Cover

User's Manual

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User should read caution information and keep in mind before using. Different icons remind important information as to safety. TIT Eng is not responsible for physical harm to body or physical damage to the product occurred by user's careless use.

Danger : Warns user of risk of losing life or being seriously injured.

Warning : Warns user of risk of being seriously or slightly injured, or damage to product.

Caution : Warns you of slight damage to body.

Note : Indicates information that supplements detailed information.

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Danger : Warns user of risk of losing life or being seriously injured.

POWER

- Do not use damaged power cord, plug or socket.
- Do not pull plug with power cord line.
- Do not touch power plug with wet bare hand.
- Do not bend power cord or put heavy things on the power cord.

- Unplug during thunder and lightning or storage

INSTALLATION
- Do not put the printer in wet, dirty place.
- Do not put lightings on the printer. Put the printer away from heat source.
- Unplug while moving the printer
- Put the printer away from flammable source.

CLEANING
- Clean the wet and dirty plug.
- Unplug the printer before cleaning. Do not use water or chemical cleanser.

MISCELLANEOUS
- Do not put water bowel, medicine, metal on the printer.
- In case of abnormal situation in the printer, unplug the printer immediately and contact your dealer.
- Make sure that you use adequate power adaptor.

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Caution : Warns you of slight damage to body.

INSTALLATION
- Do not put the printer on unstable place.
- Avoid direct sunlight that may cause trouble.

CLEANING
- Do not disassemble cover or protection parts.
- When you put hand inside the printer, do not operate it
- Make sure that you perform cleaning and maintaining according to the instructions.

MISCELLANEOUS
- Do not disassemble, repair, modify.
- Do not put heavy things on the printer.

1. Getting Started

1.1 Introduction

This card printer enables user to create cards easily and shortly in accordance with the card specifications you wish to get.

You can get high quality color image with the card printer of dye sublimation printing. In order to meet customers demand, it provides options such as M/S, IC(Contact), RF(Contactless) encoding as well as bar code, diagram, picture printing.

It is useful for creating membership card, bonus card and identification card on PET, PVC card.

1.2 Contents in Package

TP-9000 , TP-9000

 CLEANING ROLLER, POWER ADAPTOR, POWER CABLE, USB PRINTER CABLE, SOFTWARE CD, USER MANUAL, STACKER(not applicable for TP-9000), CLEANING CARD

 * Please make sure that printer and all the accessories are in good order. If any items are missing, please contact your dealer.

1.3 Product Features

TP-9000 (Manual, Single Printing)

Front   Rear
Side

Features Description

No	Features	Description
1	LED Display	LED shows the status of printer
2	LCD Display	LCD panel displays the status of printer
3	Card Eject	Button for ejecting card from the printer

4	Ribbon Load	Button for replacing or repositioning ribbon cartridge
5	Mobile Connector	Socket for mobile chip
6	Power Button	Power on and off (Option)
7	Card Output Stacker	Stacker for released output cards
8	Printer Lid	Open for replacing ribbons and cleaning rollers
9	Flipper	Used for Dual sided printing (Option)
10	USB Socket	Used for memory stick or USB connecting
11	USB Communication Port	Used for connecting PC and printer with USB cable
12	RS232C Communication Port	Used for connecting PC and printer with RS232C
13	Power Socket	Used for supplying power
14	External RF	Recognize RF Card

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TP-9000 (Auto Continuous Printing)

Front   Rear

Side

Features Description

No	Features	Description
1	LED Display	LED shows the status of printer
2	LCD Display	LCD panel displays the status of printer
3	Card Eject	Button for discharging card inside the printer
4	Ribbon Load	Button for replacing or relocating ribbon cartridge
5	Mobile Connector	Socket for mobile chip
6	Power Button	Power on and off (Option)
7	Card Output Stacker	Stacker for released output cards
8	Printer Lid	Open for replacing ribbons and cleaning rollers
9	Flipper	Used for Dual sided printing (Option)
10	USB Socket	Used for memory stick or USB connecting
11	USB Communication Port	Used for connecting PC and printer with USB cable
12	RS232C Communication Port	Used for connecting PC and printer with RS232C
13	Power Socket	Used for supplying power
14	External RF	Recognize RF Card

* Even though we have three different models of TP series, since there is no big difference in operation, user's manual has been designed for TP-9000 Dual Sided as main reference.

TP-9000 (Dual Sided, Auto Continuous Printing)

Front　　　Rear
Side

Features Description

No	Features	Description
1	LED Display	LED shows the status of printer
2	LCD Display	LCD panel displays the status of printer
3	Card Eject	Button for discharging card inside the printer
4	Ribbon Load	Button for replacing or relocating ribbon cartridge
5	Mobile Connector	Socket for mobile chip
6	Power Button	Power on and off (Option)
7	Card Output Stacker	Stacker for released output cards
8	Printer Lid	Open for replacing ribbons and cleaning rollers
9	Flipper	Used for Dual sided printing (Option)
10	USB Socket	Used for memory stick or USB connecting
11	USB Communication Port	Used for connecting PC and printer with USB cable
12	RS232C Communication Port	Used for connecting PC and printer with RS232C
13	Power Socket	Used for supplying power
14	External RF	Recognize RF Card

* Even though we have three different models of TP series, since there is no big difference in operating them, user manual is designed for TP-9000 Dual Sided as main reference.

1.4 Loading Ribbon Cartridge

1. Unpack ribbon carton box.

2. Open printer lid by pressing Cover Release Button and raise it fully.

3. Make sure that ribbon cartridge is placed in right position and the printer lid is closed.

Note : Please note that improper closing lock of the printer lid may cause bad printing. (Check out lock of the printer lid)

1.5 Loading Cleaning Rollers

1. Open printer lid by pressing Cover Release Button and raise it fully.

   U-shaped Slot

2. Slide the cleaning roller into the loading part and insert roller bar into U-shaped slots until it locks in place.

   Cleaning Roller

1.6 Card Feeding Hopper

1. Open card the feeding lid.

   Card thickness adjustment controller

2. Rotate card thickness adjustment controller in the card feeder to synchronize it with the card you wish to print.

   Card feeding weight

   Card feeding weight

3. Lift the card feeding weight.

4. After stacking card into the card feeding hopper, put the weight on the stack of the cards.

1.7 Card Output Stacker

1. Lock the latch of card output stacker into slots of the front side.

1.8 Power Device, Power cable, Communication Cable

PC, Communication cable, Power adaptor, Power cable

2. Software Installation

PC Systems requirement

    * Check out minimal PC operating environment.

    * MS Widows: Windows 2000/XP (32bit), Windows Vista

    * Computer

      - CPU : Pentium Ⅲ 1GHz above (Pentium Ⅳ 1.5 GHz recommended)

      - Memory 128 MB above (512 MB recommended)

      - HDD 1 GB above (5 GB recommended)

      - Internet Explorer 5.5 above (6.0 recommended)

- Note: For windows 2000/XP users, only administrator with authority can install and remove the program after log-on.

2.1 Installing FTD2xx Direct USB Driver

Installing

- Close all windows in operation. (Recommended).

    (Explanation is based on windows XP. Picture and sequence can differ in Windows 2000.)

1. Attach USB cable to computer and place the printer's power switch in the ON position. The [New Hardware installation] window will open. Select "**Install from a list or specific location**", then click "**Next>**".

<New Hardware installation>
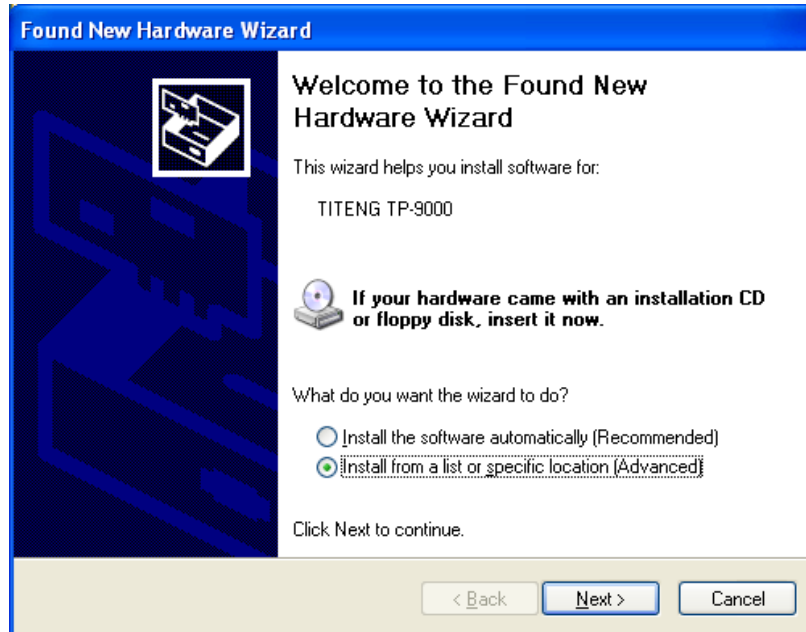
2. Select "**Search for the best driver in these locations**" and "**Include this location in the search**". Click "**Browse**" to search the CD location as follows.

<Driver location and file searching>
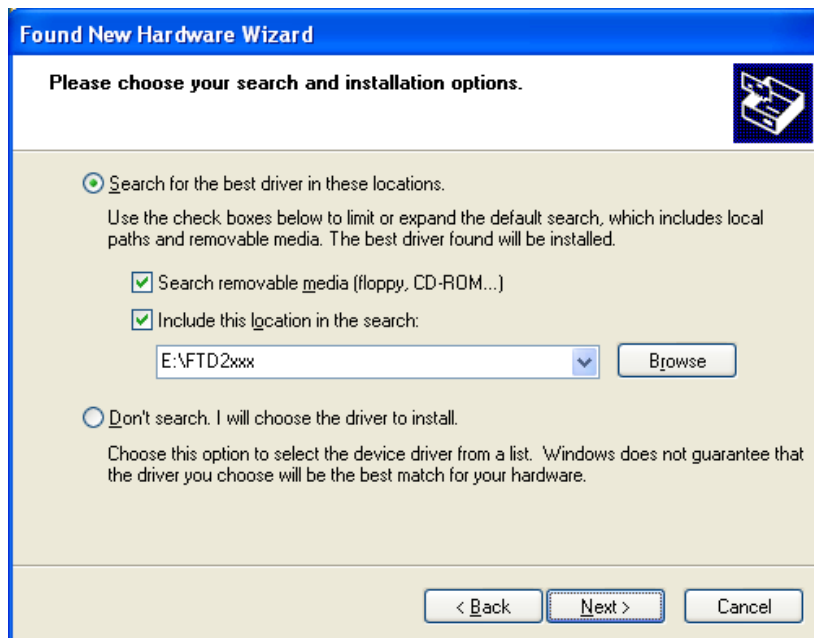
3. If FTD2xx driver has been found successfully, installation begins.

<Driver installing>
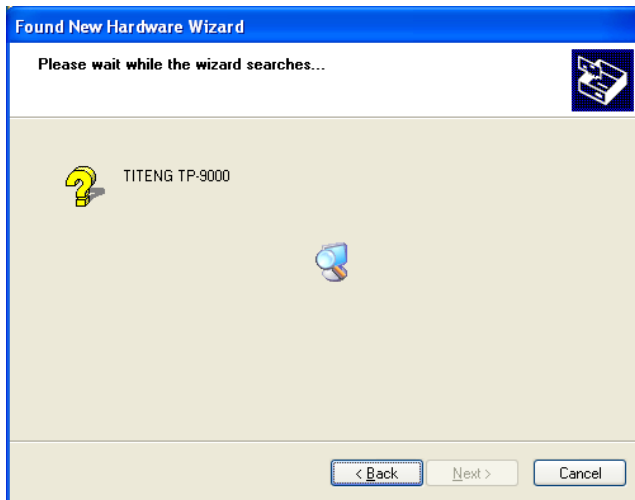
4. In the "**Windows Logo Testing**" window, select the "**Continue Anyway"** button.

<Windows logo testing>

5. Click the "**Finish"** button and drive installation will be complete.

<Competing the Found New Hardware>
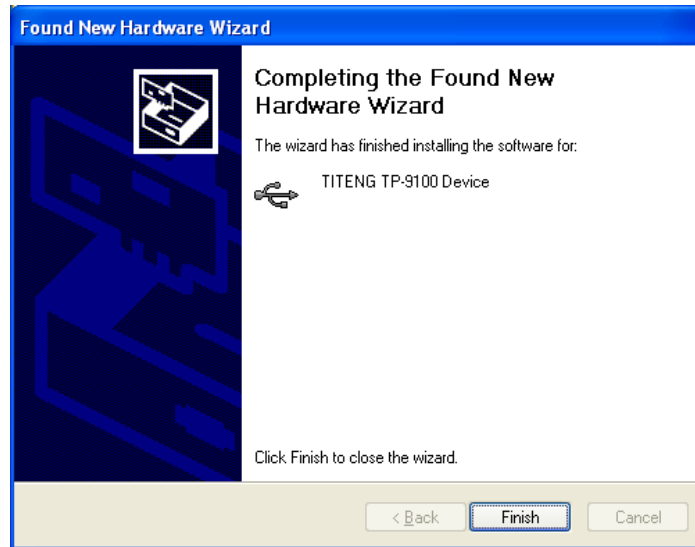
6. If Windows Restart message opens, restart windows.

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2.2 Installing Microsoft Windows Application Software / Driver

Installing

● Close all windows in operation. (Recommended).

1. Turn on the computer. In the Found New hardware window, click "**Cancel**" button.

2. The "**Insert installation CD**" window will open automatically.

· Insert installation CD with printed side up in CD-ROM drive.

· If installation window does not open or if you have closed it, eject CD and re-insert.

   In the "**Star**t" Menu, select "**Execute**" and start 'X(Number of CD-ROM drive):\install.exe'
   and click "**OK**" button.

3. Automatically open software installation wizard window when you insert software CD.
   Click "**Start**" to start installation process.

<Start window for software installation>
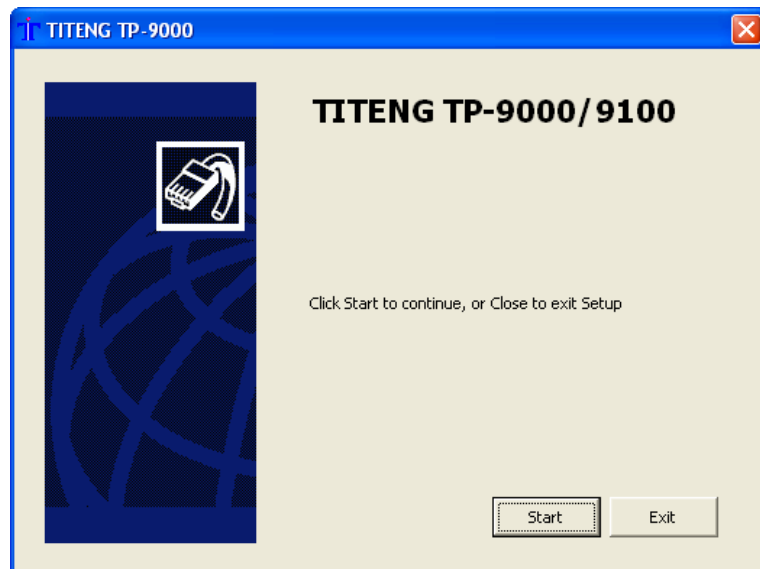
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4. Select the software you wish to install. Click "**Next>>**".

<Software selection window>
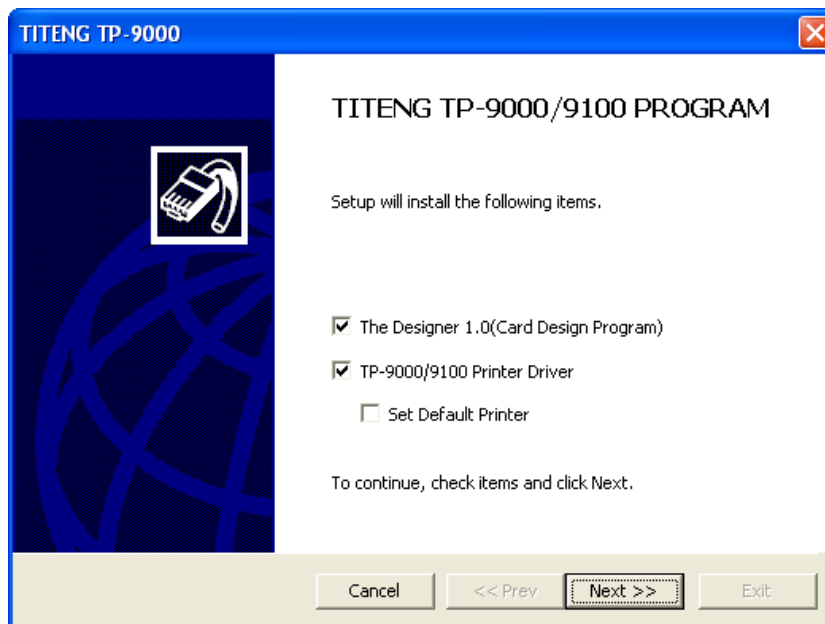
5. Read License Agreement. Click "**Approval**" and "**Next>>**".
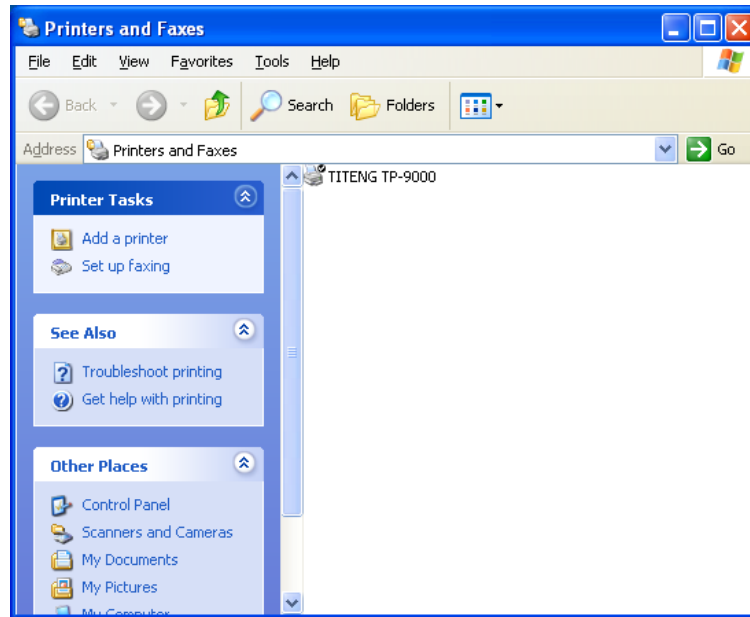
<Software license agreement>
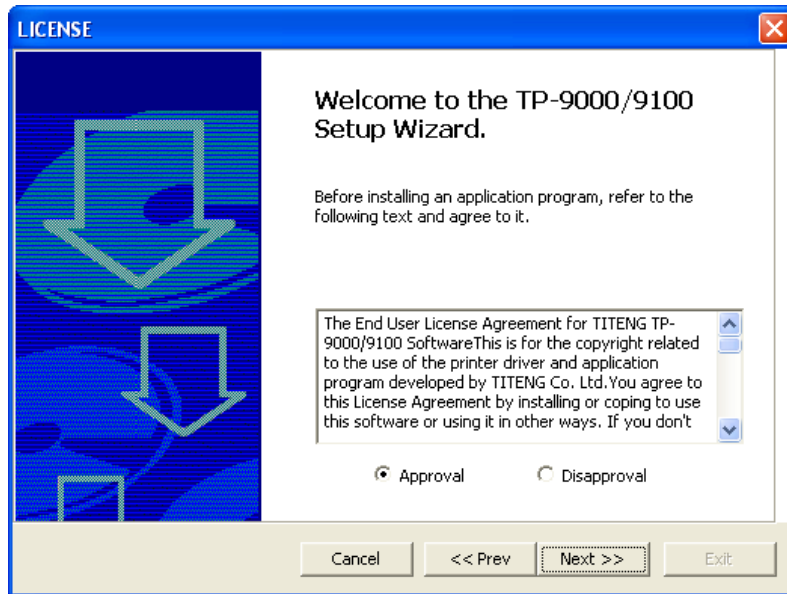
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6. When installation is complete, Click "**Finish**".

<Completing software installation>
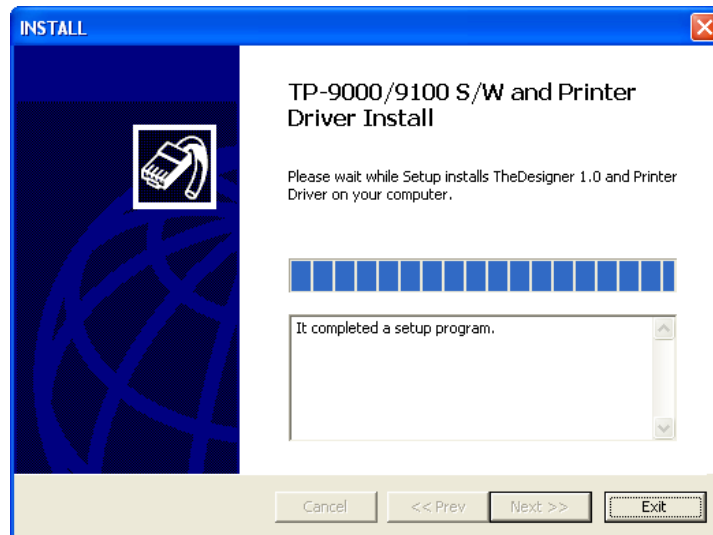
7. Check out the "TITENG TP-9000" installed in the printer folder. Check out "TIT ENG TP-9000" software installed in "**START -> ALL PROGRAM**" -> "**TITENG TP-9000**".

<Printer driver folder>

2.3 Removing FTD2xx Direct USB Driver

1. Execute "**Start -> Control Panel -> Change or Remove Programs**".

2. Click "**Change/Remove**" to start the process.

<Removing FTDI FTD2xx USD Drivers>
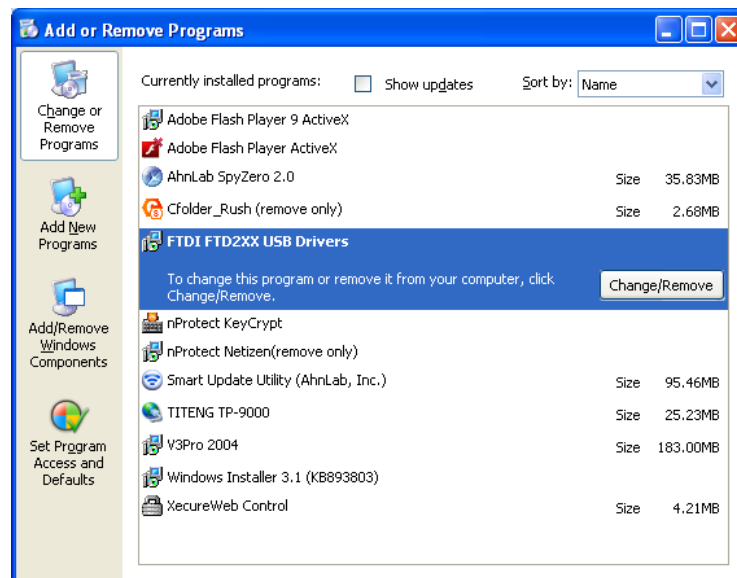
3. Click "**Continue**" to remove USB driver.

<Uninstalling>

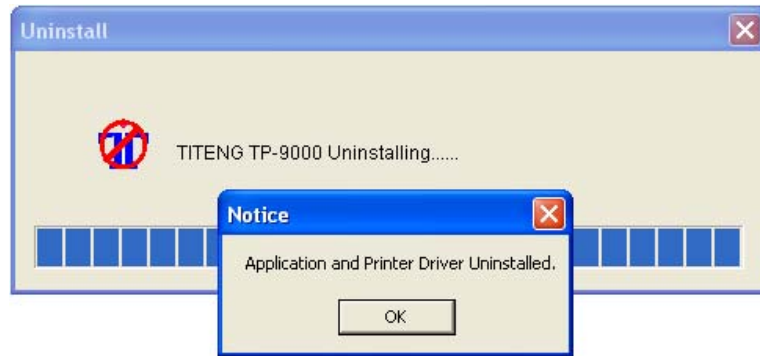4. When uninstalling is complete, finish the process to click "**Finish**".

<Completing Uninstalling>
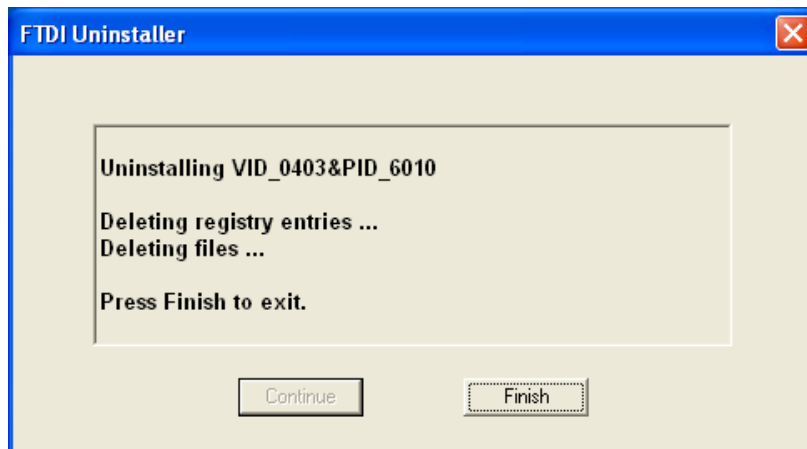
2.4 Removing TP-9000 Application Software / Driver

1. In "**Start**" -> "**All Program**" -> "**TIT ENG TP-9000**" -> Click "**Remove**" to start the process.

 * Note: When you remove "TITENG TP-9000", TITENG TP-9000 printer driver is removed at the same time.

<Uninstalling Completed>

2.5 Printing with TP-9000 on Microsoft Windows Application Software

* This section gives you instructions on how to print on Windows application software.

· Print sequence may differ according to application software. To ensure right sequence, please refer to user manual of the application software.

1.   Open file of the Windows application software you wish to print.
2.   Go to "**File**" => "**Prin**t".

   · Make sure that you choose TITENG TP-9000.

   · Print sequence may differ according to application software. On most of windows application software, you can print out by clicking printer icon on menu bar or print in "**File**" menu.

3.   Select documents you wish to print. Click "**Print**" or "**OK**" to start printing process. The files to be printed standing by in spool allocated for TP-9000.

   · Ensure that the printing image is oriented in same direction (vertical, horizontal) as that of paper. Preview function of software will help you check it out.

   * What is TITENG TP-9000 Spool?

Spool saves data temporarily on hard disk from application program, not sending more than one job to printer at a time. And the system will hold them up until the printer can accept the data.

Canceling Print

* There are two ways to cancel printing. Canceling in application software and canceling in spool in a queue.

· If card is jammed on the way of printing, you have to cancel it, which costs ribbon and card.

Canceling in Spool

* Spooled files queue up for being sent to printer.

1. Double click printer icon in menu bar in bottom right.

2. If user wishes to change settings, right click on the printer icon.

· Information: Shows the information of spool

· Hide after printing: If printing is complete, spool window disappears.

· Always on top : Set the spool window always on top.

· EXIT: Terminate spool window.

* Spool program resume when printing in operating again, even though you have already terminated it.

3. Set up all spooled file prior to printing.

　　· Right click on the printing standby.

　　You can select one of "All document stop", "All document start" and "All document cancel".

 4. Set up of spooled file in printing

　　· Click right button on spooled file in printing. You can select one of "Stop", "Resume", "Cancel".

Caution

If you stop the document printing, the file in printing can be mixed up with other spooled file.


Controlling TIT ENG TP-9000 printer remote

* Program that allows users to control TITENG TP-9000 remote is provided. Follow procedure

below to set up status of printer for remote controlling.

1. Click "**Start**" -> "**All Programs**" -> "**TITENG TP-9000**" -> "**TITENG TP-9000 remote controlling program**"
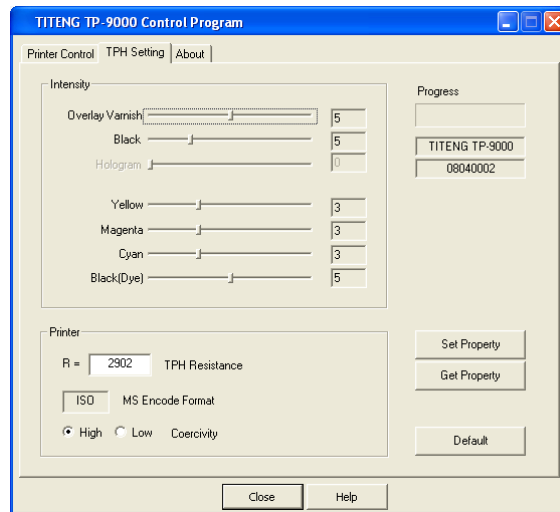

· Printer control tab

Printer cleaning function is provided for best printing quality. If image of printed card is incorrectly positioned, set the card margin.
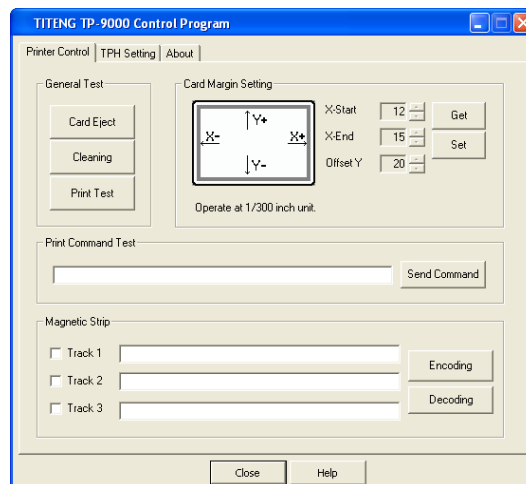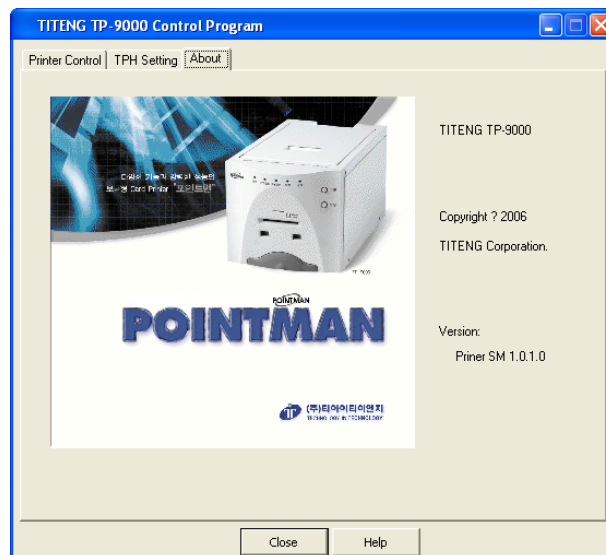
· Printer head set up

Set color density for best printing quality. And input TPH resistance value.

· Printer information tab

In the printer information tab, copyright and version is described.

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2.6 Printer Settings in Microsoft Windows

* User can set up own printing environment with various functions the printer provides.

Opening Printing Preferences window of the printer

* The values input in printing program will get back to previous one when current operating program terminates.

Opening Printing preferences on application software

1. Execute printing order in application program.

2. Click <Printing Preferences>.

3. Click each tab and windows will open.

4. Upon completing settings, click <OK>.

Opening in printer folder

1. "**Start**" -> "**Printers and Faxes**"

2. Double click "**TITENG TP-9000**"

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3. Open Printing Preferences window in a printing queue as follows "**Printer**" -> "**Printing Preferences**" -> "**Properties**" -> "**Printer Setting**"

4. Click each tab, then window opens.

2.7 Printer Driver Settings

Registered information of the printer

· "Card" tab

Set the number of copies, the card orientation, manual/auto feeding.
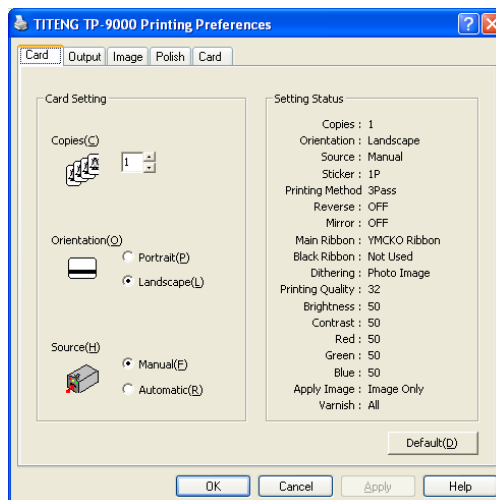
Items	Descriptions
Number of copies	Set the number of copies; 1 to 999
Card orientation	Set the card orientation. Default is horizontal.
Manual / Auto Feeding	Set the card feeding method; manual or auto

* NOTE: Ensure that the printing image is oriented in same direction (vertical, horizontal) as that of card. Preview function of software will help you check it out.

· "Output" tab

Set Sticker, Printing Method, Main Ribbon, Dithering.
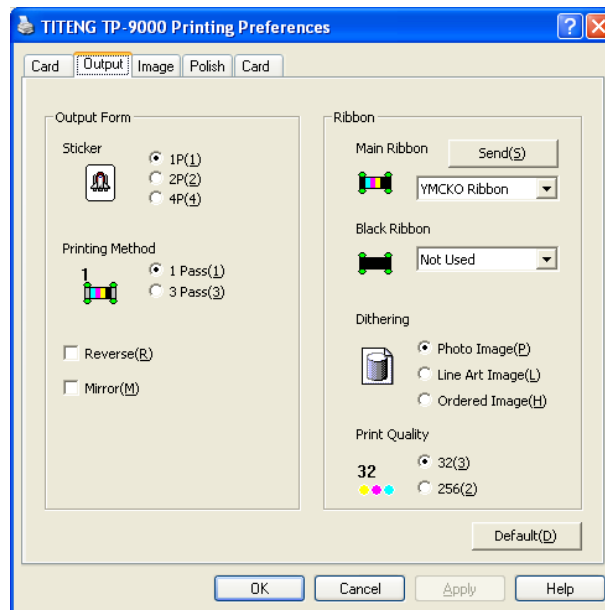
Items	Descriptions
Sticker	Print same image in sticker format for 1, 2, 4 sheets.
Printing Method	1 pass print: Transfer all data of YMCKO and then print.
	3 pass print: Transfer corresponding data of each color and then print.
Reverse	Reverse RGB and print.
Mirror	Mirror the printing data and print.
Main Ribbon	YMCKO Ribbon: Yellow, Magenta, Cyan, Black, Overlay
	K Resin: Resin black ribbon. Capable to print 256 color level.
	K Wax Resin: Wax resin ribbon

Black Ribbon	Not used: Black printed in color
	Text: Print text in document with K ribbon.
	Always: Print all black in document with K ribbon.
	Except image: Print all except image in document with K ribbon
Dithering	Photo image: Print soft image
	Line Art Image: Print image in pattern set.
	Ordered Image: Print image in ordered pattern
Print Quality	32: Print image level 32 (fast printing)
	256: Print image level 256 (High quality printing)

· "Image" Tab

Set the Card Orientation, Printing Quality, Paper Size and Paper Quality
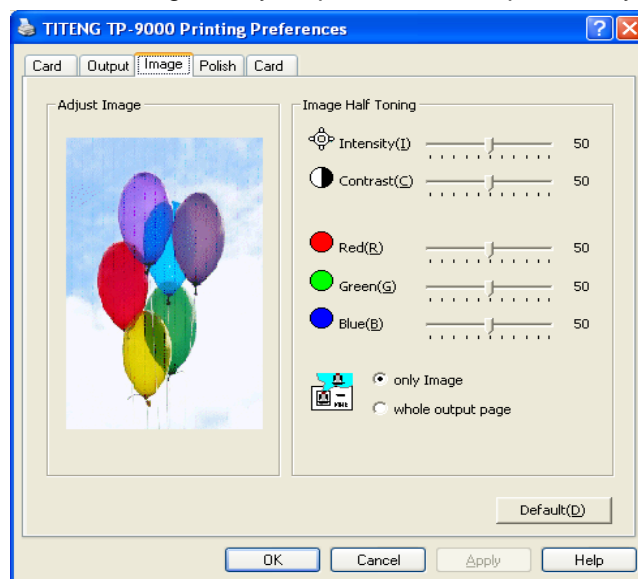
| Items	Descriptions
Intensity	Set brightness of image
Contrast	Set contrast of image and make it more bright
Red	Set red
Green	Set green
Blue	Set blue
Only Image	Half toning applicable only to image
Whole print page	Half toning applicable whole data

· "Polish" Tab

Set varnish on the card.
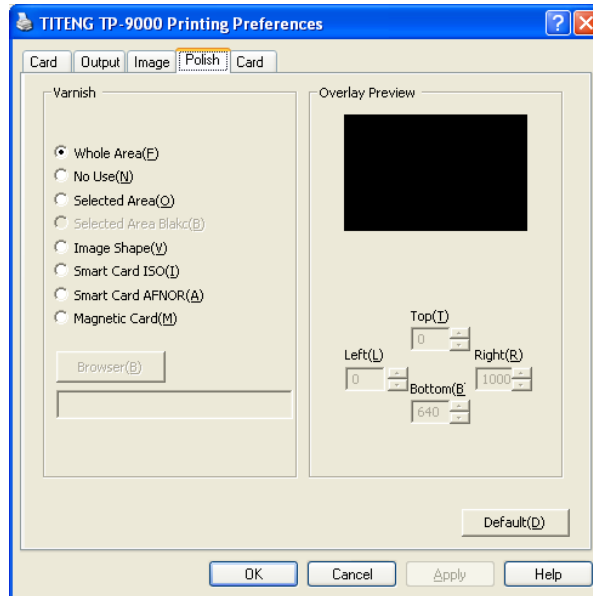
· "Card" Tab

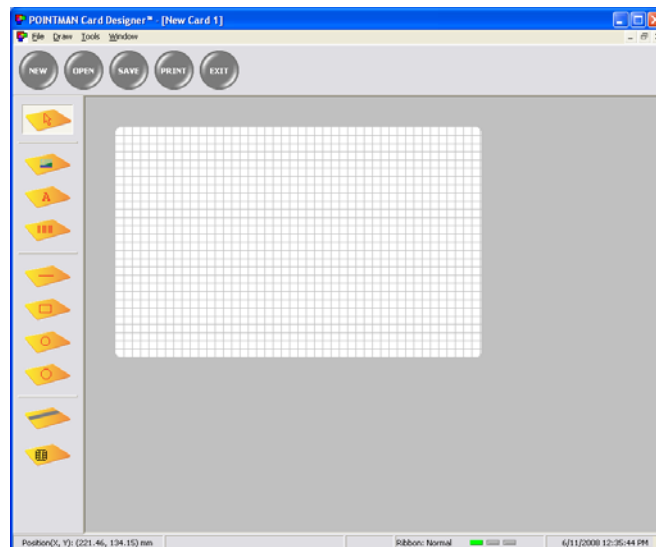If you click the image, the website of TIT ENG Co., Ltd. will open on internet browser.
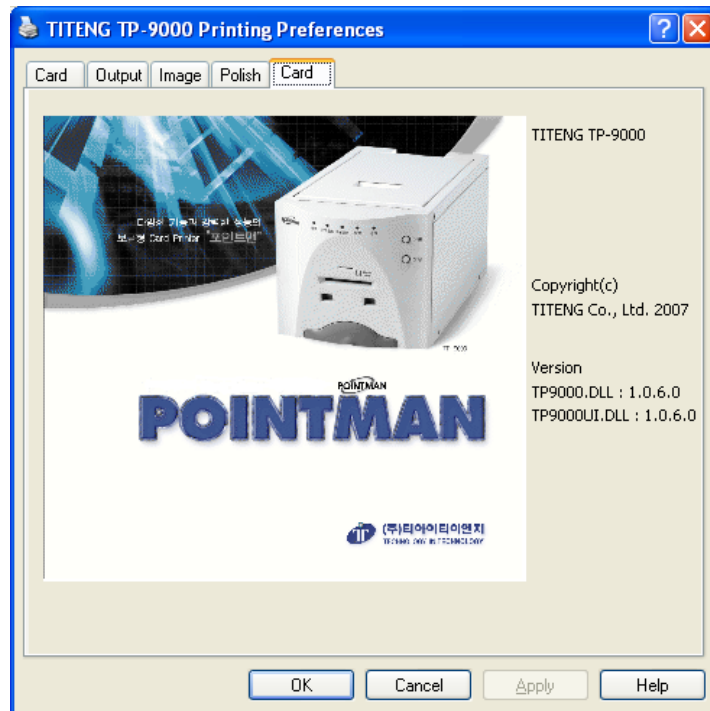
3. Printer Operation

3.1 Getting Started

The Designer 1.0 is software that allows user to design and issue cards. Follow the steps below to create cards.

Select "**Start**" -> "**All Program**" -> "**TIT ENG TP-9000**" -> "**The Designer**"

3.2 Description on Features

· **NEW** : Design new card. Up to 10 windows can be created at the same time.

· **OPEN**: Read a saved card design

· **SAVE**: Save a card design

· **ISSUE**: Print a card

· **EXIT**: Terminate the window

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3.3 Designing Card

IMAGE designing

1. Select (이미지) icon to start image designing in The Designer.
2. Drag mouse on the range where image is positioned on card.
3. When window of "**Properties – Image**" opens, click "**Select Image**" button. Select image you wish to insert.
4. Click "**Save**", then the selected image is inserted.
5. You can change properties of the inserted image.
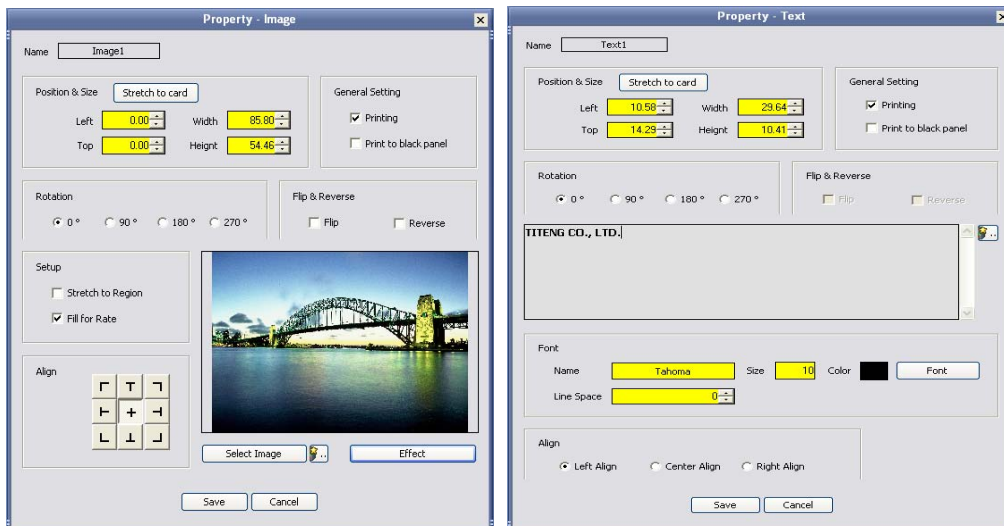
TEXT designing

1. Select (이미지) icon to start text designing in The Designer.
2. Drag mouse on the range where text is positioned on card.

3. When window of "**Properties – Text**" opens, type the text you wish to insert.

4. Click "**Save**", then the text is inserted.

5. If you wish to change properties of the inserted text, double click on the text.

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BARCODE designing

1. Select (이미지)icon to start bar code designing in The Designer.

2. Drag mouse on the range where barcode is positioned on card.

3. When window of "**Properties – barcode**" opens, insert "**Code**" you wish to insert.

4. Click "**Save**", then the bar code is inserted.

5. If you wish to change properties of the inserted text, double click on the bar code.

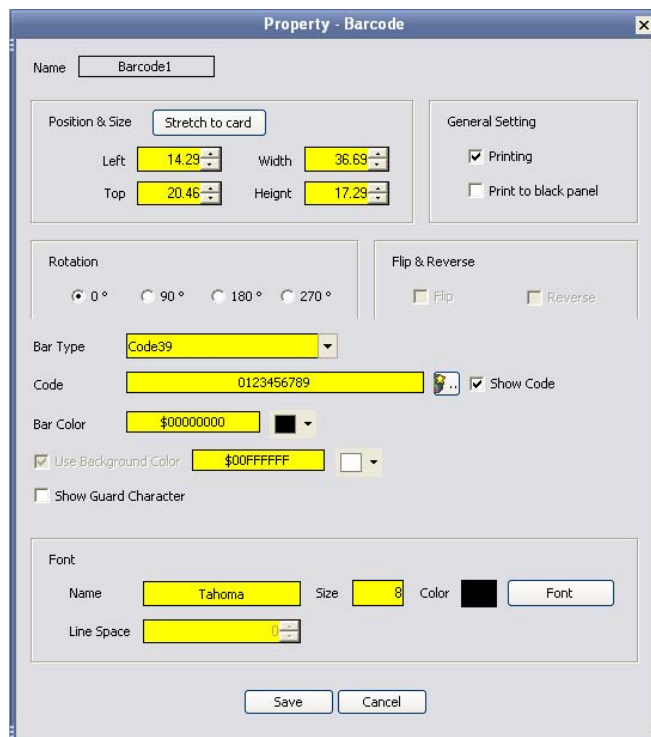## DIAGRAM designing

1. Select (이미지)icon to start diagram designing in The Designer.

2. You can draw Diagram; Circle, Rectangle, Oval.

3. If you wish to change properties of the diagram, double click on the diagram.

MAGNETIC CARD

1. Select (이미지)icon to start diagram designing in The Designer.
2. Magnetic stripe is displayed within the range of card.
3. If you wish to input data into magnetic stripe, double click the magnetic stripe and input data in the relevant track.
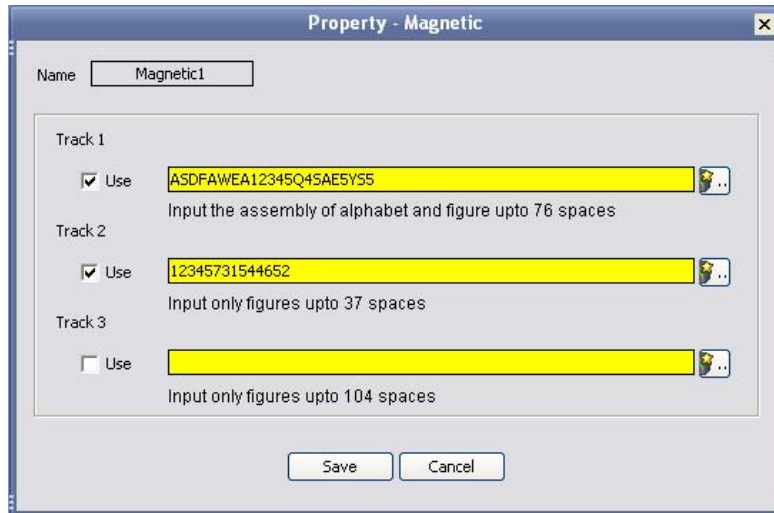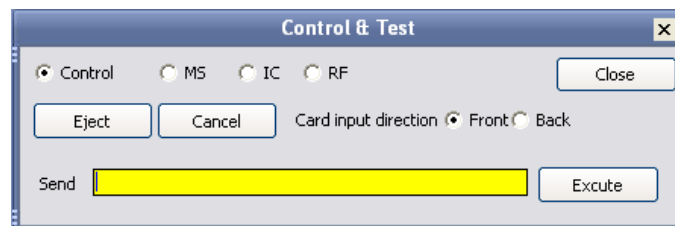

IC CARD

1. Select (이미지)icon to start image job left of the ISSUE window.
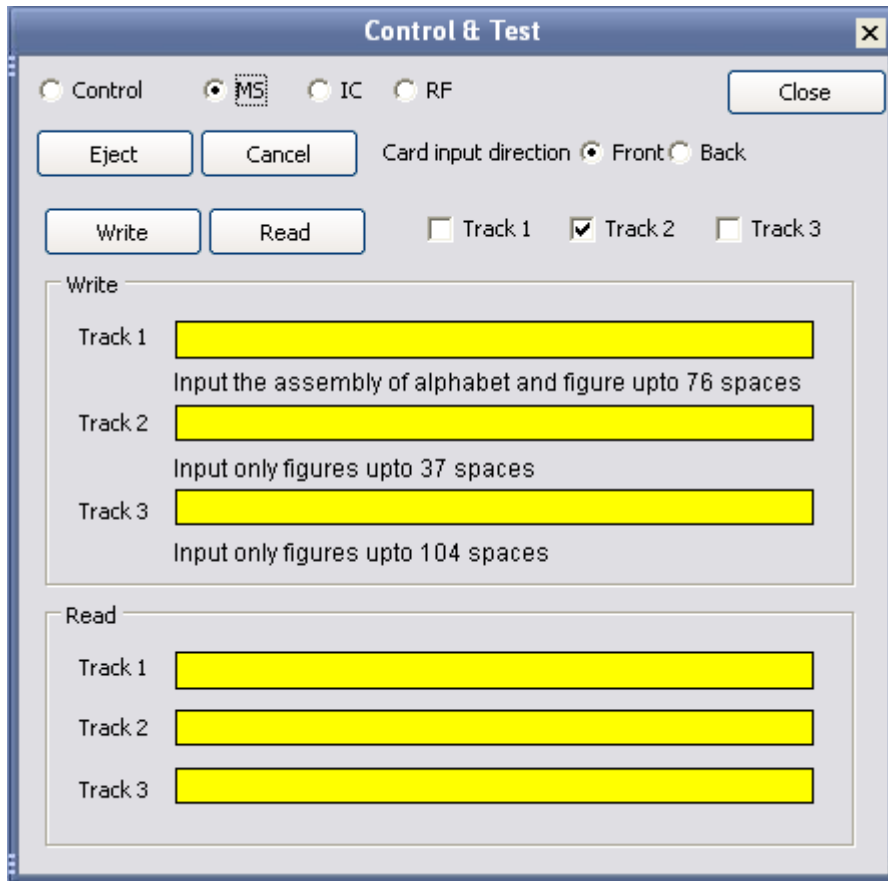2. IC chip is displayed within the range of card.

3.4 Tools

Device Control

User can control printer remote. After input of printer control code described in the manual, click "**Execute**".
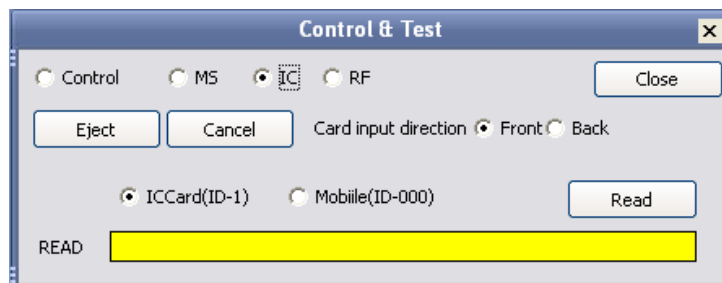
Magnetic card

After input of data to be written on magnetic track, click "**Write**". Click "**Read**" to read the saved data on each track.
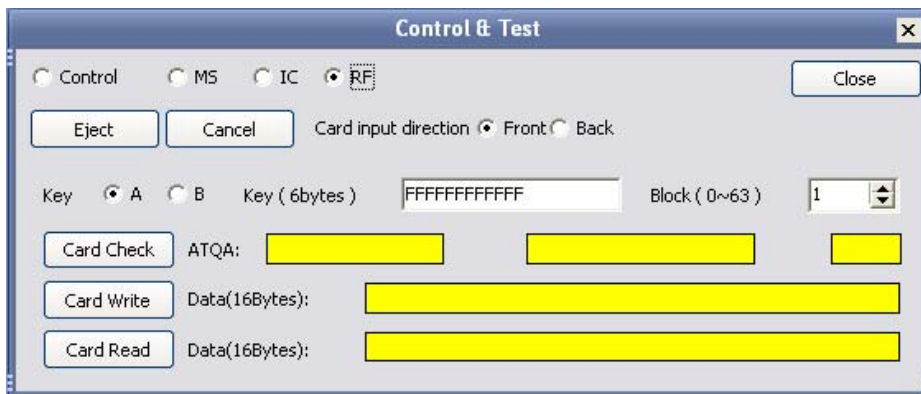
IC CARD

Select "**IC**" and click "**Read**" button. Progress bar will show communication status with IC chip.
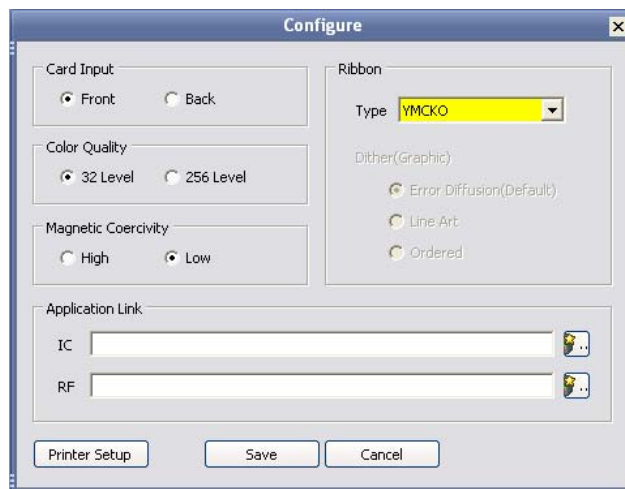

IC CARD

Click "**Card Read**". The progress will show communication status with RF card.

3.5 Configuration

Configure

When issuing card, user can set the type of ribbons, the card orientation and dithering for black ribbon. When issuing IC card or RF card, user can set the external program necessary.

3.6 Data Synchronizing

* Data Synchronizing will help user to synchronize data created in Microsoft Excel or Microsoft Access with what will be used in card issuing software for card creation. User can make card

effectively in shorter time.

EXAMPLE

If user would like to issue company staff's card, user would have staff list database. If there is no database, user is recommended to make up a list in Microsoft Excel as follows.

* If you have data file and picture file in the same folder, you can synchronize them only with file name and extention. (example: James.jpg)
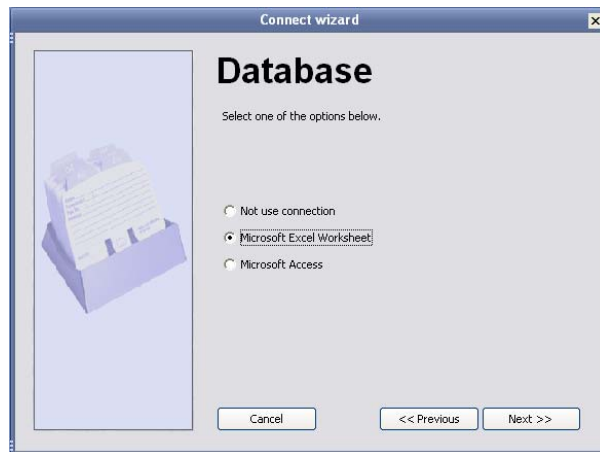
Data Connect Wizard

1. The Designer "**Tool**" -> "**Data Connect**" -> "**Data Connect wizard**"
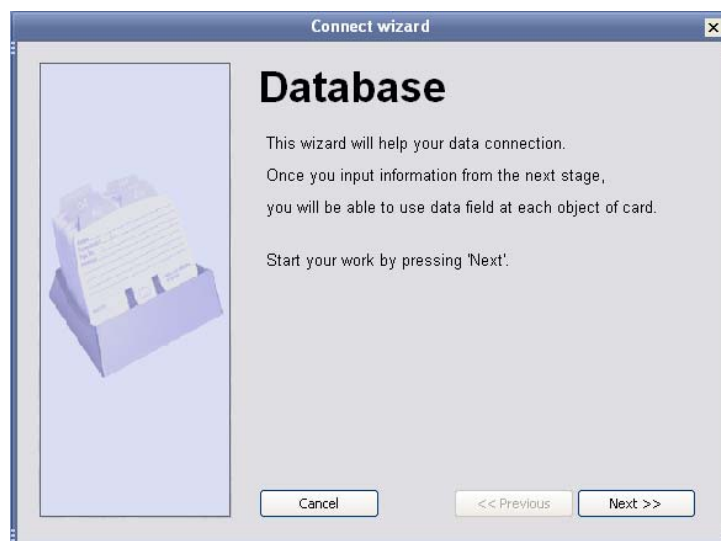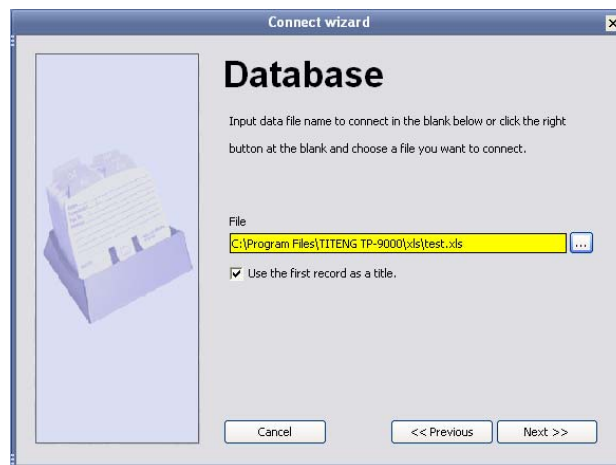

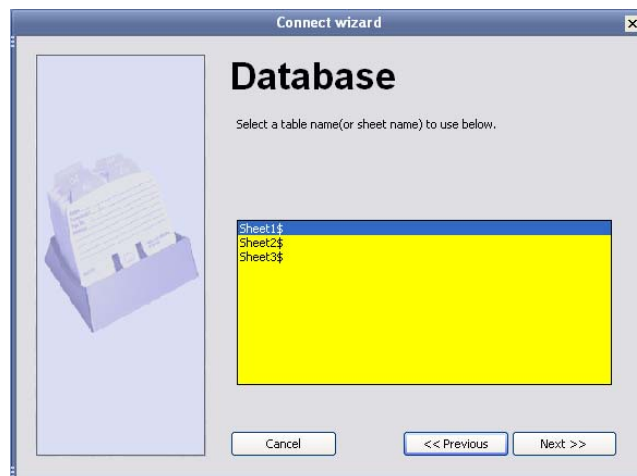2. Select target database to synchronize. (Select Excel Work Sheet if target DB is in Excel format)

3. Choose database file.

   Click "**Use the first record as a title**". The first record will not be used.

4. Select sheet in the selected database.

<Choose Microsoft Excel Worksheet 1>

5. Choose Sheet to be used in database.

<Completing synchronizing>
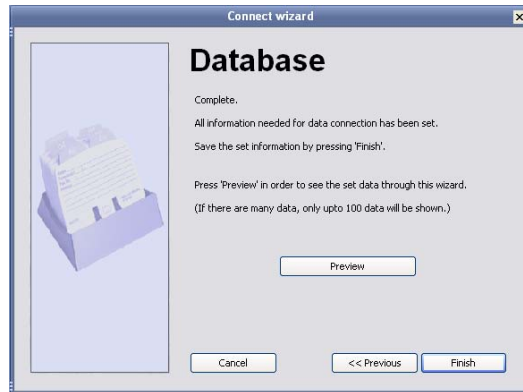
p

6. If synchronizing with target database is complete, click "**Preview**".
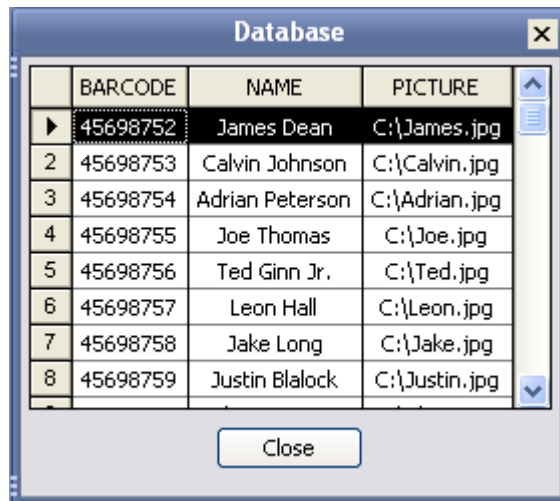
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Synchronizing data on the card with database (ex. Staff number)

1. Double click Barcode (Field 1) on database to synchronize.

   <이미지 그대도 사용> Field1 Double click

2. Click "**Data input**" button. Select "**Data field**" for data input. Select "**Staff number**" for data field. Click "**+**" to add data for staff number. Click "**Finish**".
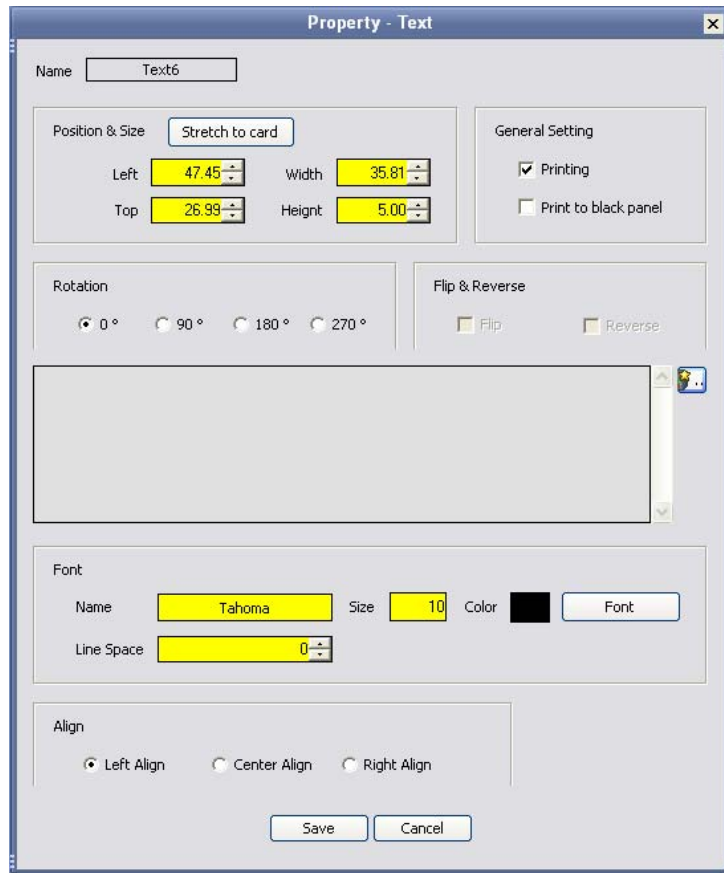
Data input button
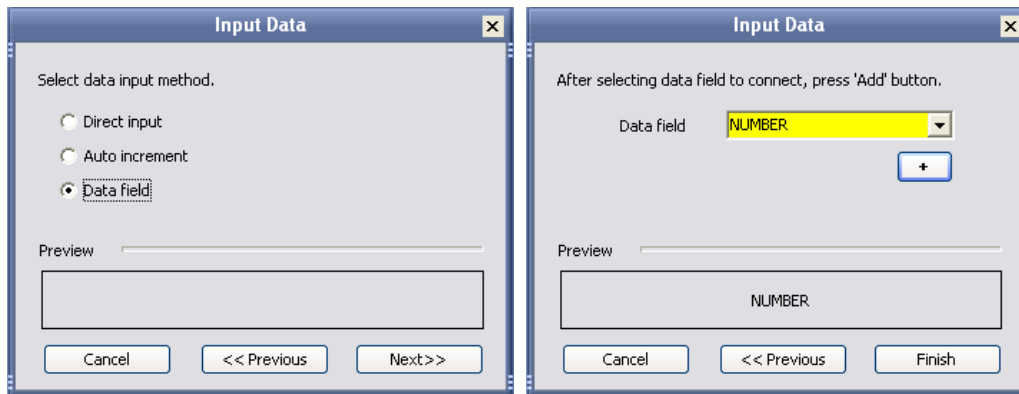
Synchronizing data on the card with database (ex. Staff name)

1. Double click "**Staff Name**" (Field 2) on card data to synchronize.

Field3 Double Click

2. Click "**Data input**" button. Select "**Data field**" for data input. Select "**Staff Name**" for data field. Click "**+**" to add data for staff number. Click "**Finish**". And Click "**Save**".

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Synchronizing data on the card with database (ex. Staff picture)
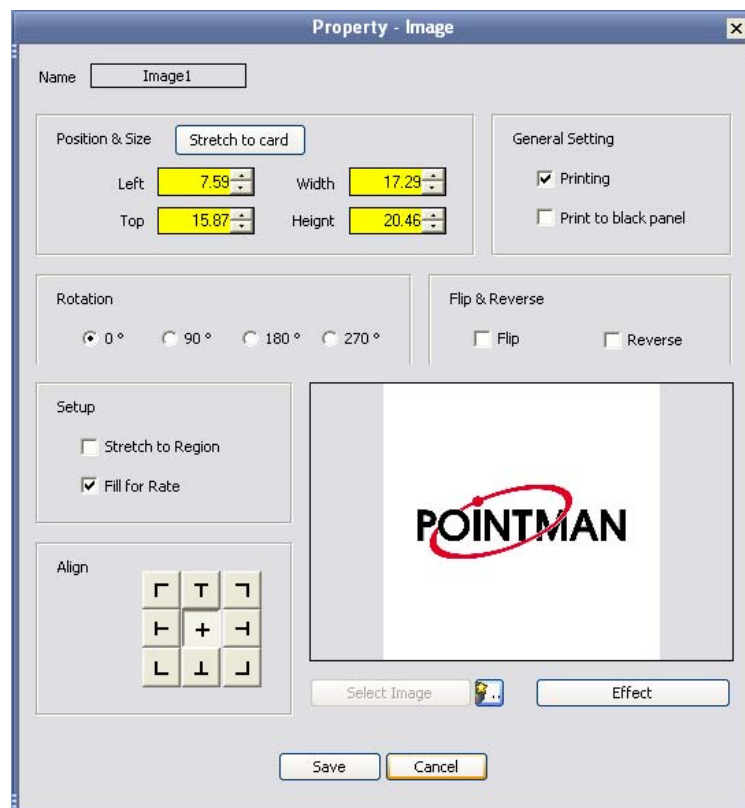
1. Double click "**Staff Name**" (Field 3) on card data to synchronize.
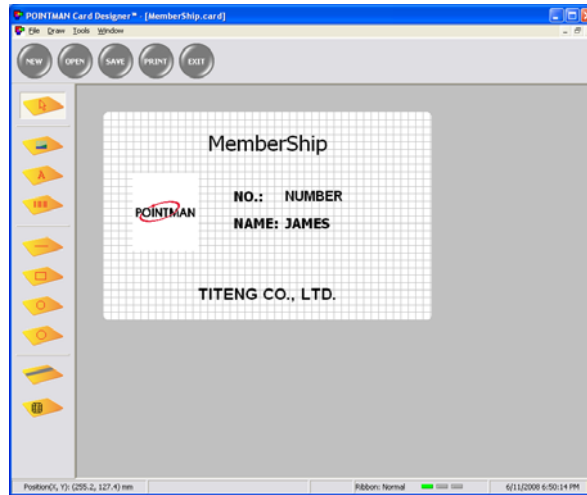
Field3 Double Click

2. Click "**Data Input**" button. Select "**Data Field**" for data input. Select "**Staff Picture**" for data field. Click "**+**" to add data for staff number. Click "**Finish**". And Click "**Save**".
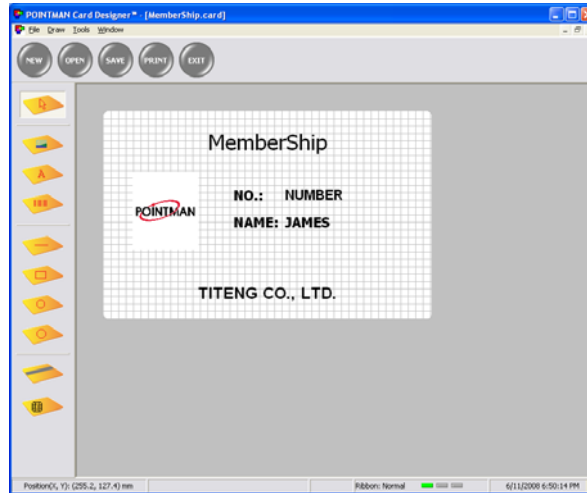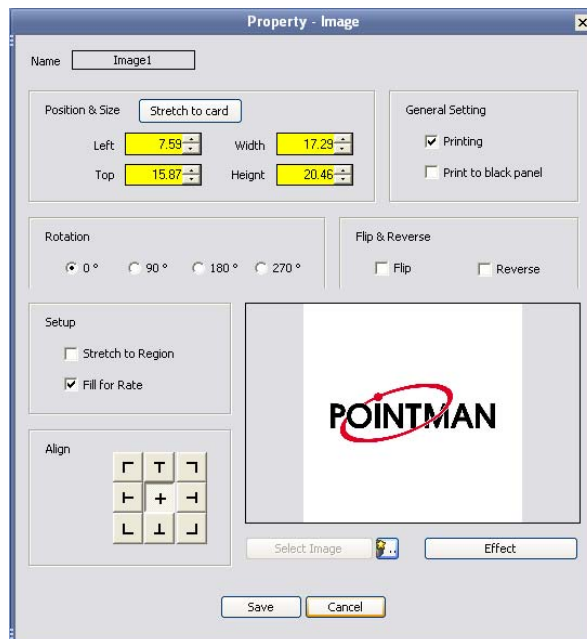

Data input button

3.7 Card Printing

Card Issue

If you click "**Issue**" on The Designer, window below will open.
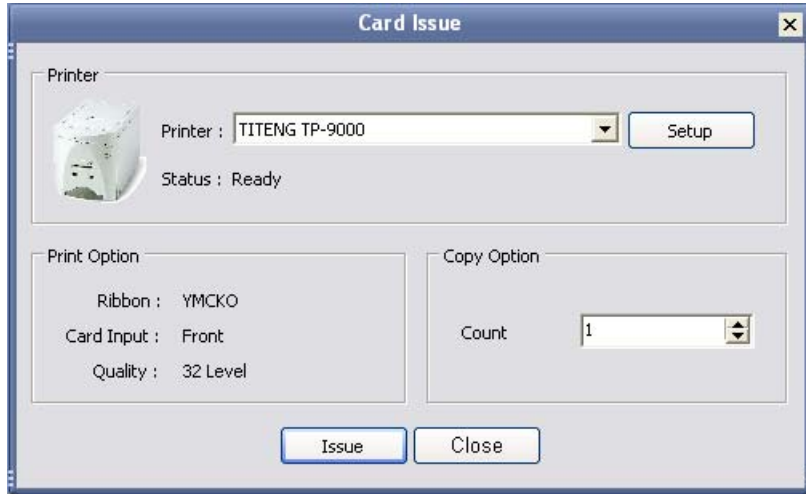
Click the "**Issue**" button, then progress bar window will open and printing starts.
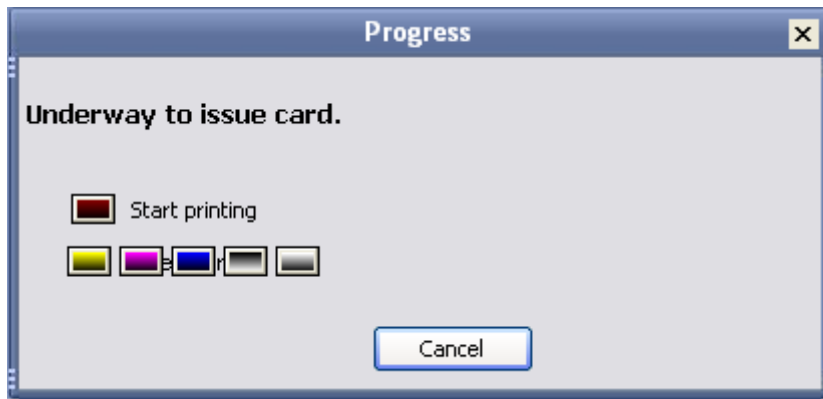
4. Instructions on Maintenance

4.1 Maintenance of Product

Never use card below

· Heavy damaged card

· Card with heavy dirt

· Card with scratch

· Bended or deformed card

Cleaning

· Place the printer power switch in the OFF position and pull out the plug and power adaptor.
  Cleanse the surface of the printer with wet soft cloth.
· Do not let water inside the printer.
· When the printer gets dry, turn power on.

4.2 How to Replace Ribbon Cartridge

1. Open printer lid by pressing the Cover Release button.

2. Hold the used ribbon cartridge and pull it out from the printer.

3. Make sure that supply ribbon and rewinding ribbon placed in right position. Close the printer lid.

4.3 How to Clean the Printer

Cleaning card

* Dirt or embedded contamination on roller may cause problem. Follow the recommended maintenance procedures below.

1. Turn the power off and remove card and ribbon cartridge.

2. Turn the power on with pressing "Eject" button at the same time. When front LED panel flashes, insert the cleaning card wet with alcohol cleanser into the front card slot.

3. After completing cleaning, cleaning card is ejected automatically. And the cleaning card is reusable.

4. Leave the printer for 2 ~ 3 minutes until alcohol cleanser evaporates.

Cleaning Roller

* For cleaning roller maintenance, follow the procedures below.

1. Remove the cleaning roller from the printer.

2. Wet and clean the cleaning roller in flowing water.

3. When the cleaning roller gets dry, insert it into the printer.

4.4 How to Replace TPH(Thermal Print Head) and Consumables

1. Turn the power off. Open printer lid by pressing the Cover Release button.

2. Pull the TPH upward and backward, then head cover is detached. And disconnect cable connectors from the printer.

3. Connect the new TPH's cable connectors to the printer.

4. After completing TPH replacement, execute "Start" -> "All Program" -> "TITENG TP-9000" -> "Remote Control Program".

In remote control program, set the resistant value of new TPH. Click the "Printer Transfer" button.

* For more information, refer to "Printer Head settings" on page 26 in the user's manual ".

* TPH resistance value is described on TPH.

4.5 Trouble-shooting

1. In case front LED keeps on flashing or always on all the time.

Error Code	Trouble	Solution
10	TPH Module open	- Check TPH module is closed
11	TPH Up/Down failure	- With TPH module opened, check printer inside and turn power off and on. Perform module Up/Down.
12	Card jammed	Remove the jammed card inside the printer
13	TPH temperature trouble	- Check that temperature is within the operating temperature range. - Open TPH module and check that cable is correctly connected.
14	Encoder trouble in ribbon control part	- Check that ribbon is cut - Check that ribbon run out. - Check that encoder in ribbon control part is correctly assembled and operates normal.
15	Medium trouble	- Check that size of the medium meets specification - If same trouble repeats, contact dealer.
16	EEPROM trouble	- Turn power on again. If same trouble repeats, contact dealer.
17	IC Contact Module not correctly positioned	- Check that IC Contact Module is correctly positioned - If not correct, turn power off and on. - If same trouble repeats, contact dealer.
50~51	Flipper module communication trouble	- After remove card, turn power on. - If same trouble repeats, contact dealer.
52~56	Flipper module mechanism trouble	- After remove card, turn power on. - If same trouble repeats, contact dealer.
57	Flipper improperly positioned or Card inside	- After remove card, turn power on.

* After the trouble above is resolved, perform one of three below to get printer into normal operation.

1) Press reset button with ribbon cartridge correctly loaded.

2) Press "EJECT" button

3) Place power switch in OFF position, and ON position.

2. Other troubles

Trouble	Solution
Found frequently ribbons cut in the front edge of card when printing	- In printer driver or The Designer settings, increase Print Start Position.
Found frequently ribbons cut in the rear edge of card when printing	- In printer driver or The Designer settings, increase Print End Position.
Printer not found in The Designer or application software	- Check that printer driver is correctly installed. - Check that communication cable is properly connected - Reboot your PC.
Other than power LED, 4 Front LEDs continuously flash in sequence	- Check out www.titeng.co.kr for firmware download. - Download the latest version of firmware for the printer. - Perform install using firmware install program.
Firmware installation not performed	- With pressing "EJECT", "RESET" switch at the same time, place power switch in the ON position. - Check that front 4 LEDs flash in sequence, install firmware using firmware install program.

4.6 Technical Specifications

Motor	Motor	Step Motor Driven
Print	Thermal Dye Sublimation	1) Printing : Dye Sublimation 2) Printing Speed: Mono 4 sec, Color single sided 25 sec, Color dual-sided 20 sec(YMCKO) 3) Printing side: Single or Dual sided
	TPH	1) Resolution : 300DPI(11.8DPM) 2) Pulse Life: 1×10^8 , Abrasion: 50km
	Color & Mono	1) Color: 165K color, Full color 2) Mono: Black + Overlay, Black
Ribbons Cartridges	Color (YMCKO)	200 cards / cartridge
	Mono (KO)	500 cards / cartridge
	Black (K)	1,000 cards / cartridge
Electrical	CPU	32 Bit Processor
	RAM	64 Mb
	User inferface	LCD, LED, Switch
	Power adaptor	Input: 110 ~ 220 V / 50 ~ 60Hz, Output: 24 V / DC
Cards	PVC Card	53.98(W) x 85.7(H) x 0.77(T)
	PET Card	53.98(W) x 85.7(H) x 0.2(T)
Encoding	Magnetic Stripe	1) Single Track (Track2) (Default) 2) HiCo/LoCo
		1) ISO7811 (Track1,2,3) (Option) 2) HiCo/LoCo
	Contact (IC)	1) ISO7816 (Option) 2) EMV, K-Cash
	Contactless (RF)	ISO14443 A, B, Mifare
Interface	USB	USB1.1, USB2.0
Environmental	Operating Temperature	0℃ ~ 35℃, 20 ~ 70% RH
	Storage Temperature	-25℃ ~ 70℃
Dimension	TP-9000 (Single Sided)	292(L) x 196(H) x 192(W)
	TP-9000 (Dual Sided)	359(L) x 196(H) x 192(W)
	TP-9100 (Single Sided)	403(L) x 202(H) x 192(W)
	TP-9100 (Dual Sided)	471(L) x 202(H) x 192(W)

FCC (Federal Communications Commission)

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 technical for help.

WARNING: This equipment may generate or use radio frequency energy.   Changes or modifications to this equipment may cause harmful interference unless the modifications are expressly approved in the instruction manual.   The user could lose the authority to operate this equipment if an unauthorized change or modification is made.

This device complies with Part 15 of the FCC`s Rules. Operation is subject to the following two Conditions:

1. This device may not cause harmful interference, and

2. This device must accept ant interference received, including interference that may cause undesirable operation.