USB Magnetic Card Reader

V3TU Series
User's Manual

Thank you for purchasing OMRON Magnetic Card Reader.
To use this product properly, read the Installation chapter contained in
the driver CD-ROM before connecting the card reader to the computer.

OMRON

Rev. V3.1.5

Notice

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⚠ Safety Precautions

For safe and proper use/maintenance of this product, read and understand this manual carefully before using the product.

After reading this manual, save it for later use.

This section provides important safety information. Make sure to heed it.
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WARNING	Alerts you to conditions that may result in death or serious personnel injury.
CAUTION	Alerts you to conditions that may result in personnel injury or property damage.

Property damage means extensive damage to houses, household effects, domestic animals, or pets.

■ Major Symbols

The symbol indicates a caution (including a warning).
Specific information is provided as messages or illustrations in or near the symbol.
The example on the left indicates "Beware of electric shock."

This symbol indicates prohibition (don'ts).
Specific information is provided as messages or illustrations in or near the symbol.
The example on the left indicates "Do not disassemble."

The symbol indicates compulsion (a must).
Specific information is provided as messages or illustrations in or near the symbol.
The example on the left indicates "Turn off the power."

Other symbols: [General precaution]

⚠

⚠ WARNING

Do not install or use the product in wet locations. Also, never let any metal object or liquid get inside the product. Failure to comply may result in shock or fire hazards.

Do not touch or operate the product with wet hands. Failure to comply may result in shock hazards.

Do not plug or unplug the USB connector with wet hands. Failure to comply may result in shock hazards.

⚠ CAUTION

Do not disassemble the product. Failure to comply may result in shock or fire hazards.

Do not install the product in a location that is wet, steamy, dusty, or filled with oil mist. Non-compliance may result in shock hazards, fire hazards, or failures.

Do not use the product near strong magnetic fields, which may cause malfunctions or failures.

Do not use the product in a location that is subject to intense vibrations, which may cause malfunctions or failures.
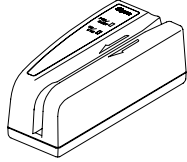
When performing maintenance on the product, unplug the USB cable from the computer to avoid shock hazards.

Checking the Contents of the Package

After unpacking the product, check that the following items are present.

1.Magnetic card reader: 1 unit

2.USB cable (approx. 2 m long):   1 piece

3.Driver CD-ROM: 1 piece

4.User's manual (this document):   1 copy

5.Installation manual: 1 copy

Contents

1. Introduction

Product Overview

Supports multiple tracks.
This magnetic card reader can read a card with up to three tracks in a single operation.

Product line-up

Model	JIS-II (NTT)	ISO		
		Track 1 (IATA)	Track 2 (ABA)	Track 3 (THRIFT)
V3TU-1K		O	O	O
V3TU-2K	O			
V3TU-6K		O	O	
V3TU-DK	O		O	
V3TU-FK	O	O	O	
*V3TU-4K			O	
*V3TU-7K			O	O

* optional

Easy connection with a personal computer.
Since the card reader employs a USB interface, you can install it by simply plugging the connectors.

Requires no special application program.
Since data is sent to the PC (personal computer) as keyboard data, you can use the product out of the box without the need for a special program.

Provides a utility for operation setting.
You can use Control Panel to specify the tracks and data size to be read.

Allows the use of a customized program.
A card reader control library is provided, allowing you to use a customized program.
(Samples are provided.)

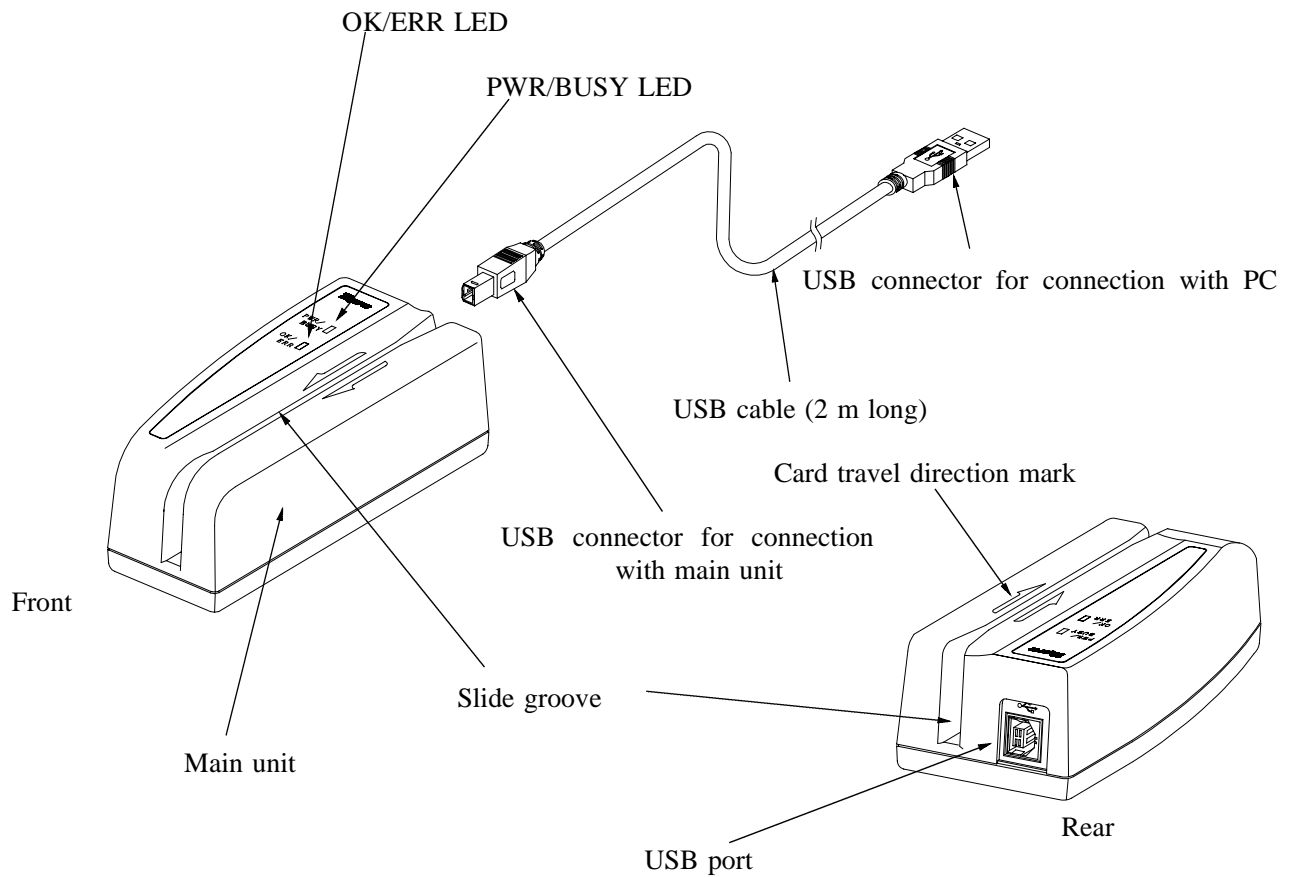**Requires no AC adapter.**
The card reader draws its power from the USB port, saving you the trouble of using an AC adapter.

System Requirements

You can use your magnetic card reader under the following environment.

Machine:	IBM-PC compatible provided with USB. (A CD-ROM drive is required.)
OS:	US version of Microsoft Windows 98
Software-distribution medium:	CD-ROM

Names and Functions of Parts

OK/ERR LED

PWR/BUSY LED

USB connector for connection with PC

USB cable (2 m long)

Card travel direction mark

USB connector for connection with main unit

Front

Slide groove

Main unit

USB port

Rear

Main unit	Main unit of the magnetic card reader
Slide groove	Used to slide the magnetic card for reading. (For details, refer to "Method of Operation" later in this manual.)
PWR/BUSY LED	Indicates the status of the card reader by color. (For details, refer to "Method of Operation" later in this manual.)
OK/ERR LED	Indicates the result of reading by color. (For details, refer to "Method of Operation" later in this manual.)
Buzzer	Sounds when a card is read. (For details, refer to "Method of Operation" later in this manual.)
USB port	Used to insert the reader-side connector of the furnished USB cable.
USB cable (approx. 2 m long)	Connects the main unit with a PC. The two ends (on the PC side and card reader side) of the cable are provided with connectors of different shapes.

2. Installation

Installation

To install the card reader, proceed as follows.

(1) Start the PC (personal computer) without connecting the card reader.

(2) When Microsoft Windows 98 (US version) starts up successfully, connect the card reader to the PC.

Insert the connector securely.

To the USB port of the PC
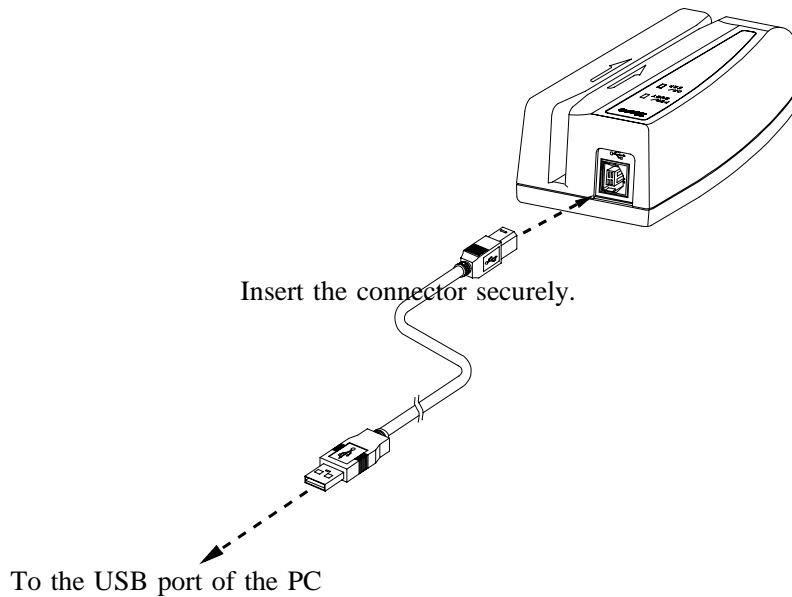
> **Caution:** Do not plug and unplug the USB cable instantaneously. That may result in malfunctions.

(3) When the card reader is recognized, a dialog box (wizard) that looks like the one shown below appears and the installation of the necessary drivers starts.
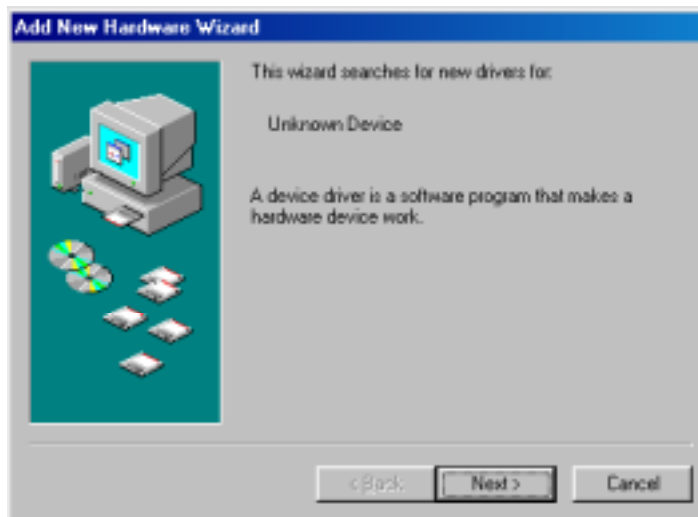
> There is a total of three drivers to be installed. (Their names and sequence of installation may change.)
>   USB composite device (Topre USB Device)
>   Unknown device (Topre USB Card Reader)
>   USB Human Interface Device(Topre HID Keyboard Emulation)
> To install the drivers for the devices listed above, repeat Steps (3) to (7) **three times.**

Insert the furnished CD-ROM (driver CD-ROM) in the CD-ROM drive of the personal computer and press the Next button on the wizard.

(4) The Add New Hardware wizard prompts you to select the method of searching for a driver.
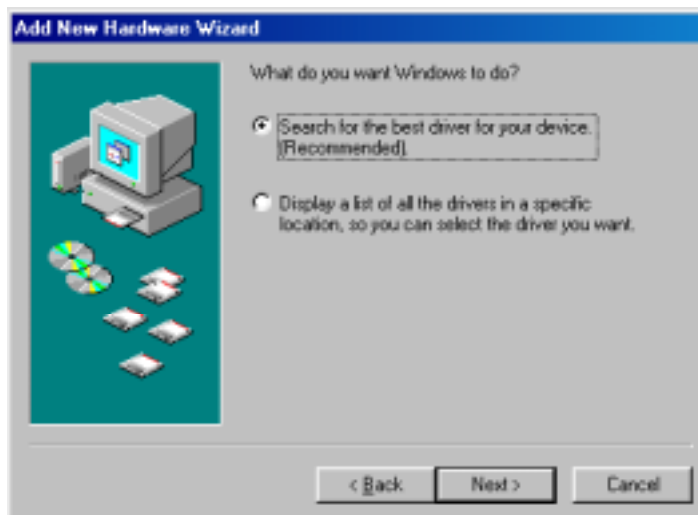
Select the "Search for the best driver for your device" option and click the Next button.

(5) Specify the drive where the driver can be found.

Select the "CD-ROM drive" option and click the Next button.

You may be prompted to insert the Windows 98 CD-ROM as shown below.

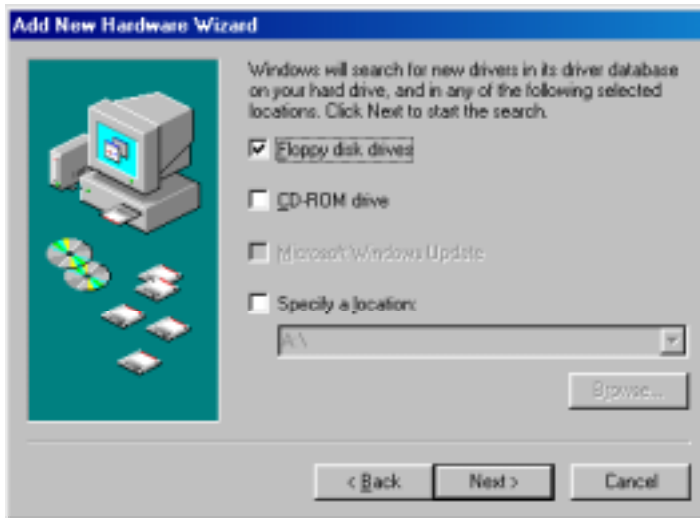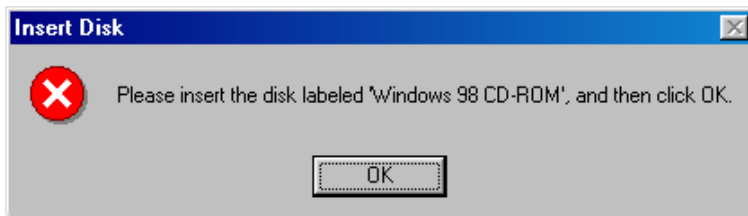After files are copied from the Windows 98 CD-ROM, make sure to insert the driver CD-ROM
Otherwise, Your PC may fail to operate properly. The proper time to insert the CD-ROM is when
the Add New Hardware wizard appears in Step (3).

(6) Now the Windows is ready to install the driver.
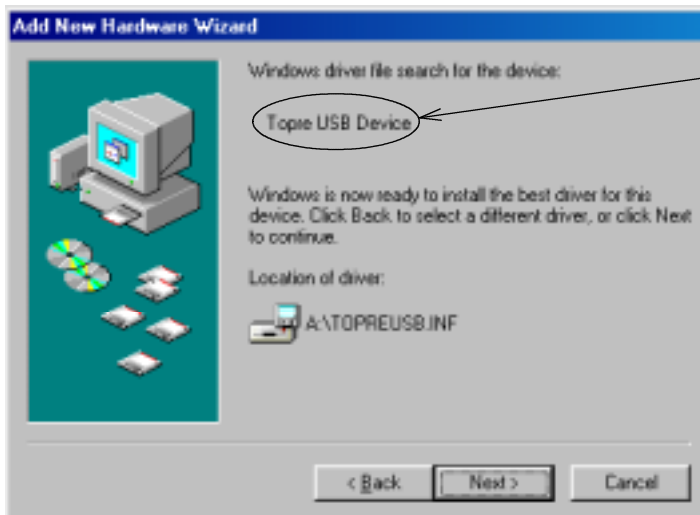
One of the following device
names is displayed.

Topre USB Device
Topre USB Card Reader
Topre HID Keyboard Emulation

Click the Next button.

(7) Now the driver installation is complete.
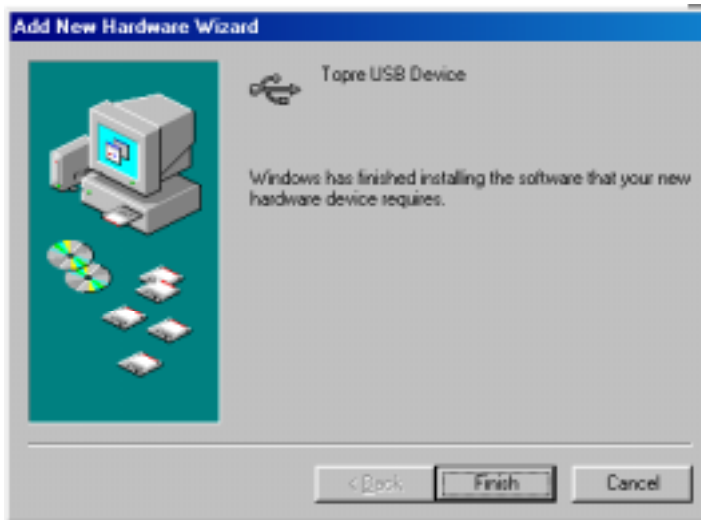
Click the Finish button.

(8) Repeat Steps (3) to (7) three times and finish the installation.

Now you can use your card reader. However, make detailed settings by selecting the Card Reader icon form the Control Panel.

Example of how to start Card Reader Setup program

Click [Start] -> Click [Settings] -> Click [Control Panel] -> Double-click the [Card Reader] icon.

For details, refer to the next chapter "Card Reader Setup Procedures."

3. Card Reader Setup Procedures

Starting the Card Reader Setup Program
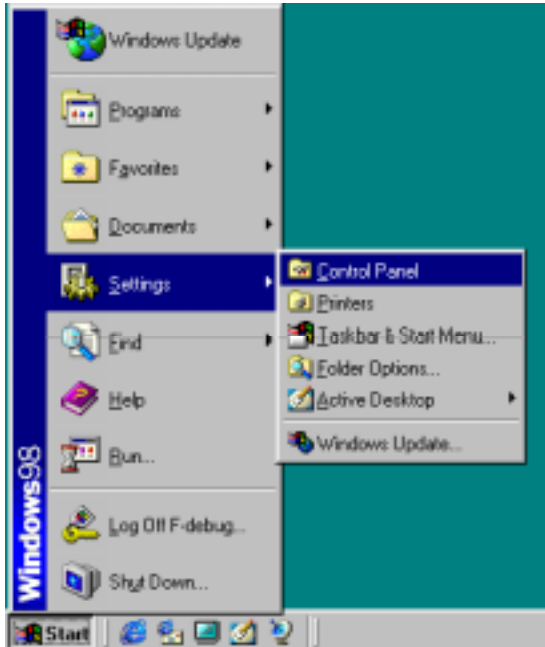
Click menu commands in the following order: [Start] -> [Settings] -> [Control Panel]

Double-click this icon.

Double-click the [Card Reader] icon to start the program.

Card Reader

The Card Reader Properties dialog box appears.

Card Reader Properties

Card Reader

The following Card Readers are installed.

V3TU-1K (ISO1,2,3) — No.1 ←—————— Displays the name of the card reader
V3TU-1K (ISO1,2,3) — No.2   connected.
                                           Format: Product name (track) -- Identification
                                                     No.

                                           Disabled if no card reader is selected. (If only
[Diagnostics] [Properties] ←—————— one card reader is connected, it is selected
                                           automatically.)
[Refresh] ←——————

                                           Displays the name of the connected
Card Reader ControlPanel Ver.V3.1.10E   card reader anew.
Copyright (c) 1999 OMRON Corporation.

                                           Finishes setting.
[OK] ←——————

Select the card reader to set up, by clicking its name.
If only one card reader is connected, it is selected automatically.
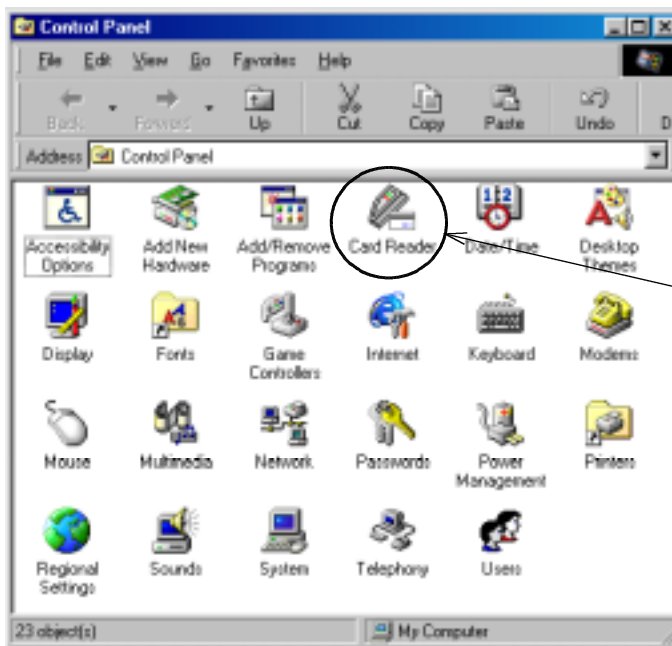
Card Reader Properties

Card Reader

The following Card Readers are installed.

V3TU-1K (ISO1,2,3) — No.1
V3TU-1K (ISO1,2,3) — No.2

                                           Confirms the existence of the selected card
                                           reader by a LED and buzzer sound.

                                           Used to set up the selected card reader.

[Diagnostics] [Properties]

[Refresh]

Card Reader ControlPanel Ver.V3.1.10E
Copyright (c) 1999 OMRON Corporation.

[OK]
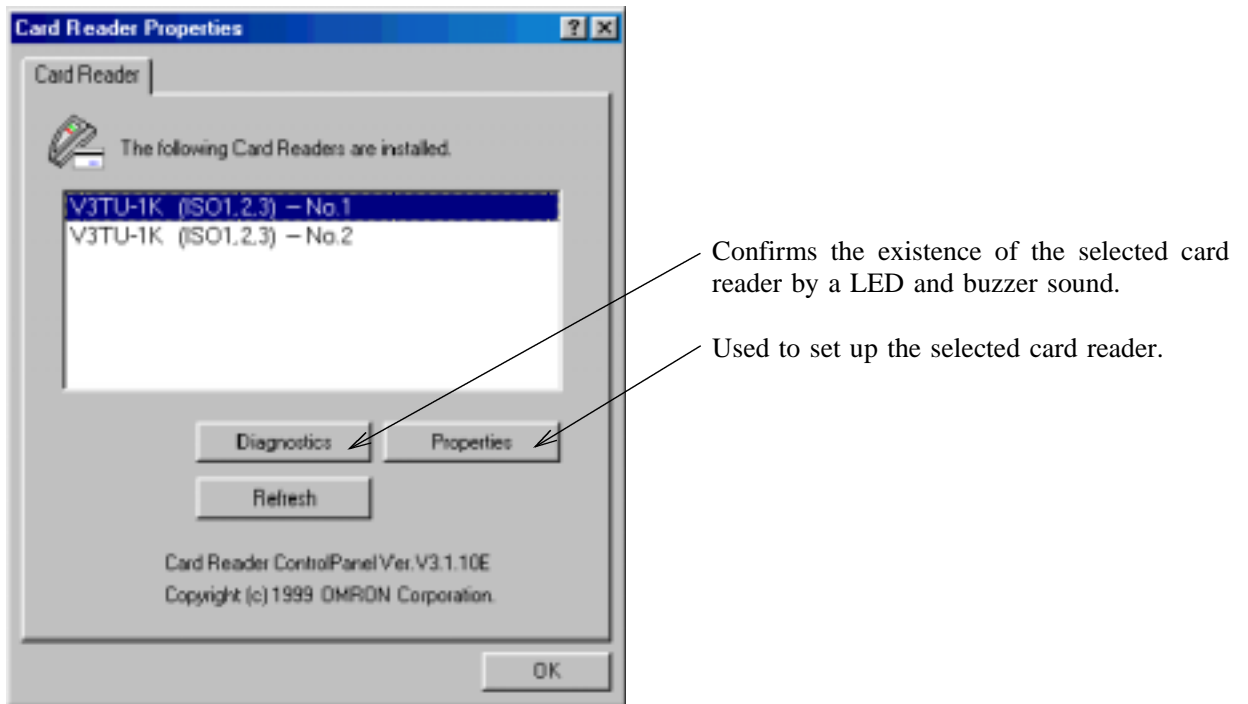
Setting Operation Modes

Operation mode settings apply to the entire card reader.
The settings are registered in the card reader and remain effective in the subsequent uses of the card reader.

Displays the Operation Mode Setting page

Displays device information

Displays the ISO1 Setting page
Displays the ISO 2 Setting page
Displays the ISO 3 Setting page

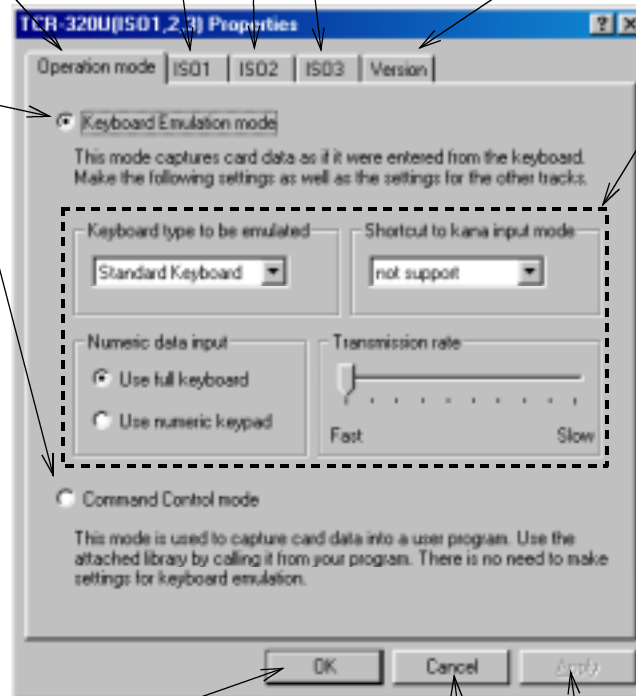Switches between operation modes

The options in the dotted box are effective only in the keyboard emulation mode

TCR-320U(ISO1,2,3) Properties

Operation mode | ISO1 | ISO2 | ISO3 | Version

Keyboard Emulation mode
This mode captures card data as if it were entered from the keyboard. Make the following settings as well as the settings for the other tracks.

Keyboard type to be emulated
Standard Keyboard

Shortcut to kana input mode
not support

Numeric data input
Use full keyboard
Use numeric keypad

Transmission rate
Fast   Slow

Command Control mode
This mode is used to capture card data into a user program. Use the attached library by calling it from your program. There is no need to make settings for keyboard emulation.

OK   Cancel   Apply

Saves the settings without closing the page

Saves the settings and returns to the previous screen

Returns to the previous screen without saving the settings

Keyboard Emulation mode / Command Control mode

Specify the operation mode of the card reader. If you want to capture card data in the keyboard input format, select the Keyboard Emulation mode. If you want to use a special program for data capture, select the Command Control mode.

Keyboard type to be emulated

Specify the keyboard type you are using currently. The data from the card reader is sent as keyboard data of the selected keyboard type. This setting does not apply to the Command Control mode.

Shortcut to kana input mode

If you are using a Japanese keyboard, a shortcut key (key combination) is available to switch to kana input mode instead of using the Japanese input function (FEP). Select a desired combination. This setting does not apply to the Command Control mode.

Numeric data

Some applications accept only the numeric characters entered from a numeric keypad. When using such an application, select the "Use numeric keypad" option.
This setting does not apply to the Command Control mode.

Transmission rate

Depending on the throughput of a PC or structure of an application, data may not be received if it is transmitted too fast. In that case, slow down the transmission speed.
This setting does not apply to the Command Control mode.

Specifying Track Details

You can make settings for each card track. The tabs displayed on the panel varies with the card reader model. The settings are registered in the card reader and remain effective in the subsequent uses of the card reader.

Specify whether you want to read this track
Click the desired track

Reading position

Leading character

Trailing character

Restores the default value of the reading position

Saves the settings without closing the page

Saves the settings and returns to the previous screen

Returns to the previous screen without saving the settings

Read this track

Check this option if you want to read this track. You cannot read a single-track card with a three-track card reader because the remaining two tracks result in reading errors. In that case, deselect this option for the remaining two tracks.
This setting does not apply to the Command Control mode.

Start position of reading

This field specifies the start position of reading on the given card track for data transfer to the PC. Use this option if you want to send only a part of card data to the PC.
This setting does not apply to the Command Control mode.

End position of reading

This field specifies the end position of reading on the given card track for data transfer to the PC. Use this option if you want to send only a part of card data to the PC.
This setting does not apply to the Command Control mode.

Leading character

Specify the characters you want to add to the head of data when, for example, you intend to use the data on a spreadsheet program. These characters are sent to the PC before the card data. Frequently used characters are listed in the combo box. As to other characters, check the "Other" option and enter desired characters from the keyboard.
This setting does not apply to the Command Control mode.

Trailing character

Specify the characters you want to add to the end of data when, for example, you intend to use the data on a spreadsheet program. These characters are sent to the PC before the card data. Frequently used characters are listed in the combo box. As to other characters, check the "Other" option and enter desired characters from the keyboard.

Factory Default Settings

Operation mode	Operation mode		Keyboard Emulation mode
	Keyboard to be emulated		106-key Japanese keyboard
	Shortcut to kana input mode		Ctrl + Caps Lock
	Numeric data input		Use full keyboard
	Transmission rate		Fastest
Track details	JIS II (NTT)	Read this track	Yes
		Start position	2
		End position	70
		Leading character	Do not add
		Trailing character	Add a line feed
	ISO-1 (IATA)	Read this track	Yes
		Start position	2
		End position	77
		Leading character	Do not add
		Trailing character	Add a line feed
	ISO-2 (ABA)	Read this track	Yes
		Start position	2
		End position	38
		Leading character	Do not add
		Trailing character	Add a line feed
	ISO-3 (THRIFT)	Read this track	Yes
		Start position	2
		End position	105
		Leading character	Do not add
		Trailing character	Add a line feed

4. Method of Operation.

How to Read a Card

(1) PC settings

Before reading a card, specify the following settings for the PC (personal computer).

Kanji input by kana-kanji conversion (the Japanese word input mode activated generally by pressing the Alt + Kanji keys): OFF
Katakana input: OFF
Num Lock: ON
Caps Lock: OFF
Scroll Lock: OFF

In the keyboard emulation mode, start an application that will receive the data read from the card and will display keyboard entries. If you do not have a specific application, start Notepad that can accept keyboard entries.

(2) How to manipulate a card

Insert the card into the card reader from above and slide it horizontally along the slide groove, as illustrated below. Slide it at a uniform speed whenever possible.

Slide the card with the JIS 2 track on the left side.

Up

ISO
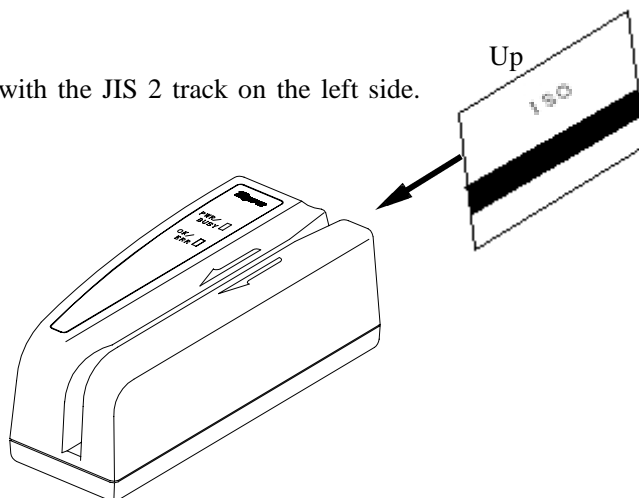
Slide the card with the ISO track on the right side.
Down

The reader can read cards if the PWR/BUSY LED glows green. It cannot read cards if the LED glows orange or blinks.

(3) Results of reading

If data was read successfully, the buzzer beeps once, the OK/ERR LED glows green, and the card data is displayed on the active editor.

If data could not be read successfully, the buzzer beeps three times, the OK/ERR LED glows red, and no card data is displayed. Review the previous section "How to Read a Card" and read the card again. If the card still cannot be read successfully, check against Chapter 3 "Card Reader Setup Procedures." If the settings are correct, check whether the card is correct.

About LEDs and Buzzers

PWR/BUSY LED	Indicates the status of the card reader by color		
		Reading is	Status
	Glows green	Possible	
	Glows orange	Impossible	Data being transferred
	Blinks orange	Impossible	Initializing
	Off	Impossible	Power OFF or suspended
OK/ERR LED	Indicates the result of reading by color.		
		Result of reading	
	Glows green	Success	
	Glows orange	Error	
	Off	Waiting for reading	
Buzzer	Sounds when a card is read.		
		Result of reading	
	Continuous beep (one long beep)	Success	
	Intermittent beep (three short beeps)	Error	

5. Troubleshooting

If you have problems with your card reader, check the following items first.

Trouble	Cause	Measures
Data is not displayed on PC	USB cable is not connected properly.	Plug the USB connectors properly.
	Drivers have not been installed.	Install the drivers. (See Chapter 2 "Installation")
	Settings of operation mode or tracks are wrong.	Make proper settings. (See Chapter 3 "Card Reader Setup Procedures") Example: No track has its "Read this track" option enabled.
Displayed data is wrong	Settings of operation mode or tracks are wrong.	Make proper settings. (See Chapter 3 "Card Reader Setup Procedures")Example: The keyboard type to be emulated is wrong. Reading position setting is wrong.
	Kanji input by kana-kanji conversion is set at ON.	Turn off kanji input by kana-kanji conversion. Also, ensure the following settings. Katakana input: OFF Caps Lock: OFF Num Lock: ON Scroll Lock: OFF (See Chapter 3 "Card Reader Setup Procedures")
Card cannot be read or an error results	Card type is wrong.	Check if the card is supported by your card reader.
	Track settings are wrong.	Enable the "Read this track" option of the card tracks. (See Chapter 3 "Card Reader Setup Procedures")
	Orientation of the card is wrong.	Insert the card from above, with JIS 2 tracks on the left side and with ISO tracks on the right side (as viewed from the front), and slide it along the groove from the rear to the front of the card reader. (See Chapter 4 "Method of Operation")
	Card reader is contaminated.	Contamination of the card reader head or slide groove may result in malfunctions. Clean them periodically. (See Chapter 6 "Maintenance")

Trouble	Cause	Measures
PC does not operate properly: e.g., it does not read cards.	PC or card reader may not be in proper condition.	Try the following measures: unplug the USB cable and plug it again, or restart the PC. This may work in some cases. However, do not plug and unplug the USB cable instantaneously. Doing that may cause malfunctions.

6. Maintenance

Cleaning the Card Reader

Contamination of the card reader head or slide groove with oil or other foreign matter may result in malfunctions or errors. Maintenance is performed to prevent or deal with them.

1.Cleaning fluid

Moisten the felt portion of a cleaning card with a cleaning fluid such as CFC, ethanol, or methanol and shake off any excess fluid.

2.Method

Slide the cleaning card along the slide groove about five times with the felt side facing the reading head. Then leave the card reader about five minutes before use.

3.Frequency

Clean the card reader after every 500 to 1000 passes of magnetic cards or if errors occur repeatedly.

4.Precautions

Do not use a cleaning card if

its felt portion is peeling,
its felt portion is conspicuously napped,
it is warped 3 mm or more, or
it is conspicuously contaminated.

For information on how to purchase cleaning cards, contact our sales department.

Appendix

About Command Control Mode

The Command Control mode works only with user applications. As a reference for preparation of user applications, the driver CD-ROM contains a library and samples (their operation has been verified with Visual Basic Ver. 5 and Visual C++ Ver. 5) created by using the library.

Directory structure of driver CD-ROM

Root directory	Contains all the drivers for the card reader including the setup file and configuration file.
Library:	DLLs and specifications (in the PDF format) for use in controlling the card reader in the Command Control mode.
VBSample	Command control sample programs created in Visual Basic.
→ Release	Executable files of sample programs.
VCSample	Command control sample programs created in Visual C.
→ Release	Executable files of sample programs.
Acrobat4	A utility for reading Acrobat PDF files. (Start the ar40eng.exe program.)

Note: OMRON will not assume any responsibility for the results of using the sample source codes. Evaluate them carefully on your own before using them.

Major Specifications

Supported cards	Magnetic card standards	ID-1 card compliant with ISO 7810 and 7811-1 to -5 ID-1 card compliant with JIS X 6301 (1998) ID-1 card and identification card with a magnetic stripe on front face (attached document), compliant with JIS X 6302 (1998)	
	Recording method	F2F frequency modulation	
	Track	Up to 3 tracks of the JIS II, ISO-1, ISO-2, or ISO-3 type	
	Reading rate	100 to 1000 mm/s	
Interface	Interface	USB 1.0 compatible	
	Connector	USB series B connector	
	Connecting cable	Shielded USB cable 2 m long (supplied)	
	Transfer method	Interrupt transfer	
	Transfer rate	Low speed 12 Mbps	
	Data transfer mode	Keyboard emulation or Command control	
OS	Windows 98 (US version)		
Driver type	WDM (Windows Driver Model)		
Device class	Keyboard Emulation mode	HID (Human Interface Device)	
	Command Control mode	Vendor class	
Pilot lamp	LED lamp -- PWR (green) / BUSY (orange); OK (green) / ERR (red)		
Buzzer	Piezoelectric buzzer		
Reader life	300,000 passes		
Environment	Operating temperature range	0 to 40 C	
	Operating humidity range	30 to 80 % RH (no condensing)	
	Storage temperature range	-15 to 60 C	
	Storage humidity range	20 to 90 % RH (no condensing)	
Power supply	Supplied through USB interface (bus power)		
Operating voltage	4.40 to 5.25 V		
Power consumption	During operation	50 mA (typ), 100 mA (max)	
	During stand-by	300 uA (typ), 500 uA (max)	
Weight	130 g (excluding accessories)		
Outside dimensions	Approx. 55 (W) x 39.5 (H) x 120 (D) mm		

If you have any question concerning use of the product, contact us at the following address.

Contact address

CARD READER COMPONENTS DEPARTMENT,
OMRON Corporation
GATE CITY OHSAKI, WEST TOWER 14F,
1-11-1, OHSAKI, SHINAGAWA-KU,
TOKYO, 141-0032 JAPAN
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FAX   : +81-3-5435-2017