

Sublimation type Retransfer Card Printer CX-7600

Technical Document for Software Development

Revision 1.03

Notice

1. Before using the document, please read through the "Software License Agreement" attached to the printer Instruction Manual. You will not be allowed to develop any software by the use of the document unless you have agreed to accept the terms stated in the agreement.
2. We shall not be responsible for anything developed by the use of this document.
3. This document may be changed for improvements without prior notice.
4. Microsoft and Windows are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries. In this book, the names for Microsoft® Windows® 10 operating system, Microsoft® Windows® 8 operating system, Microsoft® Windows® 7 operating system, Microsoft® Windows Vista® operating system, Microsoft® Windows® XP operating system and Microsoft® Windows® 2000 operating system are written as Windows 10, Windows 8, Windows 7, Windows Vista, Windows XP and Windows 2000 respectively.

<Revision Contents>

| | |
|-------------------------|---|
| 02.Apr.2014 Rev 1.00 | The differences from CX-7000 are described with blue and bold characters . |
| 06.Jul.2015 Rev 1.01 | <ol style="list-style-type: none">1) "5.12.2 Mode Sense (3)PageCode=0x28" and "5.12.3 Mode Select (5) PageCode=0x28": Added the "Off" parameter of the "Heat Roller Temperature (Card Fix)".2) "5.12.3 Mode Select (5)PageCode=0x2B" : Moved the "Off" parameter of the "Velocity (Card Fix)" to the "Heat Roller Temperature (Card Fix)".3) "Appendix 4 The location of the MAC address printed with UV" : Corrected the words. ("Protecting Region" to "Priority Region", 1224 to 1222) |
| 24.May.2016 Rev 1.02 | <ol style="list-style-type: none">1) "2. Operational Environment" : Added Windows 102) "5.3 Process flow to issue the card" : Added "Sample of print sequence" |
| 9.Nov.2017 Rev 1.03 | <ol style="list-style-type: none">1) "Appendix 3 Card Printer Error Code Table" : Modified the words. |

<Table of contents>

| | |
|---|----|
| 1. Overview | 5 |
| 2. Operational Environment..... | 5 |
| 3. System Configuration on USB Interface | 6 |
| 4. About Card Printer | 7 |
| 4.1 Command Structure of the USB Interface | 7 |
| 4.2 Card Position | 7 |
| 4.3 Print Range | 7 |
| 5. Printer Control Function | 8 |
| 5.1 Program Construction | 8 |
| 5.2 Basic rule of the return code from functions..... | 8 |
| 5.3 Process flow to issue the card | 9 |
| 5.4 Scan Printer..... | 11 |
| 5.4.1 Scan Printer Functions | |
| 5.4.2 Printer Check Function | |
| 5.5 Getting Printer Status..... | 11 |
| 5.5.1 Test Unit Ready Function | |
| 5.5.2 Read Position Function | |
| 5.6 Print on Retransfer Film | 13 |
| 5.6.1 Image Out Function | |
| 5.6.2 LUT Setting Function | |
| 5.6.3 Print Function | |
| 5.7 Moving & Discharging Card | 17 |
| 5.7.1 Card Load Function | |
| 5.7.2 Card Move Function | |
| 5.8 Retransfer on the card | 19 |
| 5.8.1 Retransfer Function | |
| 5.9 Magnetic Encoding..... | 20 |
| 5.9.1 Writing Function(For JIS) | |
| 5.9.2 Reading Function(For JIS) | |
| 5.9.3 Writing Function(For ISO) | |
| 5.9.4 Reading Function(For ISO) | |
| 5.10 IC Encoding | 23 |
| 5.10.1 IC Control Function | |
| 5.11 Initializing Printer..... | 24 |
| 5.11.1 Rezero Function | |

| | |
|--|----|
| 5.12 Getting information and Changing setting | 25 |
| 5.12.1 Inquiry Function | |
| 5.12.2 Mode Sense Function | |
| 5.12.3 Mode Select Function | |
| 5.12.4 Log Sense Function | |
| 5.12.5 Log Select Function | |
| 6. How to encode with Printer Driver | 56 |
| 6.1 Inline Encoding | 56 |
| 6.1.1 Default encoding | |
| 6.1.2 Type B encoding | |
| 6.1.3 Type C encoding | |
| 6.2 Encoding by using ExtEscape() | 60 |
| 6.3 How to make IC Encoding program | 61 |
| 7. How to change the driver setting | 63 |
| 7.1 How to use ExtEscape() | 63 |
| 7.2 Change the setting | 64 |
| 7.3 Get the current setting | 64 |
| 7.4 Programming sample | 65 |
| 7.5 About the parameter | 67 |
| 7.6 About the error code | 70 |
| Appendix 1 Error Code Table | |
| Appendix 2 Magnetic Data Code | |
| Appendix 3 Card Printer Error Code Table | |
| Appendix 4 The location of the MAC address printed with UV | |

1. Overview

This document explains the printer software from the point of software development view. When you install the printer software, the Printer Control DLL is also installed. Although Printing and Encoding is done by using the printer driver normally, you can do them by using Printer Control DLL directly without using Printer Driver. This explains how to use Printer Control DLL, and the special usage of the printer driver such as IC and MAG encoding.

Note: In case of Network interface, the printer cannot control by the Printer Control DLL. The Printer Control DLL in this document is about USB interface.

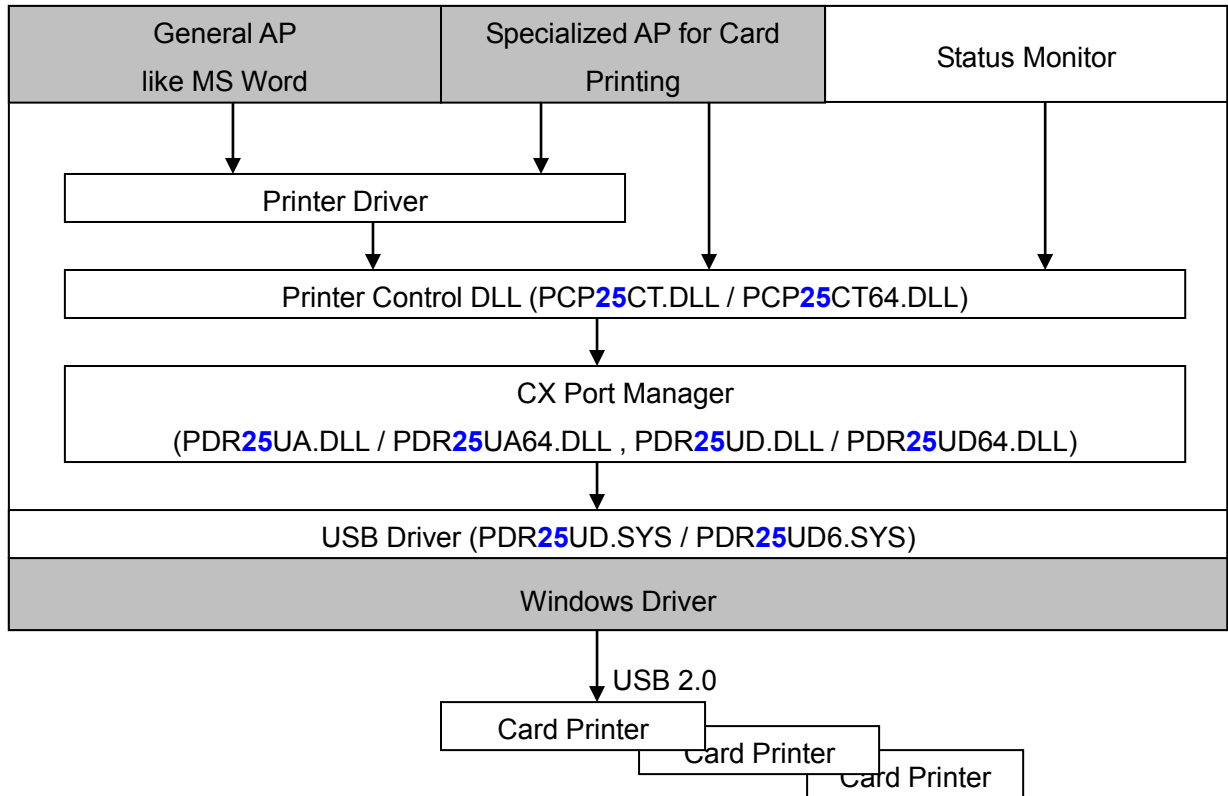
2. Operational Environment

Following table shows the operational environment of the software.

| Item | Contents |
|------------|---|
| OS | Windows 2000 Professional (SP4) Windows XP (SP3) Windows Vista (SP2) Windows 7 32bit / 64bit (SP1) Windows 8 32bit / 64bit (including Windows 8.1) Windows10 32bit / 64bit Note: The Printer Control DLL cannot run on 64-bit OS excluding Windows 7 / 8 / 10. |
| Peripheral | Card Printer connected PC via USB. |

3. System Configuration on USB interface

Following figure shows the configuration of the printer software. The software surrounded by the white rectangle in the figure is the software which is installed from the CD-ROM of the printer. Many Application Software (hereinafter “AP”) use the printer driver.



Note: The file names are described such as (32bit / 64bit).

<Hint> Normally, Printer Driver loads the card, and encodes and prints. But when there is a card in the printer already, Printer Driver's processing is done to the card in the printer. By using this function, you can do pre-processing such as encoding by using Printer Control DLL before the Printer Driver's process.

Caution: If you use both Printer Control DLL and Printer Driver, Windows Spooling had better be disabled. If any printing data is pooled in Spooler, problem will happen as DLL controls Card Printer directly.

4. About Card Printer

4.1 Command Structure of the USB interface

The structure of the command to the printer is according to the SCSI rule. The printers being connected to a PC can be specified with the Slot number and the ID of the printer. This addressing makes it possible to control by 10 printers. Almost functions require both Slot number and ID to specify the printer. Slot number is a value decided by system environment, and ID is the value which is subtracted by 1 from Unit number of the printer.

4.2 Card Position

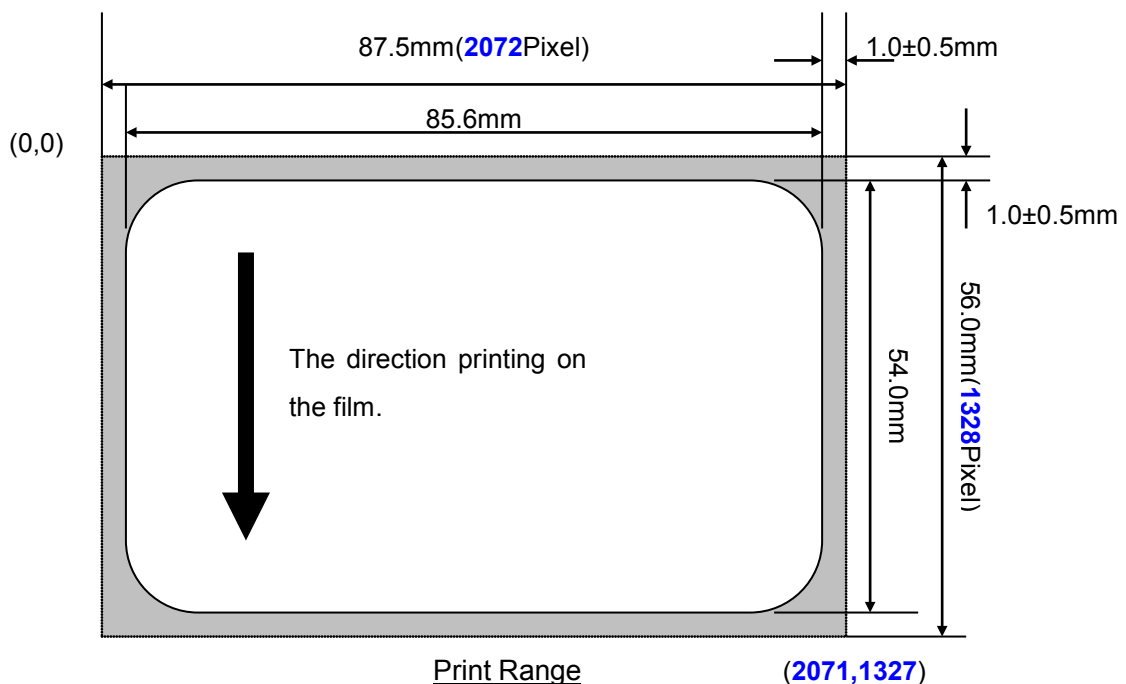
The printer command may fail if the card position is not proper for the command. For example, Retransfer command, which retransfers the image on the film to the card, will fail if the card is not positioned at Retransfer Position. Read Position command is prepared to know the card position.

Card Position in the Card Printer

| Card Position | Explanation |
|--------------------------------|--|
| Retransfer Position | The position to start Retransfer. |
| Contact IC encoder position | The position to do Contact IC encoding. |
| No-Contact IC encoder position | The position to do No-Contact IC encoding. |
| MAG encoder position | The position to do MAG encoding. |

4.3 Print Range

The print range on Retransfer film is bigger than actual print range on the card. Following figure shows it.



5. Printer Control Function

5.1 Program Construction

They are functions in Printer Control DLL which is supplied as Windows DLL. They are installed when the printer driver is installed.

| Name | OS | File Name |
|---------------------|-------|---------------|
| Printer Control DLL | 32bit | PCP25CT.DLL |
| | 64bit | PCP25CT64.DLL |

Note: Use the PCP25CT.DLL of 32bit version when you use 32bit application software on 64bit OS.

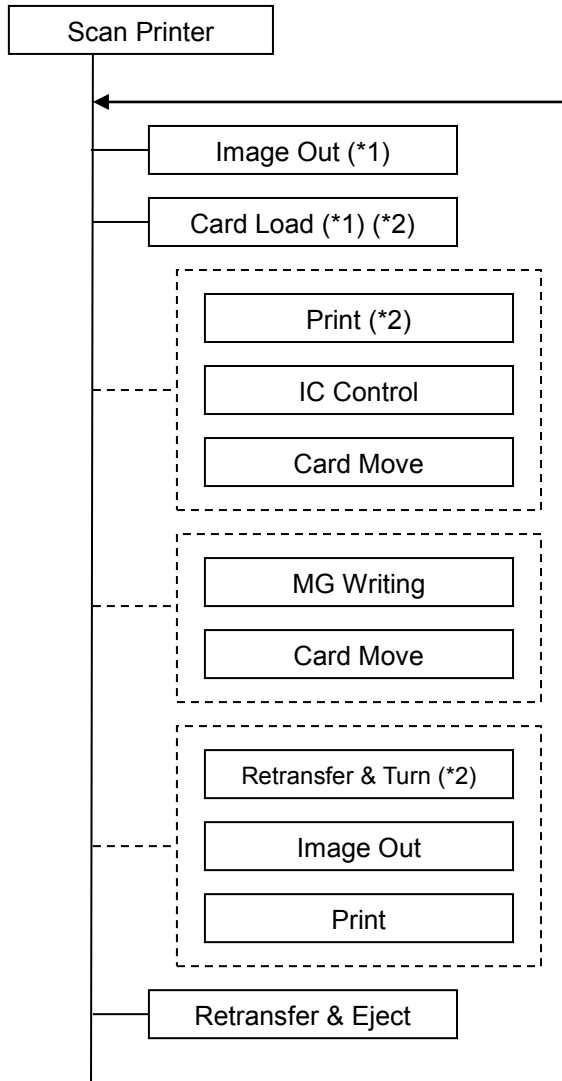
5.2 Basic rule of the return code from functions

The return code from all functions is according to following rules if there is no explicit description.

- ◆ 0 : It means success.
- ◆ Positive value: Command could not be executed but the condition will recover automatically. Retry after a little waiting.
 - 1(_BUSY) : CX Port Manager did not send command to the printer because of Printer's condition. This error never happens.
 - 2(_TARGET_BUSY1) : Card Printer rejected the command because it is on the way of moving the card.
 - 3(_BUS_BUSY) : Printer Control DLL rejected the command because the command issued by other process is on the way of processing.
 - 4(_TARGET_BUSY2) : Card Printer rejected the command because it is on the way of printing on the retransfer film.
 - 5(_TARGET_BUSY3) : Card Printer rejected the command because of both _TARGET_BUSY1 and _TARGET_BUSY2.
- ◆ Negative value : It means error. "Appendix Error Code Table" shows the detail.

5.3 Process flow to issue the card

Firstly, "Scan Printer" function should be used to know Slot number and ID of the printer. After that, you can control the printer with them. The printing method of the printer is Retransfer method, which prints on the retransfer film and retransfers the image on Retransfer film to the card.



Note

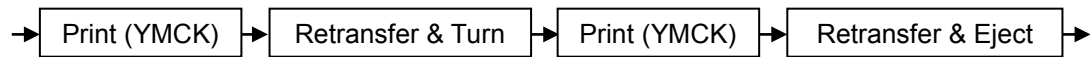
- 1) For the parallel processing of image data transferring and mechanical action, the command marked by *2 should be issued with setting Immediate Flag on. If Immediate flag is set, the command will end immediately after the command is accepted by the printer. So software can take next action such as image sending.
 - 2) The process surrounded by dashed line is optional procedure.
 - 3) It is required the card is located at proper position for the card processing command. The destination parameter of Card Move/Card Load must be considered to locate the card at proper position for the next card processing command.
 - 4) The card is discharged from the card outlet only by Retransfer command. The card is discharged from NG card outlet by other commands.
- *1 The order of Image Out and Card Load is arbitrary.

Sample of print sequence

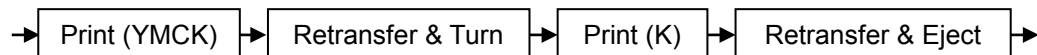
Single-sided YMCK Printing



Double-sided YMCK Printing (Front: YMCK Back: YMCK)



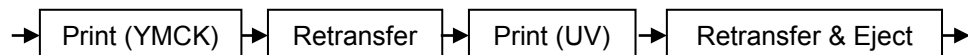
Double-sided YMCK Printing (Front: YMCK Back: K)



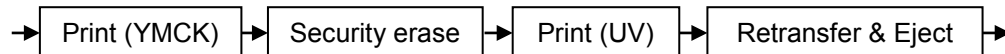
YMCK-UV Printing (1 panel)



YMCK-UV Printing (2 panels)

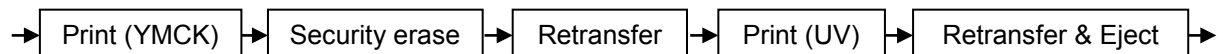


YMCK-UV Printing (1 panel) + Security erase

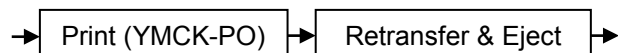


Note: This sequence is recommended.

YMCK-UV Printing (2 panels) + Security erase



YMCK-PO Printing



Note1: “Image Out” and “Card Load” are omitted.

Note2: “Security erase” needs special data.

5.4 Scan Printer

5.4.1 Scan Printer Functions

| No. | Function Name | Explanation |
|-----|---|---|
| 1 | int CXCMD_ScanPrinter (int *piSlot, int *piID) | Search for the printer from the first, and return Slot number and ID. The result is set at piSlot and piID. |
| 2 | int CXCMD_ScanPrinterNext (int *piSlot, int *piID) | Search for the printer from the next of the printer specified by piSlot and piID. The result is set at piSlot and piID. |

Note: It is not required to retry even if above functions return positive value. Valid value is set at piSlot and piID even if they return positive value.

5.4.2 Printer Check Function

| No. | Function Name | Explanation |
|-----|--|---|
| 1 | BOOL CXCMD_CheckIfConnected (int *piSlot, int *piID) | Check whether the printer specified by Slot number and ID is connected or not. It returns TRUE if it is connected and it returns FALSE if it is not. This is more safety way than using other functions to confirm whether it is connected or not. |

5.5 Getting Printer Status

5.5.1 Test Unit Ready Function

| No. | Function Name | Explanation |
|-----|---|--|
| 1 | int CXCMD_TestUnitReady (int iSlot, int iID) | Check the printer condition by issuing Test Unit Ready command to the printer. |

5.5.2 Read Position Function

| No. | Function Name | Explanation |
|-----|--|--|
| 1 | int CXCMD_ReadPosition (int iSlot, int iID, BYTE *pbyBuffer) | Get card position by issuing Read Position command to the printer. Read Position data is set at pbyBuffer. |

1) Read Position Data format

| Bit Byte | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|-------------|----------|---|---|---|---|----|----------|-----------|
| 0 | Reserved | | | | | PU | Reserved | |
| 1 | Reserved | | | | | | | Load Mode |
| 2-6 | Reserved | | | | | | | |
| 7 | Position | | | | | | | |

PU (Position Unknown)

0: The card is in the printer unit.

1: No card in the printer unit

Note: Printer reports PU = 1 even if any card is in the card hopper. Printer generates Check Condition if the card is being transported.

Position: Card position in the printer unit.

0: At Retransfer Position 1: At Contact IC Encoder 2: At No-Contact IC encoder

3: At MAG encoder

Load Mode: The way to load the card

0: From the card hopper

5.6 Print on Retransfer Film

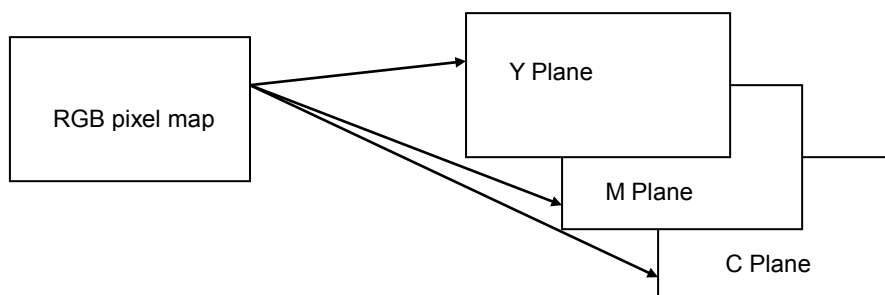
5.6.1 Image Out Function

| No. | Function Name | Explanation |
|-----|---|--|
| 1 | int CXCMD_ImageOut (int iSlot, int iID, BYTE * pbyPlane, int iLength, int iColor, int iBuffer) | <p>Transfer image data to the printer by using Image Out command.</p> <ul style="list-style-type: none">◆ pbyPlane: Image Data. The size of image data must be 2072 x 1328 bytes.◆ iLength: Size of image data in byte. This must be 2072 x 1328.◆ iColor: Kind of image data.<ul style="list-style-type: none">0 if image data is for K ink.1 if image data is for C ink.2 if image data is for M ink.3 if image data is for Y ink.4 if image data is for UV ink.5 if image data is for PO ink.◆ iBuffer: Image Data buffer number. Printer has two image buffers for all images. Image data is stored to the buffer specified here.<ul style="list-style-type: none">0 if Buffer 0.1 if Buffer 1. |

1) How to translate RGB to YMC planes

Only supports YMC plane to print colored image, RGB must be transformed to Y, M and C plane. Normally, the formula to translate RGB to YMC is as follows.

$Y = 255 - B$, $M = 255 - G$, $C = 255 - R$.



2) About K

Resin K ink (hereinafter “K ink”) is the ink specialized for black text printing. The data for K ink is Boolean, only the not zero part is printed with black color. It makes the quality of black text better.

3) About UV ink

UV ink is the ink which becomes visible with ultraviolet rays. The data for UV ink is gray scale data from 0 to 255, the greater value gives the more UV efficiency.

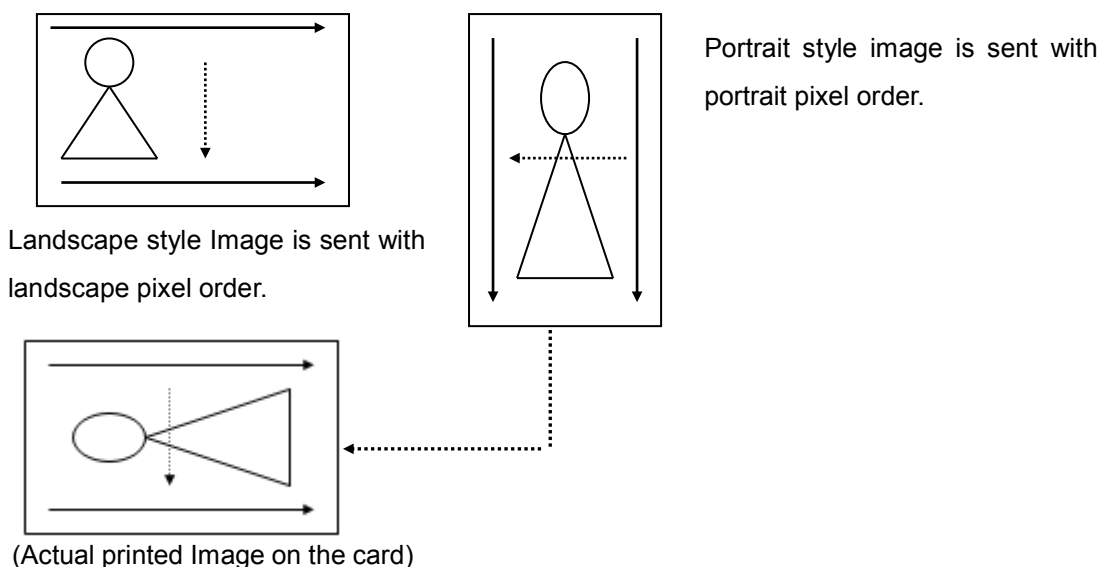
4) About PO(Peel-off)

Peel-off is used not to print any on magnetic stripe or sign panel. The data for Peel-off is from 0 to 255, the bigger value has the stronger power to peel off.

Note: Ability of Peel-off depends on the shape, size and location of the peeled off area. Furthermore operational environment of the printer gives some influence to the ability of Peel-off. Please use Peel-off after you confirm well that Peel-off works well.

5) About the order of the image sent to printer

The sending order of pixels to printer must be always Landscape order even if the image is created with portrait style. If the design is portrait style like right side of the following figure, pixel order must be adjusted by the application program.



- The solid line means the order of the pixels in a line to send to the printer.
- The dashed line means the order of the lines to send to the printer. The pixel at the top of left corner must be sent first, and the pixel at the bottom of right corner must be sent last.

5.6.2 LUT Setting Function

| No. | Function Name | Explanation |
|-----|--|---|
| 1 | int CXCMD_DefineLUT (int iSlot, int iID, int iColor, int iLength, BYTE *pbyBuffer) | Change LUT of the printer by using Print Format command. ◆ iColor: Each color has its own LUT. Specify the color here. 0 for K, 2 for C, 4 for M, 6 for Y ◆ iLength: The length of LUT data in byte. From 0 to 256. ◆ pbyBuffer: LUT Data. |

Note: Don't specify K because it is used internally by the printer.

1) About LUT

LUT is 256 bytes length data and it is used to transform the color being printed. Printer has 4 LUTs for each color transformation.

| Image Data from Host | | Byte Position in LUT | Data of LUT | | Color being printed actually |
|-------------------------|---|-------------------------|----------------|---|---------------------------------|
| 0 | → | 0 | 0 | → | 0 |
| 1 | → | 1 | 2 | → | 2 |
| 2 | → | 2 | 5 | → | 5 |
| : | : | : | : | : | : |
| 253 | → | 253 | 255 | → | 255 |
| 254 | → | 254 | 255 | → | 255 |
| 255 | → | 255 | 255 | → | 255 |

The value X in image data is replaced with LUT[X] value when it is printed.

LUT Data configuration and the way to transform

Note: LUT data is set default value every when the printer is powered.

5.6.3 Print Function

| No. | Function Name | Explanation |
|-----|---|--|
| 1 | int CXCMD_Print (int iSlot, int iID, int iColor, int iBuffer, int ilmmed) | <p>Print on Retransfer film by using Print command.</p> <ul style="list-style-type: none"> ◆ iColor Bit0-3: Specify the color to print. Bit0: YMC Bit1: K Bit2: UV Bit3: PO Bit4-5: The location of the MAC address printed with UV. 1: Upper right corner 2: Lower left corner Note: Please refer “Appendix4” too. ◆ iBuffer: Specify Image buffer to print. 0: Buffer-0 1: Buffer-1 ◆ ilmmed: Specify immediate flag which decides when printer reply. 0: Reply after printer finishes printing. 1: Reply immediately after printer accepts the command. <p>Note: As printing UV on YMC ink decreases the quality of YMC, UV must be retransferred after the YMC was retransferred to the card when UV image and YMC image overlaps.</p> |
| 2 | int CXCMD_SecurityPrint (int iSlot, int iID, int iColor, int iBuffer, int ilmmed) | <p>Do Security Erase which conceals the text on the K ink and the retransfer film by printing again. It prints the K image in the image buffer on the retransfer film by using last used K ink.</p> <ul style="list-style-type: none"> ◆ iColor: Specify the color to print. Only K(0x02) must be specified. Bit0: YMC Bit1: K Bit2: UV Bit3: PO ◆ iBuffer: Specify Image buffer to print. 0: Buffer-0 1: Buffer-1 ◆ ilmmed: Specify immediate flag which decides when printer reply. 0: Reply after printer finishes printing. 1: Reply immediately after printer accepts the command. <p>Note: Security Erase must be done after the ink is printed on the film and before it is not retransferred. This function is available only for the usage of YMCK ink, YMCK-UV ink and YMCK-K ink.</p> |

5.7 Moving & Discharging Card

5.7.1 Card Load Function

| No. | Function Name | Explanation |
|-----|---|--|
| 1 | int CXCMD_LoadCard (int iSlot, int iID, int iDest, int iFlip, int iFilmInit, int iImmed) | <p>Load the card to the specified position by using Media Control command. The card is discharged from NG card outlet if NG card outlet is specified as Destination.</p> <ul style="list-style-type: none">◆ iDest: Destination to move card.<ul style="list-style-type: none">0: Retransfer position1: Contact IC encoder2: No-contact IC encoder3: MG encoder4: NG Card outlet. Card is discharged from printer.◆ iFlip: Specify whether turn over the card or not.<ul style="list-style-type: none">0: Not turn over1: Turn over the card before arriving at the destination.◆ iFilmInit: Specify whether Film position is adjusted or not. This setting is effective only when Destination is NG Card outlet.<ul style="list-style-type: none">0: Not adjusted. 1: Adjusted.◆ iImmed: Specify immediate flag which decides when printer reply.<ul style="list-style-type: none">0: Reply after printer finishes loading.1: Reply immediately after printer accepts the command. |

Note1: Film position must be adjusted by setting iFilmInit 1 if the part of retransfer film which is printed already is not used.

Note2: Error will be returned if CXCMD_LoadCard() is used when there is a card in the printer, and positive value will be returned if it is issued while the printer is on the way of moving card or retransfer. Retry with a little waiting if positive value is returned.

5.7.2 Card Move Function

| No. | Function Name | Explanation |
|-----|---|--|
| 1 | int CXCMD_MoveCard (int iSlot, int iID, int iDest, int iFlip, int iFilmInit, int iImmed) | <p>Move the card to the specified Destination by using Media Control command. The card is discharged from NG card outlet if NG card outlet is specified as Destination.</p> <ul style="list-style-type: none"> ◆ iDest: Destination to move card. <ul style="list-style-type: none"> 0: Retransfer position 1: Contact IC encoder 2: No-contact IC encoder 3: MG encoder 4: NG Card outlet. Card is discharged from printer. ◆ iFlip: Specify whether turn over the card or not. <ul style="list-style-type: none"> 0: Not turn over 1: Turn over the card before arriving at the destination. ◆ iFilmInit: Specify whether Film position is adjusted or not. This setting is effective only when Destination is NG Card outlet. <ul style="list-style-type: none"> 0: Not adjusted. 1: Adjusted. ◆ iImmed: Specify immediate flag which decides when printer reply. <ul style="list-style-type: none"> 0: Reply after printer finishes moving. 1: Reply immediately after printer accepts the command. |

Note1: Film position must be adjusted by setting iFilmInit 1 if the part of retransfer film which is printed already is not used.

Note2: Error will be returned if CXCMD_MoveCard() is used when there is no card in the printer, and positive value will be returned if it is issued while the printer is on the way of moving card or retransfer. Retry with a little waiting if positive value is returned.

5.8 Retransfer on the card

5.8.1 Retransfer Function

| No. | Function Name | Explanation |
|-----|---|---|
| 1 | int CXCMD_RetransferAndEject (int iSlot, int iID, int ilmmed) | Retransfer the image printed on the film to the card, and Discharge the card to the card outlet by using Media Control command. ◆ ilmmed: Specify immediate flag which decides when printer reply. 0: Reply after printer discharged the card. 1: Reply immediately after printer accepts the command. |
| 2 | int CXCMD_RetransferAndTurn (int iSlot, int iID, int ilmmed) | Retransfer the image printed on the film to the card, and Move the card to Retransfer Position after card is turned over by using Media Control command. ◆ ilmmed: Specify immediate flag which decides when printer reply. 0: Reply after printer finishes retransfer and turning the card. 1: Reply immediately after printer accepts the command. |
| 3 | int CXCMD_Retransfer (int iSlot, int iID, int ilmmed) | Retransfer the image printed on the film to the card, and move the card to Retransfer Position by using Media Control Command. ◆ ilmmed: Specify immediate flag which decides when printer reply. 0: Reply after printer finishes retransfer and turning the card. 1: Reply immediately after printer accepts the command. |

Note: Error will be returned if CXCMD_RetransferAndEject() and CXCMD_RetransferAndTurn() are used when the card is not located at Retransfer position, and positive value will be returned if it is issued while the printer is on the way of moving card or retransfer. Retry with a little waiting if positive value is returned.

Note: CXCMD_Retransfer() is added for UV. As the UV image gives a bad influence to the durability of the YMC ink if they are retransferred together, the UV image should be retransferred after YMCK have been retransferred.

5.9 Magnetic Encoding

5.9.1 Writing Function (For JIS)

| No. | Function Name | Explanation |
|-----|---|---|
| 1 | int CXCMD_WriteMagData (int iSlot, int iID, BYTE *pbyBuff, int iLength, int iMagFormat) | Write data to magnetic stripe by using Magnetic Data Write command. <ul style="list-style-type: none">◆ pbyBuff: Data to write. The code is ASCII character.◆ iLength: Size of data in byte.◆ iMagFormat: Specify kind of MG encoding. 0x07:JIS-2(7bits) 69 characters at most |

Note: Error will be returned if CXCMD_WriteMagData() is used when the card is not located at MAG encoder position, and positive value will be returned if it is issued while the printer is on the way of moving card or retransfer. Retry with a little waiting if positive value is returned.

5.9.2 Reading Function (For JIS)

| No. | Function Name | Explanation |
|-----|--|--|
| 1 | int CXCMD_ReadMagData (int iSlot, int iID, BYTE *pbyBuff, int *piLength, int iMagFormat) | Read data from magnetic stripe by using Magnetic Data Read command. <ul style="list-style-type: none">◆ pbyBuff: Pointer to the memory which MG data is stored. Data is set with ASCII character.◆ piLength: Size of data in byte is set.◆ iMagFormat: Specify kind of MG encoding. 0x07:JIS-2(7bits) 69 characters maximum |

Note: Error will be returned if CXCMD_ReadMagData() is used when the card is not located at MAG encoder position, and positive value will be returned if it is issued while the printer is on the way of moving card or retransfer. Retry with a little waiting if positive value is returned.

5.9.3 Writing Function (For ISO)

| No. | Function Name | Explanation |
|-----|---|--|
| 1 | <pre> int CXCMD _WriteISO3TrackMagData (int iSlot, int iID, int iTrack1MagFormat, BYTE * pbyTrack1Buff, int iTrack1DataLength, int iTrack2MagFormat, BYTE * pbyTrack2Buff, int iTrack2DataLength, int iTrack3MagFormat BYTE * pbyTrack3Buff, int iTrack3DataLength) </pre> | <p>Write data to the ISO MG stripe on the card by using ISO 3 Track Magnetic Data Write command.</p> <ul style="list-style-type: none"> ◆ iTrack1MagFormat: Specify the format of Track1. <ul style="list-style-type: none"> 0x00: Not to write 0xa6: Write as ISO 6 unit code. Max 76 characters 0xa7: Write as ISO 7 unit code. Max 69 characters 0xa8: Write as ISO 6 unit code. Max 79 characters ◆ pbyTrack1Buff: Data to write to track 1. The data must be set with ASCII. ◆ iTrack1DataLength: Size of data in pbyTrack1Buff. ◆ iTrack2MagFormat: Specify the format of Track2. <ul style="list-style-type: none"> 0x00: Not to write 0xb4: Write as ISO 4 unit code. Max 37 characters ◆ pbyTrack2Buff: Data to write to track 2. The data must be set with ASCII. ◆ iTrack2DataLength: Size of data in pbyTrack2Buff. ◆ iTrack3MagFormat: Specify the format of Track3. <ul style="list-style-type: none"> 0x00: Not to write 0xc4: Write as ISO 4 unit code. Max 104 characters 0xc7: Write as ISO 7 unit code. Max 69 characters 0xc6: Write as ISO 6 unit code. Max 79 characters ◆ pbyTrack3Buff: Data to write to track 3. The data must be set with ASCII. ◆ iTrack3DataLength: Size of data in pbyTrack3Buff. |

Note: Error will be returned if CXCMD_WriteISO3TrackMagData() is used when the card is not located at MAG encoder position, and positive value will be returned if it is issued while the printer is on the way of moving card or retransfer. Retry with a little waiting if positive value is returned.

5.9.4 Reading Function (For ISO)

| No. | Function Name | Explanation |
|-----|--|---|
| 1 | int CXCMD _ReadISO3TrackMagData (int iSlot, int iID, int iTrack1MagFormat, BYTE *pbyTrack1Buff, int *piTrack1DataLength, int iTrack2MagFormat, BYTE *pbyTrack2Buff, int *piTrack2DataLength, int iTrack3MagFormat, BYTE *pbyTrack3Buff, int *piTrack3DataLength) | Read data from the ISO MG stripe on the card by using ISO 3 Track Magnetic Data Read command. ◆ iTrack1MagFormat: Specify the format of Track1. 0x00: Not to read 0xa6: Read as ISO 6 unit code. Max 76 characters 0xa7: Read as ISO 7 unit code. Max 69 characters 0xa8: Read as ISO 6 unit code. Max 79 characters ◆ pbyTrack1Buff: Data of track 1. The data is set in ASCII. ◆ iTrack1DataLength: Size of data in pbyTrack1Buff is set. ◆ iTrack2MagFormat: Specify the format of Track2. 0x00: Not to read 0xb4: Read as ISO 4 unit code. Max 37 characters ◆ pbyTrack2Buff: Data of track 2. The data is set in ASCII. ◆ iTrack2DataLength: Size of data in pbyTrack2Buff is set. ◆ iTrack3MagFormat: Specify the format of Track3. 0x00: Not to read 0xc4: Read as ISO 4 unit code. Max 104 characters 0xc7: Read as ISO 7 unit code. Max 69 characters 0xc6: Read as ISO 6 unit code. Max 79 characters ◆ pbyTrack3Buff: Data of track 3. The data is set in ASCII. ◆ iTrack3DataLength: Size of data in pbyTrack3Buff is set. |

Note: Error will be returned if CXCMD_ReadISO3TrackMagData() is used when the card is not located at MAG encoder position, and positive value will be returned if it is issued while the printer is on the way of moving card or retransfer. Retry with a little waiting if positive value is returned.

5.10 IC Encoding

5.10.1 IC Control Function

| No. | Function Name | Explanation |
|-----|---|---|
| 1 | int CXCMD_ICControl (int iSlot, int iID, int iICType, int iAction) | Perform the procedure for IC encoding by using IC Control command. ◆ iICType: Type of IC encoding. 0: Contact IC encoding 1: No-Contact IC encoding ◆ iAction: Action of IC encoder. 0: Contact 1: Release |

Note1: Error will be returned if CXCMD_ICControl() is used when the card is not located at the appropriate IC encoder position, and positive value will be returned if it is issued while the printer is on the way of moving card or retransfer. Retry with a little waiting if positive value is returned.

Note2: CXCMD_MoveCard() is rejected as error after CXCMD_ICControl() is issued with iAction=0. It is required to issue CXCMD_ICControl() with iAction=1 before moving card even if it is for No-Contact IC encoding.

5.11 Initializing Printer

5.11.1 Rezero Function

| No. | Function Name | Explanation |
|-----|--|---|
| 1 | int CXCMD_RezeroUnit (int iSlot, int iID, int iAction) | Initialize printer by using Rezero command. Printer discharges the card and adjusts both Retransfer position and Ink position. ◆ iAction: designate initialization 0: execute standard mechanical initialization. 1: release Power Save mode. No mechanical working. |

5.12 Getting information and Changing setting

5.12.1 Inquiry Function

| No. | Function Name | Explanation |
|-----|---|---|
| 1 | int CXCMD_StandardInquiry (int iSlot, int iID, BYTE *pbyBuffer) | Get Inquiry Data from the printer by using Inquirycommand. ◆ pbyBuffer: Inquiry data is stored. 96 bytes or more memory is required. |

1) Standard Inquiry Data format

| Bit Byte | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|-------------|---|---|---|---|---|---|---|---|
| 0 | Device Type(2: Printer) | | | | | | | |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 3 | Reserved | | | | 0 | 0 | 1 | 0 |
| 4 | Additional Length (0x5b) | | | | | | | |
| 5-6 | Reserved | | | | | | | |
| 7 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 8-15 | Vendor Identification (ASCII) | | | | | | | |
| 16-31 | Product Identification (ASCII) | | | | | | | |
| 32-39 | Printer Firmware Version (ASCII) | | | | | | | |
| 40 | MG Option (Binary): None:0,ISO:1,JIS:2 | | | | | | | |
| 41 | IC Contact Option (Binary): None:0,ISO:1,JIS:2 | | | | | | | |
| 42 | Contact IC R/W Option (Binary): None:0,Installed:1 | | | | | | | |
| 43 | IC Antenna (Binary): None:0,Installed:1 | | | | | | | |
| 44 | Turn Over Unit Option (Binary): None:0,Installed:1 | | | | | | | |
| 45 | Bend Remedy Heat Roller Option (Binary): None:0,Installed:1 | | | | | | | |
| 46 | Security Lock Option (Binary): None:0,Installed:1 | | | | | | | |
| 47 | Laminator (Binary): None:0,Connected:1 | | | | | | | |
| 48-49 | Reserved | | | | | | | |
| 50-57 | Laminator Version (ASCII): Laminator Firmware Version | | | | | | | |
| 58-70 | Thermal Head Information (ASCII): Thermal Head information | | | | | | | |
| 71-78 | Config Version (ASCII): Printer Configuration Version | | | | | | | |
| 79-86 | Table Version (ASCII): Printer Table Version | | | | | | | |
| 87-95 | Reserved | | | | | | | |

Note: The version of the option unit which is not attached is filled with '?'.

5.12.2 Mode Sense Function

| No. | Function Name | Explanation |
|-----|---|--|
| 1 | int CXCMD_ModeSense (int iSlot, int iID, int iPC, int iPage, BYTE *pbyBuffer) | Get Mode Sense Data from printer by using Mode Sense command. ◆ iPC: Page Control. This must be 1. ◆ iPage: Choose one of following Mode Sense Data. 0x23: Ink Information Data 0x28: Print Unit Information Data 0x2a: Encode Unit Information Data 0x2C: Laminator Unit Information Data 0x2D: Network Information Data ◆ pbyBuffer: Pointer to the memory to store Mode Sense Data. The size of memory must be; (4+40) bytes at least if Ink Information Data. (4+60) bytes at least if Print Unit Information Data. (4+10) bytes at least if Encode Unit Information Data. (4+24) bytes at least if Laminator Unit Information Data. (4+100) bytes at least if Network Information Data. |

Note: Mode Data Header is stored at the top of 4 bytes. Actual data is stored from 5th byte.

1) Mode Sense Data format

(1) Mode Sense Data Header

| Bit Byte | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|-------------|------------------------|---|---|---|----------|---|---|---|
| 0 | Mode Sense Data Length | | | | | | | |
| 1 | Reserved | | | | | | | |
| 2 | Reserved | 0 | 0 | 1 | Reserved | | | |
| 3 | Reserved | | | | | | | |

Mode Sense Data Length: It is the number that is subtracted by 1 from the size of Mode Sense Data in byte.

(2) Ink Information Data (Page Code = 23H)

| Bit Byte | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|-------------|--|---|------------------|---|---|---|---|---|
| 0 | 0 | 0 | Page Code (0x23) | | | | | |
| 1 | Page Specific Parameter Length (0x26) | | | | | | | |
| 2 | Ink Code | | | | | | | |
| 3 | Reserved | | | | | | | |
| 4 | (MSB) Number of Set of Ink Panel (LSB) | | | | | | | |
| 5 | | | | | | | | |
| 6 | Reserved | | | | | | | |
| 7 | Reserved | | | | | | | |
| 8-39 | Lot Number (ASCII) Only first 6 bytes are meaningful. The rest are filled with 0. | | | | | | | |

Ink Code: Specifies the kind of the ink.

0x00: YMCK 0x01: Reserved 0x02: YMCK-PO 0x03: K
 0x04: YMCK-K 0x05: YMCK-UV
 0xFF: Unknown (Unable to communicate with TAG Reader Writer)
 0xFE: Unknown (Ink TAG is not found)
 0xFD: Unknown (Communication error happens between TAG)
 0xFC: Unknown (Invalid TAG data)

Number of Set of Ink Panel: The number of cards being printed by the ink normally.

Lot Number: The lot number of the ink. It is set by ASCII characters.

Note: Lot Number will be filled with zero if Ink Code is from 0xfc to 0xff.

(3) Print Unit Information Data (Page Code = 0x28)

| Bit Byte | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|-------------|---|---|------------------|---|---|---|---|---|
| 0 | 0 | 0 | Page Code (0x28) | | | | | |
| 1 | Page Specific Parameter Length (0x3a) | | | | | | | |
| 2-3 | Reserved | | | | | | | |
| 4 | (MSB) Basic Resolution X (0x0258) (LSB) | | | | | | | |
| 5 | | | | | | | | |
| 6 | (MSB) Basic Resolution Y (0x0258) (LSB) | | | | | | | |
| 7 | | | | | | | | |
| 8 | HR Temperature Control | | | | | | | |
| 9 | Reserved | | | | | | | |
| 10-11 | Reserved | | | | | | | |
| 12 | (MSB) Card Size X (LSB) | | | | | | | |
| 13 | | | | | | | | |
| 14 | (MSB) Card Size Y (LSB) | | | | | | | |
| 15 | | | | | | | | |
| 16 | MG Peel Mode | | | | | | | |
| 17 | Reserved | | | | | | | |
| 18 | Reserved | | | | | | | |
| 19 | Reserved | | | | | | | |
| 20 | Film Code | | | | | | | |
| 21 | Reserved | | | | | | | |
| 22 | Card Code | | | | | | | |
| 23 | Standby Mode | | | | | | | |
| 24 | (MSB) Print Position X (LSB) | | | | | | | |
| 25 | | | | | | | | |
| 26 | (MSB) Print Position Y (LSB) | | | | | | | |
| 27 | | | | | | | | |
| 28 | (MSB) Print Size X (LSB) | | | | | | | |
| 29 | | | | | | | | |
| 30 | (MSB) Print Size Y (LSB) | | | | | | | |
| 31 | | | | | | | | |
| 32 | Reserved | | | | | | | |
| 33 | Heat Roller Temperature (Retransfer) | | | | | | | |

| | |
|----|--|
| 34 | Velocity (Retransfer Front) |
| 35 | Velocity (Retransfer Back) |
| 36 | Heat Roller Temperature (Card Fix) |
| 37 | Velocity (Card Fix) |
| 38 | Reserved |
| 39 | Peel Wait Time |
| 40 | Reserved |
| 41 | Resin K (Black) Level |
| 42 | Resin K (Black) Mode |
| 43 | A0 (UV) Level |
| 44 | A1 (PO) Level |
| 45 | Buzzer Mode |
| 46 | Power Save Mode |
| 47 | Film Quantity |
| 48 | Ink Quantity |
| 49 | Card Quantity |
| 50 | YMC Level |
| 51 | Display Contrast |
| 52 | Reserved (0xff) |
| 53 | Display Mode |
| 54 | Display Counter |
| 55 | Security Lock |
| 56 | Velocity of the front side 2nd retransfer (UV) |
| 57 | Velocity of the back side 2nd retransfer (UV) |
| 58 | Backside Cooling |
| 59 | Reserved (0xff) |

Basic Resolution X: Horizontal resolution in DPI.

Basic Resolution Y: Vertical resolution in DPI.

HR Temperature Control:

When this is enabled, the printer decrease the heat roller temperature when the card is not printed for 30 minutes.

0: Disabled

1: Enabled

Peel Wait Time: Wait time in second before peel. From 0 to 15.

This setting becomes invalid.

Resin K (Black) Level: Resin K (Black) printing energy. From 0(Low) to 6(High).

Resin K (Black) Mode: Resin K (Black) printing mode. 0:Standard 1:Fine

A0 (UV) Level: UV ink printing energy. From 0(Low) to 6(High).

A1 (PO) Level: PO ink printing energy. From 0(Low) to 6(High).

Buzzer Mode: 0: On 1: Off

Power Save Mode: Power Save Mode enabled time in minutes.

| | | | |
|-----------|-------|-------|-------|
| 0: 5(min) | 1: 10 | 2: 15 | 3: 20 |
| 4: 25 | 5: 30 | 6: 45 | 7: 60 |
| 8: Off | | | |

Film Quantity: Usable retransfer film quantity. From 0(None) to 10(Full).

Ink Quantity: Usable ink quantity. From 0(None) to 50(Full).

Card Quantity: Card quantity in the card hopper.

0: Any 2: None

YMC Level: YMC printing energy. From 0(Low) to 6(High).

Display Contrast: LCD contrast.

| | | | |
|-------|-------|-------|------|
| 0: -3 | 1: -2 | 2: -2 | 3: 0 |
| 4: +1 | 5: +2 | 6: +3 | |

Display Mode: Contents in the LCD.

0: Counter 1: Laminator Status

Note) When the laminator is not connected, it shows the kind of Counter. When the connected laminator has malfunction, it shows the contents of the malfunction in the both setting.

Display Counter: The kind of Counter in the LCD.

| | | | |
|------------------|---------------------|------------------|--|
| 0: Total Counter | 1: Head Counter | | |
| 2: Free Counter | 3: Cleaning Counter | 4: Error Counter | |

Security Lock: The status of the security lock.

0: Unlocked 1: Locked

Velocity of the front side 2nd retransfer (UV):

The velocity for the 2nd retransfer of UV on the front side. From 0(+2:Fast) to 5(-3:Slow).

Velocity of the back side 2nd retransfer (UV):

The velocity for the 2nd retransfer of UV on the back side. From 0(+2:Fast) to 5(-3:Slow).

Backside Cooling: Wait a little before the retransfer of the back side to decrease the card bending. 0: Off 1: On

(4) Encode Unit Information Data (Page Code = 0x2a)

| Bit Byte | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|-------------|---------------------------------------|---|------------------|---|---|---|---|---|
| 0 | 0 | 0 | Page Code (0x2a) | | | | | |
| 1 | Page Specific Parameter Length (0x08) | | | | | | | |
| 2 | ISO Mode | | | | | | | |
| 3 | JIS Mode | | | | | | | |
| 4-6 | Reserved | | | | | | | |
| 7 | Write Retry | | | | | | | |
| 8 | Reserved | | | | | | | |
| 9 | Reserved | | | | | | | |

ISO Mode: Coercivity of ISO head.

0: Lo-Co (300Oe) 1: Hi-Co

JIS Mode: Coercivity of JIS head.

0: Lo-Co 1: Hi-Co (2750Oe)

Write Retry: The retry count of magnetic writing by one card. From 0 to 3.

(5) Laminator Unit Information Data Page (Page Code = 0x2c)

| Bit Byte | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|-------------|---------------------------------------|---|------------------|---|---|---|---|---|
| 0 | 0 | 0 | Page Code (0x2c) | | | | | |
| 1 | Page Specific Parameter Length (0x16) | | | | | | | |
| 2 | Laminate Mode | | | | | | | |
| 3 | Film T Type | | | | | | | |
| 4 | Film T Position | | | | | | | |
| 5 | Heat Roller T Temp | | | | | | | |
| 6 | Laminate Speed | | | | | | | |
| 7 | Cassette | | | | | | | |
| 8 | Laminate Cooling Time | | | | | | | |
| 9 | HR Control | | | | | | | |
| 10-13 | Reserved | | | | | | | |
| 14 | Film B Type | | | | | | | |
| 15 | Film B Position | | | | | | | |
| 16 | Heat Roller B Temp | | | | | | | |
| 17-23 | Reserved | | | | | | | |

Note: In "Film T Type" and "Film B Type", T(Top) means the lamination function on the top side of the

card. B(Bottom) means the lamination function on the bottom side of the card.

Laminate Mode: The way of lamination

0: Laminate 1: Pass through

Film T Type: The type of lamination film on the top side.

0: Patch 1: Overlay

Film T Position = The position of lamination start ($\pm X$ direction) on the top side.

From 0(-7) to 14(+7)

Heat Roller T Temp: The heat roller temperature setting on the top side lamination.

| | | |
|-------------------|-------------------|-------------------|
| 0: 90centigrade | 1: 95centigrade | 2: 100centigrade |
| 3: 105centigrade | 4: 110centigrade | 5: 115centigrade |
| 6: 120centigrade | 7: 125centigrade | 8: 130centigrade |
| 9: 135centigrade | 10: 140centigrade | 11: 145centigrade |
| 12: 150centigrade | 13: 155centigrade | 14: 160centigrade |
| 15: 165centigrade | 16: 170centigrade | 17: 175centigrade |
| 18: 180centigrade | | |

Note)

If the temperature setting is over 180 centigrade, it becomes 180 centigrade.

Laminate Speed: The laminate speed setting.

| | | | |
|--------------|--------------|--------------|--------------|
| 0: 3.0mm/s | 1: 3.5mm/s | 2: 4.0mm/s | 3: 4.5mm/s |
| 4: 5.0mm/s | 5: 5.5mm/s | 6: 6.0mm/s | 7: 6.5mm/s |
| 8: 7.0mm/s | 9: 7.5mm/s | 10: 8.0mm/s | 11: 8.5mm/s |
| 12: 9.0mm/s | 13: 9.5mm/s | 14: 10.0mm/s | 15: 10.5mm/s |
| 16: 11.0mm/s | 17: 11.5mm/s | 18: 12.0mm/s | |

Cassette: The provision of film cassette.

| | |
|---------------------------------|---|
| 0: not provided | 1: provided for the top side |
| 2: provided for the bottom side | 2: provided for the top and bottom side |

Laminate Cooling Time: Laminate cooling time setting.

| | | | |
|----------|----------|----------|----------|
| 0: 0sec | 1: 5sec | 2: 7sec | 3: 10sec |
| 4: 15sec | 5: 20sec | 6: 30sec | |

HR Control: In the case of "On", the heat roller temperature falls to 180 centigrade when the laminator does not work in 30 minutes.

0: Off 1: On

Film B Type: The type of the lamination film on the bottom side.

0: Patch 1: Overlay

Film B Position: The position of lamination start ($\pm X$ direction) on the bottom side.

From 0(-7) to 14(+7)

Heat Roller B Temp: The heat roller temperature setting on the bottom side lamination.

| | | |
|-------------------|-------------------|-------------------|
| 0: 90centigrade | 1: 95centigrade | 2: 100centigrade |
| 3: 105centigrade | 4: 110centigrade | 5: 115centigrade |
| 6: 120centigrade | 7: 125centigrade | 8: 130centigrade |
| 9: 135centigrade | 10: 140centigrade | 11: 145centigrade |
| 12: 150centigrade | 13: 155centigrade | 14: 160centigrade |
| 15: 165centigrade | 16: 170centigrade | 17: 175centigrade |
| 18: 180centigrade | | |

Note)

If the temperature setting is over 180 centigrade, it becomes 180 centigrade.

(6) Network Information Data Page (Page Code = 0x2d)

| Bit Byte | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|-------------|---|---|------------------|---|---|---|---|---|
| 0 | 0 | 0 | Page Code (0x2D) | | | | | |
| 1 | Page Specific Parameter Length (0x62) | | | | | | | |
| 2-5 | (MSB) IPv4 Address (LSB) | | | | | | | |
| 6-9 | (MSB) IPv4 Sub Net Mask (LSB) | | | | | | | |
| 10-13 | (MSB) IPv4 Default Gateway Address (LSB) | | | | | | | |
| 14 | Session Timeout | | | | | | | |
| 15 | DHCP | | | | | | | |
| 16 | Host I/F | | | | | | | |
| 17-26 | Printer Name (ASCII) | | | | | | | |
| 27 | IPSec Mode | | | | | | | |
| 28 | IPSec Type | | | | | | | |
| 29 | IPv6 Subnet Prefix Length | | | | | | | |
| 30 | IPv6 Address Configuration | | | | | | | |
| 31-46 | IPv6 Default Gateway Address | | | | | | | |
| 47-62 | IPv6 Address | | | | | | | |
| 63-99 | Reserved | | | | | | | |

IPv4 Address: IPv4 Address setting

IPv4 Sub Net Mask: IPv4 Sub Net Mask setting

IPv4 Default Gateway Address: IPv4 Default Gateway Address setting

Session Timeout:

This specifies the time out interval to detect the disconnection from the host on TCP print session.

0 is recommended.

0: Disabled 1: 10 minutes 2: 20 minutes 3: 30 minutes
4: 60 minutes

DHCP:

0: Enabled 1: Disabled

HOST I/F:

0: Ethernet I/F 1: USB I/F

Printer Name:

Logical name of the printer. The remainder is filled with 0 when the size of Printer name is less than 10.

IPSec Mode: 0: IPSec Function prohibit 1: IPSec Function work

Note) When IPSec Mode is not 0, IPSec does not work in the case that IPSec Type is 0.

IPSec Type: 0: No Certificate 1: Preshared 2: Certificate

IPv6 Subnet Prefix Length: IPv6 Subnet Prefix length setting

From 0 to 128.

IPv6 Address Configuration: IPv6 Address configuration setting

0: Auto 1: Manual

Note) In the case of Auto, IP Address set by manual is not effective.

IPv6 Default Gateway Address: IPv6 Default Gateway Address setting

IPv6 Address: IPv6 Address setting

5.12.3 Mode Select Function

| No. | Function Name | Explanation |
|-----|--|--|
| 1 | int CXCMD_ModeSelect (int iSlot, int iID, int iSp, int iPage, BYTE *pbyData) | <p>Change printer setting by using Mode Select command.</p> <ul style="list-style-type: none"> ◆ iSp: Specify whether setting data is stored NVR(Non Volatile Memory) or not. <p>Note: It should be set 0 always. In the case that the setting is not kept in the EEPROM, the setting will be changed by Print Information Data Page. The setting in other pages will be kept always in the EEPROM.</p> <ul style="list-style-type: none"> ◆ iPage: Choose one of following Mode Select Data. <ul style="list-style-type: none"> 0x28: Print Unit Information Data 0x2a: Encode Unit Information Data 0x2C: Laminator Unit Information Data 0x2D: Network Information Data 0x2B: Print Information Data <p>Note: The setting in this page is not kept in the EEPROM.</p> <ul style="list-style-type: none"> ◆ pbyData: Pointer to the memory. Mode Select Data must have been set. The size of memory must be; <ul style="list-style-type: none"> 32 bytes if Print Unit Information Data. 10 bytes if Encode Unit Information Data. 24 bytes if Laminator Unit Information Data. 80 bytes if Network Information Data. 24 bytes if Print Information Data. |

Notice:

- The data 0xff in the setting data has the following special meanings.
 - In the case of the setting is 0xff, this setting is not kept in the non volatile memory.
 - In the case of the setting is 0xff, the data in the non volatile memory is effective.
- In Mode Select Data, please set 0 at the position of "Reserved". In the case of 0xff clearly, please set 0xff.

1) Mode Select Data format

(1) Print Unit Information Data (Page Code = 0x28)

| Bit Byte | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|-------------|--|---|------------------|---|---|---|---|---|
| 0 | 0 | 0 | Page Code (0x28) | | | | | |
| 1 | Page Specific Parameter Length (0x1e) | | | | | | | |
| 2 | Reserved (0xff) | | | | | | | |
| 3 | Reserved (0xff) | | | | | | | |
| 4 | Heat Roller Temperature (Retransfer) | | | | | | | |
| 5 | Velocity (Retransfer Front) | | | | | | | |
| 6 | Velocity (Retransfer Back) | | | | | | | |
| 7 | Heat Roller Temperature (Card Fix) | | | | | | | |
| 8 | Velocity (Card Fix) | | | | | | | |
| 9 | Reserved (0xff) | | | | | | | |
| 10 | Peel Wait Time | | | | | | | |
| 11 | MG Peel Mode | | | | | | | |
| 12 | Standby Mode | | | | | | | |
| 13 | Resin K (Black) Level | | | | | | | |
| 14 | Resin K (Black) Mode | | | | | | | |
| 15 | A0 (UV) Level | | | | | | | |
| 16 | A1 (PO) Level | | | | | | | |
| 17 | Film Code | | | | | | | |
| 18 | HR Temperature Control | | | | | | | |
| 19 | Card Code | | | | | | | |
| 20 | Reserved (0xff) | | | | | | | |
| 21 | Buzzer Mode | | | | | | | |
| 22 | Power Save Mode | | | | | | | |
| 23 | YMC Level | | | | | | | |
| 24 | Display Contrast | | | | | | | |
| 25 | Reserved (0xff) | | | | | | | |
| 26 | Display Mode | | | | | | | |
| 27 | Display Counter | | | | | | | |
| 28 | Velocity of the front side 2nd retransfer (UV) | | | | | | | |
| 29 | Velocity of the back side 2nd retransfer (UV) | | | | | | | |
| 30 | Backside Cooling | | | | | | | |

| | |
|----|-----------------|
| 31 | Reserved (0xff) |
|----|-----------------|

The contents in this page are kept always in the EEPROM. In the case that the setting is 0xff, it works according to the setting kept in the printer EEPROM, the items are not changed. Film Code setting will be effective after the reset. Other printing function setting will be effective from the next printing.

Heat Roller Temperature (Retransfer): From 0(Low) to 4(High).

Velocity (Retransfer Front): From 0(Fast) to 5(Slow).

Velocity (Retransfer Back): From 0(Fast) to 5(Slow).

Heat Roller Temperature (Card Fix): From 0(Low) to 5(High), **10(Off)**.

Velocity (Card Fix): From 0(Slow) to 4(Fast).

Peel Wait Time: Wait time in second before peel. From 0 to 15.

This setting becomes invalid. It does not give any influence to the printer.

MG Peel Mode: The way of peeling retransfer film on the back side of the card. It is the special arrangement for the card magnetic side. In the case that the card does not have magnetic stripe, do not set "On". Without magnetic encoder, it does not work.

0: Off 1: On

Standby Mode:

The printer waits for the laminator becoming ready. This is effective only when both side printing and the laminator are attached.

0: Wait after the front side retransferring.

1: Wait after the back side retransferring.

Resin K (Black) Level: Resin K (Black) printing energy. From 0(Low) to 6(High).

Resin K (Black) Mode: Resin K (Black) printing mode.

0: Standard 1: Fine

A0 (UV) Level: UV ink printing energy. From 0(Low) to 6(High).

A1 (PO) Level: PO ink printing energy. From 0(Low) to 6(High).

Film Code: The kind of retransfer film.

0: Standard (1000panels)

2: Standard (750panels)

HR Temperature Control:

When this is enabled, the printer decrease the heat roller temperature when the card is not printed for 30 minutes.

0: Disabled 1: Enabled

Card Code: The kind of Card.

0: Standard

2: Thin card (Card thickness is 0.25mm)

Buzzer Mode:

0: On 1: Off

Power Save Mode: Power Save Mode enabled time in minutes.

0: 5(min) 1: 10 2: 15 3: 20
4: 25 5: 30 6: 45 7: 60
8: Off

YMC Level: YMC printing energy. From 0(Low) to 6(High).

Display Contrast: LCD contrast.

0: -3 1: -2 2: -1 3: 0
4: +1 5: +2 6: +3

Display Mode: Contents in the LCD.

0: Counter 1: Laminator Status

Note) When the laminator is not connected, it shows the kind of Counter. When the connected laminator has malfunction, it shows the contents of the malfunction in the both setting.

Display Counter: The kind of Counter in the LCD.

0: Total Counter 1: Head Counter
2: Free Counter 3: Cleaning Counter 4: Error Counter

Velocity of the front side 2nd retransfer (UV):

The velocity for the 2nd retransfer of UV on the front side. From 0(+2:Fast) to 5(-3:Slow).

Velocity of the back side 2nd retransfer (UV):

The velocity for the 2nd retransfer of UV on the back side. From 0(+2:Fast) to 5(-3:Slow).

Backside Cooling: Wait a little before the retransfer of the back side to decrease the card bending. 0:

Off 1: On

(2) Encode Unit Information Data (Page Code = 0x2a)

| Bit Byte | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|-------------|---------------------------------------|---|------------------|---|---|---|---|---|
| 0 | 0 | 0 | Page Code (0x2A) | | | | | |
| 1 | Page Specific Parameter Length (0x08) | | | | | | | |
| 2 | ISO Mode | | | | | | | |
| 3 | JIS Mode | | | | | | | |
| 4-6 | Reserved (0xff) | | | | | | | |
| 7 | Write Retry | | | | | | | |
| 8 | Reserved (0xff) | | | | | | | |
| 9 | Reserved (0xff) | | | | | | | |

The contents in this page are kept always in the EEPROM. In the case that the setting is 0xff, it works according to the setting kept in the printer EEPROM. The setting will be effective from the next printing.

ISO Mode: Coercivity ISO head.

0: Lo-Co (300Oe) 1: Hi-Co

JIS Mode: Coercivity of JIS head.

0: Lo-Co 1: Hi-Co (2750Oe)

Write Retry: The retry count of magnetic writing by one card.

From 0 to 3.

(3) Laminator Unit Information Data Page (Page Code = 0x2c)

| Bit Byte | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|-------------|---------------------------------------|---|------------------|---|---|---|---|---|
| 0 | 0 | 0 | Page Code (0x2C) | | | | | |
| 1 | Page Specific Parameter Length (0x16) | | | | | | | |
| 2 | Laminate Mode | | | | | | | |
| 3 | Film T Type | | | | | | | |
| 4 | Film T Position | | | | | | | |
| 5 | Heat Roller T Temp | | | | | | | |
| 6 | Laminate Speed | | | | | | | |
| 7 | Reserved (0xff) | | | | | | | |
| 8 | Laminate Cooling Time | | | | | | | |
| 9 | HR Control | | | | | | | |
| 10-13 | Reserved (0xff) | | | | | | | |
| 14 | Film B Type | | | | | | | |
| 15 | Film B Position | | | | | | | |
| 16 | Heat Roller B Temp | | | | | | | |
| 17-23 | Reserved (0xff) | | | | | | | |

T(Top) means the lamination function on the top of card and B(Bottom) means the lamination function on the bottom of card. In the case that the setting is 0xff, it works according to the setting kept in the laminator EEPROM. The settings in this page are kept in the laminator EEPROM. Film T Type and Film B Type setting will be effective after the laminator reset. Other laminate function setting will be effective from the next printing.

Laminate Mode: Laminate function setting.

0: Laminate 1: Pass through

Film T Type: Film Type on the top side of card.

0: Patch 1: Overlay

Film T Position: Move to the X direction of the laminate start on the top side of card.

From(0: -7) to (14: +7)

Heat Roller T Temp: Laminate Heat Roller temperature setting on the top side of card.

| | | |
|-------------------|-------------------|-------------------|
| 0: 90centigrade | 1: 95centigrade | 2: 100centigrade |
| 3: 105centigrade | 4: 110centigrade | 5: 115centigrade |
| 6: 120centigrade | 7: 125centigrade | 8: 130centigrade |
| 9: 135centigrade | 10: 140centigrade | 11: 145centigrade |
| 12: 150centigrade | 13: 155centigrade | 14: 160centigrade |
| 15: 165centigrade | 16: 170centigrade | 17: 175centigrade |

18: 180centigrade

Note)

If the temperature setting is over 180 centigrade, it becomes 180 centigrade.

Laminate Speed: Laminate speed setting.

| | | | |
|--------------|--------------|--------------|--------------|
| 0: 3.0mm/s | 1: 3.5mm/s | 2: 4.0mm/s | 3: 4.5mm/s |
| 4: 5.0mm/s | 5: 5.5mm/s | 6: 6.0mm/s | 7: 6.5mm/s |
| 8: 7.0mm/s | 9: 7.5mm/s | 10: 8.0mm/s | 11: 8.5mm/s |
| 12: 9.0mm/s | 13: 9.5mm/s | 14: 10.0mm/s | 15: 10.5mm/s |
| 16: 11.0mm/s | 17: 11.5mm/s | 18: 12.0mm/s | |

Laminate Cooling Time: Laminate cooling time setting.

| | | | |
|----------|----------|----------|----------|
| 0: 0sec | 1: 5sec | 2: 7sec | 3: 10sec |
| 4: 15sec | 5: 20sec | 6: 30sec | |

HR Control: In the case of effective, the heat roller temperature falls to 180 centigrade when it does not laminate in 30 minutes.

| | |
|--------|-------|
| 0: Off | 1: On |
|--------|-------|

Film B Type: Laminate film type on the bottom of card setting.

| | |
|----------|------------|
| 0: Patch | 1: Overlay |
|----------|------------|

Film B Position: Move to the X direction of the laminate film on the bottom of card.

From 0(-7) to 14(+7)

Heat Roller B Temp: Laminate heat roller temperature setting on the bottom of card.

| | | |
|-------------------|-------------------|-------------------|
| 0: 90centigrade | 1: 95centigrade | 2: 100centigrade |
| 3: 105centigrade | 4: 110centigrade | 5: 115centigrade |
| 6: 120centigrade | 7: 125centigrade | 8: 130centigrade |
| 9: 135centigrade | 10: 140centigrade | 11: 145centigrade |
| 12: 150centigrade | 13: 155centigrade | 14: 160centigrade |
| 15: 165centigrade | 16: 170centigrade | 17: 175centigrade |
| 18: 180centigrade | | |

Note)

If the temperature setting is over 180 centigrade, it becomes 180 centigrade.

(4) Network Information Data Page (Page Code = 0x2d)

| Bit Byte | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|-------------|---|---|------------------|---|---|---|---|---|
| 0 | 0 | 0 | Page Code (0x2d) | | | | | |
| 1 | Page Specific Parameter Length (0x4e) | | | | | | | |
| 2-5 | (MSB) IPv4 Address (LSB) | | | | | | | |
| 6-9 | (MSB) IPv4 Sub Net Mask (LSB) | | | | | | | |
| 10-13 | (MSB) IPv4 Default Gateway Address (LSB) | | | | | | | |
| 14 | Session Timeout | | | | | | | |
| 15 | DHCP | | | | | | | |
| 16 | Host I/F | | | | | | | |
| 17-26 | Printer Name (ASCII) | | | | | | | |
| 27 | IPSec Mode | | | | | | | |
| 28 | Reserved | | | | | | | |
| 29 | IPv6 Subnet Prefix Length (IPv6) | | | | | | | |
| 30 | IPv6 Address Configuration | | | | | | | |
| 31-46 | (MSB) IPv6 Default Gateway Address (LSB) | | | | | | | |
| 47-62 | (MSB) IPv6 Address- (LSB) | | | | | | | |
| 63-79 | Reserved | | | | | | | |

The contents in this page are kept in the EEPROM. Except Printer Name and Session Timeout setting, the setting in this page will be effective after the power on. In the case that the setting is 0xff, it does not revive the setting in the EEPROM in this page, the effective setting will be kept as it is in the EEPROM.

IPv4 Address: IPv4 Address setting

IPv4 Sub Net Mask: IPv4 Sub Net Mask setting

IPv4 Default Gateway Address: IPv4 Default Gateway Address setting

Session Timeout:

This specifies the time out interval to detect the disconnection from the host on TCP print session.

0 is recommended. This becomes effective after it is set.

0: Disabled 1: 10 minutes 2: 20 minutes 3: 30 minutes 4: 60 minutes

DHCP:

0: Enabled 1: Disabled

HOST I/F:

0: Ethernet I/F 1: USB I/F

Printer Name:

Logical name of the printer. The remainder is filled with 0 when the size of Printer name is less than 10. This becomes effective after it is set.

IPSec Mode: 0: IPSec function prohibit 1: IPSec function work

Note) In the case that IPSec Type is 0(No Certificate), IPSec does not work.

IPv6 Subnet Prefix Length: IPv6 Subnet Prefix length setting.

From 0 to 128

IPv6 Address Configuration: IPv6 Address configuration setting.

0: Auto 1: Manual

Note) In the case of Auto, IPv6 Address(Manual) is not effective.

IPv6 Default Gateway Address: IPv6 Default Gateway Address setting.

IPv6 Address: IPv6 Address setting.

(5) Print Information Data Page (Page Code = 0x2b)

| Bit Byte | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|-------------|--|---|------------------|---|---|---|---|---|
| 0 | 0 | 0 | Page Code (0x2b) | | | | | |
| 1 | Page Specific Parameter Length (0x16) | | | | | | | |
| 2 | Heat Roller Temperature (Retransfer) | | | | | | | |
| 3 | Velocity (Retransfer Front) | | | | | | | |
| 4 | Velocity (Retransfer Back) | | | | | | | |
| 5 | Heat Roller Temperature (Card Fix) | | | | | | | |
| 6 | Velocity (Card Fix) | | | | | | | |
| 7 | Peel Wait Time | | | | | | | |
| 8 | MG Peel Mode | | | | | | | |
| 9 | Standby Mode | | | | | | | |
| 10 | YMC Level | | | | | | | |
| 11 | Resin K (Black) Level | | | | | | | |
| 12 | A0 (UV) Level | | | | | | | |
| 13 | A1 (PO) Level | | | | | | | |
| 14 | Laminate Mode | | | | | | | |
| 15 | ISO Mode (for MG) | | | | | | | |
| 16 | JIS Mode (for MG) | | | | | | | |
| 17 | Write Retry (for MG) | | | | | | | |
| 18 | Resin K (Black) Mode | | | | | | | |
| 19 | Velocity of the front side 2nd retransfer (UV) | | | | | | | |
| 20 | Velocity of the back side 2nd retransfer (UV) | | | | | | | |
| 21 | Backside Cooling | | | | | | | |
| 22-23 | Reserved (0xff) | | | | | | | |

The settings in this page are not kept in the EEPROM. In the case of 0xff, the setting in the EEPROM is effective. The setting will be effective from the next printing.

Heat Roller Temperature (Retransfer): From 0(Low) to 4(High).

Velocity (Retransfer Front): From 0(Fast) to 5(Slow).

Velocity (Retransfer Back): From 0(Fast) to 5(Slow).

Heat Roller Temperature (Card Fix): From 0(Low) to 5(High), **10(Off)**.

Velocity (Card Fix): From 0(Slow) to 4(Fast), ~~4(Off)~~

Peel Wait Time: Wait time in second before peel. From 0 to 15.

This setting becomes invalid. It does not give any influence to the printer.

MG Peel Mode: The way of peeling retransfer film on the back side of the card. It is the special arrangement for the card magnetic side. In the case that the card does not have magnetic stripe, do not set "On". Without magnetic encoder, it does not work.

0: Off 1: On

Standby Mode:

The printer waits for the laminator becoming ready. This is effective only when both side printing and the laminator are attached.

0: Wait after the front side retransferring.

1: Wait after the back side retransferring.

YMC Level: YMC printing energy. From 0(Low) to 6(High).

Resin K (Black) Level: Resin K (Black) printing energy. From 0(Low) to 6(High).

A0 (UV) Level: UV ink printing energy. From 0(Low) to 6(High).

A1 (PO) Level: PO ink printing energy. From 0(Low) to 6(High).

Laminate Mode: Laminate function.

0: Laminate 1: Pass through

ISO Mode: Coercivity of ISO head.

0: Lo-Co (300Oe) 1: Hi-Co

JIS Mode: Coercivity of JIS head.

0: Lo-Co 1: Hi-Co (2750Oe)

Write Retry: The retry count of magnetic writing by one card. From 0 to 3

Resin K (Black) Mode: Resin K (Black) printing mode.

0: Standard 1: Fine

Velocity of the front side 2nd retransfer (UV):

The velocity for the 2nd retransfer of UV on the front side. From 0(+2:Fast) to 5(-3:Slow).

Velocity of the back side 2nd retransfer (UV):

The velocity for the 2nd retransfer of UV on the back side. From 0(+2:Fast) to 5(-3:Slow).

Backside Cooling: Wait a little before the retransfer of the back side to decrease the card bending. 0:

Off 1: On

5.12.4 Log Sense Function

| No. | Function Name | Explanation |
|-----|--|---|
| 1 | int CXCMD_LogSense (int iSlot, int iID, int iPage, BYTE *pbyBuffer) | Get Log Sense Data from printer by using Log Sense command. ◆ iPage: Choose Log Sense data. 0x38: Medium Quantity page 0x39: Miscellaneous page 0x3a: Laminator Counter Page ◆ pbyBuffer: Pointer to the memory being stored Log Sense Data. The size of memory must be enough size to store Log Sense Data. |

(1) Log Sense Data format (Medium Quantity Page : Page Code =0x38)

| Bit Byte | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|-------------|---|---|------------------|---|---|---|---|---|
| 0 | Reserved | | Page Code (0x38) | | | | | |
| 1 | Reserved | | | | | | | |
| 2 | (MSB) Page Length (0x0030) (LSB) | | | | | | | |
| 3 | | | | | | | | |
| 4 | (MSB) Parameter Code (0x0000) (LSB) | | | | | | | |
| 5 | | | | | | | | |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 | Parameter Length (0x04) | | | | | | | |
| 8 | (MSB) Total count (The number of printed cards) (LSB) | | | | | | | |
| 9 | | | | | | | | |
| 10 | | | | | | | | |
| 11 | | | | | | | | |
| 12 | (MSB) Parameter Code (0x0001) (LSB) | | | | | | | |
| 13 | | | | | | | | |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15 | Parameter Length (0x04) | | | | | | | |
| 16 | (MSB) Free count (The number of successfully printed cards. It can be set to zero) (Refer Note1) (LSB) | | | | | | | |
| 17 | | | | | | | | |
| 18 | | | | | | | | |
| 19 | | | | | | | | |

| | | | | | | | | | |
|-------|-------|--|---|---|---|---|---|---|-------|
| 20 | (MSB) | Parameter Code (0x0002) | | | | | | | (LSB) |
| 21 | | | | | | | | | |
| 22 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 23 | | Parameter Length (0x04) | | | | | | | |
| 24 | (MSB) | Head count(Number of printed colors) | | | | | | | |
| 25 | | | | | | | | | |
| 26 | | | | | | | | | |
| 27 | | | | | | | | | |
| 28 | (MSB) | Parameter Code (0x0003) | | | | | | | (LSB) |
| 29 | | | | | | | | | |
| 30 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 31 | | Parameter Length (0x0004) | | | | | | | |
| 32 | (MSB) | Cleaning count (Number of printed card. It is initialized to zero when Roller Cleaning is done) | | | | | | | |
| 33 | | | | | | | | | |
| 34 | | | | | | | | | |
| 35 | | | | | | | | | |
| 35 | | | | | | | | | |
| 36 | (MSB) | Parameter Code (0x0004) | | | | | | | (LSB) |
| 37 | | | | | | | | | |
| 38 | | 0x00 | | | | | | | |
| 39 | | Parameter Length (0x0004) | | | | | | | |
| 40 | (MSB) | Error Count (The number of total resettable error card) (Refer Note1) | | | | | | | |
| 41 | | | | | | | | | |
| 42 | | | | | | | | | |
| 43 | | | | | | | | | |
| 44-51 | | Reserved | | | | | | | |

Note1: Error Count is initialized when Free Count is initialized. And the relationship of Error Count and Free Count is following.

Error Count is Card load success count minus Free Count.

Free Count means the number of card which exit from left side of the printer without JAM after the retransfer printing, Card load success count does not count card supply JAM card.

(2) Log Sense Data format (Miscellaneous Page : Page Code = 0x39)

| Bit Byte | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|-------------|---|---|------------------|---|---|---|---|---|
| 0 | Reserved | | Page Code (0x39) | | | | | |
| 1 | Reserved | | | | | | | |
| 2 | (MSB)Page Length (0x0048)(LSB) | | | | | | | |
| 3 | | | | | | | | |
| 4 | (MSB)Parameter Code (0000H)(LSB) | | | | | | | |
| 5 | | | | | | | | |
| 6 | 00H | | | | | | | |
| 7 | Parameter Length (0004H) | | | | | | | |
| 8 | (MSB)NG Count Note: Respond 0 always (LSB) | | | | | | | |
| 9 | | | | | | | | |
| 10 | | | | | | | | |
| 11 | | | | | | | | |
| 12 | (MSB)Parameter Code (0001H)(LSB) | | | | | | | |
| 13 | | | | | | | | |
| 14 | 00H | | | | | | | |
| 15 | Parameter Length (0004H) | | | | | | | |
| 16 | (MSB)Retransfer HR Power On Time. (It is accumulated by one on every 5 minutes during the heater is powered.) (LSB) | | | | | | | |
| 17 | | | | | | | | |
| 18 | | | | | | | | |
| 19 | | | | | | | | |
| 20 | (MSB)Parameter Code (0002H)(LSB) | | | | | | | |
| 21 | | | | | | | | |
| 22 | 00H | | | | | | | |
| 23 | Parameter Length (0004H) | | | | | | | |
| 24 | (MSB)Remedy HR Power On Time (It is accumulated by one on every 5 minutes during the heater is powered.) (LSB) | | | | | | | |
| 25 | | | | | | | | |
| 26 | | | | | | | | |
| 27 | | | | | | | | |
| 28 | (MSB)Parameter Code (0003H)(LSB) | | | | | | | |
| 29 | | | | | | | | |
| 30 | 00H | | | | | | | |
| 31 | Parameter Length (0004H) | | | | | | | |
| 32 | Printer Status | | | | | | | |

| | |
|-------|--|
| 33 | Printer Error Status (Sense Key) |
| 34 | Printer Error Status (Additional Sense Code) |
| 35 | Printer Error Status (Additional Sense Qualifier) |
| 36 | (MSB) Parameter Code (0x0004) (LSB) |
| 37 | |
| 38 | 0x00 |
| 39 | Parameter Length (0x0004) |
| 40 | (MSB) Unresettable Retransfer HR Power On Time (Unresettable retransfer heat roller total power on time) (LSB) |
| 41 | |
| 42 | |
| 43 | |
| 44 | (MSB) Parameter Code (0x0005) (LSB) |
| 45 | |
| 46 | 0x00 |
| 47 | Parameter Length (0x0004) |
| 48 | (MSB) Unresettable Remedy HR Power On Time (Unresettable bend remedy heat roller total power on time) (LSB) |
| 49 | |
| 50 | |
| 51 | |
| 52 | (MSB) Parameter Code (0x0006) (LSB) |
| 53 | |
| 54 | 0x00 |
| 55 | Parameter Length (0x0002) |
| 56 | Laminator Status |
| 57 | Laminator Error Status |
| 58-75 | Reserved |

Printer Status: It reports the printer status.

- | | |
|--|---|
| 0: Ready (Ready to load the card) | 1: Initializing |
| 3: Offline. Not ready by the setting mode or as like. | 7: Preheating |
| 51: Loading the card. | 52: Moving the card. |
| 53: MG Encoding | |
| 55: Card is at the contact IC encoder. | 56: Card is at the no-contact IC encoder. |
| 57: Retransferring (Card is moved to Retransfer Origin) | |
| 61: Printing on the retransfer film. | |
| 62: Sleeping | |
| 63: Heating (The status that HR is revived the normal temperature from HR Control Mode.) | |

255: Any printer error. Printer Error Status shows the contents of the error.

Note: This status is not rigid. This purpose is to make it possible for the software to show the printer status to the operator.

Printer Error Status:

This reports the contents of the printer error in case of (Printer Status =255). Otherwise, this reports 0.

Printer Error Status (Sense Key): Sense Key is reported.

Printer Error Status (Additional Sense Code) Additional Sense Code is reported.

Printer Error Status (Additional Sense Qualifier): Additional Sense Qualifier is reported.

Note: Some of error status are reported as Printer Status. They are;
Busy of Transporting, Busy of Printing, Busy of Transporting and Printing,
Preheating, Initializing, Testing or Cleaning, On Setting or Transport Mode,
Sleeping

Laminator Status: Report the laminator status

0x00: Ready (Possible to laminate)

0x01: Power Saving

0x02: Low temperature waiting mode

0x0f: Download mode

0x10: Initializing

0x11: Preheating

0x12: Laminating

0x13: Cleaning

0x14: Sensor testing

0x15: Motor testing

0xfe: Laminator is not connect

0xff: Laminator has malfunction

Laminator Error Status: Report the laminator malfunction. In the case that Laminator Status is not 255, it reports 00.

0x50: Card JAM (near the card entrance) 0x51: Card JAM (in the printer)
0x52: Card JAM (near the card exit)
0x53: No remains of upper film 0x54: No remains of lower film
0x55: Impossible to detect upper film (No film or broken)
0x56: Impossible to detect lower film (No film or broken)
0x57: Impossible to detect upper film mark
0x58: Impossible to detect lower film mark
0x59: Door open
0x5a: No cassette
0x60: Thermostat cut
0x61: Upper heat roller overheat 0x62: Lower heat roller overheat
0x63: Upper heater inside temperature overheat
0x64: Lower heater inside temperature overheat
0x65: Upper heater error 0x66: Lower heater error
0x67: Wire of upper heat roller thermistor is broken.
0x68: Wire of lower heat roller thermistor is broken.
0x6b: Upper heat roller cum error 0x6c: Lower heat roller cum error
0x6d: Over cool
0x6e: Supply side encoder error of upper film
0x6f: Supply side encoder error of lower film
0x70: Take up side encoder error of upper film
0x71: Take up side encoder error of lower film
0x7d: other errors

(3) Laminator Counters Page (Page Code = 0x3A)

Respond the following laminator information

| <div>Bit</div> <div>Byte</div> | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|--------------------------------|--|---|------------------|---|---|---|---|---|
| 0 | Reserved | | Page Code (0x3A) | | | | | |
| 1 | Reserved | | | | | | | |
| 2 | (MSB) <div>Page Length (0x0040)</div> (LSB) | | | | | | | |
| 3 | | | | | | | | |
| 4 | (MSB) <div>Parameter Code (0x0000)</div> (LSB) | | | | | | | |
| 5 | | | | | | | | |
| 6 | 0x00 | | | | | | | |

| | | |
|----|---------------------------|--|
| 7 | Parameter Length (0x0004) | |
| 8 | (MSB) | Total Count (The number to total card issue. Unresettable.) |
| 9 | | |
| 10 | | |
| 11 | | (LSB) |
| 12 | (MSB) | Parameter Code (0x0001) |
| 13 | | (LSB) |
| 14 | 0x00 | |
| 15 | Parameter Length (0x0004) | |
| 16 | (MSB) | Cleaning Count (The number of total card issue. Resettable every roller cleaning) |
| 17 | | |
| 18 | | |
| 19 | | (LSB) |
| 20 | (MSB) | Parameter Code (0x0002) |
| 21 | | (LSB) |
| 22 | 0x00 | |
| 23 | Parameter Length (0x0004) | |
| 24 | (MSB) | Resettable Heat Roller T Power On Time (Resettable heat roller top total power on time) |
| 25 | | |
| 26 | | |
| 27 | | (LSB) |
| 28 | (MSB) | Parameter Code (0x0003) |
| 29 | | (LSB) |
| 30 | 0x00 | |
| 31 | Parameter Length (0x0004) | |
| 32 | (MSB) | Resettable Heat Roller B Power On Time (Resettable heat roller bottom total power on time) |
| 33 | | |
| 34 | | |
| 35 | | (LSB) |
| 36 | (MSB) | Parameter Code (0x0004) |
| 37 | | (LSB) |
| 38 | 0x00 | |
| 39 | Parameter Length (0x0004) | |
| 40 | (MSB) | Unresettable Heat Roller T Power On Time (Unresettable heat roller top total power on time) |
| 41 | | |
| 42 | | |

| | | |
|-------|-------|---|
| 43 | | (LSB) |
| 44 | (MSB) | Parameter Code (0x0005) |
| 45 | | |
| 46 | | 0x00 |
| 47 | | Parameter Length (0x0004) |
| 48 | (MSB) | Unresettable Heat Roller B Power On Time (Unresettable heat roller bottom total power on time) |
| 49 | | |
| 50 | | |
| 51 | | |
| 52 | (MSB) | Parameter Code (0x0006) |
| 53 | | |
| 54 | | 0x00 |
| 55 | | Parameter Length (0x0002) |
| 56 | (MSB) | Heat Roller T Current Temperature (Heat Roller Top current temperature) |
| 57 | | |
| 58 | (MSB) | Parameter Code (0x0007) |
| 59 | | |
| 60 | | 0x00 |
| 61 | | Parameter Length (0x0002) |
| 62 | (MSB) | Heat Roller B Current Temperature (Heat Roller Bottom current temperature) |
| 63 | | |
| 64-75 | | Reserved |

5.12.5 Log Select Function

| No. | Function Name | Explanation |
|-----|--|--|
| 1 | int CXCMD_LogSelect (int iSlot, int iID, int iMod) | Initialize both Free Counter and Error Counter of the printer. Note: Set 0 always at iMod. |

6. How to encode with Printer Driver

The printer driver offers a function for encoding. Normally, It is not possible to pass the encode data to the printer driver. We offer two kinds of special way to it to the printer driver.

6.1 Inline Encoding

Encoding data can be passed to the printer driver as print data. A text proceeding by the predefined prefix is not printed but encoded. Set the method of inline encoding in the “Inline type” of the Printer Driver. The default encoding is encoded without the ISO Magnetic encoding. If the text is regarded as the encoding data, both prefix and the text will be not printed.

6.1.1 Default Encoding

Adding a prefix (tilde(~), ?, or numeric characters) at the beginning of a text enables the string to be recognized as encoding data.

| Prefix | Max Length | Code | Text after prefix |
|--------|------------|--------|---|
| ~?0 | 69 | 7 unit | Text is processed as the data for JIS-2 MG encoding. |
| ~?1 | 76 | 6 unit | Text is processed as the data for ISO track1 MG encoding |
| ~?2 | 37 | 4 unit | Text is processed as the data for ISO track2 MG encoding |
| ~?3 | 104 | 4 unit | Text is processed as the data for ISO track3 MG encoding |
| ~?4 | 32760 | 8 unit | Text is processed as the data for the contact IC encoding |
| ~?5 | 32760 | 8 unit | Text is processed as the data for the non-contact IC encoding |
| ~?6 | 69 | 7 unit | Text is processed as the data for ISO track1 MG encoding |
| ~?7 | 69 | 7 unit | Text is processed as the data for ISO track3 MG encoding |
| ~?8 | 79 | 6 unit | Text is processed as the data for ISO track1 MG encoding. |
| ~?9 | 79 | 6 unit | Text is processed as the data for ISO track3 MG encoding. |

*Column “Max Length” shows the maximum number of encoding characters.

Note:

- Encoding setting of the printer driver property sheet must be enabled.
- Inline encoding data must be set on the first printed page.
- The prefix and text must be successive, and their font and size must be same.
- Effective code for MG encoding is shown at “Appendix: ASCII Code Table and Magnetic Data”.
- In JIS-2 encoding, JIS Katakana characters are transformed to ASCII characters by inserting SI / SO control code by the printer driver.
- In case of both Contact IC encoding and Non-Contact IC encoding, the data being passed to IC Encode DLL(See 6.3) is ASCII single byte code. If other characters than ASCII are described, the value being passed to Encode DLL will not be guaranteed.

Following figure is an example for ISO MAG Track1 encoding. If following picture is printed, “12345678” will be encoded and “~?112345678” will be not printed.



6.1.2 Type B Encoding

Adding a prefix (tilde(~), numeric characters or start sentinel) at the beginning of a text enables the string to be recognized as encoding data.

| Prefix | Code | Text after prefix | Last character |
|-------------------------|----------------------------|--|-----------------|
| ~1 Start Sentinel | 6 unit 7 unit | Text is processed as the data for ISO track1 MG encoding | End Sentinel |
| ~2 Start Sentinel | 4 unit | Text is processed as the data for ISO track2 MG encoding | End Sentinel |
| ~3 Start Sentinel | 4 unit 6 unit 7 unit | Text is processed as the data for ISO track3 MG encoding | End Sentinel |

Note:

- Encoding setting of the printer driver property sheet must be enabled.
- Inline encoding data must be set on the first printed page.
- The prefix and text must be successive, and their font and size must be same.
- The start sentinel determines the unit code. The end sentinel is needed at the last of character string. Effective code for MG encoding is shown at "Appendix: ASCII Code Table and Magnetic Data".

6.1.3 Type C Encoding

Adding a prefix (tilde(~), numeric characters or “=”) at the beginning of a text enables the string to be recognized as encoding data.

| Prefix | Max Length | Code | Text after prefix |
|--------|------------|--------|--|
| ~1= | 76 | 6 unit | Text is processed as the data for ISO track1 MG encoding |
| ~2= | 37 | 4 unit | Text is processed as the data for ISO track2 MG encoding |
| ~3= | 104 | 4 unit | Text is processed as the data for ISO track3 MG encoding |

*Column “Max Length” shows the maximum number of encoding characters.

Note:

- Encoding setting of the printer driver property sheet must be enabled.
- Inline encoding data must be set on the first printed page.
- The prefix and text must be successive, and their font and size must be same.
- Effective code for MG encoding is shown at “Appendix: ASCII Code Table and Magnetic Data”.

6.2 Encoding by using ExtEscape()

You can pass the encoding data to the printer driver by using ExtEscape() function of WIN32 API.

(1) Parameter to ExtEscape() function

```
int ExtEscape (  
    HDC      hdc,           // Handle to the device context.  
    Int      nEscape,       // Escape ID.  
    int      cbInput,       // Size of encoding data.  
    LPCSTR   lpzInData,     // Encoding data.  
    int      cbOutput,      // Unused.  
    LPSTR    lpzOutData    // Unused.  
);
```

List of Escape ID

| No | Escape ID | Explanation |
|----|-----------|--|
| 1 | 9010 | Non-contact IC encoding. |
| 2 | 9011 | Contact IC encoding. |
| 3 | 9020 | JIS Magnetic encoding(7Unit, Max 69 characters) |
| 4 | 9021 | ISO Track1 Magnetic encoding (6Unit, Max 76 characters) |
| 5 | 9022 | ISO Track2 Magnetic encoding (4Unit, Max 37 characters) |
| 6 | 9023 | ISO Track3 Magnetic encoding (4Unit, Max 104 characters) |
| 7 | 9024 | ISO Track1 Magnetic encoding (7Unit, Max 69 characters) |
| 8 | 9025 | ISO Track3 Magnetic encoding (7Unit, Max 69 characters) |
| 9 | 9026 | ISO Track1 Magnetic encoding (6Unit, Max 79 characters) |
| 10 | 9027 | ISO Track3 Magnetic encoding (6Unit, Max 79 characters) |

(2) Return Code from ExtEscape() function

It'll return greater than zero if the function is successful. It means not the result of encoding but the result of sending encoding data.

Note:

- ExtEscape() must be used between StartPage() and EndPage(). And if both sides are printed, ExtEscape() must be done at the 1st printing side.
- Encode setting of the printer driver property sheet must be enabled.

6.3 How to make IC Encoding program

The printer driver does not offer the actual IC encoding function. When IC Encoding data is passed to the printer driver, it calls IC Encode DLL after making the printer ready for IC Encoding. If you would like to do IC encoding, you must make IC Encode DLL and locate it in the system32 folder.

(1) File name of IC Encode DLL

PDR25IC0.DLL : For Non-contact IC encoding in case of USB interface.

PDR25IC1.DLL : For Contact IC encoding in case of USB interface.

PDR26IC0.DLL : For Non-contact IC encoding in case of Network interface.

PDR26IC1.DLL : For Contact IC encoding in case of Network interface.

(2) Function Prototype of IC Encode DLL

```
int stdcall Encode (  
    LPINT    lpiPrinterAdr,    // Pointer to the printer address.  
    LPINT    lpiErrorCode,    // Pointer to the error code(Not used).  
    LPSTR    lpPrinterName,    // Pointer to the printer name.  
    LPCSTR   lpzInData,        // Encoding data.  
    int      cbInput          // Size of encoding data.  
);
```

| Parameter | USB Interface | Network interface |
|---------------|--|--|
| lpiPrinterAdr | ID of the printer. From bit0 to bit7: ID From bit8 to bit15: Slot number | Connection information to the printer. |
| lpiErrorCode | This is not used. | |
| lpPrinterName | Printer Name in ASCII. It can be set with the printer operation or CXCMD_ModeSelect(). | |
| lpzInData | Encoding data passed by Inline Encoding or ExtEscape(). | |
| cbInput | Size of encoding data in byte. | |

(3) Return Code from IC Encode DLL

It must return zero when the function ends successfully, and must return a negative value when an error happens. Printer Driver will discharge the card when a negative value is returned from DLL after the confirmation is done with the error dialog.

Note:

The processing of the printer driver to the return code from IC Encode DLL is changed as follows. This is applied to the printer driver version 3.0.0.9 and the later.

0: Success. The printer driver continues printing.

0x1001: Fail. The printer driver does not display an error dialog. It discharges the card and retries on a new card.

0x1002: Fail. The printer driver does not display an error dialog. It discharges the card and cancels the current Print Job.

Negative, and other positive value than above: The printer driver displays an error dialog, and does further processing according to the operator's choice.

7. How to change the driver setting

The setting of the printer driver can be referred and changed by using ExtEscape() function.

7.1 How to use ExtEscape()

```
int ExtEscape (  
    HDC      hdc,           // Handle to the device context.  
    Int      nEscape,       // Escape ID.  
    int      cbParameter,   // Size of the parameter data.  
    LPCSTR   lpzParameter,  // Pointer to the parameter data.  
    int      cbResult,      // Size of the result area.  
    LPSTR    lpzResult     // Pointer to the result area.  
);
```

- nEscape : Set 9100 for this purpose.
- cbParameter : Set the length of Parameter in byte.
- lpzParameter : Pointer to the Parameter memory.
- cbResult : Set the length of Result memory in byte.
- lpzResult : Pointer to the Result memory.

Note:

- ExtEscape() must be used after StartDoc() and before StartPage().

7.2 Change the setting

1) Format of the parameter

| Name | Command Code | ID | Size | Data(New value) |
|----------------|--------------|----|------|-----------------|
| Length in byte | 1 | 2 | 2 | n |
| Value | 'S'(0x53) | *1 | *2 | *1 |

*1: Refer to "7.5 About the parameter".

*2: Data length in byte.

2) Format of the result

(1) In case of success

| Name | Error Code | Reserved |
|----------------|------------|-------------|
| Length in byte | 1 | 4 |
| Value | 0x00 | Not defined |

(2) In case of error

| Name | Error Code | Error Code-A | Error Code-B |
|----------------|------------|--------------|--------------|
| Length in byte | 1 | 2 | 2 |
| Value | 0xff | *1 | *1 |

*1: Refer to "7.6 About the error code".

7.3 Get the current setting

1) Format of the parameter

| Name | Command Code | ID |
|----------------|--------------|----|
| Length in byte | 1 | 2 |
| Value | 'G'(0x47) | *1 |

*1: Refer to "7.5 About the parameter".

2) Format of the result

(1) In case of success

| Name | Error Code | ID | Size | Data(Current value) |
|----------------|------------|----|------|---------------------|
| Length in byte | 1 | 2 | 2 | n |
| Value | 0x00 | *1 | *2 | *1 |

*1: Refer to "7.5 About the parameter".

*2: Data length in byte.

(2) In case of error

| Name | Error Code | Error Code-A | Error Code-B |
|----------------|------------|--------------|--------------|
| Length in byte | 1 | 2 | 2 |
| Value | 0xff | *1 | *1 |

*1: Refer to “7.6 About the error code”.

7.4 Programming sample

1) Change the setting of “Number of copies” to 100

```
int          escape_id;
unsigned short id, size;
unsigned long data;
unsigned char in[9], out[5];
int          ret;
unsigned short error_code;
escape_id = 9100; id = 257; size = 4; data = 100;
in[0]      = 'S';
in[1]      = (unsigned char)((id >> 8) & 0xFF);
in[2]      = (unsigned char)(id);
in[3]      = (unsigned char)((size >> 8) & 0xFF);
in[4]      = (unsigned char)(size);
in[5]      = (unsigned char)((data >> 24) & 0xFF);
in[6]      = (unsigned char)((data >> 16) & 0xFF);
in[7]      = (unsigned char)((data >> 8) & 0xFF);
in[8]      = (unsigned char)(data);

ret = ExtEscape ( hDC, escape_id, sizeof(in), (const char*)in, sizeof(out), (char*)out );
if (ret > 0) {          // Succeed in calling ExtEscape()
if (out[0] == 0x00) {    // Succeed
;
} else {                // Error happens in the driver
// Get error code
error_code = (unsigned short)((unsigned short)out[1] << 8 | out[2]);
}
} else {                //Fail in the ExtEscape()
;
}
}
```

2) Refer to the setting of “Number of copies”.

```
int            escape_id;
unsigned short id, size;
unsigned long  data;
unsigned char  in[3], out[9];
int            ret;
unsigned short error_code;

escape_id = 9100; id = 257;

in[0]    = 'G';
in[1]    = (unsigned char)((id >> 8) & 0xFF);
in[2]    = (unsigned char)(id);

ret = ExtEscape ( hDC, escape_id, sizeof(in), (const char*)in, sizeof(out), (char*)out );
if (ret > 0) {          // Succeed in calling ExtEscape()
    if (out[0] == 0x00) {    // Succeed
        size = (unsigned short)((unsigned short)out[3] << 8 | out[4]);
        data = (unsigned long)((unsigned long)out[5] << 24 | (unsigned long)out[6] << 16 |
            (unsigned long)out[7] << 8 | out[8]);
    } else {                // Error happens in the driver
        // Get error code
        error_code = (unsigned short)((unsigned short)out[1] << 8 | out[2]);
    }
} else {                  //Fail in the ExtEscape()
    ;
}
```

7.5 About the parameter

Note: All value must be set with Big Endian.

| Item Name | ATR | ID | Size | Data | Explanation |
|---|-----|--------|--------|-------------------------------|---|
| Number of copies | R/W | 0x0101 | 0x0004 | 0x00000001 ~ 0x000003E7 | The value must be from 1 to 999. |
| Card Load/Eject settings | R/W | 0x0103 | 0x0004 | 0x00000000 | Not turn the card. |
| | | | | 0x00000001 | Turn the card before discharging(Not available) |
| | | | | 0x00000002 | Turn the card after loading. |
| | | | | 0x00000003 | Turn the card after loading and turn the card before discharging. (Not available) |
| Print Print on both sides Print the back side first | R/W | 0x0201 | 0x0004 | 0x00000000 | Not print |
| | | | | 0x00000010 | Single side printing. |
| | | | | 0x00000020 | Both side printing. Print front side fast. |
| | | | | 0x00000021 | Both side printing. Print back side fast. |
| Print mode [Front side] | R/W | 0x0202 | 0x0004 | 0x00000001 | Use YMC ink for front side printing. |
| | | | | 0x00000002 | Use K ink for front side printing. |
| | | | | 0x00000003 | Use YMCK ink for front side printing. |
| | | | | 0x00000011 | Use YMC & UV ink for front side printing. |
| | | | | 0x00000012 | Use K & UV ink for front side printing. |
| | | | | 0x00000013 | Use YMCK & UV ink for front side printing. |
| Print mode [Back side] | R/W | 0x0203 | 0x0004 | 0x00000001 | Use YMC ink for back side printing. |
| | | | | 0x00000002 | Use K ink for back side printing. |
| | | | | 0x00000003 | Use YMCK ink for back side printing. |
| | | | | 0x00000011 | Use YMC & UV ink for back side printing. |
| | | | | 0x00000012 | Use K & UV ink for back side printing. |
| | | | | 0x00000013 | Use YMCK & UV ink for back side printing. |

| Item Name | ATR | ID | Size | Data | Explanation |
|--------------------------------------|-----|--------|--------|------------|---|
| Using of Resin K ink [Front side] | R/W | 0x0204 | 0x0004 | 0x00000010 | Print black text of front side with K ink. |
| | | | | 0x00000011 | Print black text of front side with K and print its background with YMC. |
| | | | | 0x00000020 | Print black color of front side with K ink. |
| | | | | 0x00000021 | Print black color of front side with K and print its background with YMC. |
| | | | | 0x00000040 | Use page split function. |
| Using of Resin K ink [Back side] | R/W | 0x0205 | 0x0004 | 0x00000010 | Print black text of back side with K ink. |
| | | | | 0x00000011 | Print black text of back side with K and print its background with YMC. |
| | | | | 0x00000020 | Print black color of back side with K ink. |
| | | | | 0x00000021 | Print black color of back side with K and print its background with YMC. |
| | | | | 0x00000040 | Use page split function. |
| Rotate by 180 [Front side] | R/W | 0x0206 | 0x0004 | 0x00000000 | Not rotate the image of front side. |
| | | | | 0x00000001 | Make the front side image upside down. |
| Rotate by 180 [Back side] | R/W | 0x0207 | 0x0004 | 0x00000000 | Not rotate the image of back side. |
| | | | | 0x00000001 | Make the back side image upside down. |
| Magnetic encoding | R/W | 0x0301 | 0x0004 | 0x00000000 | Disable MG encoding. |
| | | | | 0x00000010 | Enable MG encoding. |
| | | | | 0x00000011 | Turn the card after MG encoding. |
| Non-contact/Contact IC encoding | R/W | 0x0302 | 0x0004 | 0x00000000 | Disable IC encoding. |
| | | | | 0x00000010 | Enable Contact IC encoding. |
| | | | | 0x00000011 | Turn the card after Contact IC encoding. |
| | | | | 0x00000020 | Enable No-Contact IC encoding. |
| | | | | 0x00000021 | Turn the card after No-Contact IC encoding. |
| | | | | 0x00000030 | Enable both Contact and No-Contact IC encoding. |
| | | | | 0x00000031 | Turn the card after both Contact and No-Contact IC encoding. |

| Item Name | ATR | ID | Size | Data | Explanation |
|-------------------------------|-----|--------|--------|------|--|
| Printer Interface Information | R | 0x0901 | 0x0005 | | <p>If the interface is unknown;</p> <p>1st byte: 0x00</p> <p>From 2nd byte to 5th byte: Unpredictable</p> <p>Note: In the case of followings, Unknown happens.</p> <p>1) Printer driver is not connected to the port directly.</p> <p>2) Printer Pool is enabled, and multiple ports are specified.</p> <p>3) The setting of the port is invalid.</p> |
| | | | | | <p>If the interface is USB;</p> <p>1st byte: 0x01</p> <p>2nd byte: Slot number</p> <p>3rd byte: ID</p> <p>4th byte: Unpredictable</p> |
| | | | | | <p>If the interface is network;</p> <p>1st byte: 0x02</p> <p>From 2nd byte to 5th byte: IP address</p> <p>Ex) If IP address is 192.168.0.1;</p> <p>2nd byte: 192</p> <p>3rd byte: 168</p> <p>4th byte: 0</p> <p>5th byte: 1</p> <p>Note: In the case that the setting of the Port Monitor is either "No Selection" or "No Device", IP address is filled with 0.</p> |

7.6 About the error code

Note: All value is set with Big Endian.

| No | Error code A | Error code B | Explanation |
|----|--------------|--------------|---|
| 1 | 0x0901 | 0x0000 | Invalid parameter was passed. |
| 2 | 0x0902 | * | Length of data area is not enough. Required length for the data is returned at Error code B. |

<Appendix 1 Error Code Table>

The configuration of error is shown in the table below. The error code in the table is transformed to positive by the calculation “ (-1) * (Error code)”. Detail of printer error code is shown in “Appendix Card Printer Error Code table”.

| Error Code(HEXA) | | | | Explanation |
|------------------|-----------|---------|--------|--|
| Bit31-24 | Bit23-16 | Bit15-8 | Bit7-0 | |
| 0x01 | Sense Key | ASC | ASCQ | Error code from Card Printer: From bit 0 to bit 23 is an error code sent from the printer. |
| 0x02 | 00 | XXX | | Error of CX Port Manager. XXX means the contents of error. |
| 0x02 | 01 | XXX | | Error of CX Port Manager: XXX is an Invalid SRB status value from Manager. |
| 0x02 | 02 | XXX | | Error of CX Port Manager: XXX is an Invalid HA status value from Manager. |
| 0x02 | 03 | XXX | | Error of CX Port Manager: XXX is an Invalid Target status value from Manager. |
| 0x09 | XXX | | | Other Error. XXX means the contents of error. |

A) Driver Error (0x02xxxxxx)

| Bit31-24 (0x02) | Bit23-16 | Bit15-0 | Explanation |
|--------------------|----------|---------|---|
| 0x02 | 00 | 1 | Not enough memory. |
| 0x02 | 00 | 2 | CX Port Manager is busy, and command cannot be accepted. |
| 0x02 | 00 | 3 | Command was aborted. |
| 0x02 | 00 | 4 | Time out. |
| 0x02 | 00 | 5 | No SCSI card. |
| 0x02 | 00 | 6 | CX Port Manager can not work. This means that the DLL of CX Port Manager could not be loaded. |
| 0x02 | 01 | XXXX | XXX is an Invalid SRB status value from CX Port Manager. |
| 0x02 | 02 | XXXX | XXX is an Invalid HA status value from CX Port Manager. |
| 0x02 | 03 | XXXX | XXX is an Invalid Target status value from CX Port Manager. |

B) Others(0x09xxxxxx)

| Bit31-24 (0x09) | Bit23-0 | Explanation |
|--------------------|---------|--|
| 0x09 | 1 | Invalid parameter, such as NULL pointer. |
| 0x09 | 2 | No printer is found. |
| 0x09 | 3 | Not enough memory. |
| 0x09 | 4 | File Operation Error: fail to read file, or file content is wrong. |
| 0x09 | 5 | Content of the DC is invalid: fail to get image from DC. |

<Appendix 2 Magnetic Data Code>

| 4 unit code | | | | | |
|-------------|----|----|----|---|-------------|
| b4 | b3 | b2 | b1 | | |
| 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 1 | 1 | 1 |
| 0 | 0 | 1 | 0 | 2 | 2 |
| 0 | 0 | 1 | 1 | 3 | 3 |
| 0 | 1 | 0 | 0 | 4 | 4 |
| 0 | 1 | 0 | 1 | 5 | 5 |
| 0 | 1 | 1 | 0 | 6 | 6 |
| 0 | 1 | 1 | 1 | 7 | 7 |
| 1 | 0 | 0 | 0 | 8 | 8 |
| 1 | 0 | 0 | 1 | 9 | 9 |
| 1 | 0 | 1 | 0 | A | : |
| 1 | 0 | 1 | 1 | B | ; |
| 1 | 1 | 0 | 0 | C | < |
| 1 | 1 | 0 | 1 | D | = |
| 1 | 1 | 1 | 0 | E | > |
| 1 | 1 | 1 | 1 | F | ? |

Note: Special code

| No. | Meaning | Character |
|-----|---------------------------|-----------|
| 1 | Start Code | ; |
| 2 | End Code | ? |
| 3 | Separate Code | = |
| 4 | Code for hardware control | : < > |

Default encoding must not use End Code as MG Encoding data.

Type B encoding must not use Start Code and End Code as MG Encoding data.

Type C encoding must not use Separate Code as MG Encoding data.

| 6 unit code | | | | | | | | | |
|-------------|----|----|----|---|--|----|---|---|---|
| | | | | | | 0 | 0 | 1 | 1 |
| | | | | | | 0 | 1 | 0 | 1 |
| b4 | b3 | b2 | b1 | | | 0 | 1 | 2 | 3 |
| 0 | 0 | 0 | 0 | 0 | | | 0 | @ | P |
| 0 | 0 | 0 | 1 | 1 | | ! | 1 | A | Q |
| 0 | 0 | 1 | 0 | 2 | | “ | 2 | B | R |
| 0 | 0 | 1 | 1 | 3 | | # | 3 | C | S |
| 0 | 1 | 0 | 0 | 4 | | \$ | 4 | D | T |
| 0 | 1 | 0 | 1 | 5 | | % | 5 | E | U |
| 0 | 1 | 1 | 0 | 6 | | & | 6 | F | V |
| 0 | 1 | 1 | 1 | 7 | | ‘ | 7 | G | W |
| 1 | 0 | 0 | 0 | 8 | | (| 8 | H | X |
| 1 | 0 | 0 | 1 | 9 | |) | 9 | I | Y |
| 1 | 0 | 1 | 0 | A | | * | : | J | Z |
| 1 | 0 | 1 | 1 | B | | + | ; | K | [|
| 1 | 1 | 0 | 0 | C | | , | < | L | \ |
| 1 | 1 | 0 | 1 | D | | - | = | M |] |
| 1 | 1 | 1 | 0 | E | | . | > | N | ^ |
| 1 | 1 | 1 | 1 | F | | / | ? | O | _ |

Note: Special code

| No. | Meaning | Character |
|-----|---------------------------|---------------------|
| 1 | Start Code | % |
| 2 | End Code | ? |
| 3 | Separate Code | ^ |
| 4 | Code for hardware control | !“&‘*+,,:;<=>@[\\]_ |

Default encoding must not use End Code as MG Encoding data.

Type B encoding must not use Start Code and End Code as MG Encoding data.

Type C encoding must not use Code for hardware control (=) as MG Encoding data.

| 7 unit code | | | | | | | | | | | | | |
|-------------|----|----|----|---|----|---|----|---|---|---|---|-----|---|
| | | | | | b7 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| | | | | | b6 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 |
| | | | | | b5 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 |
| b4 | b3 | b2 | b1 | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | |
| 0 | 0 | 0 | 0 | 0 | | | | 0 | @ | P | ` | p | |
| 0 | 0 | 0 | 1 | 1 | | | ! | 1 | A | Q | a | q | |
| 0 | 0 | 1 | 0 | 2 | | | “ | 2 | B | R | b | r | |
| 0 | 0 | 1 | 1 | 3 | | | # | 3 | C | S | c | s | |
| 0 | 1 | 0 | 0 | 4 | | | \$ | 4 | D | T | d | t | |
| 0 | 1 | 0 | 1 | 5 | | | % | 5 | E | U | e | u | |
| 0 | 1 | 1 | 0 | 6 | | | & | 6 | F | V | f | v | |
| 0 | 1 | 1 | 1 | 7 | | | ‘ | 7 | G | W | g | w | |
| 1 | 0 | 0 | 0 | 8 | | | (| 8 | H | X | h | x | |
| 1 | 0 | 0 | 1 | 9 | | |) | 9 | I | Y | l | y | |
| 1 | 0 | 1 | 0 | A | | | * | : | J | Z | j | z | |
| 1 | 0 | 1 | 1 | B | | | + | ; | K | [| k | { | |
| 1 | 1 | 0 | 0 | C | | | , | < | L | \ | l | | |
| 1 | 1 | 0 | 1 | D | | | - | = | M |] | m | } | |
| 1 | 1 | 1 | 0 | E | | | . | > | N | ^ | n | ~ | |
| 1 | 1 | 1 | 1 | F | | | / | ? | O | _ | o | DEL | |

Note: Special code

| No. | Meaning | Character |
|-----|---------------------------|--------------------|
| 1 | Start Code | 0x7f (DEL) |
| 2 | End Code | 0x7f (DEL) |
| 3 | Separate Code | ^ |
| 4 | Code for hardware control | !“&‘*+,;:<=>@[\\]_ |

Start Code and End Code must not be used as MG Encoding data.

Type C encoding must not use Code for hardware control (=) as MG Encoding data.

<Appendix 3 Card Printer Error Code Table>

| No. | Error Code | | | Name | Contents |
|-----|------------|-----|-----|-----------------------------------|---|
| | SK | ASC | ASQ | | |
| 1 | 02 | D0 | 00 | No card | There is no card, or the card hopper is detached. |
| 2 | 02 | D1 | 00 | Door Open | Printer door is opened, or cleaning unit is detached. |
| 3 | 02 | D3 | 00 | Busy of Transporting | Busy because of transporting card or encoding. Note: This error is not returned from functions. Control Function returns positive value as BUSY. |
| 4 | 02 | D4 | 00 | Busy of Printing | Busy because of printing. Note: This error is not returned from functions. Control Function returns positive value as BUSY. |
| 5 | 02 | D5 | 00 | Busy of Transporting and Printing | Busy because of both "Busy of Transporting" and "Busy of Transporting and Printing", or on the way of retransfer. Note: This error is not returned from functions. Control Function returns positive value as BUSY. |
| 6 | 02 | D6 | 00 | [Removed] | |
| 7 | 02 | D7 | 00 | [Removed] | |
| 8 | 02 | DA | 00 | Preheating | Printer is on the way of preheating. |
| 9 | 02 | DB | 00 | Initializing | Printer is on the way of initializing. |
| 10 | 02 | DC | 00 | Testing or Cleaning | Printer is on the way of Off-line Test or cleaning. |
| 11 | 02 | DD | 00 | On Setting or Transport Mode | Printer is in the setting mode or transporting mode. |
| 12 | 02 | DE | 00 | Not Ready for Download | Firmware download cannot be done as printer is not in Download mode. |
| 13 | 02 | FD | 00 | Sleeping | Printer is in the power save mode. Note: To exit this, initializing printer, which is pressing ENTER button after RESET button or sending REZERO command, is required. |
| 14 | 02 | FE | 00 | Password Error | Password certification is not done. |

| No. | Error Code | | | Name | Content |
|-----|------------|-----|-----|----------------|---|
| | SK | ASC | ASQ | | |
| 15 | 03 | 90 | 00 | Jam(Hopper) | The card does not arrive the card supply sensor within a predefined time. |
| 16 | 03 | 91 | 00 | Jam(TurnOver) | The card does not arrive the sensor inside the turnover unit within a predefined time. |
| 17 | 03 | 92 | 00 | Jam(MG) | The card does not arrive at the card edge sensor within a predefined time after leaving turnover unit. Also in case of magnetic encoding, when detection by the start position sensor of the MG unit is not possible. |
| 18 | 03 | 93 | 00 | Jam(Transfer) | The card does not arrive the card outlet sensor within a predefined time after leaving the card edge sensor. |
| 19 | 03 | 94 | 00 | Jam(Discharge) | The card stops at the card outlet sensor. |
| 20 | 03 | 95 | 00 | [Removed] | The name and content was changed. Refer to No.71. |
| 21 | 03 | A0 | 00 | [Removed] | |
| 22 | 03 | A1 | 00 | Media Search | Mark on the retransfer film could not be detected. |
| 23 | 03 | AD | 00 | MG Write Error | Writing error to the magnetic stripe happens. |
| 24 | 03 | AE | 00 | MG Read Error | Reading error from the magnetic stripe happens. |
| 25 | 03 | B0 | 00 | Ink Error | Invalid ink is attached. |
| 26 | 03 | B1 | 00 | Ink Search | Mark on the ink ribbon could not be detected, or ink is broken. |
| 27 | 03 | BB | 00 | [Removed] | |

| No. | Error Code | | | Name | Content |
|-----|------------|-----|-----|-------------------------|--|
| | SK | ASC | ASQ | | |
| 28 | 04 | 44 | 00 | Hardware (Printing) | Time out was detected by the printer firmware. |
| 29 | 04 | A9 | 00 | [Removed] | |
| 30 | 04 | AB | 00 | MG Mechanical | Mechanical error happens in the MG unit. |
| 31 | 04 | AC | 00 | MG Hardware | Hardware error happens in the MG unit. |
| 32 | 04 | AF | 00 | [Removed] | |
| 33 | 04 | B9 | 00 | [Removed] | |
| 34 | 04 | BA | 00 | [Removed] | |
| 35 | 04 | BE | 00 | [Removed] | |
| 36 | 04 | BF | 00 | EXT2. Communicate | Communication error happens during updating laminator firmware. |
| 37 | 04 | C0 | 00 | [Removed] | |
| 38 | 04 | C1 | 00 | Cam Error | A heating roller operation error has occurred. |
| 39 | 04 | D8 | 00 | Hardware (Initializing) | Circuit trouble was detected at the initialization, or writing error to the laminator memory fails during updating laminator firmware. |
| 40 | 04 | F0 | 00 | TR Overheat | The temperature of retransfer heating roller is too hot. |
| 41 | 04 | F1 | 00 | TR Heater | Retransfer heating roller is out of order. |
| 42 | 04 | F2 | 00 | TR Thermister | Thermistor of retransfer heating roller is out of order. |
| 43 | 04 | F3 | 00 | RR Overheat | The temperature of bend remedy heating roller is too hot. |
| 44 | 04 | F4 | 00 | RR Heater | Bend remedy heating roller is out of order. |
| 45 | 04 | F5 | 00 | RR Thermister | Thermistor of bend remedy heating roller is out of order. |
| 46 | 04 | F6 | 00 | Overcool | The temperature in the printer is too cool. |
| 47 | 04 | F8 | 00 | Head Overheat | The temperature of the thermal head is too hot. |
| 48 | 04 | FA | 00 | [Removed] | |

| No. | Error Code | | | Name | Contents |
|-----|------------|-----|-----|---------------------------------------|--|
| | SK | ASC | ASQ | | |
| 49 | 05 | 1A | 00 | Parameter List Length Error | The content of command is invalid. Parameter list length value in CDB or Page Data is invalid. |
| 50 | 05 | 20 | 00 | Invalid Command Operation Code | The content of command is invalid. Operation Code in CDB is invalid. |
| 51 | 05 | 24 | 00 | Illegal Field in CDB | The content of command is invalid. The data in CDB is invalid. |
| 52 | 05 | 25 | 00 | [Removed] | |
| 53 | 05 | 26 | 00 | Invalid Field in Parameter List | The content of command is invalid. The data in Page Data is invalid. |
| 54 | 05 | 27 | 00 | Invalid Color Code in CDB | Invalid ink is specified. |
| 55 | 05 | 2A | 00 | Command Sequence Error | The command is issued in bad order. Ex. Load Card is done when the card is in the printer. |
| 56 | 05 | 2B | 00 | MG Data Error | MG data from the host computer is invalid. |
| 57 | 05 | 2C | 00 | IC Encoder not installed | There is no specified IC Encoder. |
| 58 | 05 | 2D | 00 | MG Encoder not installed | There is no specified MG Encoder. |
| 59 | 05 | FB | 00 | Invalid Download Data | Download data from the host computer is invalid. |
| 60 | 06 | 28 | 00 | Medium Changed | Printer was initialized by pressing RESET button. |
| 61 | 06 | 29 | 00 | Power On or Bus Device Reset Occurred | Printer was initialized by turning on the printer power. |
| 62 | 42 | A2 | 00 | Media Run Out | End of retransfer film is detected. |
| 63 | 42 | B2 | 00 | Ink Run Out | End of ink ribbon is detected. |

| No. | Error Code | | | Name | Contents |
|-----|------------|-----|-----|-----------------------------|---|
| | SK | ASC | ASQ | | |
| 64 | 04 | C2 | 00 | HR Overheat | The temperature of the bend remedy heat roller or retransfer heat roller. |
| 65 | 03 | A8 | 00 | MG Write Error in Self Test | MG writing error happens in MG Self Test. |
| 66 | 05 | 2E | 00 | Option Not Installed | The command could not be executed as the turn over unit is not attached. |
| 67 | 05 | 21 | 00 | Security Key is already set | New security key could not be registered as the key is already set. |
| 68 | 05 | 23 | 00 | Security key is not set | Security key is not registered. |
| 69 | 05 | 22 | 00 | Invalid Security Key | Security key is invalid. |
| 70 | 04 | C3 | 00 | Detect Power Interrupt | 24V electric power was interrupted. |
| 71 | 03 | 95 | 00 | Jam(Retransfer) | Card JAM error happens during retransfer. |

<Appendix 4 The location of the MAC address printed with UV>

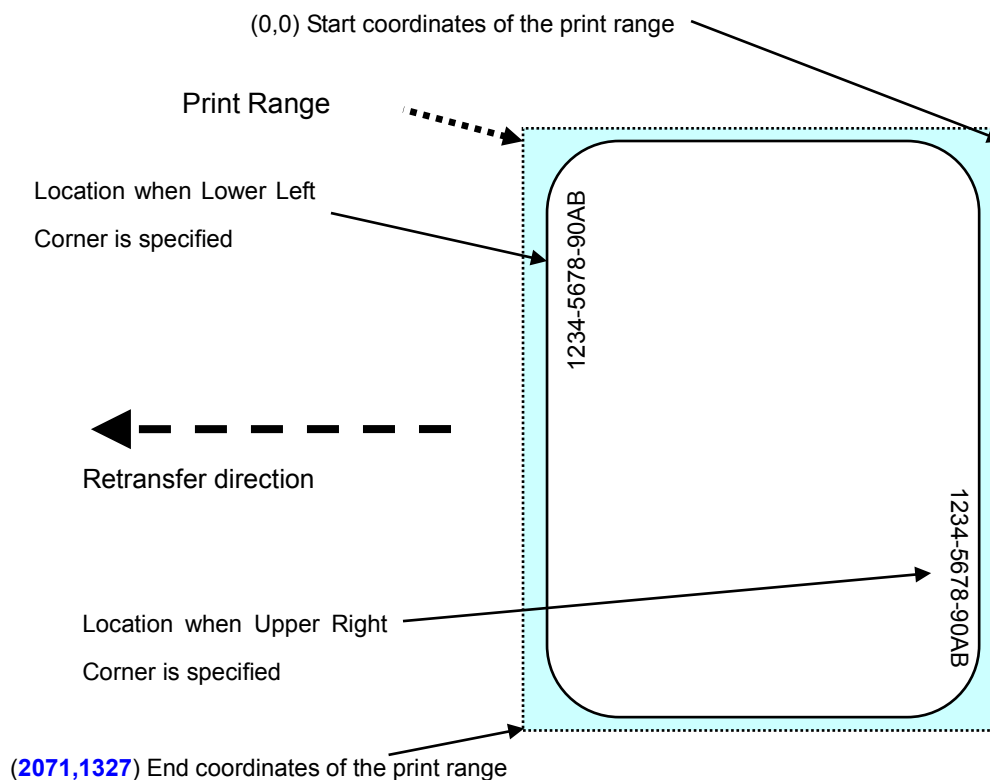
Printing UV on YMC directly makes it difficult to retransfer the YMC ink to the card. In case of the UV image and the YMC image overlapping, you must use 2 patches of the retransfer film so as not to happen this problem. After printing the YMC image on the retransfer film and retransferring it to the card, the UV image should be printed on the new patch of the retransfer film and be retransferred to the card.

Printing UV on K directly, the film and the ink may stick when the UV ink is printed on the YMC image printed on the film. So as not to happen this problem, please use the next patch of the film for UV, or replace the UV image with zero the place where the UV image and the K image overlap. And 4 pixels are required between K and UV image.

The card printer prints always its MAC address at the corner of the card with UV every when the UV ink is printed. So it is important to care about the place where the MAC address is printed when you don't use the printer driver.

1) The location where the MAC address is printed

The location can be specified by the command of the printer, one is at the upper right corner of the card and another is at the lower left corner. In case of the location at the lower corner, the font is printed upside down. So when you rotate the card by 180 degree, the same characters are printed at the same location.



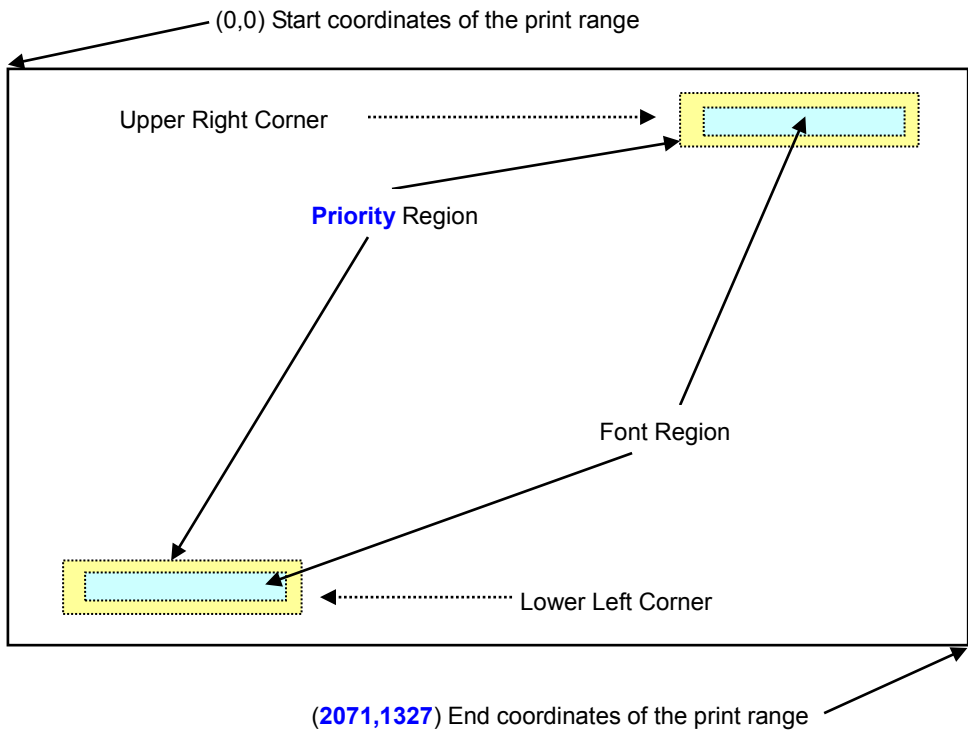
2) More about the location

(1) Structure of the font

| | |
|--------|--|
| Height | 36 pixels.(Approx.1.5mm). |
| Width | 32 pixels including 4 white pixels on both sides (Approx. 1.4mm) |

(2) Priority Region on the print range

We define two regions for MAC address printing. One is Font Region and another is **Priority** Region. MAC address is printed at Font Region. So the UV image in Font Region is replaced with MAC Address. **Priority** Region is a recommended region where YMCK image should not be printed. If they are overlapped, the UV image had better be printed on the film after the YMCK image is retransferred.



| | | Upper Right Corner | Lower Left Corner |
|---------------------------|--------|--------------------|-------------------|
| Priority Region | Width | 460 pixels | |
| | Height | 68 pixels | |
| | X | 1528 | 84 |
| | Y | 36 | 1222 |

