SMART-50

Utilities User's Manual

FEB. 2013

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1. Setup

1.1 Overview

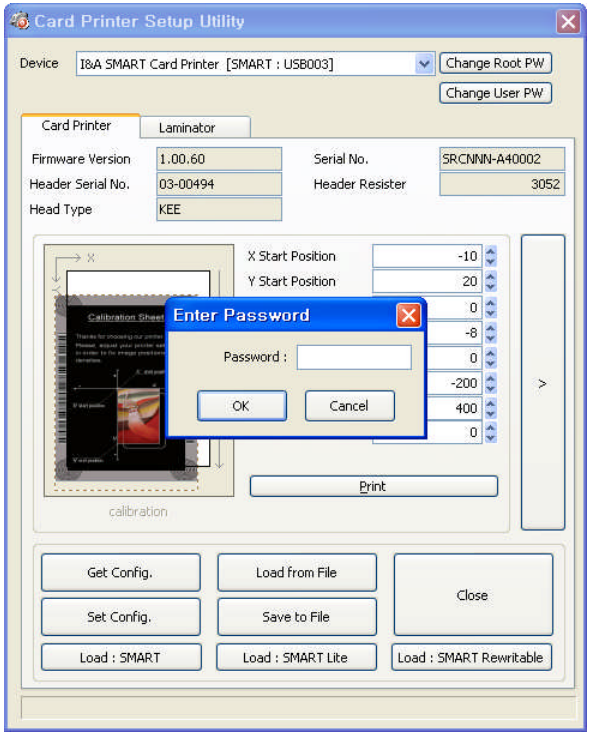
- 1.1.1 Function

SMART Card Printer is delivered in optimized state from factory. However it can be set the setup value using CardPrinter Setup Utility provided with CD when the unit is disassemble and reassemble or change of part. The following setup value can be changed using CardPrinter Setup utility.

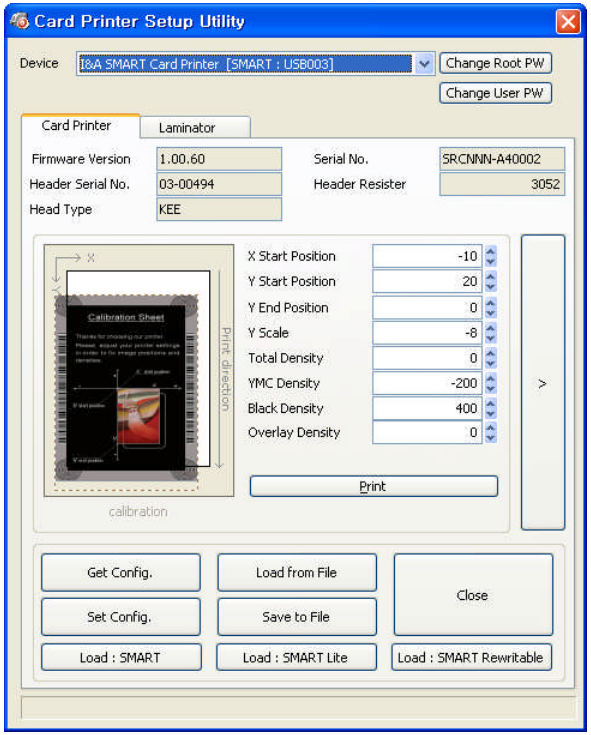
Item	Explanation
Print Location	**Set the start position or end position of the printed image.**
Print Thickness	**Set the print thickness of color, resin black, overlay.**
Ribbon Operation	**Set the ribbon moving power**
Rotator	**Set the rotation angle of rotator**
Magnetic Stripe	**Set the start position of magnetic data.**
Ribbon Color Sensor Recognition	**Set the sensor value to distinguish the ribbon color.**
Security	**Set the value for the printer security**
Etc.	**Set the printer's hardware version and the printer state.**

1.1.2 Start

When start the program there will be displayed the password input window. If input the password, the recorded setup value will be shown and can change that value. The password is saved to SMART Card Printer so even if change to other PC, it need to input the password to change the setup value. (SMART Printer is not set its password so if you press O.K, you can see the setup value and can change. Default is no password)



SmartSetup startup

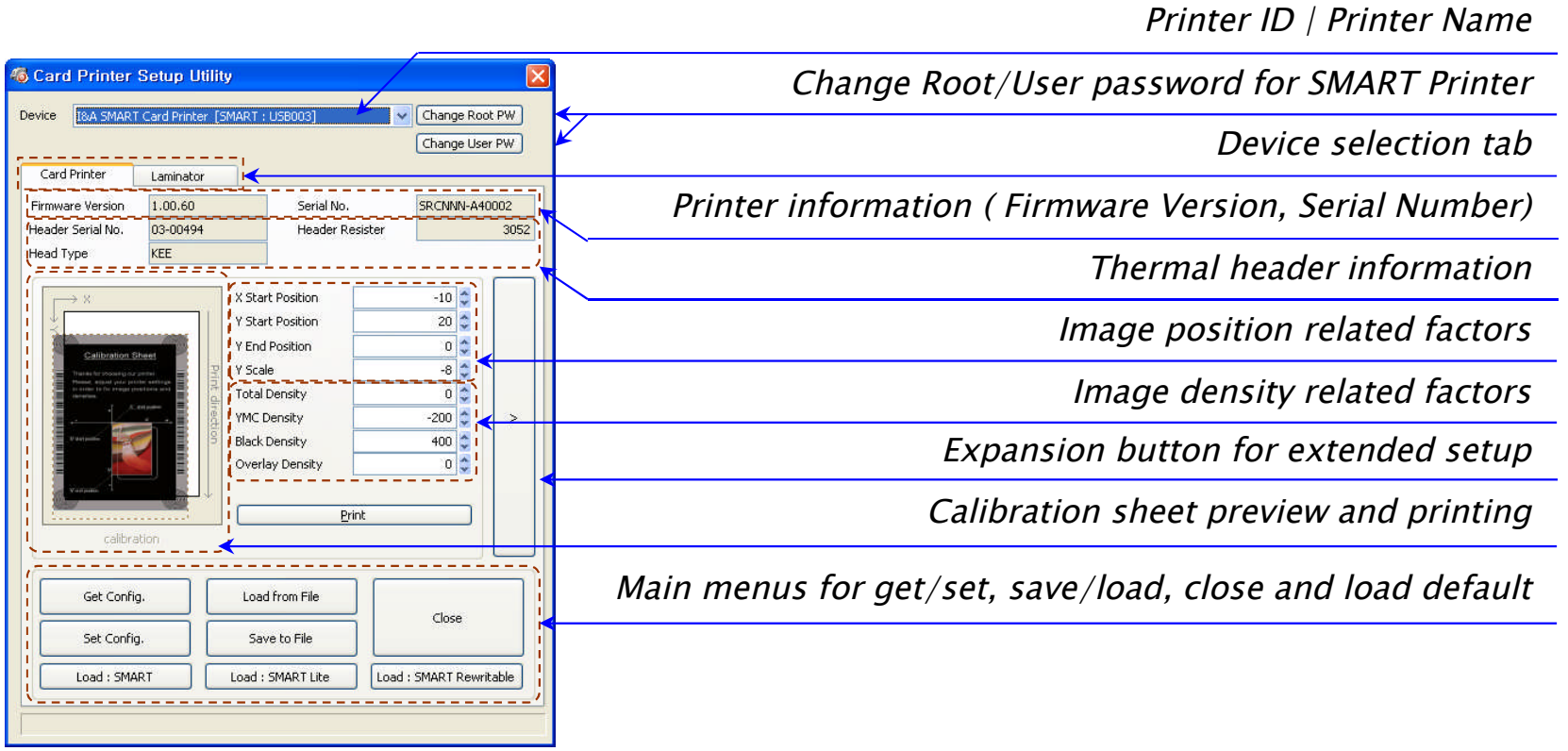


SmartSetup main window

1.2 Card Printer Setup

1.2.1 Basic Setup

The most of basic setup can be realized on this window easily. To set more detailed setup, press “>” button for expansion. Below image shows basic functions of “CardPrinterSetup”



Basic Setup Item

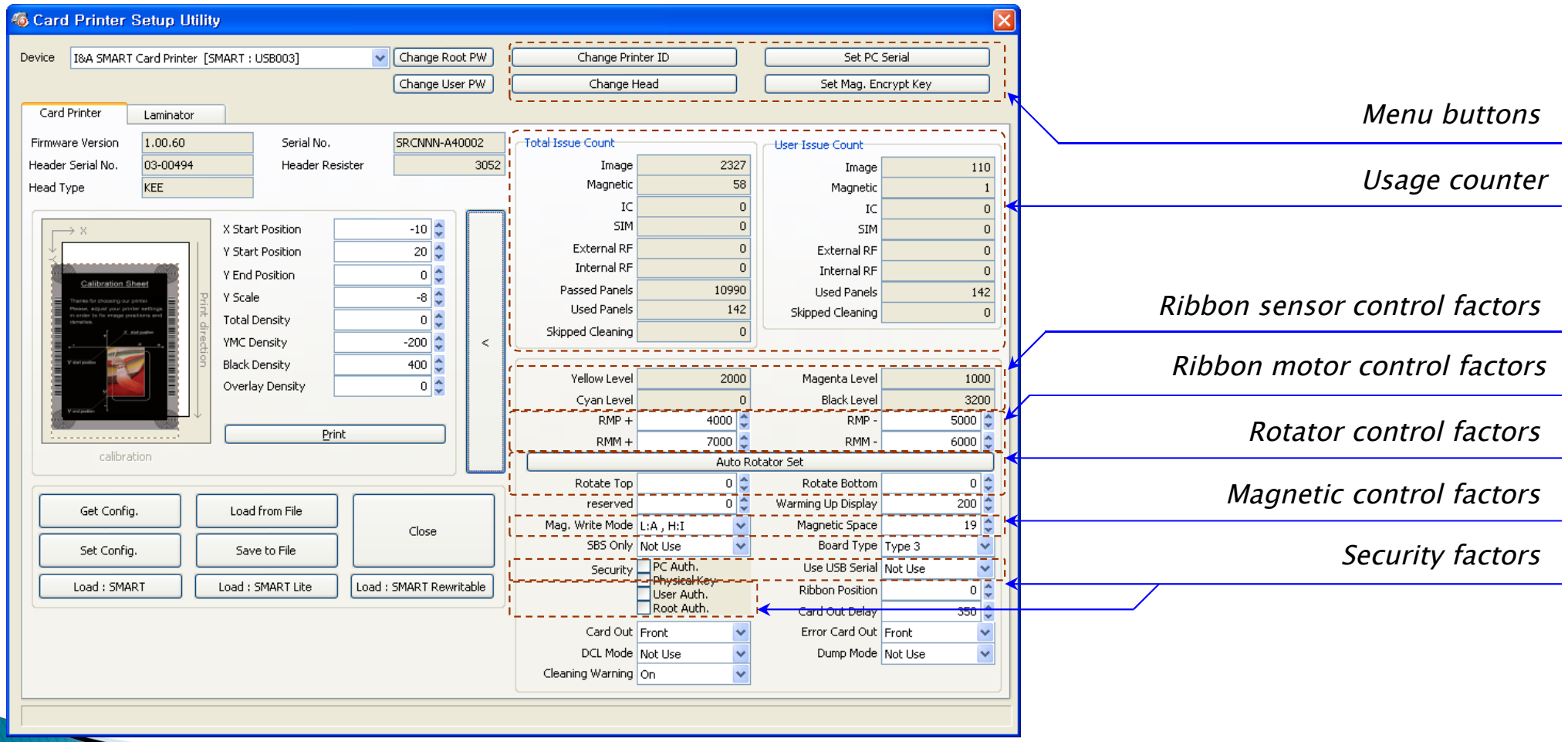
Item	Explanation
Device	Available device list will be displayed. “SMART” is printer ID value. “I&A SMART Card Printer” is the printer driver name. Using the printer ID, the printer can be distinguish when you use SDK.
Change Password	Change password
Firmware Ver.	The printer’s firmware version
Serial No.	The printer’s serial no.
Header Serial No.	The printer’s thermal head serial no. When the print head is change, it should be changed.
Header Resister	The resistor value of the thermal head. When the print head is change, it should be changed.
Head Type	Designate type of installed thermal printer head
X Start Position	Adjust X start position (Range : -30 ~ 30) ※ If the value is change, the example will be changed.
Y Start Position	Adjust Y start position. (Range : -30 ~ 30) ※ If the value is change, the example will be changed.
Y End Position	Adjust Y end position (Range : -20 ~ 20) ※ If the value is change, the example will be changed.
Y Scale	Adjust the length of image (Range : -60 ~ 60) ※ If the value is change, the example will be changed.
Total Density	Set the image’s total density (Range : -500 ~ 500)
YMC Density	Set the color density (YMC) (Range : -500 ~ 500)
Black Density	Set Black (Resin) thickness (Range : -1500 ~ 1000)
Overlay Density	Set Overlay thickness (Range : -500 ~ 500)

Basic Setup Item

Item	Explanation
Example	Preview the changed value
Print	To check the adjusted value. You can print the test card
>	Show the expansion items
Get Config.	Load the printer's setup value
Set Config.	Save the changed setup value In case you use the password, if it is not matching, it will not be saved
Load from File	Load the saved file
Save to File	Save the setup value to the file
Load Default	Back to the default value
Close	Exit the program
Load : SMART	Load set up default value for SMART
Load : SMART Lite	Load set up default value for SMART Lite
Load : SMART Rewritable	Load set up default value for SMART Rewritable

1.2.2 Expansion Setup

This window can be used to check the printer's state or change the detailed setup. Below image shows special functions of "CardPrinterSetup"



Expansion Setup Item

Item		Explanation
Change Printer ID		When use SKD, this ID can be used to distinguish each printer
Set PC Serial		When use PC Authentication, set the PC to print
Change Header		In case of changing the print head, set the serial no. and resistor value
Set Mag. Encryption Key		When transport the magnetic data and if it is encrypted, you can set the Key
Total Issue	Image	The total number of printed image after purchase
	Magnetic	The total number of magnetic encoding after purchase
	IC	The total number of IC encoding after purchase (It can be increased by SDK)
	SIM	The total number of SIM encoding after purchase (It can be increased by SDK)
	External RF	The total number of external RF encoding after purchase (It can be increased by SDK)
	Internal RF	The total number of internal RF encoding after purchase (It can be increased by SDK)
	Passed Panels	The number of printed panel when image print
	Used Panels	The total number of image and magnetic printing for cleaning
	Skipped Cleaning	The number of skipped cleaning alarm after purchase
User Issue	Image	The total number of printed image
	Magnetic	The total number of magnetic encoding
	IC	The total number of IC encoding (It can be increased by SDK)
	SIM	The total number of SIM encoding (It can be increased by SDK)
	External RF	The total number of external RF encoding (It can be increased by SDK)
	Internal RF	The total number of internal RF encoding (It can be increased by SDK)
	Used Panels	The total number of image and magnetic printing for cleaning
	Skipped Cleaning	The number of skipped cleaning alarm

Expansion Setup Item

Item	Explanation
Yellow Level	The value of yellow Level in device. (only for board type 1, 2)
Magenta Level	The value of magenta Level in device. (only for board type 1, 2)
Cyan Level	The value of cyan Level in device. (only for board type 1, 2)
Black Level	The value of black Level in device. (only for board type 1, 2)
RMP +	Set the ribbon motor's max torque value while printing. Range : 2000 ~ 7000
RMP -	Set the ribbon motor's min torque value while printing. Range : 2000 ~ 7000
RMM +	Set the ribbon motor's max torque value while moving. (The value must be bigger than RMM -) Range : 4000 ~ 8000
RMM -	Set the ribbon motor's min torque value while moving. (The value must be smaller than RMM +) Range : 4000 ~ 8000
Auto Rotator Set	Printer finds proper Rotate Top value and Rotate Bottom value, automatically.
Rotate Top	Set the angle to be flat for the rotator front side (Range : -30 ~ 30) (The lower the value the more the angle)
Rotate Bottom	Set the angle to be flat for the rotator back side (Range : -30 ~ 30) (The lower the value the more the angle)
Fast Y End Position	Adjust Y end position when print in Fast mode
Fast Y Scale	Adjust Y scale when print in Fast mode
Mag. Write Mode	Set the track writing
Magnetic Space	Set the start position of magnetic data (Range : 10 ~ 30) If the value is increased, the start position will be close to the end
SBS Only	Set the SMART printer is only operated in the applications those using SMART SDK

Expansion Setup Item

Item	Explanation
Board type	Set the main board type (Do not change!)
Security	This function is for security in SMART printer. PC Auth : Matching SMART printer and PC (To use this function, press "Set PC Serial" and save the PC information to SMART Printer) Physical key : Deciding whether using Key in case of customized model. User Auth: Set password for specified user. Root Auth: Set password for specified administrator.
Use USB Serial	The function when use the several PC with only one SMART Card Printer The printer should be connected with PC case by case and set this function as Use
Error Card Out	Set error card out direction (The back out can be done only in dual side printer)
Card Out Delay	Use for specific printer for card in and out from hopper.
Ribbon Position	Adjust ribbon position. +5mm ~ -5mm
DCL Mode	Use DCL Mode If DCL mode is set, driver installation is not needed. If driver is already installed, it will not be used. This mode is developed for special program that does not require or use driver. (Caution! You are unable to print general program on DCL Mode.)

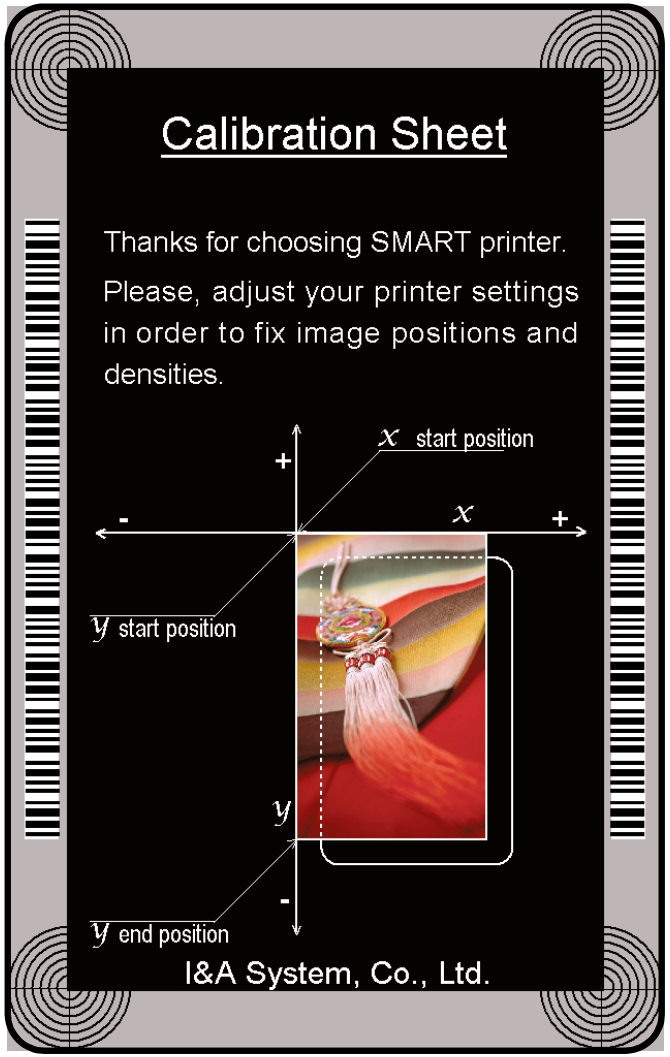
1.3 Adjustment of Printer Setup

1.3.1 Printing Location

SMART Card Printer is the direct thermal printer and need to some setting to print all over the card surface.

In CardPrinter setup, if press “Print” button, the image like left side will be printed. In this time, if four circles on each side are printed well and the space of upper & bottom is in 0.5mm, it is proper setting.

For correct setting, you can adjust the setup value as follows.



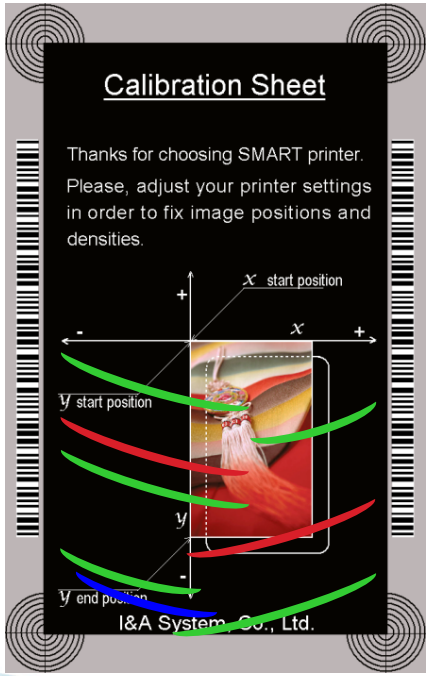
1. Do not make too much space on left and right side as adjusting X start position value.
2. Do make the image start point in 0.4mm ~ 0.5mm from the card upper side as adjusting Y start position value.
3. Do make the image end point in 0.4mm ~ 0.5mm from the card bottom side as adjusting Y end position value. In this case, Y scale value should be input more bigger than the proper setup value.
4. Do make the four circles can be shown fully as adjusting Y scale value.

1.3.2 Printing Thickness

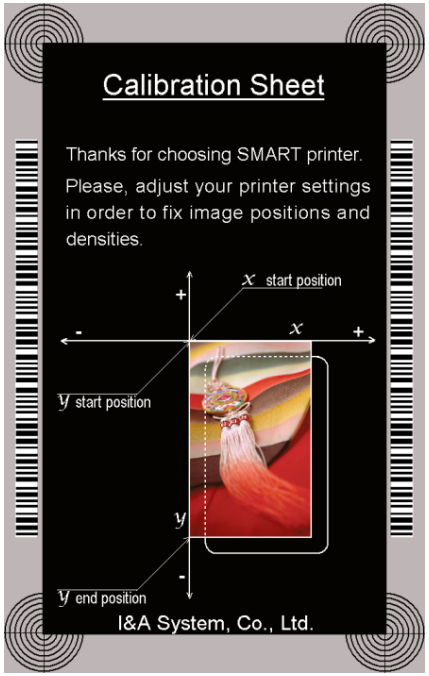
SMART Card Printer is direct thermal printer. Use the thermal heat to print. To print the correct and proper printing, the thermal heat should be different in color printing, resin black printing, overlay printing. So for the best printing image, some adjustment is needed.

[Color Printing Thickness]

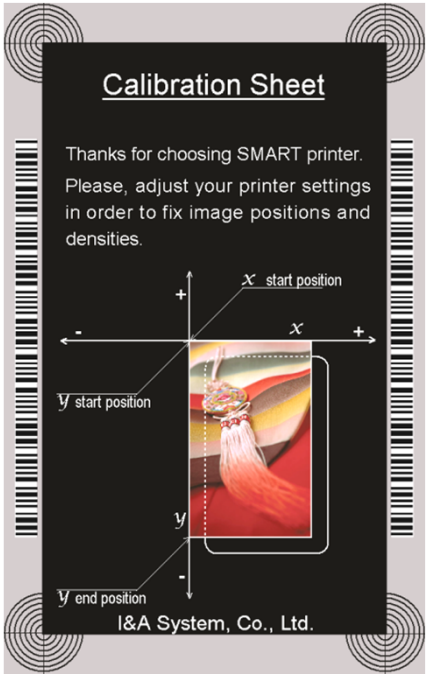
Color printing is print the color image using the color ribbon. SMART printer can print 16,777,216 color. In its color printing thickness, the color expression range can be widen and get the clear image by printing so thickly as possible as the ribbon is allowed. However if it is too thick, the ribbon can folded and there might be green or red bad image. And if it is too weak, the image is not clear as below third figure. Set the proper thickness.



Too strong



Proper



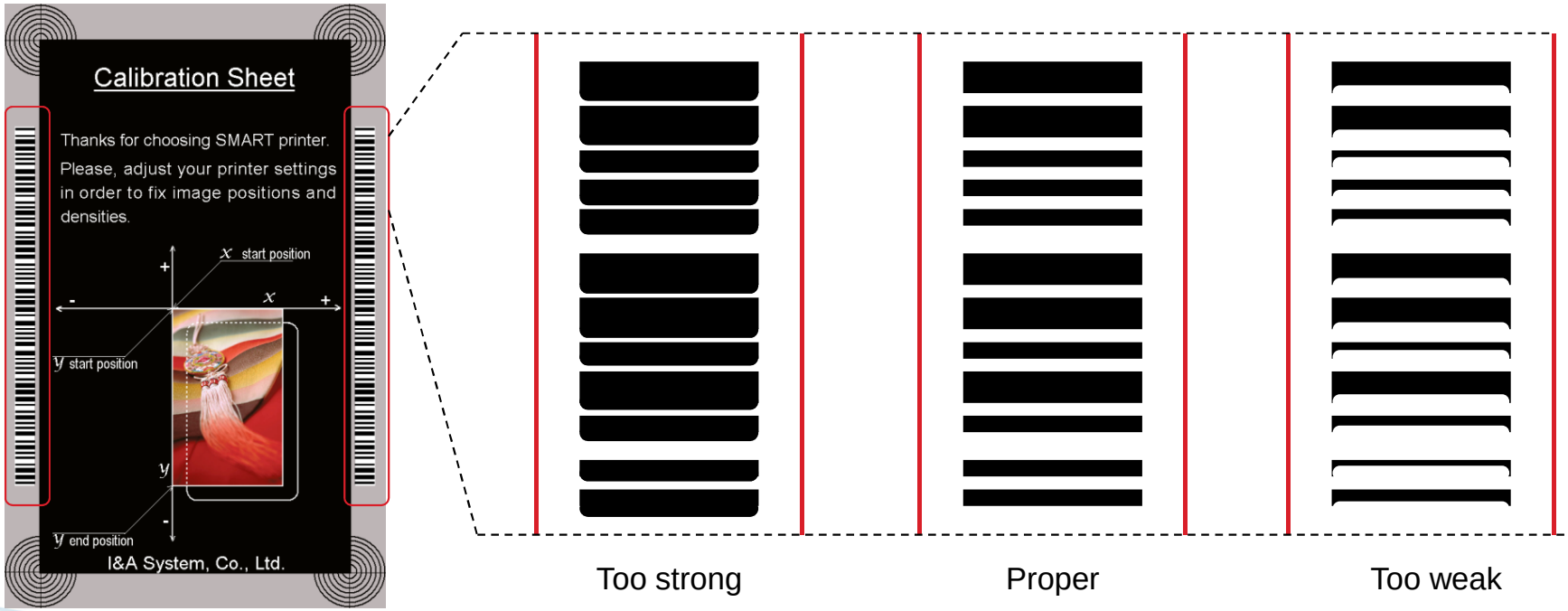
Too weak

[Resin Black Printing Thickness]

Resin Black is used to print the black clearly such as the barcode or text. It prints the black which extracted by the printer device driver or set as resin in Smart Design. The red box in the below figure is printed by resin black.

Resin Black is printed as binary type, not level for the printing result. So the setting standard of printing density is different.

If the thickness is too strong, the barcode is not clear and too widen. And if too weak, the barcode is printed too short. Set the resin black printing thickness properly to get the clear barcode printing. Not too strong but a little bit strong is best.

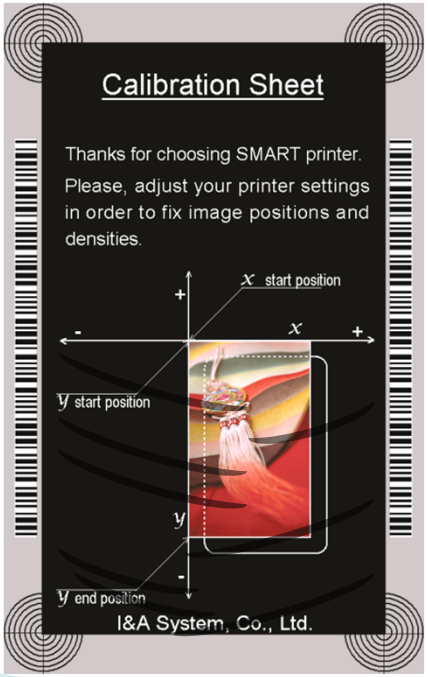


[Overlay Printing Thickness]

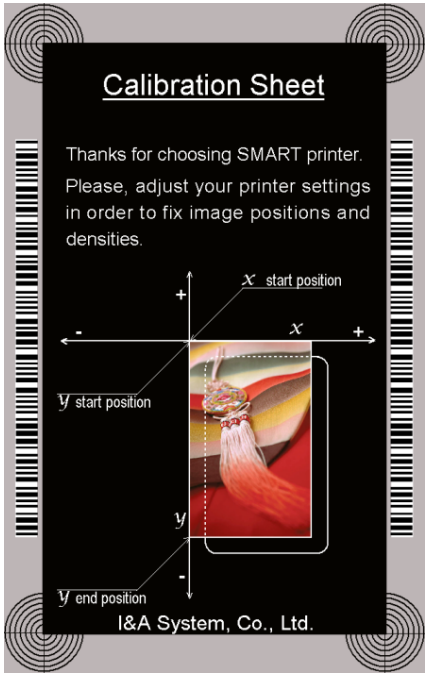
Overlay is coating to the surface of card for the protection of printing image. Usually the overlay print all over the card surface but it can be printed in specific area by the device driver or Smart Design software.

Overlay is binary type such as black resin, print or not. So the setting standard of printing thickness is different.

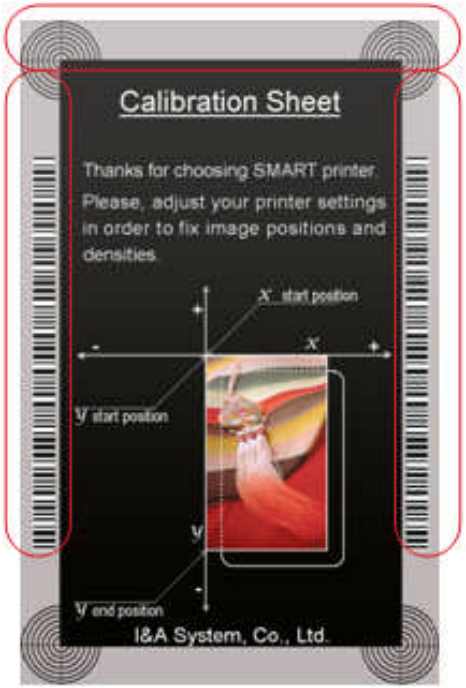
If it is too strong, it is too dull and can be occurred the bad overly such as left figure. And if too weak, some area will not be overlaid. You can check it if place the card under light. So set the overlay printing thickness properly. Not too strong but a little bit strong is best.



Too dark



Proper



Too weak

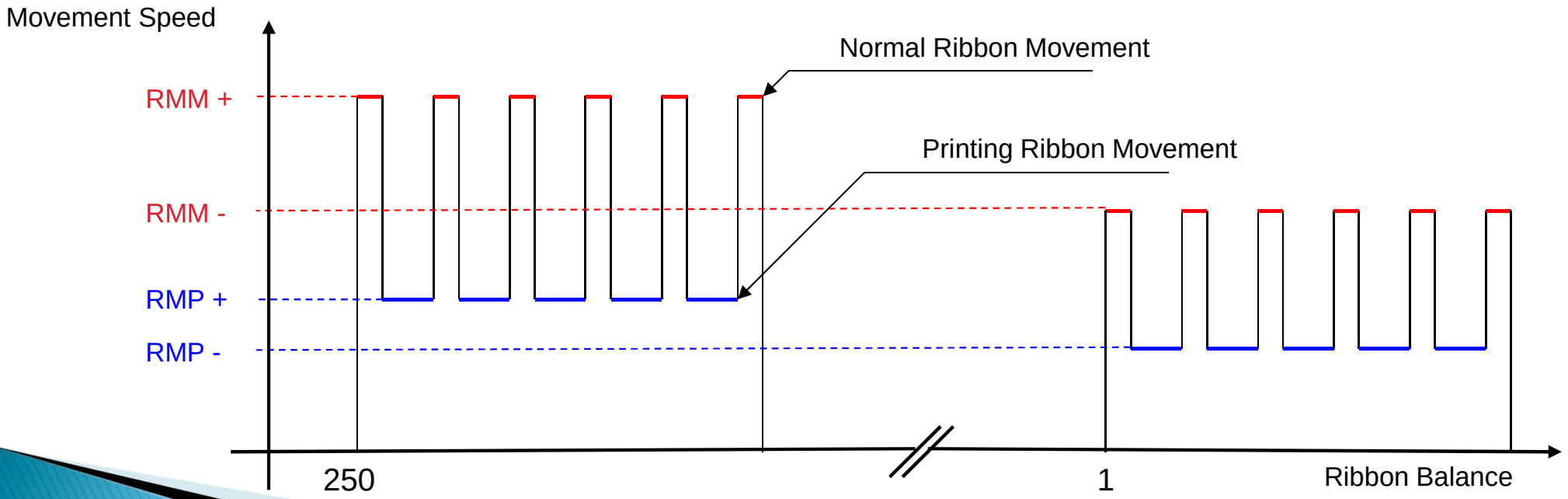
1.3.3 Ribbon Movement

SMART Card Printer's ribbon movement is variable to make the interference minimized. So to get the stable image quality, set the proper ribbon movement setting. As below graph SMART Card Printer is control the speed of printing and normal movement differently to get the regular speed. And its movement speed is changed for the remained ribbon balance. Set the movement speed as below graph.

RMP control the ribbon movement when printing. If set too low, the ribbon can not be rewind and the problem can be occurred. On the contrary if set too strong, the rolling speed is too fast so there might be bad image.

RMM control the normal movement. If set too low value, the printer is stop as print head is adhered with ribbon. If too high, the ribbon rolling speed is too fast so the correct printing position can not be detected.

(We recommend to not change RMP and RMM until there is critical problem)

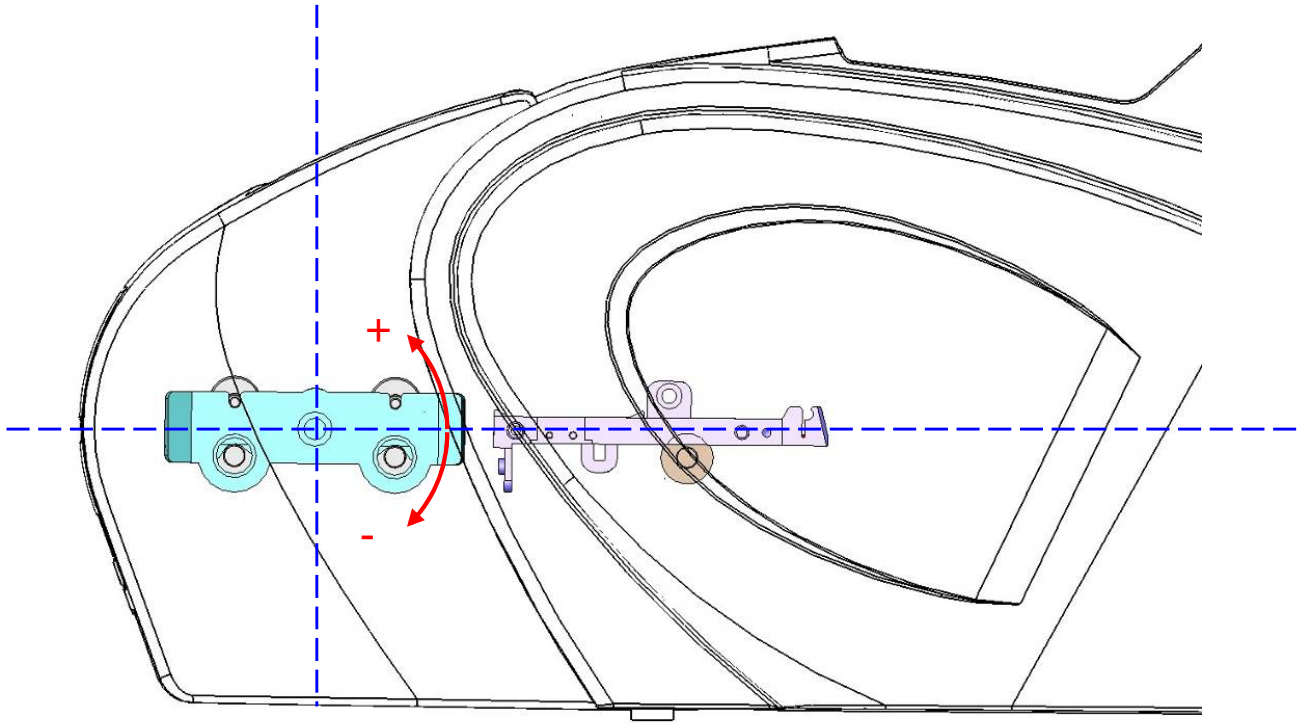


1.3.4 Rotator

Rotator can be installed as an option. When there is no printing, the rotator keep the horizontal flat. So the setup of rotator is to make it the horizontal flat by adjusting its angle.

“Rotate Top” and “Rotate Bottom” are the accurate setting when the rotator is front side or back side to make a horizontal flat with the card movement passage. This value is between -30 ~ 30 and + is upper adjustment, - is down adjustment.

(We recommend that there is rotator card jam problem.)

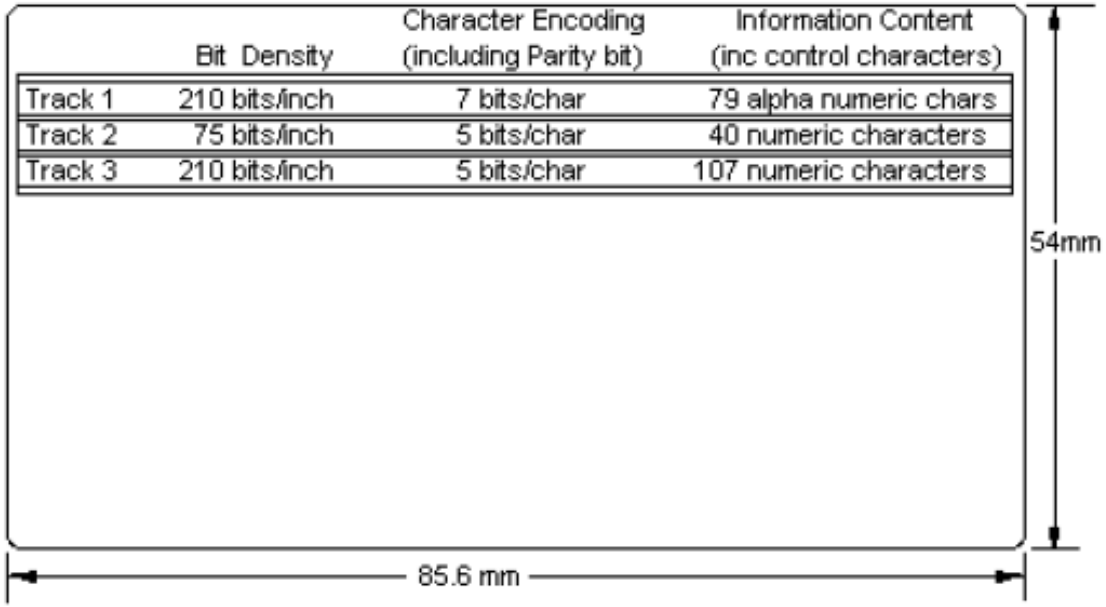


1.3.5 Magnetic Stripe

Magnetic Stripe Encoder can be installed as option. It is encoder module which can read/write to the three tracks to the magnetic stripe card in ISO specification. The magnetic track can be saved as SC, SS, TD, ES, LRC, SC format.

In recording the magnetic data, the location of SS (Start Sentinel) should be apart 7.44 ± 0.5 mm from the card edge as ISO spec. SS location can be adjusted using “Magnetic Space”. If “Magnetic Space” value is higher, it is more far from the card edge.

	Bit Density	Character Encoding (including Parity bit)	Information Content (inc control characters)
Track 1	210 bits/inch	7 bits/char	79 alpha numeric chars
Track 2	75 bits/inch	5 bits/char	40 numeric characters
Track 3	210 bits/inch	5 bits/char	107 numeric characters



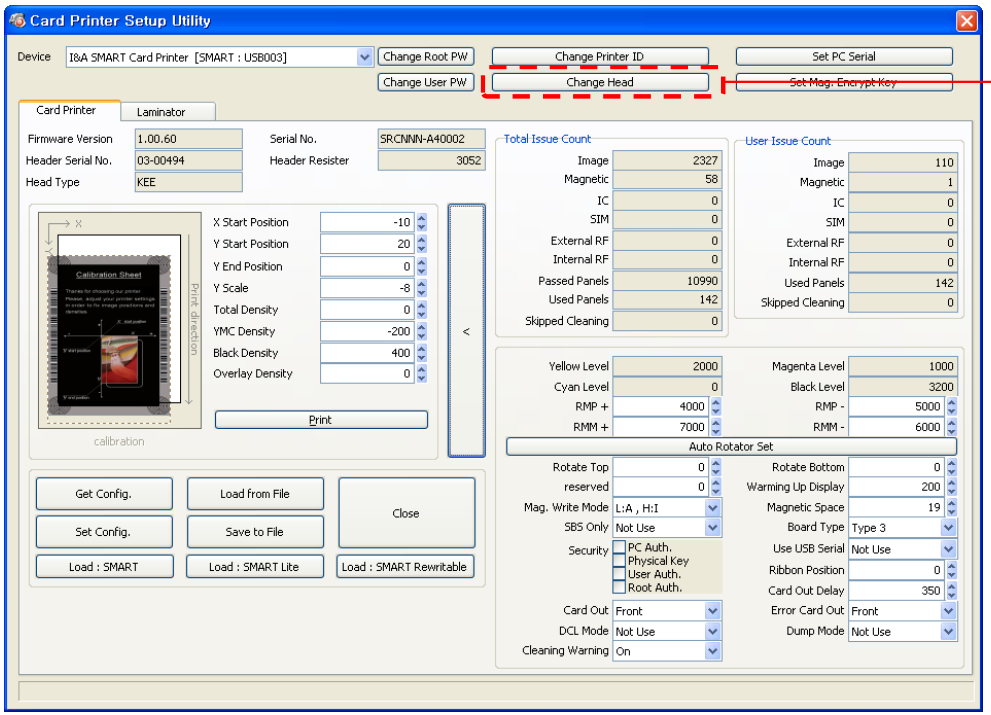
SC	SS	TD (Track Data)	ES	LRC	SC

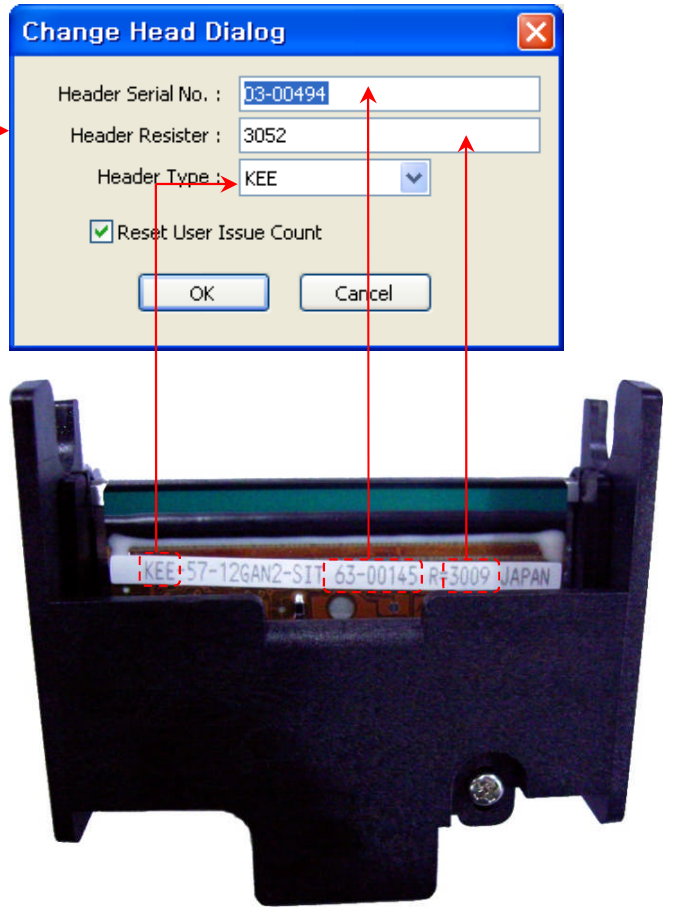
(SC: Sync Clock pulse, SS: Start Sentinel, ES: End Sentinel, LRC: longitudinal redundancy check)

1.3.6 Change Print Head

To change the print head, the print head module as below photo should be changed. After change the print head module, its serial no. and register value should be registered. First press “>” button and click “Change Header” and input the serial no. with the resister value and header type which are described on the print head. “Reset User Issue Count” is initialization of the printing number.

(After change the print head, the printing position and thickness should be adjusted.)





1.3.7 Security

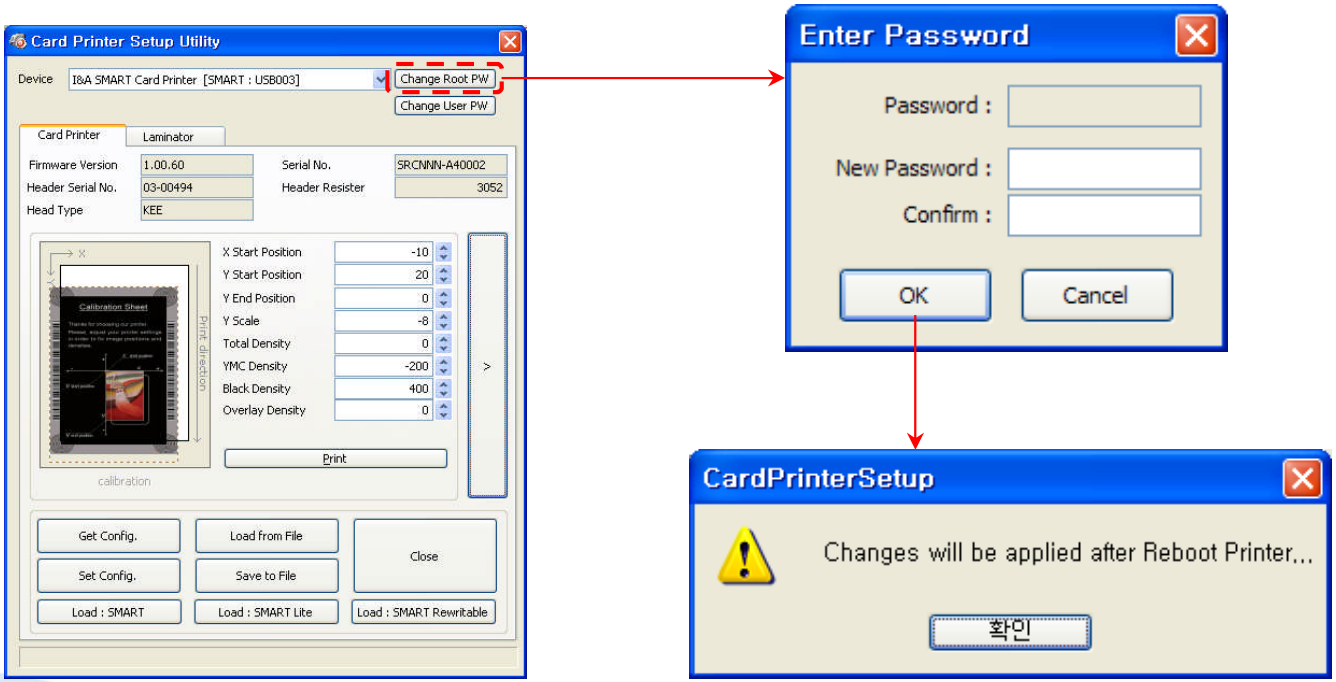
[Password]

It need to input the password to change the setup value but if you do not set the password, it need not. When execute CardPrinter Setup program, the password input window will be displayed. If you set the password, it is saved to SMART Card Printer itself so even if you change the PC, the password is needed for that card printer.

To change the password, click “Change Password” in basic setup window. It will be activated after the printer is reboot.

(The default is no password setting.)

(If the password is not remember, please contact the manufacturer.



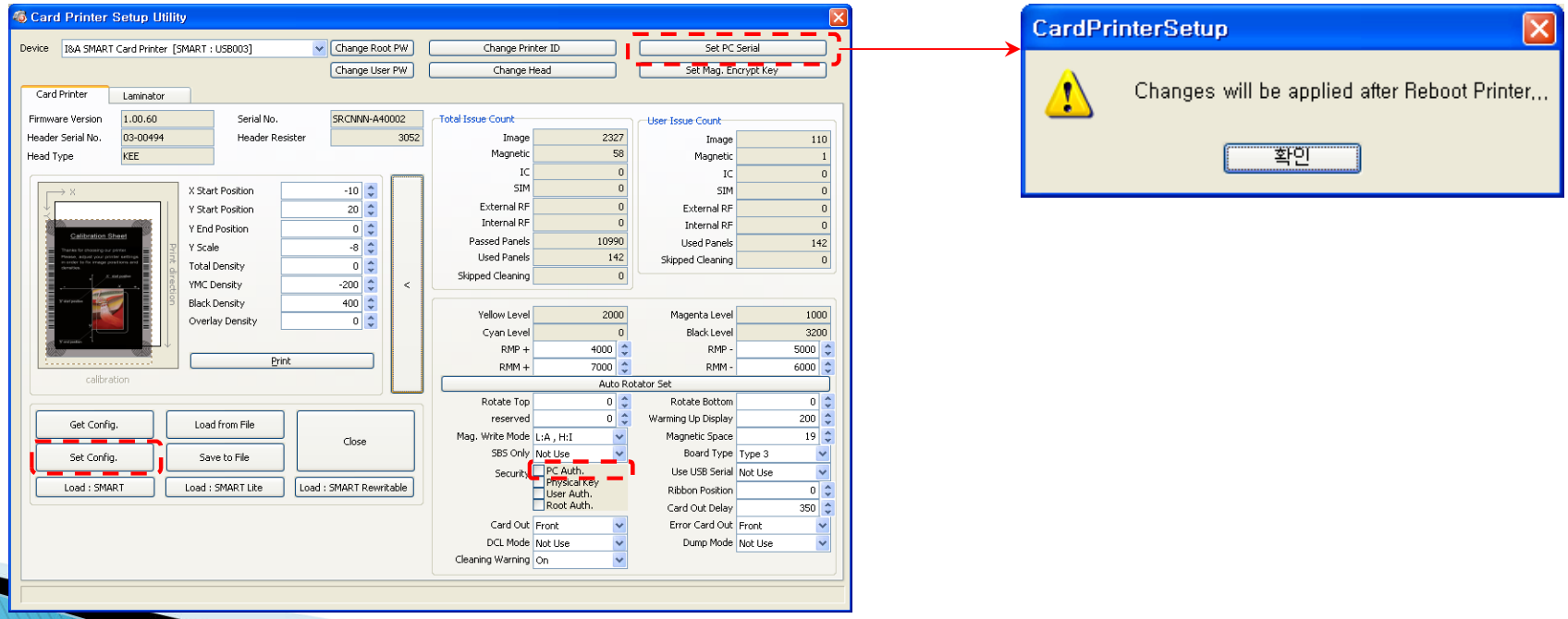
[PC Auth]

PC auth is the function to make an operation in specific card printer which the user set. This is to prevent the access of unauthorized person. The method is as follows.

1. In expansion mode, tick “PC Auth” and click “Set Config.”
2. Click “Set PC Serial” and save the current PC information to the card printer.

PC Auth will be activated after the printer’s rebooting. When connect SMART printer which is applied PC Authentication to the other PC, “Verify Your PC” message will be displayed on the LCD (or Watchman).

(In case PC Auth is activated and PC is not found, please contact your distributor.)

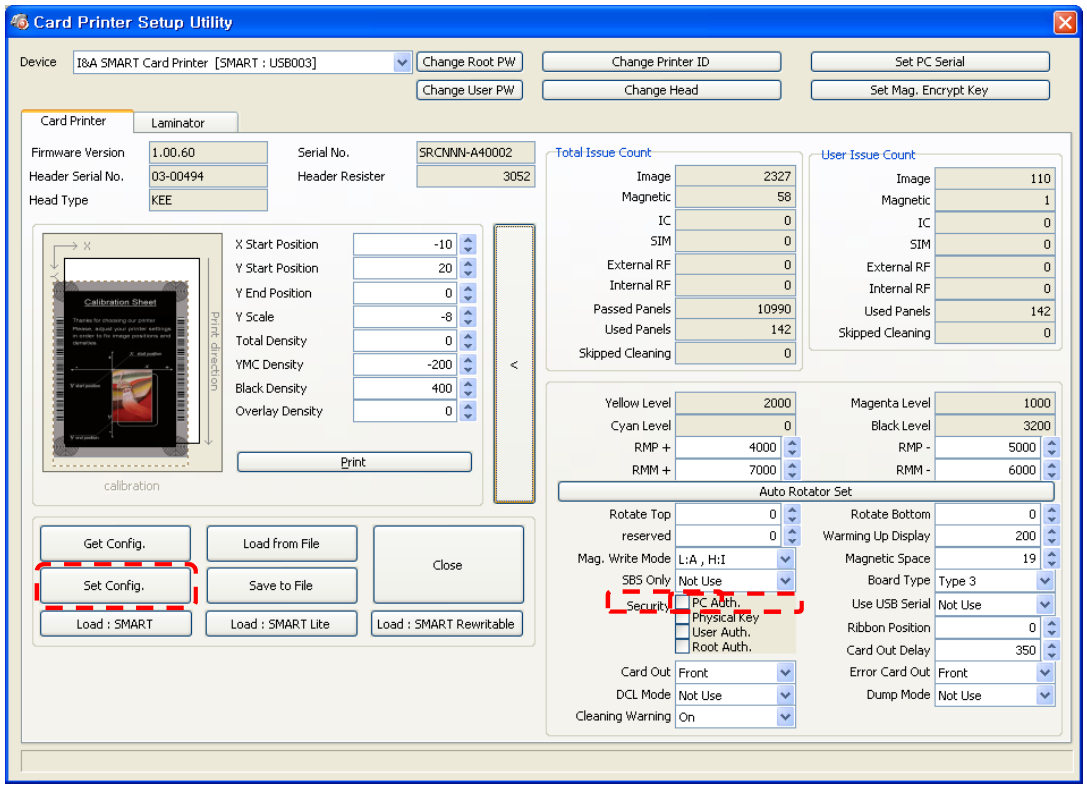


[Physical Key]

Physical Key is the function which enables to operate SMART printer who have the physical key. It is provided as special option. To use this function, in expansion mode, tick “Physical Key” and press “Set Config.”

Physical Key will be activated after SMART printer reboot. If the printer is locked, “Unlock Please” message will be displayed on LCD and if not, “System Ready” will be displayed.

Physical Key is electrical key so its setup will be kept when the printer is reboot (power off/on).

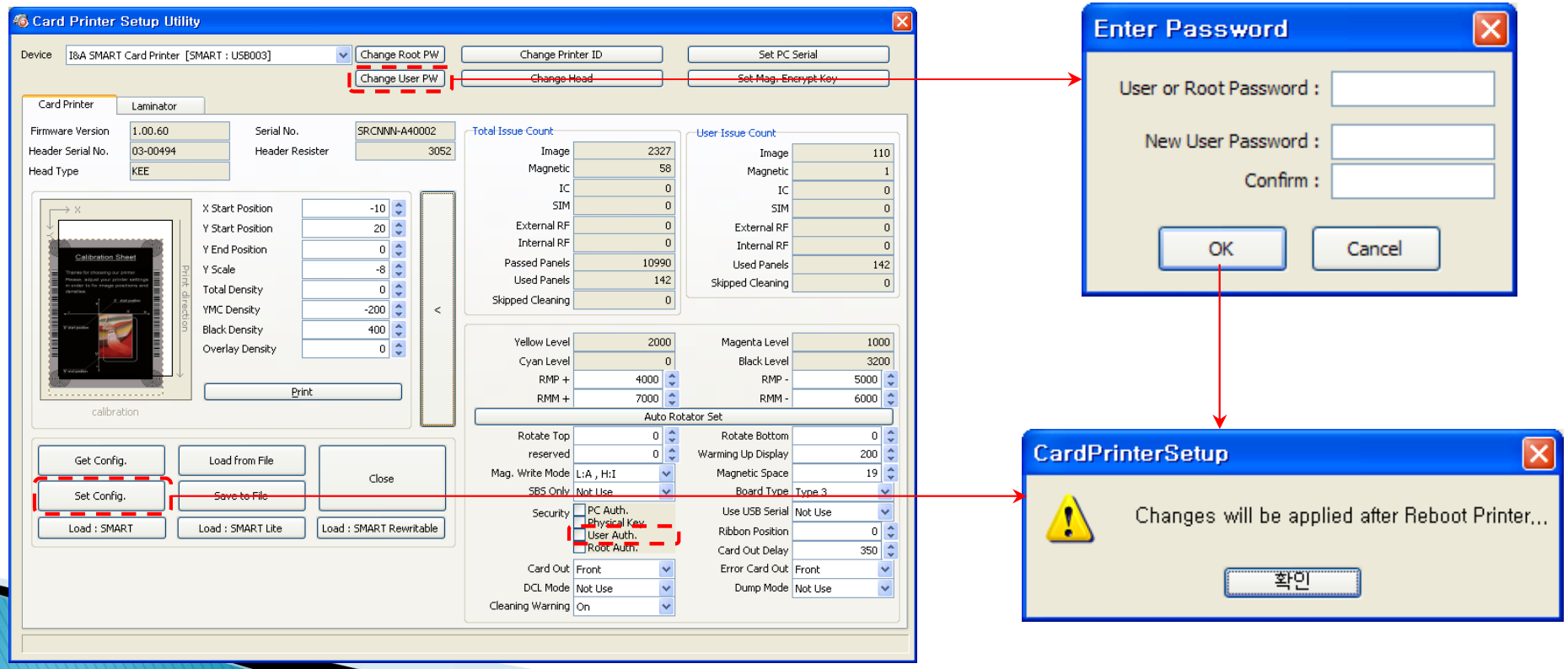


[User Auth]

User Auth allows using PC for someone who knows User password.
To activate this function, please tick ‘User Auth’ and click ‘Set Config’.

After setting User Auth, this function is activated after re-booting ID card printer. In case printer is locked, LCD (or Watchman) displays “Unlock Please” message. When you unlock the printer by inputting password using SDK, “System Ready’ is displayed.

To change password, click ‘Change User Password’ and password change pop up comes up. You can change password and it will be applied after card printer is re-booted.

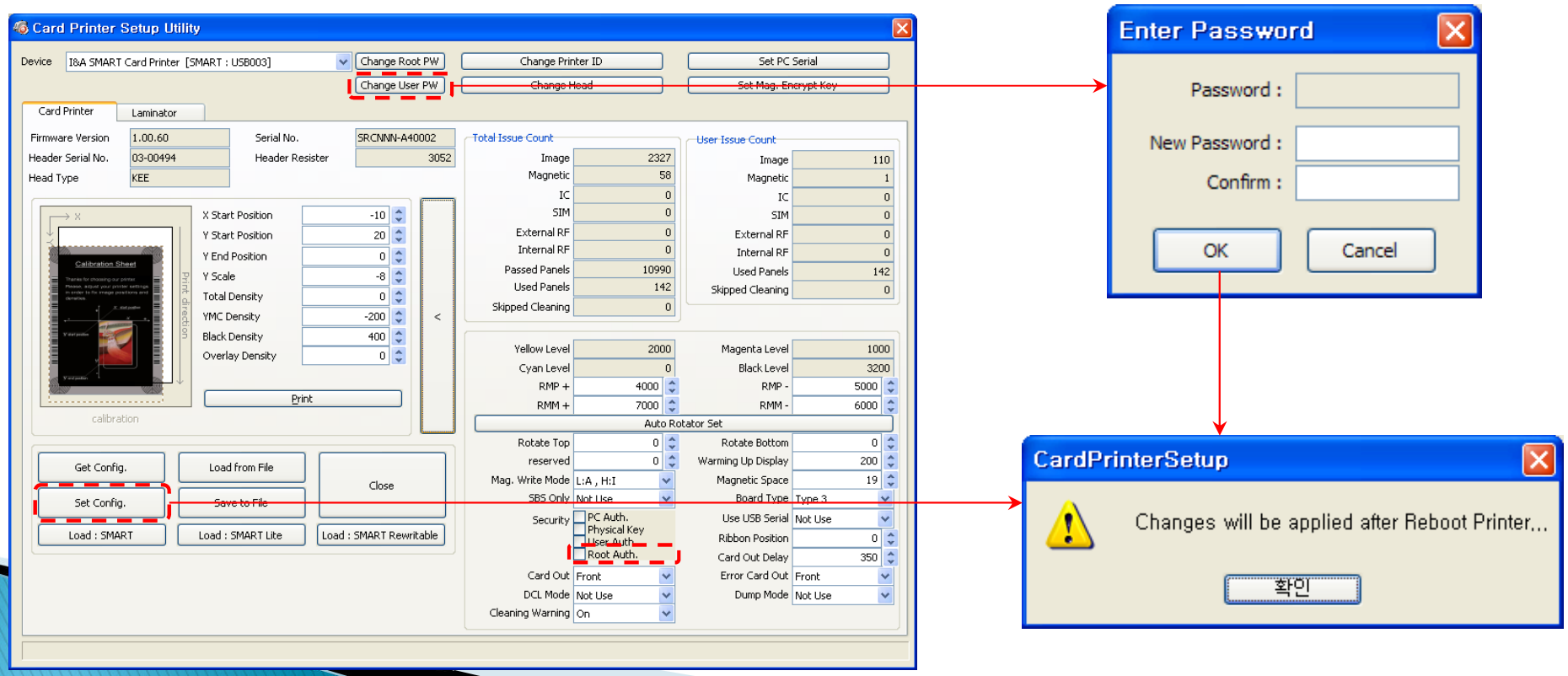


[Root Auth]

Root Auth allows using PC for someone (administrator) who knows Root password.
To activate this function, please tick ‘User Auth’ and click ‘Set Config’.

After setting Root Auth, this function is activated after re-booting ID card printer. In case printer is locked, LCD (or Watchman) displays “Unlock Please” message. When you unlock the printer by inputting password using SDK, “System Ready’ is displayed.

To change password, click ‘Change Root Password’ and password change pop up comes up. You can change password and it will be applied after card printer is re-booted.

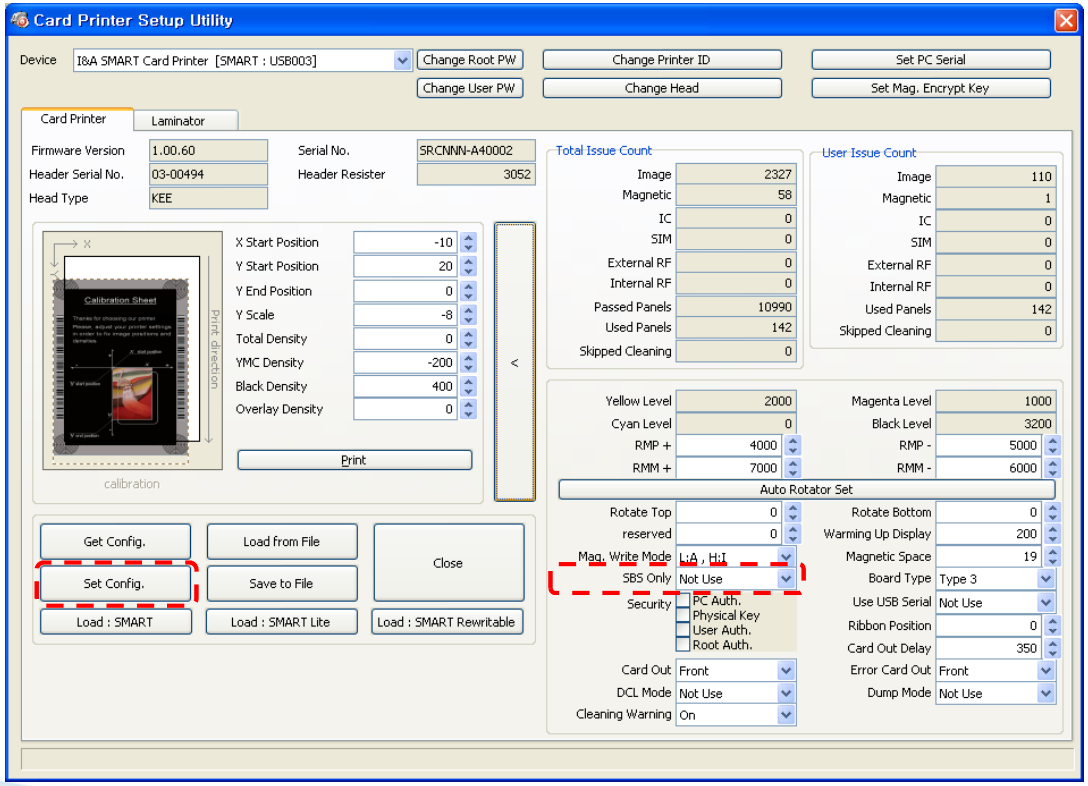


[SBS Only]

SMART Printer is provided the printer driver same as other normal printer so it can be used in the application for SMART card printer and other general application. “SBS Only” function can be realized in the application which is developed by our SDK.

To use this function, in the expansion mode, change “SBS Only” to “Use” and press “Set Config.”

SBS Only will be activated after SMART printer is reboot. This SBS Only mode is not activated in other general application.

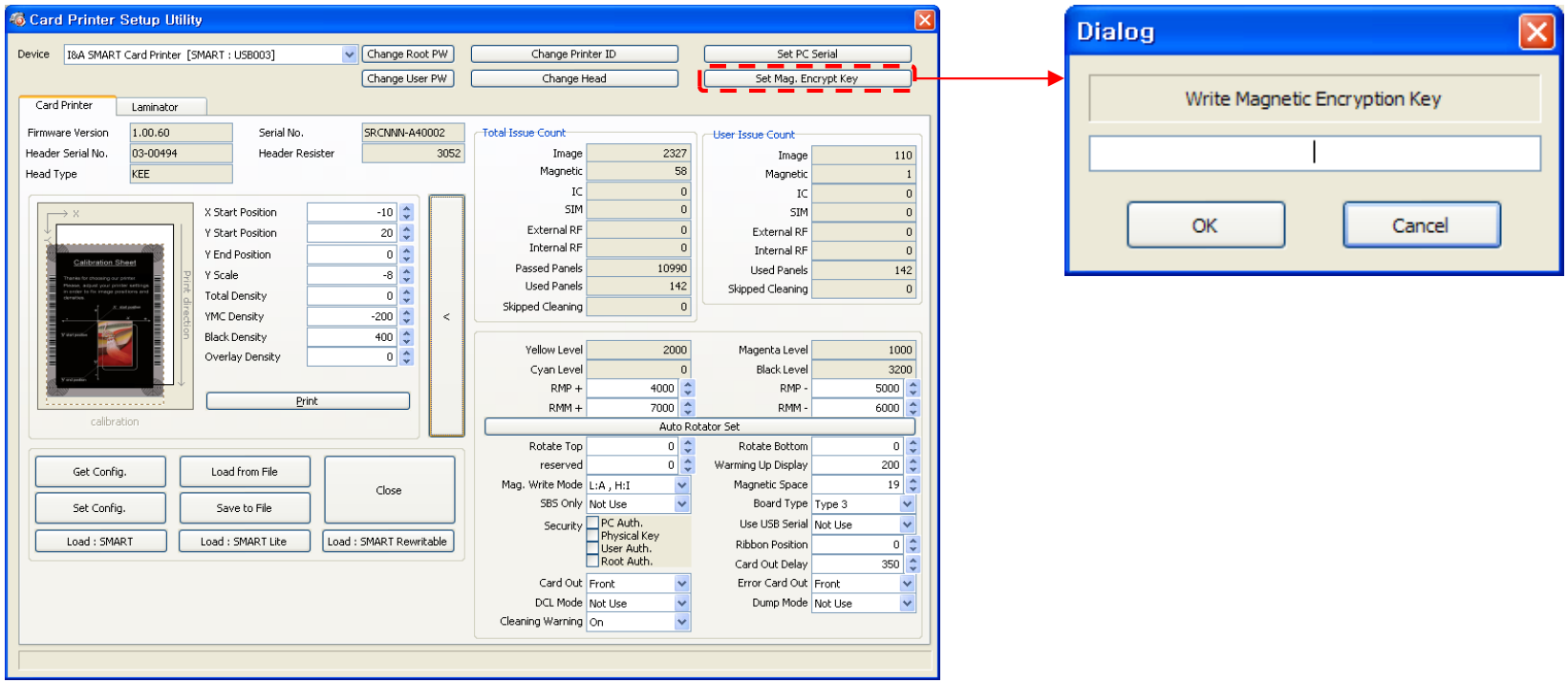


[Magnetic Encryption]

If the magnetic stripe card is read and write by SMART printer, the magnetic information can be transfer by USB. “Magnetic Encryption” is define the key which is used to encrypt the magnetic information to prevent that information’s hacking between PC and SMART printer.

To use “Magnetic Encryption”, press “Set Mag. Encryption Key” and input the key you want to use to the dialog.

For the encryption, you can use the magnetic read/write encryption key in SDK provided.



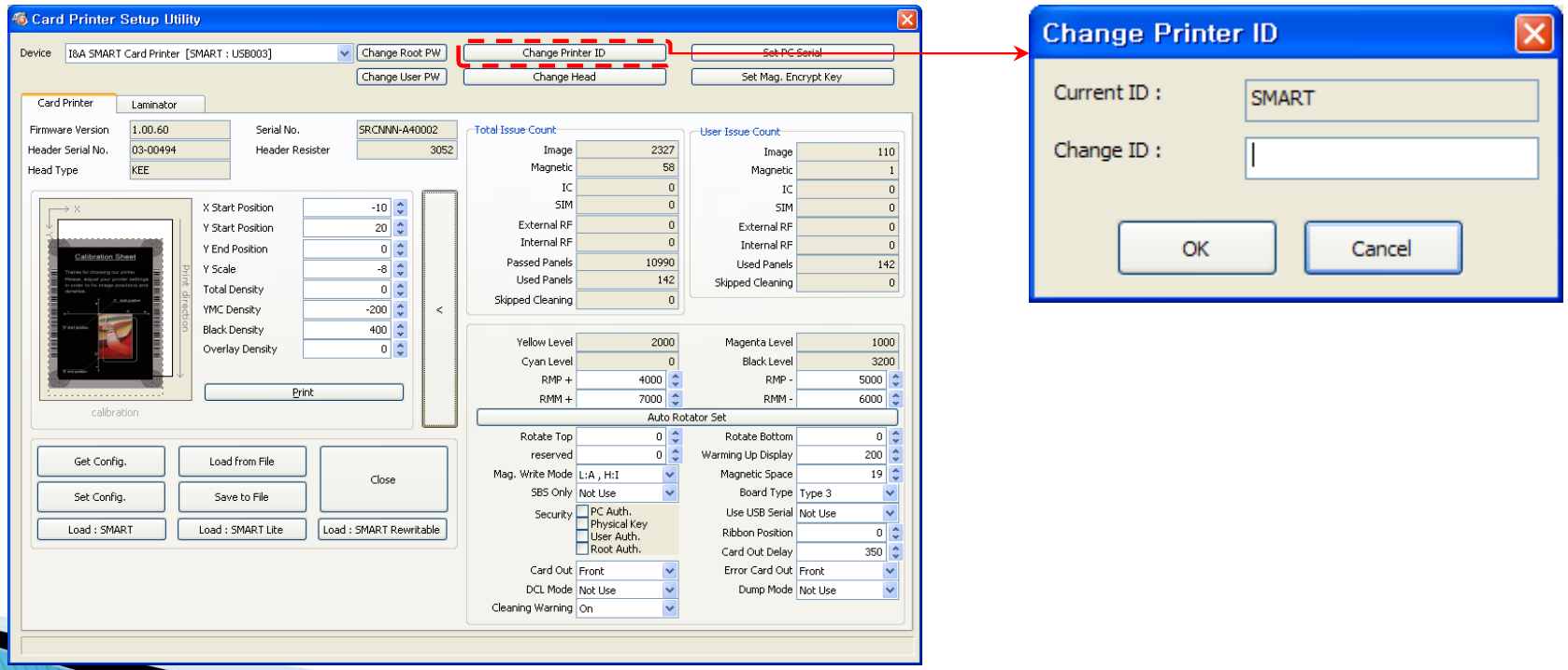
1.3.8 Etc.

[Printer ID]

To use SMART printer's SDK, you have to set the printer which you want to use. And in this case you need to get ID to distinguish the printer and it named as Printer ID. Normally we use one PC and one SMART card printer so do not need to concern. However if use more than one SMART card printer is connected with PC or want to use the several card printer using networking function, you have to set the different Printer ID per each card printer.

To change Printer ID, press "Change Printer ID" and when there is pop up window, input Printer ID and press O.K. The changed Printer ID will be activated after rebooting of SMART card printer.

The default Printer ID is "SMART."

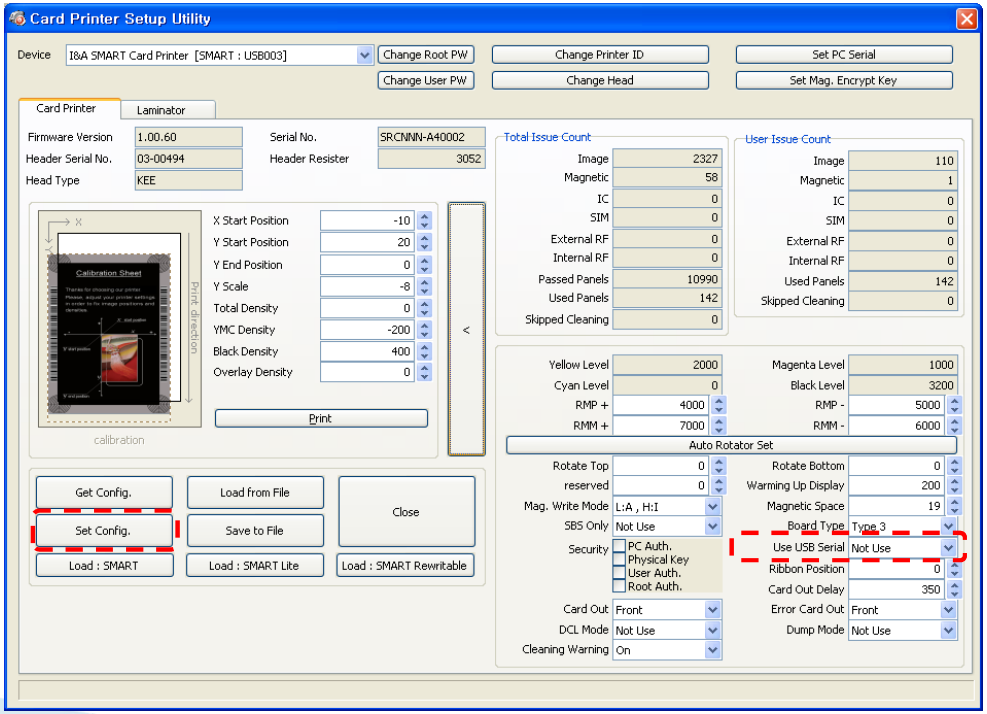


[Use USB Serial]

In SMART Card Printer, even if you change the USB port, you do not need to install the printer driver. This is because their own ID is used in USB communication. Basically every printer have their own ID but considering the general usage circumstance and the convenience of maintenance, it is set as same ID. So if want to use more than one printer in one PC, you have set the different ID (this is not same as Printer ID we explained already). Use USB Serial is ID which is used when the printer is recognized by USB and the serial no. of printer will be used as ID.

To activate Use USB Serial, change “Use USB Serial” to “Use” and press “Set Config.” button. This change will be activated after SMART printer is reboot.

When use more than one SMART printer in one PC, “Use USB Serial” should be set as “Use”. If not, PC might be not working.



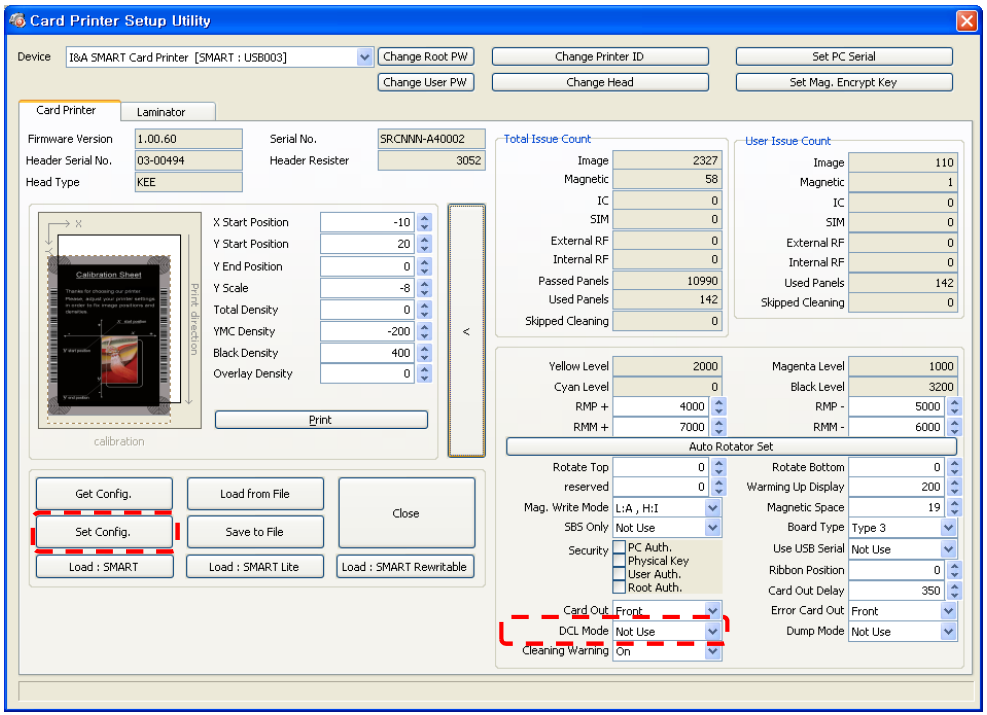
[DCL Mode]

With DCL mode, you can control card printer without installation of printer driver. It is operated with DCL commands in SDK. You can control this mode with DCL commands in SDK but printer driver installation pop-up appears whenever card printer is connected.

If you set ‘DCL Mode’ to ‘Use’, it does not use printer driver and previously installed driver becomes off-line.

In order to use DCL mode, please change ‘DCL Mode’ to ‘Use’ and click ‘Set Config’. This function is activated after card printer is re-booted.

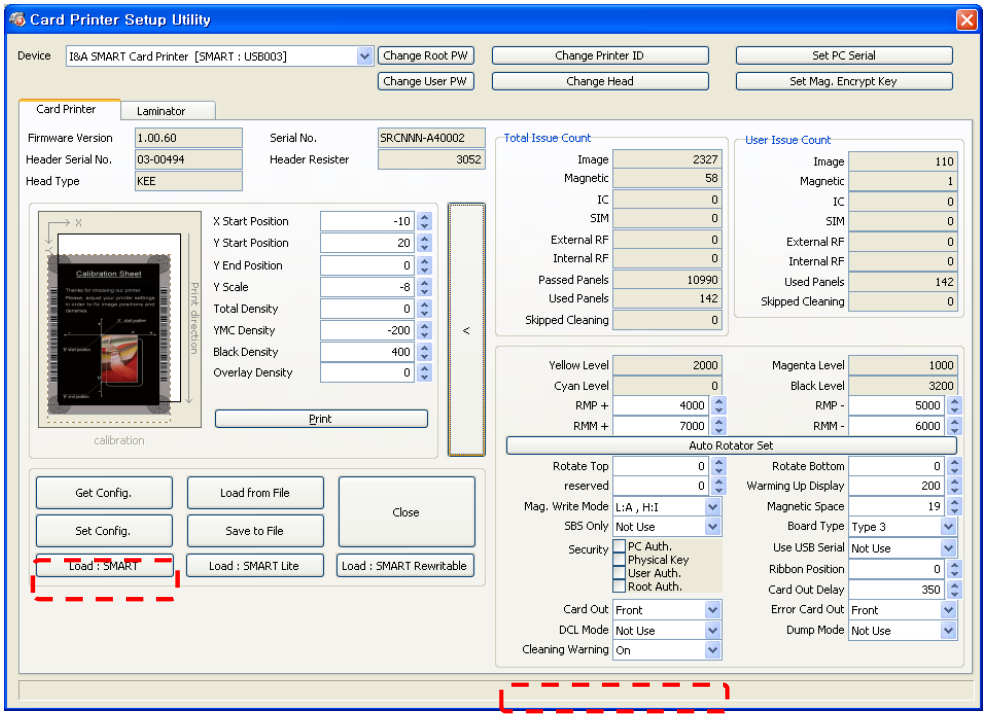
If DCL mode is activated, you will not use printer on general programs. It is only controlled by DCL order in SDK.



[Cleaning Warning]

SMART Printer checks the point of cleaning. If cleaning time comes, the message “Do printer clean” message is displayed on LCD.

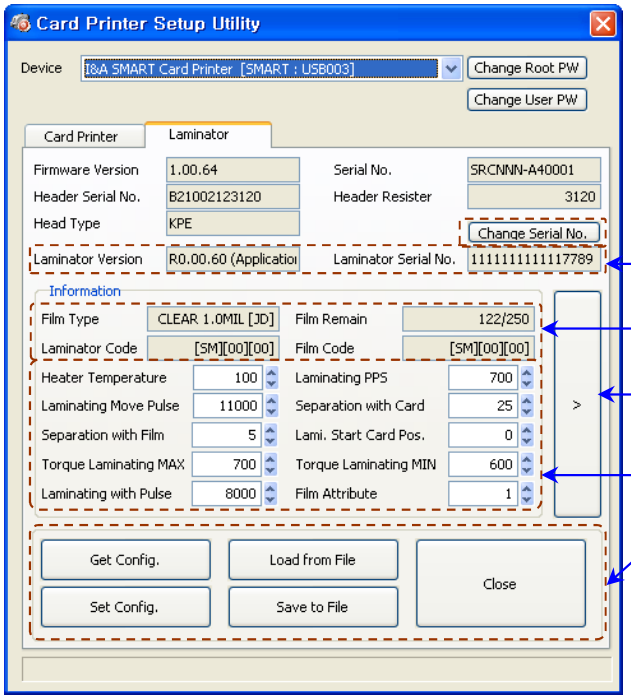
If you don’t want that message, change “Cleaning Warning” to “Off” and click “Set Config” button.



1.4 Laminator Setup

1.4.1 Basic Setup

If you click “Laminator” tap, you can see the configuration options for laminator. Basic setup functions are displayed like below image. If you click “>” button and set special functions.



Laminator information (Firmware Version, Serial Number)

Laminator and Film information

Expansion button for extended setup

Laminator tag setup

Main menus for get/set, save/load and close

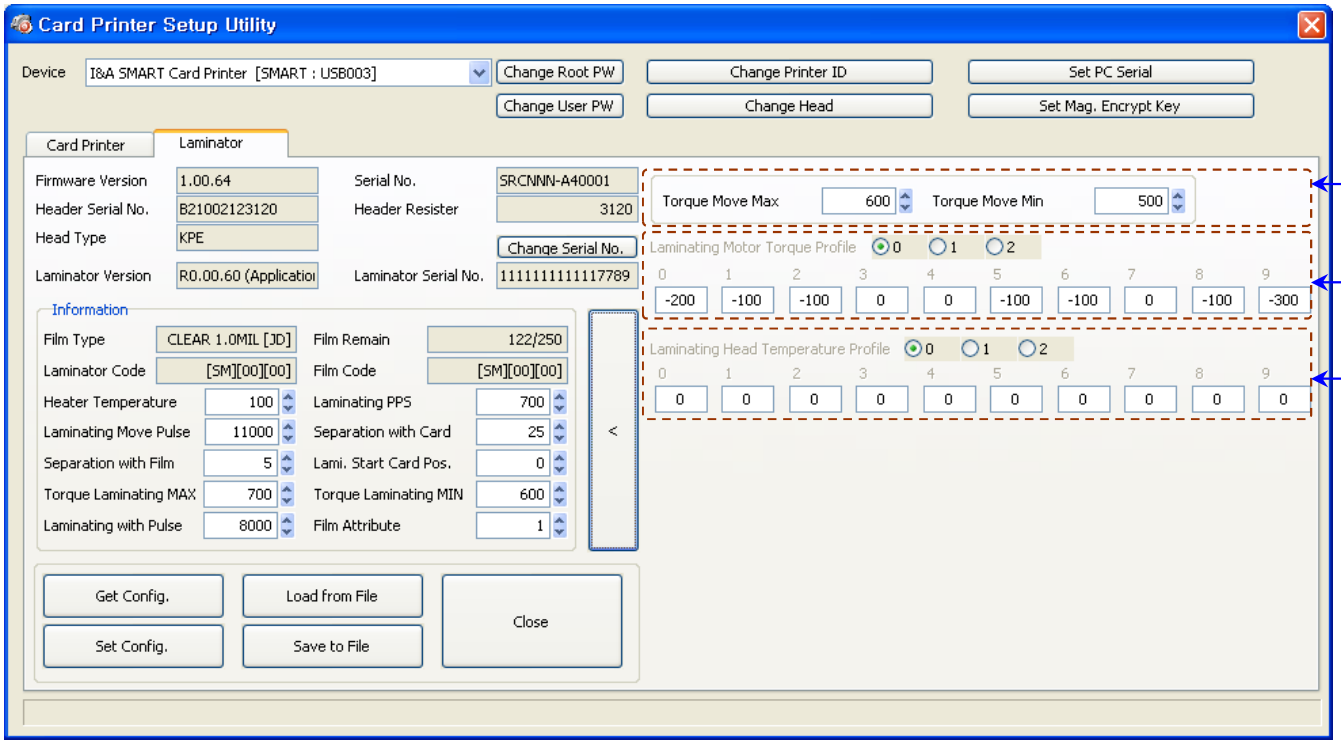
Basic Setup Item

Item	Explanation
Laminator Version	Firmware version of laminator.
Laminator Serial No.	Serial number of laminator.
Change Serial No.	You can change the serial number of laminator using this function.
Film Type	Shows installed ribbon type and ribbon maker.
Film Remain	Shows the total number of ribbon and remains of ribbon.
Laminator Code	Shows laminator code, vendor, local code.
Film Code	Shows film code, vendor, local code.
Heater Temperature	You can change laminating temperature according to the type of film.
Laminating PPS	You can change laminating speed according to the type of film.
Laminating Move Pulse	You can change laminating move pulse according to the type of film.
Separation with Card	You can change the distance of card movement after laminating and removing film.
Separation with Film	You can change the distance of film movement after laminating and removing film.
Lami. Start Card Pos.	You can change laminating start point according to the type of film.
Torque Laminating MAX	You can change laminating motor max torque according to the type of film.
Torque Laminating MIN	You can change laminating motor min torque according to the type of film.
Laminating with Pulse	You can change laminating with purse according to the type of film.
Film Attribute	You can change film attribute according to the type of film.

1.4.2 Expansion setup

To check printer's status and setup specific configuration, use expansion setup.

Below image shows the parts of laminator expansion setup.



Film moving motor torque

Laminating motor torque profile

Laminating head temperature profile

Expansion Setup Item

Item	Explanation
Torque Move MAX	**You can change max torque of film movement.**
Torque Move MIN	**You can change min torque of film movement.**
Laminating Motor Torque Profile	**You can change motor torque value of each section.**
Laminating Head Temperature Profile	**You can change head temperature value of each section.**

2. Test

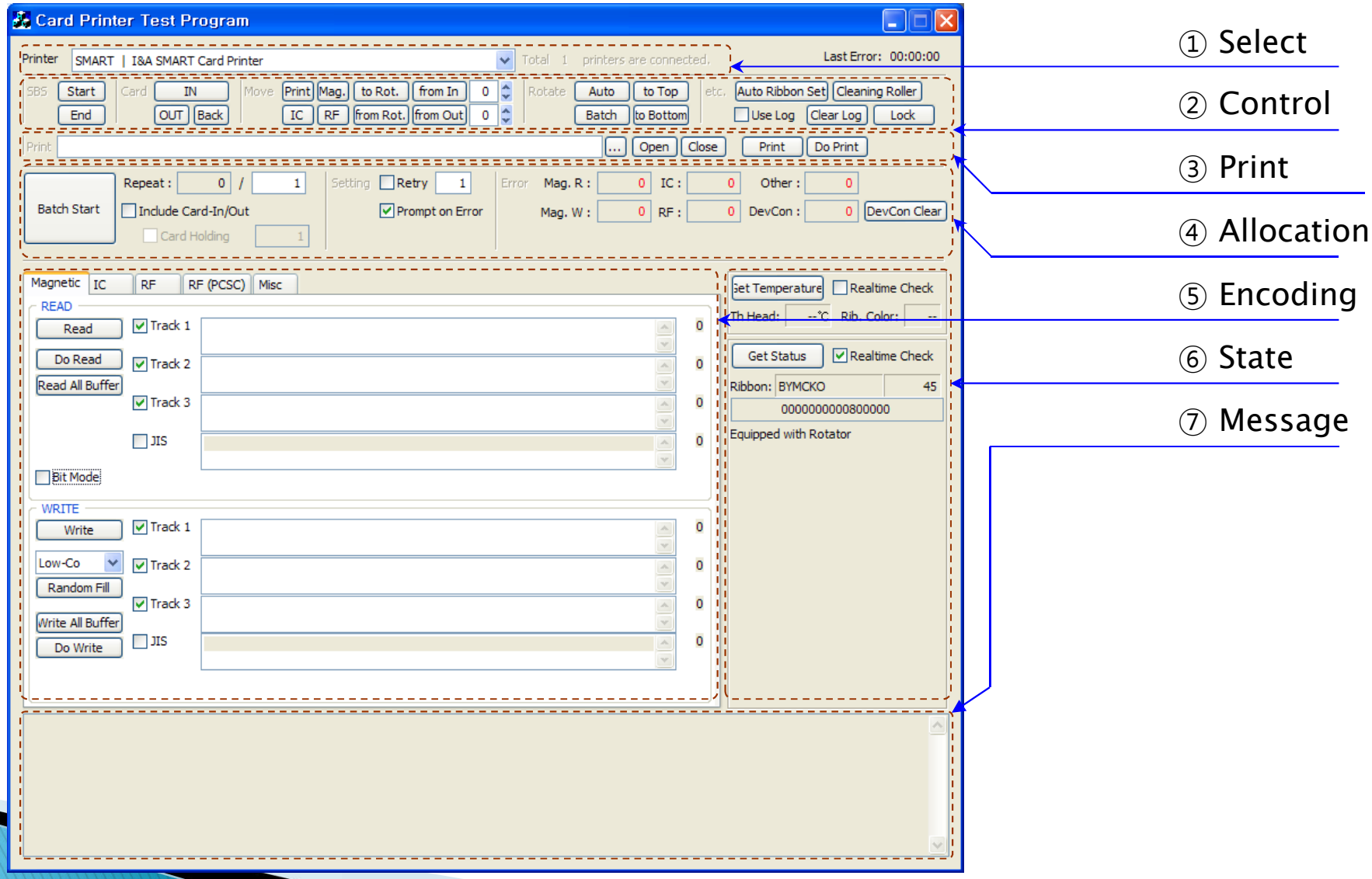
2.1 Overview

CardPrinter Test is to test the all function of SMART Card Printer. To operate CardPrinter Test program, the device driver should be installed to PC and SMART printer should be connected.
Card Printer use the standard printer device driver so it can be printed same as general printer. However if there is encoder, it need to install the driver which the encoder is required. In this case the printer's detailed operation can be controlled using ″Card Printer SDK.” CardPrinter Test program is developed by ″Card Printer SDK”.

CardPrinter Test is consist of Select, Control, Print, Allocation, Encode, State, Message.

① Select : Select the printer when there is more than one printer is connected.
② Control : Order the command such as Card In, Out, Move and Rotate.
③ Print : Print the image.
④ Allocation : Set the encoding number.
⑤ Encoding : Do magnetic stripe encoding, SmartCard and Contactless SmartCard encoding.
⑥ State : Check the printer's state.
⑦ Message : Display all kinds of message which displayed when use CardPrinterTest.

If execute CardPrinter Test program, the following window will be displayed. It is consist of ① Select, ② Control, ③ Print, ④ Allocation, ⑤ Encoding, ⑥ State, ⑦ Message.



2.2 General Operation

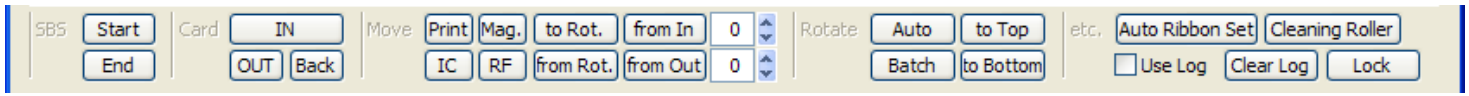
2.2.1 Select

This is printer selection display. When you run ‘CardPrinterTest’ program, you can choose currently available connected printer. Installed Printers ID and Printer driver names are displayed in the selection menu. (explained in 4.1).
In the below picture, only 1 printer is connected. Its ID is “SMART” and driver is “I&A SMART Card Printer”.
(In case you use more than one printer, activate “USB Serial” in the Setup (explained in 1.3.7) and change printer ID. When no printer connected, this menu is displayed unclear. Please check if printer is connected and turned on properly.)

2.2.2 Control

Control is consist of SBS, Card, Move, Rotate, Etc. and it is used to control the printer's each step.

- SBS is the operation of SBS (Step-By-Step) mode. The user can control SMART printer using the command. The difference of NORMAL mode and SBS mode is that the printer do printing after get the printing command(DoPrint). If press "Start" in SBS, SMART printer operate as SBS mode and in this time if there is printer spool, it will be removed. To close SBS mode, press "Stop".
- Card is the command for Card In / Out. "IN" is for moving the card to the printer inside and "OUT" is the command to card out to the stacker. "Back" is to out the card to back side.
- Move is the command to move the card. "Print" is to move the print location, "Mag." is magnetic location, "IC" is SmartCard location, "RF" is Contactless SmartCard location, "To Rotate" is move to the inside of rotator, "From Rotate" is move the card from rotator inside to the printer inside.
- Rotate is for the card flipping. When the card is the printer inside if do "Auto" command, the card is move to rotator and flip and move to the printing location. "Batch" is repeat as set. "To bottom" is the card flip to back side. "To Top" is the card flip to front side. For Etc., "Auto Ribbon Set" is automatically set the ribbon. And using "Use Log", you can decide to record to the log file or not.
- Etc is other orders. "Auto Ribbon Set" is an order to indicate the ribbon automatically. "Cleaning Roller" is an order to clean roller. "Use Log" displays log details on the display. "Lock" is an order to lock the printer after unlocked with authentication when security function is set up.

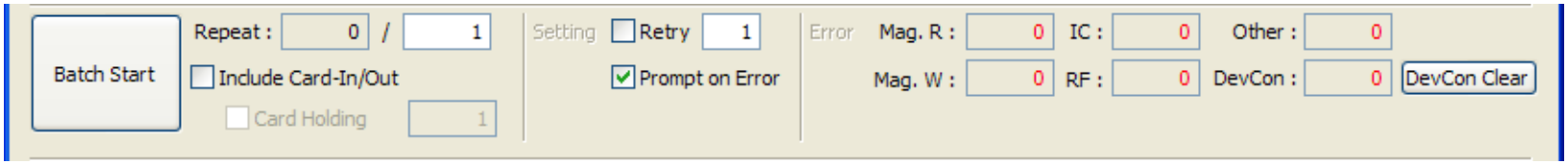


2.2.3 Print

Print can be used to print the designed image which made by Smart Design. To print the card, use ″…” and choose csd file. Press “Open” and select csd file and press “Print”.
When the printer is NORMAL state, if you press “Print”, the data is transfer to SMART printer and print. However in SBS mode, if press ″Print”, the data is transfer to SMART printer and waiting the printing command. So in SBS mode, it need to press “Do Print” for the printing. This function is needed to control the printer in detail.

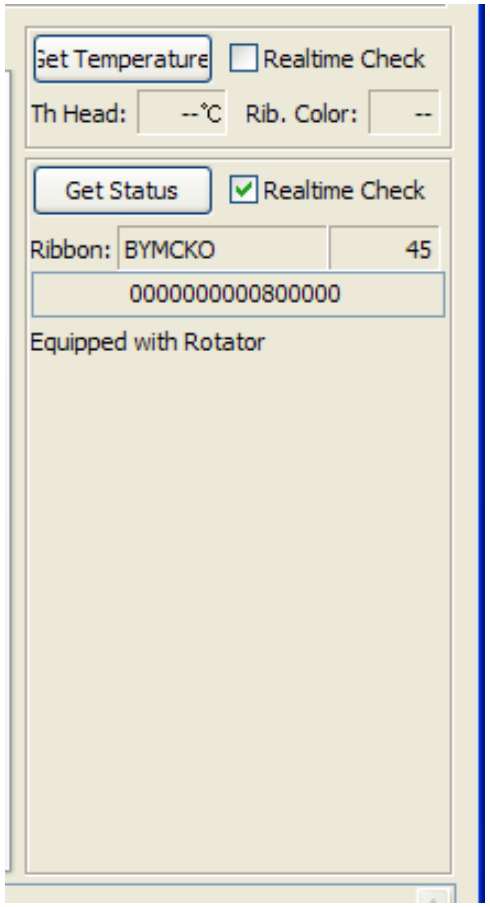
2.2.4 Batch

Batch is used to test the encoding and decoding continually. Set the repeat no. and if press “Batch Start” it repeat the test. In this case if “Include Card In/Out” section is marked, the card in/out operation is also proceed. However if it is not checked, use one card contiunally..
In Strategy, if the retry is not checked, the encoding is placed only one time and it is checked, it is repeat as set when there is an error. If Prompt on Error is checked, the pop up message will be displayed when there is an error. And if it is not checked, the test is proceeding after an error is counting.
Error is the error number for each encoding.



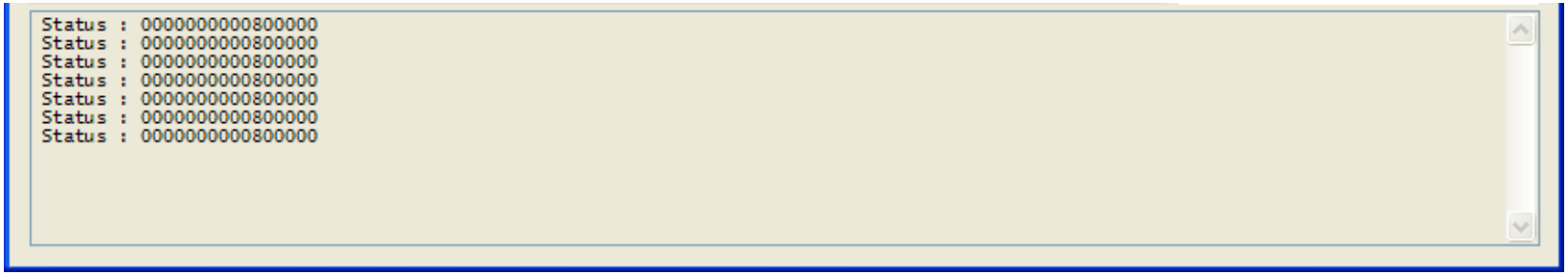
2.2.5 State

State is to check the printer state. If tick ″Get Temperature”, state will display the thermal head’s temperature. In this case if “Realtime Check” is ticked, the temperature is checked in real time.
“Get Status” is to check the printer’s state. It show the ribbon balance, printer condition and error state. If tick “Realtime Check” is ticked, it shows the printer’s status in real time.



2.2.6 Message

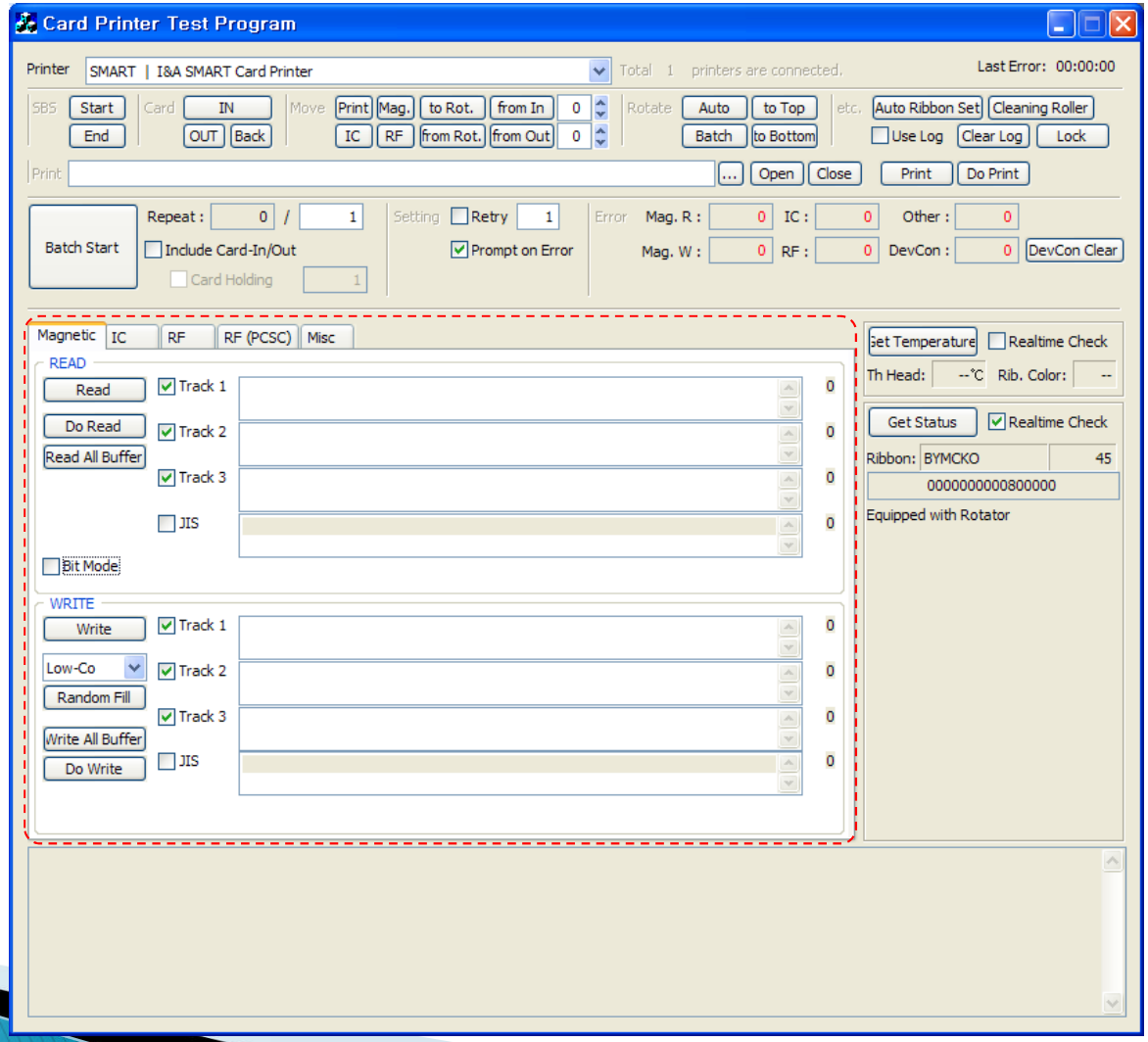
It show the communication detail between CardPrinter Test program and SMART Printer so you can check what kind of operation is activated in real time.



2.3 Encoding

2.3.1 Magnetic Stripe

Magnetic encoding is to test the magnetic stripe card when choose “Magnetic” tap as below.

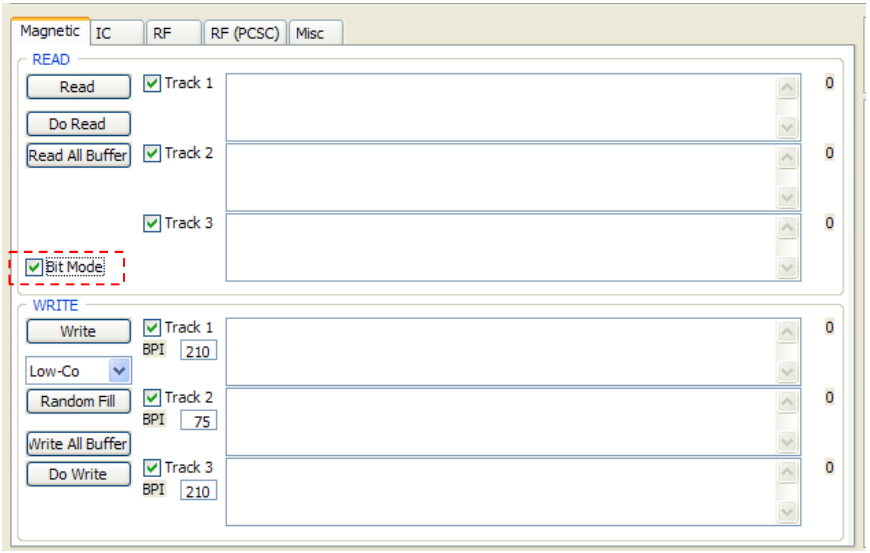


In Magnetic tap, you can do the read/write of the magnetic stripe card.

“Read” is the reading of the magnetic stripe card and show the date. In fact “Read” is consist of ″Do Read” and ″Read All Buffer” but operated at one time. ″Do Read” is read the magnetic data in the printer inside. “Read All Buffer” is bring the data to PC. So ″Read” is same as ″Do Read” and ″Read All Buffer”. Only checked track can be concerned.

“Write” is the writing of the magnetic stripe card and record the date. “Write” is also consist of ″Write All Buffer” and ″Do Write”. “Write All Buffer” is send the encoding date to the printer, “Do Write” is recording the data to the magnetic card. You can choose ″Lo Co”/”Hi Co” as its card type. “Random Fill” is inputting the random date to test.

When you tick ‘Bit Mode’, display is changed to Bit Mode writing condition. In the ‘Bit Mode’, you can input data with ‘0’ and ‘1’ only. You can set BPI information in the ‘Bit Mode’.



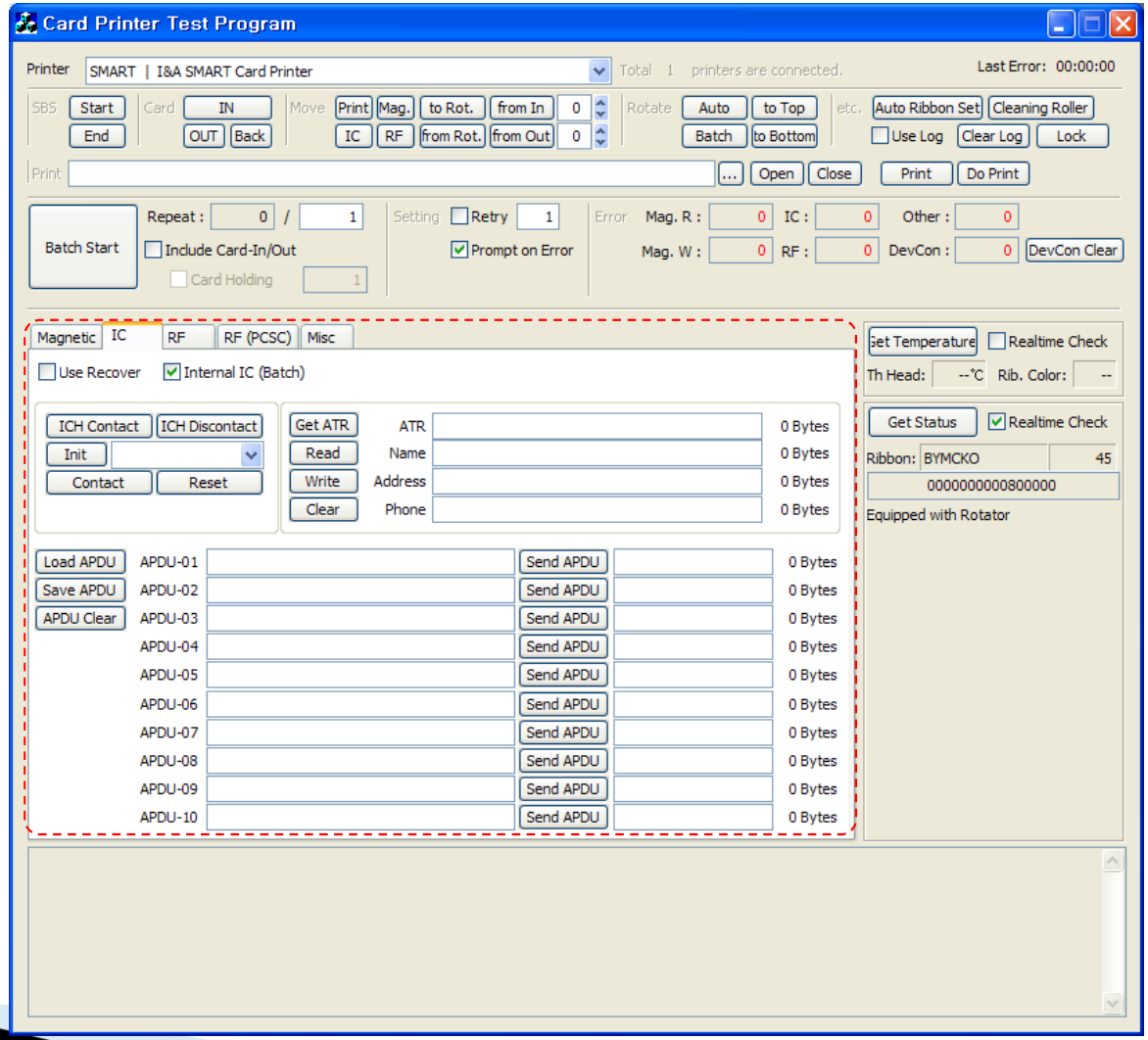
If you want to write and read on magnetic in order, you need to do following procedures.

Card “IN” → Move “Mag” → Magnetic “Random Fill” → Magnetic “Write” → Magnetic “Read” → Card “OUT”

When you select ‘Magnetic’ on the encoding selection tap and click “Batch Start”, magnetic encoding is repeated as above.

2.3.2 Contact SMART Card

Contact SmartCard encoding is enable to encode the date to SmartCard when you choose the IC tap.



In IC tap, the read/write of SmartCard is possible.

″ICH Contact” is the command to contact the head with SmartCard chip. “ICH Disconntact” is the dis-contact command. “Init” is the initialization of the installed IC reader. The installed IC reader will be displayed on right down control board. “Contact” is contacting between the IC head and SmartCard. “Reset” is stop to use.

After “Contact”, ″Get ATR”, “Read”, “Write” and “Clear” command are possible to operate. “Get ATR” is loading ATR value of SmartCard. “Read” is reading such as name, address, phone data. “Write” is writing.

If read/write the date directly using APDU command, you can use the following APDU command. ″Load APDU” is load the saved APDU command. “Save APDU” is save the current APDU command. “Clear APDU” is clear the APDU screen. To see the individual APDU command, press ″Send APDU” on the line..

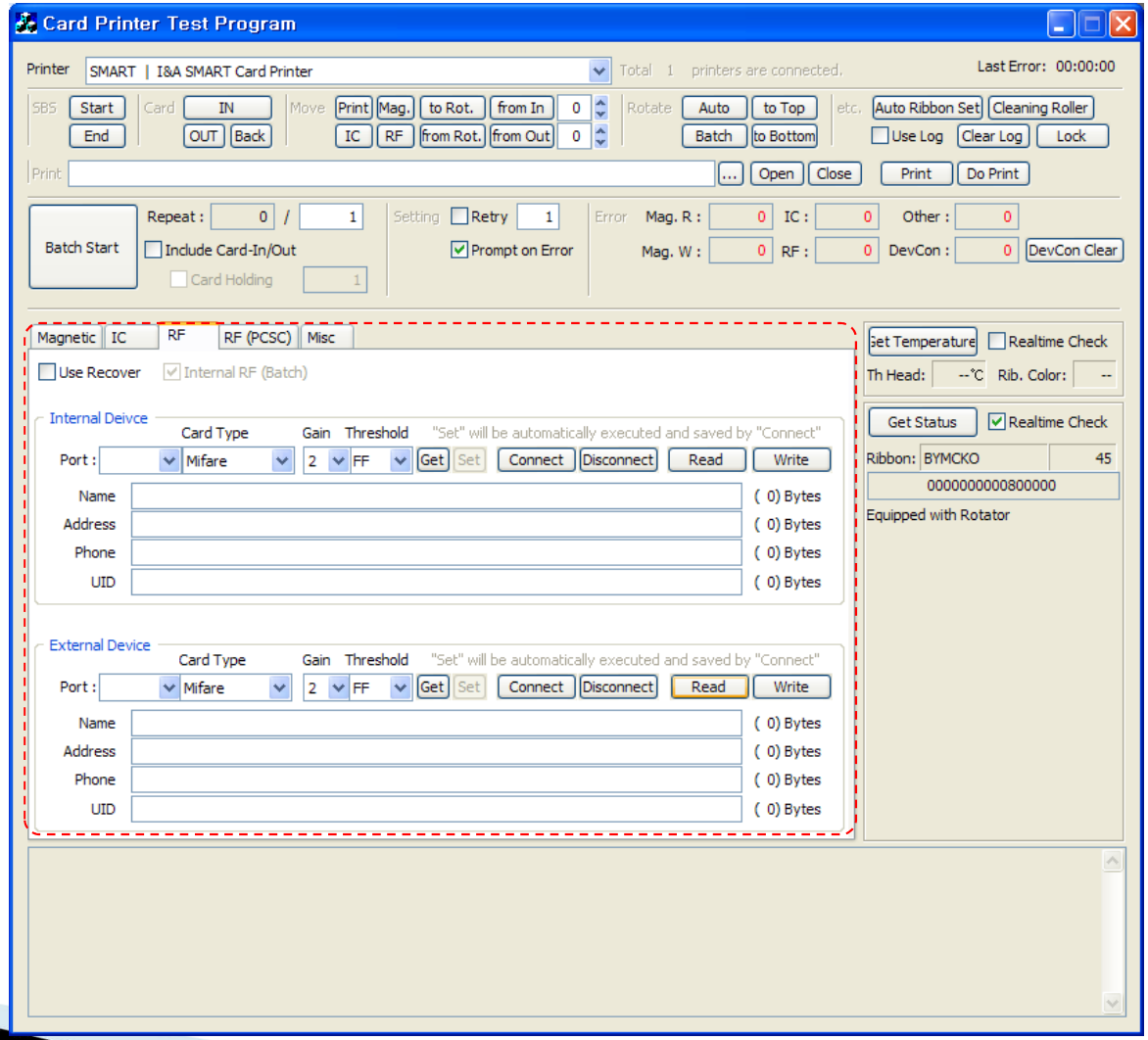
To write and read on SmartCard, you have to proceed the following procedure.

Card “IN” → Move “IC” → IC “ICH Contact” → IC “Init” → IC “Contact” → IC “Write” → IC “Clear” → IC “Read” → IC “Reset” → IC “ICH Dis-contact” → Card “OUT”

If press ″Batch Start”, IC encoding will be repeated. SMART Printer is support the internal SmartCard encoder and external SIM encoder. SIM is not possible to move automatically so the batch is not possible for SIM.

2.3.3 Contactless SMART Card

Contactless Smart Card encoding is enabled to read/write to Contactless Smart Card when you select the tap ‘RF’.



As the figure, the RF card read/write is possible in RF tap. There is two encoder (inside, outside) in Smart Card Printer. Internal Encoder will encode the card entered from hopper. External Encoder will encord with antenna on the top of printer. You need to put the card on antenna. Disposition can be placed only inside.

“port” is a COM port which connected RF reader, you need to set it up after check at control panel.
“Card type” selecting the RF card which will be used. “Gain”, “threhold” are setting value of antenna. You just can use setting value. “Get”/ “Set” save or bring the setting value like port, gain, threshold.

“Contact” commends access electronically to RF card, “disconnect” commends finish the access. “Read” read given name, address, phone. “Write” save name,address, phone data to RF card.

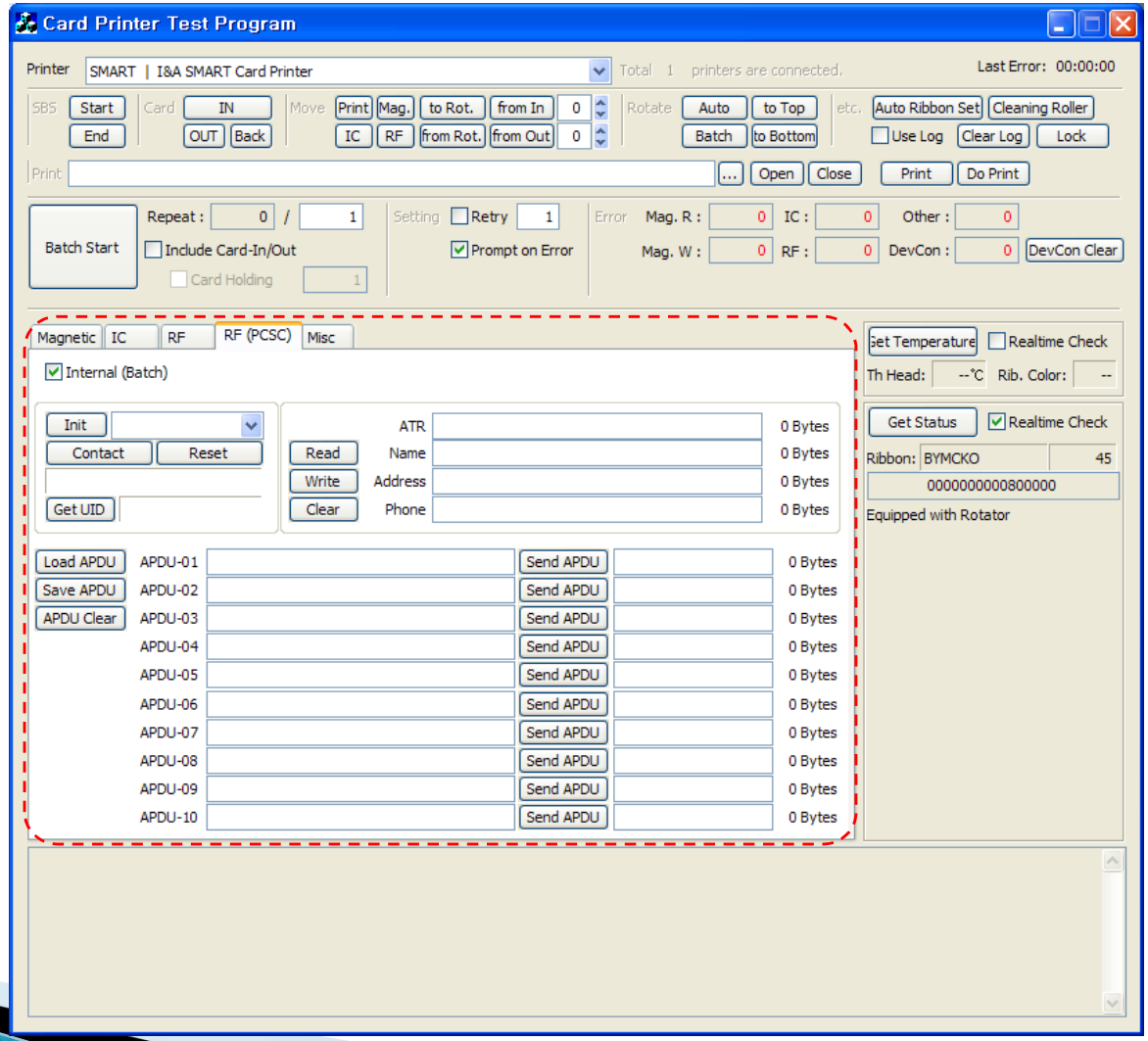
To write and read on SmartCard, you have to proceed the following procedure.

Card “IN” → Move “RF” → RF “Connect” → RF “Write” → RF “Read″ → RF“Disconnect” → Card “OUT”

If press ″Batch Start”, IC RF encoding will be repeated .

2.3.4 Contactless (PC/SC) Smart Card

Contactless (PC/SC) SmartCard encoding is enable to encording test with PC/SC protocol when you select “RF(PC/SC)” in Encording tap as figure below.



In RF tap(PC/SC) as figure, Contactless SmartCard reading and writing is possible.

“Init” is the order to read PC/SC and show up. At this time, reader appear at full down control (right side). “contact” is commend to access automatically to RF card.

After “Contact” , you can execute “Get UID”, “Read”, “Write”, “Clear”. “Get UID” read serial value in RF chip. “Read” will read given name, address, phone data. “Write” record name, address, phone to RF card.

You can use APDU commend, directly rewrite to RF with APDU commend. “Load APDU” read the stored APDU commends. “Save APDU” save current commends. “Clear APDU” clear APDU screen. if you want each commend, you can click “send APDU” on the line What you want.

SMART Printer have two RF encoder such as the internal and external. The internal type is encoded in the inside of printer and external is placed its encoding on the printer top side. So the batch is only possible for the internal type.

To proceed the RF rewrite, you have to follow the below procedure.

Card “IN” → Move “from in (-62)” → RF (PC/SC) “Init” → RF (PC/SC) “Contact” → RF(PC/SC) “Write”→RF (PC/SC)”Read”→ RF (PC/SC) “Reset” → Card “OUT”

If press ‘’Batch Start”, above procedure will be repeated automatically. At this time, it is running again and again step described above. SMART Printer supply internal RF encoder and external RF encoder . If you want test External RF, select the “ internal (batch)”

2.4.1 Status Code

```
#define     SMSC_M_CARDIN           0x0000000000000001    // Under Card In
#define     SMSC_M_CARDOUT          0x0000000000000002    // Under Card Out
#define     SMSC_M_MOVE_PRINT       0x0000000000000004    // Moving to the print position
#define     SMSC_M_MOVE_PRN2ROT     0x0000000000000008    // Move from Printer to Rotator
#define     SMSC_M_MOVE_ROT2PRN     0x0000000000000010    // Move from Rotator to Printer
#define     SMSC_M_MOVE_IC          0x0000000000000020    // Move to IC position
#define     SMSC_M_MOVE_RF          0x0000000000000040    // Move to RF position
#define     SMSC_M_MOVE_MAG         0x0000000000000080    // Move to Magnetic position
#define     SMSC_M_THUP             0x0000000000000100    // Up thermal print head
#define     SMSC_M_THDOWN           0x0000000000000200    // Down the thermal head
#define     SMSC_M_ICHUP            0x0000000000000400    // Under IC head (Contactor) up
#define     SMSC_M_ICHDOWN          0x0000000000000800    // Under IC head (Contactor) down
#define     SMSC_M_PRINT            0x0000000000001000    // Printing
#define     SMSC_M_MAGRW            0x0000000000002000    // Read/Write the magnetic data
#define     SMSC_M_SEEKRIBBON       0x0000000000004000    // Searching Ribbon
#define     SMSC_M_MOVERIBBON       0x0000000000008000    // Moving Ribbon
#define     SMSC_M_ROTATORTOP       0x0000000000010000    // Card front side rotating
#define     SMSC_M_ROTATORBOTTOM    0x0000000000020000    // Card back side rotating
#define     SMSC_S_HOPPERHASCARD    0x0000000000040000    // Card is stacked on hopper
#define     SMSC_S_THUP             0x0000000000080000    // Thermal head up Status
#define     SMSC_S_CARDIN           0x0000000000100000    // Card detection by card in sensor
#define     SMSC_S_CARDOUT          0x0000000000200000    // Card detection by card out sensor
#define     SMSC_S_ROTATORTOP       0x0000000000400000    // Card front side is up on Rotator
#define     SMSC_S_EQUIPROTATOR     0x0000000000800000    // Rotator is installed
#define     SMSC_M_RECVPRINTDATA    0x0000000001000000    // Receiving the print buffer
#define     SMSC_S_HASPRINTBUFFER   0x0000000002000000    // Reserving the print data buffer
#define     SMSC_M_SBSRUNNING       0x0000000004000000    // Doing SBS command
#define     SMSC_S_SBSMODE          0x0000000008000000    // SBS mode Status
#define     SMSC_S_CASEOPEN         0x0000000010000000    // Case open Status
#define     SMSC_M_INIT             0x0000000020000000    // Initialized Devise
#define     SMSC_S_TESTMODE         0x0000000080000000    // Under test mode
```

In the case, SMART Card Printer firmware version is upper than 1.00.59, the status is changed from black text to red text like below

```
#define     SMSC_S_THUP                 0x0000000000080000    // Thermal head-up status
#define     SMSC_S_CLEANWARNING         0x0000000000080000    // Needs Cleaning

#define     SMSC_S_ROTATORTOP           0x0000000000400000    // Front card up status in Rotator.
#define     SMSC_S_EQUIPLAMINATOR       0x0000000000400000    // Laminator is installed.
```

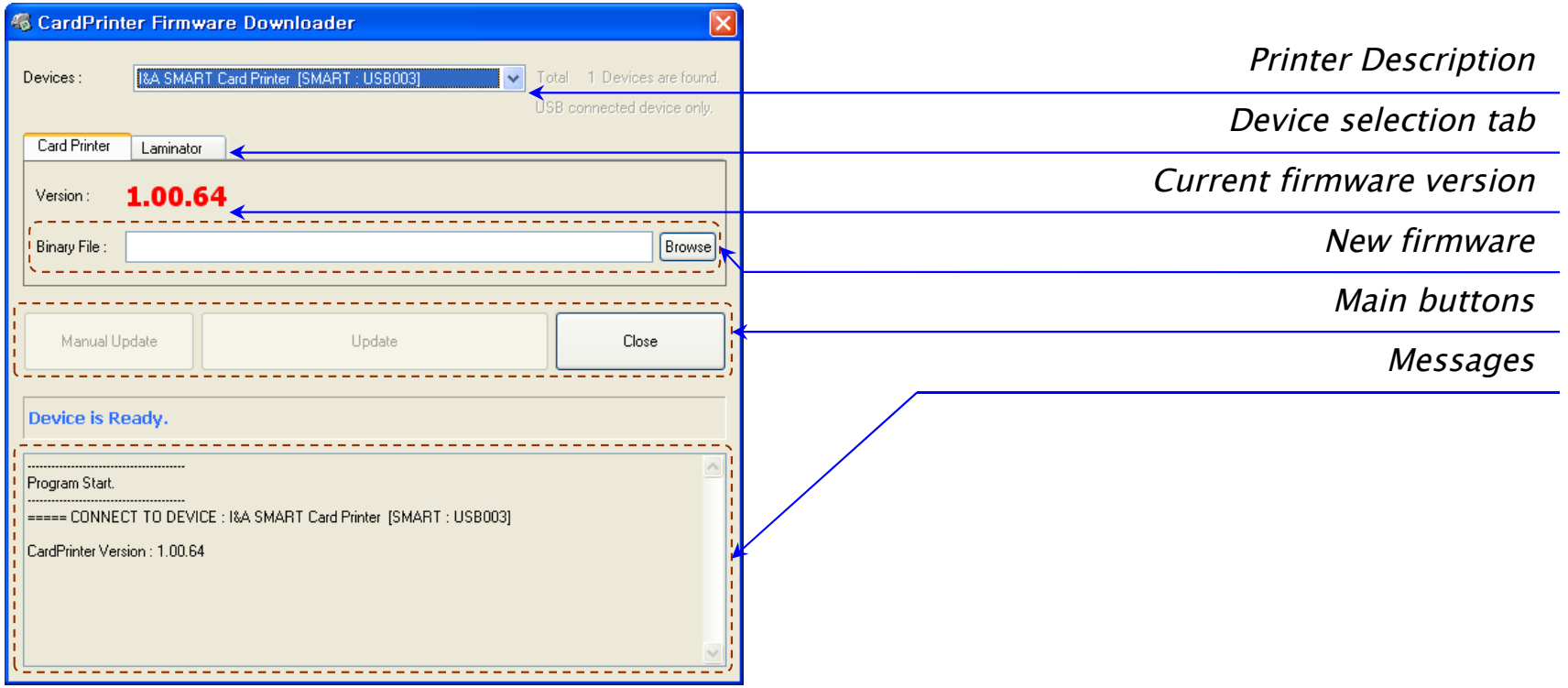
2.4.2 Error Code

```
#define   SMSC_F_CARDIN          0x0000000100000000   // Card in fail
#define   SMSC_F_MOVETOPRINT     0x0000000200000000   // Card movement fail
#define   SMSC_F_CARDOUT         0x0000000400000000   // Card out fail
#define   SMSC_F_MOVETOMAG       0x0000000800000000   // Movement to Magnetic position is fail
#define   SMSC_F_MOVETOIC        0x0000001000000000   // Movement to IC location is fail
#define   SMSC_F_MOVETORF        0x0000002000000000   // Movement to RF location is fail
#define   SMSC_F_MOVETOROTATOR   0x0000004000000000   // Movement fail to Rotator
#define   SMSC_F_MOVEFROMROTATOR 0x0000008000000000   // Movement fail from Rotator to Printer
#define   SMSC_F_THUP            0x0000010000000000   // Thermal head up fail
#define   SMSC_F_THDOWN          0x0000020000000000   // Thermal head down fail
#define   SMSC_F_ICHUP           0x0000040000000000   // IC head (Contactor) up fail
#define   SMSC_F_ICHDOWN         0x0000080000000000   // IC head (Contactor) down fail
#define   SMSC_F_ROTATORTOP      0x0001000000000000   // Card front side upper rotating fail
#define   SMSC_F_ROTATORBOTTOM   0x0002000000000000   // Card back side down rotating fail
#define   SMSC_F_PRINT           0x0004000000000000   // Printing Error
#define   SMSC_F_MAGRW           0x0008000000000000   // Magnetic read/write error
#define   SMSC_E_SEEKRIBBON      0x0001000000000000   // Ribbon search error
#define   SMSC_E_MOVERIBBON      0x0002000000000000   // Ribbon movement error
#define   SMSC_E_NOTH            0x0004000000000000   // The thermal head is not installed
#define   SMSC_E_THOVERHEAT      0x0008000000000000   // Thermal head's overheat
#define   SMSC_E_EMPTYRIBBON     0x0010000000000000   // No ribbon
#define   SMSC_F_DATA            0x0020000000000000   // Printing data erorr
#define   SMSC_F_CARDBACKOUT     0x0040000000000000   // Card movement to back side is fail.
#define   SMSC_F_CARDERASE       0x0080000000000000   // Fail to remove the card data
#define   SMSC_F_INCORRECT_PW    0x0100000000000000   // Wrong password.
#define   SMSC_F_MAGREADT1       0x0200000000000000   // Failed to read from Mag. track 1.
#define   SMSC_F_MAGREADT2       0x0400000000000000   // Failed to read from Mag. track 2.
#define   SMSC_F_MAGREADT3       0x0800000000000000   // Failed to read from Mag. track 3.
#define   SMSC_F_LOCKED          0x1000000000000000   // Device is locked.
#define   SMSC_F_SPOOLFULL       0x2000000000000000   // Spool of printer is full.
#define   SMSC_F_SET             0x4000000000000000   // Printer setup fail status in recent motion
```

3. Firmware

3.1 Overview

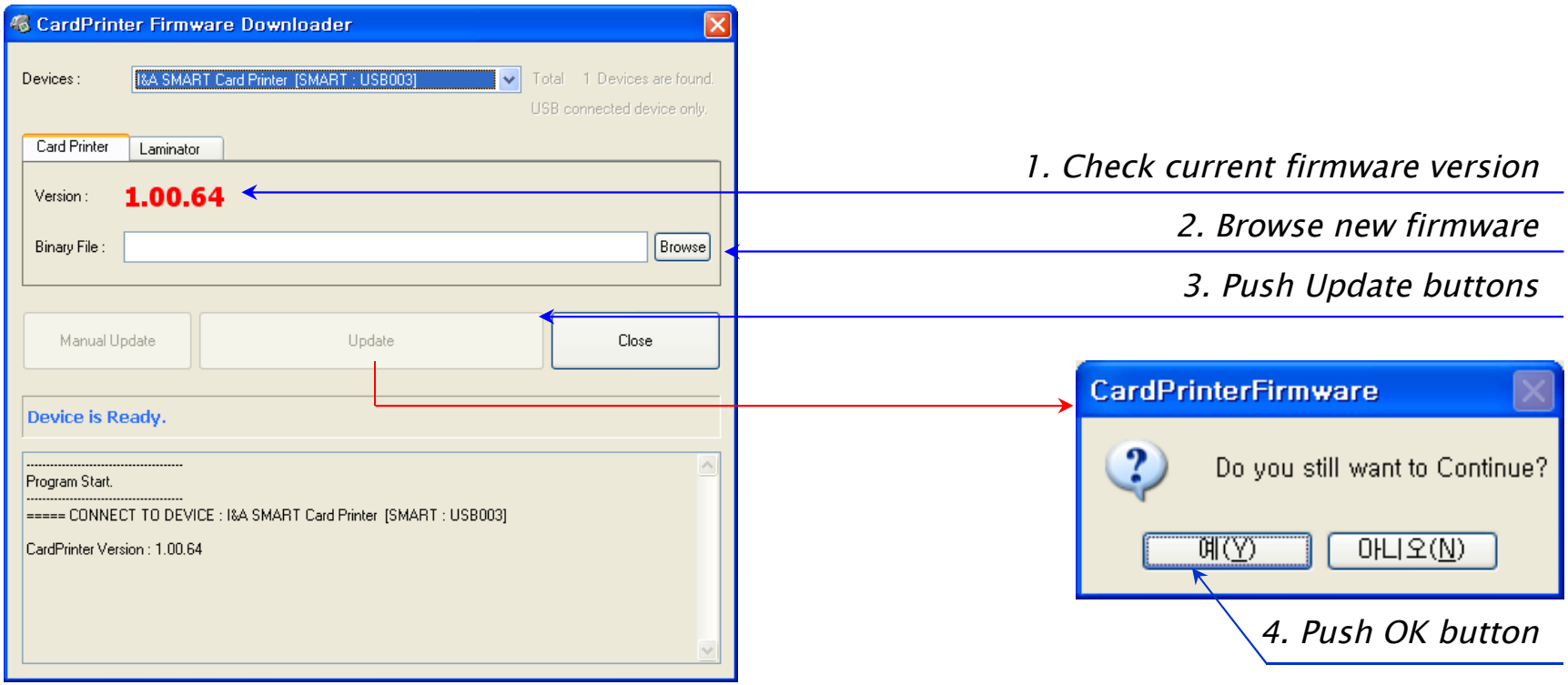
CardPrinter Firmware is the software for changing the firmware of SMART printer. The firmware of SMART printer is the operating software for the processor of SMART printer. If new function is added or there is other reason, it will be provided by web-site or distributor. Card Printer Firm is the software for upgrade firmware. When you run Card printer Firmware, Window display as below



3.2 Card Printer - Auto Upgrade

Usually the auto upgrade is used to install new firmware. If there is some problem to upgrade automatically, you can use the manual update. The upgrade procedure is as follows.

1. Check the current printer's firmware version.
2. Press "Browse" button and select the firmware you want to install.
3. Press "Update" button and upgrade.
4. Click "OK" on dialog message to continue the upgrade.
5. Wait until the firmware upgrade is finished.

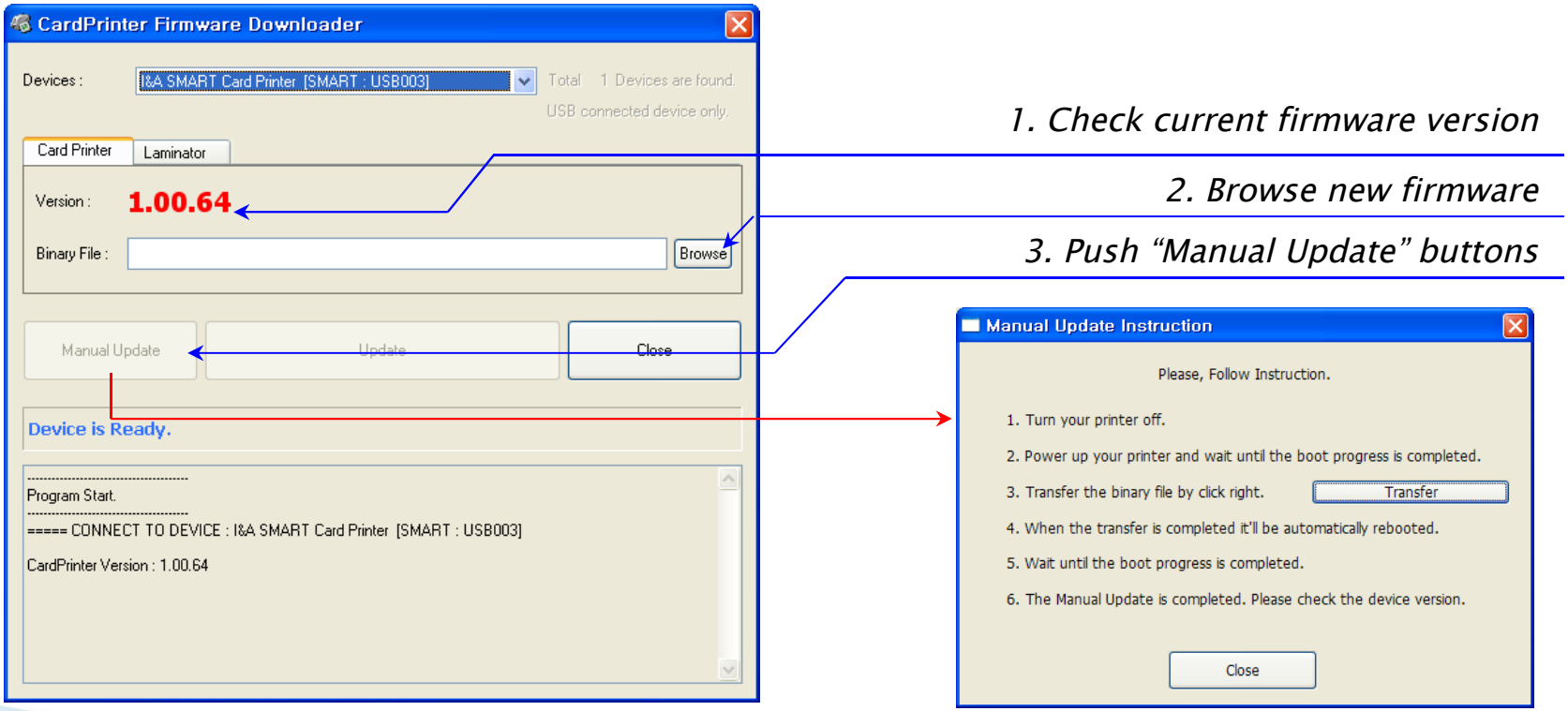


(In firmware upgrade, the printer is automatically reboot.)
(During upgrade, do not operate the printer or close the program.)

3.3 Card Printer - Manual Upgrade

Manual upgrade procedure is as follows.

1. Check the printer's firmware version.
2. Press "Browse" button and select the firmware you want to install.
3. If press "Manual Update", "Manual Update Instruction" window will be displayed.
4. Follow "Manual Update Instruction".
5. Click the "Transfer" button , transfer is completed then Window is automatically closed.
6. Wait until the firmware upgrade is finished.

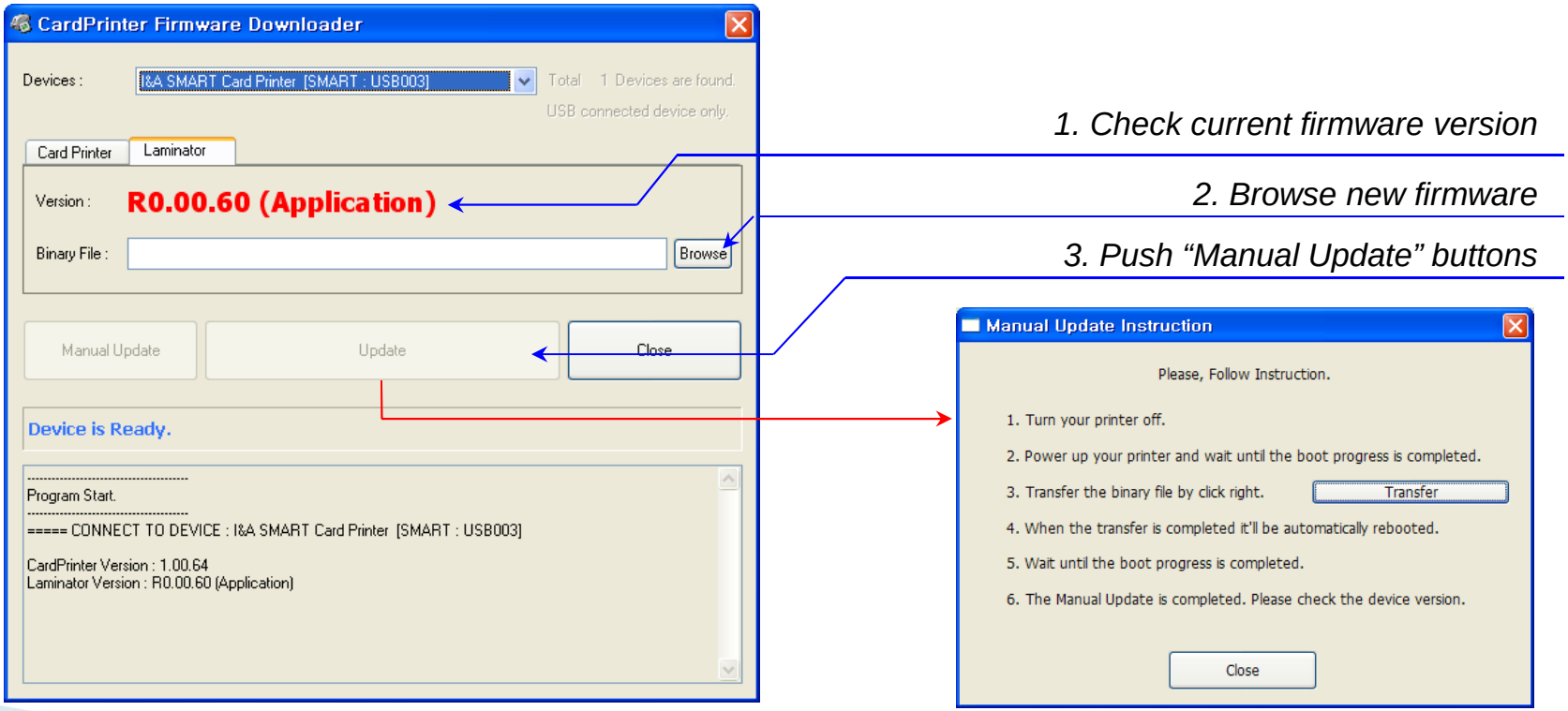


(In firmware upgrade, follow the instruction and do not operate other thing.)

3.4 Laminator - Auto Upgrade

Laminator upgrade is the same as card printers. Please follow below steps

1. Click “Laminator” Tap.
2. Check the current laminator’s firmware version.
3. Press “Browse” button and select the firmware you want to install.
4. Press “Update” button and upgrade.
5. Click “OK” on dialog message to continue the upgrade.
6. Wait until the firmware upgrade is finished.

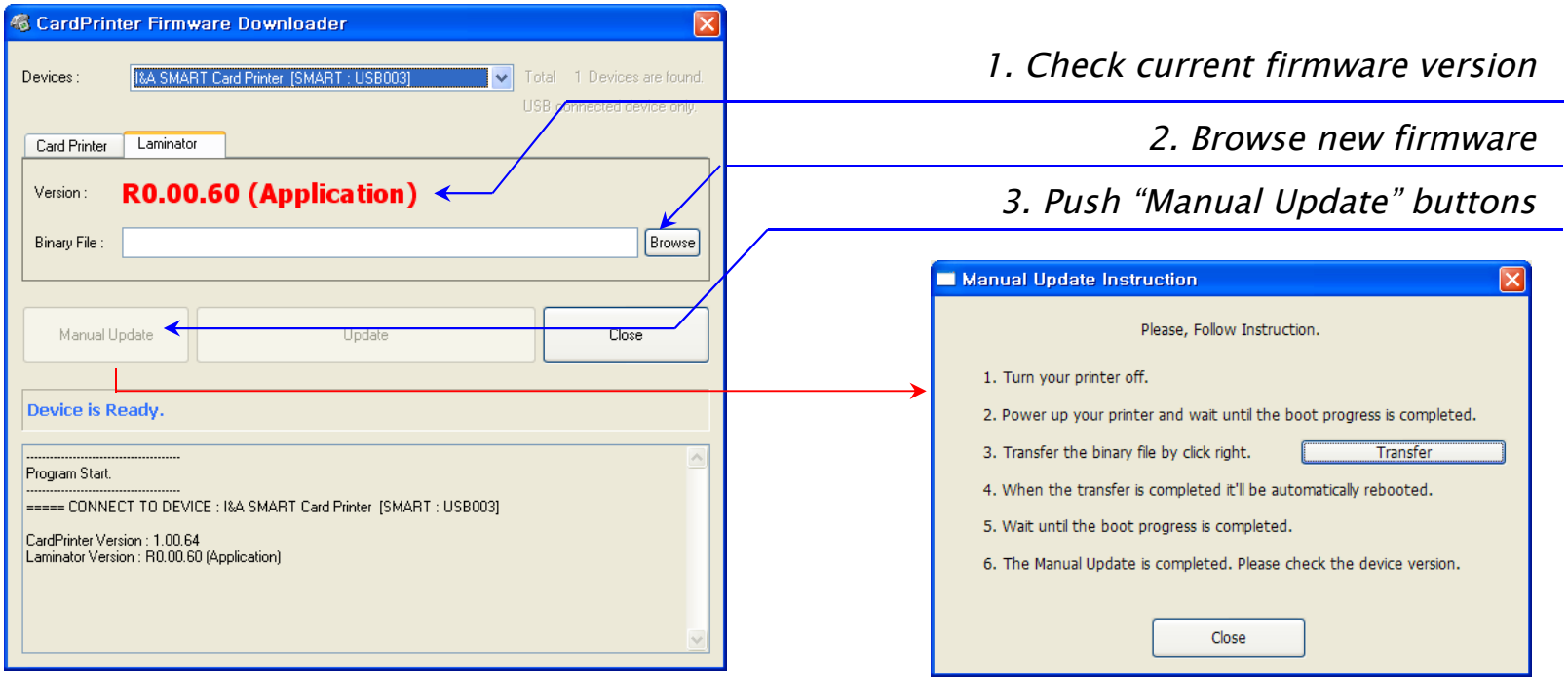


(In firmware upgrade, follow the instruction and do not operate other thing.)

3.5 Laminator - Manual Upgrade

Please follow below steps

1. Click “Laminator Tap”
2. Check the laminator’s firmware version.
3. Press “Browse” button and select the firmware you want to install.
4. If press “Manual Update”, “Manual Update Instruction” window will be displayed.
5. Follow “Manual Update Instruction”.
6. Click the “Transfer” button , transfer is completed then Window is automatically closed.
7. Wait until the firmware upgrade is finished.

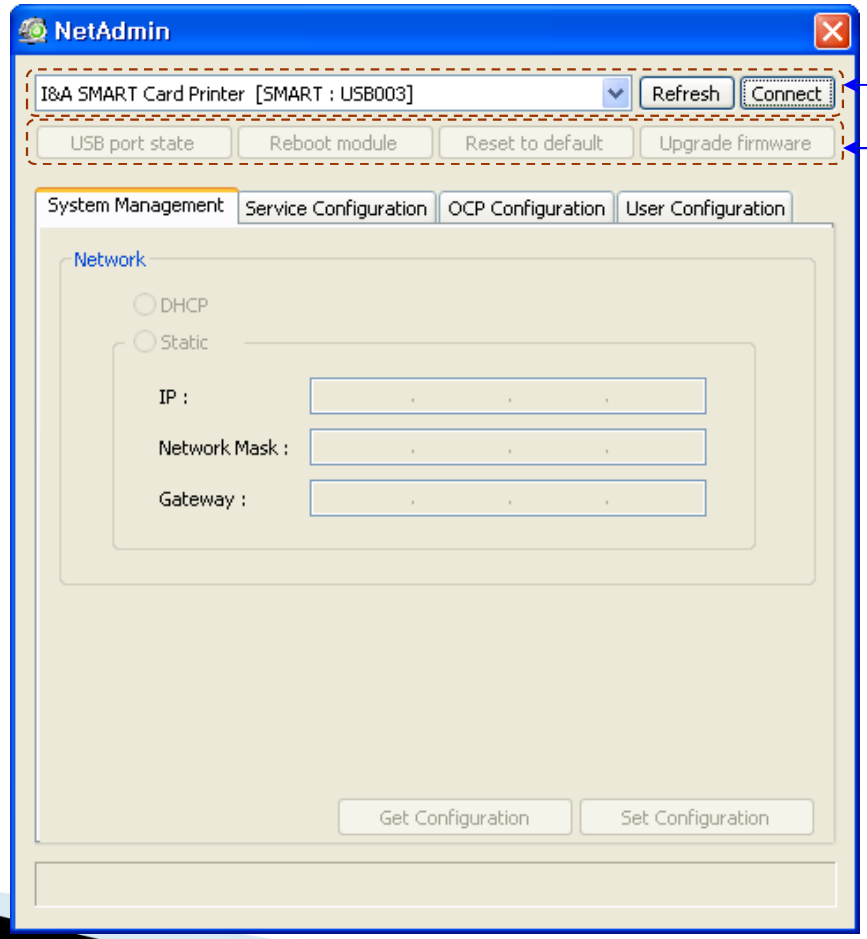


(In firmware upgrade, follow the instruction and do not operate other thing.)

4. Network Configuration

4.1 Overview

NetAdmin is changing the network configuration of SMART printer which is installed network module.
It is for changing IP address, simple management, configure the system and user account management.

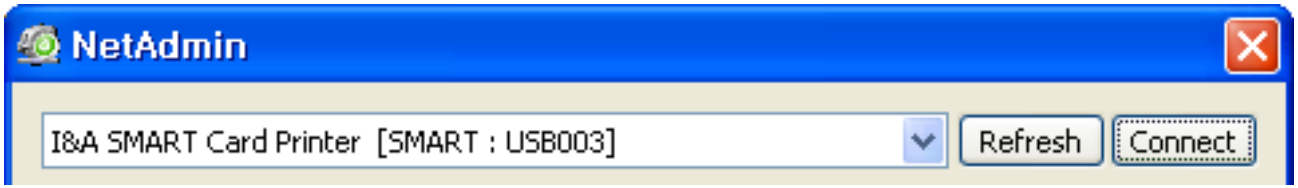


Printer Description

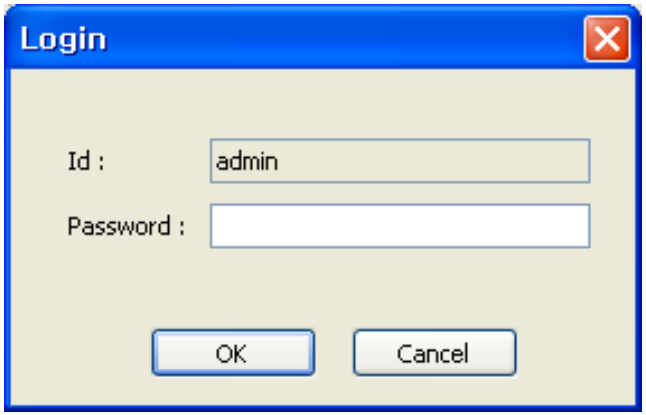
Control Functions

4.2 Connection

Available printers are listed on the pull down control when you startup NetAdmin, .
The meaning of the string in the list is,
"Printer ID + IP Address + Port Number + Flag of SSL Using + Server Type".
"Refresh" button will updates the printer list.
If you want to connect printer, you can choose the printer and click "Connect" button to connect.



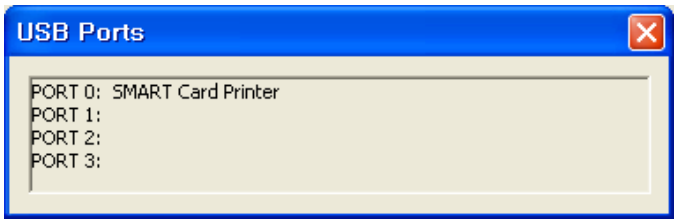
Login information window is appeared, when you click "Connect" button.
Write the password of admin, and then click "OK" to connect the printer.
Default admin password of factory setting is "admin".



4.3 Network Server Module

Below 4 buttons will be activated, when the connection is succeeded to printer.

USB port state : It will display the devices which is connected to the USB hub of network module.



Reboot module : Shutdown and restart the network module. it will may takes some minutes.
Reset to default : Initialize configuration values to default and restart the network module.
Upgrade firmware : Updates the firmware of network module
Please notice, it will update firmware of network module, not the printer.
And, **DO NOT Turn Off** the printer until restart is finished after update.

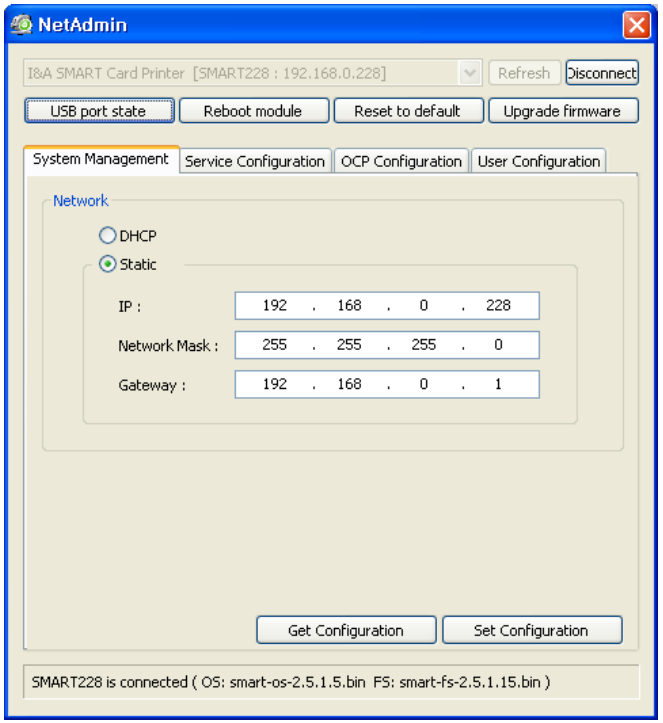
4.4 System Management

Network category is to setup the IP address of network server module of printer.
You can select DHCP, if you want to automatically allocate the address.
You can select Static and write the IP, Network Mask and Gateway addresses, if you want to use fixed address.

The initial IP address is 192.168.0.223.

Click “Set Configuration” button on bottom of window, it will change address values of printer. When you change the value, you should restart the network server module. Press “Reboot module” button to reboot which is described at 4.3.

Click “Get Configuration” button, it will read and display current address settings.



4.5 Service Configuration

It will change configurations of network service.

Use USB Spool : Sets whether receive or not the printing data from printer driver when the printer is directly connected by USB.

Use Network Spool : Sets whether receive or not the printing data from network printer driver when the printer is serviced as network printer server.

TCP Port : Port number to receive printing data via network. (**DO NOT Change**)

TCP Timeout (sec) : Second based TIMEOUT value when data receiving is delayed via network.

Use Network SDK : Sets whether allow or not the connection via network which is by using SDK.

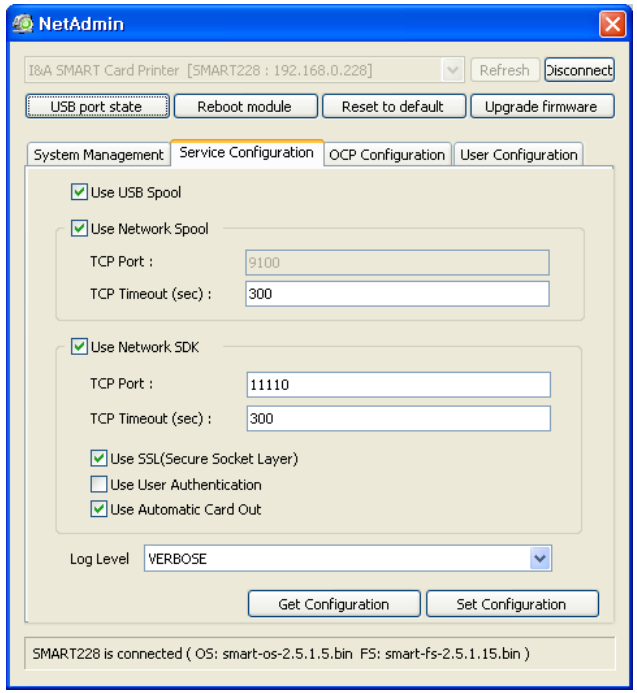
Use SSL (Secure Socket Layer) : Connect by using secured socket (SSL).

Use User Authentication : Use user account (where registered 'User Configuration') authentication.

Use Automatic Card Out : Card is automatically ejected when the connection is closed.

Log Level : Sets the logging level.

When you finish changing, please "Set Configuration" button to apply. Changed Values are applied after the network server module is restarted.



4.6 Open Card Print Setup

Open Card Print is to print card through network card irrespective of OS. It uses commands and controls and modifies all the data.

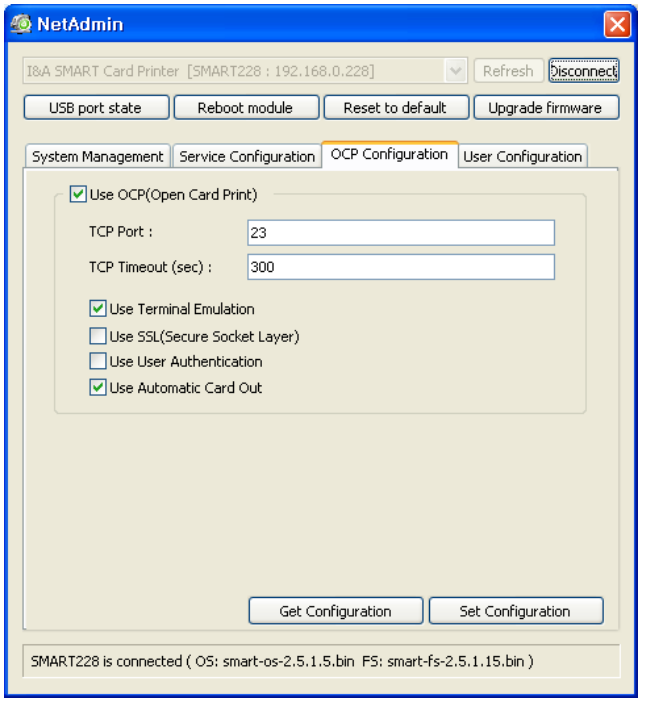
Use OCP (Open Card Print) : Setup the use of Open Card Print function. To use this function, you should connect to printer using “Telnet”.

TCP Port : Port number for Network printer control commands. (**Do Not Change**)
TCP Timeout (sec) : Time (Second) out value for delay from network control commands.

Use Terminal Emulation : Setting transmission for results of commands. After user send control commands using terminal, shows the result of commands.

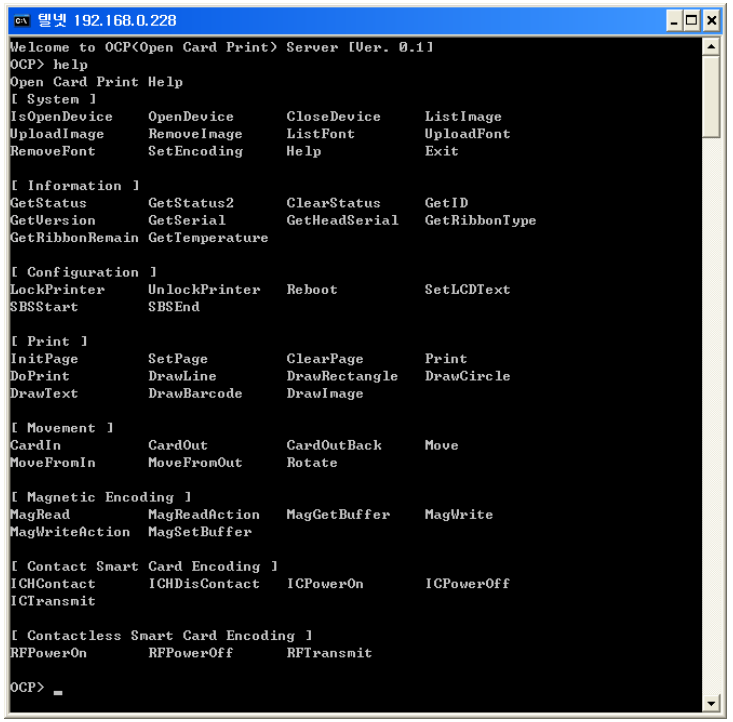
Use SSL (Secure Socket Layer) : Communication using SL|
Use User Authentication : Use User account which is defined in ‘User Configuration’
Use Automatic Card Out : When connection is terminated, card out automatically.

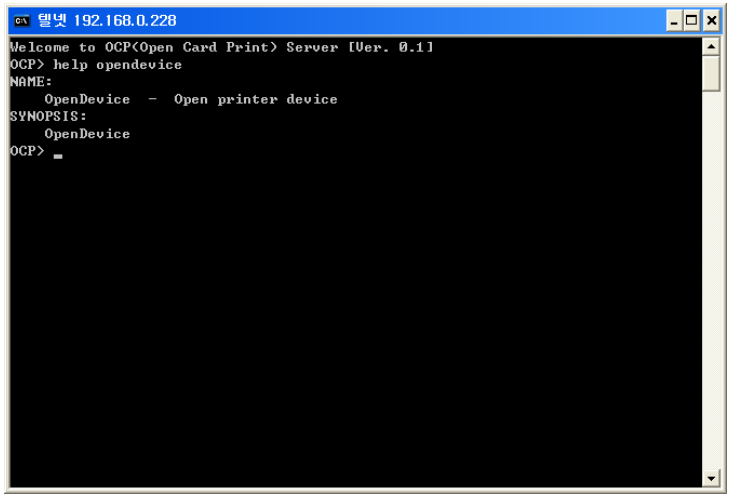
If you click “Set Configuration” button, modified values are adapted. And you should restart printer server module to use the modified values.



OCP function is available when Network module firmware version is upper than 2.5.1.15.

Type “help” command in Terminal, and you can see available commands in the Terminal.
If you type a command behind “help” (help specific-command) and you can see the explanation of the command.





4.7 User Configuration

Manages the user account on network module.

Get User : Get current user accounts and display.
Add User : Create a new user account.
Del User : Delete a user account which is selected from the list.
Password User : Change a password of user account which is selected from the list.

To use user authentication, you should activate the “Use User Authentication” option which is described at ‘4.5 Service Configuration’.