

Hitachi Portable Biometric Reader PC-KCM50

User Guide

Read all guidelines in this document carefully before using this product.
This document should be kept for the future reference.

Important Notices

- Quoting or partial / total reprinting of the contents of this document without license is prohibited.
- The contents of this document are subject to change without notice.
- In the case of any errors, inaccuracies or omissions in the contents of this document, please contact your distributor.
- Hitachi, Ltd. permits the acquisition and use of the product according to the conditions stated in this document.
- According to the statements contained in previous paragraphs, Hitachi, Ltd. will not assume any liability or obligation for damage of any kind arising from the use of this product. Consequently, do not use the product unless you fully understand its operation.

Product Reliability

- The product you have purchased has been designed and manufactured for general office use. Avoid its use for applications that require extremely high reliability or in cases where lives or property may be at stake, for example the control of chemical plants, medical devices, urgent communications etc. Hitachi, Ltd. assumes no liability for any such use and for any derived circumstances that may lead to accidents if used inappropriately.
- Hitachi, Ltd. does not guarantee the correct functioning of this product if it is used simultaneously with other identification devices.

Regulations and Measures

- ICES-003 Statements
- This Class B digital apparatus complies with Canadian ICES-003.
- Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.
- Federal Communications Commission (FCC) Statement

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.

FCC CAUTION

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

The USB cable supplied in the package must be used for connection to the host computer in order to meet FCC emission limits.

- This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter.
- This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment and meets the FCC radio frequency (RF) Exposure Guidelines. This equipment has very low levels of RF energy that is deemed to comply without testing of specific absorption rate (SAR).

Note: 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. 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.

Exports Regulations

- Before exporting the product, verify legal requirements in each country in addition to U.S. regulations for export control, and make all necessary arrangements accordingly. The above applies to attachments and software surrounding the device as well. Contact your distributor should you have any concerns.

Disposal

- When discarding this product, follow all regional and local laws. Also consult regulations regarding the material of each component.

Hazardous substance table for China

有毒有害物质或者元素

部件名称	铅 (Pb)	水银 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷线路板	×	○	○	○	○	○
机箱	○	○	○	○	○	○
连接线缆	○	○	○	○	○	○
光学部件	○	○	○	○	○	○
USB 线缆	○	○	○	○	○	○

○：表示该有毒有害物质在该部件所有均质材料中的含量均在 GB/T26572-2011 规定的限量要求以下。

×：表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 GB/T26572-2011 规定的限量要求。

备注：以上部件中，部分含有有毒有害物质超过是由于目前行业技术水平所限，暂时无法实现替代或减量化。

Notes

Attention: If the device is not properly used, device failure may occur.

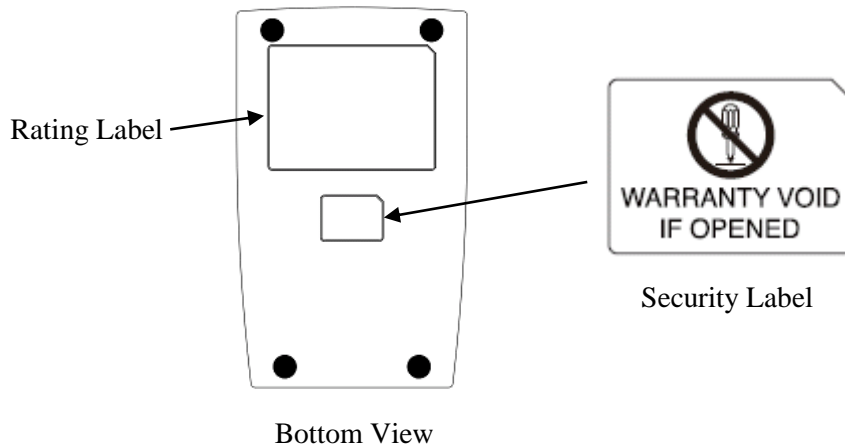
Important: If the device is not properly used, certain functions may not respond properly.

Safety Guidance

- Do not use this product near wet places such as humidifiers, washing machines, cooking places, washbasins, baths and the like. This may cause damage to the product.
- Do not use damaged or badly bent USB cables. If the cable is damaged, this may cause interruptions or malfunction.
- Do not dismantle or modify this device. It may lead to damage and malfunction.

Security Guidance

- Do not use this product if security label is damaged.
There is a possibility of that it was disassembled and modified for hacking.



1. Introduction

Hitachi gratefully acknowledges your purchase of the Hitachi Portable Biometric Reader (hereafter referred to as “Biometric Reader”). The objective of this document is to provide a basic understanding of how to handle and use the Biometric Reader.

1.1 Product characteristics

The Biometric Reader is a biometric authentication device that performs individual authentication by capturing finger vein patterns.

1.2 What's in the box

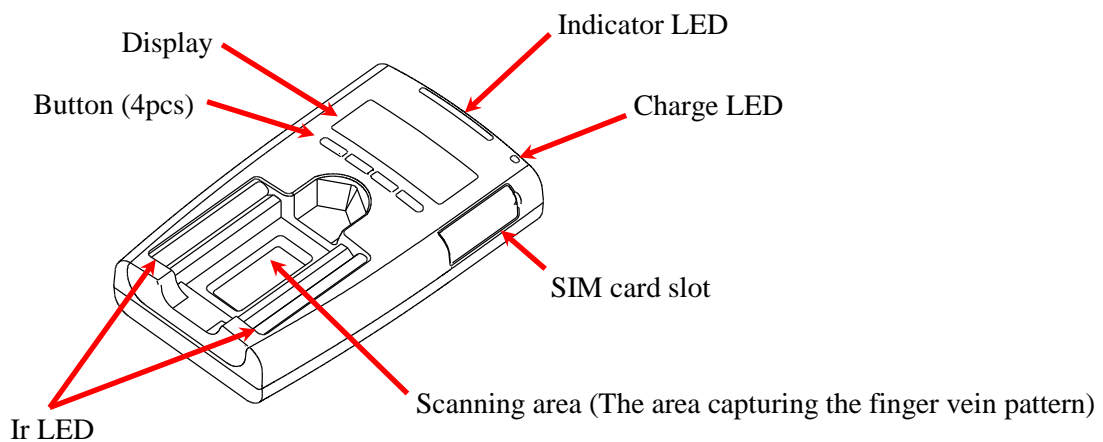
Your Biometric Reader package includes:

Biometric Reader 1 unit

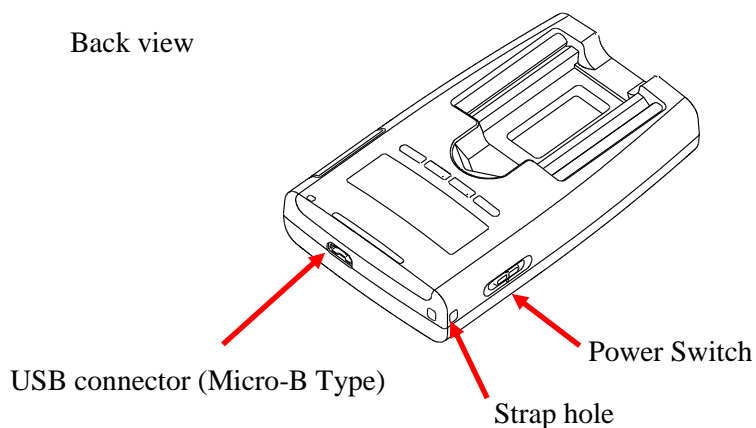
USB Cable (1.8m/5.9ft) 1 piece

1.3 Biometric Reader components

Overhead view



Back view



1.4 LED color and Biometric Reader status

The indicator LED shows the status of the Biometric Reader. Depending on its color and blinking state, please take an appropriate action. Note that Hitachi Finger Vein Biometric PKI Middleware (hereafter called the Middleware) for Windows (C-N1900-11) or for Mac (C-N1900-12) needs to be installed in the PC or Mac.

LED status	Biometric Reader status	Action
Off	Biometric Reader is not connected to the PC or Biometric Reader is not recognized by the Middleware.	Connect the Biometric Reader to the PC. Install the Middleware. If the Middleware is already installed, disconnect the Biometric Reader and a USB hub (if any) from the PC and connect them again.
Orange	Biometric Reader is connected to the PC and is recognized by the Middleware. (SIM card is not inserted or recognized.)	Insert a supported SIM card into the Biometric Reader.
Orange blink	Biometric Reader is connected to the PC and SIM card being is accessed.	Wait until the LED status becomes Blue. Do not disconnect the Biometric Reader or remove the SIM card unless the LED has not turned blue after 1 minute. If the Middleware is already installed, disconnect the Biometric Reader and a USB hub (if any) from the PC and connect them again.
Blue	Biometric Reader is connected to the PC and SIM card is recognized. Biometric Reader is to ready for use.	-
Blue blink (Slow)	Biometric Reader is connected to the PC and is waiting for a finger to be placed for capture.	Place your finger on the scanning area of the Biometric Reader.
Blue blink (Fast)	Biometric Reader is capturing finger vein.	Place your finger until authentication is finished.
Red	Biometric Reader is connected to the PC and finger vein authentication failed.	Retry finger vein authentication.
Red blink	Biometric Reader is connected to the PC and a device error occurred.	Disconnect the Biometric Reader and a USB hub (if any) from the PC and connect them again.

Note: On some PCs the LED doesn't extinguish when the PC enters SLEEP or POWER OFF modes.

1.5 Display and Button

Reader Unit has a Display and four Push Buttons.

- Display

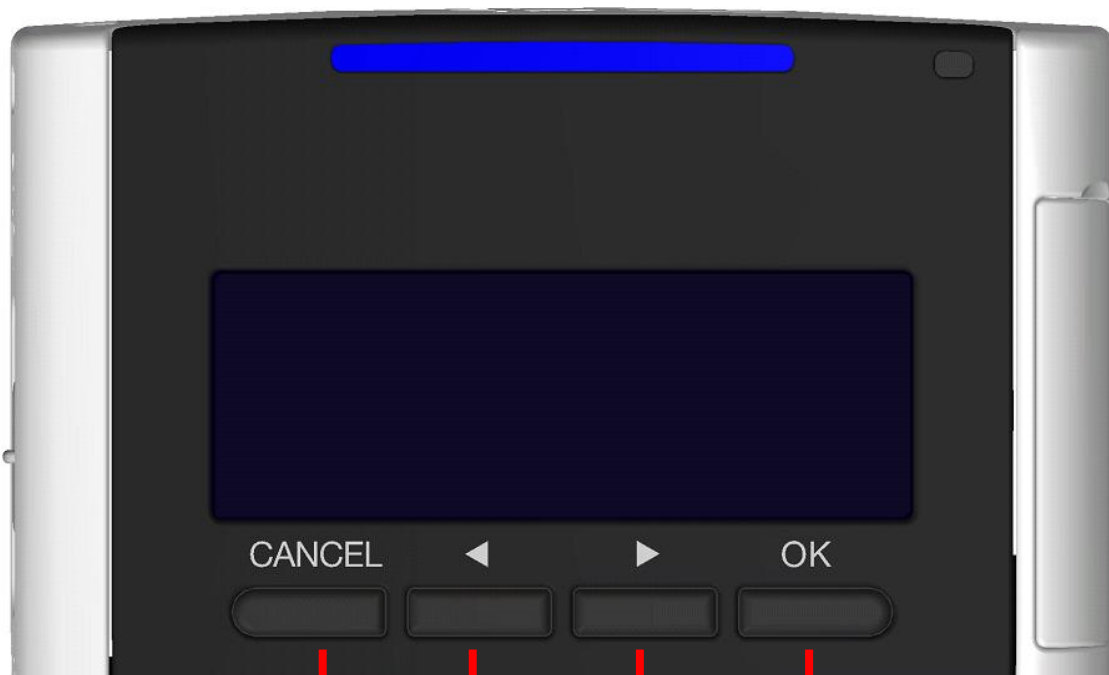


icon	Function	meaning
	Connection	On: Biometric Reader is connected to Host Off: Reader is disconnect
	Bluetooth	On: Biometric Reader is Bluetooth mode Off: Biometric Reader is USB mode
	Silent mode	On: Buzzer of Biometric Reader is Off
	Caution	On: An internal Error has occurred *1
	Page	Indicates further pages are available pages are available by stepping forward pages are available by stepping both forward and backwards pages are available by stepping backwards
	Page Number	Current Page number / Total page number
	Charge	On: Internal battery is charged. Off: Internal battery is not charged.
	Battery	Remaining Capacity Full capacity 2/3 1/3 Low Battery (flush) Error *1

*1 Stop using and remove USB cable and power off.

- Button

Biometric Reader has four buttons.



Cancel button Backward page button Forward page button OK button

Button	Function
OK	Push this button to continue the process.
CANCEL	Push this button remove to cancel the process.
◀	Push this button to step backwards a page.
▶	Push this button to step forward a page.

1.6 Battery

Biometric Reader has a 750mAh Lithium Ion battery.

The battery is charged when USB cable is connected and USB bus power is supplied.

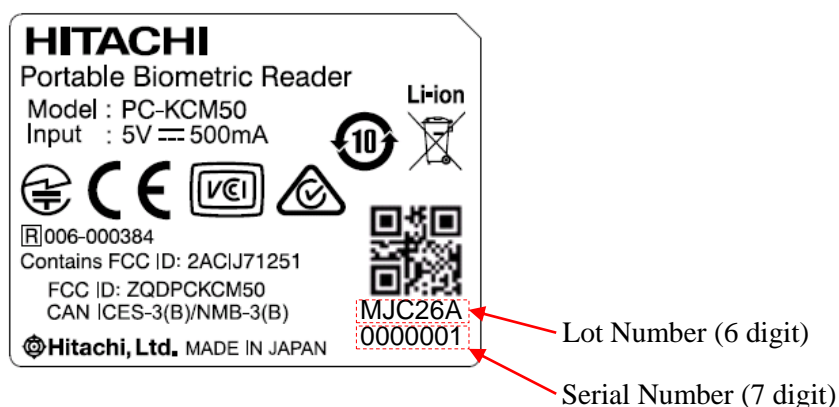
Biometric Reader has one LED to indicate charging status.

LED status	Biometric Reader status	Remark
Off	Not changing	
Orange	Charging	
Orange blink	Battery error	Remove USB cable and stop using Biometric Reader.

Important

- The battery charger controls the charging current so that it does not exceed the USB bus power specification. Therefore the charge time is longer when the device is powered-on than when it is switched-off.
- Battery capacity indicated on the display may not be updated immediately. In that case, it will be updated after waiting a moment.
- For extending battery cycle life time, charge battery in environment more than 10 degrees C if possible.
- Charge Time increases when the temperature under 10C.
- The unit stops charging when the temperature is under 0C.
- If you plan to store the Biometric Reader for longer than six months, charge it to 2/3 capacity every six months that remains in storage.
- For safety, please take care of following attentions.
 - Do not expose to water, fire or extreme high temperature.
 - Do not incinerate or disassemble.
 - Do not short circuit.
 - Do not damage by fall and shock.
 - Do not use this unit with being damaged.
 - Do not touch the liquid leaking from the internal battery.
 - Do not use in locations with high temperature and humidity, such as in a bathroom, sauna, bedrock bath or greenhouse.
 - Dispose of used batteries according to the manufacture's instructions.

1.7 Rating Label



2. Installation of the Biometric Reader

2.1 Place the Biometric Reader

Install the Biometric Reader on a horizontal and stable surface. Ensure no light through a window or from lamps can enter the scanning area of the Biometric Reader.

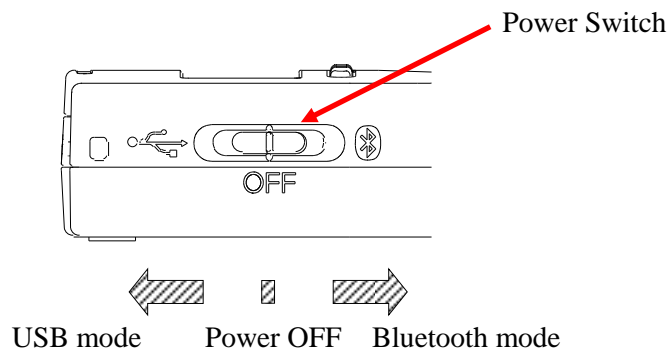
It is recommended that you use the Biometric Reader in the 300-1000 lx luminance range, which is equivalent to the brightness suitable for reading a newspaper.

Important

- Do not use the Biometric Reader in places where the Biometric Reader is exposed to strong light such as outdoors, near windows or near a light source, which may lead to an authentication failure.

2.2 Power On

Slide power switch (left side of the unit) to power on.



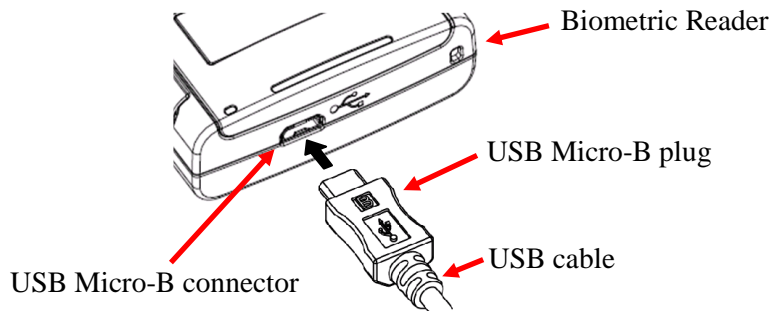
	USB mode	Power OFF	Bluetooth mode
With USB cable connection (powered by USB)	- Power On - Connected by USB	- Power Off	- Power On - Connected by Bluetooth
Without USB cable connection (powered by internal battery)	- Power Off	- Power Off	- Power On - Connected by Bluetooth

Important

- Biometric Reader can't power up in USB mode without USB bus power.
- Biometric Reader may generate a little heat due to the use of infra-red light inside, but this will not cause malfunctions.
- Do not connect more than one Biometric Readers simultaneously to one PC. If more Biometric Readers are connected, they will not work properly.
- After connecting the Biometric Reader to your PC, wait for at least 5 seconds before performing any operation.

2.3 Connect the USB cable

Connect the USB Micro-B plug of the USB cable to the USB Micro-B connector of the Biometric Reader.



Connect the plug A of the USB cable to the USB port of your PC.

Attention

- Connect the USB plug and the USB connector securely. Hold the plug end when connecting or disconnecting the USB cable to prevent the connectors from damage.

Important

- When connecting the USB cable via a USB hub, check the supply current. The Biometric Reader may malfunction with insufficient power supply.
- Do not use a USB 1.1 hub for a USB 2.0 PC port, which may cause the Biometric Reader to malfunction.
- Biometric Reader may generate some heat due to the use of infra-red light inside, but this will not cause any malfunctions.
- Do not connect more than one Biometric Reader simultaneously to one PC. If multiple Biometric Readers are connected, they will not work properly.
- After connecting the Biometric Reader to your PC, wait for at least 5 seconds before performing any operation. In some PCs it may take more than 5 seconds until the Biometric Reader becomes ready for use.

2.4 Connect Bluetooth

Biometric Reader has a Bluetooth (Bluetooth low energy technology) interface.
Slide power switch to Bluetooth mode, Biometric Reader power up and connect Bluetooth.

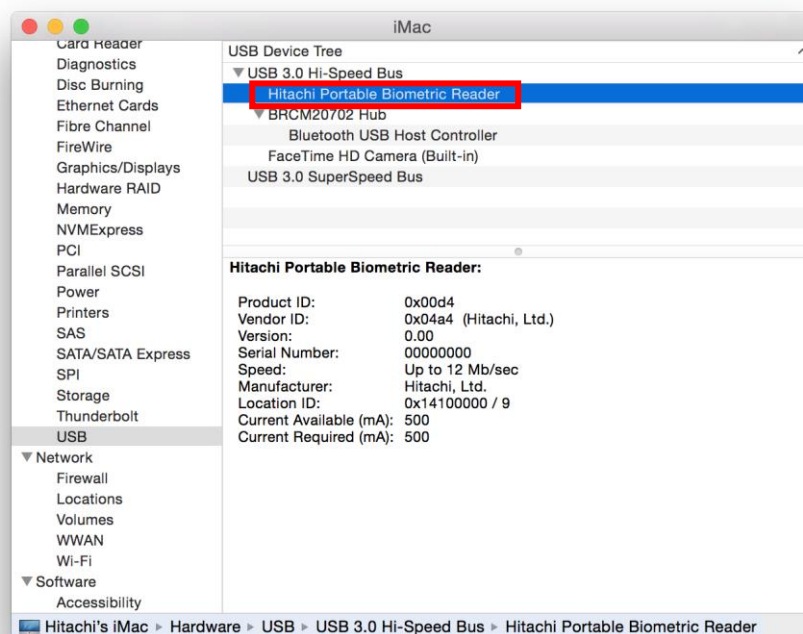
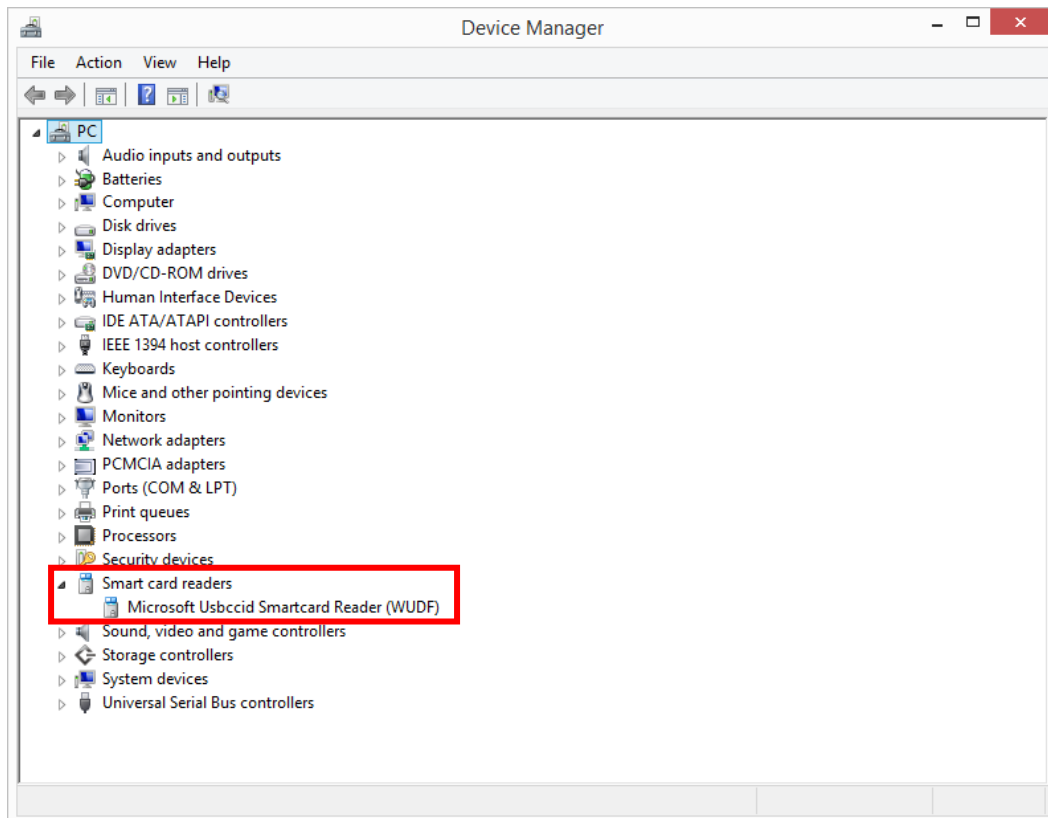
Important

- It is necessary to pair the Biometric Reader before making the first Bluetooth connection.
- The Biometric Reader's wireless range of Bluetooth is 10m (Class 2).
- Following things may interfere with wireless range and throughput of Bluetooth.
 - Other wireless device (Bluetooth, Wi-Fi, codeless phone etc.)
 - Microwave oven
 - Steel furniture
 - Concrete wall etc.
- Don't use Bluetooth mode at a location where transmission of radio waves is prohibited.
- This Biometric Reader is compatible with Bluetooth low energy technology, but it does not guarantee a connection with all of Bluetooth.
- The battery can be charged in Bluetooth mode when a USB cable is connected and USB bus power is supplied.
- The Biometric Reader can store pairing information of up to five host terminals. If a pairing attempt is made with a new host terminal when there are already five paired host terminals, the pairing information of the oldest host terminal will be overwritten by that of the new host terminal.

2.5 Check the Biometric Reader is recognized

After connecting the Biometric Reader to your PC, check that the Biometric Reader is recognized correctly by the PC. Note that Windows and Macintosh use the Smart card readers device driver to access the Biometric Reader, so you do not need to install a specific device driver for the Biometric Reader.

Confirm that the Biometric Reader is displayed in the Device Manager (Windows) or System Information (Mac).



2.6 Removing the Biometric Reader

Use following procedure to safely remove the Biometric Reader in USB mode.

1. Click the **Safely Remove Hardware and Eject Media** icon in the notification area, at the far right of the taskbar.

Note: To display the **Safely Remove Hardware and Eject Media** icon, click **Show hidden icons** icon (the arrow at the left side of the notification area).

2. Click the name of the Biometric Reader in the list.

You are prompted that it is safe to remove the Reader.

3. Remove the Reader.

3. How to use the Biometric Reader

3.1 How to insert / remove the SIM card

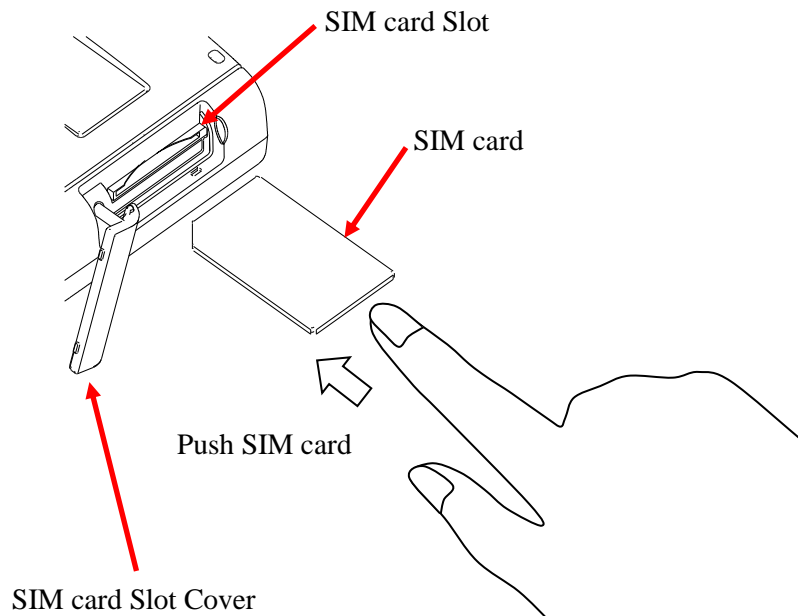
Disconnect the USB cable before you insert or remove the SIM card.

- Insertion

Open the SIM card Slot Cover and push the SIM card gently until it latches in the slot. Close SIM card Slot Cover after insert SIM card.

-Removal

Push the SIM card gently further into the slot and release it. After the card leaves the slot, pull it out.



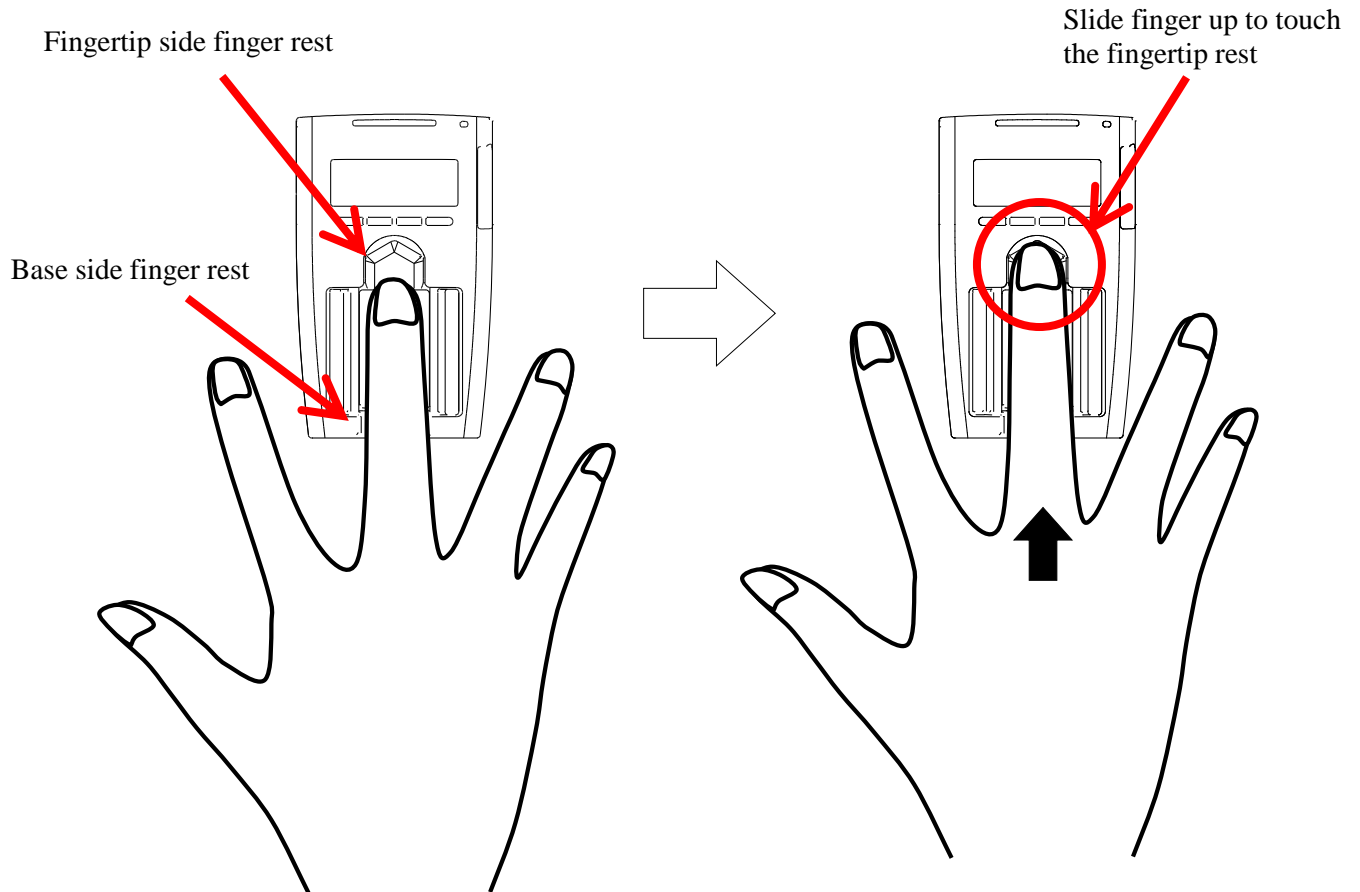
Important

- Disconnect USB cable before you insert or remove the SIM card.
- Check the direction of the SIM card before you insert it to the Biometric Reader. If you insert it in the wrong direction, the Biometric Reader and the SIM card can be damaged and malfunction.
- Do not use anything to push the SIM card except fingers.
- The SIM card is a very small material. Be careful in its handling. Especially, keep it away from young children in order to avoid accidental ingestions.
- If the LED does not come on when the USB cable is connected following SIM card insertion, then unplug and reconnect the USB cable.

3.2 How to perform a finger vein authentication

Place your finger on the base side finger rest.

Slide your finger up to the fingertip finger rest.



Important

- Improper positioning of the finger may lead to an authentication failure. See the *Enrolment and Authentication Guide* for details of the proper finger placement.
- Do not move your finger until the capture process is completed (You will hear a double beep when the capture process is completed).
- Finger vein authentication and enrolment may fail in the following cases:
 - narrow fingers - finger width under 10 mm/0.4 inch
 - wide fingers - finger width over 25 mm/1 inch
 - short fingers - finger cannot reach the back finger rest
- Do not insert any non-finger objects into the Biometric Reader.
- Do not disconnect the USB cable or the Biometric Reader from the PC.

4. Biometric Reader maintenance

Attention

- Disconnect the USB cable and power off before the maintenance of your Biometric Reader. Keeping the cable connected during maintenance may cause failures.
- Take care so that the Biometric Reader is not exposed to any liquid or humidity as it may cause malfunction.
- Do not clean the device with organic solvents such as gasoline or alcohol.

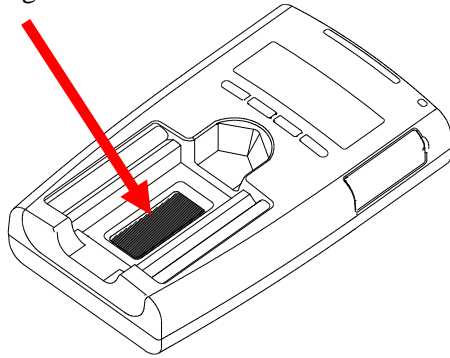
4.1 Cleaning external parts

Periodic maintenance of the external parts of the Biometric Reader is recommended. About once a month or whenever required according the condition of the Biometric Reader, clean the external parts by rubbing with a soft piece of cloth. If dirt remains, use a mild detergent and wipe it off with a damp cloth.

4.2 Cleaning scanning area

Maintenance of the scanning area is recommended about once a month or whenever it is dirty with fingerprints or dusty.

Scanning area



5. Hardware specifications

Name	Hitachi Portable Biometric Reader	
Model	PC-KCM50	
Applicable finger width *1	Wider than 10 mm/0.4 inch and narrower than 25 mm/1 inch	
Interface	USB 1.1 *2 *3 *4	
Dimensions	Approx. 55mm/2.2inch(W) x 91mm/3.6inch(D)x 18mm/0.7inch(H) (USB cable not included)	
Weight	Under 75g/2.7oz (USB cable not included)	
Maximum Current Consumption	DC 5V 500 mA (Bus powered)	
Battery	Life Time	5 days *5
	Charge Time	About 2.5 hours *6
	Cycle Life	250 times
Environment Conditions (Operation)	Operating temperature	5 to 35 degrees C (41 to 95 degrees F)
	Operating Humidity	20 to 80% Rh (Do not allow condensation)
Environment Conditions (Storage)	Storage Temperature	-10 to 50 degrees C (14 to 140 degrees F)
	Storage Humidity	20 to 80% Rh (Do not allow condensation)
SIM card	ISO/IEC 7810 ID-000 sized	

*1: If the finger positioning is incorrect, authentication may fail even with the applicable finger width.

*2: It is recommended to connect the Biometric Reader directly to the USB port of your PC. If you need to connect the Biometric Reader via a USB hub, use a powered hub.

*3: When you reconnect the Biometric Reader to your PC after a disconnection, use the same USB port to which the Biometric Reader was connected.

*4: When Biometric Reader is connected to a USB 3.0 port, the Biometric Reader is recognized as a USB 1.1 device.

*5: 20 authentications/day (power off as soon as every authentication is complete)

*6: Charge Time increases when the temperature exceeds 10C.

6. Troubleshooting

This chapter presents methods for solving problems with the Biometric Reader.

- **The USB cable is connected to the Biometric Reader, but the LED does not turn on or is not blue**

The supported SIM card is not inserted.

→ Insert the supported SIM card. You need to insert a SIM card in which Hitachi Finger Vein Biometric PKI Card Application is installed.

The required software is not installed.

→ Install latest version of Hitachi Finger Vein Biometric PKI Middleware for Windows or for Macintosh in the PC.

The device driver is not appropriately configured.

→ See **2.5 Check the Biometric Reader is recognized** and confirm that the device driver is properly configured on the PC.

The USB communication is confused.

→ Disconnect the Biometric Reader and a USB hub (if any) from the PC and connect them again.

The USB port of your PC is malfunctioning.

→ Restart your PC.

The Biometric Reader is damaged.

→ Please contact your retailer.

- **Enrolment / Authentication fails**

Your finger position is not stable during the capture process

→ Place your finger properly into the Biometric Reader during the capture process. Do not move your finger until the capture process is completed (You will hear a double beep when the capture process is completed).

Your finger is not properly placed.

→ Place your finger properly into the Biometric Reader as shown in the *Authentication and Registration Guide*.

Your finger is wounded, excessively dry, cold or dirty

→ Wash or clean your finger, then perform enrolment or authentication again. When your finger is wounded, excessively dry, cold or dirty, it may not be possible to obtain a quality finger vein image, which could result in enrolment or authentication failure.

Your finger width is over 25 mm/1 inch or below 10 mm/0.4 inch

→ Enrol another finger. When a finger is too wide or too narrow, it may not be possible to obtain a quality finger vein image, which could result in authentication failure.

Your current finger condition differs from that at enrolment.

→ Enrol your finger again.

An internal error occurred in the Biometric Reader.

→ Disconnect the Biometric Reader and a USB hub (if any) from the PC and connect them again.

- Enrolment / Authentication does not start

The Biometric Reader is not ready to start the enrolment or authentication process.

→ When the Biometric Reader is connected to the PC and SIM card is inserted properly, its LED light is blue. However, when connecting the Biometric Reader or inserting the SIM card, you need to wait for at least 5 seconds until the LED status changes from blank or blinking orange to blue, before performing an operation. In some PCs it may take more than 5 seconds until the LED status changes to blue.

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