Intelligent Data Collector
MID-100 Series

Operation Manual

2nd Edition

July 21st, 2017

MTS MARS TOHKEN SOLUTION CO. LTD.

Update Information

Date	Edition	Description of Change
May 26th, 2017	1	New Release
July 21st, 2017	2	Modify the contents of FCC statement.

Introduction

Thank you for your Purchase

This manual explains the features, system configuration, specifications, and operation of the of the MID-100 series. In order to use the product properly, please read this manual carefully. The contents of this manual or catalogue may change without any notice for product improvement or some reasons. Check our website for the latest version.

If any problems occurred during use, keep the record for a smooth support.

Registered Trademark

Bluetooth is a registered trademark of Bluetooth SIG.Inc., We use it under license. Windows is a registered trademark of Microsoft Corporation. The other product names and company names in this manual are the respective trademarks or registered trademarks of Bluetooth SIG.Inc., or Microsoft Co. Ltd.

Safety notice

DO NOT disassemble. Disassembly will void the warranty and could cause damage or personal injury.

- This product is intended for use in general electronics equipment (electronic computer, OA equipment, communications equipment, test and measurement equipment, machine tools, industrial robots, AV equipment, home appliances etc.).
  Appropriate measures should be taken at use of unit/system related to safety and operation of transportation equipment (aircraft, train, automobile), traffic signal, gas leak detector and safety devices.
  Also, please do not use it for requiring extremely high reliability such as satellite equipment, nuclear equipment, submarine relay equipment, medical equipment directly related to human life.

- Industrial, scientific and medical equipment such as microwave ovens, private radio stations for mobile identification used in factory manufacturing lines etc. (license stations which require licenses) and specific low-power radio stations (radio stations which do not require licenses) and amateur radio stations (radio stations which require licenses) are used in the frequency band used by MID-100.

1. Before using MID-100, make sure that a local radio station for mobile identification and amateur radio stations are not in operation nearby.
2. If a harmful radio wave interference is generated from MID-100 to a local radio station for mobile identification, change the operating frequency immediately or stop transmitting of the radio wave, and contact us at the following number/address to consult about measures to avoid a crosstalk (e.g. installing partition etc.).
3. If you encounter any harmful cases of radio interference from MID-100 to a specific low power radio station for mobile identification or an amateur radio station, contact us at the following contact information.

Contact：MARS TOHKEN SOLUTION CO.LTD.
(Address and telephone number at the end of this manual.)

- MID-100 is a Class 1 laser product.
  DO NOT look into the reading window or turn it towards the other people, when irradiating the laser and flash is on.

Handle with Care

- DATA BACKUP
  This product has a memory backup function. This backup data restoration cannot be guaranteed if repair, reconstruction, or upgrades are performed on this product.
- To clean the reading window, follow the steps below:
  - Wipe gently with cloth or cotton swab moistened with alcohol etc.
  - Wipe gently again with a dry cloth.

- DO NOT expose this product to water, moisture, oil, etc.
- This product may be damaged in environments containing corrosive gas.
- DO NOT use any chemicals when cleaning.
  Wipe gently with a neutral detergent diluted, when the case is very dirty.
- DO NOT use this product at temperature or humidity ranges beyond that documented in the product specifications, or in direct sunlight.
- This is a high-precision optical device, avoid exposing this product to excessive force such as that sustained by a drop.
- DO NOT use highly volatile organic solvents, chemicals, chemical wipes.

- Follow the warnings and cautions that are instructed by the manufacturer of your computer or peripheral equipments when using MID-100.
- Do not install electrical wiring or plugin/unplug of cable (except LAN cable) when this product is powered on. These may result in an electrical damage to this product.
- To minimize the risk of data loss, make sure to backup the hard drive before install the software. Our company shall not be responsible for any troubles such as data loss or damages.

Locations for operation and storage

- Avoid the following locations that could cause an accident or damage to the product.
  - Exposed to ambient temperature outside the rating.
  - In the presence of the risk of condensation.
  - In the presence of the risk of water leak & electronic leak.
  - Exposed to direct sunlight.
  - In the presence of dust, salt, or iron particles
  - In the presence of static electricity.
  - In the presence of the fire & retain the heat.
  - In the presence of flammable or explosive gases.（No Explosion-proof）
  - In the presence of corrosive gas.
  - Exposed to direct vibration or shock
  - Exposed to rapid temperature fluctuations
  - In the presence of the magnet.

Proper Use

How to Prolong the Battery (Li-ion Rechargeable Battery Pack)

- Battery life becomes shorter due to the battery characteristics.
- If the battery life lasts only for a short time even after charging, it is considered to be almost dead. Exchange it with a new battery.
- Battery life varies depending on the ambient air temperature / conditions of use of the device. Depending on the usage environment, the number of years that can be used may be short, or the number of usable charge/discharge cycles may decrease.
- If the battery has been left for a long time, recharge it before use.
- Make sure to lock the battery cover before turn on the device.

- DO NOT wet battery or handle with wet hands.
- DO NOT give a shock or drop the battery.
- DO NOT use the other batteries except the dedicated rechargeable Li-ion battery (FHTBA122Y).
- DO NOT use the other charger except the dedicated charging Cradle (MBC-100).

- Li-ion battery may bulge as a result of being left for a long term, use environment and aging-deterioration. Exchange the battery with a new one if the battery bulges.
- Make sure to turn off the power when exchanging the battery.

- Operation in Cold Climate
  - If the temperature is below 0 ° C, the performance of the battery deteriorates. Therefore, operation time may be shortened or the power may suddenly turns off due to rapid voltage drop in cold climates. The following methods are recommended for a better operation.
  - Place a spare battery in a pocket etc. and keep it warm until just before replacing the battery.
  - Keep the battery warm in such as a pocket until just before replacing the battery. When warming battery with a pocket warmer etc., do not place the pocket warmer directly to the battery.
  - The optimal room temperature for charging battery is 10～30°C.
- How to Handle Batteries
  - Handle the device with care not to adhere foreign substance such as dust or sand to the terminal part. If foreign substance adheres on the battery, please remove it completely with a soft cotton swab, etc. After cleaning, repeat attach and detach the battery pack on the charger several times.
  - Even if the battery is charged, it spontaneously discharges little by little. Recharge the battery before use (within 1-2 days).
  - Store the battery in a cool place and charge it at a temperature around10-30℃.These methods help to lengthen battery life.

Long Storage

- For the storage of MID-100, avoid vibration, dust, high temperature, low temperature, high humidity, direct sunlight.
- To prevent battery drain, remove the battery when not in use for a long term (one month or more).
- If the uncharged term is over three months, charge the battery periodically for three months. The battery rapidly deteriorates if it is left for more than one month with full discharge.

Regulations and Cautions Regarding Standard

CE Marking : Mars Tohken Solution has confirmed that this product meets the requirements of the EC Directive based on the following requirements. Note the following requirements when using MID-100 in EU countries.

EMC(2014/53/EU)

The requirement is not to guarantee of satisfied the essential requirement of EMC into the whole machine device. Confirmation of compatibility with the device is the responsibility of the machine equipment manufacturer.

Federal Communications Commission (FCC) Statement

15.21

You are cautioned that changes or modifications not expressly approved by the part responsible for compliance could void the user's authority to operate the equipment.

15.105(b)This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

—Reorient or relocate the receiving antenna.

—Increase the separation between the equipment and receiver.

—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

—Consult the dealer or an experienced radio/TV technician for help.

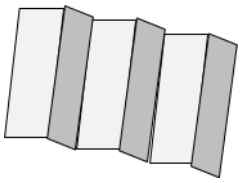
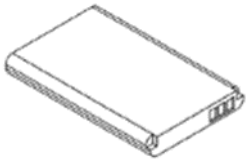
Caution: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
1) this device may not cause harmful interference and
2) this device must accept any interference received, including interference that may cause undesired operation of the device.

Radiation Exposure Statement: This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance.This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Included Items

Check that the box includes the items listed below. If any items are missing or damaged, contact your sales representative.

MID-100	QuickGuide	Battery
		
MID-100(H)	This QuickGuide	Rechargeable Lithium Ion Battery Pack FHTBA122Y

Optional Items

Item	Model	Description
Charging Cradle	MBC-100	Packed with AC adaptor
Rechargeable Lithium ion Battery pack	FHTBA122Y	Dedicated battery

※ Contact our sales representative for optional items.

Lineup

The lineup of MID-100 and product model are as follows:

Product Model MID-100 1

	Character	Description
1	None	Regular type
	-H	High-Resolution type (Reading Distance：Short)

Download Information

The operation manual and setting software can be downloaded from our company's website.

https://www.mars-tohken.co.jp/DL/

Operation Manual MID-100(this manual)

http://sdk.mars-tohken.co.jp/mid-100/

For the access to the above URL, Need the User ID, Password below;

User ID：mid100user　Password：mtscustomer

Application software, Development environment, SDK

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1. SUMMERY

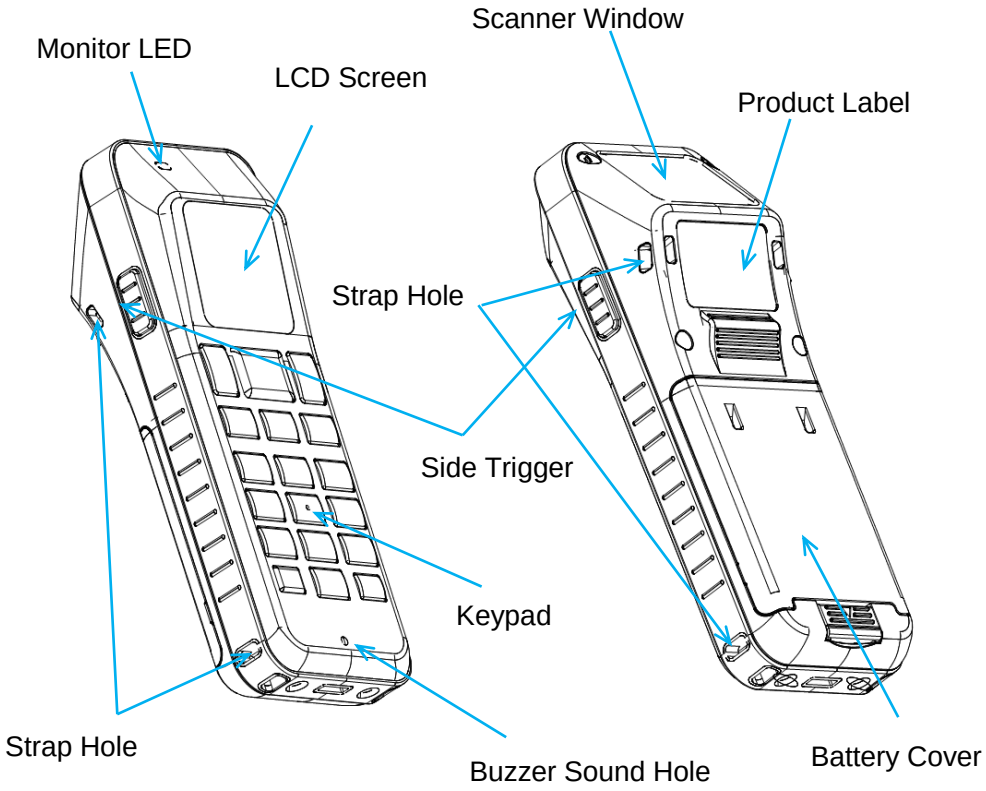
- MID-100 is an ultra-compact data collector with a liquid crystal display and numeric keypad input in a compact code reader adopting state-of-the-art digital camera technology and image recognition software.
- MID-100 is a dust-proof and anti-immersion type protection structure (IP 54) and it can be used in harsh environments.
- MID-100 has a Bluetooth interface and can be used as a wireless type barcode reader.
- There are two types (Standard / High resolution) appropriate for the reading resolution.
- We pursued miniaturization of the device by adopting simple display and input.
- High-speed processing ARM Core CPU and 1.8 GByte of large capacity memory are mounted to support various applications
- We provide development environment to develop dedicated programs for free of charge.
- The sample program is preinstalled on the main unit.
- A sample program for PC can be downloaded from our company's website.
- We adopted a simple but easy-to-use input key such as double-sided buttons and function keys, a key arrangement that reminiscent of mobile phones.

1.1. Description of Key Operation in This Manual

Words with box brackets such as [MENU] are described as the key in this manual.

e.g. [Menu]: Press Menu key

1.2. Parts Name



1.3. LCD Screen

MID-100 is equipped with a 128 × 128 dot monochrome LCD that can display half-width alphanumeric characters, symbols, Japanese (Chinese characters, katakana etc.). Various data can be displayed depending on the program.

【Screen image】

① Data Display Area

② BT Connection Mode

S : SPP Connection

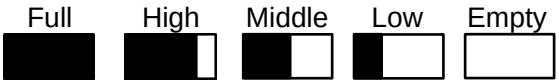
H : HID Connection

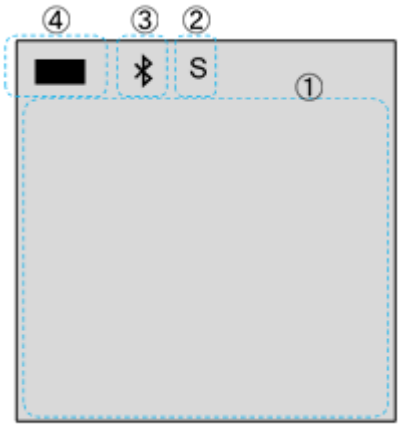
③ BT Connection Status

: Disconnected

: Connected

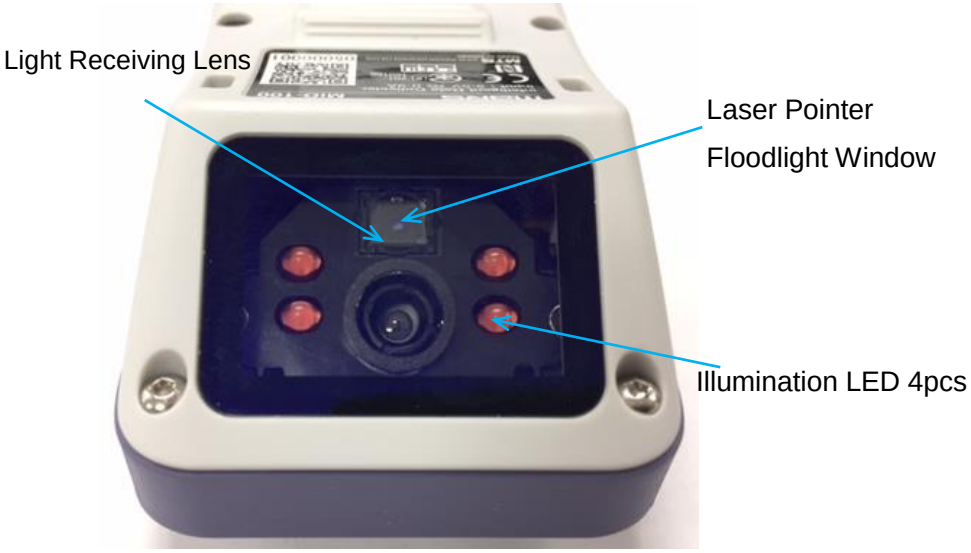
④ Battery Level





1.4. Scanner Window

This scanner window is used for imaging by the camera unit of the symbol reading scanner. This is also used for illumination and laser pointer emission. Do not look in when using the device.



1.5. Monitor LED、Buzzer、Vibrator

The monitor LED is an indicator light for displaying the status of MID-100 and the result of processing. The buzzer sounds from the sound emission hole at the bottom of the keypad when displaying the result of the key operation or alarm. The built-in vibrator vibrates during system operation and reading. The three units operate as shown in the table below.

Status	Monitor LED	Buzzer	Vibrator
Power OFF	LED Off	OFF	OFF
Power ON	Green	150ms	150ms
Charging	Red	OFF	OFF
Full Charge	Green	OFF	OFF
Charge Error	Orange	OFF	OFF
Long Press Power Key	Red(100ms)	300ms	300ms
Shutting Down	Red(100ms)	100ms	OFF
Low Battery Alarm	Red(100ms)	100ms	OFF
Reading Succeeded	Green(100ms)	100ms	100ms

1.6. Keypad and Side Trigger Key

MID-100 has a key pad at the bottom of LCD monitor which consists of 18 keys. There are two side triggers adjacent to the LCD screen and on both sides of the main body.

【Key Name and Function】

Name	Key	Description
Power	⏻	Turns the power ON/OFF and starts the system menu.
Menu	[Menu]	Displays the setting menu of the sound volume, vibrator and backlight.
Function	[F1]、[F2]	Moves the cursor or decide the item in the select menu.
Scan	[SCAN]	Reads symbols.
Clear	[CLR]	Clear the characters being entered.
Back	[ESC]	Returns to the previous view.
OK	[OK]	Decides the item selection or input.
Side Trigger (on both sides of the main body)		Reads symbols.

【Special Operation】

Key Operation	Description
[Menu]+[OK] ⇒ + [Power]	Starts system menu
Both Side Triggers ⇒ + [Power]	Forced Power OFF*
[POWER] while the power is ON	Less than1.5 : Suspend 1.5～5 Sec : Power OFF（Displayed For Confirmation） More than 5 Sec : Force Power OFF*

CAUTION

* Do not forcibly turn off the power in case of other than emergency. Or files and memory under operation may be damaged.

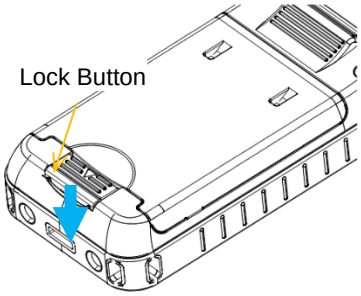
1.7. Battery

Observance

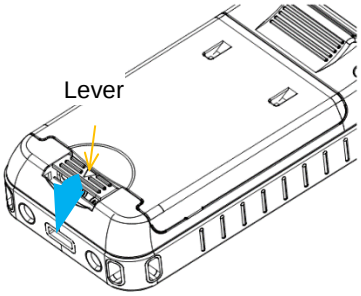
Make sure to use a dedicated rechargeable li-on battery (FHTBA122Y). Also, use the dedicated charging cradle (MBC - 100) to charge.

Battery Cover

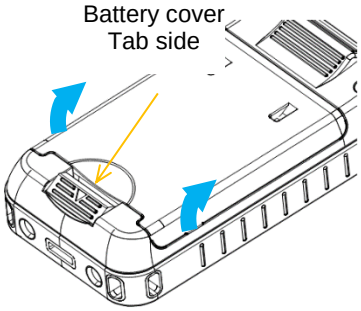
Remove the Battery Cover



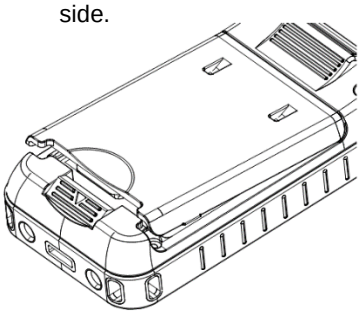
1. Press lock button.



2. Hold down the lock button and tilt the lever to the lock button side.

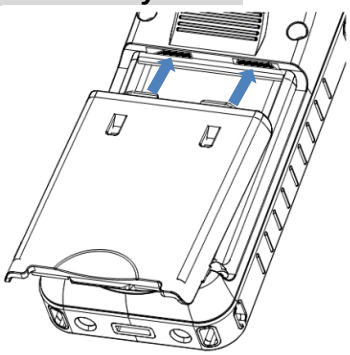


3. Pull off the battery cover tab from the lever and take up the cover.

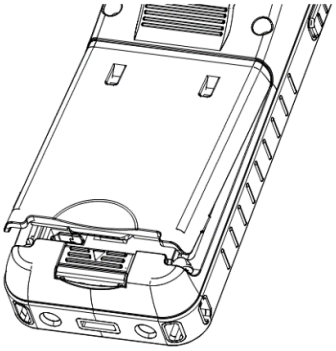


4. Remove the battery cover.

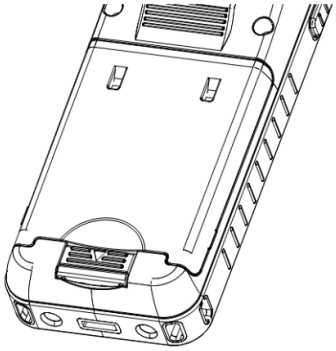
Attach Battery Cover



1. Hook the tab of the battery cover into the hole of the device.



2. Press and hold the lock button and tilt the lever as described in the method (1).

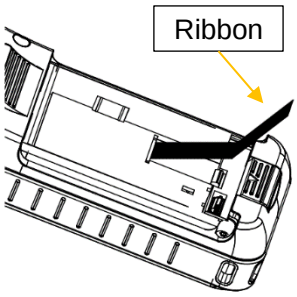


3. Attach the battery cover until hearing a snap sound. Make sure there is no float on the cover.

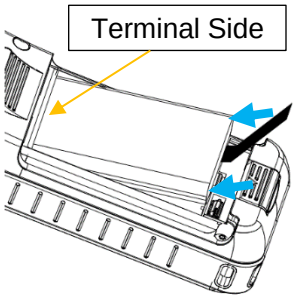
Removing Battery

The battery can be removed easily by pulling the ribbon towards the operator.

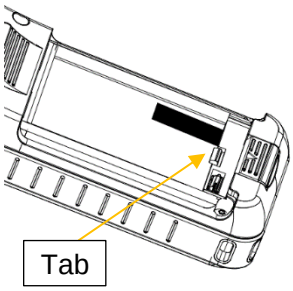
Insert the Battery



① Hang down the ribbon as shown.



② Insert the battery from the terminal side.



③ Hook the battery to the tab at the bottom side.

※ To remove the battery properly, make sure the ribbon come out from the bottom.

Battery Charge

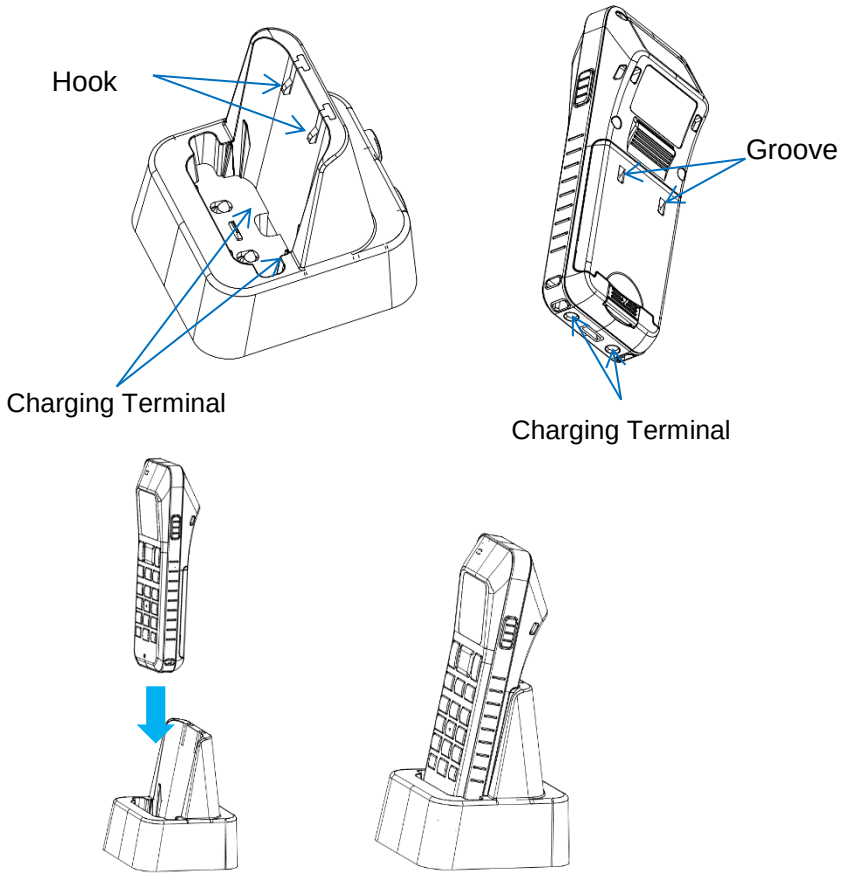
For charging the battery, Use the dedicated Charging Cradle (MBC-100).

Fully charge the battery immediately after purchase using the dedicated battery charger MBC-100. Monitor LED lights red during charging and lights green when charging is completed. When the remaining battery power becomes insufficient, a warning is displayed on the screen to request a battery charge. Charge the battery when the warning is displayed.

① Set the scanner in the charger by aligning the bottom with the charging terminal of the cradle.

② Cradle's hook supports the groove of the battery cover.

③ If the battery cannot be charged properly, lift the battery to check if the terminal and hook are set in the right direction.



● Before the charge, make sure that the battery cover is locked properly without float.

Low Battery Level

When the remaining battery level of MID-100 is low, a battery alarm sounds. The LED lights red, the buzzer sounds and a message “Battery Alarm” is displayed on the screen. Also the battery indicator turns into “Empty”.

After a certain time, the power turns off automatically. After the power is off due to the worn-out battery, MID-100 can be turn on again by charging the battery or exchanging the battery with a charged one.

- Remove the battery from the device and store it, if you do not use MID-100 for more than a week.
- Make sure to charge the battery once every three months. DO NOT leave the battery fully discharged to prevent a rapid deterioration.
- Finish exchanging the battery in three minutes. If no power is supplied from the battery over three minutes, the values of calendar/time are reset. Initialize the calendar/time when using MID-100 again.

2. How to Use

2.1. Preparation

Insert the battery pack to charge. Refer to Section 1.7,”Battery,” for the charging method.

Confirm Basic Operation (When initializing SCAN MODE and every setting)

① Press and hold [POWER] for two seconds. A message “Hello” is displayed on the screen and the monitor LED lights green. The monitor LED turns off after a while and the scanner activates. The backlight on the LCD screen lights and a message “SCAN MODE” is displayed on the screen.

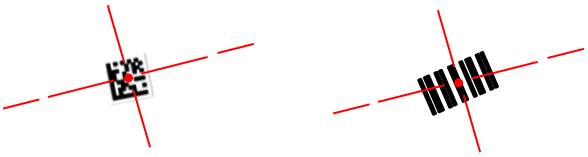
② MID-100 is disconnected with the host during SCAN MODE. Search and select MID-100 from the Bluetooth Connection of the host to connect. Refer to Section 2.2,”Bluetooth,” for the method of connecting with Computer.

③ After MID-100 is disconnected, the message ”Disconnected” disappears and a confirmation message whether to send the data which was read before the connection is displayed on the screen. Select [F1] to send or [F2] not to send.

To send stored data, make sure the host is ready to receive.
Receiving a large amount of data may make the computer inactive or perform unpredictably.

④ Connection method can be skipped at the performance check. Select “Start” while MID-100 is disconnected.

After the method ③ or ④, the message “Reading” is displayed on the screen. Press [SCAN] (or side trigger key) to start reading. Press and hold [SCAN] to adjust the center of symbols in the center of the cross pointer.



When the reading is successful, the buzzer sounds once, monitor LED lights green and the vibrator vibrates.

2.2. Bluetooth

Bluetooth interface provides transmission with various Bluetooth devices. MID-100 supports the profiles of HID and SPP.

HID Profile

The data sent to upper host can be handled as if it was input by keyboard.

SPP Profile

Connects by virtual COM. Host requires an application to communicate with an allocated virtual COM. Refer to「1. Scanner Type」in Section 5.2,”General Setting,” for the detail of Switching the Profile.

Connection Example

Manual Connection from Host

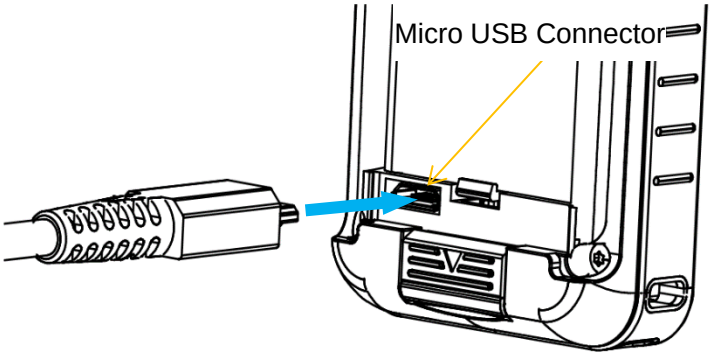
1. Search for a Bluetooth device from the host.
2. Select 「MID-100」from the search result to establish a connection.
3. MID-100 connects with the set profile when receiving a connection request.

Manual Connection from Scanner（Refer to Section 5.6,”Bluetooth CFG,”）

1. Select“6. Bluetooth CFG”from the system Menu.
2. Select“1. Search”from the search result.
3. Select a connection destination.

2.3. Storage Connection by USB

Micro USB connector is located inside the battery cover. After establishing connection with a PC through a micro USB cable while the system menu is displayed, user can access to the files in MID-100 like a USB storage device.



- Keep the battery installed when establishing a storage connection.

  Folder configuration in storage device is as follows:

\apps	//	Application
\app-data	//	Application Data(*1)
\logs	//	MID-100 Operation Log(*2)
\scan-data	//	Data of Code Reader
\download	//	Other Files

*1 Can be used as a storage folder for such as master files, transaction data.

*2 Recording files of scanner operation log are stored in this folder. A log folder is created with the name "log-date-hour-minute-second". Up to 50 log folders are created, and after 51 copies are overwritten from the old log folder

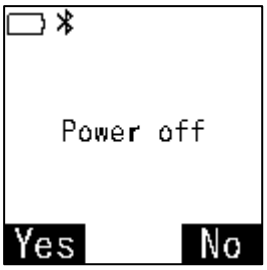
3. Scanner Menu Operation

3.1. Start Scanner

Press and hold [Power] for 1.5 seconds to turn on the power.

3.2. Stop Scanner

Press and hold [Power] for 1.5 seconds to turn off the power and displayed 「Power off」「Yes」「No」on the screen.



Press [F1] and choose「Yes」, The power off

Press [F2] and choose「No」, Stop the power off and return to the previous menu.

[ESC] operates same function with「No」.

3.3. Suspend Scanner

After press [Power] less than 1.5 sec, Scanner enters Suspend state (low-power consumption state). Suspend can be canceled by pressing [Power] again. MID-100 automatically enters Suspend when being not operated for a while.

3.4. Start System Menu

Hold down [OK] and [Menu] while the power is off and press [Power] over 1.5 sec to start the system menu.

3.5. Turn Off Scanner Forcibly

Hold down the two side triggers on both sides of MID-100 and press [Power] to turn off MID-100 due to some abnormality. Also, MID-100 can be turned off forcibly by pressing and holding [Power] for more than 5 seconds.

CAUTION	Do not turn off the power forcibly of MID-100 in cases other than emergency. Or files and memory under operation may be corrupted.

3.6. Key Operation in Menu

Select Menu with cursor or keypad input while the menu is displayed on the screen.

Cursor

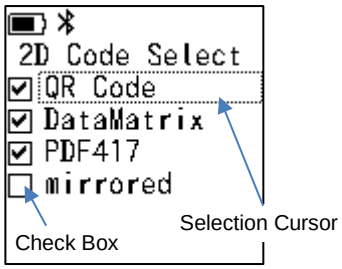
Use function keys [F1], [F2], [OK], and [ESC] to move cursor.

Press [F1] to move the cursor up, and press [F2] to move the cursor down. Selected item is highlighted or surrounded by a square frame. Press [OK] at the cursor position to select an item. Press [ESC] to return to the previous menu. Pressing [ESC] at the first menu has no function.

Input Number

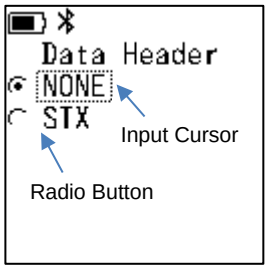
If there is a number on the menu choice, you can jump to the selection item by pressing the number key. When the item is highlighted, press [OK] to decide.

Check Boxes



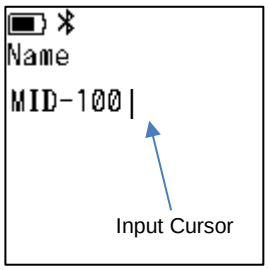
A check box is displayed if there is On/Off selection on the item. A check mark appears when the item of ON. By pressing [OK] user can check/uncheck the item with the selection cursor. Press [OK] at unchecked box to check and press [OK] at checked box to uncheck.

Radio Button



A radio button is displayed if only one of several items can be selected. Press [OK] to decide a desired item with it is selected with the cursor.

Input Character



A cursor appears when character input is required. Cursor move to the left pressing [F1] and to the right pressing [F2]. Use numeric keypad to input. Press [CLR] to delete characters to the left of the cursor and the cursor moves to the left. Characters can be input in the same method for portable phones.

E.g. Character on the cursor changes from A-B-C-a-b-c-2 by repeating the method [2] continuously. After a while, the cursor moves to the right and the selection is determined.

4. Device Settings

4.1. Menu Settings

※The items set up by moving curser. (No Need [OK] Button)

Menu Settings

To display the menue settings, press [Menu] on the bottom right of the Keypad.

Press [ESC] to return.

1.Beep Volume

Setting the buzzer volume.

Default is “Mid”.

Press [ESC] to return.

2.Brightness

Setting the brightness of the LCD backlight.

Default is “Normal”.

Press [ESC] to return.

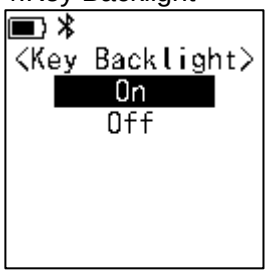
3.Vibrator

Setting the vibrator function.

Default is “Enable”.

Press [ESC] to return.

4.Key Backlight

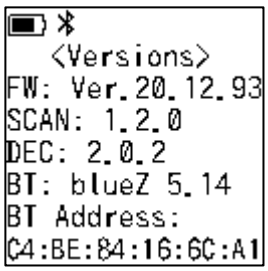


Setting the function of key backlight

Default is “On”.

Press [ESC] to return.

5.FW Version



Versions of firmwares and various drivers

FW	:	Firmware version of scanner main unit
SCAN	:	Driver version of scanner engine
DEC	:	Decode version of scanner engine
BT	:	Driver version of Bluetooth
BT Address	:	Bluetooth Address

Press [ESC] to return.

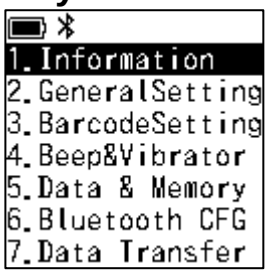
6.APP Version

Application Version

SystemMenu	:	Version of system menu
ScanMode	:	Version of scan mode
Diagnostics	:	Version of diagnostics

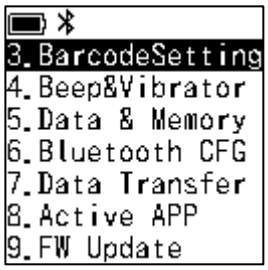
Press [ESC] to return.

5. System Menu



To set various settings and download user application programs, use the system menu.

To display the system menu, hold down [Menu] and [OK] on the keypad and press [Power]. After a while, turn on the power to display the system menu.



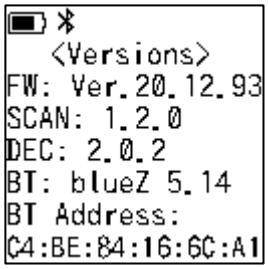
Cursor move to the up with [F1] and to the down with [F2].

5.1. Information

The sub menu is displayed by selecting “Information” from the system menu.

Press [ESC] or [0.Exit] and then [OK] to return.

1.FW Version



Versions of firmwares and various drivers

FW	:	Firmware version of scanner
SCAN	:	Driver version of scanner engine
DEC	:	Decoder version of scanner engine
BT	:	Driver version of Bluetooth
BT Address	:	Bluetooth Address

Press [ESC] to return.

2.APP Version

Application Version

SystemMenu	:	Version of system menu
ScanMode	:	Version of scan mode
Diagnostics	:	Version of diagnostics

Press [ESC] to return.

3.Battery Level

Displays the battery level

3:	Full	:	Full charged
2:	High	:	～79%
1:	Middle	:	～59%
0:	Low	:	～39%
No Mark:	Empty	:	Less than ～19%
			(Warning state of voltage drop)

Press [ESC] to return.

* Temporary measurement error could exist depending on the environment.

4.Select Language

Selecting language

English	:	Display English
Japanese	:	Display Japanese

Press [ESC] to return.

The default language is Japanese.

5.Diagnostics

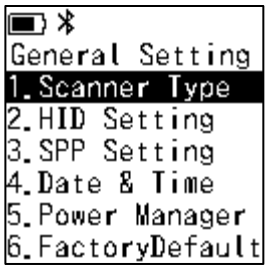
Diagnoses the various function of MID-100

1.All Test	:	Automatic self-diagnosis test
2.Single Test	:	Self-diagnosis test by item
0.Exit	:	Back to the previous menu

Press [ESC] to return.

* It is our manufacturing inspection application.

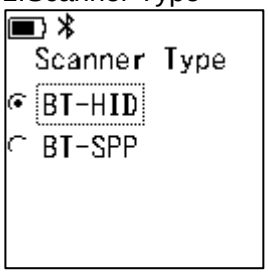
5.2. General Setting



The sub-menu is displayed by selecting “General Setting” from the system menu.

Press [ESC] or [0.Exit] and then [OK] to return.

1.Scanner Type



Selecting Bluetooth profile

BT-HID : HID Profile

BT-SPP : SPP Profile

Press [ESC] to return.

The default setting is “BT-HID”.

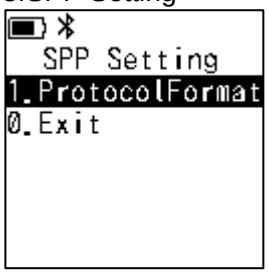
2.HID Setting

Advanced settings of HID connection

1.Char Interval	:	Sets the interval time between characters. The default interval is 40ms.
2.Keyboard Type	:	Sets the keyboard type of HID. The default setting is Japanese keyboard.
3.Convert Letter	:	Sets the case conversion setting of transmission data. The default setting is None.
4.KeyEventEnable	:	Sets the permission of keypad input. The default setting is Enable.
0.Exit	:	Back to the previous menu

Press [ESC] to return.

3.SPP Setting



SPP（Serial Port Profile）

1.ProtocolFormat : Sets protocol format.(JSON or RAW)
The default setting is JSON.

0.Exit : Back to the previous menu

Press [ESC] to return.

4.Date & Time

Setting the system timer.

① Press OK to change input mode of Date/Time.

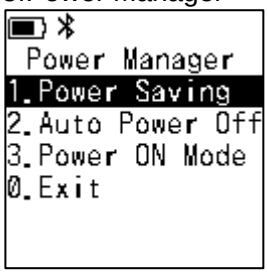
② Rewrite desired date and time.

③ Press OK to set the new time.

Press [ESC] to return without setting date/time.

The timer will reset to initial value if there is no power supply for more than 3 minutes. Please set the date and time again when reuse it.

5.Power Manager



Setting the manager settings

1.Power Saving : Sets the time until the scanner enters suspend mode. The default setting is 60 seconds.

2.Auto Power Off : Sets the time until the scanner turns off.

Operating conditions:

1 : The Power On Mode setting is “Restart”.

2 : The scanner is in suspend mode.

3 : The Auto Connect setting of the Bluetooth CFG is disable. Alternatively, the Auto Connect setting is enable, and the scanner has no Bluetooth connection history.

The default setting is 5 minutes.

3.Power ON Mode : Sets the operation after the time of the Auto Power Off has elapsed.

Restart : Power off

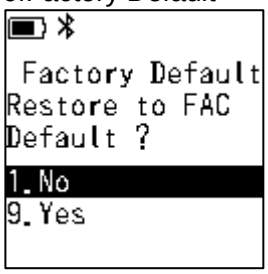
Resume : Keep suspend mode

The default setting is Resume.

0.Exit : Back to the previous menu

Press [ESC] to return.

6.Factory Default



Initializing to the factory-default settings

1.No	:	Back to the previous menu
9.Yes	:	Resets the factory default. All the settings and user memory are initialized. Be sure to consult with the administrator before execution.

Press [ESC] to return.

When Factory Default is run, all the installed applications will be deleted (except SCAN MODE).

7.Restore Default

Initializing the setting parameter

1.No	:	Back to the previous menu
9.Yes	:	Only the setting parameter is reset to the default value.

Press [ESC] to return.

8.KEY BackLight

Setting the key backlight

On	:	Backlight is on
Off	:	Backlight is off

Press [ESC] to return.

The default setting is On.

9.LCD Brightness

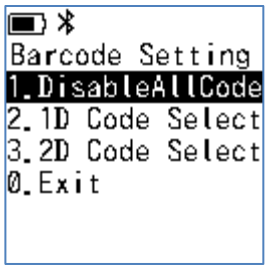
Setting the brightness of LCD backlight

Bright	:	Brightness is 80%.
Normal	:	Brightness is 40%.
Dark	:	Brightness is 20%.
Off	:	Backlight is off.

Press [ESC] to return.

The default setting is Normal.

5.3. Barcode Setting



The sub-menu is displayed by selecting “Barcode Setting” from the system menu.

Press [ESC] or [0.Exit] and then [OK] to return.

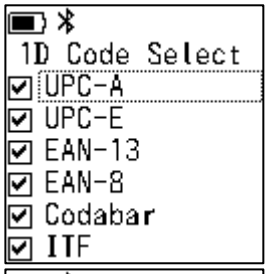
1.Disable All Code

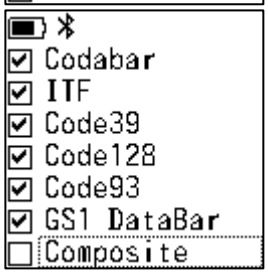
Prohibiting the reading of all symbols

1.Yes	:	Prohibit the reading of all symbols. To read only specific symbols, prohibiting all symbols once with this item helps the user to allow only the desired symbol easily.
9.No	:	Back to the previous menu

Press [ESC] to return.

2.1D Code Select





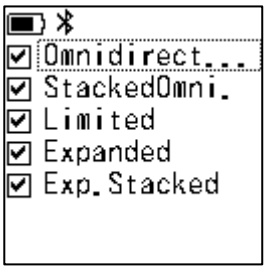
Setting permission / prohibition of reading for each one-dimensional symbols.

The default setting is On (permit) except Composite.

Press [ESC] to return.

Composite cannot be read even by setting "On" alone. Set the combination symbol to On too.

- Sub-menu of GS1 DataBar



Displays the sub-menue when GS1 DataBar is sellected.

The default setting is all ON.

3.2D Code Select

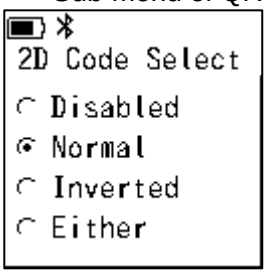
Setting permission / prohibition of reading for each two-dimensional symbol system.

The default setting is all ON (permit) except mirrored.

Press [ESC] to return.

The “mirrored” is the reading setting for mirror inversion symbol. Both inversion and non-inversion can be read when this setting is ON.

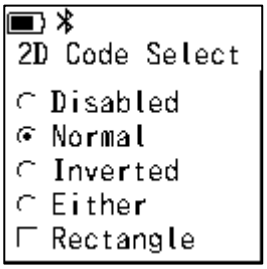
- Sub-menu of QR Code



Disabled	:	The read is invalid.
Normal	:	Reads only the code without inversion. (Black on White)
Inverted	:	Reads only the code with inversion code. (White on Black)
Either	:	Reads both inverted and non-inverted code.

The default setting is Normal.

- Sub-menu of DataMatrix



Disabled	:	The read is invalid.
Normal	:	Reads only the code without inversion code. (Black on White)
Inverted	:	Reads only the code with inversion code. (White on Black)
Either	:	Reads both inverted and non-inverted code.

The default setting is Normal.

Rectangle	:	Sets whether to allow reading of rectangular symbols. The default setting is Off. After selected Disabled, Rectangle cannot be On。

Press [ESC] to return.

5.4. Beep & Vibrator

The sub-menu is displayed by selecting “Beep & Vibrate” from the system menu.

Press [ESC] or [0.Exit] and then [OK] to return.

1.Beep Volume

Setting the buzzer sound volume

High	:	Sets volume to high.
Mid	:	Sets volume to Mid.
Low	:	Sets volume to Low.
Mute	:	Sets to mute.

The default setting is Mid.

Press [ESC] to return.

2.Vibrator

Setting the vibrator operation

Enabled	:	Enable vibrator
Disabled	:	Disable vibrator

The default setting is Enable.

Press [ESC] to return.

5.5. Data & Memory

The sub-menu is displayed by selecting “Data & Memory” from the system menu.

Press [ESC] or [0.Exit] and then [OK] to return.

1.Data Header

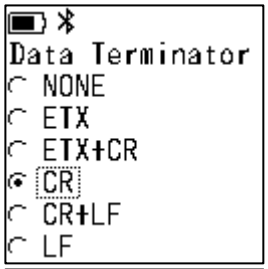
Setting the header for data transmission

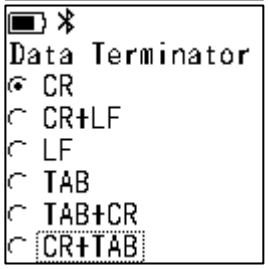
NONE	:	Do not add Header.
STX	:	Adds STX

The default setting is NONE.

Press [ESC] to return.

2.Data Terminator





Setting the terminator for data transmission

NONE	:	Do not add Header.
ETX	:	Adds ETX
ETX+CR	:	Adds ETX and CR
CR	:	Adds CR
CR+LF	:	Adds CR and LF
LF	:	Adds LF
TAB	:	Adds TAB
TAB+CR	:	Adds TAB and CR
CR+TAB	:	Adds CR and TAB

The default setting is CR.

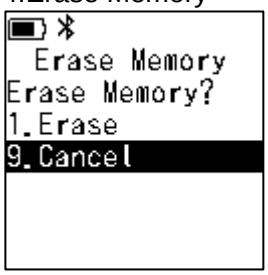
Press [ESC] to return.

3.Free MEM Space

Displays the free space of user memory area. The unit is KB (kilobyte).

Press [ESC] to return.

4.Erase Memory



Initializing the user memory area

1.Erase	:	All contents of user memory are erased.
9.Cancel	:	Back to the previous menu

Press [ESC] to return.

5.6. Bluetooth CFG

Various setting menus for Bluetooth communication are displayed when Bluetooth CFG is selected from the system menu.

Press [ESC] or [0.Exit] and then [OK] to return.

1.Search

Searches for nearby Bluetooth devices and displays the device name.

* Only permit to search Bluetooth devices nearby.

Select desired device name and press [OK] to return to switch to the Connect screen.

Press [ESC] to return.

Example (Select the device name for connection):

・Succeeded Connection

・Failed Connection

2.Paired Device

Displays Bluetooth address of the paired device.

When selecting Bluetooth address and pressing [OK], moves to the Connection screen.

Press [ESC] to return.

Example (Select displayed Bluetooth address) :

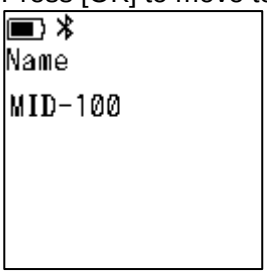
Connection screen

1.Connect	:	Connects with Bluetooth.
2.Disconnect	:	Disconnecs with Bluetooth.
9.Remove	:	Removes the list of paired devices.

3.Device Name

Displays and sets Bluetooth device name of MID-100.

Press [OK] to move to the changing screen.



The default Bluetooth device’s name is MID-100.

Press [ESC] to return.

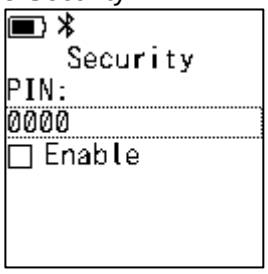
4.BT Information

Displays MAC address of Bluetooth and paring information.

BT Address	:	Bluetooth Address
State	:	Connection Status
Connected	:	Connected State
No Connect	:	Unconnected state
Connected dev	:	Information of Connected device
Up	:	Bluetooth Address
Down	:	Device Name

Press [ESC] to return.

5.Security

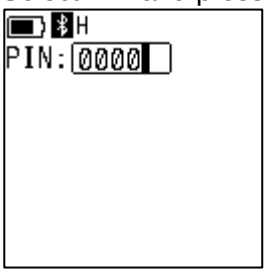


Setting the PIN code identification at Bluetooth paring.

When Enable is checked, 4 digit PIN code input is required. Set the same PIN as the connection destination.

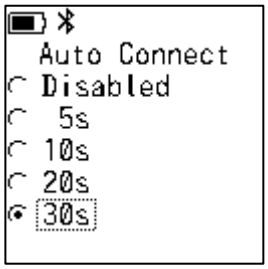
The default “Enable” is Off and PIN is 0000.

Select PIN and press [OK] to enter the setting screen.



Press [ESC] to return.

6.Auto Connect



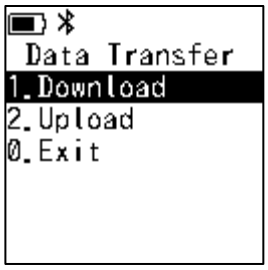
Setting the time until automatic reconnection, when the connection is lost.

Disabled	:	Automatic reconnection is invalid
5s	:	Tries to reconnect after 5 sec.
10s	:	Tries to reconnect after 10 sec.
20s	:	Tries to reconnect after 20 sec.
30s	:	Tries to reconnect after 30 sec.

The default setting is 30s.

Press [ESC] to return.

5.7. Data Transfer



The sub-menu is displayed by selecting “Data Transfer” from the system menu.

Press [ESC] or [0.Exit] and then [OK] to return.

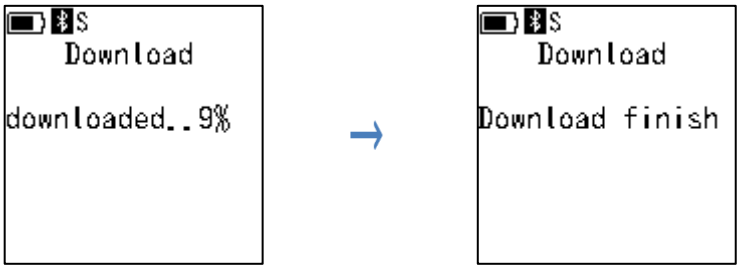
1.Download

Receives data files from host device.

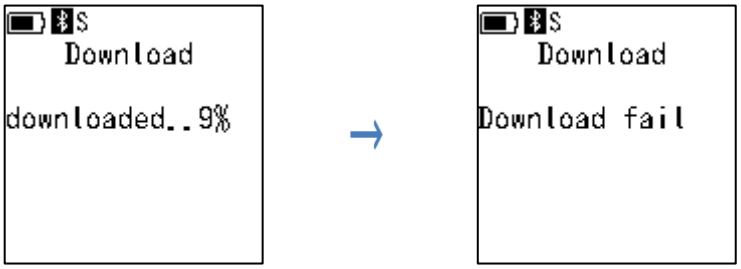
Send required files from the host device when waiting for reception.

Download Execution flow;

Success Example：

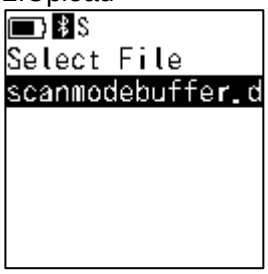


Failure Example：



Press [ESC] to return.

2.Upload



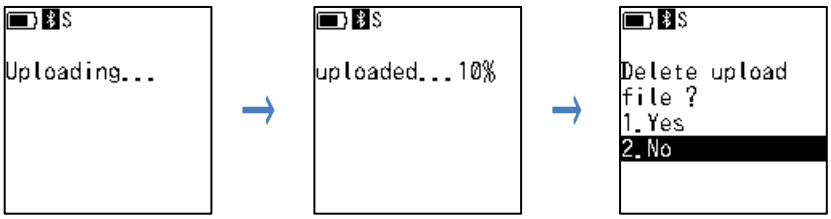
Sends data files to host device.

Files “scanmodebuffer.d…” on the list is from saving files in /data/media/scan-data/.

After selecting the file and pressing [OK], MID-100 starts data sending.

Upload Execution flow;

Success Example：

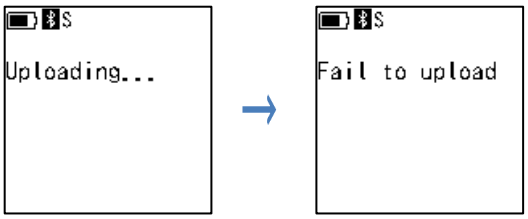


Select whether to delete the last upload file or not.

1.Yes : Delete the file from device.

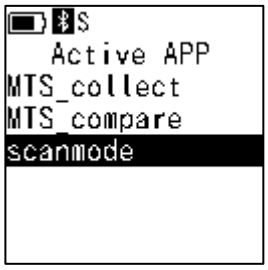
2.No : Back to the previous screen without delete.

Failure Example：



Press [ESC] to return.

5.8. Active APP



When Active App is selected from the system menu, the Active App screen is displayed.

Displays the list of application registered in MID-100.

To start the application, Select the application and press [OK].

This application will be executed when MID-100 starts next time.

The system menu is not displayed.

Press [ESC] to return.

6. General Specification

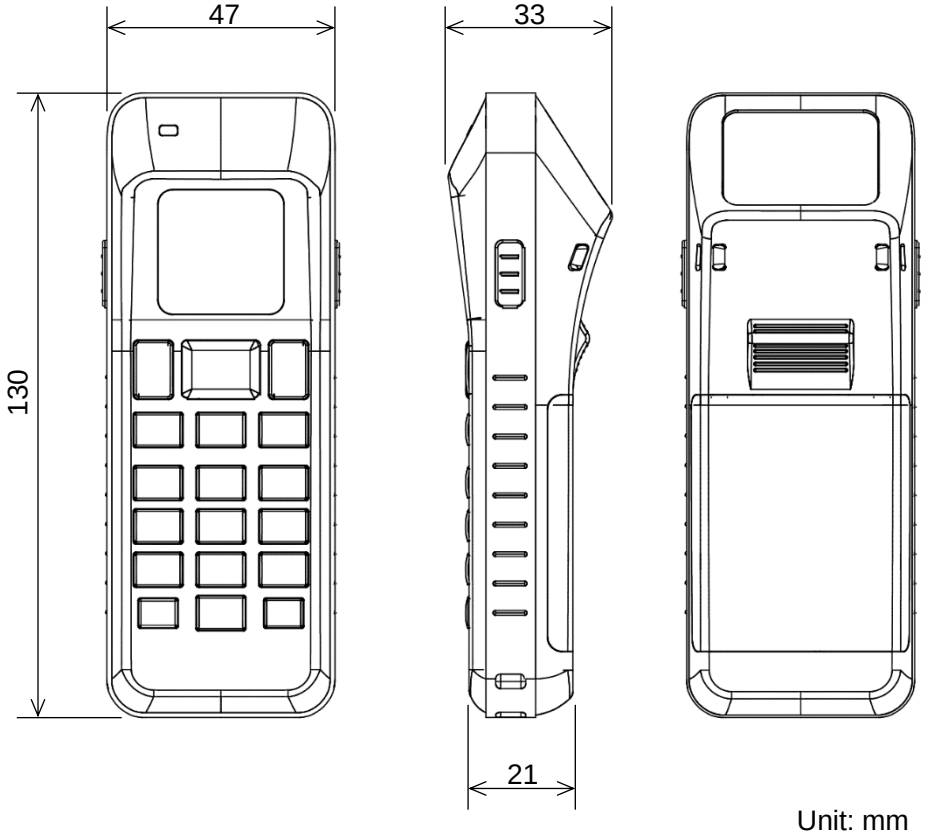
6.1. General Specification

Item		Specification
OS		Linux (ver. 3.10.53)
CPU		ARM Cortex-A9, 1GHz
Memory	RAM	128 MB　DDR2
	ROM	4GB（Useable area : Approx. 1.8GB）　FlashROM
Communication	Bluetooth	Bluetooth V2.1＋EDR　Compliant with Class2.0
		Supported Profile：HID、SPP
	USB	MicroUSB（Mass Storage Device）
LCD	LCD Type	Monochrome LCE with backlight
	Resolution	128×128 dots
	Size	Approx.22.6mm x 22.6mm
LED Monitor		Two-color LED (Green, Red and Orange)
Input Key		Numeric Keys, Function Keys (F1/F2), Clear, ESC, OK, Power, Menu, Scan Key and Side Trigger (On both sides of the main body)
		Key Backlight
Scanner	1D Symbols	Codabar(NW-7)、ITF、Code39、Code128、JAN/EAN/UPC Code93、GS1 DataBar、Composite
	2D Symbols	QR Code, PDF417, DataMatrix(ECC200)
	Reading Method	360,000 pixel CMOS Sensor
	Resolution	1D Code：0.167mm or more 2D Code：0.25mm or more
	Light	Red Color LED
	Aiming	Cross Shaped Laser Pointer
Vibrator		On/Off
Sound Volume Adjust		4 Levels: Mute / Low / Middle / High
Strap Hole		4 on the left, right, top and bottom
Size	Dimension	Approx.130 x 47 x 33(21) mm　() is grip parts size
	Weight	Approx. 130g
Battery	Specification	Rechargeable Li-ion Battery, 1,150mAh
	Charging Time	Approx.4 hours
	Operation Time	Approx.16 hours　(*1)
	Charging Method	Charge with Dedicated Cradle
	Battery backup	Approx. 3 minutes
Environmental specifications	Operation Tem./ Humidity	0～50℃ / 20～85%RH
	Storage Tem./ Humidity	-20～70℃ / 20～85%RH
	Shock	1.5m, No obstruction due to natural falling (*2)
	Environmental resistance	Compliant with IP54

*1. Using new battery, Room temperature and operating condition are mmeasured at 1 scan / 60 second cycle. (1 scan + data transmission + high brightness screen + key backlight ON (15 seconds), repeats the total of 60 seconds cycle of screen OFF + key backlight OFF (45 seconds). This is a test value according to our company's standard, not a guaranteed value.

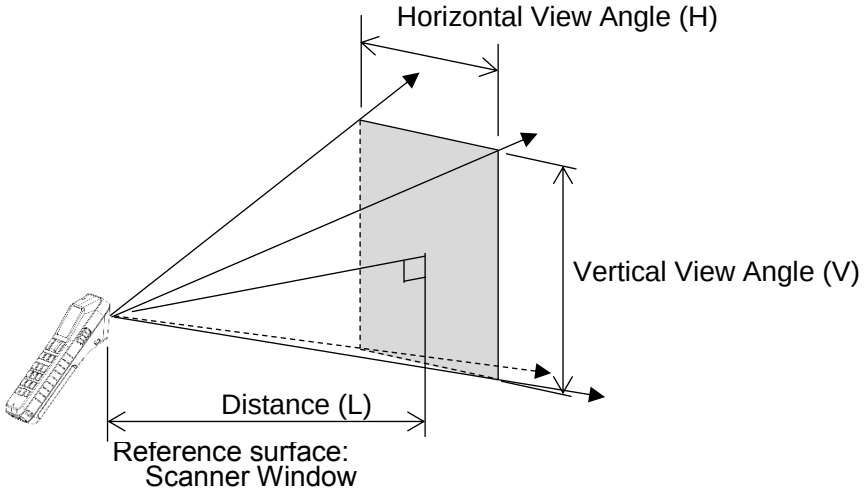
*2. This is a test value according to our company's standard, not a value to guarantee breakdown or breakage of the main unit.

6.2. External Dimensions



Unit: mm

6.3. Reading Specifications



View

L	40	70	100	115	135	175	220	270
H	28	46	64	73	85	110	135	170
V	17	29	40	47	54	71	85	108

Unit：mm

Reading Range

Regular Type	
Symbol	Reading Range
1D(0.25)	70 ～ 220
1D(0.33)	40 ～ 270
2D(0.25)	100 ～ 175
2D(0.33)	80 ～ 225

High-Resolution Type	
Symbol	Reading Range
1D(0.15)	50 ～ 115
1D(0.25)	40 ～ 130
2D(0.167)	55 ～ 95
2D(0.25)	45 ～ 115

Unit：mm

※ The distance is based on the scanner window surface as reference.
※ This is a performance when measured with our company's standard bar code label (PCS value 0.9), homogeneous brightness approx. 1000 lx (paper surface's illuminance) and a position parallel to the scanner window.

7. Troubleshooting

7.1. Even if [SCAN] is selected, the LED pointer or light does not light up.

- Does the application be started for [SCAN]?
  Without starting application, [SCAN] does not work.
  Also even if the application is started, [SCAN] does not work when the screen show up the other programs such as Setting Menu except Reading screen.

7.2. Battery cannot be charged

- Is the MID-100 set to the charging cradle properly?
  MID-100 cannot be charged when it is not set to the cradle properly.
  Refer to [Charging Battery].
- Is the AC adaptor connected to the cradle properly?
  MID-100 cannot be charged when AC adaptor is not connected to the cradle properly.
- Is the charging terminal clean?
  MID-100 cannot be charged properly when the charging terminal is not clean. Wipe off the dirt on the charging terminal with a cotton swab immersed in neutral detergent or ethanol periodically.
- Is the battery usage time short?
  The battery is a consumable item. If the battery life lasts only for a short time even after being fully charged, it is considered to be almost dead. Exchange it with a new battery as soon as possible
  For the detail of battery pack replacement, contact our sales department.

7.3. Cannot read symbol.

- Is the symbol system setting correct?
  When the symbol system setting is limited, MID-100 cannot read symbols other than the setting.
  Refer to Section,”5.3 Barcode Setting,” for a required symbol setting.
- Is the reading range appropriate?
  When the symbol is out of the specification of reading range or depth, reading may not be operated. Refer to Section,”6.3 Reading Specifications
- Is the symbol quality good?
  Even if the reading range is within the specifications, reading may not be operated when the symbol quality is low. Make sure whether the basic width/width ratio for 1D codes and cell position, code size etc. for 2D codes conform to the standards. Low-quality nonstandard symbols such as with thin, chipped, dirty prints may not be read.
- Is print surface glossy?
  Glossy surfaces may reflect the illumination light like a mirror. Adjust the position of the reader such as tilting the reader not to make the reflect light enter the reading window.
- Is reading window clean?
  If reading window is dirty, lighting becomes dark or decoded image becomes distorted/dark. Wipe off the dirt on the reading window with a cotton swab or dry cloth immersed in alcohol and wipe with a dry cloth again.

7.4. Data cannot be sent

- Is MID-100 connected via Bluetooth connection?
  Check the paring information. If it is not connected, reconnection is required.
  (Refer to Section,”2.2 Bluetooth” and ”5.6 Bluetooth CFG,”)

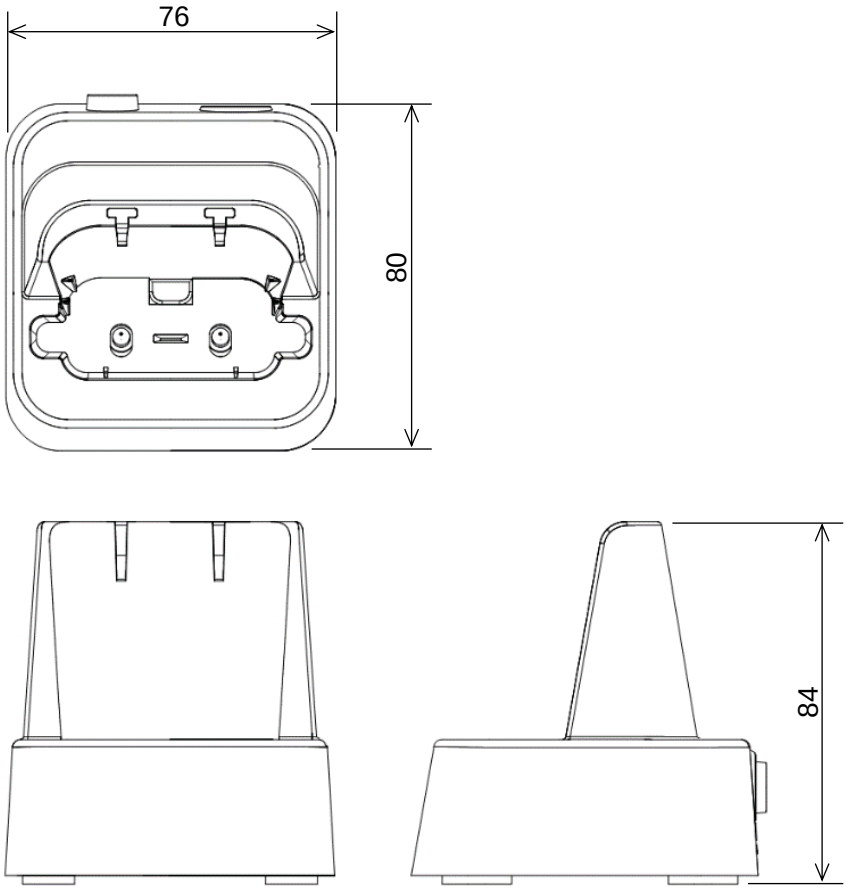
7.5. PIN is required at Bluetooth connection

- PIN is not set as factory default.
  Refer to Section,”5.6 Bluetooth CFG,” at the use of PIN.

8. 【Optional Item】Charging Cradle MBC-100

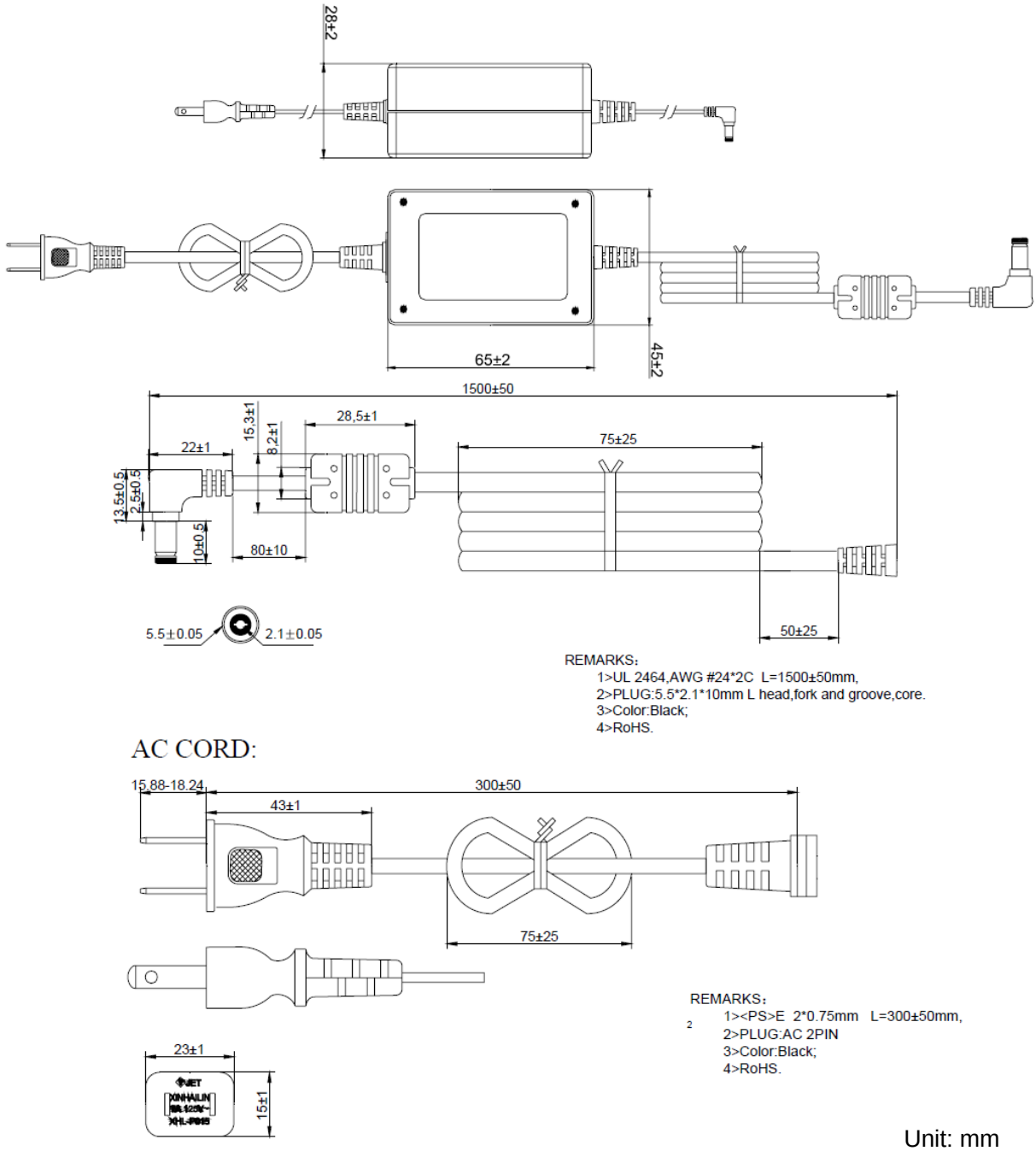
Charging cradle is an optional item. Contact our sales representative.

8.1. External Dimensions of Cradle



Unit: mm

8.2. External Dimensions of AC Adaptor



Unit: mm

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Warranty Obligations

Exclusive of the cases with special mentions in quotations, contracts or specifications, MARS TOHKEN SOLUTION warrants this product as follows.

1. Term of warranty
   One year from the date of purchase.
2. Warranty Coverage
   MARS TOHKEN SOLUTION shall repair or replace the products without any payment if any defects in the products are suspected to be due to design or manufacturing error.
   This warranty does not cover, and MARS TOHKEN SOLUTION will not to be held liable, for any damages incurred by the use of products。The above warranty shall not apply to any product below;
   ① Which has not used and maintained in accordance with the instructions
   ② Which has been repaired or altered by anyone other than MARS TOHKEN SOLUTION authorized personnel.
   ③ When the cause other than MID-100
   ④ When the cause that does not depend on the company's responsibility, such as natural disasters and disasters
   Also, This warranty includes only MID-100, excludes the damage that induced by trouble of MID-100
3. Coverage
   It is assumed to be used in Japan. When use MID-100 outside Japan, Contact our sales representative.

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Website https://www.mars-tohken.co.jp/

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