

# User's Manual

TR3XM-SD01

TR3XM-SU01

TR3XM-SN01

TR3XM-SN02

**TAKAYA**

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# Introduction

Thank you for purchasing a TR3XM-SD01 / SU01 / SN01 / SN02RFID READER/WRITER.

Be sure to read this manual before using the product.

After reading it, store the manual in a convenient place for future reference.

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# Regulations and Standards

<b>FCC</b>
<p>This product is conform to the FCC standards. FCC Rules (Federal Communications Commission) This product complies with Part 15 Subpart B and C of the FCC Rules. FCC ID : MK4TR3XM-SX01</p> <p><b>FCC NOTICE</b></p> <p>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:</p> <ul style="list-style-type: none"><li>- Reorient or relocate the receiving antenna.</li><li>- Increase the separation between the equipment and receiver.</li><li>- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.</li><li>- Consult the dealer or an experienced radio/TV technician for help.</li></ul> <p><b>FCC WARNING</b></p> <p>Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.</p>
<b>Japan Radio Law</b>
<p>Equipment using high frequencies: Inductive Reading/Writing Communications Equipment Conforming standards: Inductive Reading/Writing Communications Equipment; Standard: ARIB STD-T82</p>
<b>RoHS is support</b>
<p>Restriction of Hazardous Substances</p>
<b>Waste</b>
<p>Dispose of the Products as industrial waste.</p>



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# Safety Precautions

The following symbols are used in this manual to indicate precautions that must be observed to ensure safe use of this product. The precautions provided here contain important safety information. Be sure to observe these precautions.

The following signal words are used in this manual.

 <b>WARNING</b>	Failure to comply with a <b>WARNING</b> may result in serious injury or death.
 <b>CAUTION</b>	Failure to comply with a <b>CAUTION</b> may result in injury to the operator, or damage to the items involved.

## **WARNING**

### **Be sure to observe the following precautions to ensure safe use of the Products.**

Decomposition of this product and cable, repair, remodeling, please strictly prohibited. There is the possibility of fire or electric shock injuries.

This product is using the RFID reader/writer radio equipment. Therefore, depending on where the applications you use may affect medical equipment. To minimize the impact of medical equipment for use, please observe the following countermeasure. The Japan Automatic Identification Systems Association (JAISA) guidelines are as follows: RFID antennas from implanted cardiac pacemakers or other medical devices please 22cm apart. We recommend that you paste "RFID sticker" at equipment.



← RFID Sticker

## **CAUTION**

### **Be sure to observe the following precautions to ensure safe use of the Products.**

#### Installation and storage environment

1. Do not use the Products in sunlight.
2. Do not use the Products in environment of spray of water, oil or chemicals.
3. Do not use the Products in environments with flammable, explosive, or corrosive gasses.
4. Do not use the Products in environment of hot humid.
5. Do not use the Products in environment of vibration or shock.
6. Do not use the Products in environment of condensation.
7. Do not use the Products in environment of around the metal is covered.
8. Do not use the Products in environment of high temperature.
9. Do not use the Products in environment that has a device that generates magnetic field and shock voltage.
10. Do not use the Products in unstable place.
11. If there is failure, discontinue use immediately, please contact us or the distributor.

#### Installation

1. Turn off the power before installation or removing.
2. The following effects may not work correctly.
  - Near 13.56MHz radio device
  - Near speakers, Inverter, motor and Plasma Display
3. The communication range may vary due to environment and conditions.

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# Contents

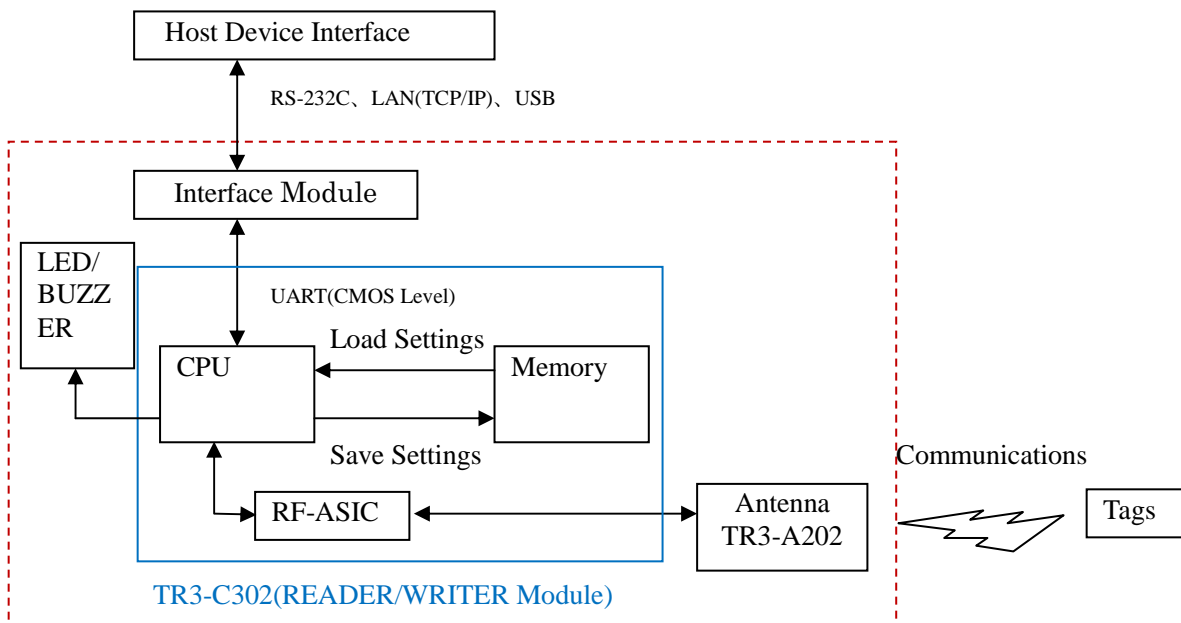
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# 1 Product Overview

## 1.1 Features

This product uses the 13.56MHz frequency. This product is the electromagnetic induction type non-contact IC can read and write RFID tag data.

This Product is the desktop reader choice to support various contactless applications such as electronic ID, payment & public transportation schemes and to interact with NFC-enabled devices.



TR3XM-SD01/TR3XM-SU01/TR3XM-SN01/TR3XM-SN02

Block Diagram

Model Name	Host Device Interface
TR3XM-SD01	RS232C
TR3XM-SU01	USB
TR3XM-SN01	TCP/IP
TR3XM-SN02	TCP/IP

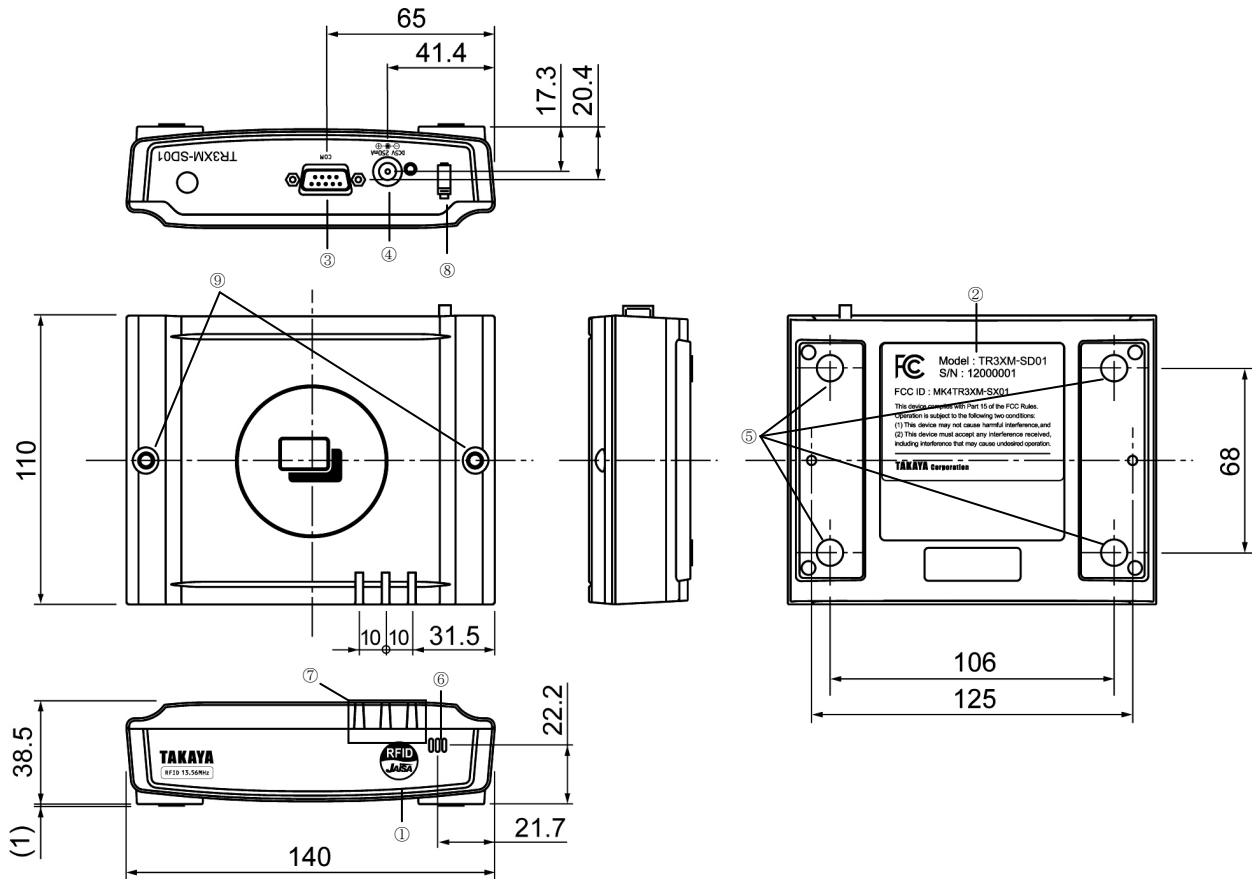
Host Device Interface

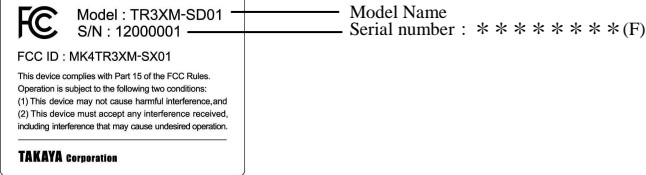
- Conform to international standards
  - ISO/IEC15693 and ISO/IEC18000-3(Mode1, 3)
  - ISO/IEC14443 TypeA
  - ISO/IEC14443 TypeB
  - ISO/IEC18052(Passive Mode), FeliCa
  
- Software
  - TR3-series common communication protocol
  - Software Development Kit
  
- Useful
  - Continuous inventory mode
    - UID of the tag automatically sends Host Device.
  - RDLoop mode
    - UID or User Data of the tag automatically sends Host Device.

For more information please refer to the TR3-PROTOCOL manual.
  
- Environmentally
  - EU RoHS(2002/95/EC) Support

## 2 Names of Parts and Functions

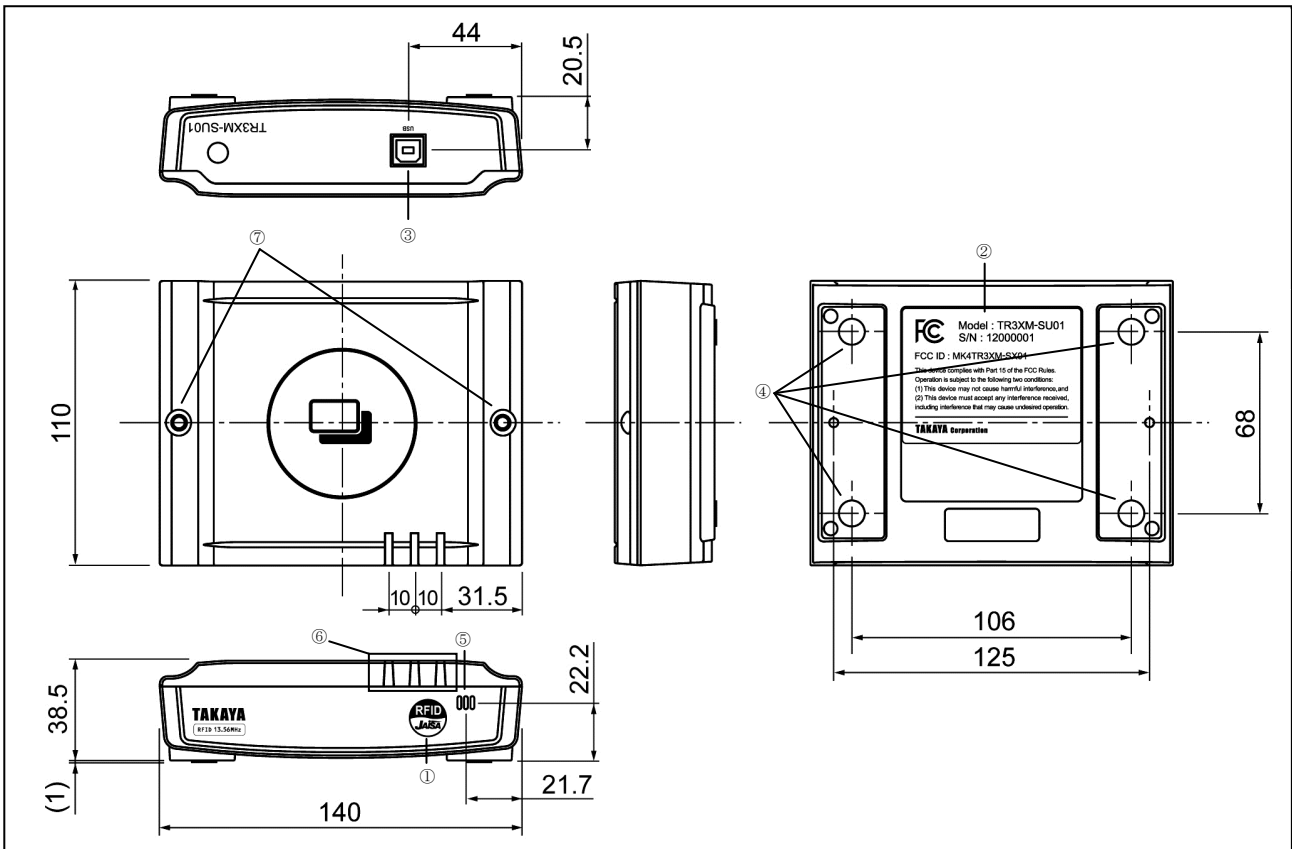
### 2.1 TR3XM-SD01



No	Name	Description
①	RFID sticker	Specify that the RFID radio waves are radiated.
②	FCC ID sticker	Production numbers, will be 8-digit serial number. 
③	Connector	Connect the RS-232C cable.
④	DC Jack	DC +5V input.
⑤	Rubber leg	4pcs
⑥	Buzzer	Sounds according to settings.
⑦	LED	Displays the status of this product.
⑧	Cable hook	Hook the AC adapter cable that comes with.
⑨	Screw holes	M4 holes

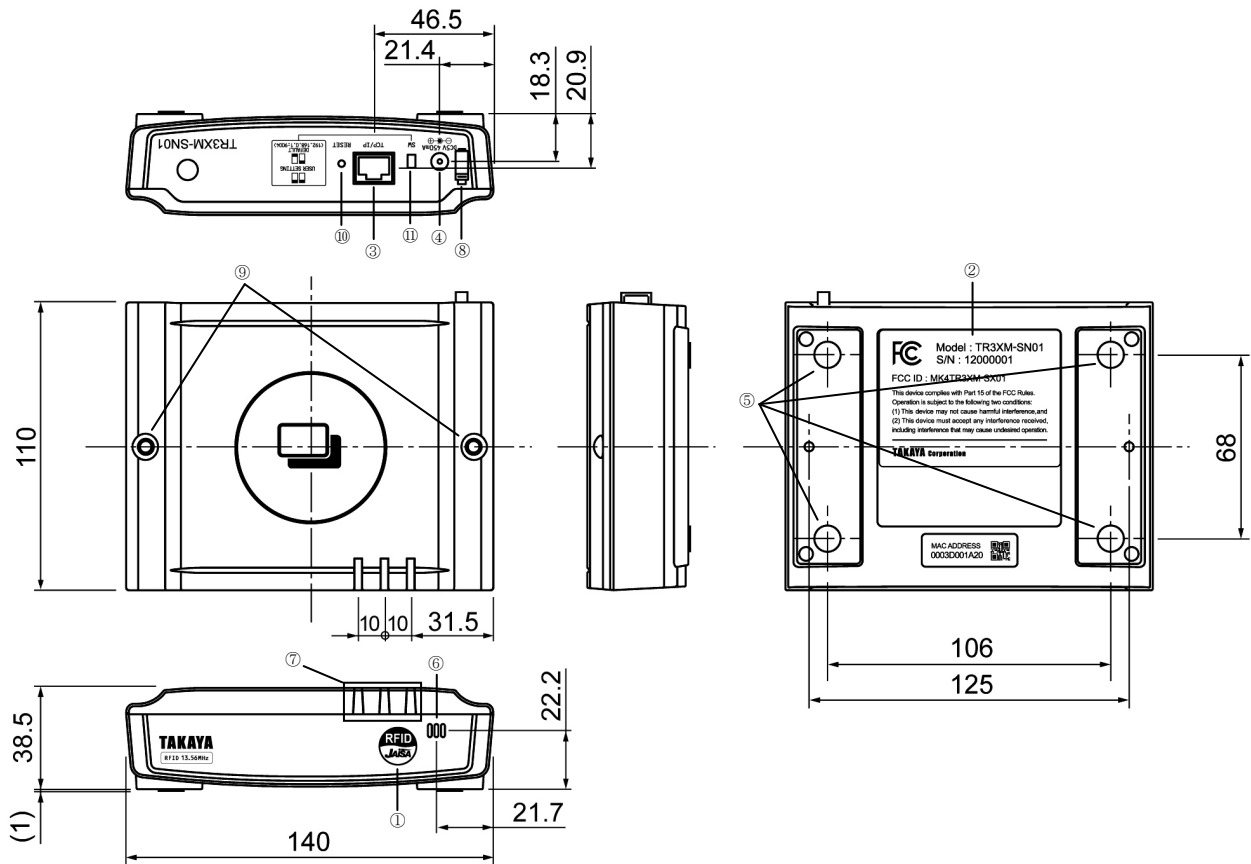



## 2.2 TR3XM-SU01



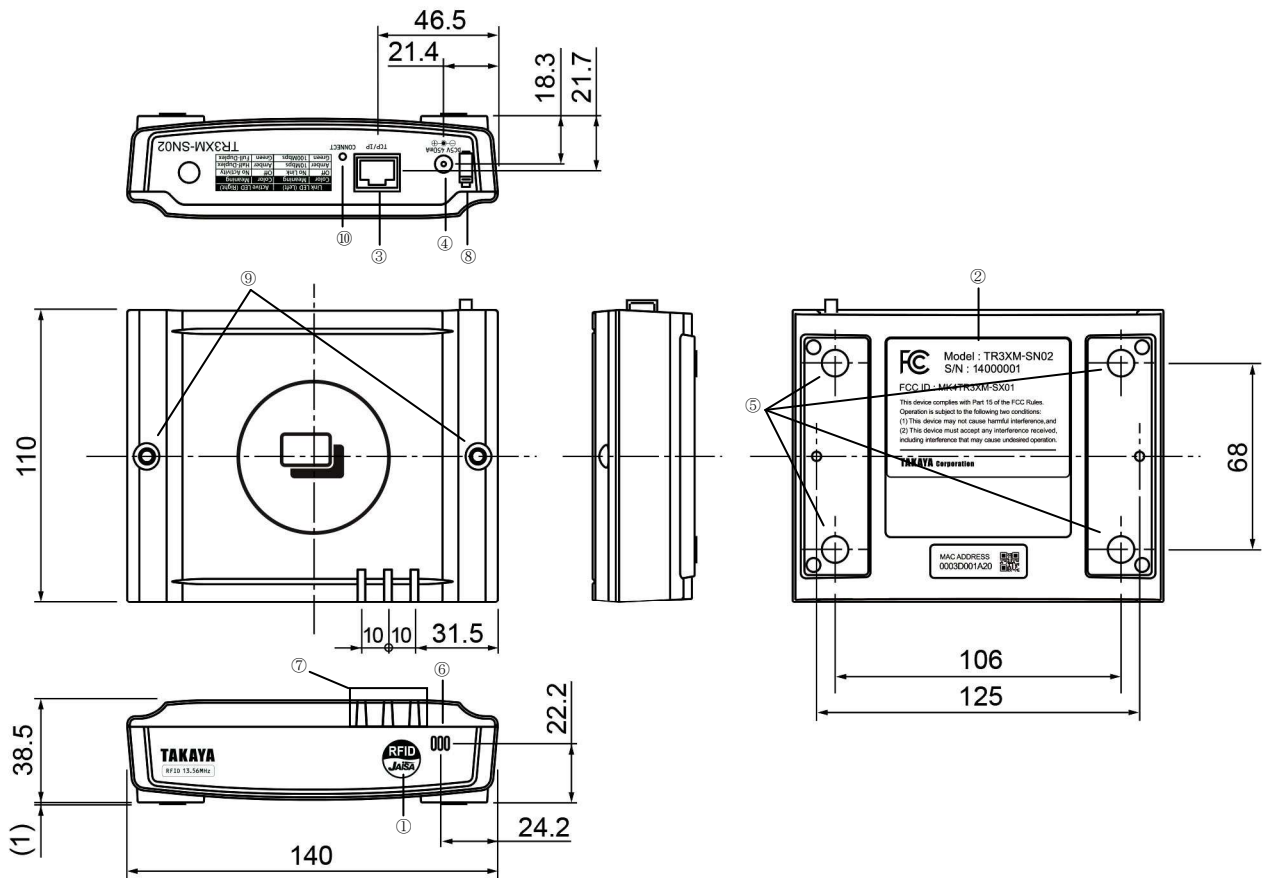
No	Name	Description
①	RFID sticker	Specify that the RFID radio waves are radiated.
②	FCC ID sticker	Production numbers, will be 8-digit serial number. <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> </div>
③	Connector	Connect the USB cable.
④	Rubber leg	4pcs
⑤	Buzzer	Sounds according to settings.
⑥	LED	Displays the status of this product.
⑦	Screw holes	M4 holes

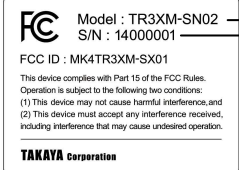
## 2.3 TR3XM-SN01



No	Name	Description
①	RFID sticker	Specify that the RFID radio waves are radiated.
②	FCC ID sticker	Production numbers, will be 8-digit serial number. 
③	Connector	Connect the TCP/IP cable.
④	DC Jack	DC +5V input.
⑤	Rubber leg	4pcs
⑥	Buzzer	Sounds according to settings.
⑦	LED	Displays the status of this product.
⑧	Cable hook	Hook the AC adapter cable that comes with.
⑨	Screw holes	M4 holes
⑩	Reset switch	
⑪	State switch	Selection of User setting or Default is made.

## 2.4 TR3XM-SN02



No	Name	Description
①	RFID sticker	Specify that the RFID radio waves are radiated.
②	FCC ID sticker	Production numbers, will be 8-digit serial number. 
③	Connector	Connect the TCP/IP cable.
④	DC Jack	DC +5V input.
⑤	Rubber leg	4pcs
⑥	Buzzer	Sounds according to settings.
⑦	LED	Displays the status of this product.
⑧	Cable hook	Hook the AC adapter cable that comes with.
⑨	Screw holes	M4 holes
⑩	Connection LED	Displays the status of establishing a TCP/IP connection.

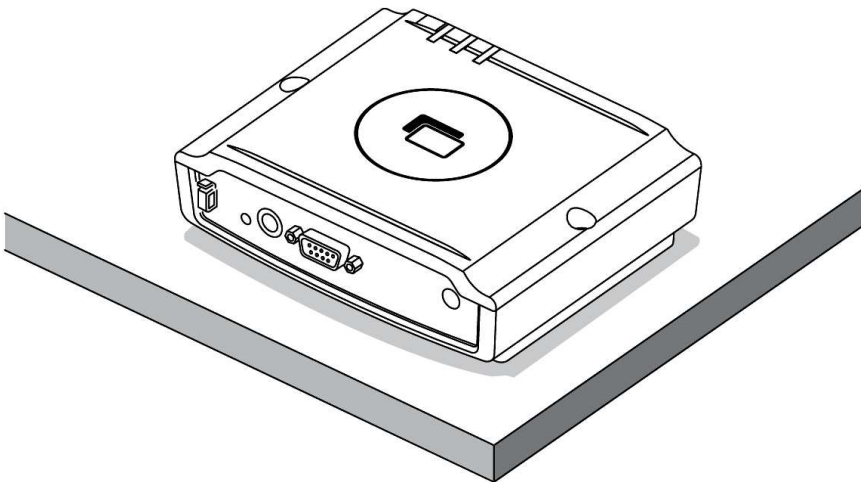
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## 3 Setting and connection

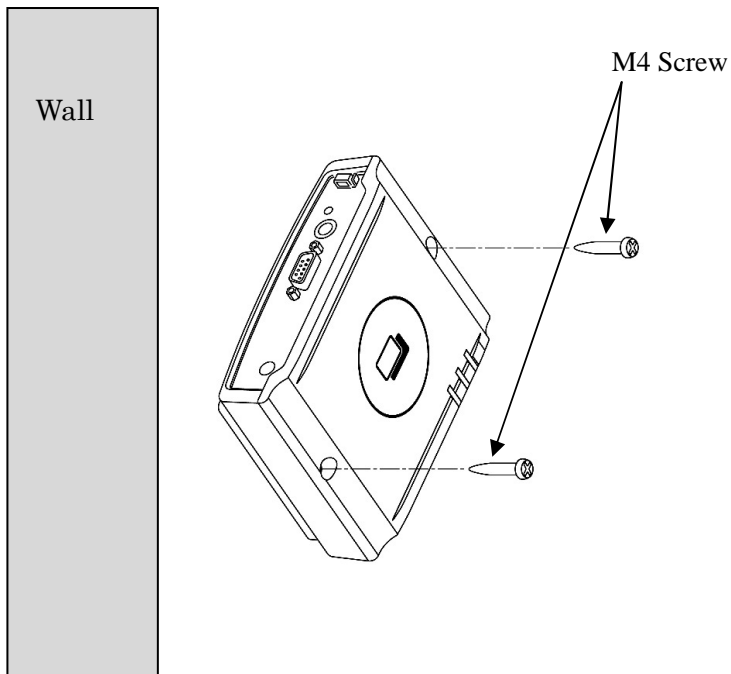
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### 3.1 Setting

#### 3.1.1 DeskTop



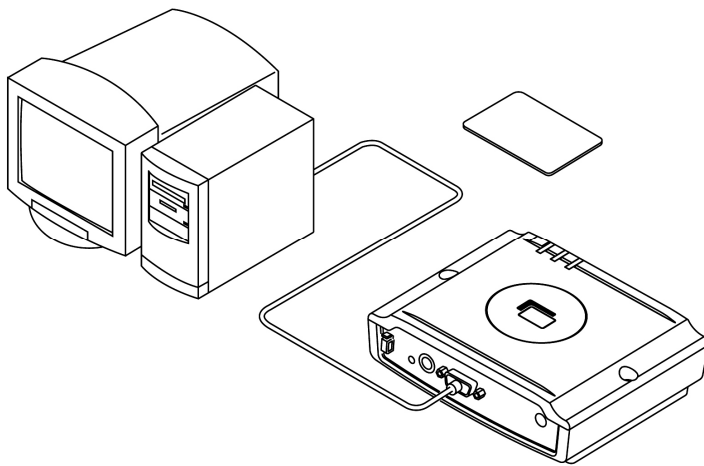
#### 3.1.2 Wall Installation



## 3.2 Connection

This product connects with Host Device with the cable.

### 3.2.1 Attaching the Cable



Model Name	Cable
TR3XM-SD01	RS232C Cable
TR3XM-SU01	USB Cable
TR3XM-SN01	LAN Cable
TR3XM-SN02	LAN Cable

# 4 Specifications

## 4.1 TR3XM-SD01

Specifications	Item	Parameter																							
Applicable Standards	Japan Radio Law	ARIB STD-T82																							
	FCC	FCC Part 15 Subpart B,C FCC ID : MK4TR3XM-SX01																							
	RoHS	EU RoHS(2002/95/EC) Supports																							
Radio Frequency	Carrier frequency	13.56MHz $\pm$ 50ppm(Ta=25°C) or less																							
	Antenna Resonant frequency	13.56MHz $\pm$ 40kHz(Ta=25°C)																							
	Transmit power or power range	10~200mW $\pm$ 20%(Ta=25°C, VCC=5.0V)																							
	Standards	ISO/IEC 15693、ISO/IEC18000-3(Mode1、Mode3) ISO/IEC 14443A、ISO/IEC 14443B、ISO/IEC 18092 (FeliCa)																							
	Tags	Tag-it HF-I, my-d, I·CODE SLI, MB89R118 Mifare Ultralight, FeliCa																							
Data rate	<ul style="list-style-type: none"> <li>• ISO/IEC 15693,ISO/IEC18000-3(Mode1) <table border="1" style="margin-left: 20px;"> <thead> <tr> <th></th> <th>Speed</th> <th>Data rate</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Product⇒Tag</td> <td>1/4</td> <td>26.48kbps</td> </tr> <tr> <td>1/256</td> <td>1.65kbps</td> </tr> <tr> <td>Tag⇒Product</td> <td colspan="2" style="text-align: center;">26.69kbps</td> </tr> </tbody> </table> </li> <li>• ISO/IEC18000-3(Mode3) <table border="1" style="margin-left: 20px;"> <thead> <tr> <th></th> <th>Parameter</th> </tr> </thead> <tbody> <tr> <td>Product⇒Tag</td> <td>26.7kbps~100kbps</td> </tr> <tr> <td>Tag⇒Product</td> <td>53kbps</td> </tr> </tbody> </table> </li> <li>• ISO/IEC 14443A, ISO/IEC 14443B 106 kbps</li> <li>• ISO/IEC 18092(Passive Mode) 212kbps</li> </ul>		Speed	Data rate	Product⇒Tag	1/4	26.48kbps	1/256	1.65kbps	Tag⇒Product	26.69kbps			Parameter	Product⇒Tag	26.7kbps~100kbps	Tag⇒Product	53kbps							
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※1 : Tag-it HF-I is a registered trademark of Texas Instruments Incorporated.

my-d is a registered trademark of Infineon Technologies AG.

I·CODE SLI and MIFARE UltraLight are a registered trademark of NXP Semiconductors.

FeliCa is a registered trademark of Sony Corporation.

MB89R118 is a registered trademark of FUJITSU Japan.

Specifications	Item	Parameter																														
	Communication distance	<table border="1"> <thead> <tr> <th>Standards</th> <th>Communication distance</th> </tr> </thead> <tbody> <tr> <td>ISO/IEC 15693 ISO/ISC 18000-3 (Mode1)</td> <td>10cm</td> </tr> <tr> <td>ISO/ISC 18000-3 (Mode3)</td> <td>8cm</td> </tr> <tr> <td>ISO/ISC 14443A</td> <td>5.5cm</td> </tr> <tr> <td>ISO/ISC 14444B</td> <td>1cm</td> </tr> <tr> <td>ISO/ISC 18092 (Passive Mode)</td> <td>3cm</td> </tr> </tbody> </table> <p>(Communication distance depends on the environment.)</p>	Standards	Communication distance	ISO/IEC 15693 ISO/ISC 18000-3 (Mode1)	10cm	ISO/ISC 18000-3 (Mode3)	8cm	ISO/ISC 14443A	5.5cm	ISO/ISC 14444B	1cm	ISO/ISC 18092 (Passive Mode)	3cm																		
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Control	Host Interface	RS-232C <table border="1"> <thead> <tr> <th>Item</th> <th>Parameter</th> </tr> </thead> <tbody> <tr> <td>Speed</td> <td>9600bps 19200bps(※2) 38400bps</td> </tr> <tr> <td>Data bits</td> <td>8</td> </tr> <tr> <td>Parity</td> <td>None</td> </tr> <tr> <td>Stop bit</td> <td>1</td> </tr> <tr> <td>Flow control</td> <td>None</td> </tr> </tbody> </table>	Item	Parameter	Speed	9600bps 19200bps(※2) 38400bps	Data bits	8	Parity	None	Stop bit	1	Flow control	None																		
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Connector	RS-232C	Connector D-SUB 9Pin  Pin assignment <table border="1"> <thead> <tr> <th>Pin No.</th> <th>Symbol</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>NC</td> <td>Not Connected</td> </tr> <tr> <td>2</td> <td>Rx</td> <td>Received data signal</td> </tr> <tr> <td>3</td> <td>Tx</td> <td>Transmitted data signal</td> </tr> <tr> <td>4</td> <td>NC</td> <td>Not Connected</td> </tr> <tr> <td>5</td> <td>GND</td> <td>GND</td> </tr> <tr> <td>6</td> <td>NC</td> <td>Not Connected</td> </tr> <tr> <td>7</td> <td>NC</td> <td>Not Connected</td> </tr> <tr> <td>8</td> <td>NC</td> <td>Not Connected</td> </tr> <tr> <td>9</td> <td>NC</td> <td>Not Connected</td> </tr> </tbody> </table>	Pin No.	Symbol	Function	1	NC	Not Connected	2	Rx	Received data signal	3	Tx	Transmitted data signal	4	NC	Not Connected	5	GND	GND	6	NC	Not Connected	7	NC	Not Connected	8	NC	Not Connected	9	NC	Not Connected
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9	NC	Not Connected																														
	DC JACK	EIAJ TYPE II (CENTER PLUS)																														

※2 : initialization

Specifications	Item	Parameter
Mechanical data	Dimensions (W x D x H)	140 x 110 x 38.5mm (Protrusions except)
	Weight	approx. 270g
	Installation	M4 Screw Screw is not included.
Electrical data	Power	Supply Voltage : 5V±10%
		Current consumption : approx. 170mA
		Carrier off : approx. 53mA
		Power down mode : approx. 44mA
		Consumption : max 1.4W
Ambient Conditions	Temperature Operating range	0 to 40 degree
	Humidity Operating range	30 to 80%RH
	Temperature Storage range	0 to 55 degree
	Humidity Storage range	30 to 80%RH
Accessories	AC Adaptor	TR3-PWR-5V-1
	RS232C Cross-cable	CB-232C-2
	RFID Sticker	SEL41400L 1 sheet
	CD-ROM	CDROM-TR3MNL



## 4.2 TR3XM-SU01

Specifications	Item	Parameter																							
Applicable Standards	Japan Radio Law	ARIB STD-T82																							
	FCC	FCC Part 15 Subpart B,C FCC ID : MK4TR3XM-SX01																							
	RoHS	EU RoHS(2002/95/EC) Supports																							
Radio Frequency	Carrier frequency	13.56MHz $\pm$ 50ppm(Ta=25°C) or less																							
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ISO/ISC 18092 (Passive Mode)	No																
Control	Platform	Windows2000, Windows XP, Windows Vista, Windows 7															
	Host Interface	USB2.0/1.1(Virtual COM Port) <table border="1"> <thead> <tr> <th>Item</th> <th>Parameter</th> </tr> </thead> <tbody> <tr> <td>Speed</td> <td>9600bps 19200bps(※2) 38400bps</td> </tr> <tr> <td>Data bits</td> <td>8</td> </tr> <tr> <td>Parity</td> <td>None</td> </tr> <tr> <td>Stop bit</td> <td>1</td> </tr> <tr> <td>Flow control</td> <td>None</td> </tr> </tbody> </table>	Item	Parameter	Speed	9600bps 19200bps(※2) 38400bps	Data bits	8	Parity	None	Stop bit	1	Flow control	None			
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Connector	USB	Connector USB B(Receptacle) <p>Pin assignment</p> <table border="1"> <thead> <tr> <th>Pin No.</th> <th>Symbol</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Vbus</td> <td>POWER</td> </tr> <tr> <td>2</td> <td>D-</td> <td>data signal</td> </tr> <tr> <td>3</td> <td>D+</td> <td>data signal</td> </tr> <tr> <td>4</td> <td>GND</td> <td>GND</td> </tr> </tbody> </table>	Pin No.	Symbol	Function	1	Vbus	POWER	2	D-	data signal	3	D+	data signal	4	GND	GND
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4	GND	GND															

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Specifications	Item	Parameter
Mechanical data	Dimensions (W x D x H)	140 x 110 x 38.5mm (Protrusions except)
	Weight	approx. 270g
	Installation	M4 Screw Screw is not included.
Electrical data	Power	Supply Voltage : 5V±10%
		Current consumption : approx. 180mA
		Carrier off : approx. 61mA
		Power down mode : approx. 70mA
		Consumption : max 1.4W
Ambient Conditions	Temperature Operating range	0 to 55 degree
	Humidity Operating range	30 to 80%RH
	Temperature Storage range	0 to 55 degree
	Humidity Storage range	30 to 80%RH
Accessories	USB cable	GH-USB20/1.8M
	RFID Sticker	SEL41400L 1 sheet
	CD-ROM	CDROM-TR3MNL

## 4.3 TR3XM-SN01

Specifications	Item	Parameter																							
Applicable Standards	Japan Radio Law	ARIB STD-T82																							
	FCC	FCC Part 15 Subpart B,C FCC ID : MK4TR3XM-SX01																							
	RoHS	EU RoHS(2002/95/EC) Supports																							
Radio Frequency	Carrier frequency	13.56MHz $\pm$ 50ppm(Ta=25°C) or less																							
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	Transmit power or power range	10~200mW $\pm$ 20%(Ta=25°C, VCC=5.0V)																							
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	LED	3 LED (red/green/ blue)														
	BUZZER	1 BUZZER														
Connector	TCP/IP (Ethernet)	Connector RJ-45														
	DC JACK	EIAJ TYPE II (CENTER PLUS)														

※2 : initialization

Specifications	Item	Parameter
Mechanical data	Dimensions (W x D x H)	140 x 110 x 38.5mm (Protrusions except)
	Weight	approx. 270g
	Installation	M4 Screw Screw is not included.
Electrical data	Power	Supply Voltage : 5V±10%
		Current consumption : approx. 380mA
		Carrier off : approx. 240mA
		Power down mode : approx. 230mA
		Consumption : max 2.5W
Ambient Conditions	Temperature Operating range	0 to 40 degree
	Humidity Operating range	30 to 80%RH
	Temperature Storage range	0 to 55 degree
	Humidity Storage range	30 to 80%RH
Accessories	AC Adaptor	TR3-PWR-5V-1
	RFID Sticker	SEL41400L 1 sheet
	CD-ROM	CDROM-TR3MNL

## 4.4 TR3XM-SN02

Specifications	Item	Parameter																							
Applicable Standards	Japan Radio Law	ARIB STD-T82																							
	FCC	FCC Part 15 Subpart B,C FCC ID : MK4TR3XM-SX01																							
	RoHS	EU RoHS(2002/95/EC) Supports																							
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Connection	One Connection At the same time															
Supported protocols	ARP、ICMP、TCP/IP、TELNET(Only Configure)															
Routing	One Static Route															
	LED	3 LED (red/green/ blue) 1 LED (green)														
	BUZZER	1 BUZZER														
Connector	TCP/IP (Ethernet)	Connector RJ-45														
	DC JACK	EIAJ TYPE II (CENTER PLUS)														

※2 : initialization



Specifications	Item	Parameter
Mechanical data	Dimensions (W x D x H)	140 x 110 x 38.5mm (Protrusions except)
	Weight	approx. 270g
	Installation	M4 Screw Screw is not included.
Electrical data	Power	Supply Voltage : 5V±10%
		Current consumption : approx. 400mA
		Carrier off : approx. 290mA
		Power down mode : approx. 280mA
		Consumption : max 2.5W
Ambient Conditions	Temperature Operating range	0 to 40 degree
	Humidity Operating range	30 to 80%RH
	Temperature Storage range	0 to 55 degree
	Humidity Storage range	30 to 80%RH
Accessories	AC Adaptor	TR3-PWR-5V-1
	RFID Sticker	SEL41400L 1 sheet
	CD-ROM	CDROM-TR3MNL

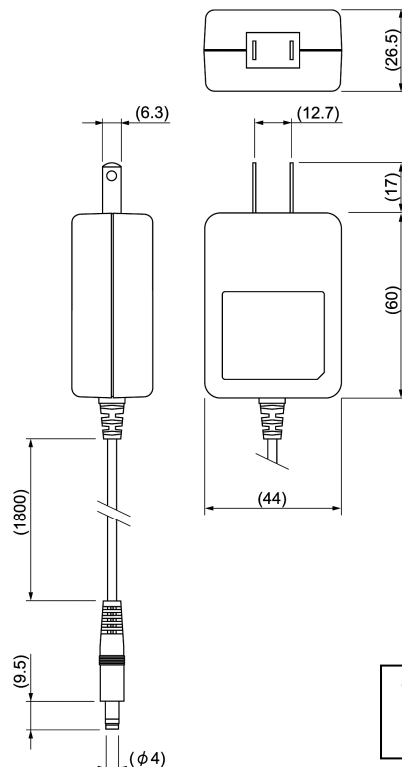
# 5 Accessories

## 5.1 AC Adapter (TR3-PWR-5V-1)

■ Specifications

Specifications	Item	Parameter
Applicable Standards	EMI	VCCI CLASS B, FCC class B, CISPR 22 class B
	COMPLY SAFETY STANDARDS	UL60950-1, PSE
	RoHS	EU RoHS (2002/95/EC) Support
AC INPUT	VOLTAGE	AC100V to AC240V
	FREQUENCY	50 to 60Hz
DC OUTPUT	DC OUTPUT VOLTAGE RANGE	DC5.0V±5%
	LOAD CURRENT	2.0A
	OUTPUT	CENTER PLUS
	PLUG TYPE	EIAJ TYPE II
Mechanical data	Wight	approx. 110g
	Dimensions	60 (W) x 44 (D) x 26.5 (H) mm (Cords are not included)
	Cable length	approx. 1800mm
Ambient Conditions	Temperature Operating range	0 to 40 degree
	Humidity Operating range	5 to 95%RH
	Temperature Storage range	-20 to 65 degree
	Humidity Storage range	5 to 95%RH

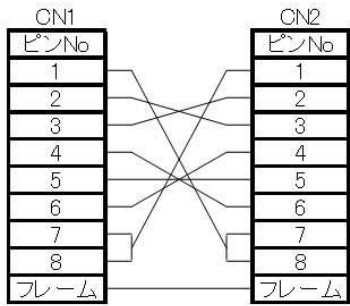
■ Dimension



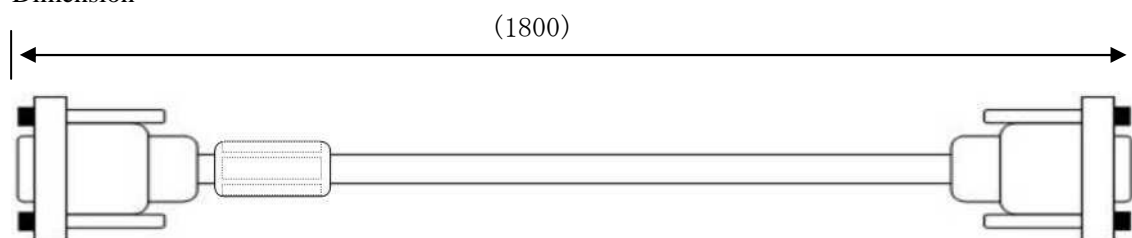
Unit : mm  
( ) is Recommended Dimension

## 5.2 RS232C Cross-cable(CB-232C-2)

### ■ Specifications

Specifications	Parameter
RoHS	EU RoHS(2002/95/EC) Support
Connector	D-sub 9Pin
screw	Inch screw
Cable length	approx. 1.8m
Connection	Cross-cable 

### ■ Dimension



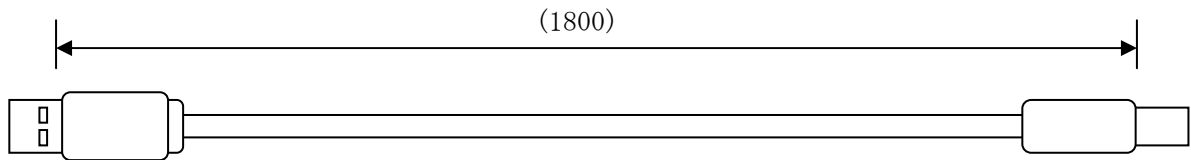
Unit : mm  
 ( ) is Recommended Dimension

### 5.3 USB Cable(GH-USB20/1.8M)

■ Specifications

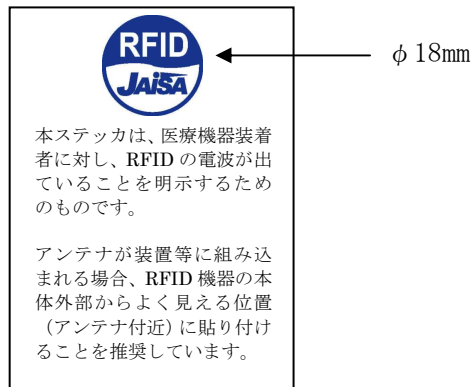
Specifications	Parameter
RoHS	EU RoHS(2002/95/EC) Support
Connector	USB(A)-USB(B)
Cable length	approx. 1.8m

■ Dimension



Unit : mm  
( ) is Recommended Dimension

## 5.4 RFID Sticker (SEL41400L)



# 6 Maintenance

This product is mainly used in electronic components and semiconductors. Therefore, the long-term stable operation, the environment and conditions are expected to defect, as shown below.

- Device degradation due to overvoltage and overcurrent.
- Device degradation due to high temperature and long-term stress.
- Poor contact of the connector and cause deterioration of insulation by moisture or dust.
- Connector corrosion by corrosive gases.

In order to use this product at its best, please conduct routine or periodic inspections.

Item		Maintenance	Criteria
Ambient conditions	Temperature	Temperature Operating range	0 to 55 degree
	Humidity	Humidity Operating range	30 to 80%RH
	Enclosure rating	Check the dusty	None
	Corrosive	Check the corrosion	None
Power	Input	Check the voltage	Input Voltage : DC5V±10%
	Voltage fluctuation	Check the Voltage fluctuation	
Attachment	Product	Check the Screw	Checking and verifying
		Check the Connector	
	Cable	Check the Cable break	None
Performance		Check the Performance	Work

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# Revision History

Revision code	Date	Revised contents
1.00	2012/03/08	Original production
1.01	2014/06/04	Add a new product : TR3XM-SN02

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# TAKAYA

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