

THIR-6000B Series

TMA-6000 and TMA-6000U Wireless Adapter Connection Instruction

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TOHKEN

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1st Edition

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1. Overview

This document explains how to use TMA-6000 and TMA-6000U (wireless adapter for THIR-6000B series, hereafter “adapter”) with THIR-6000B.

”THIR-6000B Series Operational Manual” (newer than the second edition) contains the specification of the adapter.

2. Preparation

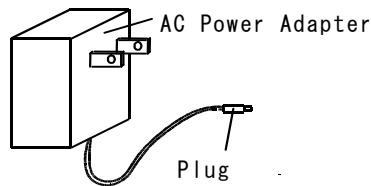
2.1 The following products are supposed to be in handy.

1. THIR-6000B Series hand held scanner
2. Wireless Adapter (TMA-6000 or TMA-6000U)
3. AC Power Adapter (for TMA-6000 (RS-232C type))
4. Windows PC
5. This document

2.2 Cable connection and power ON

2.2.1 TMA-6000 (RS-232C type)

- Plug RS232C connector of the interface cable to host device's RS232C port.
- Insert AC adapter's plug to DC jack of the interface cable.
- Plug AC power adapter to AC100V outlet. Then TMA-6000 beeps 3 times.
- Turn on the host device



2.2.2 TMA-6000U (USB type)

- Confirm that the Windows PC prepared has USB port(s) and it is available.
- Plug the USB connector of the interface cable to the PC's USB port. The PC must be turned ON.
- The PC recognizes the adapter as a Human Interface Device (HID).
- When THIR-6000B reads barcode, the data is input to the PC as if it is entered through keyboard.

3. About wireless connection

3.1 About two-way authentication

1. The adapter can wirelessly communicate through Bluetooth with a THIR-6000B (1:1)
2. For 1:1 communication, the two-way authentication is needed. Two-way authentication requires both THIR-6000B and TMA-6000 to specify the target to communicate.
3. As the default, TMA-6000 does not specify any target device.
4. Therefore, users have to configure the two-way authentication for both the adapter and the scanner. Once the two-way authentication is done, those devices can communicate each other (“Wireless Connected” status) and this authentication will not expire when they are turned off.
5. To disconnect the wireless connection, “Wireless Disconnect” procedure must be done. After this procedure, the adapter will be “Wireless Disconnected” status in which the scanner’s and the adapter’s two-way authentications are expired.
6. That is to say, to change the target for wireless connection, process “Wireless Disconnect” procedure first and configure the new two-way authentication

3.2 About “Wireless Connect” procedure

The connection ID label placed on the adapter contains information needed for the wireless connection two-way authentication. By reading the connection ID label by THIR-6000B, the two-way authentication between the THIR-6000B and the adapter can be done easily.

3.3 About “Wireless Disconnect” procedure

This procedure is done by just reading the “Disconnect” barcode by the THIR-6000B

3.4 About reconnect

In “Wireless Connected”, the status can be affected by some conditions like “out of range”, “radio interference”, “condition of power” etc. and sometimes the connection is shut down. But when the condition is recovered, the wireless connection can be fixed too.

When the wireless connection is shut down, the scanner starts trying to reconnect for 1 minute. After the 1 minute, by pressing the trigger switch makes the scanner try to reconnect again (for another 1 minute). To cancel the trial of reconnection, “Wireless Disconnect” procedure works.

4. The behavior of THIR-6000B

4.1 With "Wireless Connected" status

THIR-6000B connected with TMA-6000 send reading data to the host PC through TMA-6000. After the reading data is completely received by the host PC, the THIR-6000B can read barcodes again. When THIR-6000B fails to send reading data, the scanner beeps 7 times. The data in configuration barcodes or Connection ID label are not sent to host PC.

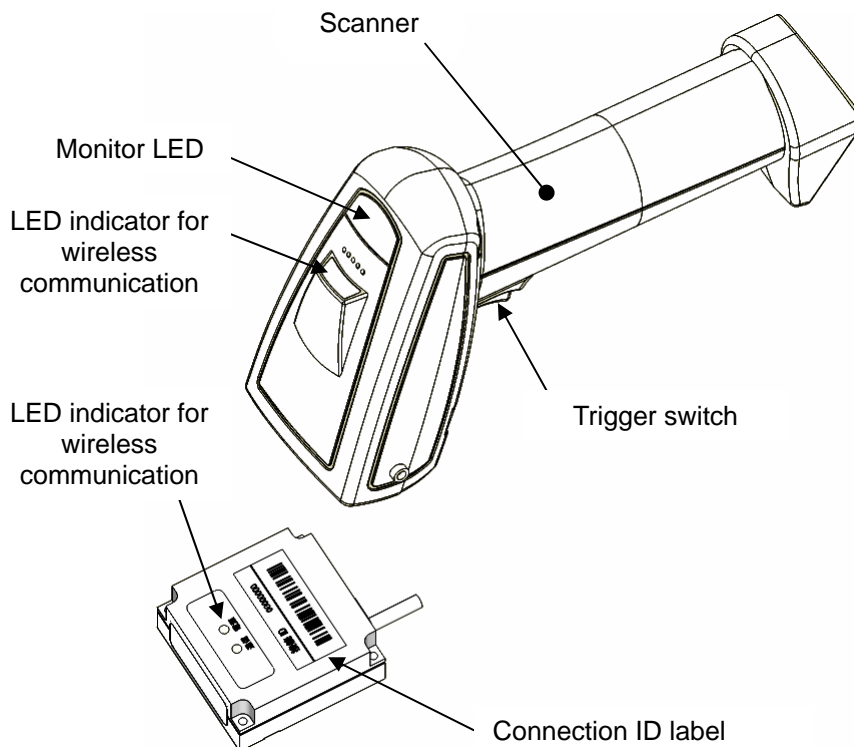
4.2 With "Wireless Disconnected" status

THIR-6000B can read barcodes but their data are not sent to host PC.

5. How to operate THIR-6000B and TMA-6000

5.1 "Wireless Connect"

1. Turn ON the adapter.
2. Read the connection ID label placed on the adapter. (please press trigger switch)
3. If THIR-6000B successfully reads the barcode, it beeps one time and the monitoring LED start blinking in red and orange which means the scanner and TMA-6000 are establishing the wireless connection
4. Once the wireless connection is established (approximately 5 seconds), the scanner becomes "Wireless Connected" status and TMA-6000 beeps one time and its LDE indicator for communication turns to green. At the same time, THIR-6000B beeps twice and LED indicator for wireless communication turns to green. If THIR-6000B fails to establish the wireless connection, THIR-6000B can read the connection ID label again for retry.
5. With "Wireless Connected" status, both LED indicator for communication (TMA-6000) and LED indicator for wireless communication turn to green.



5.2 “Wireless Disconnect”

Reading “Disconnect” barcode below by THIR-6000B disconnects the wireless communication to TMA-6000. With “Wireless Disconnected” status, both LED indicator for communication (TMA-6000) and LED indicator for wireless communication (THIR-6000B) turn off.



Disconnect

5.3 “Reconnect”

In “Wireless Connected”, the status can be affected by some conditions like “out of range”, “radio interference”, “condition of power” etc. and sometimes the connection is shut down. But when the condition is recovered, the wireless connection can be fixed too.

When the wireless connection is shut down, the scanner starts trying to reconnect for 1 minute. After the 1 minute, by pressing the trigger switch makes the scanner try to reconnect again (for another 1 minute). As trying to reconnect, THIR-6000B’s monitoring LED blinks in red and orange. To cancel the trial of reconnection, “Wireless Disconnect” procedure can be applicable.

5.4 Stop connecting

To stop trying to connect wireless communication please read the “Disconnect” barcode. By reading the barcode by THIR-6000B, the scanner stops trying to connect and monitoring LED turns off (“Wireless disconnected” status). To start trying to connect again, read “Connection ID label”.



Disconnect

5.5 Behavior of buzzer and monitoring LED

• TMA-6000 , TMA-6000U

Status of TMA-6000	Buzzer
Start (Power on)	3 short beeps
Wireless connect	1 short beep
Wireless disconnect	no beeps
Fail to send the reading data	7 short beeps

• THIR-6000B Series

Status of THIR-6000B	Monitoring LED	Buzzer
Wireless connect	OFF	2 short beeps
Wireless disconnect	Blink in red and orange	3 short beeps
Establishing the connection with TMA-6000	Blink in green and orange	no beeps
Disconnect during establishing the connection with TMA-6000	Red	7 short beeps
Trying to reconnect	Blink in red and orange	no beeps

6. Configuration Barcode Menu

How to configure TMA-6000

Configuration barcode menu is prepared to ease the configuration of TMA-6000. By reading the barcodes by THIR-6000B, settings of TMA-6000 can be changed.

The configuration is saved to flash memory of TMA-6000, the changes are not discarded if TMA-6000 turns off.



CAUTION

Some configuration barcodes are not available depending on TMA-6000's interface. Reading configuration barcodes for different interface may cause error. In this case please read correct barcode to fix the error.



CAUTION

Reading configuration barcodes in the designed order is important. If THIR-6000B reads configuration barcodes in wrong order or reads invalid barcode (e.g. contains invalid value for the settings parameter) the configuration is not valid. Please restart the configuration again in the correct order.

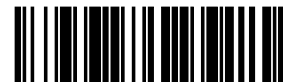


CAUTION

Default value is surrounded by rectangle as shown below.



9600[bps]



115200[bps]

6.1 Initialize

Reset TMA-6000 to its default factory settings.

 Start configuration	
 Reset to default settings	
	CAUTION The scanner can not read any barcodes in 5 second after reading this barcode.
 Exit configuration	

6.2 Disconnect

Disconnect the wireless communication between the scanner and the adapter.
If THIR-6000B reads this barcode when it is trying to connect with TMA-6000, it stop the trial.



Disconnect

6.3 Restart THIR-6000B

Restart THIR-6000B (power off and on).
Make sure to save changes in settings before restart otherwise the changes are discarded.



Restart THIR-6000B











6.4 Communication settings

6.4.1 RS-232C type

Communication settings for RS232C interface

• Baud rate (Only for RS-232C type)

Select baud rate of TMA-6000 to host PC.

 Start configuration	
 1200[bps]	 2400[bps]
 4800[bps]	 9600[bps]
 19200[bps]	 38400[bps]
 57600[bps]	 115200[bps]
 Exit configuration	





- Data frame (Only for RS-232C type)

Settings for data frame including data length, parity bit and stop bit.



• RS/CS Control (Only for RS-232C type)

Configure RS/CS control setting.

 Start configuration	
 Disable RS/CS control	 Enable RS/CS control
 Exit configuration	

• Timeout for response (Only for RS-232C type)

Time limit for waiting a response from host PC


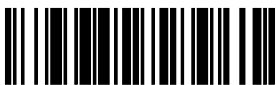



 Start configuration	
 None	
 1 second	 1.5 second
 2 second	 2.5 second
 Exit configuration	

6.4.2 USB Interface

Configure HID keyboard emulation

• Select keyboard language (Only for USB type)

English and Japanese keyboard types are selectable.

 Start configuration	
 <input type="button" value="Select Japanese"/>	 Select English
 CAUTION	The scanner can not read any barcodes in 5 second after reading this barcode.
 Exit configuration	

Interval of data transmission (Only for USB type)

Too short interval can cause fails of receiving the reading data sent from THIR-6000B series.
This parameter can be ignored depending on PC's interval of data reception.



• Enable / Disable Caps Lock (Only for USB type)

Disable Caps Lock:

If Caps Lock of PC's keyboard is off, the reading data is shown as it is.

Enable Caps Lock:

If Caps Lock of PC's keyboard is on, the reading data is shown as it is.

Automatic Caps Lock:

The reading data is shown as it is no matter how Caps Lock of PC's keyboard is set.



Example

Reading data :AaBbCc

Setting of TMA-6000	Status of PC's keyboard	Output
Disable CapsLock	Caps Lock_OFF	AaBbCc
	Caps Lock_ON	aAbBcC
Enable CapsLock	Caps Lock_OFF	aAbBcC
	Caps Lock_ON	AaBbCc
Automatic CapsLock	Caps Lock_OFF	AaBbCc
	Caps Lock_ON	AaBbCc

• Enable / Disable Num Pad (Only for USB type)

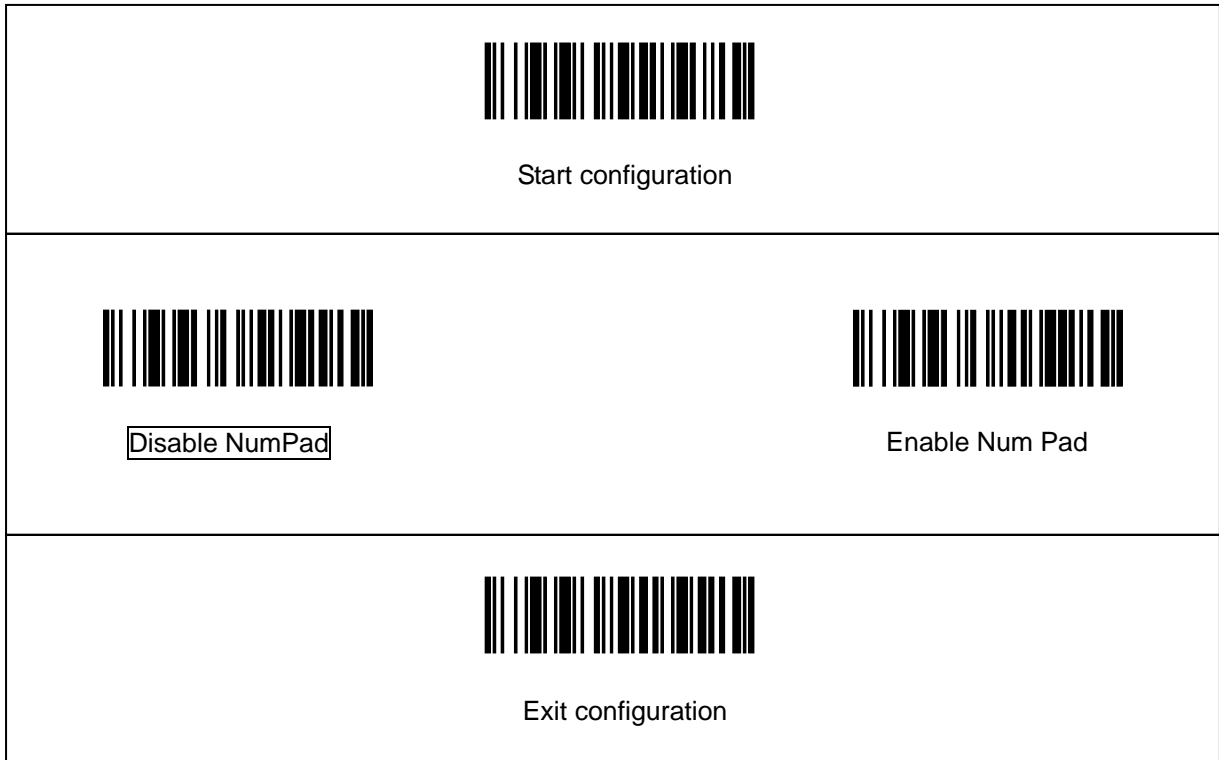
Disable Num Pad:

Emulate the numbers on alphabetic keys

Enable Num Pad:

Emulate the numbers on number keys.

Need to enable Num Lock



Example

Reading data :Aa12345

Setting of TMA-6000	Status of keyboard	Output
Disable NumPad	Num Lock_OFF	Aa12345
	Num Lock_ON	Aa12345
Enable NumPad	Num Lock_OFF	Aa
	Num Lock_ON	Aa12345

Case conversion (Only for USB type)

No conversion: Output the reading data without case conversion

Convert to lower case: Output the reading data as changing them all to lower case.

Convert to upper case: Output the reading data as changing them all to upper case.

Swap upper and lower case: Output the reading data as converting upper case to lower case and vice versa.







Example

Reading data :AaBbCc

Configuration	Result
No conversion	AaBbCc
Convert to upper case	AABBCC
Convert to lower case	aabbcc
Swap upper and lower case	aAbBcC

6.5 Buzzer setting

Enable / Disable the buzzer of TMA-6000

 Start configuration	
 Disable (buzzer does not beep)	 <input type="checkbox"/> Enable (buzzer beeps)
 Exit configuration	

6.6 Call the status table

THIR-6000B series can output the status of TMA-6000.



Call the status table

Example of output (TMA-6000)

```
***** STATUS ***** TMA-6000
<<Bluetooth>>
NAME=TMA-6000(0000)
BUZZER=1 (0:OFF 1:ON)
<<RS232C>>
BAUD RATE=9600 (1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200)
FRAME=4 (0:701 1:702 2:7E1 3:7E2 4:8N1)
      (5:8N2 6:801 7:802 8:8E1 9:8E2)
RSCS=1 (0:OFF 1:ON)
TIMEOUT=1 (0:OFF 1:1s 2:1.5s 3:2s 4:2.5s)
***** END ***** TMA-6000
```

Example of output (TMA-6000U)

```
***** STATUS ***** TMA-6000
<<Bluetooth>>
NAME=TMA-6000(0000)
BUZZER=1 (0:OFF 1:ON)
<<HID>>
KEYTYPE=0 (0:JPN 1:US)
DELAY=1 (0:0ms 1:10ms 2:20ms 3:30ms 4:3ms 5:5ms 6:7ms)
CAPS LOCK=0 (0:OFF 1:ON 2:AUTO)
NUM LOCK=0 (0:OFF 1:ON)
STRCONV=0 (0:OFF 1:UPPER 2:LOWER 3:EXCHANGE)
***** END ***** TMA-6000
```

About status

Item	Function	Description
BUZ	Setting of buzzer	0 : Disable buzzer 1 : Enable buzzer
RS-232C type		
BAUD	Baud rate	1200,2400,4800,9600,19200,38400,57600,115200
FRAME	Data frame structure	Data length / Parity bit / Stop bit
RSCS	RS/CS control	0 : Disable RS/CS control 1 : Enable RS/CS control
TIMEOUT	Timeout of response	No timeout, 1sec, 1.5sec, 2sec, 2.5sec
USB type		
KEYTYPE	Keyboard type	0 : Japanese Keyboard 1 : English Keyboard
DELAY	Data transmit interval	0:0ms 1:10ms 2:20ms 3:30ms 4:3ms 5:5ms 6:7ms
CAPS	Caps Lock	0 : Disable Caps Lock 1 : Enable Caps Lock 2 : Automatic Caps Lock
NUM	Num Pad	0 : Disable Num Pad 1 : Enable Num Pad
STRCONV	Case conversion	0 : Disable 1 : Convert to upper case 2 : Convert to lower case 3 : Convert upper to lower, lower to upper

[Memo]

Warranty Obligations

Except for cases specifically mentioned in an estimate contract or specification, TOHKEN warrants this product as follows.

1. Term of warranty

One year from the date of purchase.

2. Warranty Coverage

TOHKEN will repair or replace the product at no charge for faults on the part of the company. The losses incurred due to the failure of this product are excluded from this warranty. However, faults of the following type are outside the warranty.

(1). Handling or use of the product under conditions or an environment not in accordance with the catalog, user's manual, etc.

(2). If the product is modified or repaired by any outside party.

(3). If not caused by the product itself.

(4). If the defects are caused by *force majeure*, beyond the responsibility of TOHKEN, such as fire, natural disaster, etc..

3. Usage outside of Japan

This warranty coverage presumes use in Japan. Please contact our sales department if there need to use this product outside of Japan.

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