Prefix/Suffix characters

The string to be added to the top or end of read data is specified.

Nothing is added by default.

■ Advanced data formatting (ADF)

High-end data edit is implemented.

12.4.3.1 EAN-13

■ Report check digit

When it is checked, the check digit of read data is output. Default: ON

12.4.3.2 UPC-A

■ Report check digit

When it is checked, the check digit of read data is output. Default: ON

■ Report leading zero

When it is checked, data adding 0 at the top of read data is output. Default: ON

12.4.3.3 EAN-8

■ Report check digit

When it is checked, check digit characters of read data are output. Default: ON

■ Convert to EAN-13

When it is checked, data is output after converting read data to EAN-13. Default: OFF

12.4.3.4 UPC-E

■ Report check digit

When it is checked, the check digit of read data is output. Default: ON

■ Report leading zero

When it is checked, data adding 0 at the top of read data is output. Default: ON

- Convert to UPC-A

When it is checked, data is output after converting read data to UPC-A.　Default: OFF

- Report leading zero for UPC-A

When it is checked, data is output by adding number system character if it is converted to UPC-A.　Default: ON

12.4.3.5　Code39

- Report check digit

When it is checked, check digit character of read data is output.　Default: ON

- Report Start Stop

When it is checked, the number system character of read data is output.　Default: ON

12.4.3.6　Codabar

- Report check digit

When it is checked, the check digit character of read data is output.　Default: ON

- Report Start Stop

When it is checked, the start/stop character of read data is output.　Default: ON

- Convert to upper case

When it is checked, data is output after converting the start/stop character to capital.　Default: OFF

12.4.3.7　Interleaved 2 of 5

- Report check digit

When it is checked, the check digit of read data is output.　Default: ON

12.4.3.8　Standard 2 of 5

- Report check digit

When it is checked, the check digit of read data is output.　Default: ON

12.4.3.9　SQRC

- Output data

Select output data from both of public and private part and only private part when SQRC is read. Default: Both of public and private

- Encryption key mismatch

Select output data from nothing and only public part when SQRC with mismatch key is read. Default: Nothing

12.4.3.10 Advanced Data Formatting (ADF)
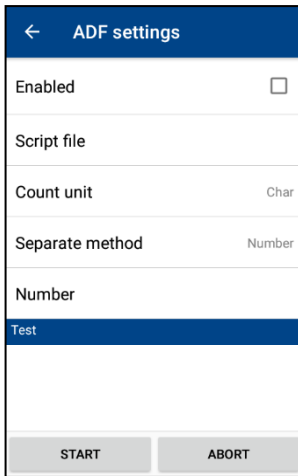
When ADF is used, reading data can be edited only by creating simple script. Describe rules for editing data in the script file. For creation procedure of script, refer to ADF script specifications.
Select [Advanced data formatting] on the data edit setting menu, and the script file selection menu starts up.

■ Enabled

ADF is enabled.
In case of Multi-symbol Scan, ADF script is executed for each data read.

■ Script file

A script file describing ADF script is selected.
For the contents of the script file, refer to the ADF Script User's Guide for Android.

■ Count unit

Select the count unit type from Char/Byte. Specify the unit of digits used in ADF script. Default: Char

■ Separate method

Select the separate method type from Number/Separator. Specify how to divide into fields used in ADF script. Default: Number

■ Number

It is used when you specify number of separate method. You can designate the number of characters for up to 90 fields. A field which has no character (the number of characters = 0) is not allowed.

■ Separator

It is used when you specify separator of separate method. You can specify up to 10 delimiters. When multiple delimiters are specified, data fields are separated by any delimiter.

■ Test

Selected script files are tested.

Press the [START] button, and data "1234567890ABCDEF" are edited and the result is output conforming to rules described by the selected script file.

If a script file that may be involved in the infinite loop accidentally is created, press [ABORT] button and you can suspend the data edit test.

12.4.4. Notification Settings
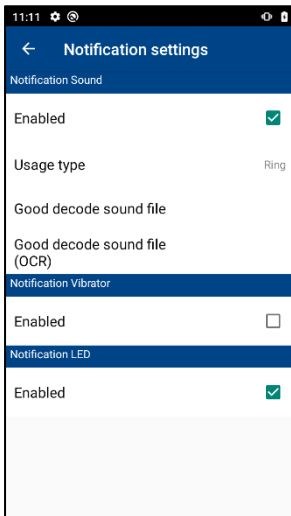
Select [Notification Settings] at the barcode scanner settings, and the setting menu related to notification when reading is completed starts up.

12.4.4.1 Notification Sound

■ Enabled

When it is checked, notification by sound is enabled when reading is completed.   Default: ON

■ Usage Type

Select the notification sound type from Ring/Media/Alarm. The volume level when reading is completed is synchronized with the volume level of the selected sound type.   Default: Ring

■ Good decode sound file

Select the sound file to replay when reading is successfully completed. Nothing is selected by default, but sound like beeper is emitted.
In the case of Multi-symbol Scan, this setting is ignored. (The system success tone sounds.)

■ Good decode sound file(OCR)
Select the sound file to replay when OCR reading is successfully completed. Nothing is selected by default, but sound like beeper is emitted.
In the case of Multi-symbol Scan, this setting is ignored. (The system success tone sounds.)

12.4.4.2 Notification Vibrator

■ Enabled
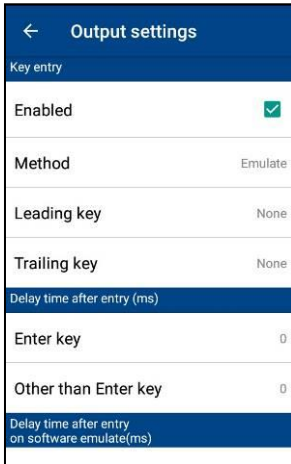
When it is checked, notification by a vibrator is enabled when reading is completed.   Default: OFF

12.4.4.3 Notification LED

■ Enabled

When it is checked, notification by LED is enabled when reading is completed.   Default: ON

12.4.5. Output Settings

Select [Output settings] at the barcode scanner settings, and the setting menu related to the data output starts up.
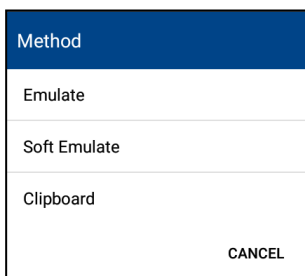
12.4.5.1 Key Input

SQRC reading by using key input is always disabled.

■   Enabled

If it is checked, a function of emulating read data by the keyboard input is enabled.

■   Method

Select the input method from Emulate/Soft Emulate/Clipboard.
Clipboard mode is default. Enter all the read text through via clipboard.

Emulate
  Emulates read data by pressing keys of characters one by one.
  This can also be entered for a source of data not supporting the clipboard.

Soft Emulate
  Enters characters one by one using the input method.
  Characters of language that cannot be emulated with a keyboard, such as Japanese, can also be entered.

Clipboard (default : recommended)
  Enters read character string in one operation by way of the clipboard.
  Characters can be entered immediately to the source of data supporting the clipboard.

■   Leading key/Trailing Key
  Specifies keys to enter before or after the read data.
  In the case of Multi-symbol Scan, enter the leading/trailing key for each read data.

- note -	The read result is output to the text field that has the focus.
	If no reading result is output to a text field, make sure that the focus is on the text field (*), for example, by tapping the text field, and then read.
	(*) e,g, :In a text field, the character input cursor is blinking.

- Point1 -	Some text fields (such as entering a browser password) may have settings that disable clipboard copy and paste. In such a case, if it cannot be modified the text field on the application side, it can be outputted the read result by using "Emulate" or "Soft Emulate."

- Point2 -	"Emulate" is emulated the actual keystrokes and enters the keys. Therefore, it might be a risk of missing input data depending on the target system of the application. To adjust the transmission interval for prevention (*).
	(*) The transmission interval can be adjusted by "Delay time after entry > Trailing key: Enter"
	(For details, please refer to 12.4.5.2 Waiting Time.)

12.4.5.2 Waiting Time

Waiting time is used to prevent the data & key input order from changing by setting the waiting time between inputs when ScanSettings outputs the scanned data to an application.

The input order change occurs in an irregular manner depending on the output destination.
Adjust the waiting time depending on the operating environment.

The waiting time settings for each key and its event occurrence timing are described below.
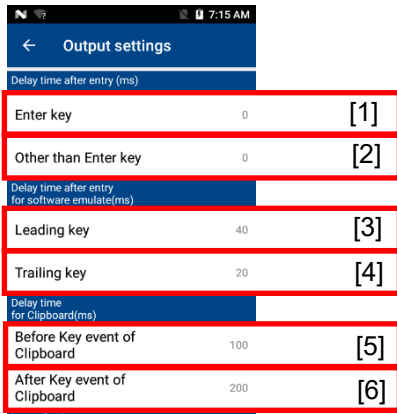
Output settings	Sequence order	ScanSetting operation sequence	Wait timing	Reference
Emulate	1	Send a preceding key on key event.[*1]	[1] or [2]	See Point1
	2	Send scanned barcode data one digit at a time on key event.	[1] or [2]	
	3	Send a subsequent key on key event.[*2]	[1] or [2]	
Soft Emulate	1	Send a preceding key on key event.[*1]	[1] or [2] [3]	See Point2
	2	Send scanned barcode data as character strings using the virtual keyboard.		
	3	Send a subsequent key on key event.[*2]	[1] or [2] [4]	
Clipboard	1	Send a preceding key on key event.[*1]	[1] or [2]	See Point3
	2	Send scanned barcode data to Clipboard.	[5]	
	3	Paste the clipboard data on CTL＋V key event.	[6]	
	4	Send a subsequent key on key event.[*2]	[1] or [2]	

*1: Executed if the preceding key is set.
*2: Executed if the subsequent key is set.

Consider the following points to set the waiting time.

— Point1 — ■When the Output is set to Emulate.
[Expected troubles]
・The output order of the preceding key, scanned data, and the subsequent key is nested.
・The output order of the previous subsequent key and the preceding key is nested during
  continuous reading.

[Solution]
・Check if the problem is solved by adjusting waiting time for [1] or [2] in units of 10ms.
  Note that the reading time slows down because waiting time for [1] or [2] occurs every time
  each digit of the scanned data is sent.

— Point2 — ■When the Output is set to Soft Emulate.
[Expected troubles]
・The output order of the preceding key, scanned data, and the subsequent key is nested.
・The output order of the previous subsequent key and the preceding key is nested during
  continuous reading.

[Solution]
・Check if the problem is solved by adjusting waiting time for [3] or [4] in units of 100ms.
  Waiting time occurs for [1], [2], however adjusting waiting time for [3] or [4] is recommended
  because [3] and [4] allow individual settings for the preceding and subsequent keys.

— Point3 — ■When the Output is set to Clipboard.
(1)
[Expected trouble]
・The contents of clipboard does not be updated, the previous read data is pasted.

[Solution]
・Check if the problem is solved by adjusting waiting time for [5] in units of 100ms.

(2)
[Expected trouble]
・The subsequent key does not work sometimes.

[Solution]
・Check if the problem is solved by adjusting waiting time for [6] in units of 100ms.

12.4.5.3 Intent notification settings

Android standard BroadcastIntent is used to receive read data.
To receive a read completion notification and obtain read data, implement BroadcastReceiver.

Refer to "3.1.5 How to receive barcode data with Intent" in the programming manual for the programming method to obtain read data.

Intent to be received when reading is completed is selectable in the menu as below.

Enable/disable Intent notification
  Check the box to receive read data using Intent.

Receiver package name
  Enter the package name of the Intent receiver application

Receiver class name
  Enter the class name of BroadcastReceiver implemented in the Intent receiver application.

Intent Action name
  Enter the Action name of Intent to be received.
    Implement the above Action to be received in the receiver application.

— **Note** —	Implicit Intent such as using "" to specify the package name and the class name are not supported.

12.4.5.4 Bluetooth SPP settings

Outputs a scanning from a Bluetooth scanner with a character code.
Select one of the following encoding. (Another encoding can be specified directly as a string.)
Encoding :
  UTF-8 / UTF-16 / UTF-16BE / UTF-16LE / ISO-8859-1 / Shift-JIS / GB2312 / Big5 /EUC-KR

12.5. Setting menu (Single-symbol Scan)

12.5.1. Symbology Settings

In the Barcode Scanner Settings, selecting [Parameter] for Single-symbol Scan will launch the Single-symbol Scan Settings menu.
Reading is enabled or disabled for each code type. Parameters for each code are also set.
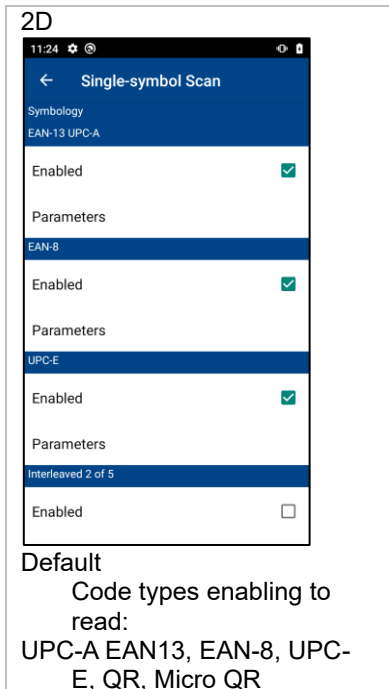
```
2D
┌──────────────────────────────┐
│ 11:24 ✿ ⊚              ◁ ▯     │
│ ←     Single-symbol Scan      │
│ Symbology                     │
│ EAN-13 UPC-A                  │
│                               │
│ Enabled                 ☑     │
│                               │
│ Parameters                    │
│ EAN-8                         │
│                               │
│ Enabled                 ☑     │
│                               │
│ Parameters                    │
│ UPC-E                         │
│                               │
│ Enabled                 ☑     │
│                               │
│ Parameters                    │
│ Interleaved 2 of 5            │
│                               │
│ Enabled                 ☐     │
└──────────────────────────────┘
Default
       Code types enabling to
       read:
UPC-A EAN13, EAN-8, UPC-
       E, QR, Micro QR
```

If check boxes for enabling each code are checked, reading of this code type is enabled. If a parameter is selected, the parameter setting menu of the code type starts up.

12.5.1.1 EAN-13, UPC-A Parameters
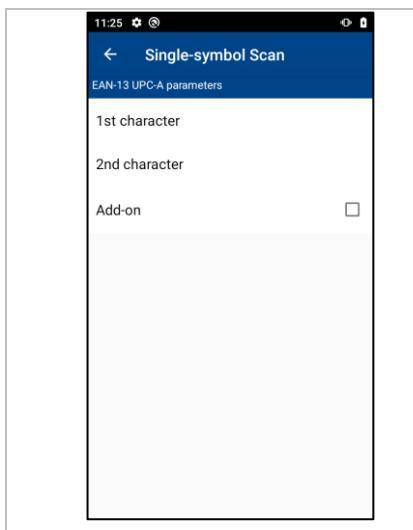
```
┌──────────────────────────────┐
│ 11:25 ✿ ⊚              ◁ ▯     │
│ ←     Single-symbol Scan      │
│ EAN-13 UPC-A parameters       │
│ 1st character                 │
│                               │
│ 2nd character                 │
│                               │
│ Add-on                  ☐     │
│                               │
│                               │
│                               │
│                               │
│                               │
│                               │
│                               │
└──────────────────────────────┘
```

■　1st character and 2nd character

Readable codes can be limited by specifying 1st and 2nd characters of the code.
Available characters are 0 to 9. 1st and 2nd characters are not limited by default.

■　Add-on

When a check box is checked, codes with add-on are enabled to be read.

12.5.1.2 EAN-8 Parameters
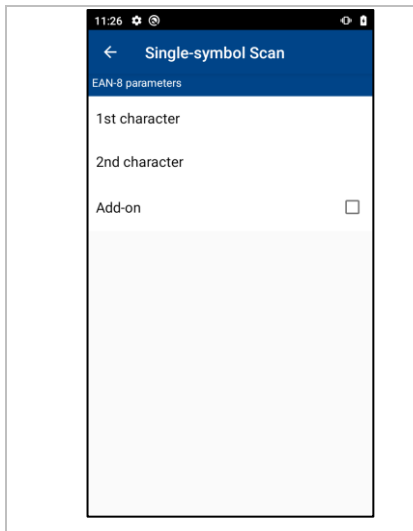
■ 1st character and 2nd character

Readable codes can be limited by specifying 1st and 2nd characters of the code.
Available characters are 0 to 9. 1st and 2nd characters are not limited by default.

■ Add-on

When a check box is checked, codes with add-on are enabled to be read.

12.5.1.3 UPC-E Parameters
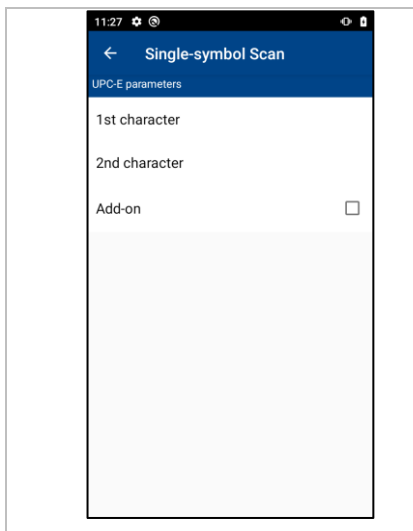
■ 1st character and 2nd character

Readable codes can be limited by specifying 1st and 2nd characters of the code.
Available characters are 0 to 9. 1st and 2nd characters are not limited by default.

■ Add-on

When a check box is checked, codes with add-on are enabled to be read.

12.5.1.4 Interleaved 2 of 5 Parameters
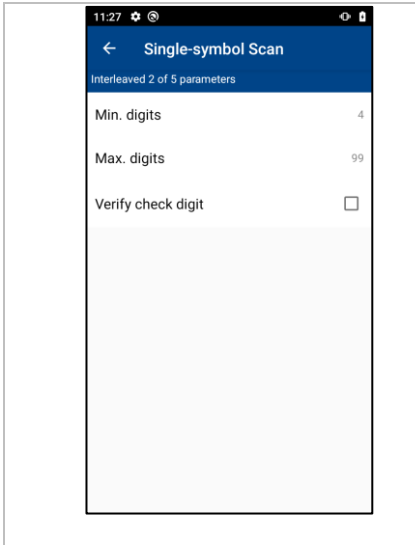
■ Min. digits /Max. digits

The range of the number of digits enabling to read codes is limited by the minimum and maximum number of digits.
ITF codes with 4 or more digits and Code39 codes with optional number of digits are read by default.

■ Verify check digit

When a check box is checked, only codes with enabled check digit added are read. It is not verified by default.

12.5.1.5 Standard 2 of 5 Parameters
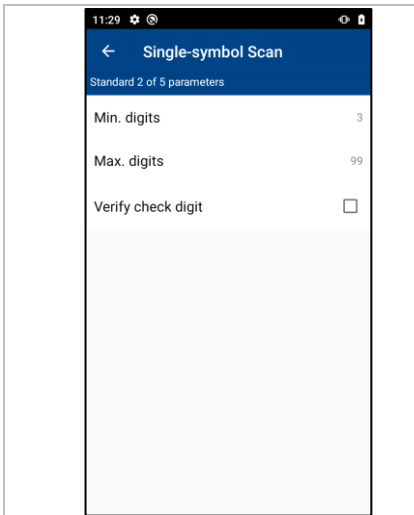
■ Min. digits /Max. digits

The range of the number of digits enabling to read codes is limited by the minimum and maximum number of digits.
Codes with 3 or more digits are read by default.

■ Verify check digit

When a check box is checked, only codes with enabled check digit added are read. It is not verified by default.

12.5.1.6 Codabar Parameters
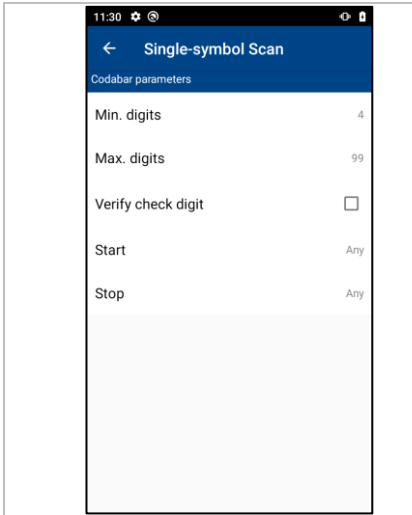
■ Min. digits /Max. digits

The range of the number of digits enabling to read codes is limited by the minimum and maximum number of digits. Codabar codes with 4 or more digits are read by default.

■ Verify check digit

When a check box is checked, only codes with enabled check digit added are read. It is not verified by default.

■ Start/Stop character

Start/Stop character (A, B, C, D) of readable Codabar code can be limited.
Start/Stop character is not limited by default. (Optional/Any is set.)

12.5.1.7 Code39 Parameters
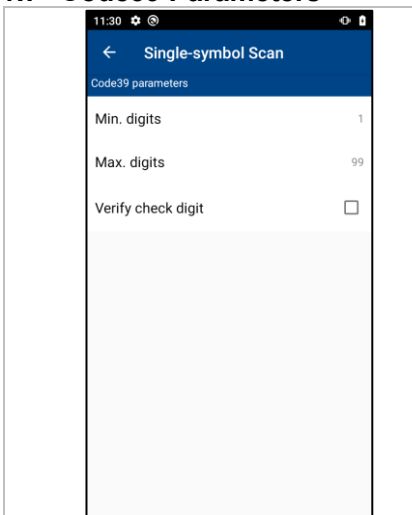
■ Min. digits /Max. digits

The range of the number of digits enabling to read codes is limited by the minimum and maximum number of digits.
ITF codes with 4 or more digits and Code39 codes with optional number of digits are read by default.

■ Verify check digit

When a check box is checked, only codes with enabled check digit added are read. It is not verified by default.

12.5.1.8 Code 93 Parameters
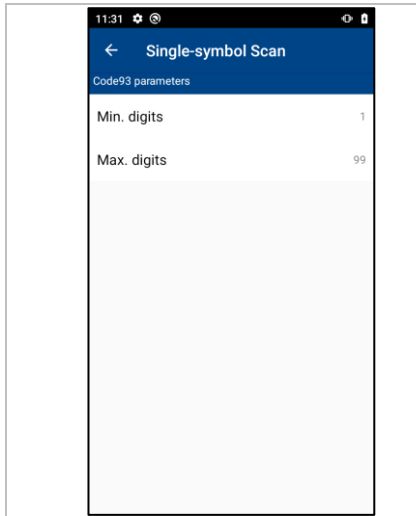
■ Min. digits /Max. digits

The range of the number of digits enabling to read codes is limited by the minimum and maximum number of digits.
Codes with optional number of digits are read by default.

12.5.1.9 Code 128 Parameters
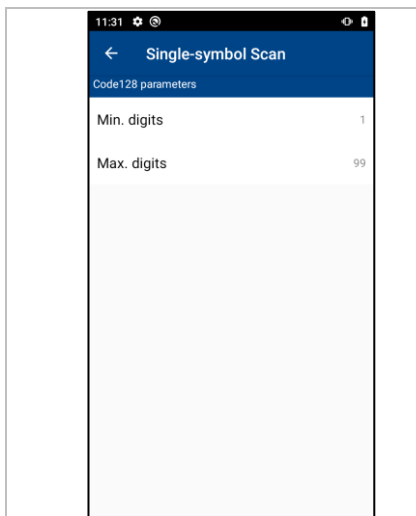
■ Min. digits /Max. digits

The range of the number of digits enabling to read codes is limited by the minimum and maximum number of digits.
Codes with optional number of digits are read by default.

12.5.1.10 GS1 Databar Parameters
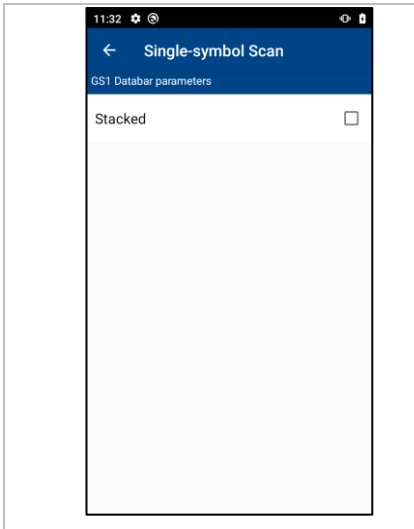
■ Stacked coded reading

When a check box is checked, stacked GS1 Databar code can be read.
Stacked code cannot be read by default.

12.5.1.11 GS1 Databar Expanded Parameters
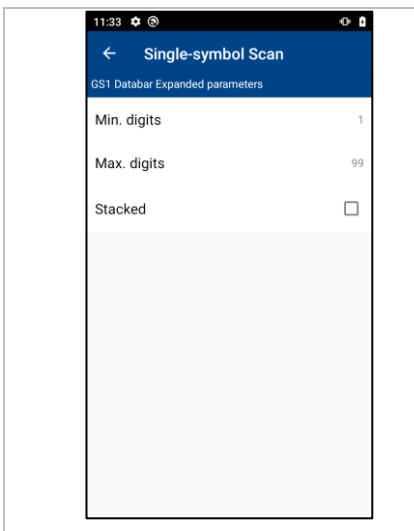
■ Min. digits /Max. digits

The range of the number of digits enabling to read codes is limited by the minimum and maximum number of digits.

Codes with optional number of digits are read by default.

■ Stacked code reading

When a check box is checked, stacked GS1 Databar Expanded code can be read.
Stacked code cannot be read by default.

12.5.1.12 QR Parameters

■ Split mode

Mode for reading concatenated codes is specified.
Concatenated codes are not read by default.

Edit mode
Reads divided reading code one by one, and outputs the read data after compiling and editing.

Batch edit mode
Reads all divided codes by containing them in the reading view, and outputs data after editing all data of the read concatenated codes.

Non edit mode
Outputs data every time a concatenated code is read.

■ Enabled

Enables/disables reading of Model 1 and Model 2 QR code individually.
Reading of both Model 1 and Model 2 are enabled by default.

■ Min. version /Max. version

The range of the code version enabling to read is limited by the minimum and maximum versions.
Codes of optional version are read by default.

12.5.1.13 Micro QR Parameters
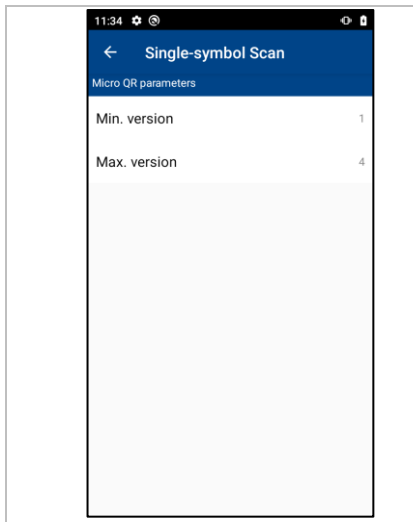
■ Min. version /Max. version

The range of code version enabling to read is limited by the minimum and maximum versions. Codes of optional version are read by default.

12.5.1.14 rMQR Parameters
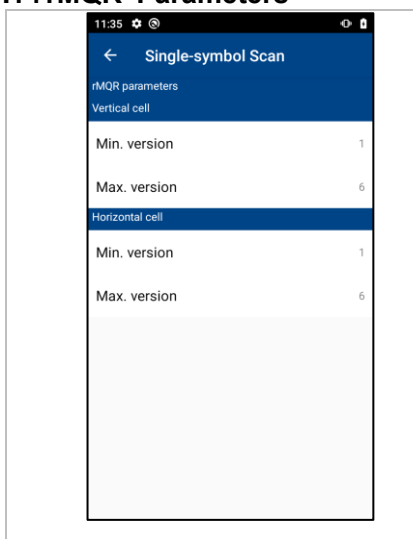
■ Min. version /Max. version

The range of code version enabling to read is limited by the minimum and maximum versions. Usually, rMQR code can be scanning as default range setting.

12.5.1.15 SQRC Parameters
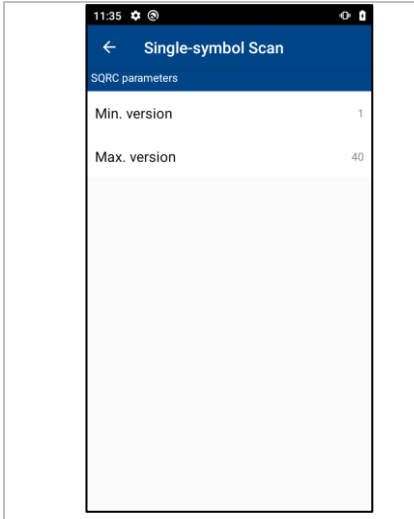
■ Min. version /Max. version

The range of code version enabling to read is limited by the minimum and maximum versions.
Codes of optional version are read by default.

12.5.1.16 iQR Parameters
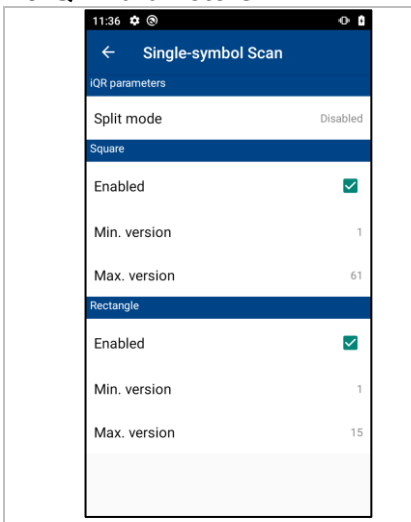
■ Split mode

Mode for reading concatenated codes is specified.
Reading of concatenated codes is disabled by default.

Edit mode
  Reads divided reading code one by one, and outputs the read data after compiling and editing.
Non edit mode
  Outputs data every time a concatenated code is read.

■ Enabled

Enables/disables reading of square and rectangular iQR Code individually.

■ Min. version /Max. version

The range of the code version enabling to read is limited by the minimum and maximum versions.
Codes of optional version are read by default.

12.5.1.17 Data Matrix Parameters
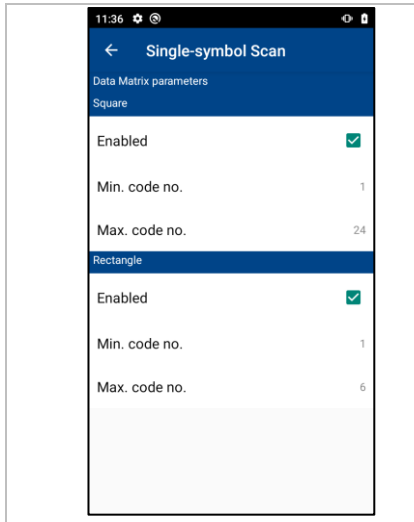
■ Enabled

Enables/disables reading of square and rectangular Data Matrix code individually.
Reading of both square and rectangular codes are disabled.

■ Min. code no./Max. code no.

The range of the code numbers enabling to read codes is limited by the minimum and maximum number code number.
Code of optional code number is read by default.

12.5.1.18 Aztec Parameters
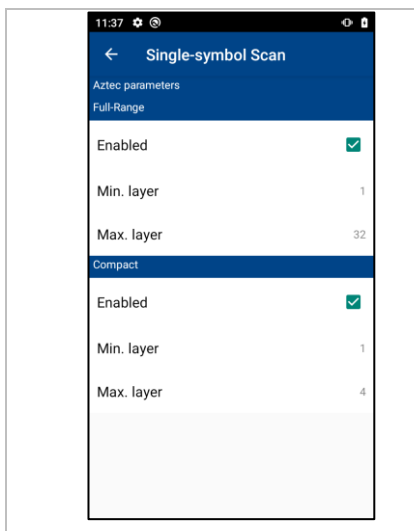
■ Enabled

Enables/disables reading of Full-Range and Compact Aztec code individually.
Reading of both Full-Range and Compact codes are disabled.

■ Min. layer/Max. layer

The range of the layer enabling to read codes is limited by the minimum and maximum number layer.
Code of optional layer is read by default.

12.5.1.19 Multi-line Code Parameters
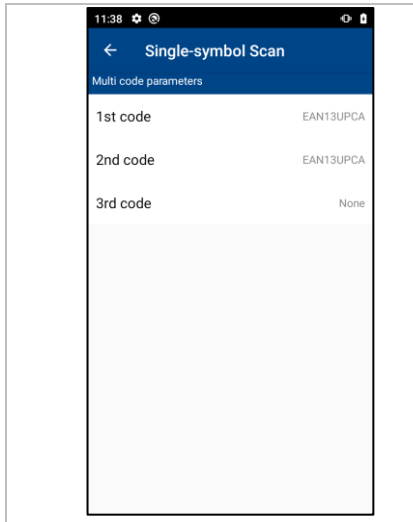
■ Enabled

Enables/disables reading of multi-line code.　Default: Disabled.

■ Parameter

Specifies 1st, 2nd, and 3rd-line code parameters.

12.5.1.20 OCR Parameters
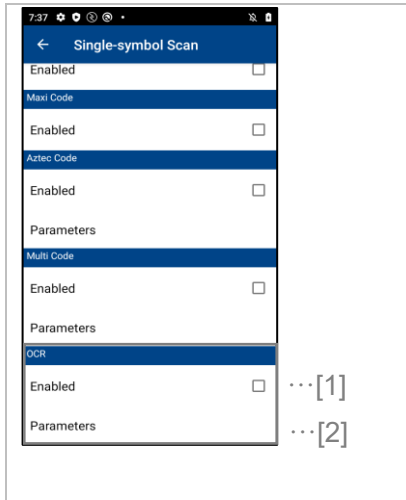
■ Enabled ⋯ [1]

Enables/disables reading of OCR. Reading of OCR codes is disabled by default. The following settings are effective when OCR is enabled.

Regarding to use OCR feature, please refer to "━ **Note** ━".

■ Parameters ⋯ [2]

Set various parameters in OCR. The settings are explained in the following figure.

[OCR Parameters]
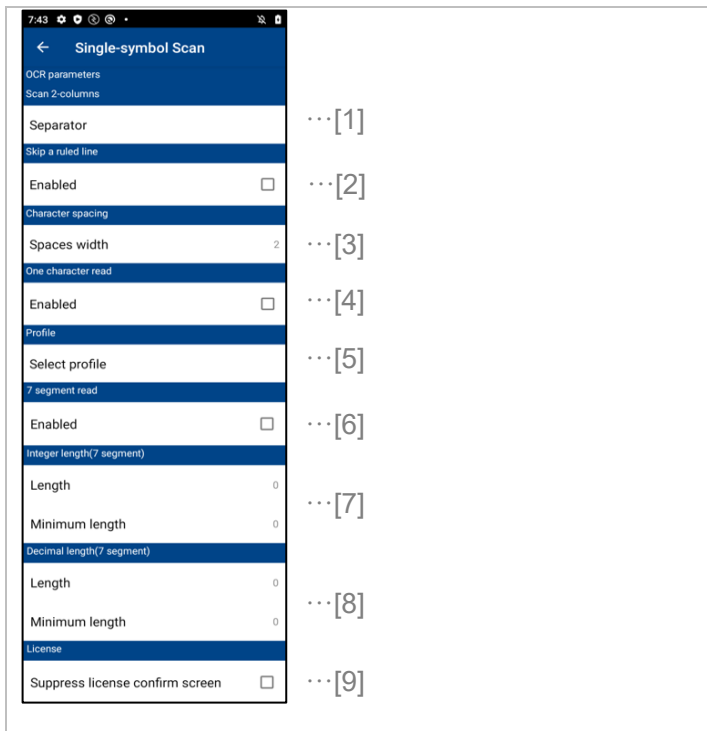
■ Scan 2-column ⋯ [1]

Enable to add any single character between first-column and second-column. This feature is enabled when OCR format is set to two-column. Separator is not set by default.

■ Skip a ruled line ⋯ [2]

Enable this setting if scanning to text surrounded by borders for each character. Enable to skip ruled line and scan single line of text.
Skip a ruled line is disabled by default.

■ Character spacing ⋯ [3]

When recognizing as one character string even if the character spacing is wide, enable to scan it as the same character string by adjusting this setting. Specifies the number of whitespace characters between characters that are recognized as a single character string.
The default number of character is 2(character width around 1 to 3)

■ One character mode ⋯ [4]

Enables/disables reading of reading of only one character. (The default OCR scan recognizes two or more characters of text.)
Reading of One character mode is disabled by default.

■ Profile ⋯ [5]

When using the OCR format(e.g. date format) to be scanning, OCR profile is enabled by exporting the OCR profile set by BHT OCR and importing it with this setting.
Profile specified is not set by default.

■ 7 segment read ⋯ [6]

Enable to special mode for reading 7 segment fonts. (e.g. Display of electronic measurement equipment).
7 segment read is disabled by default.
Regarding to use 7 segment read feature, please refer to "━ **Note2** ━" .

■ Integer length(7 segment) ⋯ [7]

Specifying the number of digits in the 7-segment display improves reading accuracy.
This setting specifies a range of digits for the integer part. The default is 0.
A setting of 0 indicates "No range specified". The setting range is from the minimum number of digits to the maximum number of digits. The maximum number of digits set is 10. About notes of setting, please refer to "━ **Note3** ━"

■ Decimal length(7 segment) ⋯ [8]

Specifying the number of digits in the 7-segment display improves reading accuracy.
This setting specifies a range of decimal places. The default is 0.
A setting of 0 indicates "No range specified". The setting range is from the minimum number of digits to the maximum number of digits. The maximum number of digits set is 10. About notes of setting, please refer to "━ **Note3** ━"

■ License ⋯ [9]

In the setting to scan bar codes and OCR, if only bar codes are scanned using BHT for which no license is set, "OCR license confirmation screen" will not be displayed by disabling this setting.
License is disabled by default.(Displayed "OCR license confirmation screen")

— Note —	To read OCR, set [Decode Settings]-[Point Scan] to something other than "Prohibited". If [Point Scan] is "Prohibited", characters cannot be read.

— Note2 —	When reading 7-segment fonts, arrange the following settings according to scanning environment.
	OCR general setting
	Set [Decode settings] - [Point scan mode] to "Point scan" or "Point scan 2."
	When 7 segment font display is lighting and the display background is black
	Set [Decode settings] - [Invert decode] to "enabled(Inverted only)".
	When 7 segment display panel reflects light (e.g. glass, plastic, etc.)
	Set [Scan settings] - [Light mode] to "OFF".

— Note3 —	The following figure shows the range of settings for the integer and fractional parts when reading 7 segments.
	Integer part : the number to the left of the decimal point
	fractional part : decimal point, right side number
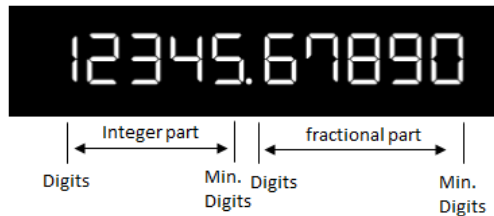
12.6. Setting menu (Multi-symbol Scan)

In the Barcode Scanner Settings, selecting [Parameter] for Multi-symbol Scan will launch the Multi-symbol Scan Settings menu.
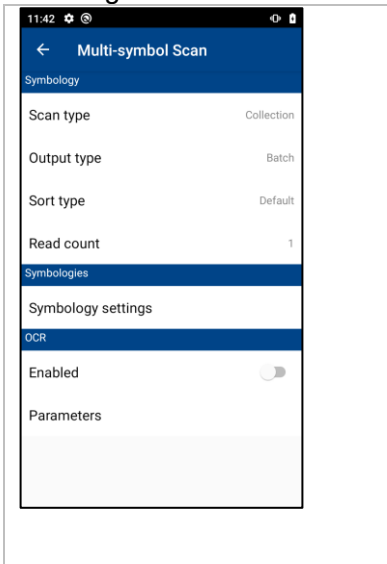
12.6.1. Symbology Settings
12.6.1.1 Scan type
Select the reading method: Collection, Collection (Single trigger), or Batch.
   Default is Collection.

Scan type
Collection
Collection(Single trigger)
Batch
CANCEL

Default : Collection.

Collection
  Accumulates the code read.
  Reading is completed when the specified number of pages is read.
  Once the trigger is turned off and the scan is turned off, the read data is not cleared.
  It can be read continuously by triggering it again.

Collection (Single trigger)
  Accumulates symbol information read only during scanning.
  Reading is completed when the specified number of pages is read.
  Clears accumulated symbol information when scanning is turned off.

Batch
  This is not supported in the current version. It has the same behavior as "Collection".

12.6.1.2 Output type

Select the output method: Each or Batch.
Default is Batch.

Output type
Each
Batch
CANCEL

Default :Batch

Each
The result is output each reading.

Batch
Outputs, in a batch, the reading results accumulated after reading the specified number of pages.

12.6.1.3 Sort type

Select the sort type for output : Default ,Alphabet or Symbol.
Default is "Default".

Sort type
Default
Alphabet
Symbol
CANCEL

Default : "Default"

Default
Output in the order read.
If set the output method to "Each", it can be set only "Default".

Alphabet
Output in alphabetical order of result of reading.
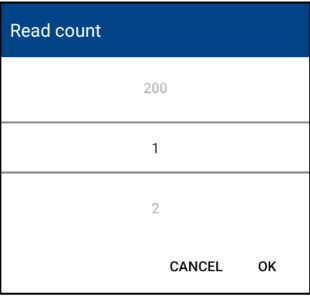
Symbol
Outputs in the order of the specified code symbols.

12.6.1.4 Read count
Select the count of reading. The range of count that can be specified varies depending on Scan type, Output type and Sort type settings.

Default is "1".

Read count
200
1
2
CANCEL   OK

Default : "1".

12.6.2. Multi-symbol Scan

In the Multi-symbol Scan Settings menu, select Symbol Settings for a reading symbol to launch the Multi-symbol Scan Settings menu. Enable/Disable reading for each code type. In addition, set parameters for each code.
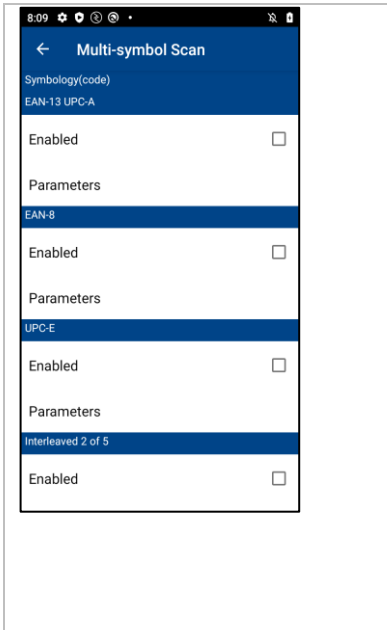
If check boxes for enabling each code are checked, reading of this code type is enabled. If a parameter is selected, the parameter setting menu of the code type starts up.
If the output order is the order specified, multiple symbol settings are displayed as shown in below figure.
Tap a line to display the reading symbol settings.
In this case, only one of the selected barcode symbology is applied per symbol setting.
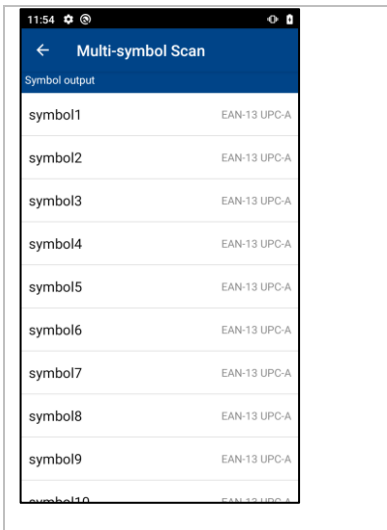
— **Note** — If the output order is specified, enable only one symbol for each symbol.
Each symbol can be checked multiple symbols, but only one applies.

12.6.2.1 EAN-13, UPC-A Parameters
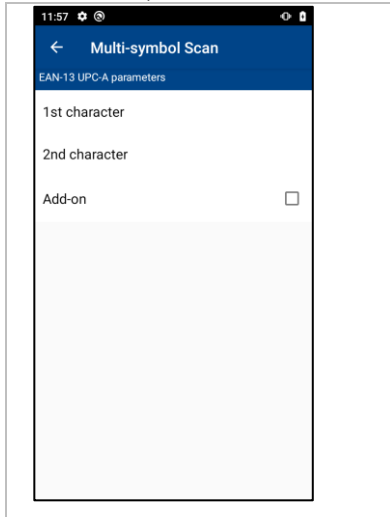
■ 1st character and 2nd character

Readable codes can be limited by specifying 1st and 2nd characters of the code. Available characters are 0 to 9. 1st and 2nd characters are not limited by default.

■ Add-on

When a check box is checked, codes with add-on are enabled to be read.

12.6.2.2 EAN-8 Parameters

■ 1st character and 2nd character

Readable codes can be limited by specifying 1st and 2nd characters of the code. Available characters are 0 to 9. 1st and 2nd characters are not limited by default.

■ Add-on

When a check box is checked, codes with add-on are enabled to be read.

12.6.2.3 UPC-E Parameters

- **1st character and 2nd character**

  Readable codes can be limited by specifying 1st and 2nd characters of the code.
  Available characters are 0 to 9. 1st and 2nd characters are not limited by default.

- **Add-on**

  When a check box is checked, codes with add-on are enabled to be read.

12.6.2.4 Interleaved 2 of 5 Parameters

- **Min. digits /Max. digits**

  The range of the number of digits enabling to read codes is limited by the minimum and maximum number of digits.

  ITF codes with 4 or more digits and Code39 codes with optional number of digits are read by default.

- **1st character and 2nd character**

  Readable codes can be limited by specifying 1st and 2nd characters of the code.
  Available characters are 0 to 9. 1st and 2nd characters are not limited by default.

12.6.2.5 Standard 2 of 5 Parameters
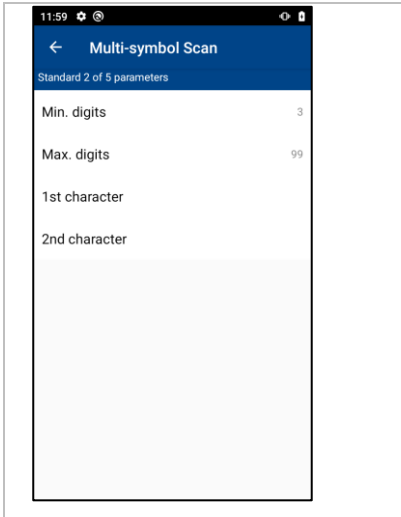
■　Min. digits /Max. digits

The range of the number of digits enabling to read codes is limited by the minimum and maximum number of digits.

Codes with 3 or more digits are read by default.

■　1st character and 2nd character

Readable codes can be limited by specifying 1st and 2nd characters of the code.
Available characters are 0 to 9. 1st and 2nd characters are not limited by default.

12.6.2.6 Codabar Parameters
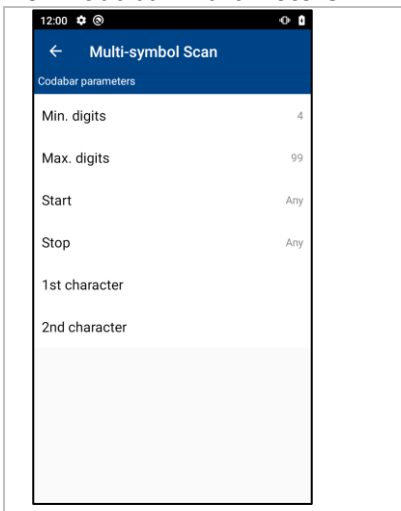
■　Min. digits /Max. digits

The range of the number of digits enabling to read codes is limited by the minimum and maximum number of digits.

Codabar codes with 4 or more digits are read by default.

■　Start/Stop character

Start/Stop character (A, B, C, D) of readable Codabar code can be limited.

Start/Stop character is not limited by default. (Optional/Any is set.)

■　1st character and 2nd character

Readable codes can be limited by specifying 1st and 2nd characters of the code.
Available characters are 0 to 9. 1st and 2nd characters are not limited by default.

12.6.2.7 Code39 Parameters
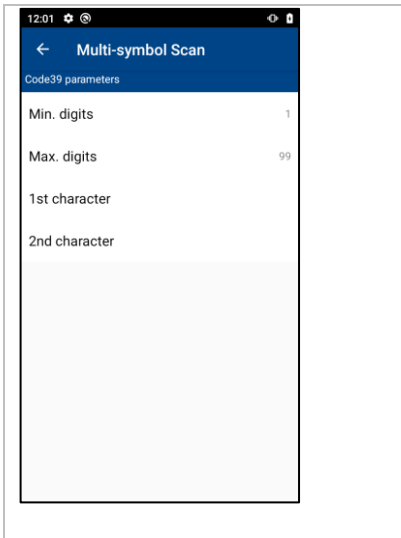
■ Min. digits /Max. digits

The range of the number of digits enabling to read codes is limited by the minimum and maximum number of digits.
ITF codes with 4 or more digits and Code39 codes with optional number of digits are read by default.

■ 1st character and 2nd character

Readable codes can be limited by specifying 1st and 2nd characters of the code.
Available characters are 0 to 9. 1st and 2nd characters are not limited by default.

12.6.2.8 Code 93 Parameters
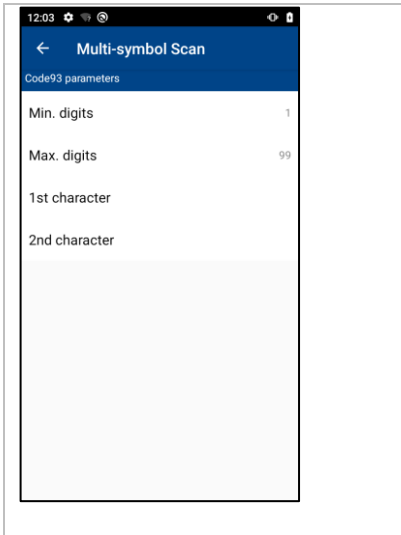
■ Min. digits /Max. digits

The range of the number of digits enabling to read codes is limited by the minimum and maximum number of digits.
Codes with optional number of digits are read by default.

■ 1st character and 2nd character

Readable codes can be limited by specifying 1st and 2nd characters of the code.
Available characters are 0 to 9. 1st and 2nd characters are not limited by default.

12.6.2.9 Code 128 Parameters
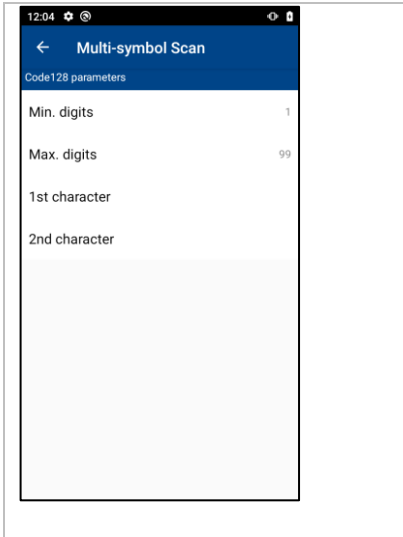
■ Min. digits /Max. digits

The range of the number of digits enabling to read codes is limited by the minimum and maximum number of digits.

Codes with optional number of digits are read by default.

■ 1st character and 2nd character

Readable codes can be limited by specifying 1st and 2nd characters of the code.
Available characters are 0 to 9. 1st and 2nd characters are not limited by default.

12.6.2.10 GS1 Databar Parameters
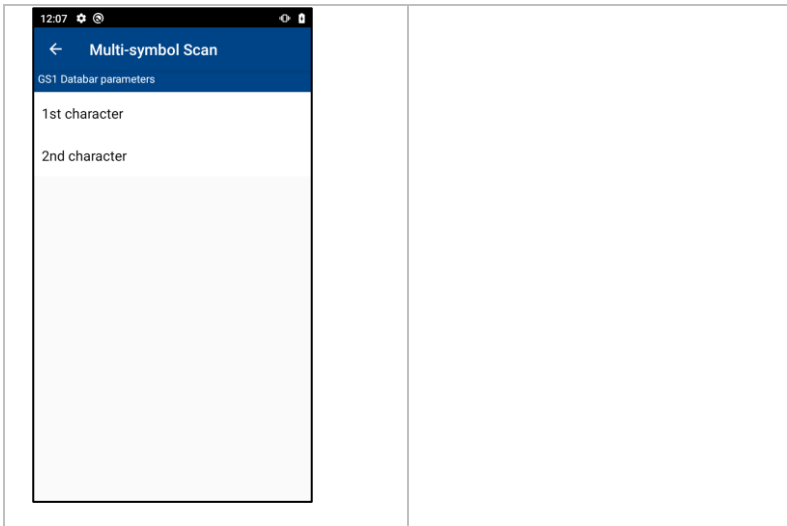
■ 1st character and 2nd character

Readable codes can be limited by specifying 1st and 2nd characters of the code.
Available characters are 0 to 9. 1st and 2nd characters are not limited by default.

12.6.2.11 GS1 Databar Limited Parameters
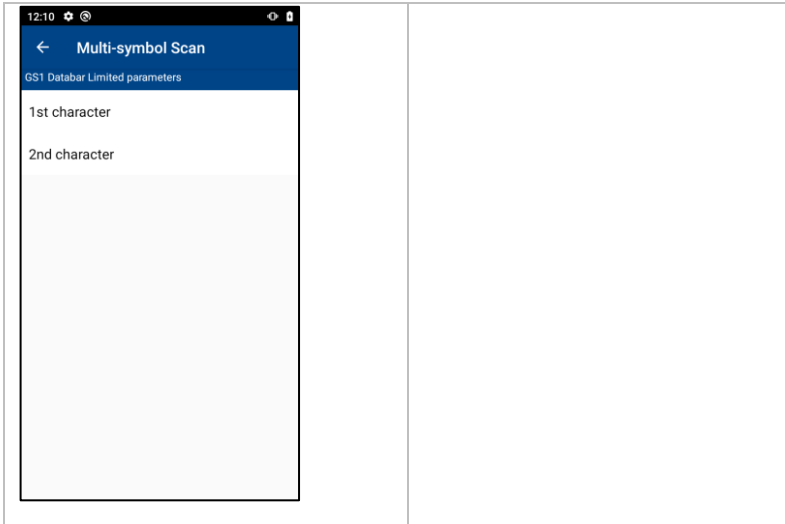
■ 1st character and 2nd character

Readable codes can be limited by specifying 1st and 2nd characters of the code.
Available characters are 0 to 9. 1st and 2nd characters are not limited by default.

12.6.2.12 GS1 Databar Expanded Parameters
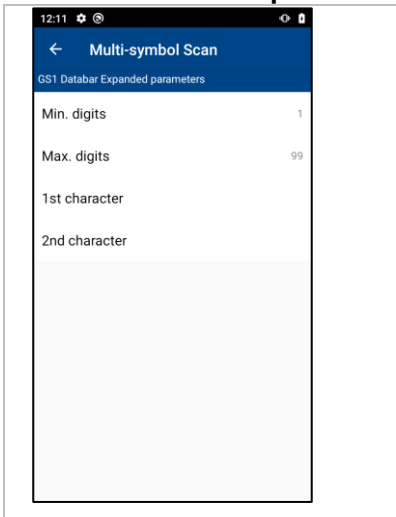
■ Min. digits /Max. digits

The range of the number of digits enabling to read codes is limited by the minimum and maximum number of digits.
Codes with optional number of digits are read by default.

■ 1st character and 2nd character

Readable codes can be limited by specifying 1st and 2nd characters of the code.
Available characters are 0 to 9. 1st and 2nd characters are not limited by default.

12.6.2.13 QR Parameters
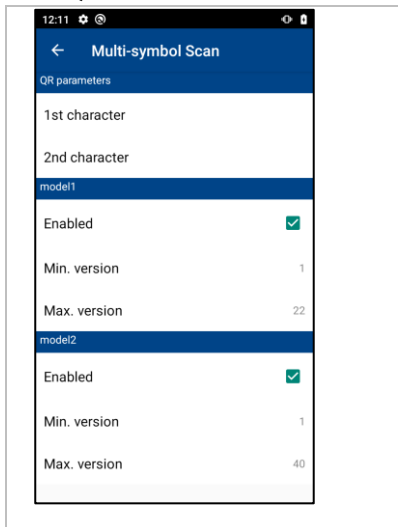
■ Split mode

Mode for reading concatenated codes is specified.
Concatenated codes are not read by default.

Edit mode
Reads divided reading code one by one, and outputs the read data after compiling and editing.

Batch edit mode
Reads all divided codes by containing them in the reading view, and outputs data after editing all data of the read concatenated codes.

Non edit mode
Outputs data every time a concatenated code is read.

■ 1st character and 2nd character

Readable codes can be limited by specifying 1st and 2nd characters of the code.
Available characters are 0 to 9. 1st and 2nd characters are not limited by default.

■ Enabled

Enables/disables reading of Model 1 and Model 2 QR code individually.
Reading of both Model 1 and Model 2 are enabled by default.

■ Min. version /Max. version

The range of the code version enabling to read is limited by the minimum and maximum versions.
Codes of optional version are read by default.

12.6.2.14 Micro QR Parameters
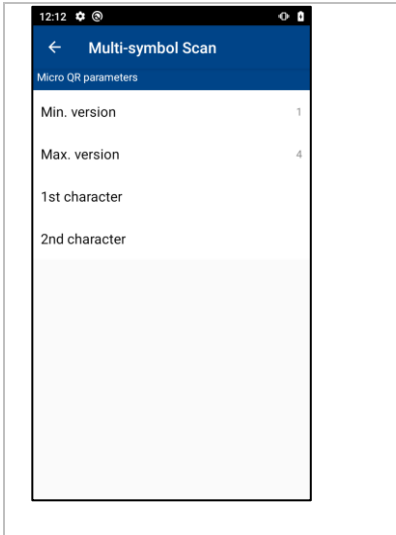
■　Min. version /Max. version

The range of code version enabling to read is limited by the minimum and maximum versions.
Codes of optional version are read by default.

■　1st character and 2nd character

Readable codes can be limited by specifying 1st and 2nd characters of the code.
Available characters are 0 to 9. 1st and 2nd characters are not limited by default.

12.6.2.15 rMQR Parameters
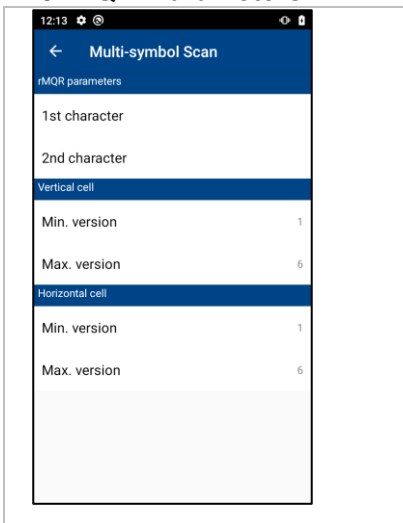
■　1st character and 2nd character

Readable codes can be limited by specifying 1st and 2nd characters of the code.
Available characters are 0 to 9. 1st and 2nd characters are not limited by default.

■　Min. version /Max. version

The range of code version enabling to read is limited by the minimum and maximum versions.
Codes of optional version are read by default.

12.6.2.16 Data Matrix Parameters
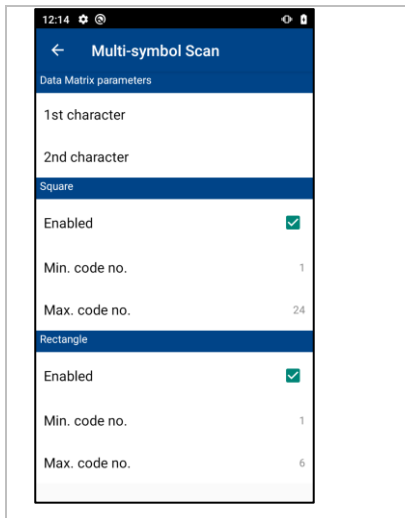
■ 1st character and 2nd character

Readable codes can be limited by specifying 1st and 2nd characters of the code.
Available characters are 0 to 9. 1st and 2nd characters are not limited by default.

■ Enabled

Enables/disables reading of square and rectangular Data Matrix code individually.
Reading of both square and rectangular codes are disabled.

■ Min. code no./Max. code no.

The range of the code numbers enabling to read codes is limited by the minimum and maximum number code number.
Code of optional code number is read by default.
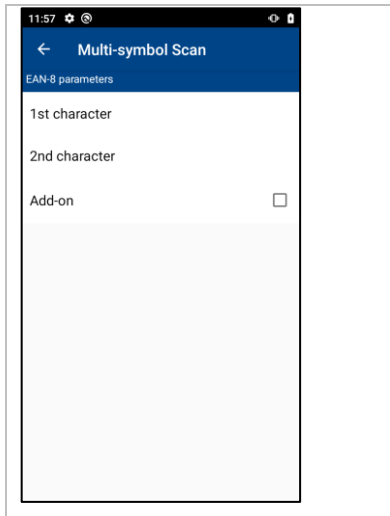
12.6.2.17 PDF417 Parameters
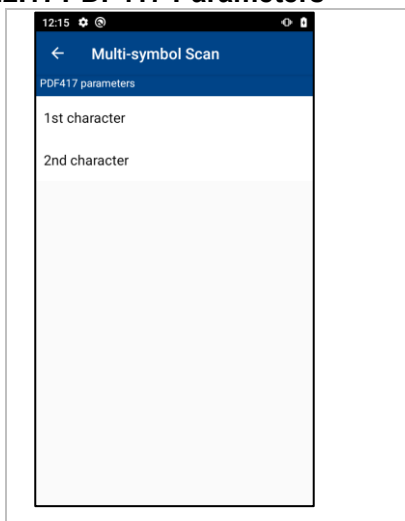
■ 1st character and 2nd character

Readable codes can be limited by specifying 1st and 2nd characters of the code.
Available characters are 0 to 9. 1st and 2nd characters are not limited by default.
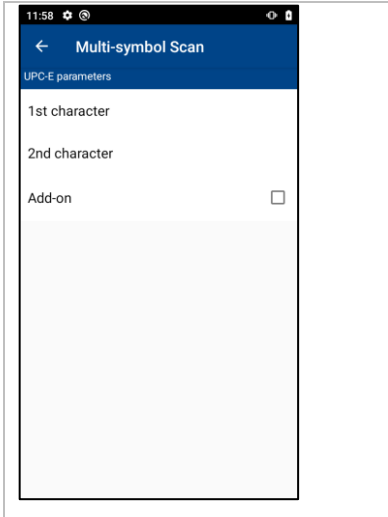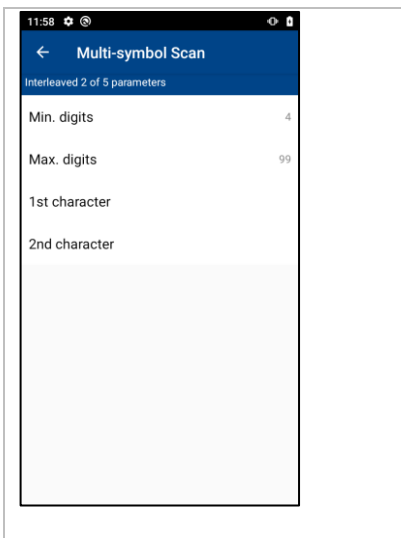
12.6.2.18 Micro PDF417 Parameters
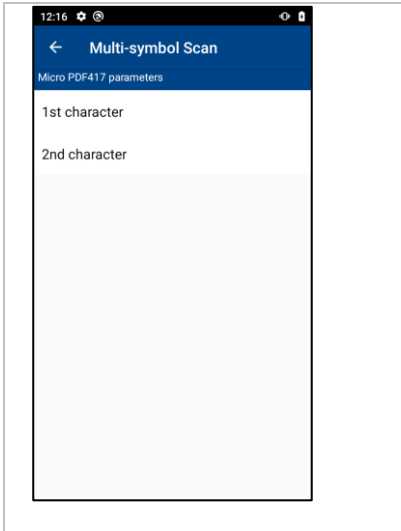
■ 1st character and 2nd character

Readable codes can be limited by specifying 1st and 2nd characters of the code.
Available characters are 0 to 9. 1st and 2nd characters are not limited by default.

12.6.3. OCR Parameters
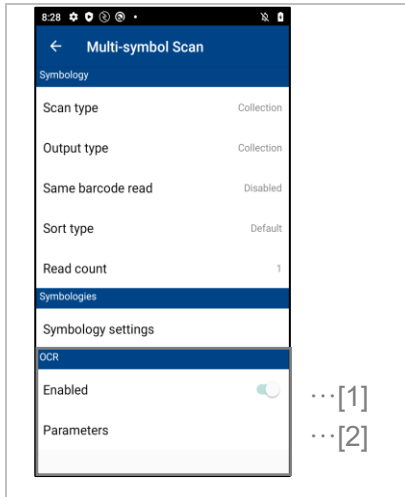
■ Enabled … [1]

Enables/disables reading of OCR. Reading of OCR codes is disabled by default. The following settings are effective when OCR is enabled.

Regarding to use OCR feature, please refer to "**— Note —**".

> **— Note —** To read OCR, set [Decode Settings]-[Point Scan] to something other than "Prohibited". If [Point Scan] is "Prohibited", characters cannot be read.

■ Parameters … [2]

Set various parameters in OCR. The settings are explained in the following figure.

[OCR Parameters]
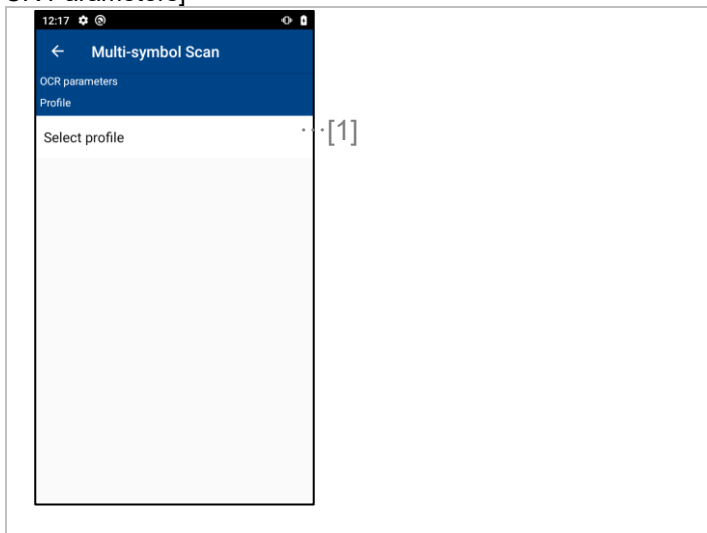
■ Profile … [1]

Specify the profile of the OCR settings that is exported by BHT OCR (OCR settings tool). The default is no profile specified. (If it is necessary to read characters in a specified format, recommended to set an OCR profile.)

12.7. Management of Setting Values
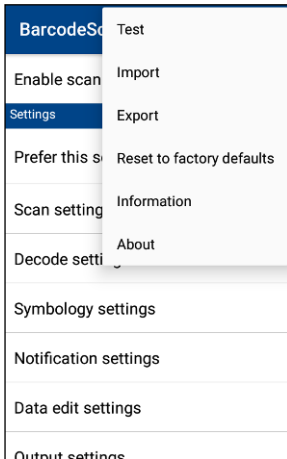
All settings are managed with xml file (hereinafter referred to as settings file). When a settings file saved in the appropriate place is imported, the setting value defined in the settings file is reflected on the menu. Next time reading barcode is enabled, the setting value is reflected on the device.
The setting value set in the menu can also be exported to a file.
Exporting contents set in one device and importing them in another device enables to use the same setting value.

The setting file is operated from the barcode scanner setting menu.

■ Import
Selects a setting file to be imported.

■ Export
Selects a place where a setting file is exported.

■ Reset to factory defaults
Resets the setting contents to the factory default. Select [Resets to the factory defaults] and select [OK] on the setting value initialization check dialogue. Then, the setting value resets to the factory default.

12.7.1. Storing Set Value Permanently
By storing the setting file in the internal shared storage/StartupSettingsData/Setup/Barcode/ folder, the file can be stored permanently without losing the setting contents after Enterprise reset. The same setting contents can be reflected on another device by exporting the contents set in one device, storing them in the above directory of another device, and executing Enterprise reset to the device.

12.7.2. Programming
The set value can be imported and/or exported by broadcasting the intent from the application. If you fail in importing and/or exporting, the error is displayed on the status bar. If you would like to execute more high-end processing in the event of a failure, sendOrderedBroadcast() method should be used. Using this method, the result of import/export can be received as ResultCode of BroadcastReceiver. Program the required processing (such as retrial, download of the setting file from a server) as needed.

■ Import
package / class
    package : com.densowave.scansettings
    class : com.densowave.scansettings.receiver.IOReceiver
action
    com.densowave.scansettings.intent.action.IMPORT_SETTINGS

extras
    key : srcDirectory, value : Name of directory for storing the setting file to import
e.g.) Import the setting file stored in myScanSettings/directory.

```
Intent intent = new Intent();
Intent.setClassName("com.densowave.scansettings",
                    "com.densowave.scansettings.receiver.IOReceiver");
intent.setAction("com.densowave.scansettings.intent.action.IMPORT_SETTINGS");
intent.putExtra("srcDirectory", "/storage/emulated/0/myScanSettings");
sendOrderedBroadcast(intent, null, myResultReceiver, null, 0, null, null);
```

When the directory name is not specified, ResultCode(RESULT_FIRST_USER+2) occurs.
When the specified directory does not exist, ResultCode (RESULT_FIRST_USER+1) occurs.
When the other errors, ResultCode (-1) occurs.

■ Export
package / class
    package : com.densowave.scansettings
    class : com.densowave.scansettings.receiver.IOReceiver
action
    com.densowave.scansettings.intent.action.EXPORT_SETTINGS
extras
    key : destDirectory, value : Name of directory for storing the setting file to export
e.g.) Export the set value to the myScanSettings/directory.

```
Intent intent = new Intent();
Intent.setClassName("com.densowave.scansettings",
                    "com.densowave.scansettings.receiver.IOReceiver");
intent.setAction("com.densowave.scansettings.intent.action.EXPORT_SETTINGS");
intent.putExtra("destDirectory", "/storage/emulated/0/myScanSettings");
sendOrderedBroadcast(intent, null, myResultReceiver, null, 0, null, null);
```

When the directory name is not specified, ResultCode(RESULT_FIRST_USER+2) occurs.
When the other errors, ResultCode (-1) occurs.

When the specified directory does not exist, a new directory will be created.

12.8. Test

Select [Test] from the barcode scanner setting menu, and the barcode reading test menu starts up.
Using the test menu, you can test contents and operations which you have set.
Read code information is displayed on the upper area of the screen.
Code type name, code type (BHT type), code type (AIM type) and number of digits are displayed from the top. The number of reading is also displayed.
Read data are displayed on the lower area of the screen. Data edited according to the set value is displayed.
When [Prefer this setting] in the top menu is ON, the device operates in accordance with the settings set on the menu. When it is OFF, follow the table shown below.

Setting value	2D
Scan settings	
Trigger mode	Auto OFF
Light mode	Auto
Marker mode	Normal
Decode settings	
Same barcode interval time	1 sec.
Decode level	4
Invert decode	Disabled
Point scan mode	Disabled
Revers decode	Disabled
Charset	UTF-8
RSS margin level	ISO/IEC24724:2006
Add-On decode level	Disabled
Symbology settings UPC-A, EAN-13, EAN-8, UPC-E	
Enabling/disabling reading	Enabled
Specifying first character	""
Specifying second character	""
Add-on	Disabled
Symbology settings ITF	
Enabling/disabling reading	Enabled
Minimum number of digits	4
Maximum number of digits	99
Check digit verification	Not verify
Symbology settings STF	
Enabling/disabling reading	Enabled
Minimum number of digits	3
Maximum number of digits	99
Check digit verification	Not verify
Specifying start/stop mode	Optional
Symbology settings Codabar	
Enabling/disabling reading	Enabled
Minimum number of digits	4
Maximum number of digits	99
Check digit verification	Not verify
Specifying start/stop mode	Not specify
Symbology settings Code39	
Symbology settings Code39	Enabled
Minimum number of digits	1
Maximum number of digits	99
Check digit verification	Not verify
Symbology settings Code93	
Enabling/disabling reading	Enabled
Minimum number of digits	1
Maximum number of digits	99
Symbology settings Code128	
Enabling/disabling reading	Enabled
Minimum number of digits	1

Maximum number of digits	99
Symbology settings GS1 Databar	
Enabling/disabling reading	Enabled
Enabling/disabling stack reading	Enabled
Symbology settings GS1 Databar Limited	
Enabling/disabling reading	Enabled
Symbology settings GS1 Databar Expanded	
Enabling/disabling reading	Enabled
Enabling/disabling stack reading	Enabled
Symbology settings QR(model1, model2)	
Enabling/disabling reading	Enabled
Structure append	Enabled
Version	All version
Symbology settings Micro QR	
Enabling/disabling reading	Enabled
Version	All version
Symbology settings rMQR	
Enabling/disabling reading	Enabled
Version	All version
Symbology settings iQR	
Enabling/disabling reading	Enabled
Structure append	Enabled
Version	All version
Symbology settings Data Matrix	
Enabling/disabling reading	Enabled
Code No.	All Code No.
Symbology settings PDF417	
Enabling/disabling reading	Enabled
Symbology settings Micro PDF417	
Enabling/disabling reading	Enabled
Symbology settings Maxi Code	
Enabling/disabling reading	Enabled
Symbology settings Aztec	
Enabling/disabling reading	Enabled
Layer	All layer
Symbology settings Multi-line Code	
Enabling/disabling reading	Disabled
Specifying reading code	-
Symbology settings OCR	
Enabling/disabling reading	Disabled
Parameters	-
Notification sound	
Enabling/disabling	Enabled
Specifying notification sound	""
Usage Type	Ringtone
Notification vibrator	
Enabling/disabling	Disabled
Notification LED	
Enabling/disabling	Enabled
Data edit　Common	
Prefix/Suffix string	""
Edit of advanced data	Disabled
Data edit EAN-13	
Check digit output	Enabled
Data edit UPC-A	
Check digit output	Enabled
Leading 0 output	Enabled
Data edit EAN-8	
Check digit output	Enabled
Conversion to EAN-13	Disabled
Data edit UPC-E	
Check digit output	Enabled
Leading 0 output	Disabled
Conversion to UPC-A	Disabled
Data edit Code39	
Check digit output	Enabled
Start/stop output	Disabled
Data edit Codabar	

Check digit output	Enabled
Start/stop output	Enabled
Conversion to capital	Disabled
Data edit ITF	
Check digit output	Enabled
Data edit STF	
Check digit output	Enabled
Output key input	
Enabling/disabling	Disabled
Input method	Clipboard
Prefix/Suffix input key	None
Waiting time after input	0

■ Password for SQRC
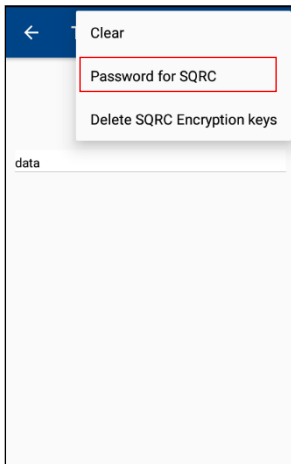
Showing the private data on the read SQRC on this menu is protected by the password.
The password protection is invalidated by factory default.

If you want to prevent a malicious third party from stealing the private data of SQRC using the test menu, please set the password by the following procedure. By set a password, the password protection is validated. The private data is not shown unless the correct password is entered.

Note
This password is different from the management code or the encryption key on the SQRC settings.
This password is not imported and exported with import/export function on the ScannerSetting.
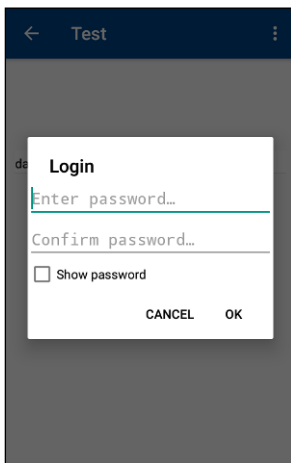
Set password to protect showing private data of SQRC:
Set the password to enter mode where showing the private data of the SQRC is permitted.
To change the password, the current password need to be entered.
If [Show password] is checked, entering password can be checked. Default : OFF
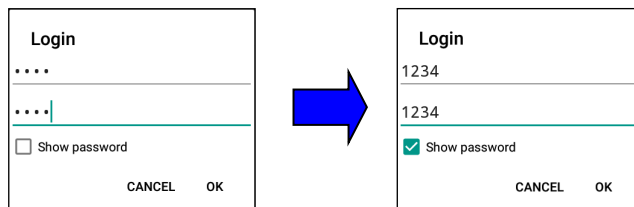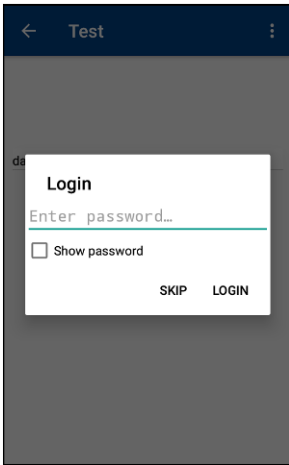
Enter the login password:

If the login password is set,
entering password is requested every when entering the test menu.Only when the correct password is entered, the private data of SQRC is shown. When [SKIP] is selected, the private data of SQRC is not shown (Data of other than SQRC and public data of SQRC is shown).

If the login password is not set,
all of the read data is shown without entering the password.

If you forget the correct password, select the "Delete SQRC Encryption keys" on the right top of the menu. The password lock is unlocked and all of the SQRC encryption keys on the BHT is deleted when [OK] is selected on the above confirmation dialog.

If you want to get or show the private data of SQRC, set the SQRC encryption keys by using SQRC Settings (Refer to " BHT SQRC Settings manual ").

12.9. Information

When [Information] or [About] is selected from the barcode scanner setting menu, information on devices and software set for this document is displayed.

- ■ Information
  Displays installed barcode device model and F/W versions.

- ■ About
  Displays the version of software for setting this barcode scanner.

13. Touch Trigger

It is an application to show a trigger button on the screen.
By tapping a trigger button, barcodes start to be read.

Tap in the App. list, and the touch trigger starts up and the main screen is displayed.

— **Point** —   When the barcode reading function is OFF, reading will not be operated even if a button is pressed.

13.1. Function

13.1.1. Start/Stop
This function changes the trigger button indication status.
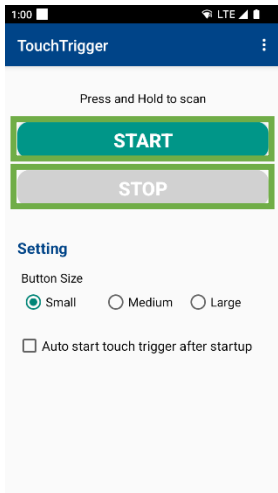
Item	Description
Start	Displays a trigger button the size of which has been set.
Stop	Stops displaying the trigger button.

When you start tapping the trigger button, the button indication is changed to "Tapped", and then the barcode reading starts.
When you stop tapping the trigger button, the button indication returns to "Normal" and the barcode reading stops.
A place to indicate a trigger button can be changed by dragging and dropping the displayed trigger button.

Normal: Tapped:

13.1.2. Trigger Button Fixing

This function changes the fixing status of the trigger button indication.
It can be set only when the touch trigger function starts.
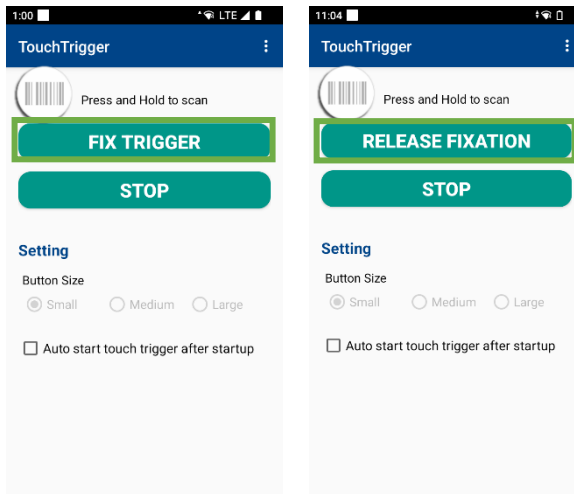
Item	Description
FIX TRIGGER	Fixes the trigger button indication. The place to indicate a trigger button cannot be changed while it is fixed.
RELEASE FIXATION	Releases the fixation of the trigger button indication. The place to indicate a trigger button will be able to be changed by dragging and dropping a trigger button.

13.1.3. Settings

The settings of a touch trigger to start up can be changed.

Item	Description
Button size	Changes the size of a trigger button. This setting cannot be configured for a trigger that has already started. Try this setting after stopping the trigger.
Auto start touch trigger after startup	Sets the touch trigger operation when the BHT power is turned ON. When it has been checked in the check box, a trigger button will be indicated automatically at the next BHT start-up. (A button with the previously indicated trigger setting will be displayed.)

13.1.4.Menu Button

Tap the Menu [icon] button, and the option menu is displayed.

Item	Description
ABOUT	Touch trigger app. version information

14. BHT Logger

BHT Logger is an application gathering log data such as logcat message, which an application or a system outputs, in the background, and packaging and saving gathered log data in the storage.
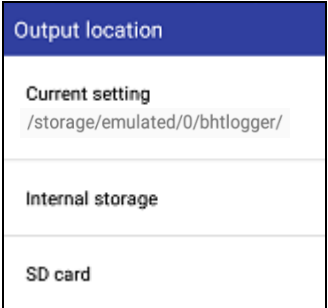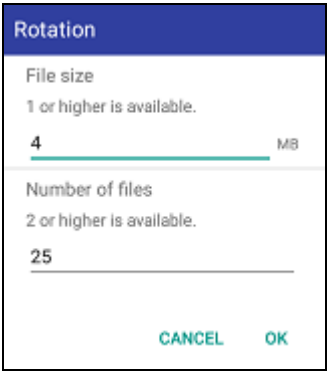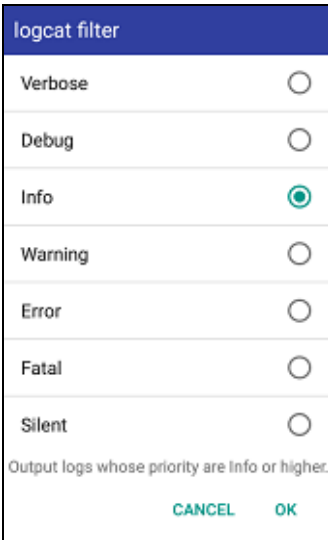
Tap [icon] in the Apps list, and the BHT Logger starts up and the following main screen is displayed.

Main screen

Menu list

Settings screen
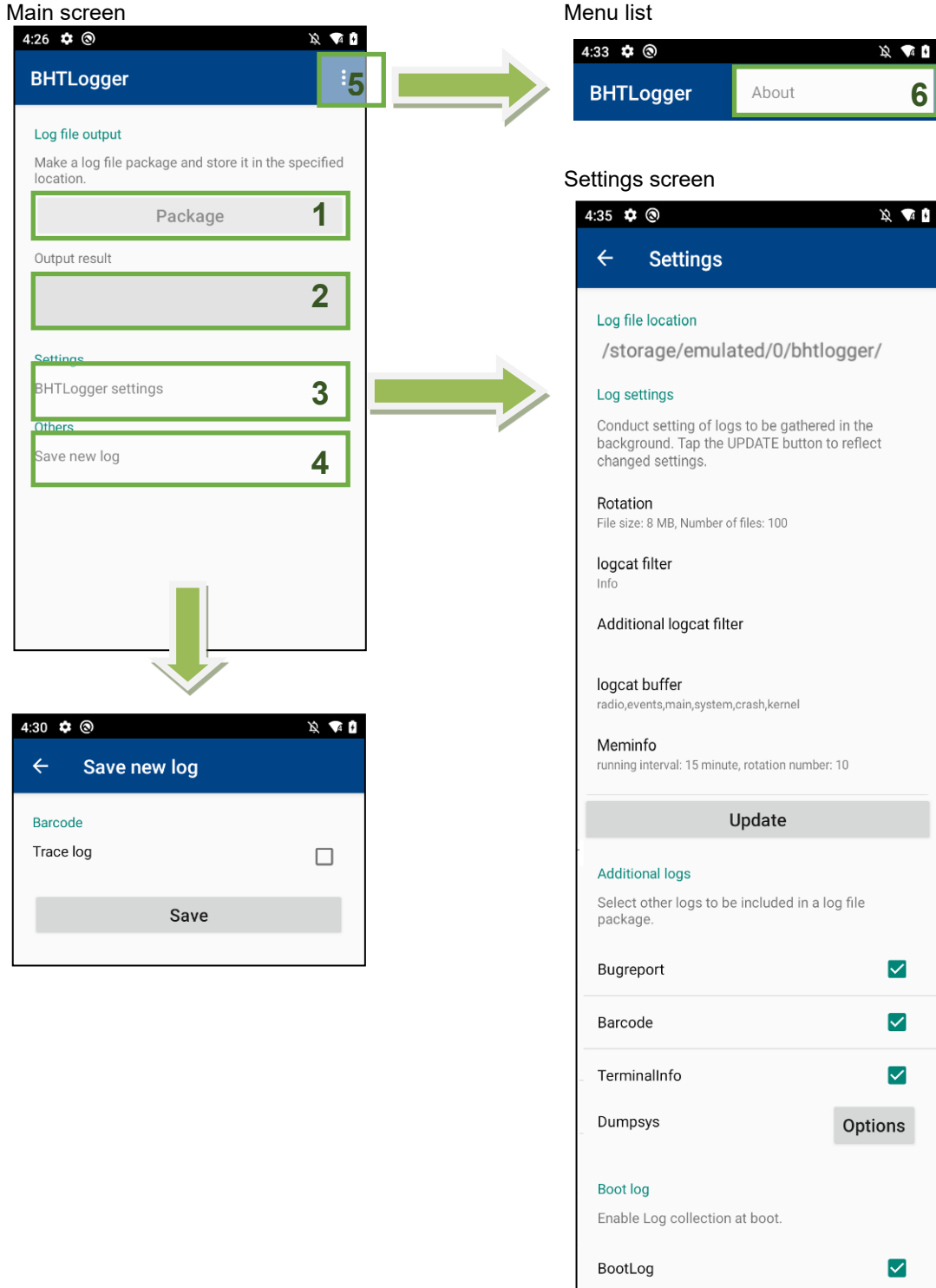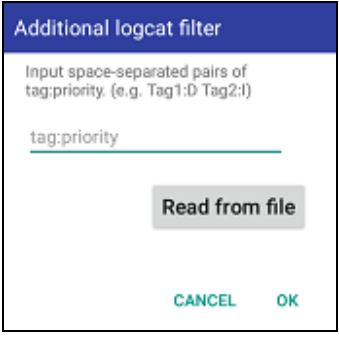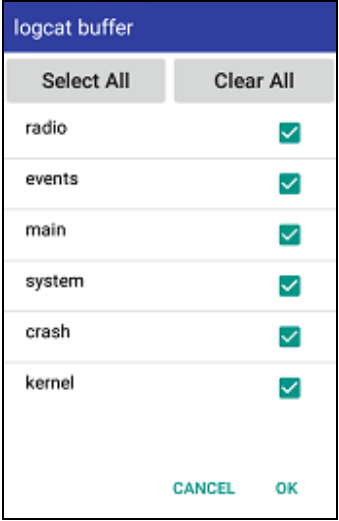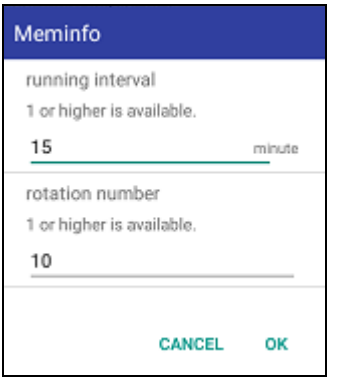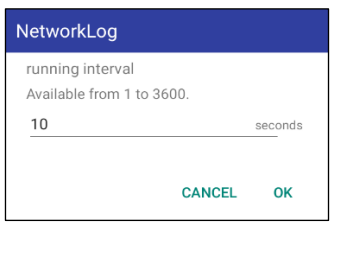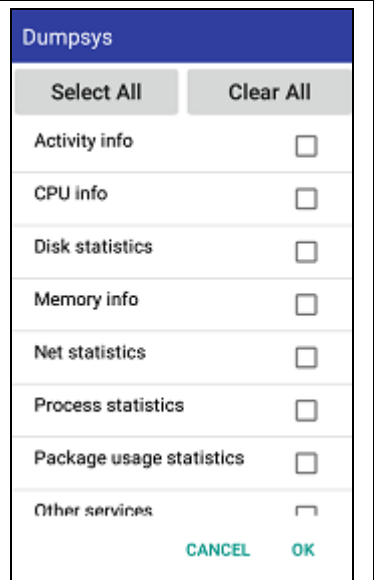
- Point -   Unless update button is tapped, change is not reflected even if a log settings item is changed.

Main screen configuration

No	Item	Description
1	Package button	When it is tapped, gathered log data are packaged in the ZIP file and saved in the place specified in the settings screen. (This ZIP file is hereinafter referred to as "log package".) The file name of log package is as follows, *<Terminal serial No.>_<File creating date>_<File creating time>*.zip
2	Output result	The place where log package is saved and the filename is displayed.
3	BHT Logger settings	When it is tapped, the setting screen is displayed.
4	Save new log	When it is tapped, the log file storing screen will be displayed.
5	Menu button	When it is tapped, the menu list is displayed.
6	About	When it is tapped, the BHT Logger version is displayed.

Settings screen configuration

Category	Item	Description	
Log file location	Output location	When it is tapped, the output location selection dialogue shown on the right is displayed. Set the saving location of the log package. — Note — If the output destination is the SD card directory, for example, the actual SD card directory will be changed by performing the following operations, and then packaging will fail, so please reset the output destination in that case. - Replace the SD card. - Format the SD card.	**Output location** Current setting /storage/emulated/0/bhtlogger/ Internal storage SD card
Log settings	Rotation	When it is tapped, a screen shown on the right is displayed. Set the number of files to be rotated and the file size per file in relation to the output of logcat message.	**Rotation** File size 1 or higher is available. 4 MB Number of files 2 or higher is available. 25 CANCEL OK
	logcat filter	When it is tapped, a screen shown on the right is displayed. Set the priority of logcat message for log output.	**logcat filter** Verbose ○ Debug ○ Info ◉ Warning ○ Error ○ Fatal ○ Silent ○ Output logs whose priority are Info or higher. CANCEL OK

Log settings	Additional logcat filter	When it is tapped a screen shown on the right is displayed. Adding a filter here enables you to specify logs to collect more specifically. As for the filter form, a tag has precedence. To input several filters, put a space between each filter.	
	logcat buffer	When it is tapped, a screen shown on the right is displayed. Set the logcat buffer for log output.	
	Meminfo	When it is tapped, a screen shown on the right is displayed. Regarding the output of the memory information, set the acquisition interval and the number of files to rotate.	
	NetworkLog	(LTE supporting model only) When it is tapped, a screen shown on the right is displayed. Regarding the output of the network information, set the acquisition interval. Network information is output only if the logcat filter is set to Verbose, Debug, or Info.	
	Update button	Changed log setting is reflected on the BHT Logger.	
Additional log	Bugreport	When it is checked, bugreport command is performed when the log package is created. A file outputting the performance result is contained in the log package.	
	Barcode	When it is checked, logs related to the barcode stored in the log file storage screen are contained in the log package.	
	TreminalInfo	When it is checked, detailed information of the BHT are contained in the log package.	

Additional log	Dumpsys	When the option button is tapped, a screen shown on the right is displayed. When more than one box is checked, dumpsys command is performed and selected information is output to a file when the log package is created. This file is contained in the log package.	Dumpsys Select All	Clear All Activity info ☐ CPU info ☐ Disk statistics ☐ Memory info ☐ Net statistics ☐ Process statistics ☐ Package usage statistics ☐ Other services ☐ CANCEL OK

Configuration of a log file storing screen

Category	Item	Description
Barcode	Trace log	Check this when the trace log of the barcode is saved.
	Save button	When it is tapped, selected logs are stored internally. Logs stored here will be contained in the log package when the Barcode of the setting screen is checked.

15. BHTSetting

BHTSetting is a tool to execute the kitting support of the setting values of BHT.

15.1. Outline

15.1.1. Configuration and Flow

Step 1: Update the master terminal setting information.
Step 2: Execute the export of BHTSetting.

Step 3: By importing the export package to the terminal of the kitting target, the settings of the master terminal can be copied to several terminals.
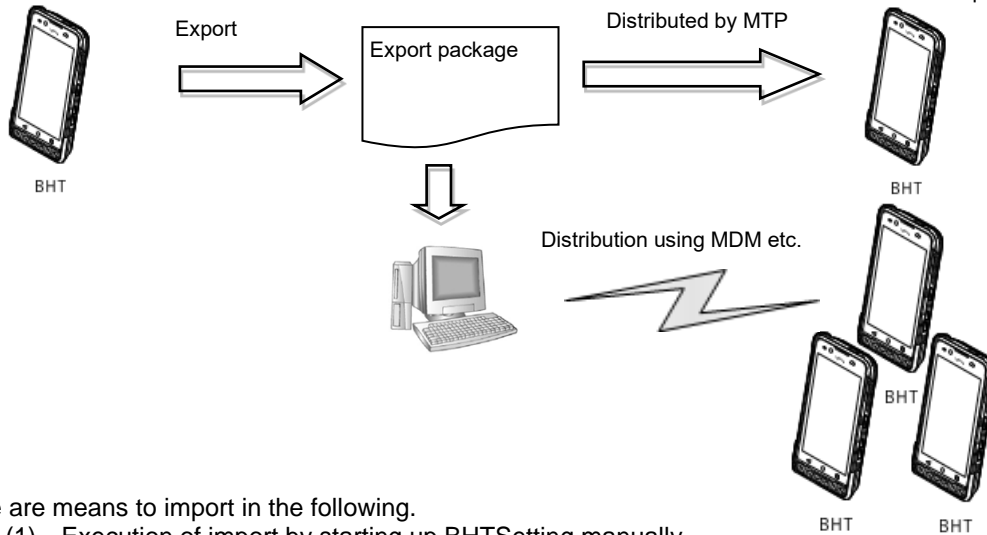
There are means to import in the following.
- (1) Execution of import by starting up BHTSetting manually.
  - · For details, refer to "15.2.1.3 Import" in this document.

- (2) Execution of import by using BhtSettingLibraryAPI of BHTSDK.
  - · For details, refer to "BhtSettingLibrary#importSettings" in "11. BHTSetting API" in the programming manual.

15.1.2. Password

In BHTSetting, there is a password that is used to suppress the operation of BHT Setting and an encrypted password that is used to protect the export package.

15.1.2.1 Password of BHTSetting

Unless the password of BHTSetting is entered to the following secure operation and setting change, it cannot be operated.
For the password setting of BHT Setting, refer to "15.2.2.16 BHTSetting"

Operation and setting change	Link
Execution of export	15.2.1.4
Start-up of BHTSecurityManager	BHT-SecurityPackage for Android user's manual
Start-up of BHTFirewall	BHT-SecurityPackage for Android user's manual
Change of prohibition settings of device	15.2.2.4
Disable enterprise reset	15.2.2.5
API disable	15.2.2.6
Other settings	15.2.2.7
Settings of BHTSetting	15.2.2.16

— **Note** — · Please note that when forgot the BHTSetting password, it cannot be reset without performing Resetting to the Factory Default (FactoryReset) in "3.6 Resetting to the Factory Default (FactoryReset) and Enterprise reset ".

15.1.2.2 Encrypted Password

The encryption password is used to protect the export package information by encrypting it and to authenticate the export package and the terminal at the time of import.

Therefore, please specify the BHTSetting password of the import destination as the encryption password to be specified when creating the export package.

15.1.2.3 Password Usage

(1) For the first time kitting (when the password is not registered in the import destination BHT Setting)

Image)

■Prerequisite state
1) The BHTSetting password of the BHT to be exported is setting "AAA".
2) The BHT Setting password of the import destination BHT is not set (blank).

■Flow

For the encrypted password at the time of an export, specify "CCC"(Any).

■Export package
· Password "AAA" of BHTSetting is stored.
· The export file is encrypted with "CCC".

When importing, it needs to specify "CCC" as the decryption password.

As a result of the import, the password of BHTSetting is updated to "AAA".
After that, only the export package encrypted with "AAA" can be imported.
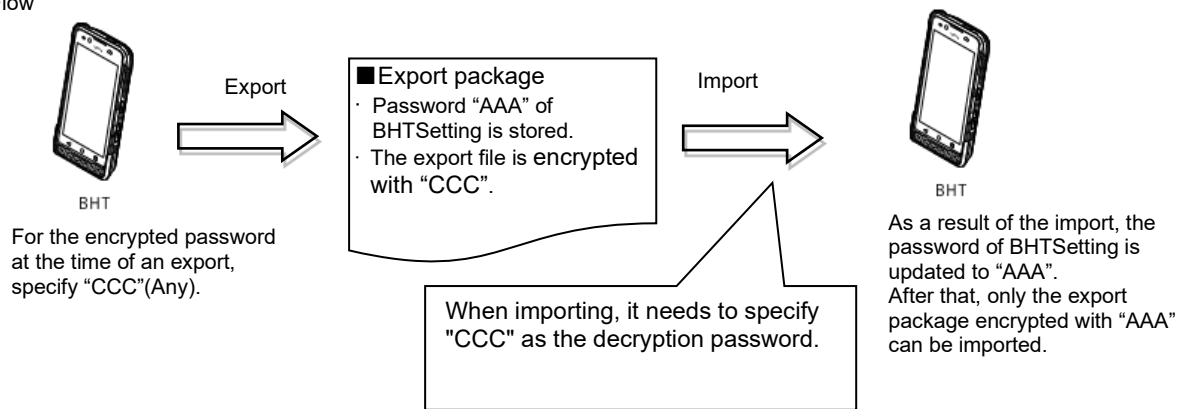
— **Point** —
· When importing using the API, it is necessary to securely store the "encryption password" of the application on the terminal.
· As shown in the example, separating the BHTSetting password and the encrypted password will prevent the BHTSetting password from being leaked even if the encrypted password is leaked.
· If the BHTSetting password is the same as the encryption password, the export package can be reused from the next time onwards, but this is not recommended because it reduces security.
· For details of password combination operations, refer to "15.1.2.4 Password Combination".

(2) In operation (when a password is registered in the import destination BHT Setting)

Image)

■Prerequisite state
1) The BHTSetting password of the BHT to be exported is setting "AAA".
2) The BHT Setting password of the import destination BHT is setting "BBB".

■Flow

Export

Export package
· Password "AAA" of BHTSetting is stored.
· The export file is encrypted with "BBB".

Import

For the encrypted password at the time of an export, specify "BBB".

It is not necessary to specify the encryption password when importing.

As a result of the import, the password of BHTSetting is updated to "AAA".
After that, only the export package encrypted with "AAA" can be imported.

— **Point** —
· When the encrypted password at the time of an export and the password of BHTSetting of the import destination do not match, it cannot be imported.
· When the passwords of BHTSetting of the import destination exist in several patterns, it must be exported for each password.
· When the password of BHTSetting is changed in an import, the export package cannot be reused. It must be remade again.
· For the action detail based on the combination of passwords, refer to "15.1.2.4 Password Combination".

15.1.2.4 Password Combination

In an export/import, the password status of BHTSetting and the combination of encrypted passwords at the time of an export are written on the following table.

No	Password status of BHTSetting		Operation		Result		Remark
	Export terminal	Import terminal	Encrypted password specified at time of export (not specified yet is impossible)	Encrypted password specified at time of import	Import	Password of BHTSetting	
1	Does not exist	Does not exist *1	AAA	AAA	✓ Possible	Does not exist (no change)	
2				Other than AAA	- Impossible	Does not exist (no change)	
3	Does not exist	AAA	AAA	No specification is required *2	✓ Possible	Does not exist	
4			Other than AAA	No specification is required *2	- Impossible	AAA (no change)	
5	AAA	Does not exist *1	AAA	AAA	✓ Possible	AAA	*3
6			AAA	Other than AAA	- Impossible	Does not exist (no change)	
7			BBB	BBB	✓ Possible	AAA	Recommended pattern for the first kitting
8			BBB	Other than BBB	- Impossible	Does not exist (no change)	
9		AAA	AAA	No specification is required *2	✓ Possible	AAA (no change)	*3
10			Other than AAA	No specification is required *2	- Impossible	AAA (no change)	
11		BBB	BBB	No specification is required *2	✓ Possible	AAA	
12			Other than BBB	No specification is required *2	- Impossible	AAA (no change)	

*1 When the password of BHTSetting of an import terminal has not been set, an encrypted password must be specified (entered) at the time of an import.

*2 When the password of BHTSetting of an import terminal has been set, it is not necessary to specify an encrypted password at the time of an import.

*3 An export package can be reused (imported again) but the security performance decreases by setting the password to the same.

15.1.3. Setting Values

The target setting value of BHTSetting and the setting value to be deleted by BHT operation are as follows.

Table BHT operation and set value to delete　✓: Data retained　–: Data erased

	Suspend/ Resume	Power OFF/ON	System update version upgrade	System update version down	Enterprise reset	data Initialization
BHT setting password, Prohibition related to enterprise reset	✓	✓	✓	✓	✓	–
Other	✓	✓	✓	–	–	–

Table target setting value

Settable function	Description of function	Setting item			Detail	Default
WLAN	Settings related to WLAN can be executed.	ON/OFF status of WLAN			6.1	ON
		WLAN scan settings			6.2.7	Default
		WLAN advanced settings	General	Radio Mode	6.2.8	←
				Country Code		←
			Scan	Active Channel Time		←
				Passive Channel Time		←
				Random MAC Address		←
			Connection	Connection Threshold (2.4GHz)		←
				Connection Threshold (5GHz)		←
			Roaming	Roaming Threshold		←
				Adaptive FT		←
			Disconnection	Beacon Lost Count		←
				Retransmission Count		←
				Disconnection Wait Time		←
		Distribution package saved in terminal			6.2.9	-
		When the WLAN country code is set to "World Wide", the warning message is displayed / not displayed.			6.3	Displayed
		IP Information			6.4	-
WWAN	Settings related to WWAN can be executed.	WWAN recovery function ON/OFF			15.2.2.1	ON
Bluetooth	Settings related to Bluetooth can be executed.	Bluetooth ON/OFF			15.2.2.2	OFF
		Device name				(Device Name)
Ethernet	Settings related to wired LAN can be executed.	Ethernet ON / OFF			8.	ON
		Ethernet Settings (IP Settings)	DHCP			○
			Static	IP address		-
				Gateway		-
				Netmask		-
				DNS1		-
				DNS2		-
		Proxy Settings (proxy)	None			○
			Manual	Proxy hostname		-
				Proxy port		-
				Bypass proxy for		-
			Proxy Auto-Config	PAC URL		-
NFC	Settings related to NFC can be executed.	NFC ON/OFF			15.2.2.3	ON
BHTSecurityManager (*1)	Settings related to monitor a terminal can be executed.	Incident settings Terminal status monitoring settings Automatic execution of terminal status monitoring			BHT-SecurityPackage for Android user's manual	←
BHTFirewall(*1)	Settings to monitor/limit wrong communication can be executed.	Allowance/Prohibition of communication of application/IP address/host name			BHT-SecurityPackage for Android user's manual	←
		At the time of communication occurrence, the log is left/not left.				←
		Periodic update time for name resolution				←

Settable function	Description of function	Setting item	Detail	Default
Device disable(*1)	Prohibition settings related to various types of hardware which can be used for a terminal can be executed.	Bluetooth Allowance/Prohibition	15.2.2.4	
		MTP Allowance/Prohibition		
		SD Allowance/Prohibition		
		USB memory Allowance/Prohibition		
		Camera Allowance/Prohibition		
		Mic Allowance/Prohibition		
Disable enterprise reset	Prohibition settings related to a function to act with the enterprise reset can be executed.	Automatically install apps stored in the Setup folder. Allowance/Prohibition	15.2.2.5	Enable
		Automatically launch apps specified in the xml file stored in the Setup folder. Allowance/Prohibition		Enable
		Automatically install apps stored in the Startup folder. Allowance/Prohibition		Enable
		Automatically launch apps specified in the xml file stored in the Startup folder. Allowance/Prohibition		Enable
		Set the Startup cancel password.		Enable
		API for auto import of the Application Launcher settings after enterprise reset. Allowance/Prohibition		Enable
API disable	Prohibition settings of the use of various types of API can be executed.	Use allowance/prohibition of API for OS update.	15.2.2.6	Enable
		Use allowance/prohibition of API for application install.		Disable
		Use allowance/prohibition of API for import the ApplicationLauncher settings.		Enable
Other settings	Other prohibition settings can be executed	Safe mode Allowance/Prohibition	15.2.2.7	Disable
		USB debugging GUI operation Allowance/Prohibition		Enable
		Wi-Fi sharing Allowance/Prohibition		Disable
		Screenshot Allowance/Prohibition		Enable
		Screenshot (key operation only) Allowance/Prohibition		Enable
Languages & input	Settings related to a language and entry are executed.	Language used for terminal	–	-
Sleep	Settings related to a time from when an operation is stopped until a sleep start can be executed.	Sleep	15.2.2.8	1 minites
Display	Settings related to the display relationship can be executed.	Brightness level	15.2.2.9	-
		Adaptive brightness ON/OFF		OFF
		When BHT is rotated.		OFF
		Navigation bar backlight		ON
Date & time	Settings related to the date and time relationship can be executed.	Automatic date & time ON/OFF	3.10	ON
		Automatic settings of time zone ON/OFF		ON
		Select time zone		-
		Use locale default		OFF
		Use 24-hour format		OFF

Settable function	Description of function	Setting item				Detail	Default
Keys	Settings related to the assignment of Key can be executed.	Remap keys	M1、M2、、M3、M4、LT、RT、CT、DPAD DOWN、DPAD LEFT、DPAD RIGHT、F1、F2、F3、、F4、F5、F6、F7、F8、F9、F10、F11、F12	Key code		4.5	M1:VOLUME_UP M2:VOLUME_DOWN LT:TRIGGER_ALL RT:TRIGGER_ALL CT:TRIGGER_ALL Others: Unassigned
				Shortcut			Unassigned
				Intent			Unassigned
		Wake up keys	M1 ON/OFF			4.6	OFF
			M2 ON/OFF				OFF
			M3 ON/OFF				OFF
			M4 ON/OFF				OFF
			Left Trigger ON/OFF				OFF
			Right Trigger ON/OFF				OFF
			Center Trigger ON/OFF				OFF
		Multi-tap	Multi-tap ON/OFF			4.3	OFF
			Preferences	Virtual keyboard ON/OFF			OFF
				Timeout(×100ms)			10
				Candidate characters ON/OFF			ON
				Function key			Lock
				Shift key			None
			Input mode settings				-
		Repeat keys	Repeat keys ON/OFF			4.7	ON

Settable function	Description of function	Setting item		Detail	Default
Disable the app	Set disable the app.	Google Play Store Enable/Disable		15.2.2.10	Enable
Battery Optimization	Set the battery optimization.	ProxyHandler Optimizing battery use/Not optimized		15.2.2.11	Optimizing battery use
USB	Settings related to USB.	USB mode	File Transfer	15.2.2.12	No data transfer
			USB tethering		
			MIDI		
			PTP		
			No data transfer		
			Use device as ACM		
		Maintaining USB mode ON/OFF			OFF
ApplicationLauncher	Settings related to the application launcher can be executed.	Various settings of ApplicationLauncher		11.7.2	-
QuickSettings	Settings related to the quicksettings can be executed.	Various settings of Quicksettings		18.2.2	-
			Wi-Fi		Show
			Wi-Fi Scan		Show
			Bluetooth		Show
			NFC		Show
			AirPlane		Show
			Keyboard		Show
			Screen timeout		Show
			BHTRemote Connect(*1)		Show
			Navigation Bar		Hide
Action settings when doing import	Settings related to the action settings at the time of an import can be executed.	Application Launcher auto-startup		15.2.2.14	-
ScanSettings	Settings related to the reading of the scanner can be executed.	General set values of ScanSettings		12	-
BHTBrowser	Settings related to the BHT dedicated browser can be executed.	Refer to the manual of BHT-Browser For Android			-
Browser (WebView) settings	Settings related to WebView.	Proxy connection ON/OFF		15.2.2.15	OFF
BHTRemote(*1)	Settings related to the BHTRemote to remote-operate the terminal from the PC can be executed.	Port number		BHTRemote_ User's_Manual _for_Android_ EX	
		Remote connection			
		Startup type			
		Operation timeout (sec)			
		Desktop mode			
		Operation timeout (sec)			
		Connection delay after restart (sec)			
		Password			
		Keyboard layout			
		Launch app when communication fails			
		Exit app when communication fails			
BHTLogger	Settings related to BHTLogger to manage a log can be executed.	General set values of BHTLogger		14.	-
BHTSetting	The settings related to this application can be executed.	BHTSetting password setting		15.2.2.16	NONE

(*1) Next release or later.

15.1.4. Notes

There are some notes in the use of this function.

15.1.4.1 Model Dependency

Option settings that are not supported by the model are not subject to BHTSetting menu display, import / export. When using for kitting between different models, please check before use.

For a list of function options by model, see "1.2.3 Corresponding Model List".

15.1.4.2 DNWA App Settings

When the application manufactured by DNWA has not been installed, transition to the setting screen of the relevant application and an import/export cannot be executed.

15.1.4.3 Setting status at the time of import processing error

When an error occurs during an import process, the import process until just before is enabled and reflected in the terminal.

The password of BHTSetting is executed at the end of an import.

So the same export package can be used again even if an error occurs during it.

15.1.4.4 Precautions for each Setting Value

Notes on setting values are as shown in the following.

Set value	Operation	Note
Device Disable (MTP)	Settings	When the allowance/prohibition of "MTP" is changed by Device disable, also "PTP (transfer of photograph)" is changed.
Device Disable (SD)	Settings	When the allowance/prohibition of "SD" is changed by Device disable, also the possibility/impossibility of the use of an SD card is reflected after the reboot of a terminal.
Bluetooth	Import	When "Bluetooth" is prohibition settings by Device disable, the import of Bluetooth is skipped.
Date & time	Settings Import Export	The setting change of "date settings" and "time settings" is possible on the setting screen and it is an item not targeted for an import/export.

"Date" and "Time" settings that are not subject to import/export
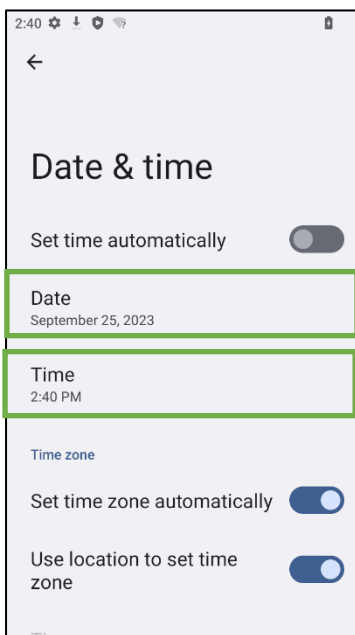
15.1.4.5 When closing the BHTSetting screen

If you exit the BHTSetting screen while executing the BHTSetting API, the API being executed will be terminated with the following error.

・ErrorCode.SERVICE_HAS_STOPPED

15.1.4.6 Reflecting settings in import

Some settings require Reboot in order to reflect the settings in the operation during import.

Therefore, ✓ is recommended for "Reboot at import" specified at export.

Refer to "15.2.1.4 Export" for details.

15.1.4.7 Caution when importing the application launcher settings while Application Launcher is in the user mode.

Reffer to Section 11.9.2. Caution when importing the application launcher settings while Application Launcher is in the user mode for details.

15.2. Functions

When 🔧 in the application list is tapped, BHTSetting is started up and the following Top screen is displayed.

An export file can be created by setting the settings of setting functions from the Top screen and then selecting a setting function for which it want to export the setting.

15.2.1. Basic Functions
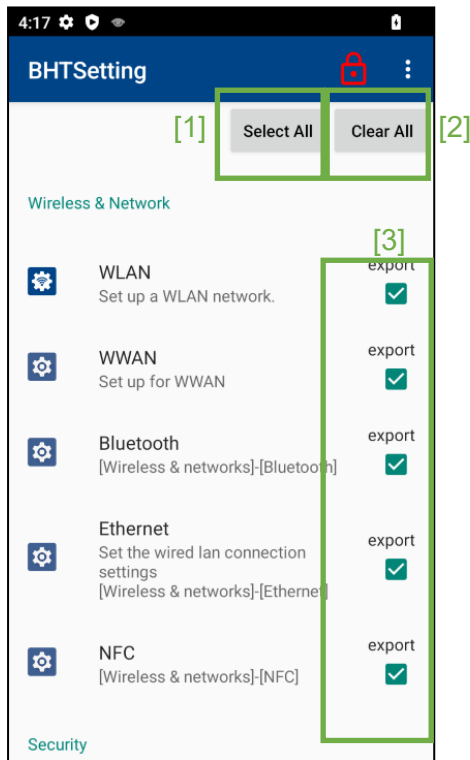
| [1]	Select All	Check and select all the check buttons of the setting functions.
[2]	Clear All	Remove the checks of all the check buttons of the setting functions.
[3]	export check	A checked setting function is the target of an export.

15.2.1.1 Menu Button
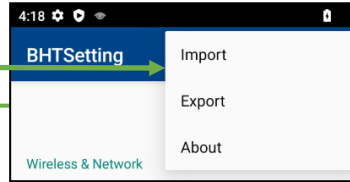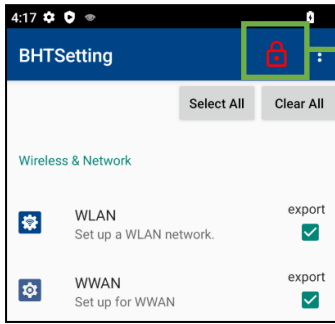
If the menu button is pressed, the selection of the import or export becomes possible.

[1]	Import	Transition to import setting menu screen. (Transition to login dialog not in case of collective login status)
[2]	Export	Transition to export setting menu screen. (Transition to login dialog not in case of collective login status)
[3]	About	The ABOUT screen is displayed.

15.2.1.2 Login Dialog

■Login dialog
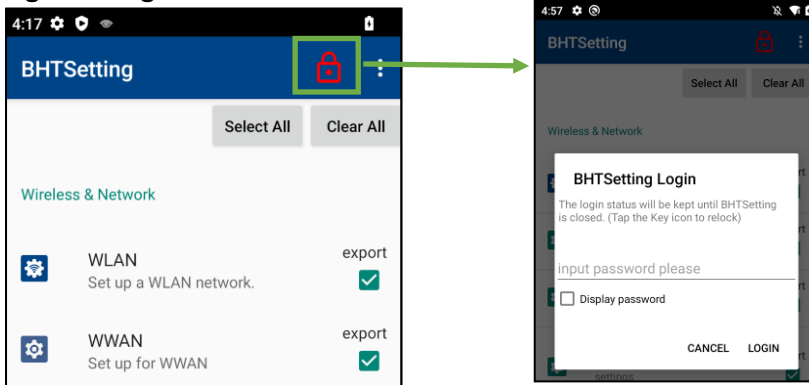
When it becomes a collective login status, the key mark changes to the icon to unlock as shown in the following.

[1] LOGIN	When the entered password and password of BHTSetting matched, it becomes a collective login status.

Menus that have the key mark on the icon as shown in the following are needed to login.

Refer to "15.1.2.1 Password of BHTSetting" for details.
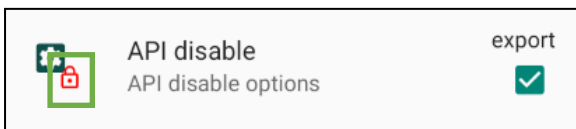
※About logout

To sign out, please tap the key mark next to the title again.

Also, when the following operations are performed from a security standpoint, it will be forcibly logged out.
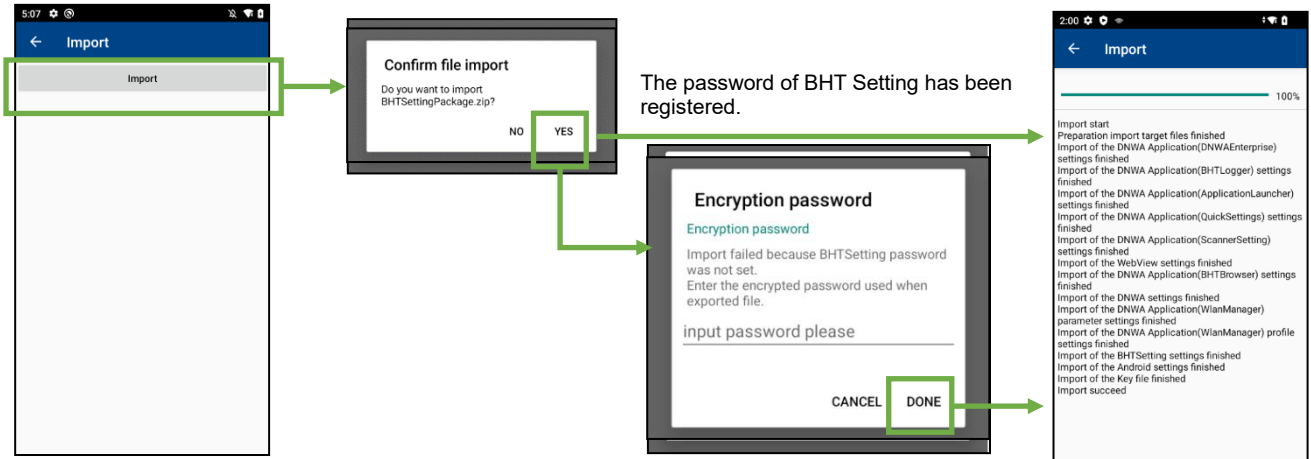 ·Home button was pressed.
 ·History button was Press.
 ·Sleep state.

After forced logout, the TOP screen is automatically displayed when BHTSettings is resumed.
(Excluding import / export progress screens)

15.2.1.3 Import

【How to transit to this screen】
Top screen > Menu > "Import"　(Refer to 15.2.1.1 Menu Button)

The password of BHT Setting has been registered.

If "Import" is pressed and "Yes" is pressed on the import file confirmation screen, an import process is executed. When the password of BHT Setting has not been set to the terminal at this time, the encrypted password entry screen is started up. By entering the password set at the time of the export, the import process can be executed. The progress can be checked on the import passing screen during the import process.

■Password specifications
Types of characters: alphanumeric symbols
Number of characters: 1 to 50 characters

─ **Point** ─	・	By storing IP information file (WlanIpInfo.csv) to the same folder as the import file at the time of the import of WLAN settings, the IP information of the profile can be changed for each terminal. For the format of the IP information file, refer to 6.4 IP Information File.
─ **Note** ─	・	If the screen lock setting of the device is other than "None" or "Swipe", it will transition to the lock screen.

15.2.1.4 Export

【**How to transit to this screen**】
Top screen > Menu > "Export" (Refer to 15.2.1.1 Menu Button)
Login is required to use this feature. When not logged in at once, a login dialog will be displayed.
(Refer to 15.2.1.2 Login Dialog)
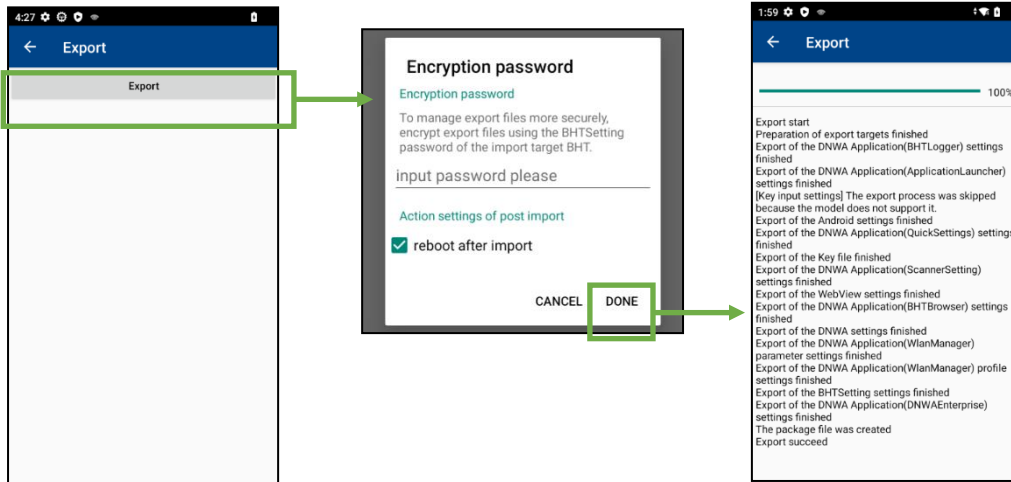
By pressing "Export", entering the password on the encrypted password screen and pressing "DONE", an export can be executed.

The progress can be checked on the export passing screen during the export process.

— **Note** —   · Some settings require Reboot in order to reflect the settings in the operation during import. Therefore, ✓ is recommended for "Reboot at import" specified at export.

· If the screen lock setting of the device is other than "None" or "Swipe", it will transition to the lock screen.

■About exporting WLAN profiles

When exporting WLAN profile settings, creating a WLAN distribution package in advance is needed.

On the export screen, the following dialog will be displayed depending on whether there is a distribution package.

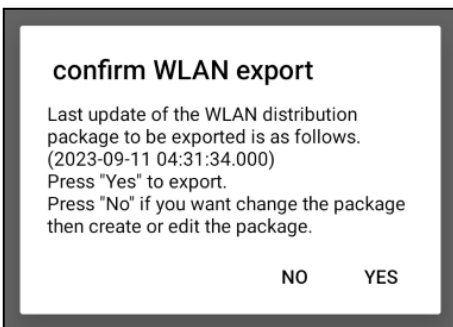·When a distribution package has not been created

confirm WLAN export

Distribution package does not exist.

NO   YES

A dialog about whether to create a distribution package is displayed.

Yes   : No distribution package is created, only WLAN serial settings are exported.

No   : Transit to the distribution package creation screen. (Refer to 6.2.9 Distribution package for details)

·When a distribution package has been created

confirm WLAN export

Last update of the WLAN distribution package to be exported is as follows. (2023-09-11 04:31:34.000) Press "Yes" to export. Press "No" if you want change the package then create or edit the package.
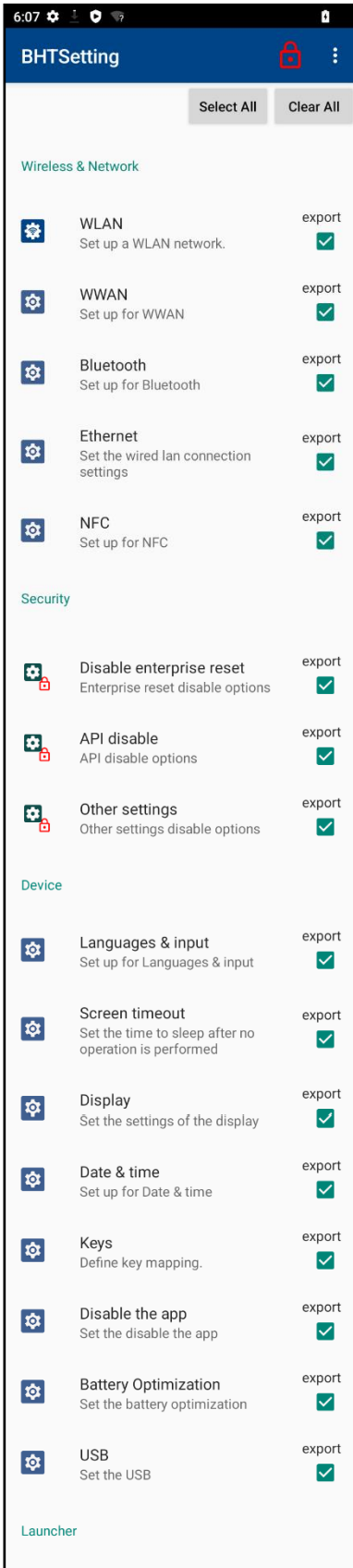
NO   YES

A confirmation dialog for the distribution package to be exported is displayed.

Yes   : The export process is executed.

No   : The export process is cancelled. When creating / editing a distribution package, transition can to the setting screen from "WLAN" on the TOP screen.

15.2.2. Setting Functions

| Setting function	Description of function	Detail
WLAN	Transition to WLAN setting menu screen of WlanManager.	6.2
WWAN	Transition to setting screen of WWAN.	15.2.2.1
Bluetooth	Transition to setting screen of Bluetooth.	15.2.2.2
Ethernet	Transition to setting screen of Ethernet.	8.1
NFC	Transition to setting screen of NFC.	15.2.2.3
BHTSecurityManager(*1)	Transition to TOP screen of BHTSecurityManager. * Refer to the BHT-SecurityPackage for Android user's manual.	-
BHTFirewall(*1)	Transition to TOP screen of BHTFirewall. * Refer to the BHT-SecurityPackage for Android user's manual.	-
Device disable(*1)	Transition to setting screen of Device disable.	15.2.2.4
Disable enterprise reset	Transition to setting screen of Disable enterprise reset.	15.2.2.5
API disable	Transition to setting screen of API disable.	15.2.2.6
Other settings	Transition to other prohibition setting screen	15.2.2.7
Languages & input	Transition to setting screen of Language & input.	-
Screen timeout	Transition to setting screen of Screen timeout	15.2.2.8
Display	Transition to setting screen of Display.	15.2.2.9
Date & time	Transition to setting screen of Date & time.	3.10
Keys	Transition to setting screen of Keys.	4.4
Disable the app	Transition to setting screen of Disable the app.	15.2.2.10
Battery Optimization	Transition to setting screen of Battery Optimization.	15.2.2.11
USB	Transition to setting screen of USB.	15.2.2.12
ApplicationLauncher	Transition to dedicated menu screen of ApplicationLauncher.	15.2.2.13
QuickSettings	Transition to dedicated menu screen of QuickSettings.	18.2.2
Action settings when doing import	Transition to setting screen Action setting when doing import.	15.2.2.14
ScanSettings	Transition to TOP screen of ScanSettings.	12
BHTBrowser	Transition to TOP screen of BHTBrowser. *Refer to the manual of BHT-Browser for Android.	-
Browser (WebView) Settings	Transition to setting screen of the Browser (WebView).	15.2.2.15
BHTRemote(*1)	Transition to TOP screen of BHTRemote. * Refer to the BHTRemote_User's_Manual_for_Android_EX	-
BHTLogger	Transition to TOP screen of BHTLogger.	14
BHTSetting	Transition to setting screen of BHTSetting.	15.2.2.16

(*1)Next release or later

	ApplicationLauncher Application launcher setups	export ☑
	QuickSettings QuickSettings setups	export ☑
	Action settings when doing import	export ☑

Reading

| | ScanSettings
Code reading setups | export
☑ |

Browser

| | BHTBrowser
BHT exclusive browser setups | export
☑ |

Setting

| | BHTSetting
Application setups | export
☑ |

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15.2.2.1 WWAN

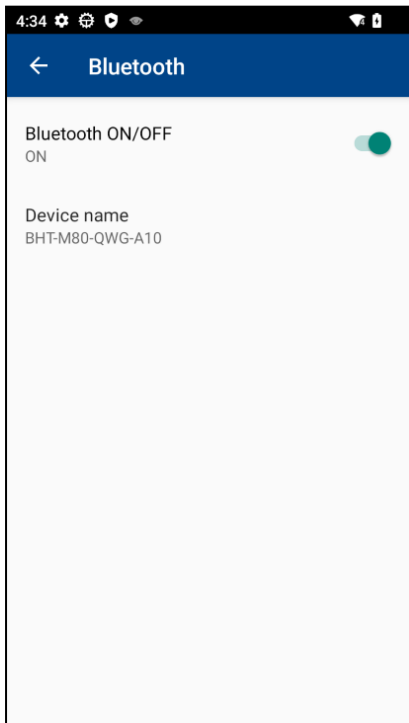【How to transit to this screen】
Top screen > "WWAN"
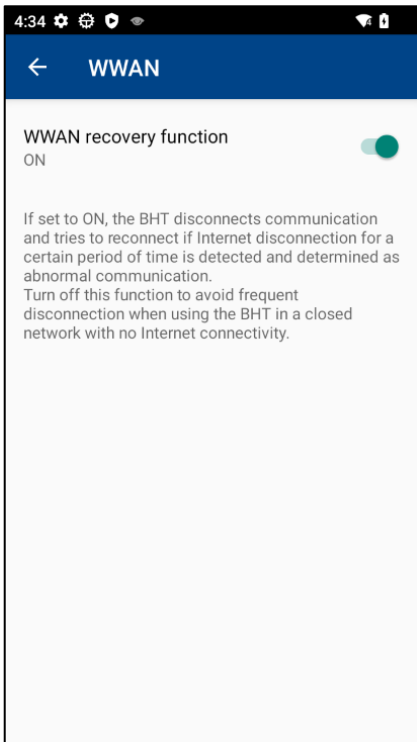
■ WWAN recovery function
  Set the WWAN recovery function ON/OFF.

15.2.2.2 Bluetooth

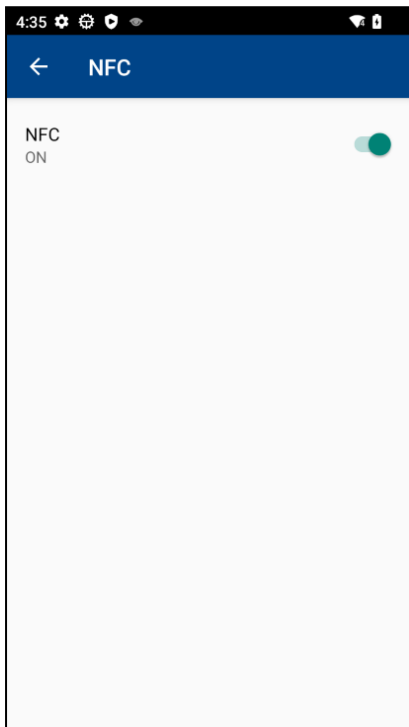【How to transit to this screen】
Top screen > "Bluetooth"

■ Bluetooth ON/OFF:
  Execute the setting of ON/OFF of Bluetooth.
■ Device name:
  When Bluetooth ON/OFF is ON, the setting of the device name can be executed.

15.2.2.3 NFC

【**How to transit to this screen**】
Top screen >"NFC"

■ NFC:
Execute the setting of ON/OFF of NFC.

15.2.2.4 Device Disable

Use of this function requires a BHTSecurityPackage license. If the license key is not registered the license authentication screen is displayed. (Refer to 17.License(BHTLicense))
Login is required to use this feature. When not logged in at once, a login dialog will be displayed.
(Refer to 15.2.1.2 Login Dialog)

This function sets the prohibition / allowance of the specified device.
When prohibited, all functions such as API related to the device will not work.
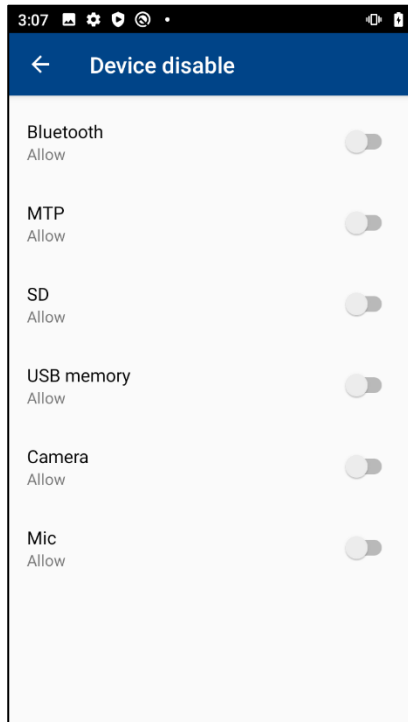
■ Bluetooth: Execute the settings of the prohibition/allowance of the use of Bluetooth.

■ MTP: Execute the settings of the prohibition/allowance of the use of MTP / PTP.

     USB functions (charging, LAN communication, etc.) other than MTP / PTP are not prohibited.

■ SD: Execute the settings of the prohibition/allowance of the use of the SD card.

■ USB memory: Execute the settings of the prohibition/allowance of the use of the USB memory.

■ Camera: Execute the settings of the prohibition/allowance of the use of the camera.

■ Mic: Execute the settings of the prohibition/allowance of the use of the mic.

Prohibition / permission switching is reflected from the next use.

Device name	Default value	Reflection timing
Bluetooth	Allow	Next time Bluetooth ON.
MTP	Allow	Next time MTP connection.
SD	Allow	Next time SD mount. (Reboot, cover open, etc.)
USB memory	Allow	Next time USB memory connection.
Camera	Allow	Next time the camera starts.
Mic	Allow	Next time the microphone is activated.

— **Note** —   · To ban a device that is already in use, restart the device after setting the ban or turn the device off once.
· When factory reset is performed, everything is reset to the default state. (Refer to 3.6)
· Even if prohibited, the corresponding application and setting screen are displayed.
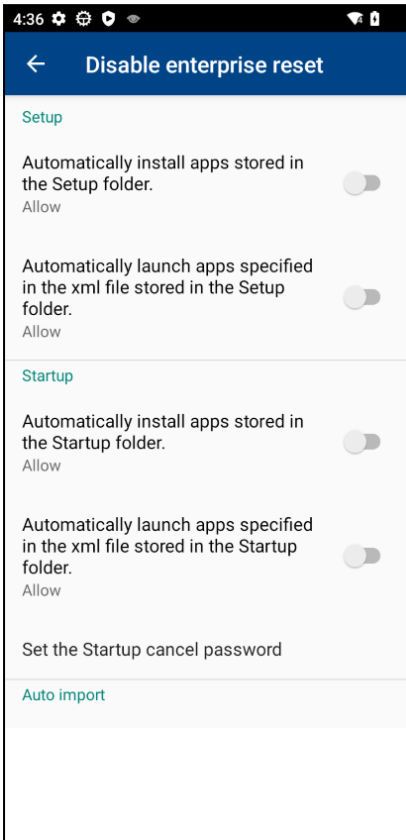   (Example: MTP and PTP are displayed in the USB connection list even if MTP is disabled.)

15.2.2.5 Disable Enterprise Reset

【How to transit to this screen】
Top screen > "Disable enterprise reset"
Login is required to use this feature. When not logged in at once, a login dialog will be displayed.
(Refer to 15.2.1.2 Login Dialog)

Automatically install apps stored in the Setup folder.:

Set the prohibition/allowance of automatically install apps stored in the storage/StartupSettingsData/Setup folder.
For details, refer to "3.7 Start-up Function".

Automatically launch apps specified in the xml file stored in the Setup folder.:

Set the prohibition/allowance of automatically launch apps specified in the xml file stored in the storage/StartupSettingsData/Setup folder.
For details, refer to "3.7 Start-up Function".

Automatically install apps stored in the Startup folder.:

Set the prohibition/allowance of automatically install apps stored in the storage/StartupSettingsData/Startup folder.
For details, refer to "3.7 Start-up Function".

Automatically launch apps specified in the xml file stored in the Startup folder.:

Set the prohibition/allowance of automatically launch apps specified in the xml file stored in the storage/StartupSettingsData/Startup folder.
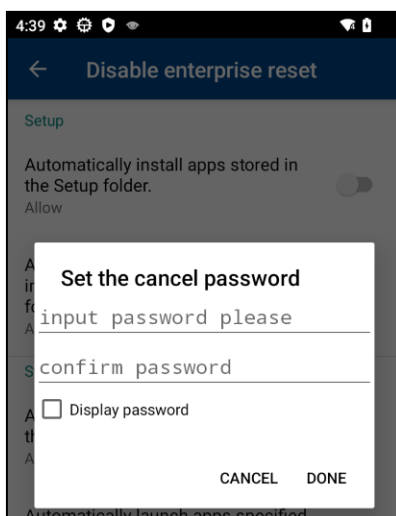For details, refer to "3.7 Start-up Function".

Set the Startup cancel password:

Set the password to execute the cancel of the Startup function.
For details, refer to "3.7.5 Administrator function cancellation".

API for auto import of the Application Launcher settings after enterprise reset:

Set the use prohibition/allowance of API for auto import of the ApplicationLauncher settings after enterprise reset.

■ Set the Startup cancel password:

Set the password to execute the cancel of the Startup function.
For details, refer to"3.7.5 Administrator function cancellation".

15.2.2.6 API Disable
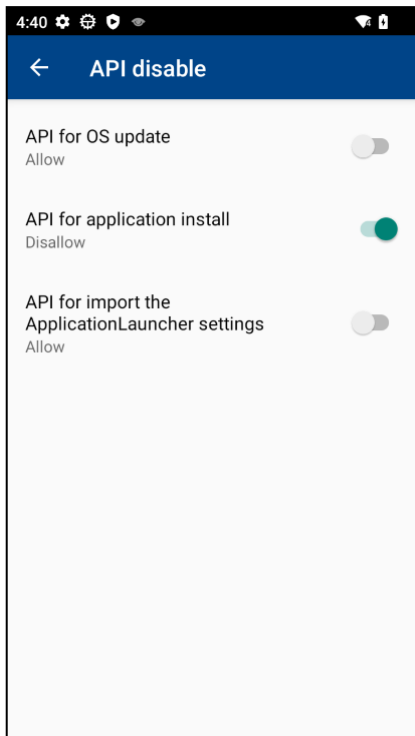
■ API for OS update:
  The settings of the use prohibition/allowance of API for OS update can be executed.

  * For details on the target API, refer to "5.1. System Update API" in the programming manual.

■API for application install:
  The settings of the use prohibition/allowance of API for application install can be executed.

  * For details on the target API, refer to "10.2. Silent Installation API" in the programming manual.

■API for import the ApplicationLauncher settings:
  The settings of the use prohibition/allowance of API for import the ApplicationLauncher settings can be executed.
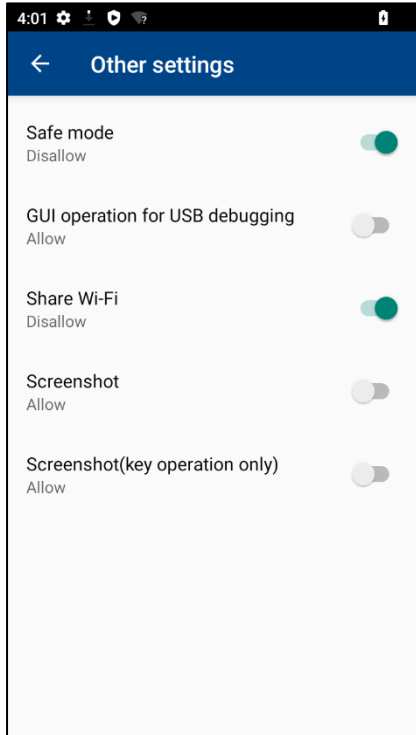
  * For details on the target API, refer to "8. Application Launcher" in the programming Manual.

15.2.2.7 Other settings

【**How to transit to this screen**】
Top screen> "Other settings"
You must be logged in to use this feature. If you have not logged in all at once, the login dialog
will be displayed. (Refer to 15.2.1.2 Login Dialog)

■ Safe mode: Set prohibition / permission to use safe mode.
■ USB debugging GUI operation: Set prohibition / permission
of USB debugging GUI operation.
■ Wi-Fi sharing: Set prohibition / permission for Wi-Fi sharing.
■ Screenshot: Set the prohibition / permission of the
screenshot.
■ Screenshot (key operation only): Set prohibition /
permission of screenshot (key operation only).

15.2.2.8 Screen timeout

【**How to transit to this screen**】
Top screen > "Screen timeout"
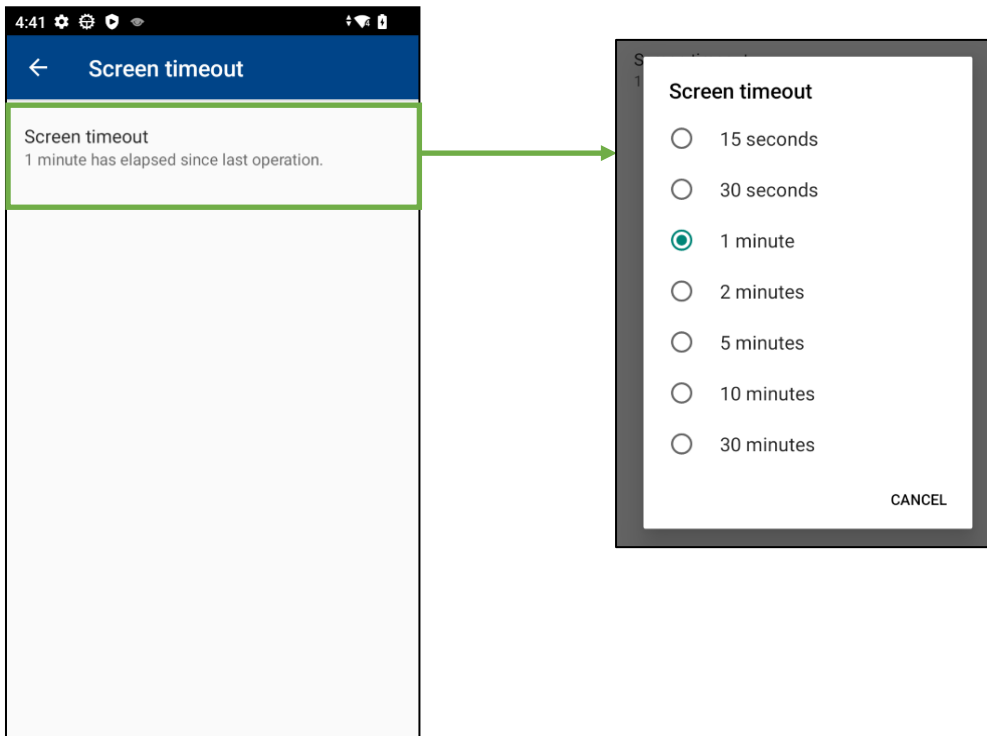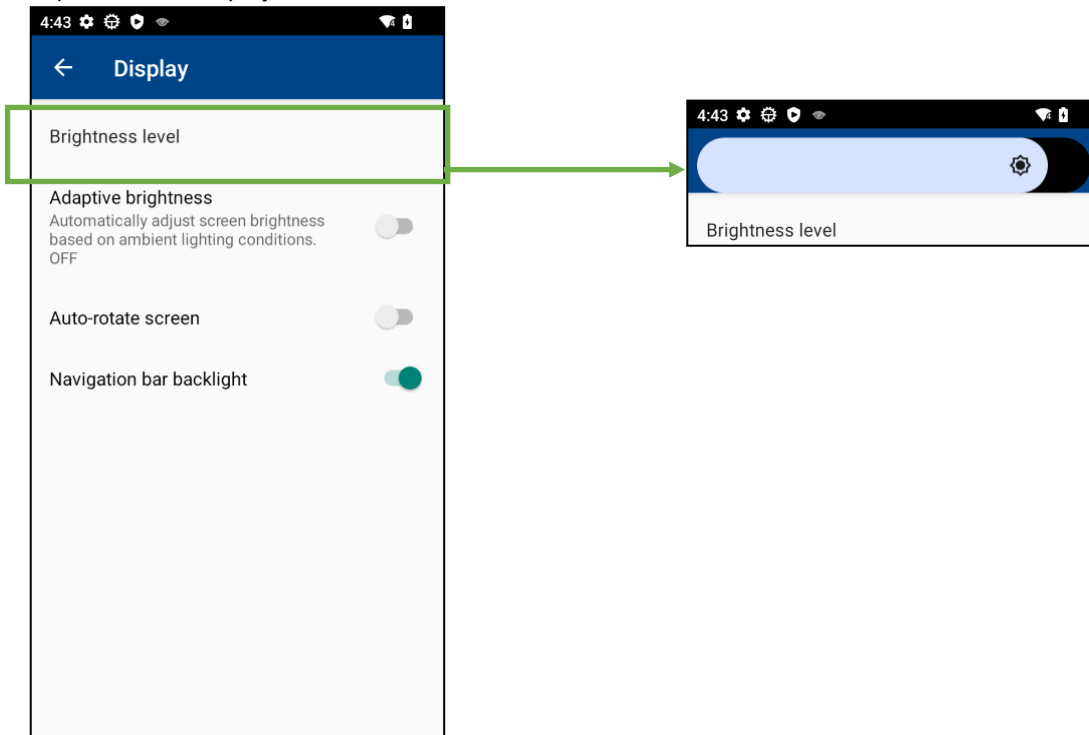

Screen timeout:
    Set a time until a Screen timeout start from the Screen timeout time selection dialog.
   (Select from 15 seconds, 30 seconds, 1 minute, 2 minutes, 5 minutes, 10 minutes and 30 minutes.)

15.2.2.9 Display

【**How to transit to this screen**】
Top screen > "Display"

■ Brightness level:

When automatic brightness adjustment is ON, the brightness level can be adjusted with the slider bar.
Cannot be selected when automatic brightness adjustment is OFF.

■ Adaptive brightness:
Execute the settings of ON/OFF of adaptive brightness.

■ Auto-rotate screen :

Set ON / OFF for automatic rotation of the screen.

■ Navigation bar backlight:
M80:Set ON / OFF of the backlight of the navigation bar.
M60/M70:Set ON / OFF of the backlight of the keyboard.

15.2.2.10 Disable the app

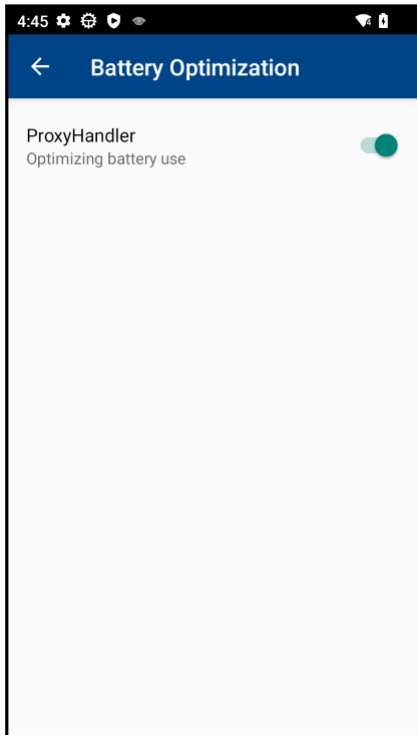**【How to transit to this screen】**
Top screen > "Disable the app"

■ Google Play Store:
  Set the Google Play Store app to be disabled.

For the effect of Google Play Store app disable setting, refer to "Applications produced by Google" in "1.3. Usage Precautions".

15.2.2.11 Battery Optimization

【How to transit to this screen】
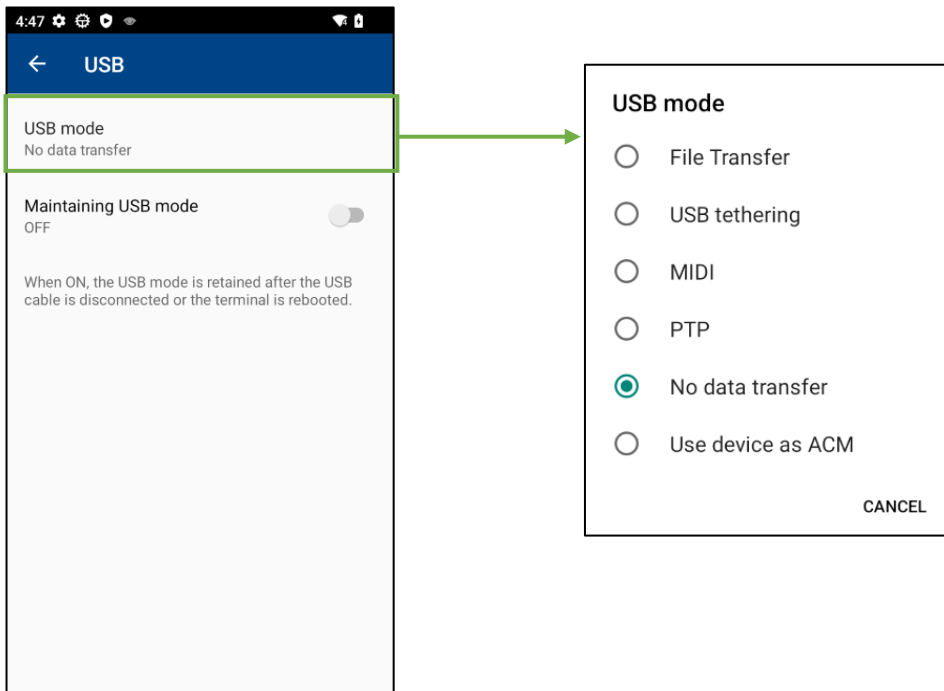Top screen > "Battery Optimization"

■ ProxyHandler:
  Set the battery optimization of ProxyHandler.

For the effect of ProxyHandler battery optimization disable setting, refer to "Network - When using Proxy Auto-Config" in "1.3. Usage Precautions".

15.2.2.12 USB

【How to transit to this screen】
Top screen > "USB"

■USB mode：

Set the USB connection mode from the USB mode selection dialog box.

■Maintaining USB mode
Set ON/OFF whether to maintain the USB mode.

When ON, the specified USB mode is maintaining after the USB cable is disconnected or the terminal is rebooted.

| — Note —	* When the maintaining USB mode is ON, communication such as file transfer is possible even when the security setting is protected by pattern/PIN/password. Confirm that there are no security problems such as unintended acquisition of files in the terminal by a third party before use.
	* When any of pattern/PIN/password is set, some functions of USB are limited by Android specifications from the time you start the terminal until you unlock the screen lock. If necessary, unlock the screen or change the screen lock setting to either None or Swipe.

15.2.2.13 ApplicationLauncher

【**How to transit to this screen**】
Top screen > "ApplicationLauncher"

■ Admin mode:
   Start the setting menu in the admin mode.
   Please enter the administrator login password.
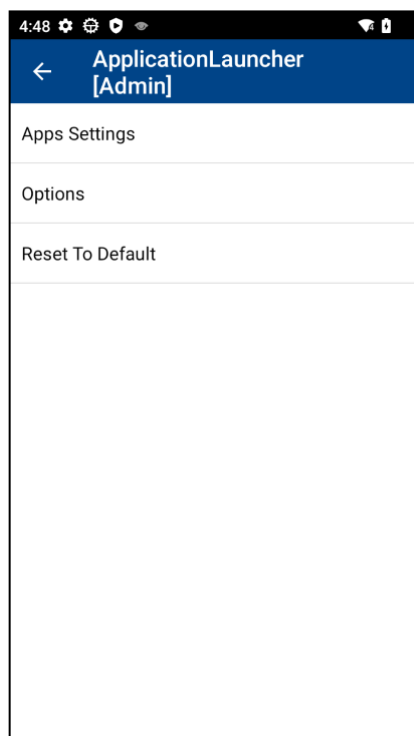
■ Apps Settings:
   Refer to 11.5.2 Apps Settings

■Options:
   Refer to 11.5.4 Options

■Reset To Default:
   Refer to 11.5.6 Reset To Default

15.2.2.14 Action settings when doing import

【**How to transit to this screen**】
Top screen > "Action settings when doing import"

■ Application launcher auto-startup after import:

    Execute the settings of ON/OFF of the application launcher auto-startup after an import process.

    When ON is set, the application launcher is started up automatically after an import process.

15.2.2.15 Browser (WebView) settings

【**How to transit to this screen**】
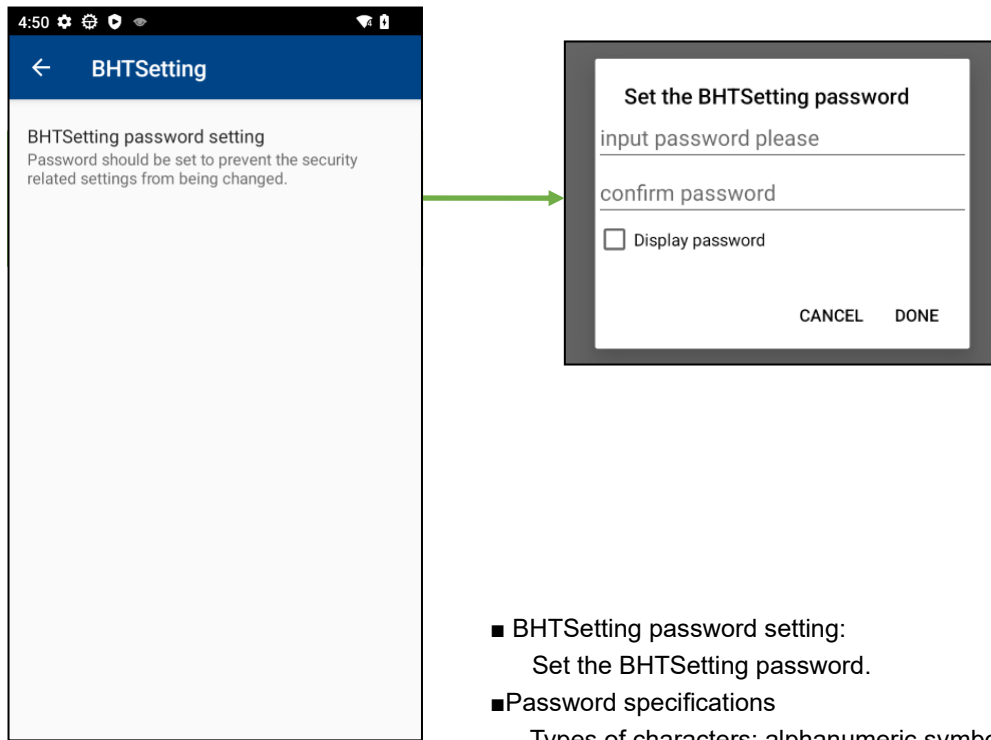Top screen > " Browser (WebView) settings"
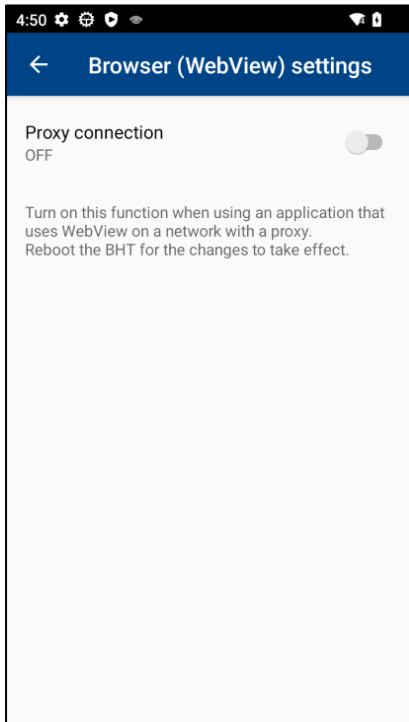
■Proxy connection:

    Set ON/OFF to enhance/not enhance the browser performance when connecting to a proxy.

15.2.2.16 BHTSetting

【**How to transit to this screen**】
Top screen > "BHTSetting"
Login is required to use this feature. When not logged in at once, a login dialog will be displayed.
(Refer to 15.2.1.2 Login Dialog)

■ BHTSetting password setting:
   Set the BHTSetting password.
■Password specifications
   Types of characters: alphanumeric symbols
   Number of characters: 0 to 50 characters

15.3. Error Code List

When an abnormal status is not solved even if the following handling is executed, check the error code and contact the system administrator.
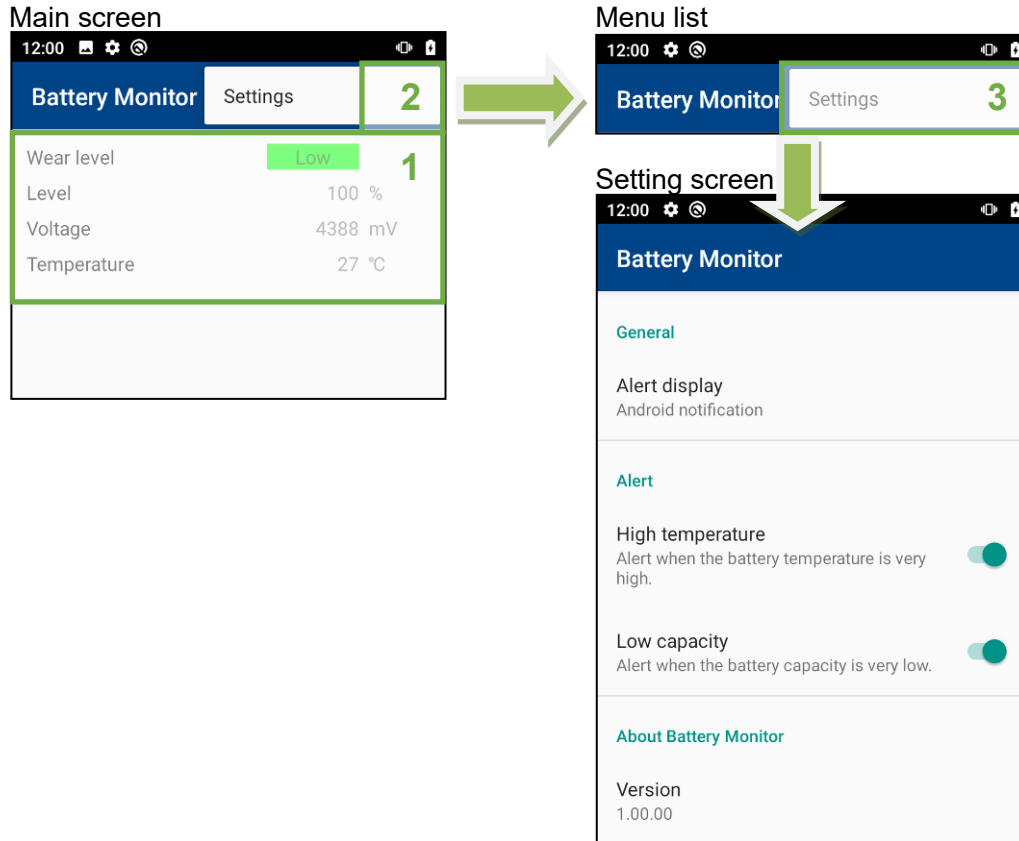
Code	Description	Solution
E1000 E1003	Failed to decompress the import file.	The import file may be damaged. After recreating the import file, execute the import again.
E1004	Failed to decompress the import file.	The import file may be damaged. After recreating the import file, execute the import again. The system versions may also differ between the master terminal and the kitting target terminal. Create the export package on the same system version of the kitting target terminal.
E1002 E1401	An encrypted password is wrong.	Check that the encrypted password of the import file and the password of BHTSetting set in the import destination terminal match. (When no password has been set in the import destination terminal, check that the encrypted password entered at the time of the import is not wrong.)
E1008	It fails in the start-up of the application launcher after an import.	Make sure that the application launcher is installed. If it is not installed, contact the administrator and update the system with the latest SYP.
E1009	It fails in a reboot after an import.	Try the following in order. · After rebooting the terminal, execute again. · Update the system with the latest SYP and execute it again.
E1100	The application manufactured by DNWA related to a set value which is an import target has not been installed.	Check that the application of the target of the error has been installed. When it has not been installed, contact the administrator and execute a system update with the newest SYP.
E2100	The application manufactured by DNWA related to a set value which is an export target has not been installed.	
E3100	Failed to apply settings to terminal.	Try the following in order. · Make sure that the settings you want to change in the device prohibition settings are not prohibited. · After rebooting the terminal, execute again. · After removing and inserting the battery of the terminal, execute again. · Execute the system update with the newest SYP and execute again. · After initializing to the factory default, execute again. (Refer to 3.6 Resetting to the Factory Default (FactoryReset) and Enterprise reset)
E4000 E5000 E5100	An entered password is wrong in a login or password change.	Enter the correct password. When initializing a password, execute initialization to the factory default. (Refer to 3.6 Resetting to the Factory Default (FactoryReset) and Enterprise reset)
XXXX	Error other than above	Try the following in order. · After rebooting the terminal, execute again. · After removing and inserting the battery of the terminal, execute again. · Execute the system update with the newest SYP and execute again. · After initializing to the factory default, execute again. (Refer to 3.6 Resetting to the Factory Default (FactoryReset) and Enterprise reset)

16. BatteryMonitor

The battery monitor is an application to display the status of a battery and monitor the status of the battery in the background to display an alert message based on the status of the battery.
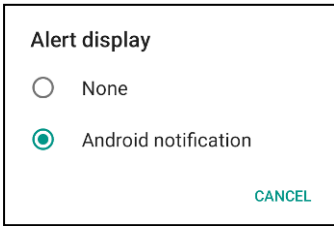
16.1. Screen and Settings

If in the application list is tapped, the battery monitor is started up and the following main screen is displayed.

Configuration of main screen

No	Item	Description		
1	Status of battery	The following battery status is displayed.		
		Item	Description	
		Wear level	The wear level of a battery is displayed. It is displayed as shown in the following based on the rate of the current chargeable maximum capacity for the specification capacity of the battery. Case of 70% or more: "Low" (background color: green) Case of 50% or more and less than 70%: "Middle" (background color: yellow) Case of less than 50%: "High" (background color: red)	
		Level	The current remaining amount is displayed.	
		Voltage	The current voltage is displayed.	
		Temperature	The current temperature is displayed.	
2	Menu button	If it is tapped, the menu list is displayed.		
3	Setting button	If it is tapped, the setting screen is displayed.		

Configuration of setting screen

Category	Item	Description	
General	Alert display	If it is tapped, the right dialog is displayed. Select a method to display a message when the battery monitor detects abnormality and wear in the battery. | Item	Description
---	---
None	No message is displayed.
Android notification	It is displayed with the push notification function of Android.		**Alert display** ○ None ◉ Android notification CANCEL
Alert	High temperature	Set whether to warn when the battery temperature becomes high.	
	Low capacity	Set whether to warn when the battery capacity is low.	
About Battery Monitor	Version	The version of the battery monitor is displayed.	

16.2. Display of Alert Message

When the battery monitor detects abnormality and wear in the battery, an alert message is displayed based on the settings.

— Point —   If BHT is the sleep status, no alert message is displayed.

Alert messages displayed by the battery monitor are as shown on the following table.

Alert message	Handling	Alert ID
Battery temperature very high (*1)	Stop using it until the battery cools down or replace the battery with new one.	10
Battery capacity very low	Replace the battery with new one.	20

(*1) It is not abnormality in the battery but if the battery becomes the specified temperature or higher, Android OS shuts down BHT forcedly, so a notice message is displayed before it.

Example of alert display
Android notification

> 🔋 Battery Monitor · now 🔔   ⌃
>
> **Battery temperature very high**
> Stop using the BHT until the battery cools down or
> replace the battery with new one.
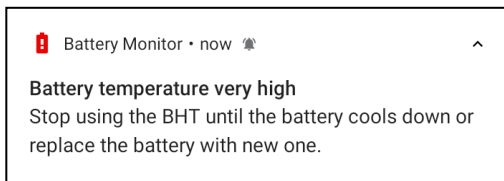
If the notification is tapped, the main screen of the battery monitor is displayed.

17. License(BHTLicense)

To use an application for which a license is required, license registration is required.
Execute license registration with BHTLicense.

There are the following types of licenses.

License	Target application
Access code	・BHT Remote ・BHT SecurityPackage
Product key	・BHT OCR

※BHT DMS (Device Management System) cannot be licensed with BHTLicense.
For details, refer to "DeviceManagementSystem Manual".
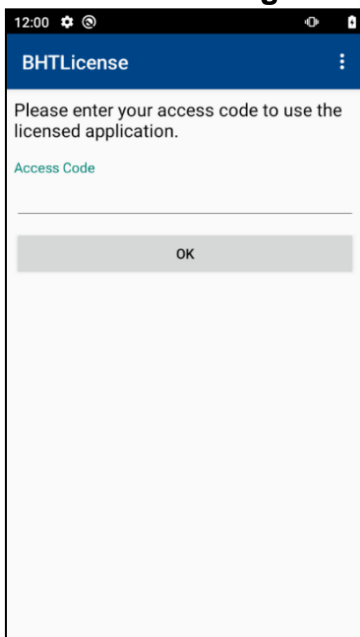
17.1. Start-up Screen
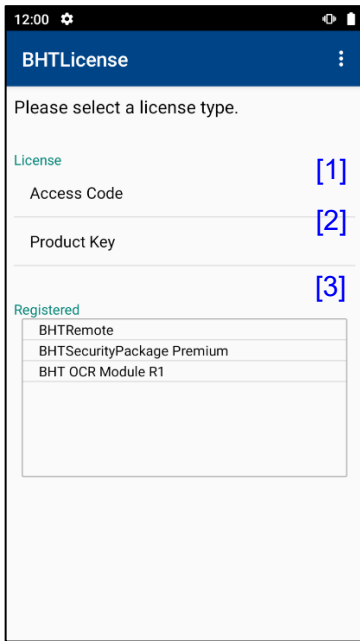
If [icon] in the application list is tapped, this screen is displayed.

[1]	The access code input screen is displayed.
[2]	The product key input screen is displayed.
[3]	Display a list of registered licenses.

17.2. Access code

17.2.1. Manual registration

Enter the access code written on the license certificate to execute license registration.
After the license registration completion, the application can be used.
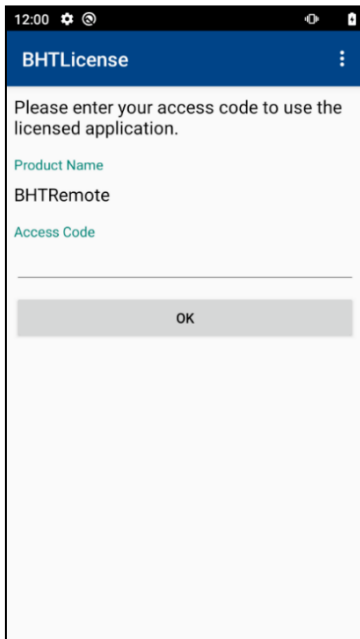
If an application for which no license registration is completed is started up, this screen is displayed.
Enter the access code written on the license certificate to execute license registration.
After the license registration completion, the application can be used. If the application is terminated, start up the application again.

17.2.2. Automatic registration

License registration can be executed automatically without entering the access code manually.
Follow the steps below.
1. Create a license file in a text format in which the list of access codes is described. The file name is arbitrary and the extension is txt.
2. Store the created license file in the following folder. Several license files may exist.
/Internal shared storage/StartupSettingsData/Setup/License
3. Start the application you want to license. If there is a corresponding access code in the license file, the license will be registered automatically. The application can be started and used as it is.

■License file example1: License1.txt
Automatically register multiple licenses on one terminal.

```
1234567890123456-1234567890     <-BHTRemote
2345678901234567-2345678901     <-BHTSecurityPack
3456789012345678-3456789012     <-BHTxxxx
```

*Combining multiple licenses into a single file eliminates the need to enter each license.

■License file example2: License2.txt
Automatically register licenses on multiple terminals.

```
1234567890123456-1234567890     <-BHTRemote :License for terminal A
1234567890123457-1234567891     <-BHTRemote :License for terminal B
1234567890123458-1234567892     <-BHTRemote :License for terminal C
2345678901234567-2345678901     <-BHTSecurityPack :License for terminal A
2345678901234568-2345678902     <-BHTSecurityPack :License for terminal B
2345678901234569-2345678903     <-BHTSecurityPack :License for terminal C
3456789012345678-3456789012     <-BHTxxxx :License for terminal A
3456789012345679-3456789013     <-BHTxxxx :License for terminal B
3456789012345670-3456789014     <-BHTxxxx :License for terminal C
```

*Distributing this file to multiple terminals eliminates the need to enter each license on each terminal.

17.3. Product key

17.3.1. Manual registration
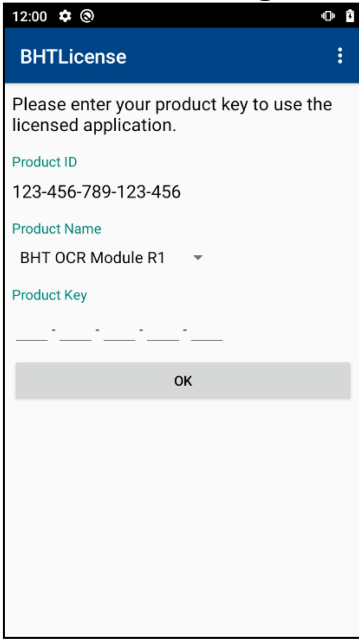
Enter the product key written on the license certificate to execute license registration. After the license registration completion, the application can be used.

This screen is also displayed when you start an application for which license registration has not been completed.
Enter the product key written on the license certificate to execute license registration. After the license registration completion, the application can be used. If the application is terminated, start up the application again.

17.3.2. Automatic registration

License registration can be executed automatically without entering the product key manually.
Follow the steps below.

1. Obtain a license file containing a list of product keys from DENSO WAVE. The file name is arbitrary and the extension is lcs.
2. Store the created license file in the following folder. Several license files may exist.
   /Internal shared storage/StartupSettingsData/Setup/License
3. Start the application you want to license. If there is a corresponding product key in the license file, the license will be registered automatically. The application can be started and used as it is.

17.4. Error Indication

Displayed message	Coping
Invalid Access Code.	The entered access code is wrong. Enter the correct access code.
Invalid Product Key.	The entered product key is wrong. Enter the correct product key.
Access code entered already in use.	Check that the entered access code is not wrong.
Product key entered already in use.	Check that the entered product key is not wrong.
Failed to register.	Please contact the administrator.
Configuration file not found.	Please contact the administrator.

17.5. Notes

If Factory Reset is executed, the registered license disappears. Execute license registration again.

18. QuickSettings

18.1. Outline

QuickSettings is used to allow users to control simple operation such as power ON/OFF, simple setting change while using Application Launcher (see 11. ApplicationLauncher) and disabling the notification bar (see 11.6.4.1 Notification Bar).

Users cannot restore operation when a problem such as communication error occurs if user operation is restricted. This application allows users to perform simple restoration.

To enable user operation to allow users to operate specified operation, see 18.2.2. Admin menu.

— Note — ON/OFF of devices that can be operated with this application and changes in settings are reflected in the Android OS settings.

18.2. Functions

18.2.1. Main menu

Tap the ⚙ icon in the aps list、 the menu below is displayed.

No	Function name	Description	reference source
[1]	Menu	Version information	
[2]	Brightness slider	Change screen brightness	See 18.2.1.1
[3]	Wi-Fi	Enable/Disable Wi-Fi	See 18.2.1.2
[4]	Wi-Fi scan	Enable/Disable Wi-Fi scan	See 18.2.1.3
[5]	Bluetooth	Enable/Disable Bluetooth	See 18.2.1.4
[6]	NFC	Enable/Disable NFC	See 18.2.1.5
[7]	Airplane mode	Enable/Disable Airplane mode	See 18.2.1.6
[8]	Keyboard	Change virtual keyboard	See 18.2.1.7
[9]	Screen timeout	Change screen timeout	See 18.2.1.8
[10]	BHTRemote Connect	Connecting to a PC with BHTRemote(*1)	See BHTRemote_User's_Manual_for_Android_EX
[11]	Navigation Bar	Enable/Disable Navigation Bar	See 18.2.1.10

(*1) Next release or later.

― Point ― ・Audio level can be adjusted with the M1 and M2 keys. See 3.9 Key for details.

18.2.1.1 Brightness

Move the slider to the right (brighten the screen) or to the left (darken the screen) to adjust the screen brightness.

Slider position to brighten the screen	Slider position to darken the screen
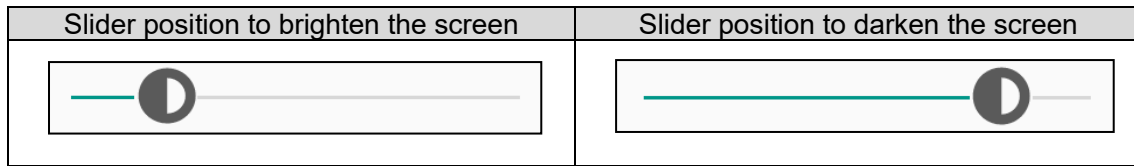
■When the brightness auto adjustment is enabled.
   Adjust the screen brightness while the auto adjustment is enabled, and change the BHT brightness settings.

■When the brightness auto adjustment is disabled.
   Adjust the screen brightness while the auto adjustment is disabled, and change the BHT brightness settings.

*Auto brightness adjustment can be switched between enabled and disabled using the Android standard setting application (see 3.8.1 Brightness of Screen) or BHTSetting (See 15.2.2.9 Display).
   The brightness level maintains each setting accordingly for enabled and disabled state, and both settings can be changed individually.

18.2.1.2 Wi-Fi

Enable or disable WiFi by tapping the Wi-Fi icon.
This function is used to connect or disconnect Wi-Fi, or restore communication when communication failure occurs.

Icon when Wi-Fi is enabled	Icon when Wi-Fi is disabled
Wi-Fi network connection is available. Set the destination network in advance.	Wi-Fi network is not available.

18.2.1.3 Wi-Fi Scan
You can scan Wi-Fi by tapping the Wi-Fi scan icon.
If it's not turned off, tap the icon to scan for Wi-Fi.
After 10 seconds, it will return to unconnected or connected.

Wi-Fi connected status icon	Scanning status icon
You will be connected to the Wi-Fi network.	Wi-Fi scanning is in progress.
Wi-Fi not connected icon	OFF state icon
OFF state icon	Wifi scan execution will be OFF.

18.2.1.4 Bluetooth

Enable or disable Bluetooth by tapping the Bluetooth icon.

Icon when Bluetooth is enabled	Icon when Bluetooth is disabled
Bluetooth connection is available. Set the Bluetooth device in advance.	Bluetooth connection is not available.。

18.2.1.5 NFC

Enable or disable NFC by tapping the NFC icon.

| Icon when NFC is enabled	Icon when NFC is disabled
Obtaining information from NFC tags and other NFC –enabled devices is available.	NFC connection is not available.

18.2.1.6 AirPlane mode

Enable or disable the AirPlane mode by tipping the AirPlane mode icon.

Icon when the AirPlane mode is enabled	Icon when the AirPlane mode is disabled
AirPlane mode is enabled. All wirelss connections are disabled. Wi-Fi and Bluetooth can be enabled while the AirPlane mode is enabled.	AirPlane mode is disabled. Wi-Fi and Bluetooth go back to the state before the AirPlane mode is disabled.

18.2.1.7 Keyboard

【Access to this menu】
Main menu > Tap the Keyboard icon ⌨ .
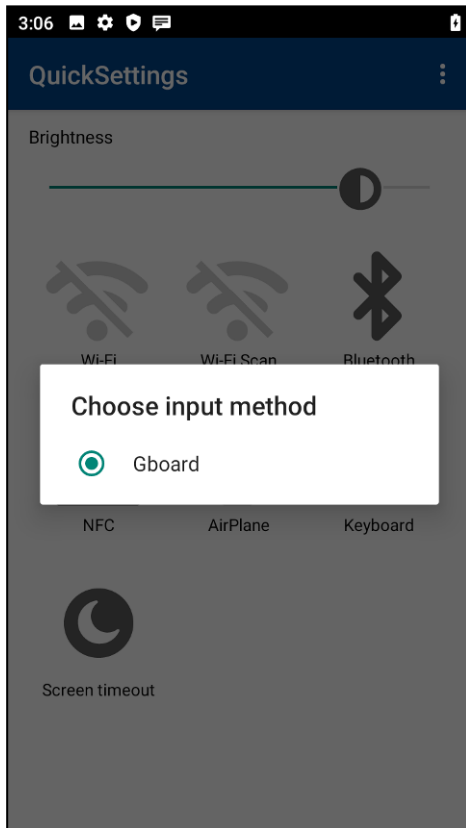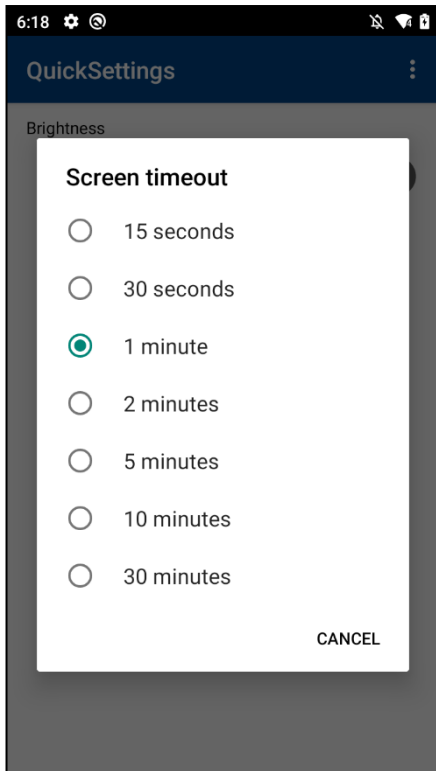
The keyboard selected by the software keyboard is displayed. (See 4.2 Selection of Software Keyboard)

Setting of the virtual keyboard displayed can be changed.

18.2.1.8 Screen timeout

【Access to this menu】
Main menu> Tap the Screen timeout icon .

■Screen timeout
Set the time until the BHT goes to Screen timeout.
(See 3.8.3 Screen Timeout Settings on the Display)

Timeout period	Description
15 sec.	Sleep in 15 seconds
30 sec.	Sleep in 30 seconds
1 min.	Sleep in 1 minute
2 min.	Sleep in 2 minutes
5 min.	Sleep in 5 minutes
10 min.	Sleep in 10 minutes
30 min.	Sleep in 30 minutes

18.2.1.9 BHTRemote Connect <Next release or later>

By tapping the BHTRemote connection icon, you can connect to the PC using the connection information that has been set beforehand.
 Refer to BHTRemote_User's_Manual_for_Android_EX for details.

18.2.1.10 Navigation Bar

Enable or disable the Navigation Bar by tipping the Navigation Bar icon.

Icon when the Navigation Bar is enabled	Icon when the Navigation Bar is disabled
Navigation Bar is enabled. Visible the navigation bar at the bottom of the screen.	Navigation Bar is disabled. Invisible the navigation bar at the bottom of the screen. Restricts the operation of the back button, home button, etc.

Visible Nabigation Bar(M60,M70)
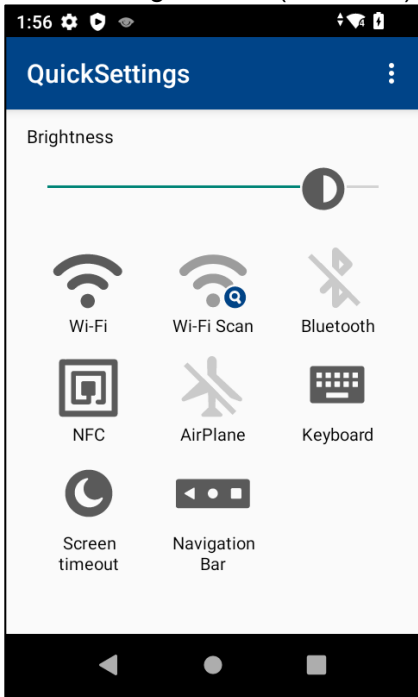
Invisible Nabigation Bar(M60,M70)
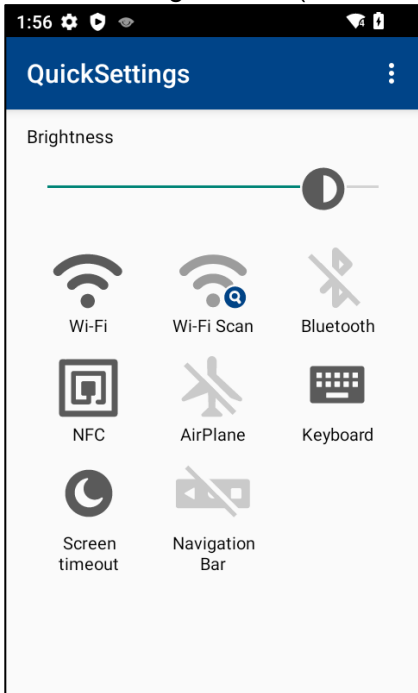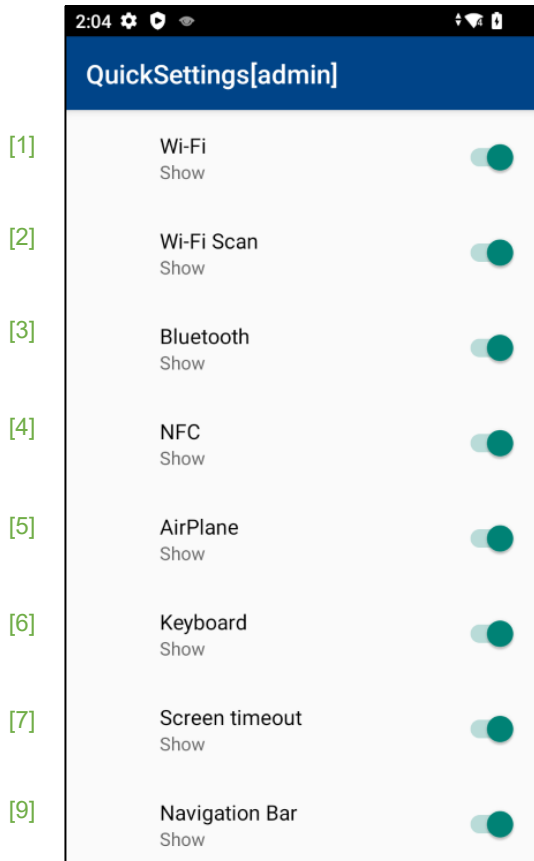
18.2.2. Admin menu

【Access to this menu】
   BHTSetting Top > QuickSettings

Logging into BHTSetting is required to use this function.
Icons for each functions to be shown on the QuickSettings main menu can be selected.

When icons are set to show.   When icons are set to hide.

[1]	Wi-Fi / Show
[2]	Wi-Fi Scan / Show
[3]	Bluetooth / Show
[4]	NFC / Show
[5]	AirPlane / Show
[6]	Keyboard / Show
[7]	Screen timeout / Show
[9]	Navigation Bar / Show
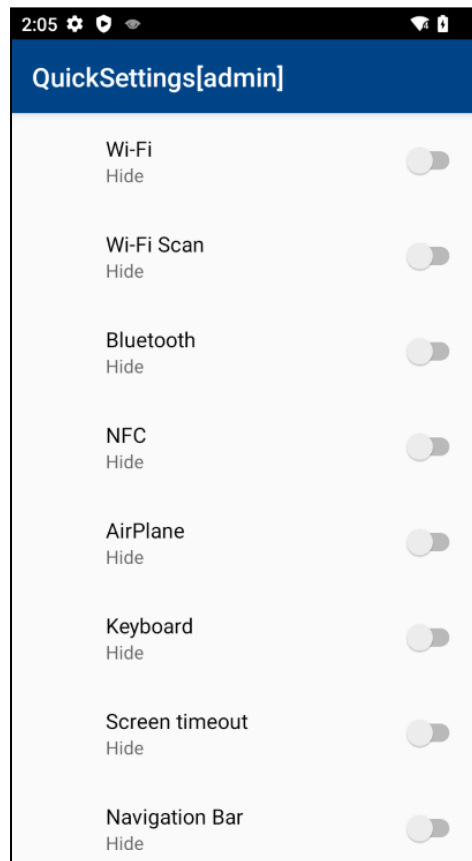
Targets [1] to [9] above can be switched between display and non-display for [1] to [9] on the following main screen.
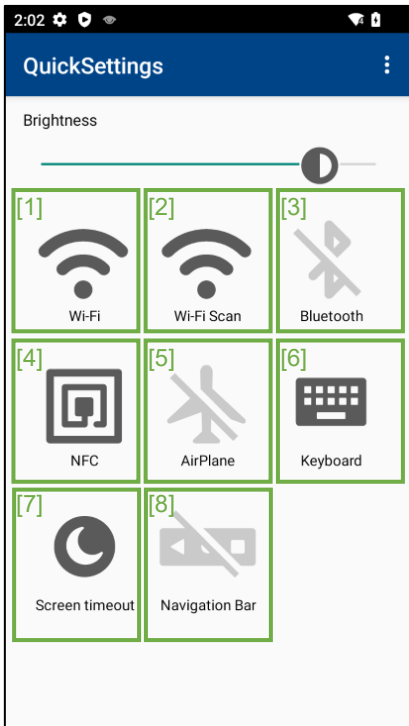
The default values are

No	Function name	Default Value
[1]	Wi-Fi	ON
[2]	Wi-Fi Scan	ON
[3]	Bluetooth	ON
[4]	NFC	ON
[5]	AirPlane	ON
[6]	Keyboard	ON
[7]	Screen timeout	ON
[8]	BHTRemote Connect(*1)	ON
[9]	Navigation Bar	OFF

(*1) Next release or later.
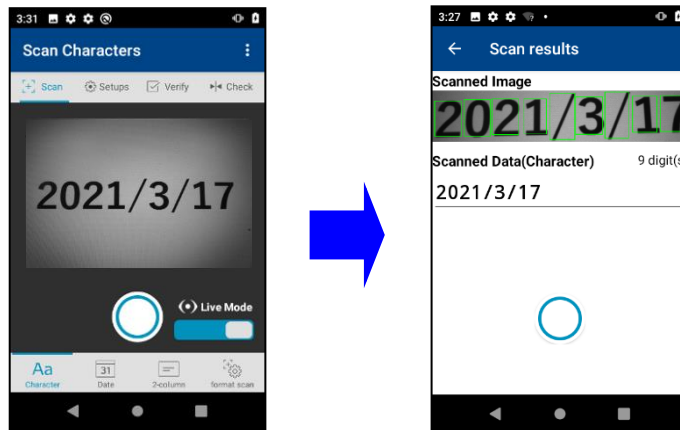
19. BHT OCR

19.1. Introduction

BHT OCR is an OCR application used exclusively with the BHT.
BHT OCR enables the following features.

19.1.1. Scanning confirmation and verification during operation

■Scanning feature
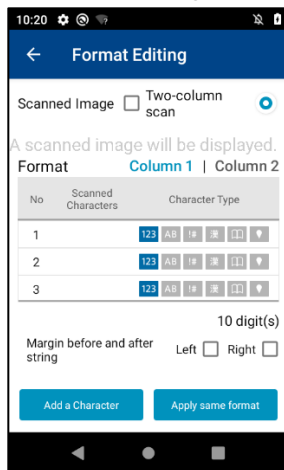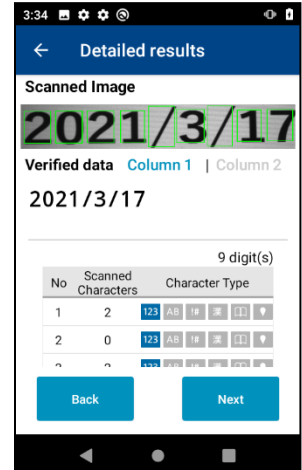Converts a scanned label used in actual operation into digital text.

Ex.)

■OCR settings and verification
The OCR stability can be improved by editing a format.
The edited format can be verified.

【Format editting】　　　　【Verification】
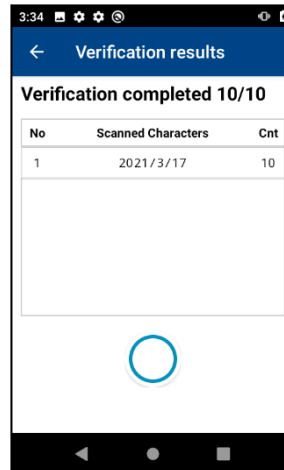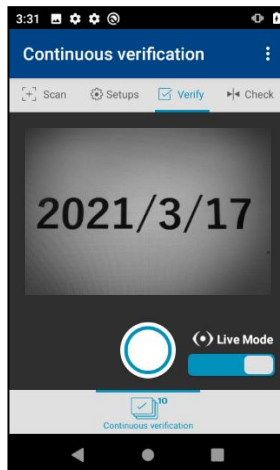
19.1.2. Advanced recognition realizes speedy & reliable scanning

■Scanning performance
Reliably scans characters on the scanning area indicated by a laser marker.

【Scanning instructions】
Point the center of the laser marker to characters. (Point scan)
*Scanning fails if the center of the laser marker is not pointed to the target characters.

Center of the scanning area

123456789

Scan line

Scan results :
123456789

1234 56789

Scan results :
Failed to scan

19.1.3. Support tools to ensure stable operation
■Format editting

Format can be edited after scanning a character image.
If the character types to scan are known in advance, "Edit all" function makes easy to edit all character types at once.
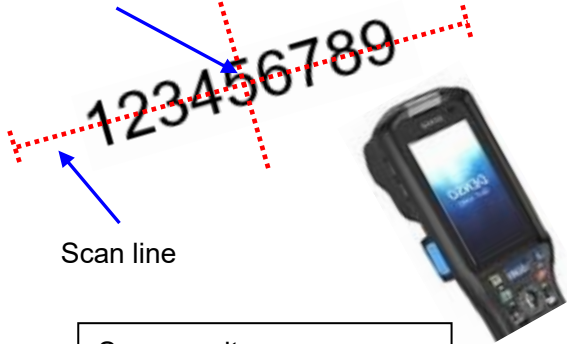
Ex.) To edit the format after scanning the target characters.

The format is automatically created based on the scanned data.
If the scanned result is not correct, the format can be manually edited.

Ex.) To edit the format by editing all character types at once.

All character types are edited at once, and also can be set as date format.

Set the margin function for scanning OCR stably.

Five templates are provided as date format.

■Alert function

The alert function provides an immediate manual correction opportunity by focusing on the possible incorrect recognition results.
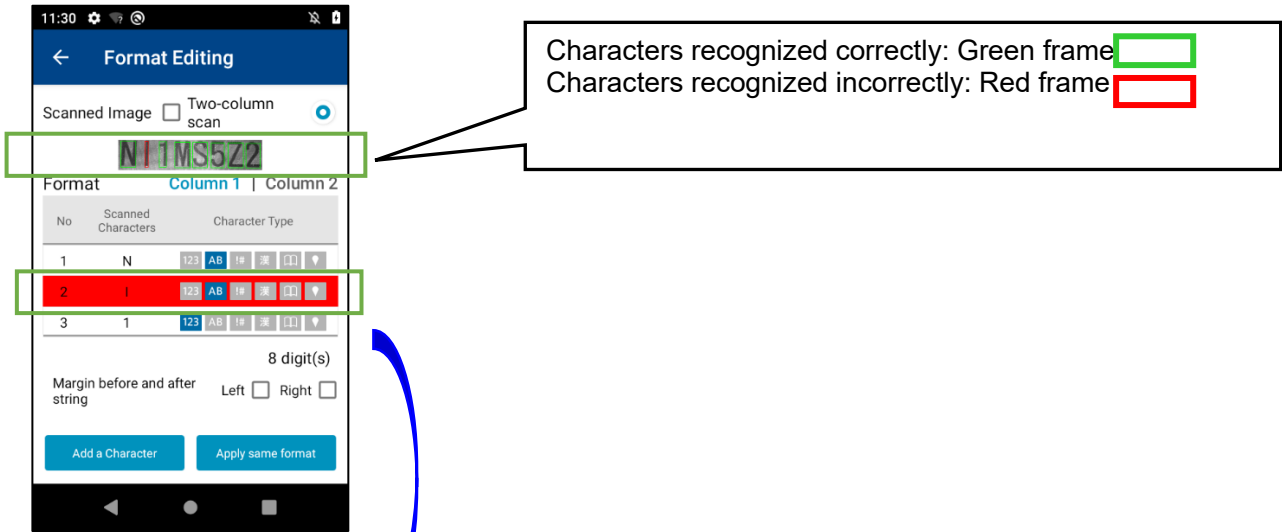
Characters recognized correctly: Green frame
Characters recognized incorrectly: Red frame
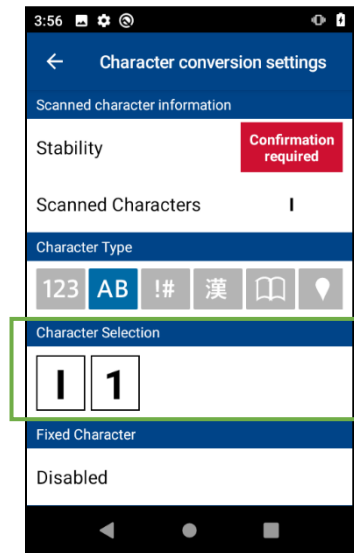
The character type can be changed by tapping the correct character from the character selection.
Ex.)
Number "1" is misrecognized to alphabet "I".
The character type can be changed to the numeric value by selecting number "1".

19.2. Outline

This section describes the setup procedure of the first BHT (master terminal) followed by the multiple BHTs (second and subsequent terminals) setups.

19.2.1. OCR scan settings (master terminal)

The flow of creating settings for reading in described below.

---

1. Scanning a label

Scan a label to be used in actual operation.
The scan mode can be selected depending on the label used.
(1) To scan characters, tap "Scan" on the top menu then "Characters" on the bottom menu.
(2) To scan date, tap "Date" on the bottom menu.
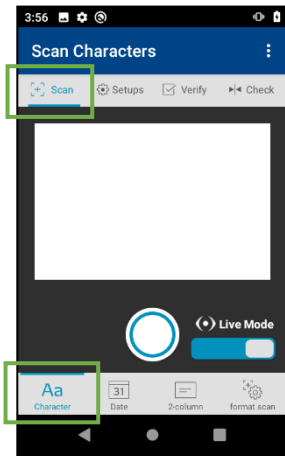
(1)Character scan   (2)Date scan
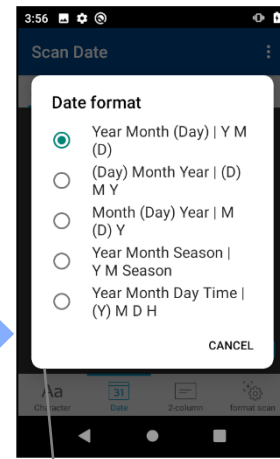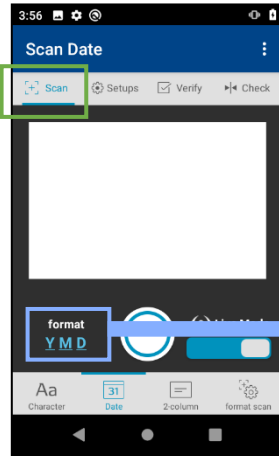
Date format is selectable.

---

2. Verifying scan results

Verify the label scan results then confirm that the results are correct.
If results are not correct, edit the format.
If recognition works as expected, proceed to the continuous verification to check whether any problem exists.
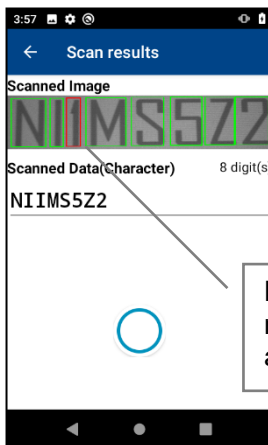
Number "1" is recognized as alphabet "I".

---
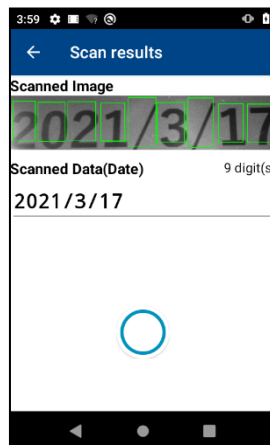
3. Format editing

Edit the format depending on labels to be scanned.
The date can be recognized easily by using the date format.
There are two ways to edit the format as follows.
① For date scan, use the "Edit all" menu.
② For character scan, scan characters then edit the format automatically created.
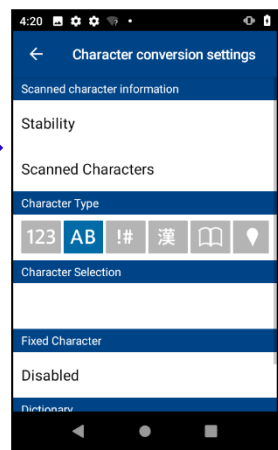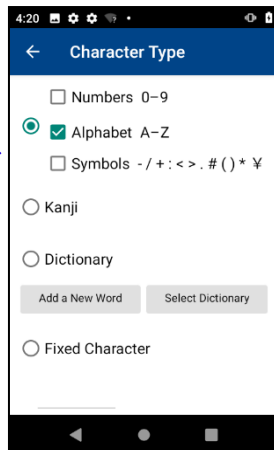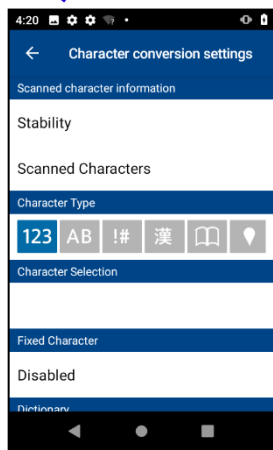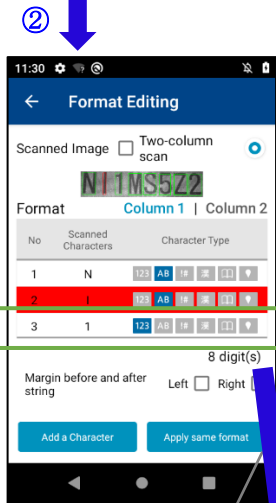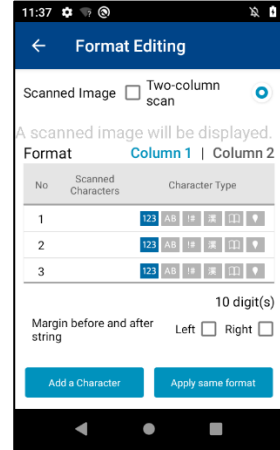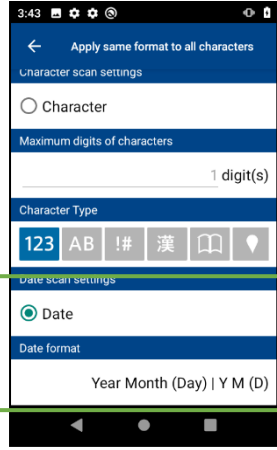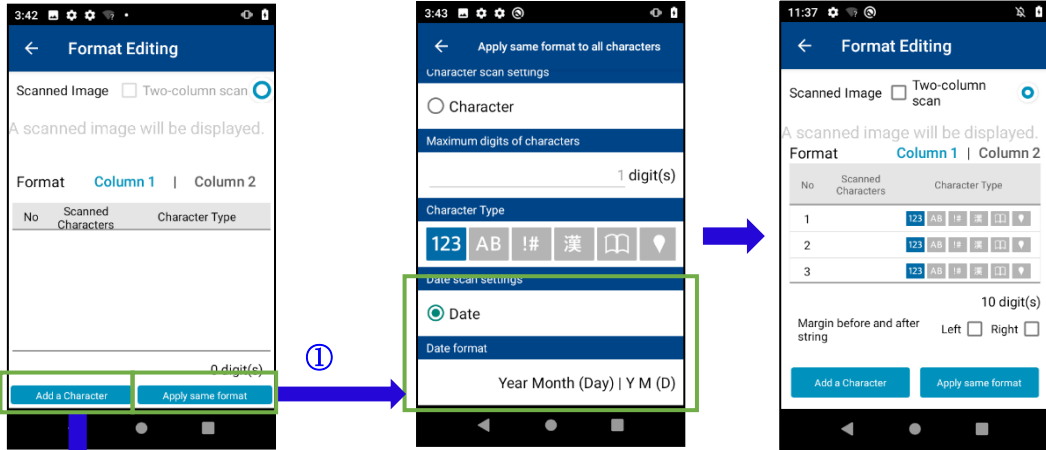
Tap the line to change the character type.

4. Verification of the edited format

Verify that the format edited works as expected.
If the format does not work as expected, reedit the format or consider to use the dictionary.

There are four ways to verify the format.
① Verify one pattern from the format unfinished editing.
② Verify multiple edited patterns at once.
③ Verify the scan accuracy by continuously scanning the same label for ten times.
④ Comparative verification with the expected scan results.

① Verification with one pattern
Scan the label using only "Pattern X" by tapping the "Verification" button in the "Pattern X" screen.
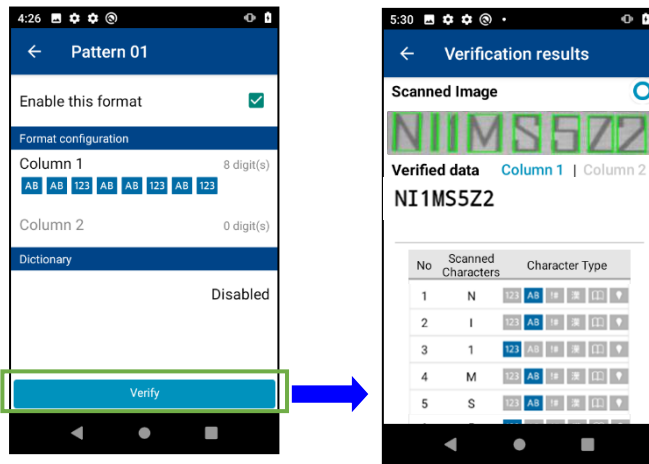
② Verification of multiple patterns
The edited format can be verified by using "Format scan" on the bottom menu in the "Scan" menu on the top.
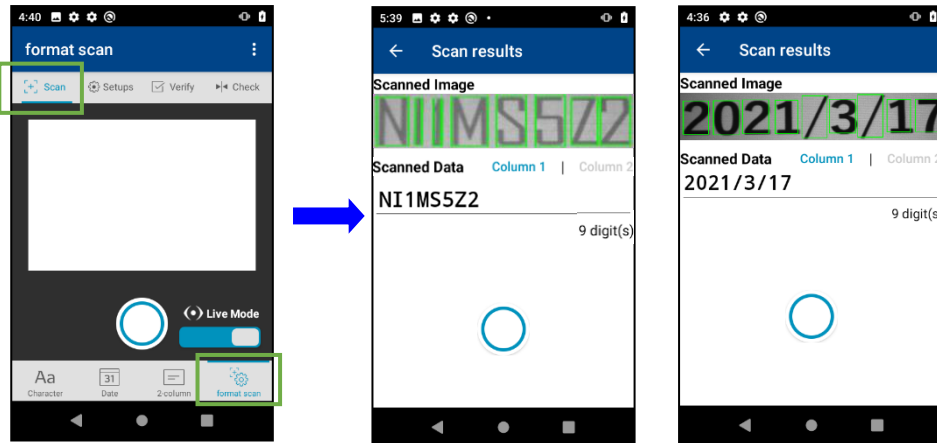
③ Verify the scan accuracy by continuously scanning the same label for ten times.
   The scan accuracy can be verified by scanning the same label from various direction using
   "Continuous verification" on the bottom menu in the "Verify" menu on the top.
   Reedit the format if the scan results are not accurate as expected.
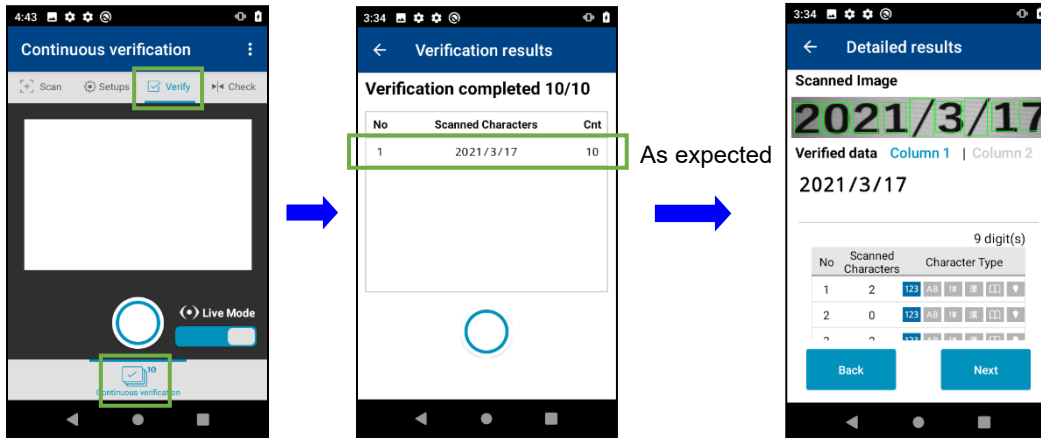
As expected

④ Comparative verification with the expected scan results.
   The comparison result is shown every time scanning the label after scanning the expected
   value as a comparison source.
   The comparison source can be set by scanning a 1D or 2D code.
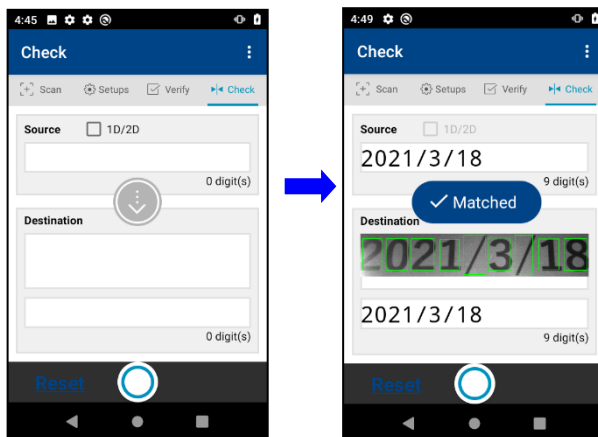
19.2.2. Operational environment settings for OCR scan (mater terminal)

1. **Purchase and register the license**

   To use OCR scan with BHTSDK or ScanSettings (Kbif), purchasing and registering the license are required. Please purchase the license in advance.

   OCR scan can be used by registering the license with the BHT to be used after purchased. See "17.License (BHTLicense)" for details of the license registration.

   If the license is not registered, the license registration dialog will appear in the following timing. Register the license if the dialog appears.

   ① When the business application performs OCR scan with BHTSDK.
   ② When OCR is enabled in the Symbol settings while Scan is enabled in ScanSettings.
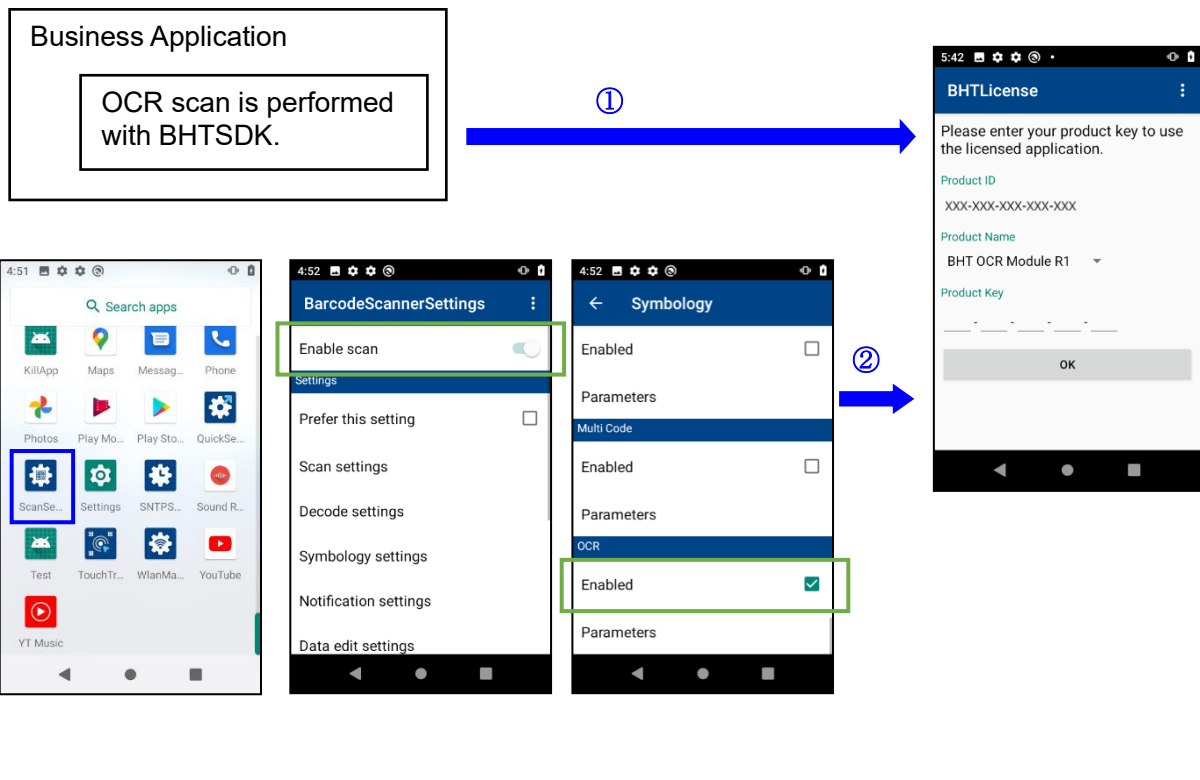
2. OCR scan in a business application

There are two ways to utilize the OCR scan in operation
① Use BHTSDK to create a business application in detail.
② Use ScanSettings(Kbif) to create a business application easily.

【①Using BHTSDK】
See Section 11. OCR related API in programing manual.

【② Using ScanSettings】
See Section 12.4.1.15 OCR for the detailed settings.
To use the BHT OCR setting file in ScanSettings, select the BHT OCR export file in the Profile menu shown on the right screen below.
Then enable the OCR scan as shown below.

Select the BHT OCR Export file in Profile.
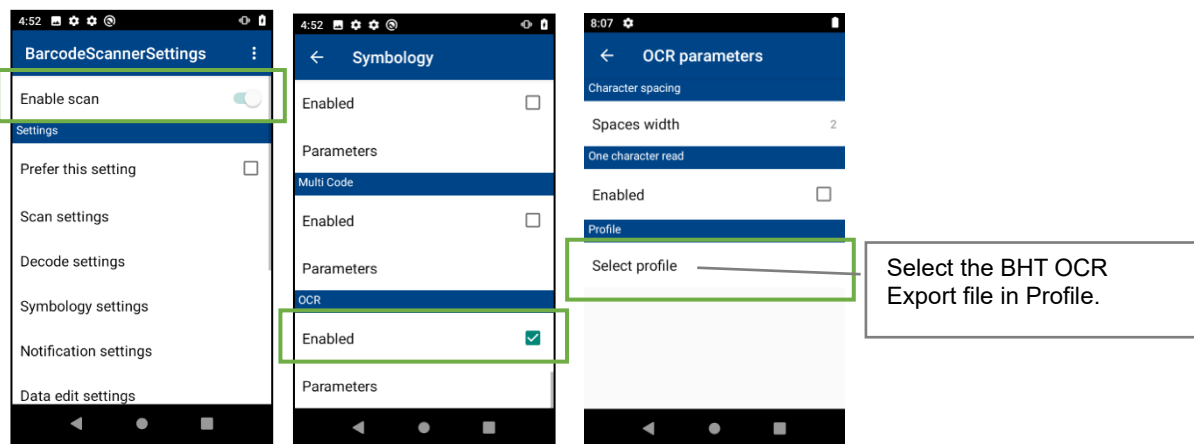
[Note] Changing the BHT OCR settings does not change the settings of ScanSettings.
The Profile setting is required to for the settings that created and verified in BHT OCR to take effect on ScanSettings.
See Section 19.2.6.1 Regarding the OCR setting data for details.

19.2.3. Kitting (Export settings from the master terminal)

This section describes the procedure to affect the environment verified with the master terminal to operation terminals.

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1. Export the settings from BHT OCR,
   Store the settings, which created in Section 19.2.1.OCR scan settings (master terminal), in any location on the internal shared storage.

BHT OCR
settings file (Zip)

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2. Export the settings of ScanSettings(Kbif).
   Use BHTSetting to export if ScanSettings(Kbif) is used in operation.
   See Section 15.2.1.4 Export for details of BHTSetting/

BHTSetting
setting file
(Zip)
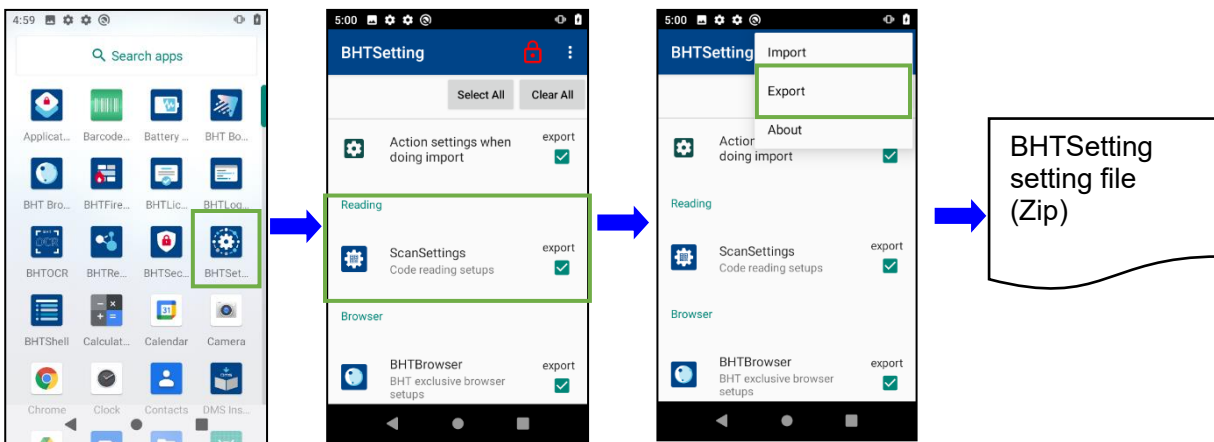
19.2.4. Kitting (Setting up the operation terminal)

3. Purchase and register the license.
   Purchasing and registering the license are also required for the operation terminal.
   For details, see "1.Purchase and register the license" in Section 19.2.2.Operational environment settings for OCR scan (mater terminal).

4. Deploy the setting exported to the operation terminal.
   Deploy the setting file (Zip) to the operation terminal.
   Deploy the BHT OCR setting file (Zip) to the location where is determined in Section 19.2.2.Operational environment settings for OCR scan (mater terminal).

BHT OCR
Setting file
(Zip)

BHTSetting
setting file
(Zip)

BHT
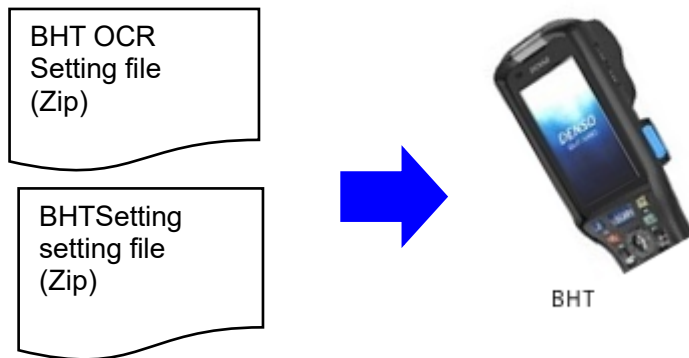
5. Import BHTSetting.
   Import the BHTSetting setting file (Zip) if BHTSetting is used to export.
   See Section 15.2.1.3 Import for details of BHTSetting.

BHTSetting
setting file
(Zip)
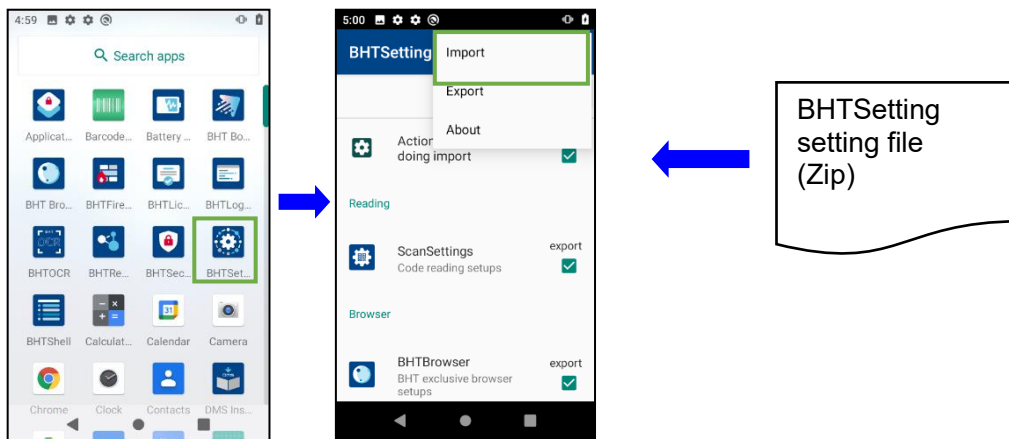
6. Install the application.
   Please install the business application.

19.2.5. OCR scan operation

This section describes the procedure of the OCR scanning in operation terminals.

1. Perform the OCR scan in the business application.

19.2.6. Notes

19.2.6.1 Regarding the OCR setting data

The setting data of BHT OCR, ScanSetting, and BHTSDK are independent of each other.

Therefore, if the OCR settings created in BHT OCR is used in operation, Specifying the OCR settings either in ScanSettings or in BHTSDK is required.
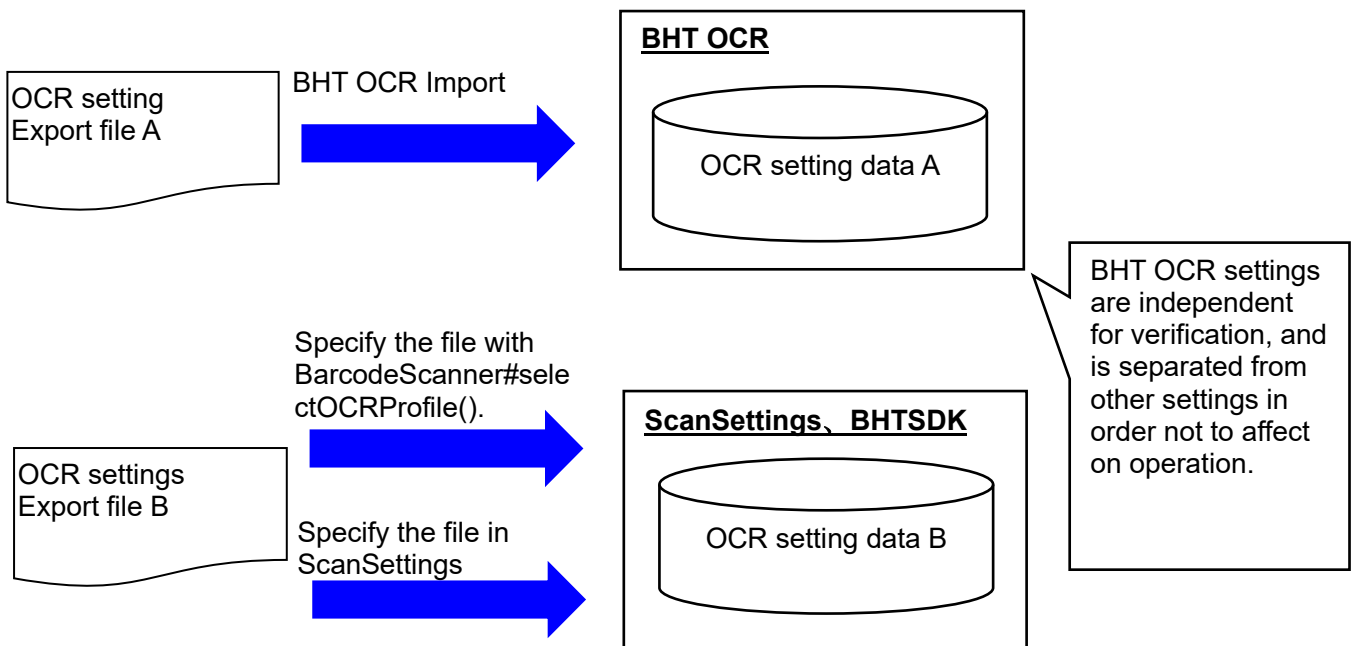
19.3. Functions

19.3.1. Startup

19.3.1.1 Startup screen

Tap the BHT OCR icon , BHT OCR startup screen appears.

19.3.2. Scan

19.3.2.1 Character

"Scan Characters" menu

Scans a character image and recognizes as digital characters without using the OCR setting data of BHT OCR.

[1]	View Finder	Real time image of the camera is shown when the "Scan" button is tapped. The screen of View Finder is switchable by turning ON/OFF the LiveMode. ・LiveModeON: Real time image of the camera is shown on ViewFinder. ・LiveModeOFF: Real time image of the camera is not shown on ViewFinder.
[2]	"Scan" button	BHT emits the scanning light and the cross laser marker to scan a character image. The screen transits to the "Scan results" screen if the characters successfully scanned.
[3]	"LiveMode" button	Switches the View Finder screen. The default of LiveMode is ON at startup. The LiveMode ON/OFF status remains the same until BHT OCR exited. The LiveMode status restores to default (ON) when BHT OCR is restarted. The LiveMode status is shared with "Character", "Date", and "Format scan" in the "Scan" menu and "Continuous verification" in the "Verify" menu.

"Scan Results" menu

The scan results are shown if a character image is successfully scanned on the "Scan Characters" menu.

[1]	Scanned Image	Displays the scanned charactor image on the "Scan Characters" menu. The scan stability of the scan results is shown by the colored frame for each character. Stability "HIGH": Green frame Stability "MIDDLE": Red frame *See "Character conversion settings" menu for stability.
[2]	Scanned data (Characters)	Displays the scanned characters on the "Scan Characters" menu.
[3]	Number of digits: XX digit(s)	Displays the number of digits of the characters scanned on the "Scan Characters" menu.
[4]	"Scan" button	BHT emits the scanning light and the cross laser marker to rescan a character image. The "Scan Characters" menu appears when scanning is started. When the character string reading is successful, the screen changes to this screen again and the display of [1] - [3] is updated with the reading result.

19.3.2.2Date
"Date" menu
Date can be scanned and recognized as date without using the OCR setting data of BHT OCR.
Five patterns are selectable as the date format.

[1]	View Finder	The real time image of the camera is shown when the "Scan" button is tapped. The screen of View Finder is switchable by turning ON/OFF the LiveMode. ・LiveModeON: Real time image of the camera is shown on ViewFinder. ・LiveModeOFF: Real time image of the camera is not shown on ViewFinder.
[2]	"format" button	Transits to the date format selection dialog to select the date format to scan. *See the Date format list. *Default is "YearMonth(Day)|YM(D)".
[3]	"Scan" button	BHT emits the scanning light and the cross laser marker to scan a character image. The screen transits to the "Scan results" screen if the date successfully scanned.
[4]	"LiveMode" button	Switches the View Finder screen. The default of LiveMode is ON at startup. The LiveMode ON/OFF status remains the same until BHT OCR exited. The LiveMode status restores to default (ON) when BHT OCR is restarted. The LiveMode status is shared with "Character", "Date", and "Format scan" in the "Scan" menu and "Continuous verification" in the "Verify" menu.

"Date format selection" dialog
   The scannable date format can be selected.
   Default is "YearMonth(Day)|YM(D)".
   This setting is effective only for the "Date scan" menu.
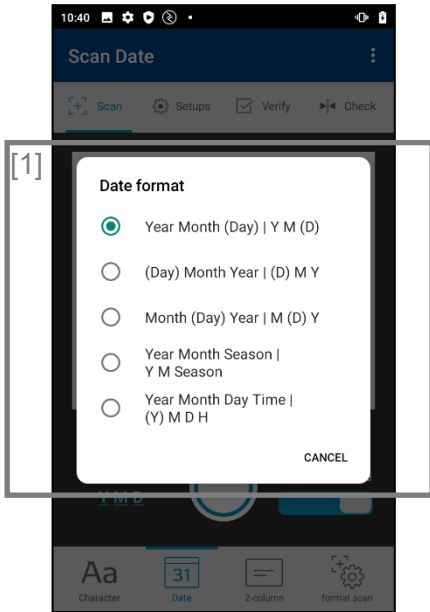
Date format	Display format	Scan example
YearMonth(Day) | YM(D)	YMD	2021/02/22 , 2021/02
(Day)MonthYear| (D)MY	DMY	22/02/2021 , 02/2021
Month(Day)Year | M(D)Y	MDY	02/22/2021 , 02/2021
YearMonthSeason| YMSeason	YMS	2021/02 上
(Year)MonthDayTime | (Y)MDH	YMDH	2021/02/22 AM10

[1]	Date format	The scannable date format can be selected from the list below. ・YearMonth(Day) | YM(D) ・(Day)MonthYear| (D)MY ・Month(Day)Year | M(D)Y ・YearMonthSeason| YMSeason ・(Year)MonthDayTime | (Y)MDH *The display format of the "Date scan" menu will be updated according to the format selected.

"Scan results"

The scan results are shown if the date is successfully scanned in the "Scan Date" menu .

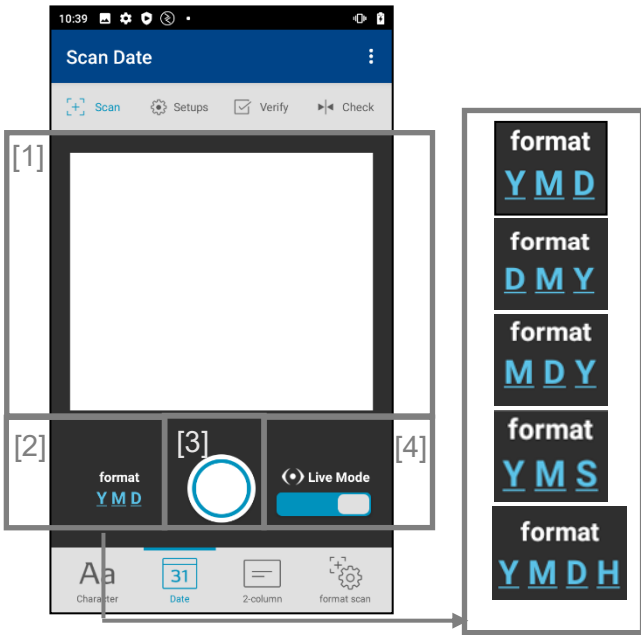| [1]	Scanned image	Displays the scanned date image on the "Scan Date" menu. The scan stability of the scan results is shown by the colored frame for each character. 　Stability "HIGH": Green frame 　Stability "MIDDLE": Red frame 　*See "Character conversion settings" menu for stability.
[2]	Scanned data (Date)	Displays the scanned date on the "Scan Date" menu.
[3]	Number of digits: XX digit(s)	Displays the number of digits of the date scanned on the "Scan Date" menu.
[4]	"Scan" button	BHT emits the scanning light and the cross laser marker to rescan a character image. The "Scan Date" menu appears when scanning is started. When the date reading is successful, the screen changes to this screen again and the display of [1] - [3] is updated with the reading result.

19.3.2.3 Two-column scan
"Scan 2-columns" menu

2 columns of OCR reading without using the BHT OCR setting data.

[1]	View Finder	The real time image of the camera is shown when the "Scan" button is tapped. The screen of View Finder is switchable by turning ON/OFF the LiveMode. ・LiveModeON: Real time image of the camera is shown on ViewFinder. ・LiveModeOFF: Real time image of the camera is not shown on ViewFinder.
[2]	"Scan" button	BHT emits the scanning light and the cross laser marker to rescan a character image. The screen transits to the "Scan results" screen if the characters are successfully scanned.
[3]	"LiveMode" button	Switches the View Finder screen. The default of LiveMode is ON at startup. The LiveMode ON/OFF status remains the same until BHT OCR exited. The LiveMode status restores to default (ON) when BHT OCR is restarted. The LiveMode status is shared with "Character", "Date", and "Format scan" in the "Scan" menu and "Continuous verification" in the "Verify" menu.

"Scan results" menu
   The scan results are shown if the character image is successfully scanned in the "Scan 2-columns" menu.
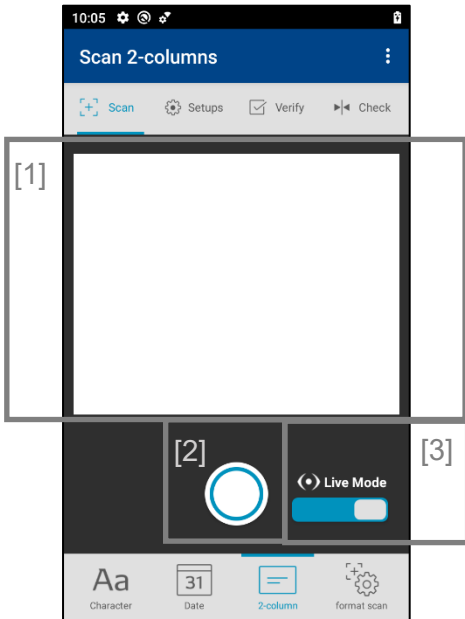

[1]	Scanned image	Displays the scanned text image on the "Scan 2-columns" menu.
		The scan stability of the scan results is shown by the colored frame for each character.
		   Stability "HIGH": Green frame
		   Stability "MIDDLE": Red frame
		   *See "Character conversion settings" menu for stability.

[2]	Scanned data	Displays the scanned text in the "Scan 2-columns" menu. The scanned data is displayed on the first row and the second row.
[3]	Number of digits: XX digit(s)	Displays the number of digits of the scanned text on the "Scan 2-columns" menu. The number of digits of the scanned data (1st column) and the scanned data (2nd column) are displayed respectively.
[4]	"Scan" button	BHT emits the scanning light and the cross laser marker to rescan a character image. The "Scan 2-columns" menu appears when scanning is started. When the reading is successful, the screen changes to this screen again and the display of [1] - [3] is updated with the reading result.

19.3.2.4Format scan
"format scan" menu

OCR scan can be performed using the OCR setting data of BHT OCR.
The above mentioned OCR setting data will not be used for OCR scan if the format is not specified in the "Format Settings" menu.

[1]	View Finder	The real time image of the camera is shown when the "Scan" button is tapped. The screen of View Finder is switchable by turning ON/OFF the LiveMode. ・LiveModeON: Real time image of the camera is shown on ViewFinder. ・LiveModeOFF: Real time image of the camera is not shown on ViewFinder.
[2]	"Scan" button	BHT emits the scanning light and the cross laser marker to rescan a character image. The screen transits to the "Scan results" screen if the characters are successfully scanned.
[3]	"LiveMode" button	Switches the View Finder screen. The default of LiveMode is ON at startup. The LiveMode ON/OFF status remains the same until BHT OCR exited. The LiveMode status restores to default (ON) when BHT OCR is restarted. The LiveMode status is shared with "Character", "Date", and "Format scan" in the "Scan" menu and "Continuous verification" in the "Verify" menu.

"Scan results" menu
   The scan results are shown if the character image is successfully scanned in the "format scan" menu .
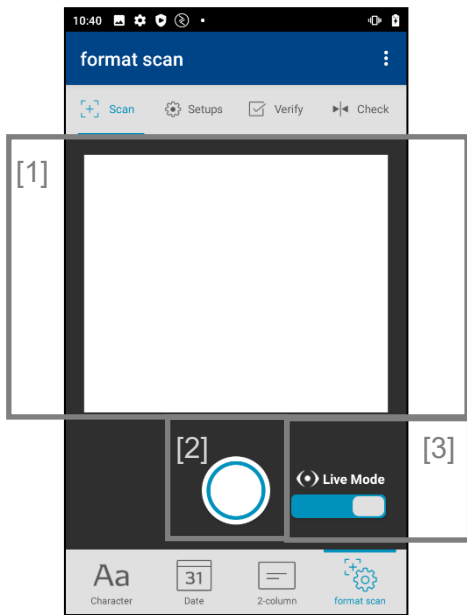

[1]	Scanned image	Displays the scanned text image in the "format scan" menu.
		The scan stability of the scan results is shown by the colored frame for each character.
		    Stability "HIGH": Green frame
		    Stability "MIDDLE": Red frame
		    *See "Character conversion settings" menu for stability.

[2]	Scanned data	Displays the scanned text in the "format scan" menu. Displays the number of columns in the scanned data in blue text. Column 1 The scan results of Column 1 are shown by tapping the "Column 1".
		Column 2 The scan results of Column 2 are shown by tapping the "Column 2".
[3]	Number of digits: XX digit(s)	Displays the number of digits of the scanned text on the "format scan" menu.
[4]	"Scan" button	BHT emits the scanning light and the cross laser marker to rescan a character image. The "format scan" menu appears when scanning is started. When the reading is successful, the screen changes to this screen again and the display of [1] - [3] is updated with the reading result.

19.3.3. Settings
19.3.3.1 Format
"Format settings" menu
The format used in the "Format scan", "Continuous verification", and "Verification" menus can be set in this menu. Prevents the scanned characters from missing digits or being misrecognized by registering the number of
digits and the character types to be scanned as a format in advance.

*The delete screen.

[1]	List	Creates a new pattern by tapping the "Add patterns" button. The format can be specified for each pattern. *See the explanation on "Pattern XX" and beyond. The pattern can be set up to 99. The following changes can be made from this menu. 【Setting change】 To change the format for each pattern, tap "Pattern" to transit to the "Pattern XX" screen. 【Order change】 Press and hold the pattern to change the order in the pattern list by sliding the pattern up or down. 【Delete】 Press and hold the pattern then flick left, the trashcan appears. Tap the trashcan to delete the pattern from the list. *See the above delete screen. Be aware that no delete confirmation dialog appears. The pattern can be deleted by restoring to default using the Menu button, Note that the OCR settings in BHTOCR and the dictionary will be initialized.
[2]	Enable	Shows whether the pattern is enabled or disabled to use for scanning. The check box status is updated when the format is changed to enable or disable in the "Pattern XX" menu.
[3]	Pattern	Shows the consecutive number 01 to 99.
[4]	Dictionary	Shows whether the dictionary registered to the format is enabled or disabled. The check box status is updated when the dictionary is changed to enable or disable in the "Dictionary select" menu.
[5]	Digits	The number of digits of the specified pattern is displayed. The number of digits in the second digit is displayed in parentheses.
[6]	"Add Patterns" button	Creates a new pattern. Tap the button to transit to the "Pattern XX" screen to specify the format for each pattern. If 99 patterns exist, the button is grayed-out and cannot be used.

"Pattern XX" menu
  Shows the status of the pattern selected in 'Format Settings' menu, and the pattern can be edited.

[1]	Enable the format	Enables or disables the format specified in this pattern to use for OCR scan.

[2]	Format configuration	Column 1 XX digits
		  Tap "Column 1" to transit to the "Format editing" menu.
		  The format can be edited up to 50 digits for each single digit units.
		  The character types specified for each digit units are shown as an icon.
		
		  123 : Number (0-9)
		  AB : Alphabet (A-Z)
		  !# : Symbols (- / + : < > . # ( ) * ¥)
		  漢 : Kanji 上中下年月日
		  📖 : Dictionary
		  📍 : Fixed character
		  ⌴ : Margin before and after string (It is recommended to enable this setting when the target string of characters is few)
		  *Just one icon will be shown in order of priority of Number, Alphabet, and Symbols for the character types if multiple character types are selected as a format.
		  See "Character type" screen.
		Column 2 XX digits
		  Tap "Column 1" to transit to the "Format editing" menu.
		  The format can be edited up to 50 digits for each single digit units.

[3]	Dictionary	Shows whether the dictionary registered to the format is enabled or disabled. The check box status is updated when the dictionary is changed to enable or disable in the "Dictionary select" menu.
[4]	Verify formats	Verifies scanning by using the format specified in each pattern. The "Verification results" is shown when completed.

"Verification results"

"Verification results" shows the results of the OCR scan using the format specified in "Pattern XX" menu.

[1]	Scanned image	The scan results of the characters scanned by tapping the "Scan" button. The scan stability of the scan results is shown by the colored frame for each character. Stability "HIGH": Green frame Stability "MIDDLE": Red frame *See "Character conversion settings" menu for stability.
[2]	Verified data	Shows the characters scanned by tapping the "Scan" button. Column 1 The Column X selected is shown in blue text. Column 1 Tap "Column 1" to show the scan results (verification data, list) of the Column 1. Column 2 Tap "Column 2" to show the scan results (verification data, list) of the Column 2.
[3]	List	Shows up to 50 digits of characters in the verification data.
[4]	No	Shows consecutive number up to 50.
[5]	Scanned character	Shows one character scanned by tapping the "Scan" button.
[6]	Character type	Shows the character type recognized by the engine in blue background frame. Character types are listed below. 123 : Number (0-9) AB : Alphabet (A-Z) !# : Symbols (- / + : < > . # ( ) * ￥) 漢 : Kanji 上中下年月日 : Dictionary : Fixed character
		*See "Character type" menu.
[7]	Number of digits: XX digits	Shows the number of character digits scanned by tapping the "Scan" button.
[8]	"Scan" button	BHT emits the scanning light and the cross laser marker to rescan a character image. *The real time image of the camera is not shown. The above results [1] to [7] will be updated if the character image is successfully scanned.

"Format Editing" menu

Specifies the format such as the number of character digits and the character type to be scanned.
The format can be specified or edited for the characters scanned by tapping the "Scan" button, or the characters
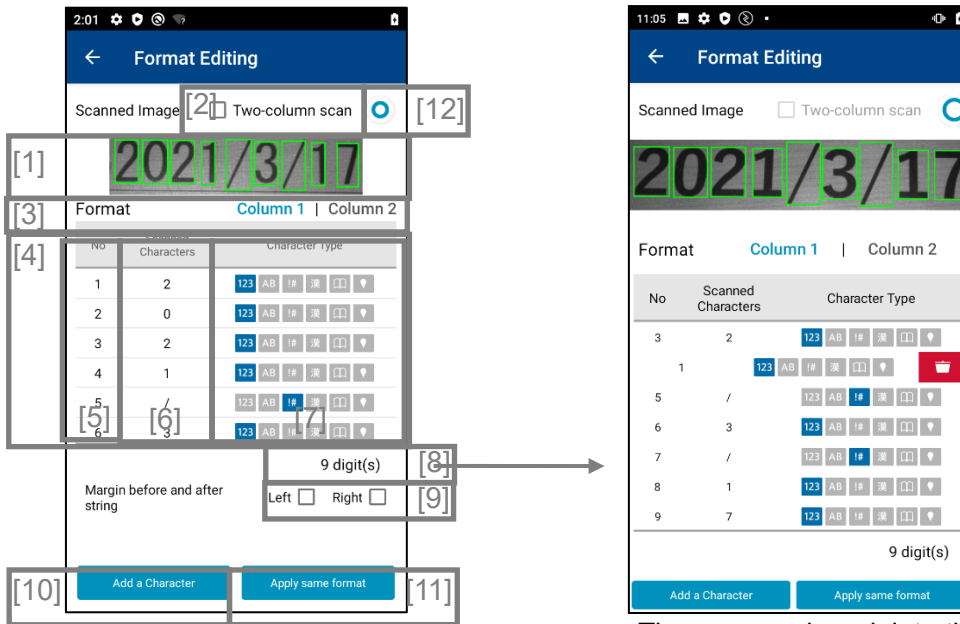manually added.

The screen when delete the format.

[1]	Scanned image	The scan results of the characters scanned by tapping the "Scan" button. The scan stability of the scan results is shown by the colored frame for each character. 　Stability "HIGH": Green frame 　Stability "MIDDLE": Red frame 　*See "Character conversion settings" menu for stability.
[2]	Two-column scan check box	Two-column scan is enabled by checking (✔) the box.
[3]	Format	Column X selected is shown in blue text. Column 1 　Tap "Column 1" to show the scan results (verification data, list) of the Column 1. Column 2 　Tap "Column 2" to show the scan results (verification data, list) of the Column 2.
[4]	List	Up to 50 characters scanned are shown as the scan results. *Although more than 50 characters can be scanned, the characters exceeding 50 will be discarded. If the stability of the scanned character needs to be checked, the character line is indicated in the red background frame. *See the "Character conversion settings" for the stability. The available functions are listed below. 　【Character type change】 　　To change the character type, tap the registered character type then the "Character conversion settings" menu appears. 　　The character types specified are indicated in blue background frame. 　　123 ：Number (0-9) 　　AB ：Alphabet (A-Z) 　　!# ：Symbols (- / + : < > . # ( ) * ¥) 　　漢 ：Kanji　上中下年月日 　　📖 ：Dictionary 　　📍 ：Fixed character

		*See "Character type" menu.
		【Order change】
		  Press and hold the pattern to change the order in the pattern list by sliding
		  the pattern up or down.
		【Delete】
		  Press and hold the pattern then flick left, the trashcan appears.
		  Tap the trashcan to delete the pattern from the list.
		  *See the delete screen.
		    Be aware that no delete confirmation dialog appears.

[5]	No	Shows consecutive number up to 50.
[6]	Scanned character	Shows one character scanned by tapping the "Scan" button. No character will be shown if added by using the "Edit a format" button.

[7]	Character type	Shows the character type recognized by the engine in blue background frame.
		Character types are listed below.
		  [123] : Number (0-9)
		  [AB] : Alphabet (A-Z)
		  [!#] : Symbols (- / + : < > . # ( ) * ￥)
		  [漢] : Kanji 上中下年月日
		  [📖] : Dictionary
		  [📍] : Fixed character
		  *See "Character type" menu.
		"Number" will be shown as the character type if a character is added by tapping the "Edit a format" button.

[8]	Number of digits: XX digits	Shows the number of character digits scanned by tapping the "Scan" button, or added by using the "Edit a format" button.
[9]	Margin before and after string	If including margins before and after the target string, checking (✔) the Left and Right box.

[10]	"Edit a format" button	Adds data to the list manually.
		*One line will be automatically added when the "Edit a format" button is tapped.
		  The button will be grayed out and not available to use if 50 formats already exist
		  in the list.

[11]	"Edit all" button	Transits to the "Edit all" menu. All formats can be edited at once.
[12]	"Scan" button	BHT emits the scanning light and the cross laser marker to rescan a character image. *The real time image of the camera is not shown. The above results [1], [3] to [8] will be updated if the character image is successfully scanned.

"Character conversion settings" menu
Specifies the character type of the format for each character digit.

[1]	Scanned character information	・Stability
		The stability will be shown when the character is successfully scanned.
		Sets the stability of the scanned character in the "Format Editing" menu
		.The stability will not be shown when the character is added by the "Edit a format" or the "Edit all" menu.
		  - Stability 95 or more: Success
		  - Stability 94 or less:　Confirmation required (Red flame)
		・Scanned Characters
		Shows the scanned character in the "Format Editing" menu.
		No character will be shown when added by the "Edit a format" or the "Edit all" menu.

[2]	Character Type	Shows the character type specified in the "Character Type" menu in blue background flame.
		  123 : Number (0-9)
		  AB : Alphabet (A-Z)
		  !# : Symbols (- / + : < > . # ( ) * ￥)
		  漢 : Kanji　上中下年月日
		  📖 : Dictionary
		  📍 : Fix character

[3]	Character Selection	Shows the character selection of the character scanned in the "Format Editing" menu. No selection will be shown when added by the "Edit a format" or the "Edit all" menu. [Note: Currently not available. Will be supported in the future.] The character type can be changed by tapping the selection shown.
[4]	Fixed Character	Shows the state of the fixed character that is enabled or disabled in the "Character Type" menu. Shows one character specified as the fixed character if "Fixed Character" is enabled.
[5]	Dictionary	Shows the state of the Dictionary that is enabled or disabled in the "Character Type" menu.

"Edit all" menu
 Specifies the formats at once.

Date format list
YearMonth(Day)|YM(D)
(Day)MonthYear|(D)MY
Month(Day)Year|M(D)Y
YearMonthSeason(Eary Mid Late)
(Year)MonthDayTime

[1]	Character scan settings	Check the radio button "Characters" to specify the Maximum digits of characters and the Character Type.
[2]	Maximum digits of characters	Set the maximum digits of characters (1 to 50) to the format. Default is set to 1. *The toast "Enter numbers from 1 to 50" pops up if numbers other than 1 to 50 are entered.
[3]	Character Type	Shows the character type specified in the "Character Type" menu in blue background flame 123 : Number (0-9) AB : Alphabet (A-Z) !# : Symbols (- / + : < > . # ( ) * ¥) 漢 : Kanji 上中下年月日 📖 : Dictionary 📍 : Fixed character
[4]	Date scan settings	Check the radio button "Date" to specify the Date format..
[5]	Date format	Tap to change the Date format specified. Default is set to YearMonth(Day)|YM(D) *See the Date format list. Setting example: Specifies the format of the characters actually to be scanned. Specify "YearMonth(Day)|YM(D)" for the character image "2021/01/25" to scan.
[6]	Back button	Tap to show the Information dialog "Format reflection". If the "Maximum digits of characters" is not entered : Shows the Warn dialog : "Maximum digits of characters".
[7]	Information dialog : "Format reflection "	Tap "No" to cancel the "Edit all" menu, "Yes" to proceed to edit all formats after discard scanned characters.
[8]	Warn dialog : "Maximum digits of characters"	After pressing the "OK" button, enter the Maximum digits of characters.

"Date format"
　Specifies the Date format available to scan.

[1]	Date format selection	・YearMonth(Day) ｜ YM(D) 2021/02/22,2021/02 ・(Day)MonthYear ｜ (D)MY 22/02/2021,02/2021 ・Month(Day)Year ｜ M(D)Y 02/22/2021,02/2021 ・YearMonthSeason(Early Mid Late) 2021/02 Early ・(Year)MonthDayTime 2021/02/22 AM10

"Character Type"

Specifies the character type available to scan.
Default is set to "Number 0-9".

[1]	Number, Alphabet, Symbols radio button	・Number (0-9) check box ・Alphabet (A-Z) check box ・Symbols (- / + : < > . # ( ) * ￥) check box The characters which check box is checked can be scanned. *The multiple boxes can be checked.
[2]	Kanji 上中下年月日 radio button	Kanji characters "上中下年月日" can be scanned if checked.
[3]	Dictionary radio button	"Add to dictionary" button 　The "Add to dictionary" button is enabled (indicates in blue 　background flame) if the Dictionary radio button is checked. 　To add an image and characters to the dictionary, tap the 　button. "Select dictionary" button 　The button is enabled (indicates in blue background flame) if 　the dictionary is registered. 　To select the registered dictionary, tap the button.
[4]	Fixed character radio button	One character can be set to the fixed character. Scanned only the characters specified in fixed characters. Settable characters are listed below. 　・Number (0-9) 　・Alphabet (A-Z) 　・Symbols (- / + : < > . # ( ) * ￥) 　*The toast appears if an invalid character is specified.
[5]	Back button	Tap to set the "Character Type" specified and transits to the "Edit all" menu. If the "Number, Alphabet, Symbols" radio button is not checked：Shows the "Select either Number, alphabet, or symbol" dialog. If the "Dictionary" radio button is not checked：Shows the "Select a dictionary" dialog. If the "Fixed Character" radio button is not checked：Shows the "Enter a fixed character" dialog.
[6]	"Select either Number, alphabet, or symbol" dialog	After pressing the "OK" button, select the characters which check box.
[7]	"Select a dictionary" dialog	After pressing the "OK" button, select the dictionary.
[8]	"Enter a fixed character" dialog	After pressing the "OK" button, enter the Fixed Character.

"Add to dictionary" menu
"①Scanning an image"
  Shows the scan result of the character to be registered.
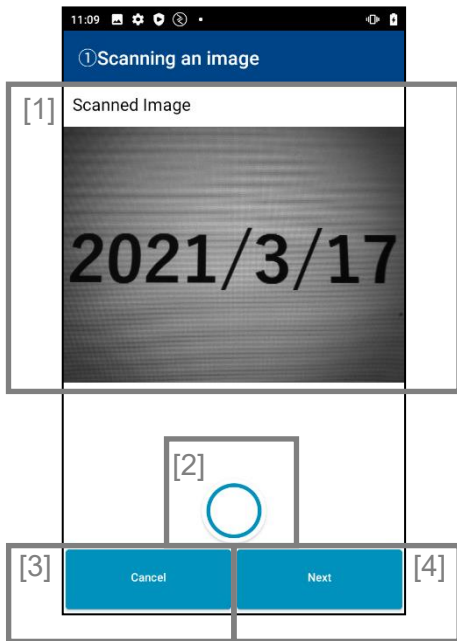
[1]	View Finder	The real time image of the camera is shown when the "Scan" button is tapped.
[2]	"Scan" button	BHT emits the scanning light and the cross laser marker to rescan a character image.
[3]	"Cancel" button	Cancels the "Add to dictionary" menu, then transits to the "Character type" menu.
[4]	"Next" button	Transits to the "②Zooming in/out" menu to zoom in or out the scanned image.

"②Zooming in/out" menu

Zooms in or out the image scanned in "①Scanning an image" menu.
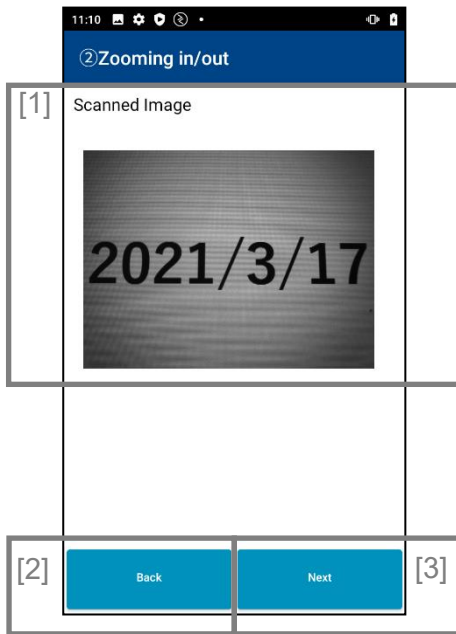
[1]	Scanned image	Shows the image scanned in "①Scanning an image" menu. Zooms in or out the image by touching the image on the screen.
[2]	"Back" button	Returns to the "①Scanning an image" menu to rescan an image.
[3]	"Next" button	Transits to the "③Trimming an image" menu to trim the image zoomed in or out.

"③Trimming an image" menu

Trims the image scanned in the "②Zooming in/out" menu.
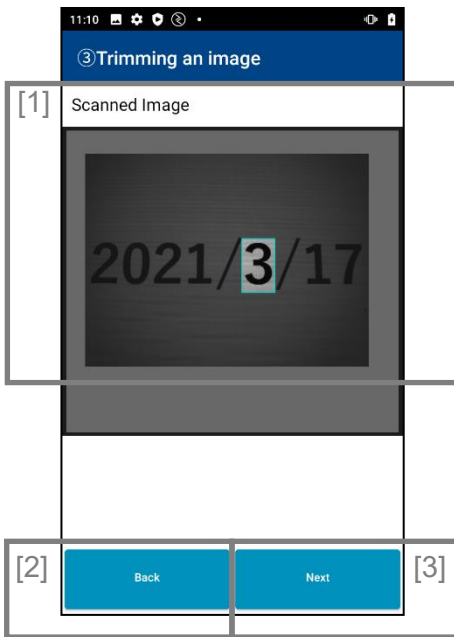
[1]	Scanned image	Shows the image zoomed in or out in the "②Zooming in/out" menu . Trims the image by touching the image on the screen.
[2]	"Back" button	Returns to the "②Zooming in/out" menu to retry zooming.
[3]	"Next" button	Transits to the "Trimming result" to confirm the trimming result.

"Trimming result"

Confirms the result trimmed in "③Trimming an image" menu.
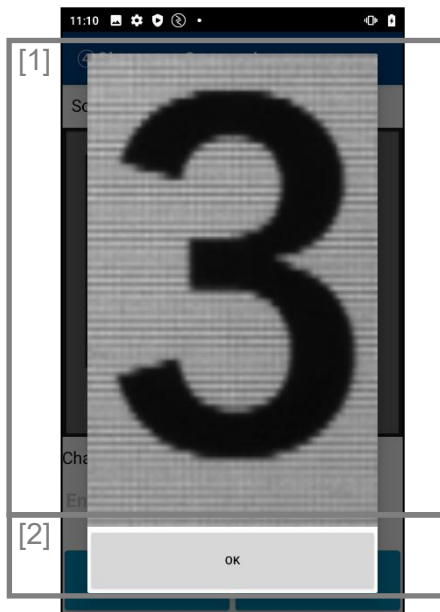
[1]	Trimmed image	Shows the image trimmed in the "③Trimming an image" menu.
[2]	"OK" button	Transits to the "④Character conversion" menu to specify the image to be converted to an arbitrary character.

"④Character Conversion" menu

Specifies the image scanned to be converted to an arbitrary character.
The same image scanned will be converted to an arbitrary character specified.

[1] Scanned Image

[2] Character
Enter a character to be converted

[3] Back   Next [4]
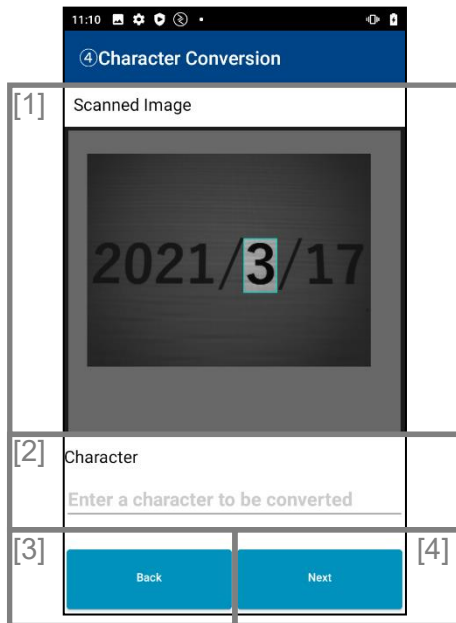
[1]	Scanned image	Shows the image confirmed in the "Trimming result" screen.
[2]	Character	Enter the character to be converted when an image is scanned using the specified format.
[3]	"Back" button	Returns to the "③Trimming an image" menu to retry trimming.
[4]	"Next" button	Transits to "⑤Save" screen to register the character to the dictionary.

"⑤Save"

Registers the image shown on the "Trimming result" screen to the dictionary.
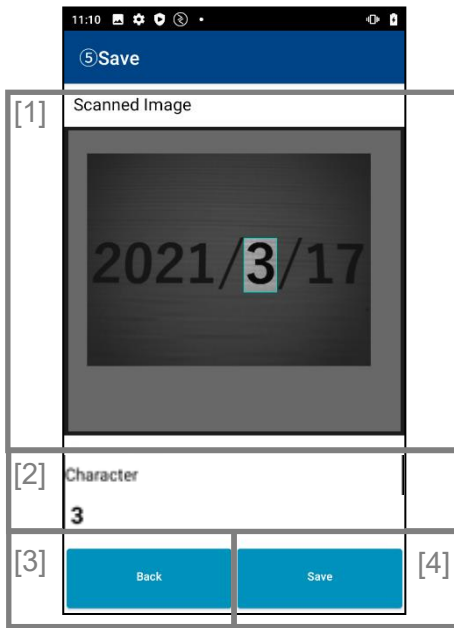
[1]	Scanned image	Shows the image confirmed in the "Trimming result".
[2]	Character	Shows the character confirmed in the "Trimming result".
[3]	"Back" button	Returns to the "④Character Conversion" menu to retry specifying the character to be converted.
[4]	"Save" button	Transits to the "DictionaryXXX" screen to confirm the image and character registered.

"Select dictionary"

The registered dictionary can be selected.
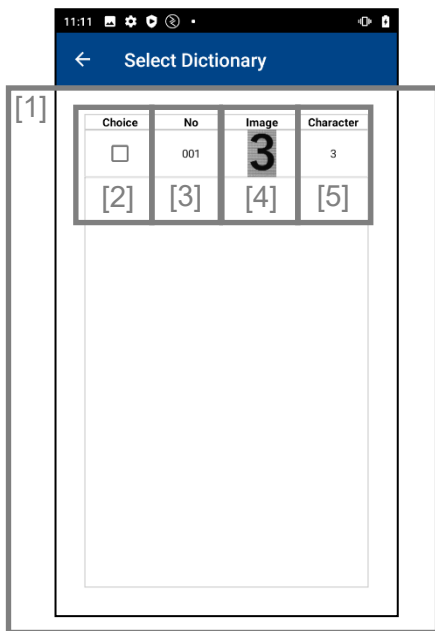
[1]	List	Lists the maximum of 100 dictionaries saved in the previous step "⑤Save". The multiple dictionaries can be selected for one character. (Up to 100 dictionaries)
[2]	Select	Check (✓) the box to select the dictionary to be used with the format specified.
[3]	No	Shows the consecutive number 001 to 100.
[4]	Image	Shows the image saved in the previous step "⑤Save".
[5]	Character	Shows the character registered in the "④Character Conversion" menu.

19.3.3.2Dictionary

Registered image data can be read by replacing it with any characters.
Make sure that the orientation of the image to be read is the same as the orientation of the image to be registered.

"Add to Dictionary" menu

Prevents the scanned characters from missing digits or being misrecognized by registering the original fonts or the characters with low scanning stability to the dictionary in advance.

*Delete confirmation popup
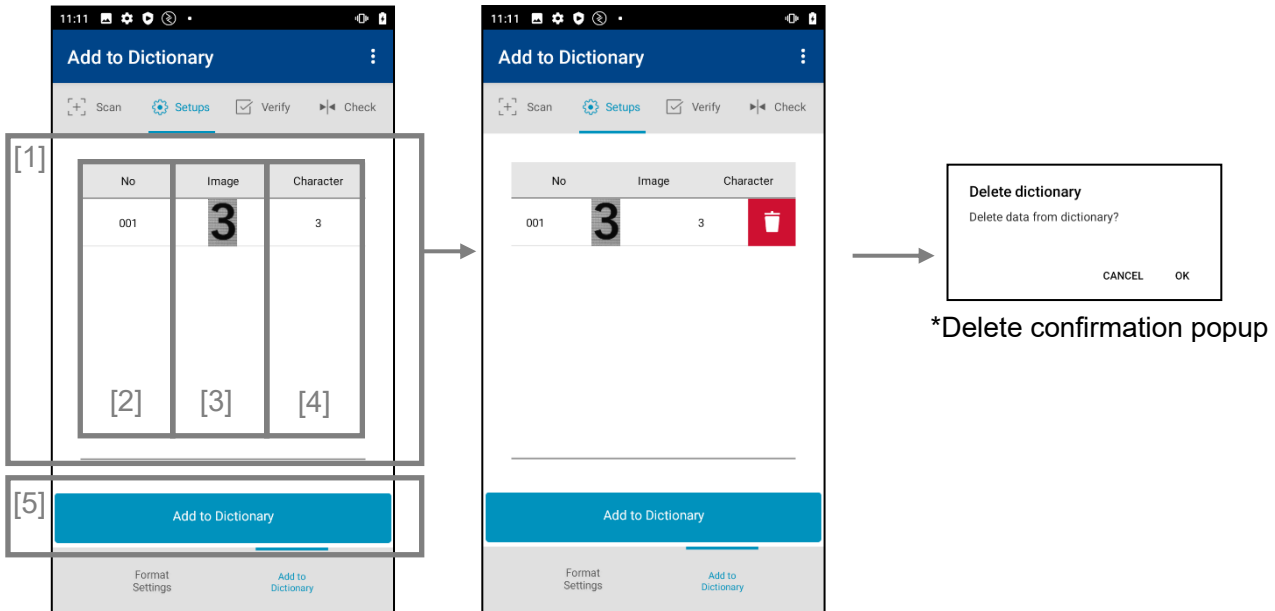
*Screen shown when delete the dictionary

[1]	List	Lists the dictionaries registered by tapping the "Add a new word" button in the "Character type" menu or tapping the "Add to Dictionary" button. Up to 100 dictionaries can be registered. The available functions are listed below. 　【Edit】 　　Transits to the "Dictionary XXX" menu screen by tapping the pattern. 　　The registered image or character can be edited. 　【Delete】 　　Press and hold the pattern then flick left. 　　The pattern can be deleted from the list by tapping the "Trashcan" button. 　　*The delete confirmation will pop up. 　　The pattern can be deleted by restoring to default from the "Menu Button", in this case, be aware that the BHTOCR settings will be initialized and all dictionaries will be deleted.
[2]	No	Shows the consecutive number 001 to 100.
[3]	Image	Shows the image saved in the step "⑤Save" screen in the "Add to Dictionary" or "Format Scan" shown on the bottom menu.
[4]	Character	Shows the character registered in the "④Character Conversion" menu in the "Add to Dictionary" or "Format Scan" shown on the bottom menu.
[5]	"Add to Dictionary" button	Transits to the "①Scanning an image" menu to specify the image and character to be registered to the dictionary.

"①Scanning an image" menu

  See Section 19.3.3.1."①Scanning an image" menu.

"②Zooming in/out" menu

  See Section 19.3.3.1."②Zooming in/out" menu.

"③Trimming an image" menu

  See Section 19.3.3.1."③Trimming an image" menu.

"Trimming result"

  See Section 19.3.3.1."Trimming result" screen.

"④Character Conversion" menu

  See Section 19.3.3.1."④Character Conversion" menu.

"⑤Save"

  See Section 19.3.3.1."⑤Save" menu.

"Dictionary XXX" menu
    Edits the dictionary registered in the "Add to Dictionary" menu.
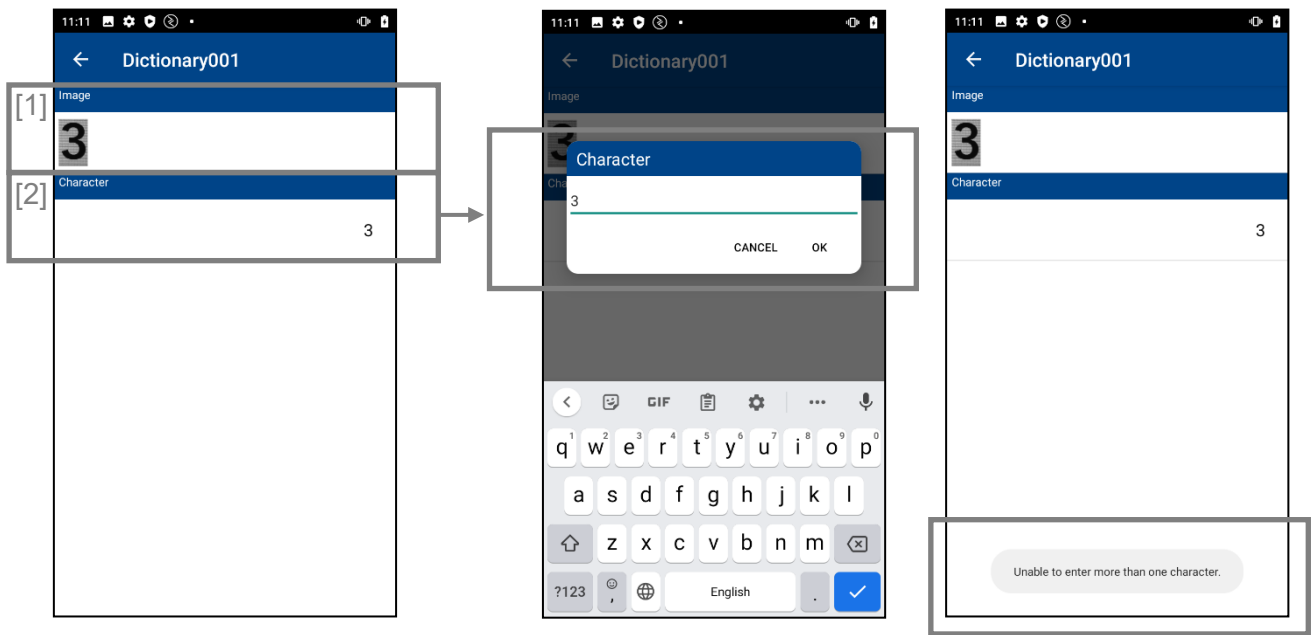
[1]	Image	Transits to the "①Scanning an image" menu to rescan an image.
[2]	Character	One character can be changed to either Kanji, Alphabet, or Symbols in the character dialog that appears by tapping the Character section. The toast "Cannot enter more than one character" pops up if more than one character is entered.

19.3.4. Verification
19.3.4.1 Continuous verification

The OCR scan can perform continuously up to 10 times using the OCR settings in BHTOCR.
*See the "Format scan" menu for settings.
The OCR scan can perform continuously in the "Verification results" screen after the first scan.

[1]	View Finder	Shows the real time image of the camera when the "Scan" button is tapped. The screen of View Finder is switchable by turning ON/OFF the LiveMode. ・LiveModeON: Real time image of the camera on is shown on ViewFinder. ・LiveModeOFF: Real time image of the camera on is not shown on ViewFinder.
[2]	"Scan" button	BHT emits the scanning light and the cross laser marker to scan a character image. The screen transits to the "Verification results" screen if the characters are scanned successfully.
[3]	"LiveMode" button	Switches the View Finder screen. The default of LiveMode is ON at startup. The LiveMode ON/OFF status remains the same until BHT OCR exited. The LiveMode status restores to default (ON) when BHT OCR is restarted. The LiveMode status is shared with "Character", "Date", and "Format scan" in the "Scan" menu and "Continuous verification" in the "Verify" menu.

"Verification results"

Shows the verification results if the character image is successfully scanned in the "Continuous verification" menu.

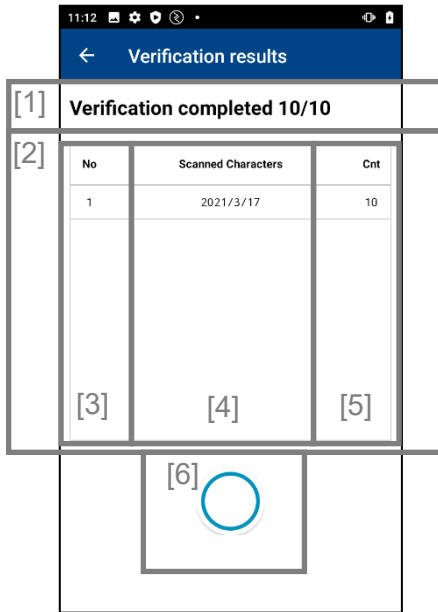The maximum 10 times of scanning is allowed.

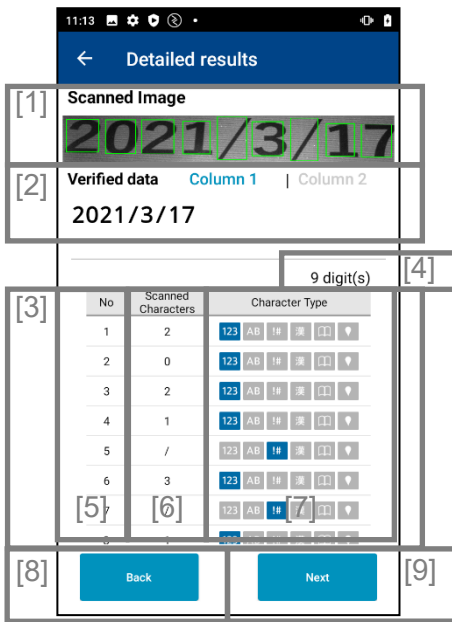"Cnt" increases by one count if the same data is scanned.

Perform scanning after returning to the "Continuous verification" menu if required to scan more than 10 times.

[1]	Verification completed N/10	"N" indicates the number of scans performed in the "Continuous verification" menu or by tapping the "Scan" button. The maximum times of scan is 10. The scan cannot be performed if already performed 10 times.
[2]	List	Transits to the "Detailed results" screen by tapping the pattern. The detailed results of the scanned characters can be confirmed. The order of the character type is in accordance with the Unicode character sort order (Symbol→Number→Alphabet→Kanji).
[3]	No	Shows the consecutive number 1 to 10.
[4]	Scanned characters	Shows the characters scanned in the "Continuous verification" menu or by tapping the "Scan" button.
[5]	Cnt	"Cnt" increases by one count if the same data is scanned in the "Continuous verification" menu or by tapping the "Scan" button.
[6]	"Scan" button	BHT emits the scanning light and the cross laser marker to rescan a character image. *The real time image of the camera is not shown. The above results [1] to [5] will be updated if the character image is successfully scanned.

"Detailed results"

Shows the character details scanned in the "Verification results" screen.

[1]	Scanned image	The scan results of the characters scanned in the "Continuous verification" menu or by tapping the "Scan" button. The scan stability of the scan results is shown by the colored frame for each character. 　　Stability "HIGH": Green frame 　　Stability "MIDDLE": Red frame 　　*See "Character conversion settings" menu for stability.
[2]	Verification data	Shows the characters scanned in the "Continuous verification" menu or in the "Verification results" screen. Column X selected is shown in blue text. Column 1 Tap "Column 1" to show the scan results (verification data, list) of the Column 1. Column 2 Tap "Column 2" to show the scan results (verification data, list) of the Column 2.
[3]	List	Lists each character shown as "Verification data" up to 10 characters.
[4]	Number of digits: XX digits	Shows the number of character digits scanned in the "Continuous verification" menu or in the "Verification results" screen.
[5]	No	Shows the consecutive number 1 to 10.
[6]	Scanned characters	Lists the each character scanned in the "Continuous verification" menu or in the "Verification results" screen.
[7]	Character type	Shows the character type recognized by the engine in blue background frame. Character types are listed below. 　123 : Number (0-9) 　AB : Alphabet (A-Z) 　!# : Symbols (- / + : < > . # ( ) * ¥) 　漢 : Kanji 上中下年月日 　🔲 : Dictionary 　♦ : Fixed character 　*See "Character type" menu.
[8]	"Back" button	If the same result exist, the result is shown in blue background flame. Tap the button to show the previous data.
[9]	"Next" button	If the same result exist, the result is shown in blue background flame. Tap the button to show the next data.

19.3.5. Check
Verifies whether the two scanned data are the same.

19.3.5.1Scanning source data
The scanned source data is shown after scanned.
Transits to the "Destination source scan" screen if the source data is successfully scanned.
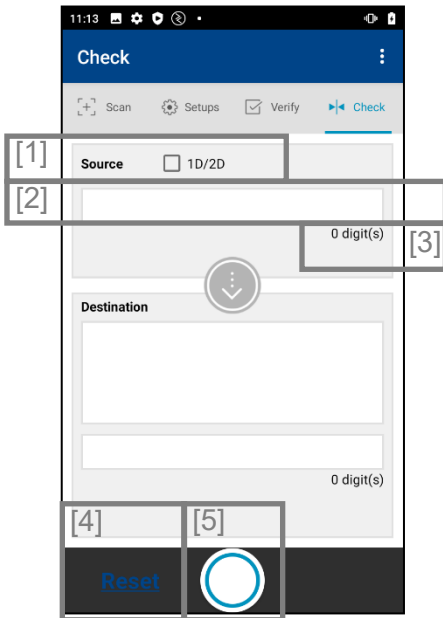
Table: Bar code standard

Name	Scan target
EAN-13	0 123456 789012
UPC-A	0 12345 67890 5
EAN-8	1234 4567
UPC-E	0 123456 5
QR	
MicroQR	
OCR	Characters

[1]	Source 1D/2D	If not checked (✔), OCR is only available. If checked (✔), 1D/2D codes are available to scan. *See Table: Bar code standard for 1D/2D codes.
[2]	Source data	Shows the results scanned by tapping the "Scan" button.
[3]	Number of digits: XX digits	Shows the number of character digits scanned by tapping the "Scan" button.
[4]	"Reset" button	Deletes the source data scanned by tapping the "Scan" button. The screen is restored to the initial state.
[5]	"Scan" button	BHT emits the scanning light and the cross laser marker to rescan a character image. *The real time image of the camera is not shown. The above results [2] and [3] will be updated if the character image is successfully scanned.

19.3.5.2 Destination data scanning

The scanned destination data is shown after scanned.
The "Check results" is shown if the data is successfully scanned.
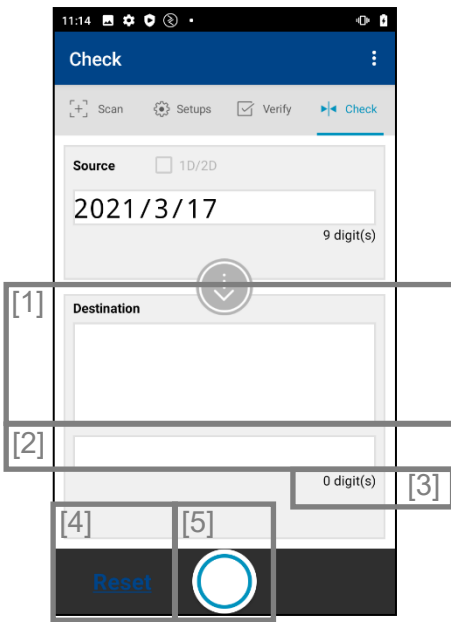
[1]	Destination image	Image scanned by tapping the "Scan" button.
[2]	Destination data	Shows the recognition results of the image scanned by tapping the "Scan" button.
[3]	Number of digits: XX digits	Shows the number of character digits scanned by tapping the "Scan" button.
[4]	"Reset" button	Deletes the source data and the destination data scanned by tapping the "Scan" button. The screen is restored to the initial state.
[5]	"Scan" button	BHT emits the scanning light and the cross laser marker to rescan a character image. *The real time image of the camera is not shown. The above results [1] to [3] will be updated if the character image is successfully scanned.

19.3.5.3 Check results
Shows the comparison results (match/unmatch) of the source data and the destination data.
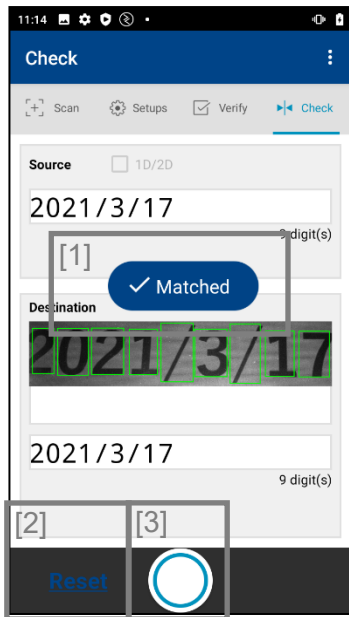
【Comparison results: match】　　　　　　【Comparison results: unmatch】

[1]	comparison results of the source data and the destination data	Compares the source data and the destination data, scanned by tapping the "Scan" button. The results is shown by "✓ matched" or "× unmatched".
[2]	"Reset" button	Deletes the the source data and the destination data, scanned by tapping the "Scan" button. The screen is restored to the initial state.
[3]	"Scan" button	BHT emits the scanning light and the cross laser marker to rescan a character image. *The real time image of the camera is not shown. The comparison results of ① will be updated after the destination data is updated if the characters are successfully recognized.

19.3.6. Menu button
 This section describes the details of the Menu Button.
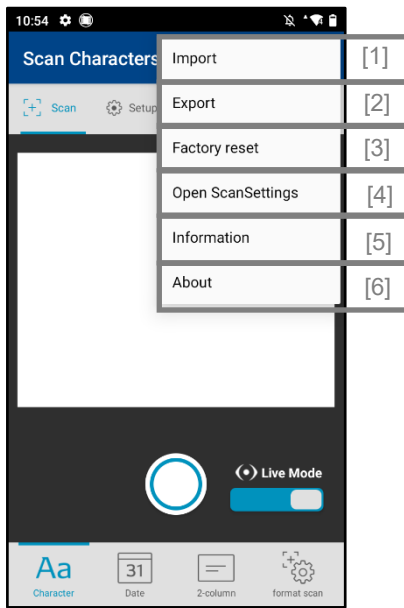
[1]	Import	Imports a setting file.
[2]	Export	Exports the BHT OCR setting file to a folder in zip file format.
[3]	Restore to default	Restore the BHT OCR settings to default.
[4]	Open ScanSettings	Opens the ScanSettings.
[5]	Information	Shows the MW version.
[6]	About	Shows the application version.

19.3.6.1 Import

Import the exported Zip file to BHTOCR.
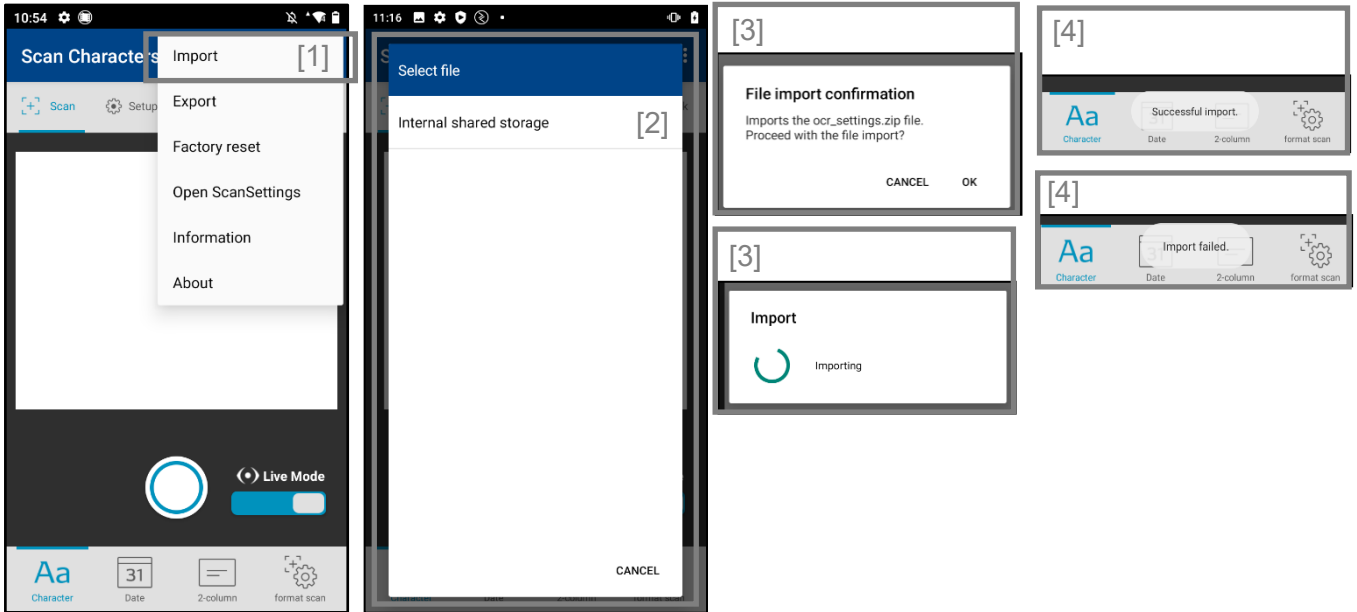
[1]	Import	Transits to the "Select file" screen to select a file to be imported.
[2]	Select file	Selects a file to be imported.
[3]	File import confirmation	The confirmation dialog appears when an import file is selected. Tap the "OK" button to start the import, the "Importing" dialog appears.
[4]	Import result	Import succeeded：The "Imported" toast appears. Import not succeeded：The "Failed to import" toast appears.

19.3.6.2 Export

Exports a Zip file created in BHTOCR expoet.
An error occurs if a file not created using the BHTOCR export function is selected.
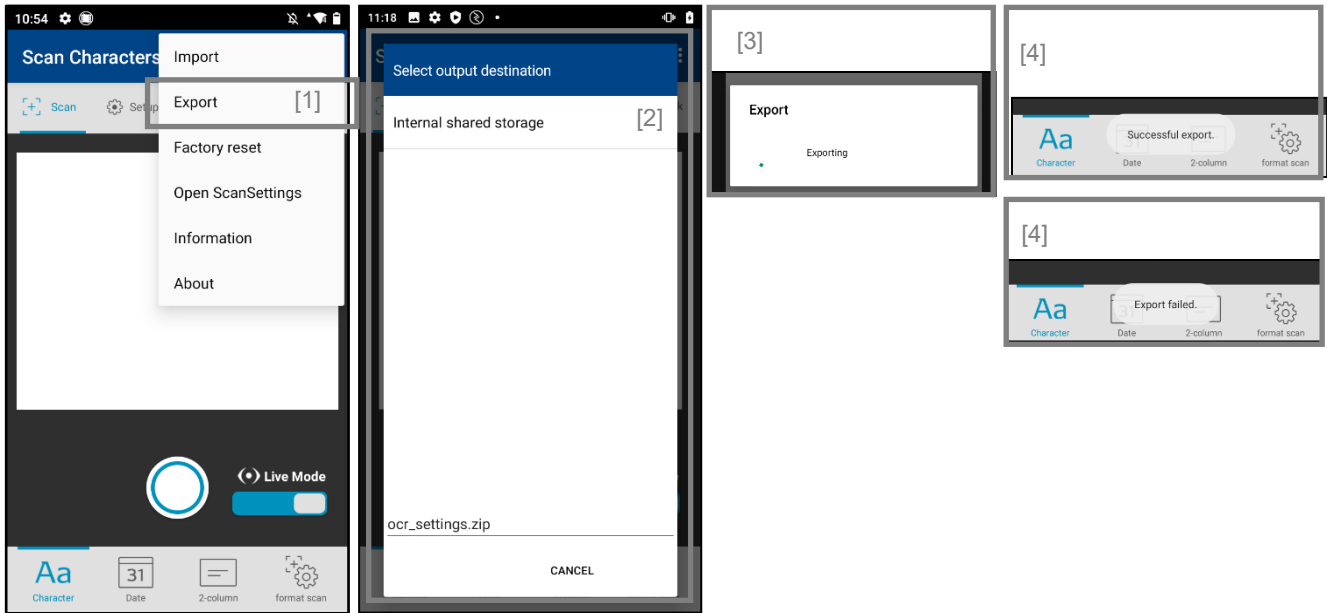
[1]	Export	Transits to the "Select destination" screen to select a folder to be exported.
[2]	Select folder	Selects a folder and a file to export.
[3]	Exporting	Select a folder to export then tap the "OK" button to start the export, the "Exporting" dialog appears.
[4]	Export result	Export succeeded：The "Exported" toast appears. Export not succeeded：The "Failed to export" toast appears.

19.3.6.3 Restore to default

Restores all BHT OCR settings to default.
Note that the registered dictionary will be deleted.
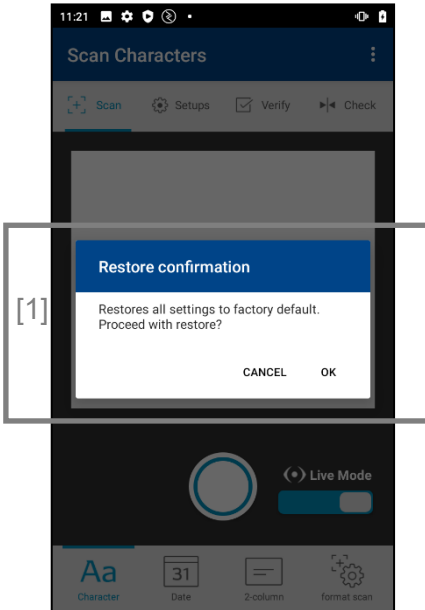
[1]	Restore to the factory default.	Initializes the BHT OCR settings and deletes the dictionary.

Appendix I

"Open Source License"

The following list shows which applications use which open source.

Applicaiton	Open source project	License
BarcodeManagerService	Android-serialport-api Apache Commons Lang Apache Commons IO Timber	Apache License Version 2.0
BHTBrowser	webview-in-coordinator-layout	Apache License Version 2.0
HardTest	Zxing-android-embedded	Apache License Version 2.0
OSUpdateService	SystemUpdaterSample	Apache License Version 2.0
ScanSettings	Apache Commons Lang	Apache License Version 2.0
SNTPSettingsService	SntpClient	Apache License Version 2.0

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Barcode Handy Terminal / 2D Code Handy Terminal
BHT-M60/M70/M80 Series
Android 13 model

Software User's Manual

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