

Sublimation type Retransfer Card Printer CX-330

Technical Document **for Software Development**

Revision 015

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<Revision Contents>

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|------------------------------|--|
| 11.Jun.2007 Revision 010 | 1 st Release. The difference from CX-320 is described with bold and blue characters. |
| 13.Sep.2007 Revision 011 | 2 nd 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 rd 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 th 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 th 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 th Release. 1) "2. Operational Environment": Add Windows 7 2) "3. System Configuration" / "5.1 Program Construction": Add the 64bit file name of DLL. |

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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.

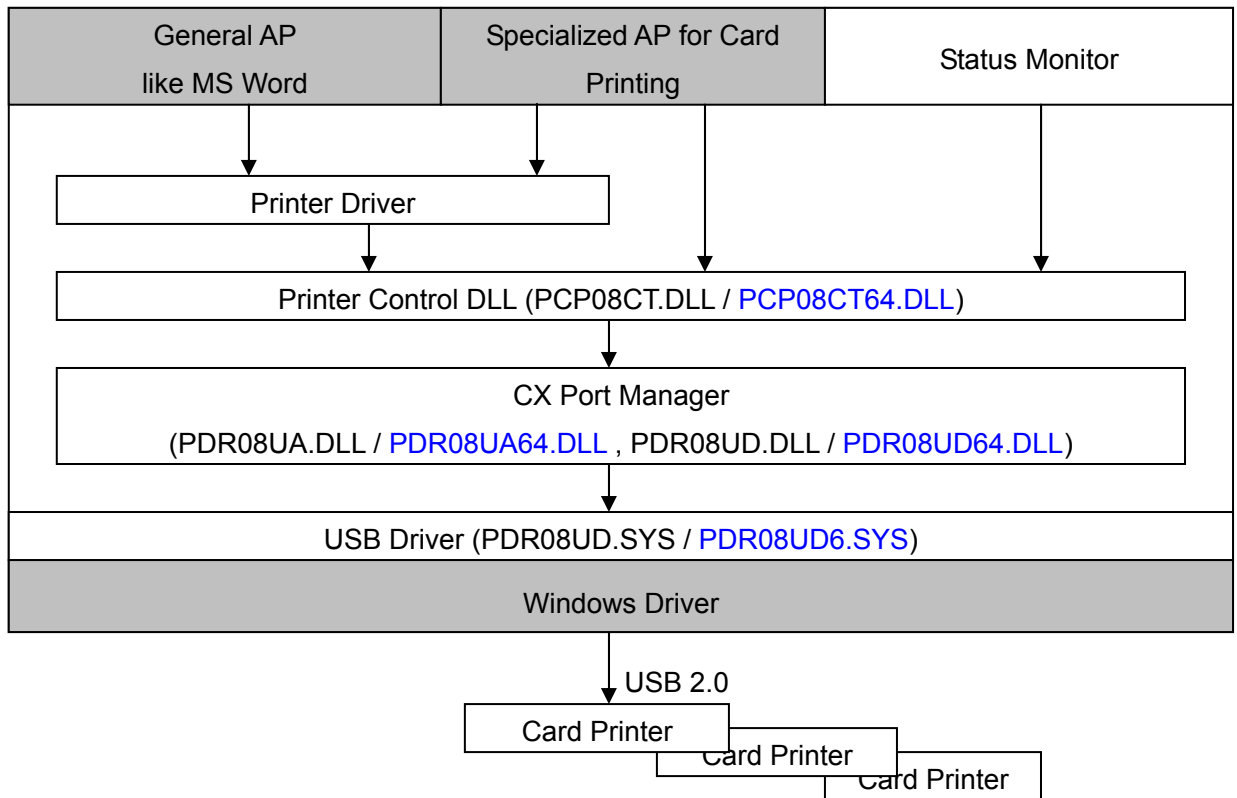
2. Operational Environment

Following table shows the operational environment of the software.

| Item | Contents | Note |
|------------|---|------|
| OS | Windows 7 32bit / 64bit Windows Vista 32bit Windows XP (Service Pack 2) 32bit Windows 2000 Professional (Service Pack 4) 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

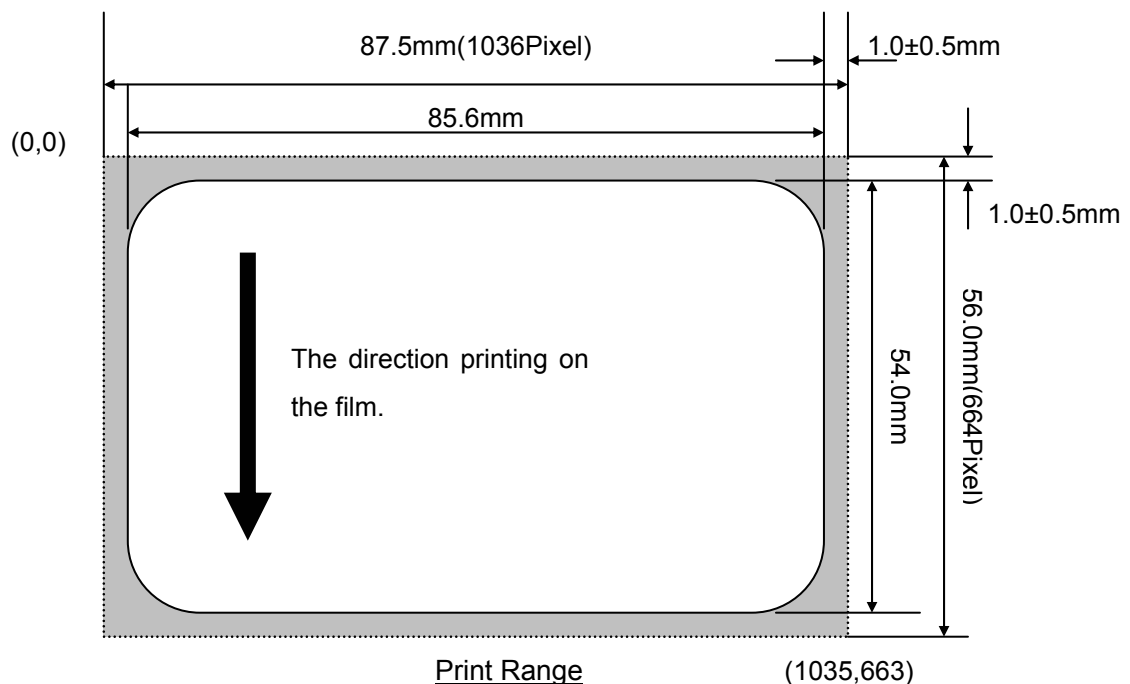
The printer command may fail if the card position is not proper for the command. For example, Retransfer command, which retransfers the image on the film to the card, will fail if the card is not positioned at Retransfer Position. Read Position command is prepared to know the card position.

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.

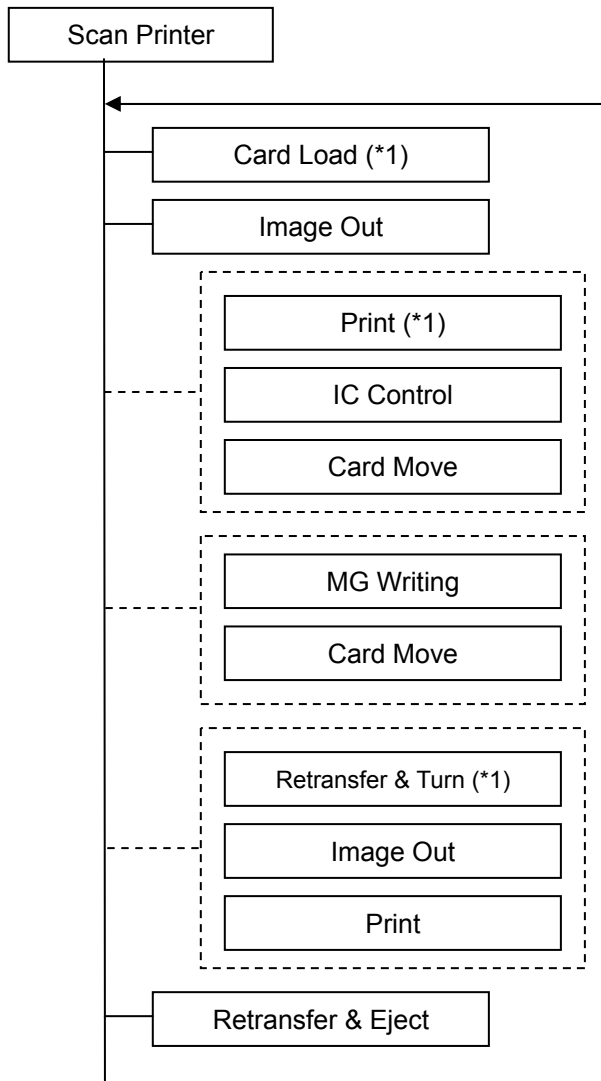
5.2 Basic rule of the return code from functions

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 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 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 nd 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

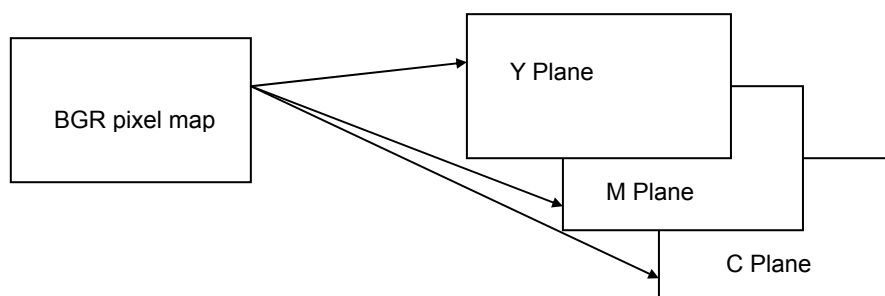
5.6.1 Image Out Function

| 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"> ◆ pbyPlane: Image Data. The size of image data must be 1036 x 664 bytes. ◆ iLength: Size of image data in byte. This must be 1036x664. ◆ 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 Peel Off. ◆ 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

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**

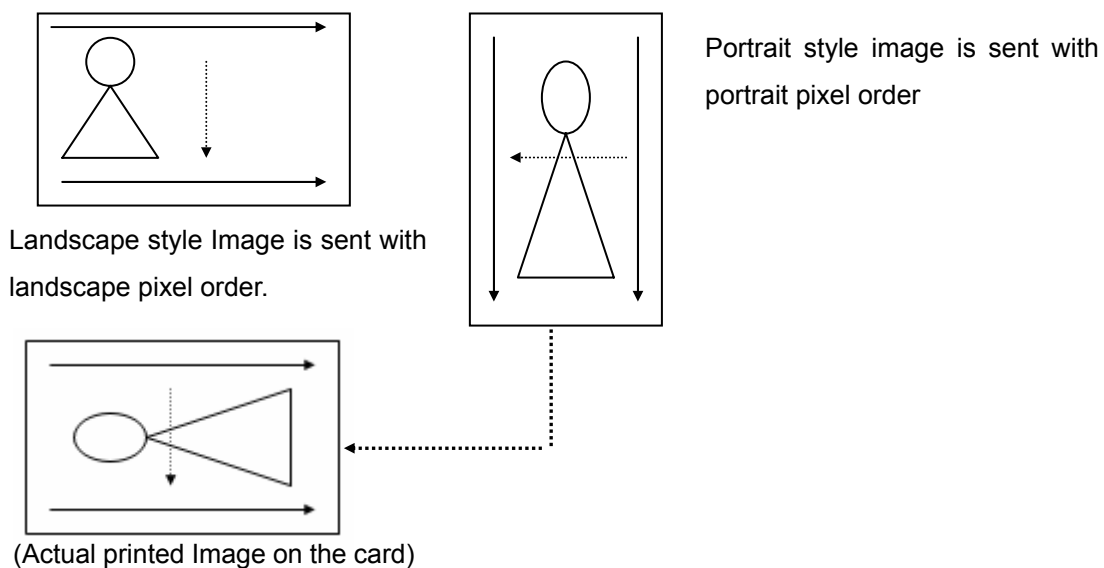
4) About Peel Off

“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.



- 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 iLD, int iColor, int iLength, BYTE *pbyBuffer) | Change LUT of the printer by using Print Format command. <ul style="list-style-type: none"> ◆ 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. 0: According to the printer setting 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. |
| 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. |

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">◆ 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.◆ iFlip: Specify whether turn over the card or not. 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 0: Not adjusted. 1: Adjusted.◆ iImmed: Specify immediate flag which decides when printer reply. 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 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"> ◆ 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. ◆ iFlip: Specify whether turn over the card or not. 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 0: Not adjusted. 1: Adjusted. ◆ ilmmed: Specify immediate flag which decides when printer reply. 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 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"> ◆ pbyBuff: Data to write. The code is ASCII character. ◆ iLength: Size of data in byte. ◆ iMagFormat: Specify kind of MG encoding. <p>0x07:JIS-2(7bits) 69 charcters at most</p> <p>0x16:ISO 1st track(6bits) 76 charcters at most</p> <p>0x17:ISO 1st track(7bits) 69 charcters at most</p> <p>0x24:ISO 2nd track(4bits) 37 charcters at most</p> <p>0x34:ISO 3rd track(4bits) 104 charcters at most</p> <p>0x37:ISO 3rd track(7bits) 69 charcters at most</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"> ◆ 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. <p>0x07:JIS-2(7bits) 69charcters maximum</p> <p>0x16:ISO 1st track(6bits) 76charcters maximum</p> <p>0x17:ISO 1st track(7bits) 69charcters maximum</p> <p>0x24:ISO 2nd track(4bits) 37charcters maximum</p> <p>0x34:ISO 3rd track(4bits) 104charcters maximum</p> <p>0x37:ISO 3rd track(7bits) 69charcters maximum</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 | 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,) | Write data to the ISO MG stripe on the card by using ISO 3 Track Magnetic Data Write command. <ul style="list-style-type: none"> ◆ iTrack1MagFormat: Specify the format of Track1. 0x00: Not to write 0xa6: Write as ISO 6 unit code. Max 76 characters 0xa7: Write as ISO 7 unit code. Max 69 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. 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. 0x00: Not to write 0xc4: Write as ISO 4 unit code. Max 104 characters 0xc7: Write as ISO 7 unit code. Max 69 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,) | <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"> ◆ 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 ◆ 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 ◆ 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) | 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 | int CXCMD_StandardInquiry (int iSlot, int iID, BYTE *pbyBuffer) | Get Inquiry Data from the printer by using Inquiry command. ◆ 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 “ JVC ” (In ASCII character) | | | | | | | |
| 16-31 | Product Identification “ CX-330 ” (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, int iPC , int iPage, BYTE *pbyBuffer) | <p>Get Mode Sense Data from printer by using Mode Sense command.</p> <ul style="list-style-type: none"> ◆ iPC:Page Control. This must be 1. 0 is only for the testing and its behavior is not guaranteed. ◆ 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 0x3f: All of Mode Sense 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+50) 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+80) bytes at least if Network Information Data. (4+100) bytes if all of Mode sense 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 | 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 | Card Loading |
| 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, 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. 0: Not to store to NVR. 1: Store to NVR. ◆ iPage: Choose one of following Mode Select Data. 0x28: Print Unit Information Data 0x2a: Encode Unit Information Data 0x2C: Laminator Unit Information Data 0x2D: Network Information Data ◆ 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. 24 bytes if Laminator Unit Information Data. 80 bytes if Network Information Data. |

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 iID, int iPage, BYTE *pbyBuffer) | <p>Get Log Sense Data from printer by using Log Sense command.</p> <ul style="list-style-type: none"> ◆ iPage: Choose Log Sense data. 0x38: Medium Quantity page 0x39: Miscellaneous 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 (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, int iMod) | Initialize Free Count of the printer. Free Count is the accumulating counter of the card being printed. Set 0 always at iMod. |

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. 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.

| 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 |
| ~?6 | 69 | 7 unit | Text is processed as the data for ISO track1 MAG encoding |
| ~?7 | 69 | 7 unit | Text is processed as the data for ISO track3 MAG 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".
- 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.



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       lpszInData,    // encoding data
    int          cbOutput,      // unused.
    LPSTR        lpszOutData    // 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) |

(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

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 |
|--------------------------------------|---|---|
| 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(). | |
| lpszInData | 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 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 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 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 | 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 | : < > |

Start Code and End Code must not be used 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 | !“ & ‘ * + , : ; < = > @ [\] _ |

Start Code and End Code must not be used 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.

<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. |

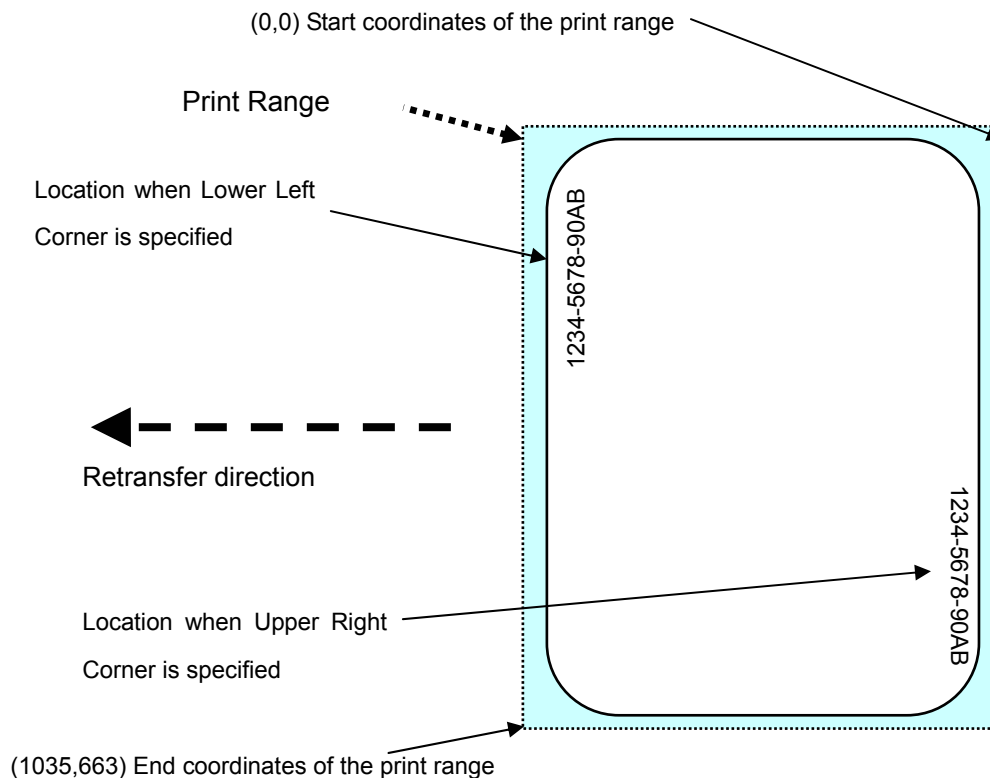
<Appendix4 The location of the MAC address printed with UV >

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 version 7.6.15.0 and later.
PCP09CT.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.



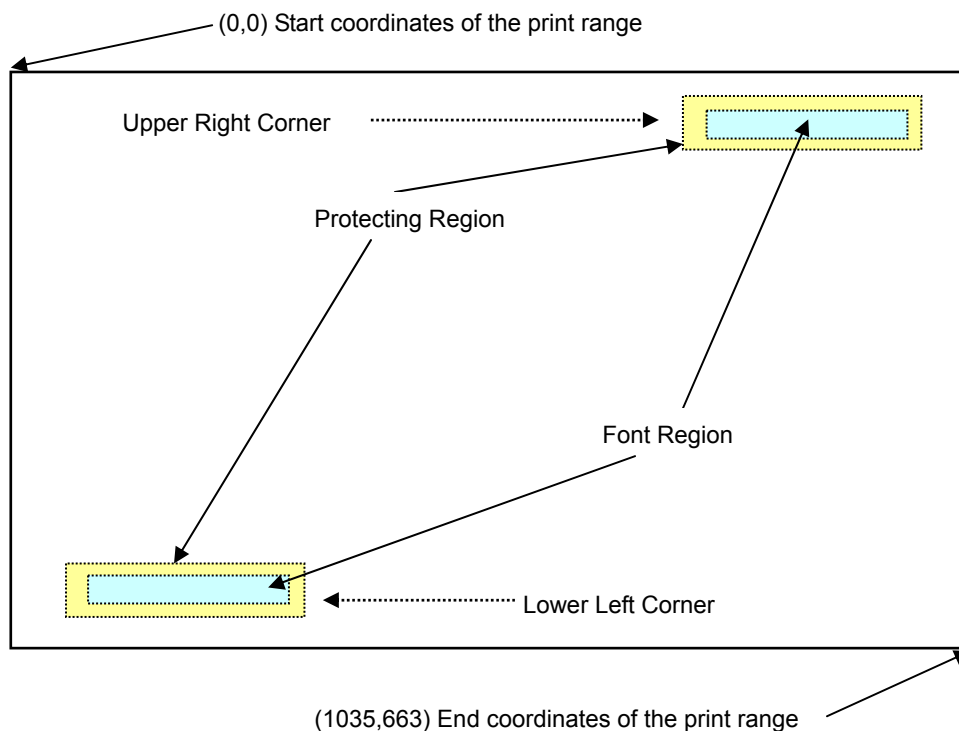
2). More about the location

(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 |

