

**Sublimation type Retransfer Card Printer CX-330**

# Technical Document for Software Development

**Revision 016**

## **Notice**

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# <Revision Contents>

11.Jun.2007 Revision 010	1 <sup>st</sup> Release. The difference from CX-320 is described with bold and blue characters.
13.Sep.2007 Revision 011	2 <sup>nd</sup> Release. 1) Add Windows Vista in the "2. Operational Environment". 2) "6.3 How to make IC Encoding Program": Correct the description of the return code from IC Encode DLL . 3) "7.1 How to use ExtEscape()": Add the explanation of the time when ExtEscape() should be issued.
09.Oct.2007 Revision 012	3 <sup>rd</sup> Release. 1) Change the parameter of CXCMD_Print() to specify the location where the MAC address is printed with UV. 2) Add "Appendix4 The location of the MAC address printed with UV".
22.Nov.2007 Revision 013	4 <sup>th</sup> Release. 1) "6.3 How to make IC Encoding Program": Add the new kind of return code to the IC Encode DLL. 2) "7.6 About the error code": The description "Required length is returned at Error code B." is corrected to "Required length for the data is returned at Error code B." 3) "7.5 About the parameter": Add the parameter "Printer Interface Information" to know the printer interface.
07.May 2009 Revision 014	5 <sup>th</sup> Release. 1) "5.12.3 Mode Select Function": Correct the setting value of Card Loading in Print Unit Information Data page, from "0:Don't change 1:Card Loading from the card tray 2:Right side card loading" to "0: Card Loading from the card tray 1:Right side card loading".
09.June 2010 Revision 015	6 <sup>th</sup> Release. 1) "2. Operational Environment": Add Windows 7 2) "3. System Configuration" / "5.1 Program Construction": Add the 64bit file name of DLL.
17.Feb.2014 Revision 016	7 <sup>th</sup> Release. 1) "2. Operational Environment": Add Windows 8 2) "6.1 Inline Encoding": Add the "6.1.1 Default Encoding", "6.1.2 Type B Encoding" and "6.1.3 Type C Encoding". 3) "Appendix 2 Magnetic Data Code": Add the note.

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## 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.

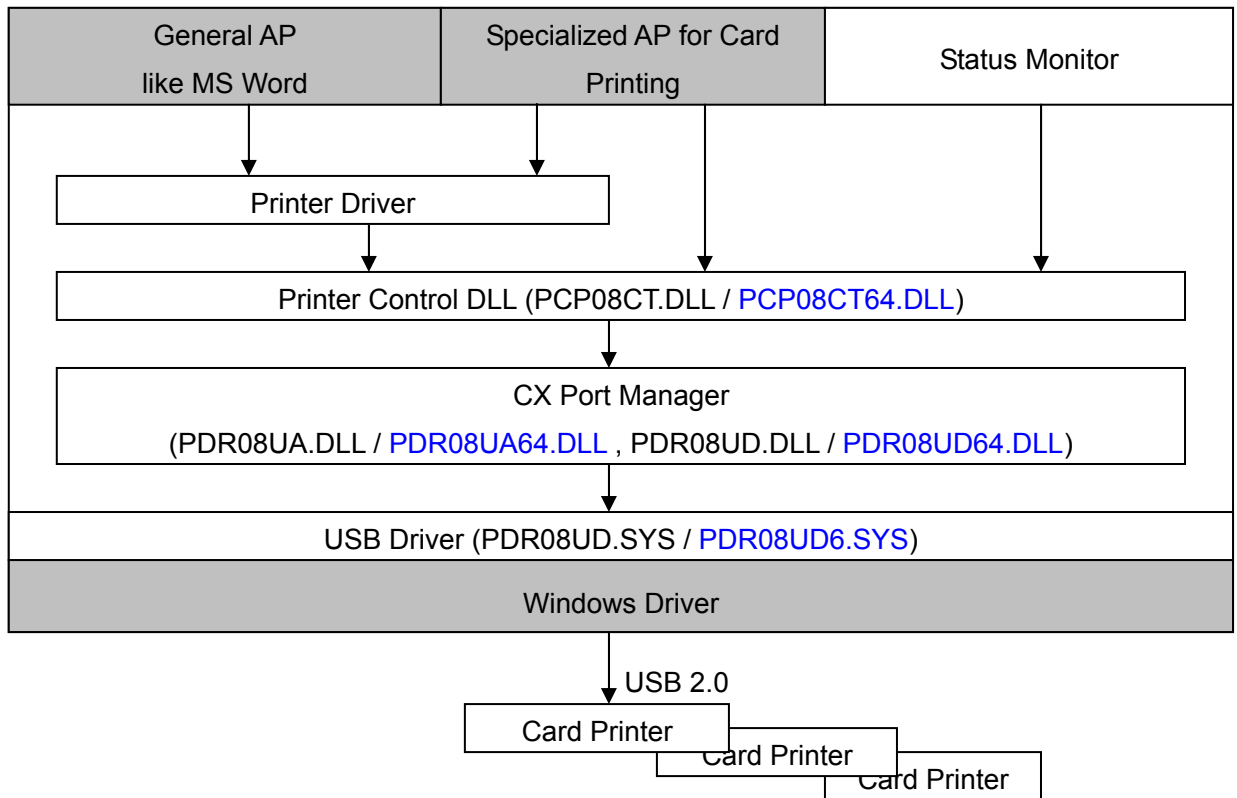
## 2. Operational Environment

Following table shows the operational environment of the software.

Item	Contents	Note
OS	Windows 8 32bit / 64bit Windows 7 (First Release, SP1) 32bit / 64bit Windows Vista (SP1, SP2) 32bit Windows XP (SP2, SP3) 32bit Windows 2000 Professional (SP4) 32bit	
Peripheral	CX-330 Card Printer	

### 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.



**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 7 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

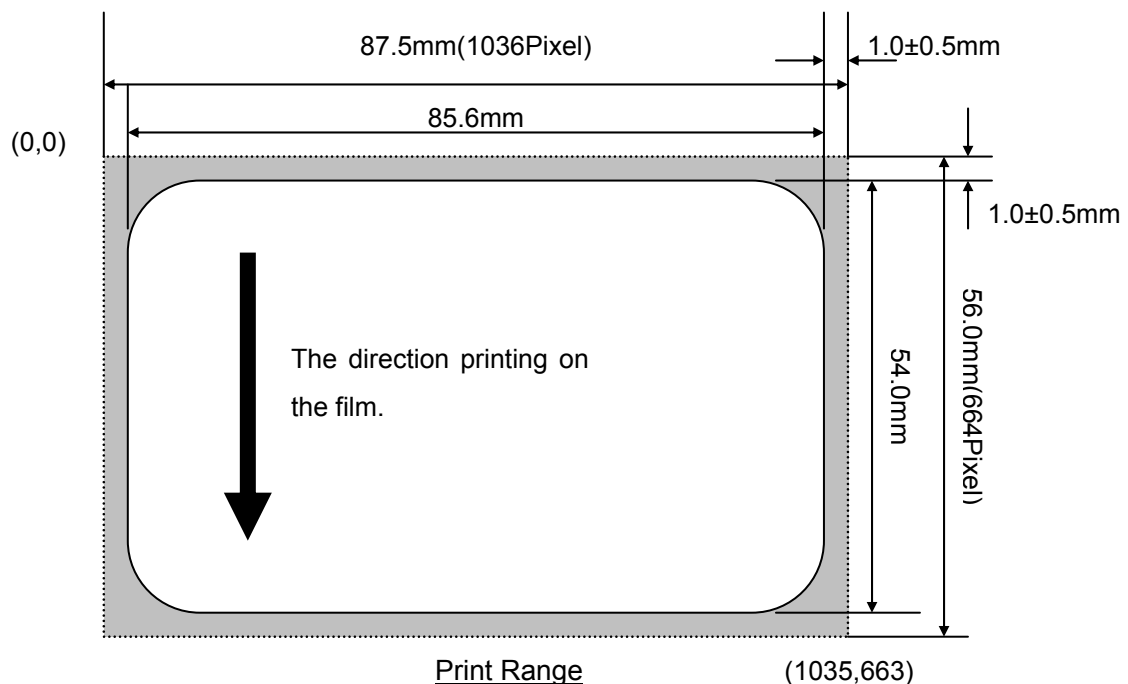
The printer command may fail if the card position is not proper for the command. For example, Retransfer command, which retransfers the image on the film to the card, will fail if the card is not positioned at Retransfer Position. Read Position command is prepared to know the card position.

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	PCP08CT.DLL
	64bit	PCP08CT64.DLL

**Note:** Use the PCP08CT.DLL of 32bit version when you use 32bit application software on 64bit OS.

### 5.2 Basic rule of the return code from functions

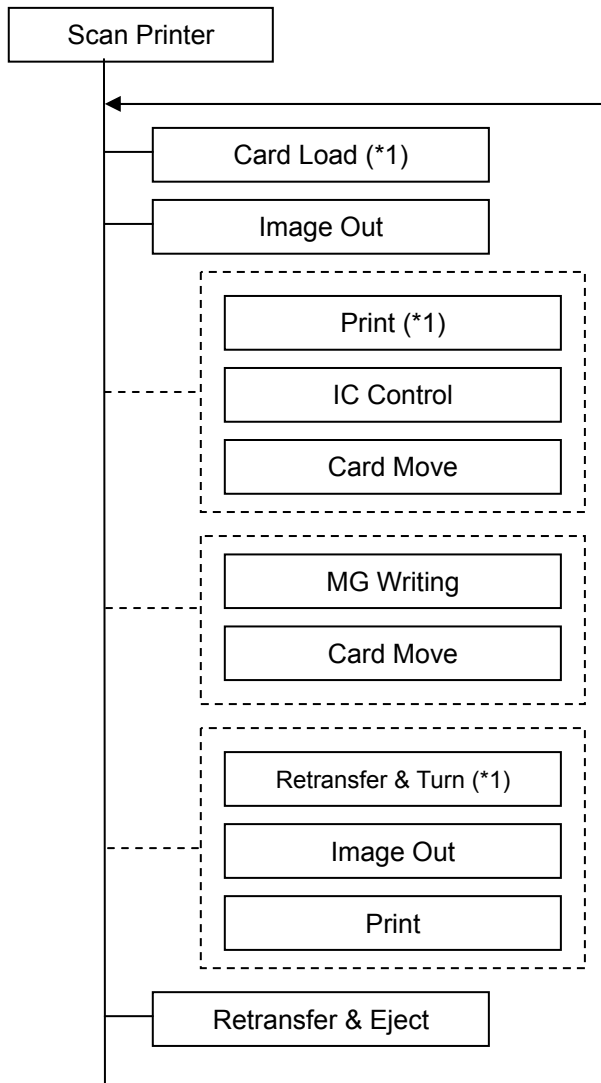
The return code from all functions is according to following rules if there is no explicit description.

- ◆ 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): CX-320 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 \*1 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.

## 5.4 Scan Printer

### 5.4.1 Scan Printer Functions

No.	Function Name	Explanation
1	int <b>CXCMD_ScanPrinter</b> (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 <b>CXCMD_ScanPrinterNext</b> (int *piSlot, int *piID)	Search for CX-320 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 returns 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
From 2 <sup>nd</sup> To 6th	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              Greater than 3: Reserved

Load Mode: The way to load the card

0: From the card tray            1: From the right side card entrance

## 5.6 Print on Retransfer Film

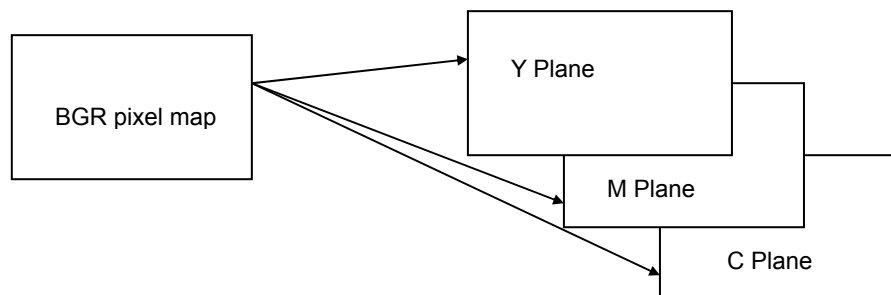
### 5.6.1 Image Out Function

No.	Function Name	Explanation
1	int CXCMD_ImageOut (int iSlot, int iLD, 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"> <li>◆ pbyPlane: Image Data. The size of image data must be 1036 x 664 bytes.</li> <li>◆ iLength: Size of image data in byte. This must be 1036x664.</li> <li>◆ iColor: Kind of image data. <ul style="list-style-type: none"> <li>0 if image data is for K ink.</li> <li>1 if image data is for C ink.</li> <li>2 if image data is for M ink.</li> <li>3 if image data is for Y ink.</li> <li>4 if image data is for UV ink.</li> <li>5 if image data is for Peel Off.</li> </ul> </li> <li>◆ 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"> <li>0 if Buffer 0.</li> <li>1 if Buffer 1.</li> </ul> </li> </ul>

#### 1) How to translate RGB to YMC planes

As CX-320 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

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**

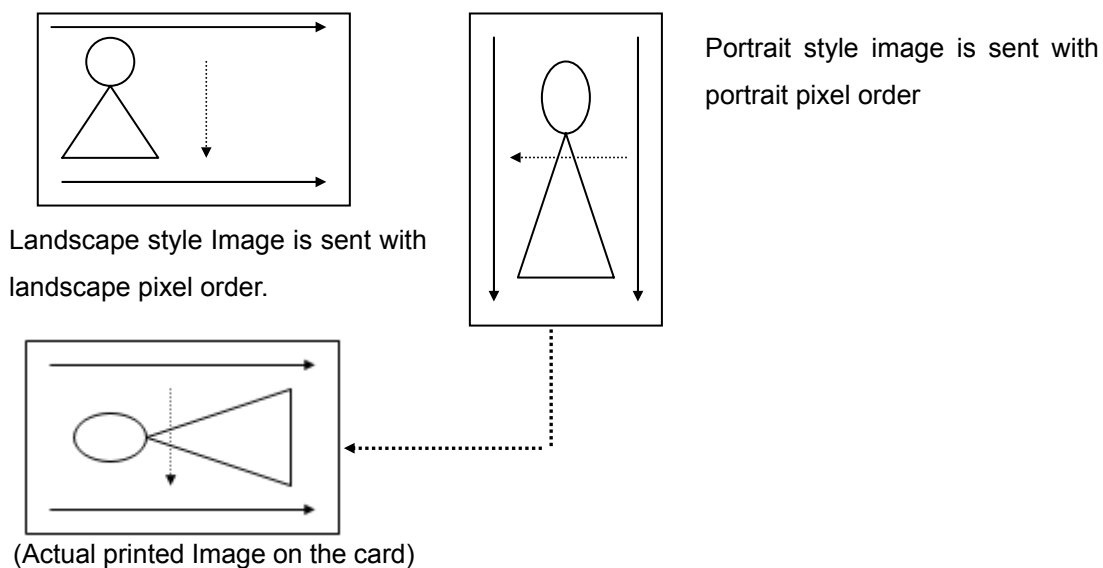
### 4) About Peel Off

“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.



- a. The solid line means the order of the pixels in a line to send to the printer.
- b. 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 iLD, int iColor, int iLength, BYTE *pbyBuffer)	Change LUT of the printer by using Print Format command. <ul style="list-style-type: none"> <li>◆ iColor: Each color has its own LUT. Specify the color here. 0 for K, 2 for C, 4 for M, 6 for Y</li> <li>◆ iLength: The length of LUT data in byte. From 0 to 256.</li> <li>◆ pbyBuffer: LUT Data.</li> </ul>

**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 iLD, int iColor, int iBuffer, int ilmmed)	<p>Print on Retransfer film by using Print command.</p> <ul style="list-style-type: none"> <li>◆ iColor Bit0-3: Specify the color to print. Bit0:YMC Bit1: K Bit2:UV Bit3:PO <b>Bit4-5: The location of the MAC address printed with UV.</b> <b>0: According to the printer setting</b> <b>1: Upper right corner</b> <b>2: Lower left corner</b> <b>Note) Please refer “Appendix4” too.</b></li> <li>◆ iBuffer: Specify Image buffer to print 0: Buffer-0 1: Buffer-1</li> <li>◆ ilmmed: Specify immediate flag which decides when printer reply. 0: Reply after printer finishes printing. 1: Reply immediately after printer accepts the command.</li> </ul>
2	int CXCMD_SecurityPrint (int iSlot,int iLD, int iColor, int iBuffer, int ilmmed)	<p><b>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.</b></p> <ul style="list-style-type: none"> <li>◆ iColor: Specify the color to print. Only K(0x02) must be specified. <b>Bit0:YMC Bit1: K Bit2:UV Bit3:PO</b></li> <li>◆ iBuffer: Specify Image buffer to print <b>0: Buffer-0 1: Buffer-1</b></li> <li>◆ ilmmed: Specify immediate flag which decides when printer reply. <b>0: Reply after printer finishes printing.</b> <b>1: Reply immediately after printer accepts the command.</b></li> </ul>

#### Notice:

1. As printing UV on YMC ink decreases the quality of YMC, UV must be retransferred on the card which YMC has been retransferred if UV image and YMC image overlaps.
2. Security Erase must be done after the (YMC)K ink is printed on the film and before it is not retransferred.

## 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"><li>◆ iDest: Destination to move card. 0: Retransfer position 1: Contact IC encoder 2: No-contact IC encoder 3: MG encoder 4: NG Card outlet. Card is discharged from printer.</li><li>◆ iFlip: Specify whether turn over the card or not. 0: Not turn over 1: Turn over the card before arriving at the destination.</li><li>◆ iFilmInit: Specify whether Film position is adjusted or not. This setting is effective only when Destination is NG Card outlet 0: Not adjusted. 1: Adjusted.</li><li>◆ iImmed: Specify immediate flag which decides when printer reply. 0: Reply after printer finishes loading. 1: Reply immediately after printer accepts the command.</li></ul>

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 ilmmed)	<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"> <li>◆ iDest: Destination to move card. 0: Retransfer position 1: Contact IC encoder 2: No-contact IC encoder 3: MG encoder 4: NG Card outlet. Card is discharged from printer.</li> <li>◆ iFlip: Specify whether turn over the card or not. 0: Not turn over 1: Turn over the card before arriving at the destination.</li> <li>◆ iFilmInit: Specify whether Film position is adjusted or not. This setting is effective only when Destination is NG Card outlet 0: Not adjusted. 1: Adjusted.</li> <li>◆ ilmmed: Specify immediate flag which decides when printer reply. 0: Reply after printer finishes moving. 1: Reply immediately after printer accepts the command.</li> </ul>

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	<b>int CXCMD_Retransfer (int iSlot, int iID, int ilmmed)</b>	<b>Retransfer the image printed on the film to the card, and move the card to Retransfer Position by using Media Control Command.</b>  <b>◆ ilmmed: Specify immediate flag which decides when printer reply.</b> <b>0: Reply after printer finishes retransfer and turning the card.</b> <b>1: Reply immediately after printer accepts the command.</b>

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 YMC(K) 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)	<p>Write data to magnetic stripe by using Magnetic Data Write command.</p> <ul style="list-style-type: none"> <li>◆ pbyBuff: Data to write. The code is ASCII character.</li> <li>◆ iLength: Size of data in byte.</li> <li>◆ iMagFormat: Specify kind of MG encoding.</li> </ul> <p>0x07:JIS-2(7bits)                  69 charcters at most</p> <p><del>0x16:ISO 1st track(6bits)        76 charcters at most</del></p> <p><del>0x17:ISO 1st track(7bits)        69 charcters at most</del></p> <p><del>0x24:ISO 2nd track(4bits)        37 charcters at most</del></p> <p><del>0x34:ISO 3rd track(4bits)        104 charcters at most</del></p> <p><del>0x37:ISO 3rd track(7bits)        69 charcters at most</del></p>

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)	<p>Read data from magnetic stripe by using Magnetic Data Read command.</p> <ul style="list-style-type: none"> <li>◆ pbyBuff: Pointer to the memory which MG data is stored. Data is set with ASCII character.</li> <li>◆ piLength: Size of data in byte is set.</li> <li>◆ iMagFormat: Specify kind of MG encoding.</li> </ul> <p>0x07:JIS-2(7bits)                  69charcters maximum</p> <p><del>0x16:ISO 1st track(6bits)        76charcters maximum</del></p> <p><del>0x17:ISO 1st track(7bits)        69charcters maximum</del></p> <p><del>0x24:ISO 2nd track(4bits)        37charcters maximum</del></p> <p><del>0x34:ISO 3rd track(4bits)        104charcters maximum</del></p> <p><del>0x37:ISO 3rd track(7bits)        69charcters maximum</del></p>

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	<b>int</b> <b>CXCMD_WriteISO3TrackMagData</b> (int iSlot, int iID, int iTrack1MagFormat, BYTE * pbyTrack1Buff, int iTrack1DataLength, int iTrack2MagFormat, BYTE * pbyTrack2Buff, int iTrack2DataLength, int iTrack3MagFormat BYTE * pbyTrack3Buff, int iTrack3DataLength, )	<b>Write data to the ISO MG stripe on the card by using ISO 3 Track Magnetic Data Write command.</b> <ul style="list-style-type: none"> <li>◆ <b>iTrack1MagFormat: Specify the format of Track1.</b>            0x00: Not to write            0xa6: Write as ISO 6 unit code. Max 76 characters            0xa7: Write as ISO 7 unit code. Max 69 characters</li> <li>◆ <b>pbyTrack1Buff: Data to write to track 1. The data must be set with ASCII.</b></li> <li>◆ <b>iTrack1DataLength: Size of data in pbyTrack1Buff.</b></li> <li>◆ <b>iTrack2MagFormat: Specify the format of Track2.</b>            0x00: Not to write            0xb4: Write as ISO 4 unit code. Max 37 characters</li> <li>◆ <b>pbyTrack2Buff: Data to write to track 2. The data must be set with ASCII.</b></li> <li>◆ <b>iTrack2DataLength: Size of data in pbyTrack2Buff.</b></li> <li>◆ <b>iTrack3MagFormat: Specify the format of Track3.</b>            0x00: Not to write            0xc4: Write as ISO 4 unit code. Max 104 characters            0xc7: Write as ISO 7 unit code. Max 69 characters</li> <li>◆ <b>pbyTrack3Buff: Data to write to track 3. The data must be set with ASCII.</b></li> <li>◆ <b>iTrack3DataLength: Size of data in pbyTrack3Buff.</b></li> </ul>

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	<b>int</b> <b>CXCMD_ReadISO3TrackMagData</b> <b>(int iSlot, int iID,</b> <b>int iTrack1MagFormat,</b> <b>BYTE *pbyTrack1Buff;</b> <b>int *piTrack1DataLength,</b> <b>int iTrack2MagFormat,</b> <b>BYTE *pbyTrack2Buff;</b> <b>int *piTrack2DataLength,</b> <b>int iTrack3MagFormat,</b> <b>BYTE *pbyTrack3Buff;</b> <b>int *piTrack3DataLength,</b> <b>)</b>	<p>Read data from the ISO MG stripe on the card by using ISO 3 Track Magnetic Data Read command.</p> <ul style="list-style-type: none"> <li>◆ 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</li> <li>◆ pbyTrack1Buff: Data of track 1. The data is set in ASCII.</li> <li>◆ iTrack1DataLength: Size of data in pbyTrack1Buff is set.</li> <li>◆ iTrack2MagFormat: Specify the format of Track2.  0x00: Not to read  0xb4: Read as ISO 4 unit code. Max 37 characters</li> <li>◆ pbyTrack2Buff: Data of track 2. The data is set in ASCII.</li> <li>◆ iTrack2DataLength: Size of data in pbyTrack2Buff is set.</li> <li>◆ 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</li> <li>◆ pbyTrack3Buff: Data of track 3. The data is set in ASCII.</li> <li>◆ iTrack3DataLength: Size of data in pbyTrack3Buff is set.</li> </ul>

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 XCMD\_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)	Initialize printer by using Rezero command. Printer discharges the card and adjusts both Retransfer position and Ink position.

## 5.12 Getting information and Changing setting

### 5.12.1 Inquiry Function

No.	Function Name	Explanation
1	<b>int CXCMD_StandardInquiry</b> (int iSlot, int iID, BYTE *pbyBuffer)	<b>Get Inquiry Data from the printer by using Inquiry command.</b> ◆ <b>pbyBuffer</b> : 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 “ <b>JVC</b> ” (In ASCII character)							
16-31	Product Identification “ <b>CX-330</b> ” (In ASCII character)							
32-35	Printer firmware Version(In ASCII character)							
36-39	Magnetic encoder option unit firmware version(In ASCII character)							
40-43	External IC option unit firmware version (In ASCII character)							
44-47	Laminator-1 option unit firmware version(In ASCII character)							
48	Configuration Revision Level(Binary number)							
49	Table Revision Level(Binary number)							
50-53	Laminator-2 option unit firmware version(In ASCII character)							
54-57	Turn Over option unit firmware version(In ASCII character)							
58-72	Thermal Head Information(ASCII)							
73-95	Reserved							

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



### 5.12.2 Mode Sense Function

No.	Function Name	Explanation
1	int CXCMD_ModeSense (int iSlot, int iID, <b>int iPC</b> , int iPage, BYTE *pbyBuffer)	<p>Get Mode Sense Data from printer by using Mode Sense command.</p> <ul style="list-style-type: none"> <li>◆ <b>iPC:Page Control. This must be 1. 0 is only for the testing and its behavior is not guaranteed.</b></li> <li>◆ iPage:Choose one of following Mode Sense Data. 0x23: Ink Information Data 0x28: Print Unit Information Data 0x2a: Encode Unit Information Data <b>0x2C: Laminator Unit Information Data</b> <b>0x2D: Network Information Data</b> <del>0x3f: All of Mode Sense data.</del></li> <li>◆ 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+50) bytes at least if Print Unit Information Data. (4+10) bytes at least if Encode Unit Information Data. <b>(4+24) bytes at least if Laminator Unit Information Data.</b> <b>(4+80) bytes at least if Network Information Data.</b> <del>(4+100) bytes if all of Mode sense data.</del></li> </ul>

Note: Mode Data Header is stored at the top of 4 bytes. Actual data is stored from 5<sup>th</sup> 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	Lot Number (ASCII) Only first 6 bytes are meaningful. The rest are filled with 0.							
39								

Ink Code : Specifies the kind of the ink.

0x00: YMCK      0x01: Reserved      0x02: YMCK-PO      0x03: K  
 0x04: YMCKK      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 (0x30)							
2-3	Reserved							
4	(MSB) Basic Resolution X (0x012C) (LSB)							
5								
6	(MSB) Basic Resolution Y (0x012C) (LSB)							
7								
8	HR Temperature Control							
9	K-YMC Eco Mode							
10-11	Reserved							
12	(MSB) Card Size X (LSB)							
13								
14	(MSB) Card Size Y (LSB)							
15								
16	MG Print(JIS)							
17	MG Mode							
18	IC Mode (Contact)							
19	IC Mode (Contactless)							
20	Film Code							
21	Ink Code							
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)
35	Velocity(Retransfer Back)
36	Heat Roller Temperature(Card Fix)
37	Velocity(Card Fix)
38	Reserved
39	Peel Wait Time
40	<b>Card Loading</b>
41	Resin Black Level
42	Resin Black Mode
43	A0 Level
44	A1 Level
45	Buzzer Mode
46	Power Save Mode
47	Film Quantity
48	Ink Quantity
49	Card Quantity

Basic Resolution X: Horizontal resolution in DPI. Actual resolution is about 300.59dpi.

Basic Resolution Y: Vertical resolution in DPI. Actual resolution is about 300.59dpi.

#### **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**

#### **K-YMC Eco Mode:**

**When this is enabled, the printing which is K on the front and YMC on the back is done by using 1 patch of the ink. This setting is only effective when YMCK ink is used.**

**0: Disabled          1: Enabled**

Card Size X: Horizontal Card size in Basic Resolution X.

Card Size Y: Vertical Card size in Basic Resolution Y.

#### **MG Print(JIS):**

**When it is enabled, the way of peeling off the retransfer film after the back side is retransferred is changed. It should be disabled if there is no JIS MG stripe on the back side. This is effective only when JIS MG Encoder is attached.**

**0: Disabled          1: Enabled**

MAG Mode: The status of MAG encoding unit.

0: None                      1: MAG Encoder

2: JIS MAG Encoder

IC Mode(Contact) : The status of Contact IC Encoder.

0: None                      1: Embedded IC Encoder

2: External IC Encoder

IC Mode(No Contact): The status of No Contact IC Encoder.

0: None

2: External small IC Encoder

3: External large IC Encoder

Film Code: The kind of retransfer film.

0: Standard (1000 panels)

2: Standard (750panels)

Ink Code: The kind of ink ribbon

0: YMCK    2:YMCK-PO    3:K    4: YMCKK    5: 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)

Card Code: The kind of Card.

0: Standard(Print Range is 1036 x 664 pixel)

2: Thin card(Card thickness is 0.25mm)

#### **Standby Mode:**

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

**0: Before retransferring the front side    1: Before retransferring the back side**

Print Position X: The location of the maximum printable area from left edge of the card is specified by the unit of Basic Resolution X.

Print Position Y: The location of the maximum printable area from top edge of the card is specified by the unit of Basic Resolution Y.

Print Size X: The width of the maximum printable area by the unit of Basic Resolution X.

Print Size Y: The height of the maximum printable area by the unit of Basic Resolution Y.

Heat Roller Temperature for Retransfer : From 0(Low) to 5(High).

Velocity for the front side Retransfer: From 0(Fast) to 12(Slow).

Velocity for the back side Retransfer: From 0(Fast) to 12(Slow).

Heat Roller Temperature for Card Fix: From 0(Low) to 5(High).

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

Peel off Wait Time: Wait time in second before peel. From 0 to 15(in seconds).

**Card Loading:**

**0: Normal**

**1: Right side card feeding mode**

Revision Number: Revision Number of Print Unit Information Data.

Resin Black Energy Level: From 0(Low) to 8(High).

Resin Black Mode: 0:Standard      1:Fine

A0 Energy Level: From 0(Low) to 8(High).

A1 Energy Level: From 0(Low) to 8(High).

Buzzer Mode: 0: Buzzer is enabled    1: Buzzer is disabled

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 tray.

0: Greater than 25 cards    1: From 1 to 24 cards    2: No cards  
3: Right Side Card loading mode

Note: The number of cards is a value in case of 0.76mm thickness card, but it is not precise. In case of Right side Card Loading mode Card Quantity value is fixed at 3.

(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							
3-6	Reserved							
7	Read Write Retry							
8	Reserved							
9	Reserved							

ISO Mode: ISO MAG encoder status

0: No ISO MAG encoder

1: 300 Oe (Lo-Co)

2: 2750 Oe (Hi-Co)

Read Write Retry: Retry count of MAG reading and writing when it fails. 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	Reserved							
3	Laminate A Film							
4-13	Reserved							
14	Laminate B Film							
15-23	Reserved							

Laminate A Film: This shows the kind of laminating film for the side-A.

0: 1mil patch film

1: 0.6mil patch film

2: Overlay film

3: 1mil Diff Patch Film 4: 0.6mil Diff Patch Film

Laminate B Film: This shows the kind of laminating film for the side-B.

0: 1mil patch film

1: 0.6mil patch film

2: Overlay film

3: 1mil Diff Patch Film 4: 0.6mil Diff Patch Film

Note: Side-A means the sunny side when the card is drawn into the laminator, side-B is the other side

**(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 (0x4E)							
2-5	(MSB)  IP Address(Binary)  (LSB)							
6-9	(MSB)  Sub Net Mask(Binary)  (LSB)							
10-13	(MSB)  Default Gateway(Binary)  (LSB)							
14	Session Timeout							
15	DHCP							
16	Host I/F							
17-26	Printer Name(ASCII)							
27-79	Reserved							

**Session Timeout:**

This specifies the time out interval to detects the disconnection from the host on TCP print session.. 0 is recommended.

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

**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.



### 5.12.3 Mode Select Function

No.	Function Name	Explanation
1	int CXCMD_ModeSelect (int iSlot, int iID, <b>int iSp</b> , int iPage, BYTE *pbyData)	<p>Change printer setting by using Mode Select command.</p> <ul style="list-style-type: none"> <li>◆ <b>iSp: Specify whether setting data is stored NVR( Non Volatile Memory) or not.</b>  <b>0: Not to store to NVR.</b>  <b>1: Store to NVR.</b></li> <li>◆ iPage: Choose one of following Mode Select Data.  0x28: Print Unit Information Data  0x2a: Encode Unit Information Data  <b>0x2C: Laminator Unit Information Data</b>  <b>0x2D: Network Information Data</b></li> <li>◆ pbyData: Pointer to the memory. Mode Select Data must have been set. The size of memory must be;  23 bytes if Print Unit Information Data.  10 bytes if Encode Unit Information Data.  <b>24 bytes if Laminator Unit Information Data.</b>  <b>80 bytes if Network Information Data.</b></li> </ul>

**Note1: When the setting value is 0xff, the corresponding setting is not changed.**

**Note2: In case that the setting values is 0xff, the corresponding setting of NVR becomes effective.**

**Note3: Set 0 at Reserve area in Mode Select Data. Set 0xff if the setting value 0xff is specified there explicitly.**

## 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 (0x15)							
2	IC Mode (Contact)							
3	IC Mode (Contactless)							
4	Heat Roller Temperature (Retransfer)							
5	Velocity(Retransfer)							
6	Velocity(Retransfer Back)							
7	Heat Roller Temperature (Card Fix)							
8	Velocity(Card Fix)							
9	K-YMC Eco Mode							
10	Peel Wait Time							
11	MG Print(JIS)							
12	Standby Mode							
13	Resin Black Level							
14	Resin Black Mode							
15	A0 Level							
16	A1 Level							
17	Film Code							
18	HR Temperature Control							
19	Card Code							
20	Card Loading							
21	Buzzer Mode							
22	Power Save Mode							

**IC Mode(Contact) : Change Contact IC Encoder option.**

**0: None                      1: Embedded IC Encoder**

**2: External IC Encoder**

**Notice: This must be 0xff if iSp is 0.**

**IC Mode(No-Contact): Change No-Contact IC Encoder option.**

**0: None**

**2: External small IC Encoder**

**3: External large IC Encoder**

**Notice: This must be 0xff if iSp is 0.**

Heat Roller Temperature for Retransfer : From 0(Low) to 5(High).

Velocity for the front side Retransfer: From 0(Fast) to 12(Slow).

Velocity for the back side Retransfer: From 0(Fast) to 12(Slow).

Heat Roller Temperature for Card Fix: From 0(Low) to 5(High).

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

Peel off Wait Time: Wait time in second before peel. From 0 to 15(in seconds).

#### **MG Print(JIS):**

**When it is enabled, the way of peeling off the retransfer film after the back side is retransferred is changed. It should be disabled if there is no JIS MG stripe on the back side. This is effective only when JIS MG Encoder is attached.**

**0: Disabled                      1: Enabled**

#### **Standby Mode:**

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

**0: Before retransferring the front side                      1: Before retransferring the back side**

Resin Black Energy Level: From 0(Low) to 8(High).

Resin Black Mode

**0:Standard                      1:Fine**

A0 Energy Level: From 0(Low) to 8(High).

A1 Energy Level: From 0(Low) to 8(High).

Film Code: The kind of retransfer film.

**0: Standard (1000 panels)**

**2: Standard (750panels)**

**Notice: This must be 0xff if iSp is 0.**

#### **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**

**Notice: This must be 0xff if iSp is 0.**

Card Code: The kind of Card.

**0: Standard(Print Range is 1036 x 664 pixel)**

**2: Thin card(Card thickness is 0.25mm)**

**Notice: This must be 0xff if iSp is 0.**

**Card Loading: Specify the way of card loading.**

**0: Card loading from the card tray    1: Right side card loading**

**Notice: This must be 0xff if SP is 0.**

Buzzer Mode:

0: Enable Buzzer    1: Disable Buzzer

**Notice: This must be 0xff if SP is 0.**

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			

**Notice: This must be 0xff if SP is 0.**

(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							
3-6	Reserved(0xff)							
7	Read Write Retry							
8	Reserved(0xff)							
9	Reserved(0xff)							

ISO Mode: ISO MAG encoder status

0: No Operation. ISO Mode is not changed.      1: 300 Oe (Lo-Co)  
2: 2750 Oe (Hi-Co)

Note: If MAG unit is not installed, 0 should be set on ISO Mode.

Read Write Retry: The number of Read/Write retries when MAG reading or MAG writing fails.  
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	Reserved (0xFF)							
4	Laminator-A Film Position							
5	Laminator-A Temp							
6	Laminator-A Speed							
7	Laminator-A Card Fan							
8	Laminator-A Cool Time							
9-14	Reserved (0xFF)							
15	Laminator-B Film Position							
16	Laminator-B Temp							
17	Laminator-B Speed							
18	Laminator-B Card Fan							
19	Laminator-B Cool Time							
20-23	Reserved (0xFF)							

Note1: This setting does not saved to NVR regardless of iSp setting. When the setting value is 0xFF, the setting in the laminator becomes effective.

Note2: Laminator-A is a laminator connecting directly to the printer, and Laminator-B is a laminator connecting to the laminator-A.

Note3: The setting to the not existing laminator is ignored by the printer.

Note4: Side-A means the sunny side when the card is drawn into the laminator, side-B is the other side.

Laminate Mode:

0: Laminate on side-A      1: Laminate on both side      2: Don't laminate  
3: Laminate on side-B

Laminator-A Film Position: Adjust laminating position of Laminator-A.

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

Laminator-A Temp : Set the heat roller temperature in centigrade of Laminator-A.

0: 120	1: 125	2: 130	3: 135	
4: 140	5: 145	6: 150	7: 155	
8: 160	9: 165	10: 170	11: 175	
12: 180	13: 185	14: 190	15: 195	16: 200

Laminator-A Film Speed : Set the film speed of Laminator-A.

0: 2.0mm/s	1: 2.5mm/s	2: 3.0mm/s	3: 3.5mm/s
4: 4.0mm/s	5: 4.5mm/s	6: 5.0mm/s	7: 5.5mm/s
8: 6.0mm/s	9: 6.5mm/s	10: 7.0mm/s	11: 7.5mm/s
12: 8.0mm/s	13: 8.5mm/s	14: 9.0mm/s	15: 9.5mm/s
16: 10.0mm/s			

Laminator-A Card Fan: Set the fan speed of Laminator-A..

0: Stop	1: Low	2: Middle	3: High
4: Maximum			

Laminator-A Cooling Time: Set the cooling time of Laminator-A..

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

Laminator-B Film Position: Adjust laminating position of Laminator-B.

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

Laminator-B Temp : Set the heat roller temperature in centigrade of Laminator-B.

0: 120	1: 125	2: 130	3: 135
4: 140	5: 145	6: 150	7: 155
8: 160	9: 165	10: 170	11: 175
12: 180	13: 185	14: 190	15: 195
16: 200			

Laminator-B Film Speed : Set the film speed of Laminator-B.

0: 2.0mm/s	1: 2.5mm/s	2: 3.0mm/s	3: 3.5mm/s
4: 4.0mm/s	5: 4.5mm/s	6: 5.0mm/s	7: 5.5mm/s
8: 6.0mm/s	9: 6.5mm/s	10: 7.0mm/s	11: 7.5mm/s
12: 8.0mm/s	13: 8.5mm/s	14: 9.0mm/s	15: 9.5mm/s
16: 10.0mm/s			

Laminator-B Card Fan: Set the fan speed of Laminator-B..

0: Stop	1: Low	2: Middle	3: High
4: Maximum			

Laminator-B Cooling Time: Set the cooling time of Laminator-B..

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

#### (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) IP Address (LSB)							
6-9	(MSB) Sub Net Mask (LSB)							
10-13	(MSB) Default Gateway (LSB)							
14	Session Timeout							
15	DHCP							
16	Host I/F							
17-26	Printer Name(ASCII)							
27-79	Reserved							

Note: This setting is saved to NVR regardless of SP setting. And they becomes effective after the printer is powered again.

##### Session Timeout:

This specifies the time out interval to detects the disconnection from the host on TCP print session. 0 is recommended. This becomes effective after it is set.

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

##### 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.



### 5.12.4 Log Sense Function

No.	Function Name	Explanation
1	int CXCMD_LogSense (int iSlot, int iLD, int iPage, BYTE *pbyBuffer)	<p>Get Log Sense Data from printer by using Log Sense command.</p> <ul style="list-style-type: none"> <li>◆ iPage: Choose Log Sense data. 0x38: Medium Quantity page <b>0x39: Miscellaneous page</b></li> <li>◆ pbyBuffer: Pointer to the memory being stored Log Sense Data. The size of memory must be enough size to store Log Sense Data.</li> </ul>

#### 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 (0x0020)(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 printed cards. It can be set to zero)(LSB)							
17								
18								
19								

20	(MSB)	Parameter Code (0x0002)							(LSB)
21									
22	0	0	0	0	0	0	0	0	
23	Parameter Length (0x04)								
24	(MSB)	Head count (Number of printed colors)							(LSB)
25									
26									
27									
28	(MSB)	Parameter Code (0x0003)							(LSB)
29									
30	0	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 by the printer)							(LSB)
33									
34									
35									

## 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 (0028H)(LSB)							
3								
4	(MSB)Parameter Code (0000H)(LSB)							
5								
6	00H							
7	Parameter Length (0004H)							
8	(MSB)NG Count (Number of the cards which discharged to the NG Card Tray. It is initialized when the NG Card Tray is drawn out. This is meaningful in case of Right Side Card Feeding Mode)(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)
36-43	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
- 54: Retransferring(Card is discharged after that)
- 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
- 70: The card cannot pass the laminator-1 by the error of Laminator-1.
- 71: The card cannot pass the laminator-1 by the error of Laminator-2.

72: The card cannot pass the laminator-1 by the error of Turn Over Unit..

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

#### 5.12.5 Log Select Function

No.	Function Name	Explanation
1	int CXCMD_ LogSelect (int iSlot, int iLD, <b>int iMod)</b>	Initialize Free Count of the printer. Free Count is the accumulating counter of the card being printed. <b>Set 0 always at iMod.</b>

## 6. How to encode with Printer Driver

The printer drivers offers a function for encoding. Normally, It is not possible to pass the encode data to the printer driver. We offers 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 preceding 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. Following table shows the prefix and its meaning.

#### 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 MAG encoding.
~?1	76	6 unit	Text is processed as the data for ISO track1 MAG encoding
~?2	37	4 unit	Text is processed as the data for ISO track2 MAG encoding
~?3	104	4 unit	Text is processed as the data for ISO track3 MAG 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
<b>~?6</b>	<b>69</b>	<b>7 unit</b>	<b>Text is processed as the data for ISO track1 MAG encoding</b>
<b>~?7</b>	<b>69</b>	<b>7 unit</b>	<b>Text is processed as the data for ISO track3 MAG encoding</b>

#### Encoding Prefix

\*Column “Max Length” shows the maximum number of MAG 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 Contac 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.



**~?112345678**  
**90**  
**ABCD**

### 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

#### Encoding Prefix

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

#### Encoding Prefix

\*Column “Max Length” shows the maximum number of MAG 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	<b>9024</b>	<b>ISO Track1 Magnetic encoding (7Unit, Max 69 characters)</b>
8	<b>9025</b>	<b>ISO Track3 Magnetic encoding (7Unit, Max 69 characters)</b>

### (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 1<sup>st</sup> 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

**PDR09IC0.DLL:** For Non-contact IC encoding in case of USB interface.

**PDR09IC1.DLL:** For Contact IC encoding in case of USB interface.

**PDR10IC0.DLL:** For Non-contact IC encoding in case of Network interface.

**PDR10IC1.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      lpszInData,    // encoding data
    int         cbInput,        // size of encoding data
);
```

Parametr	USB Interface	Network interface
<b><a href="#">lpiPrinterAdr</a></b>	<b>ID of the printer.</b> <b>From bit0 to bit7: ID</b> <b>From bit8 to bit15: Slot number</b>	<b><a href="#">Connection information to the printer.</a></b>
<b><a href="#">lpiErrorCode</a></b>	<b>This is not used.</b>	
<b><a href="#">lpPrinterName</a></b>	<b>Printer Name in ASCII. It can be set with the printer operation or <a href="#">CXCMD_ModeSelect()</a>.</b>	
<a href="#">lpszInData</a>	Encoding data passed by Inline Encoding or ExtEscape().	
<a href="#">cbInput</a>	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 up side down
Rotate by 180 [Back side]	R/W	0x0207	0x0004	0x00000000	Not rotate the image of back side.
				0x00000001	Make the back side image up side 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  Note) This parameter is effective from the printer driver version 3.0.0.9.	R	0x0901	0x0005		If the interface is unknown;  1st byte: 0x00  From 2nd byte to 5th byte: Unpredictable  Note) In the case of followings, Unknown happens.  1) Printer driver is not connected to the port directly.  2) Printer Pool is enabled, and multiple ports are specified.  3)The setting of the port is invalid.
					If the interface is USB;  1st byte: 0x01  2nd byte: Slot number  3rd byte: ID  4th byte: Unpredictable
					If the interface is network;  1st byte: 0x02  From 2nd byte to 5th byte: IP address  Ex) If IP address is 192.168.0.1;  2nd byte: 192  3rd byte: 168  4th byte: 0  5th byte: 1  Note)In the case that the setting of the Port Monitor is either "No Selection" or "No Device", IP address is filled with 0.

## 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.

## <Appendix1 Error Code table>

The configuration of error is shown in the table bellow. 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 r.
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

## <Appendix2 Magnetic Data Code>

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

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	i	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.



### <Appendix3 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 hopper tray is not closed.
2	02	D1	00	Door Open	Printer door is opened.
3	02	D3	00	Busy of Transporting	Busy because of transporting card or retransferring. 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". Note: This error is not returned from functions. Control Function returns positive value as BUSY.
6	02	D6	00	No Cassette	Ink ribbon cassette is not attached, or/and Retransfer film cassette is not attached.
7	02	D7	00	No Cleaning Ro.	Cleaning roller is not attached.
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	Load Failure	The card is not loaded within 10 seconds in Right Side Card Loading mode. Note) Load Card command can be accepted even if this error is activated.
21	03	A0	00	Media Broken	Retransfer film is broken.
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 Broken	Ink ribbon is broken.
26	03	B1	00	Ink Search	Mark on the ink ribbon could not be detected, or TAG on the ink ribbon is invalid.
27	03	BB	00	EXT. Jam	Card jam happens in the external IC unit.

No.	Error Code			Name	Content
	SK	ASC	ASQ		
28	04	44	00	Hardware	Time out was detected by the printer firmware.
29	04	A9	00	MG Unconnected	MG unit is not attached correctly.
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	MG Communicate	Communication error happens between printer and MG unit.
33	04	B9	00	EXT. Unconnected	External IC unit is not attached correctly.
34	04	BA	00	EXT. SW Setting	Dip switch setting in the external IC unit is not correct.
35	04	BE	00	EXT. Communicate	Communication error happens between printer and external IC unit.
36	04	BF	00	EXT2. Communicate	Communication error happens between printer and laminator.
37	04	C0	00	Turn Over Unit	Turnover unit is out of order.
38	04	C1	00	Heater Cam	Heater Cam is out order.
39	04	D8	00	Hardware	Circuit trouble was detected at the initialization. Ex. Vth power cannot be put out from the power supply unit.
40	04	F0	00	TR Overheat	The temperature of retransfer roller is too hot.
41	04	F1	00	TR Broken	Retransfer roller is out of order.
42	04	F2	00	TR Sensor Broken	Retransfer roller thermister is out of order.
43	04	F3	00	RR Overheat	The temperature of bend remdil roller is too hot.
44	04	F4	00	RR Broken	Bend remdil roller is out of order.
45	04	F5	00	RR Sensor Broken	Bend remdil roller thermister 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	EEPROM Broken	EEPROM on the CPU circuit board or the head EEPROM is defective.

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	Invalid LUN	The content of command is invalid. LUN value in CDB is invalid.
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.

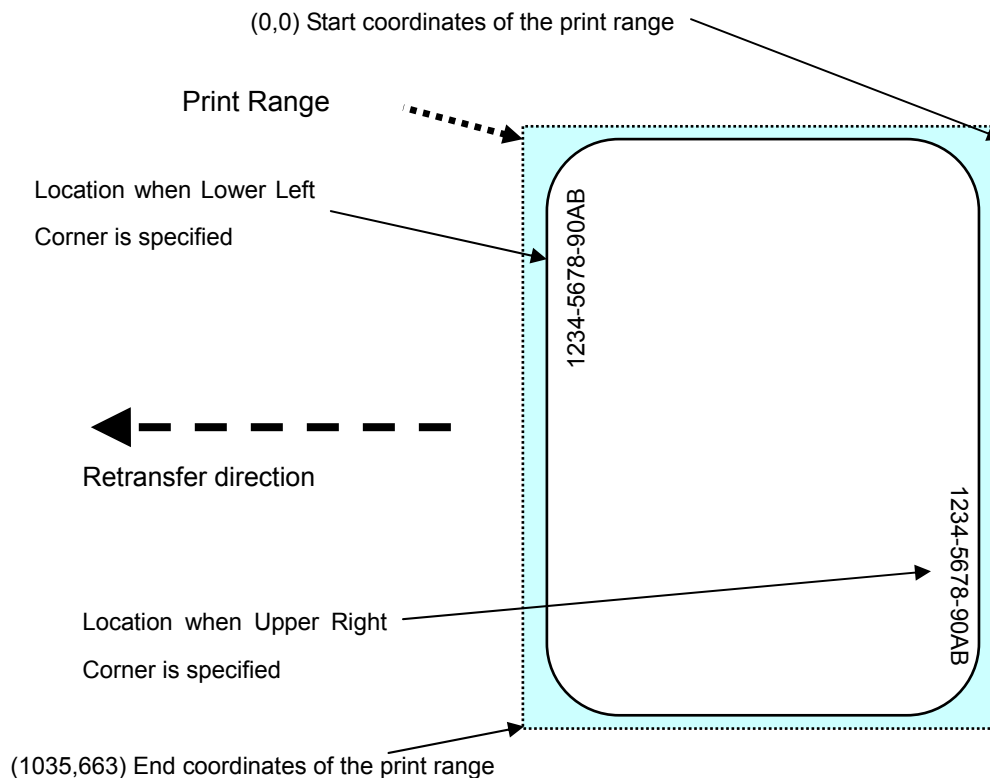
## <Appendix4 The location of the MAC address printed with UV >

CX-330 prints always its MAC address at the corner of the card when the UV ink is used for printing. As printing UV on YMC directory makes it difficult to retransfer YMC to the card, it is important to care about the place where the MAC address is printed when you don't use the printer driver. In case that YMC image overlaps the place where the MAC address is printed, UV ink must be printed after YMC is retransferred.

Note: This function is available to following software and firmware environments;  
PCP08CT.DLL / PCP08CT64.DLL : version 7.6.15.0 and later.  
PCP09CT.DLL / PCP09CT64.DLL : version 7.9.28.0 and later.  
Printer Driver version : 3.0.0.9 and later.  
Printer firmware version : A014 and later.

### 1). The location where the MAC address is printed

The location can be specified by the command or the operation panel 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 rotates the card by 180 degree, the same characters are printed at the same location.



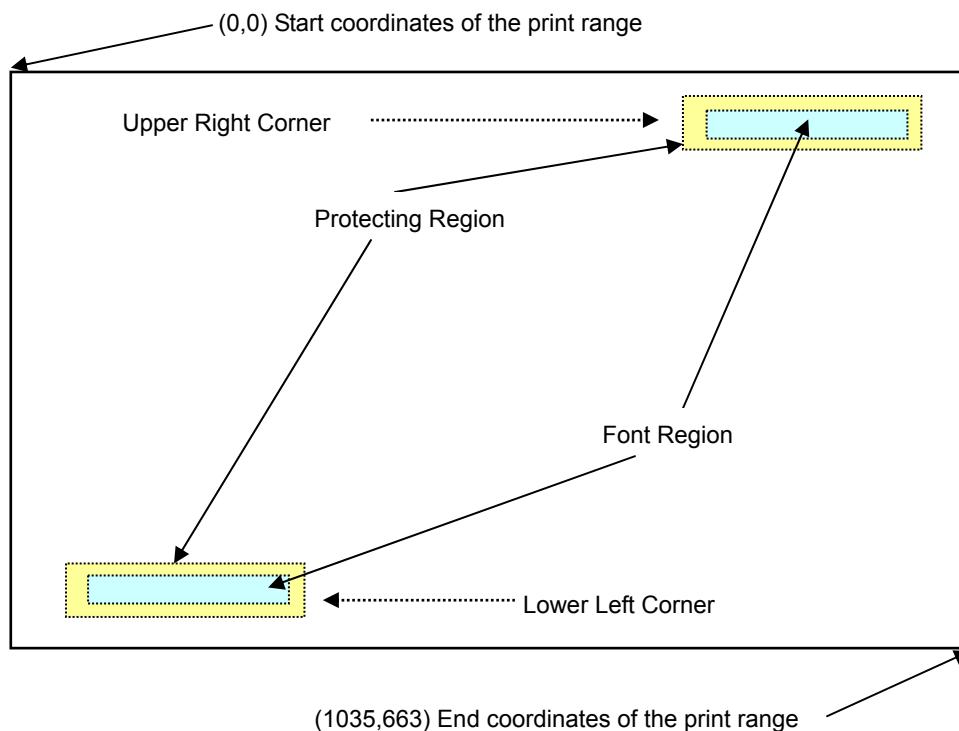
## 2). More about the location

### (1) Structure of the font

Height	18 pixels.(Approx.1.5mm).
Width	16 pixels including 2 white pixels on both sides(Approx. 1.4mm)

### (2) Protecting Region on the print range

We defines two regions for MAC address printing. One is Font Region and another is Protecting Region. MAC address is printed at Font Region. So the UV image in Font Region is replaced with MAC Address. Protecting Region is a recommended region where YMC-K 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
Protecting Region	Width	230 pixels	
	Height	34 pixels	
	X	764	42
	Y	18	611

