

EPSON®

Programming Guide

For

6 Color

EPSON Ink Jet Printer

EP-904F/EP-904A

EP-804A/EP-804AW/EP-804AR

Artisan 837/Artisan 730

Epson Stylus Photo

PX830FWD/PX730WD/TX730WD

(Level I)

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CHAPTER 1: Introduction

This section of this handbook will provide a technical overview of EPSON EP-904F/ EP-904A/ EP-804A/ EP-804AW/ EP-804AR/ Artisan 837/ Artisan 730/ Epson Stylus Photo PX830FWD/ PX730WD/ TX730WD to facilitate driver development.

1.1 Features

This printer is a narrow carriage of the six color inkjet printers introduced by EPSON. This printer's advanced EPSON Micro Piezo technology produces smaller ink droplets. This printer is an ideal business printer. They will deliver resumes, letterheads, reports, envelopes and presentations on all types of paper or transparent media.

This printer uses the original separate ink cartridge.

This printer incorporates the following features:

- New Multi-Function Printer with card slots
- Highest resolution at 5760x1440dpi
- Individual New Ink Cartridge with large ink volume
- Zero margin / Borderless printing for Faster Speed
- I/F : USB2.0 High speed

This printer is bi-directional interfaces and EPSON's Remote Mode bi-directional printer control language, the host computer can obtain useful printer status information.

See Chapter 6 in this Handbook for further information concerning EPSON's Remote Mode printer control language.

Table 1 Outline and feature of printer

	Outline and feature
Print Head	180 nozzles for Black, Cyan, Magenta, Yellow, Light Cyan, Light Magenta Original individual ink cartridge.
Interface (s)	USB2.0
Printer Language	ESC/P Raster & Remote Mode
Resolution Max (dpi)	5760(h) x 1440(v)
Font	No support
Support Code table	No support
Ink Cartridge Type	*CMYKLcLm

* - - CMYKLcLm refers to: Cyan, Magenta, Yellow, Black, Light Cyan and Light Magenta

USB Endpoint

I/F No.	Endpoint Address	Endpoint Type	Linked Interface
0x00	0x01	Bulk Out	Scanner
	0x02	Bulk In	
0x01	0x04	Bulk Out	Printer
	0x05	Bulk In	
0x02	0x07	Bulk Out	Card
	0x08	Bulk In	

CHAPTER 2: PAPER TYPES AND SIZES Media Specification

In addition to the standard plain paper and envelope sizes, EPSON provides special paper types in the following sizes:

2.1. Paper Sizes for this printer


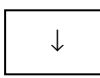
2.1.1 Paper Types

Paper Type		Size	US	EUR	ASIA/PAC	Japan
Plain paper	Cut sheets	A4	YES	YES	YES	YES
		A5	NO	YES	YES	YES
		A6	YES	YES	YES	YES
		B5	NO	YES	YES	YES
		Legal	YES	YES	YES	YES
		Letter	YES	YES	YES	YES
		Half-Letter	YES	NO	NO	NO
		User-defined	YES	YES	YES	YES
Premium Ink Jet Plain Paper	Cut sheets	A4	NO	YES	NO	NO
Premium Bright White Paper	Cut sheets	Letter	YES	NO	NO	NO
Bright White Inkjet Paper	Cut sheets	A4	NO	YES	YES	YES
Ultra Premium Glossy Photo Paper(EAI) Ultra Glossy Photo Paper(Others)	Cut sheets	4x6in./100x150 mm	YES	YES	YES	YES
		L size	NO	NO	NO	YES
		5x7in./2L size	YES	YES	NO	YES
		8x10in.(六切)	YES	NO	NO	YES
		A4	NO	YES	YES	YES
		Letter	YES	NO	NO	NO
Premium Photo Paper Glossy(EAI) Premium Glossy Photo Paper(Others)	Cut sheets	Letter	YES	NO	NO	NO
		A4	NO	YES	YES	YES
		4x6in./100x150 mm	YES	YES	YES	YES
		8x10in.(六切)	YES	NO	NO	YES
		L size	NO	NO	NO	YES
		5x7in./2L	YES	YES	YES	YES
		16:9 wide size	YES	YES	NO	YES
Photo Paper Glossy (EAI) Glossy Photo Paper (Others)	Cut sheets	Letter	YES	NO	NO	NO
		A4	YES	YES	YES	YES
		5x7in./2L size	NO	YES	NO	YES
		4x6in./100x150 mm	YES	YES	YES	YES
		L size	NO	NO	NO	YES
EPSON Photo Paper (Others)	Cut sheets	4x6in./100x150 mm	NO	YES	YES	NO
		5x7in./2L size	NO	YES	NO	NO
		A4	NO	YES	YES	YES

Paper Type		Size	US	EUR	ASIA/PAC	Japan
Premium Photo Paper Semi-Gloss (EAI) Premium Semigloss Photo Paper(Others)	Cut sheets	Letter	YES	NO	NO	NO
		A4	NO	YES	YES	YES
		L size	NO	NO	NO	YES
		5x7in./2L	NO	NO	NO	YES
		4x6in./100x150 mm	YES	YES	YES	NO
Postcard	NO	NO	NO	YES		
Ultra Premium Photo Paper Luster	Cut sheets	Letter	YES	NO	NO	NO
Presentation Paper Matte(EAI) Photo Quality Ink Jet (Other)	Cut sheets	Letter	YES	NO	NO	NO
		A4	YES	YES	YES	YES
Premium Presentation Paper Matte(EAI) Matte Paper Heavy-weight(Others)	Cut sheets	Letter	YES	NO	NO	NO
		8x10in.(六切)	YES	NO	NO	NO
		A4	NO	YES	YES	YES
Premium Presentation Paper Matte Double-sided(EAI) Double-sided Matte Paper(Others)	Cut sheets	Letter	YES	NO	NO	NO
		A4	NO	YES	YES	NO
スーパーファイン 専用紙ハガキ	Post card	Japanese Postcard	NO	NO	NO	YES
往復ハガキ	Post card	Reply-paid postcard	NO	NO	NO	YES
郵便ハガキ	Post card	Postcard	NO	NO	NO	YES
郵便IJハガキ	Post card	Postcard	NO	NO	NO	YES
郵便光沢ハガキ	Post card	Postcard	NO	NO	NO	YES
Envelopes	Envelope	#10	YES	YES	YES	NO
		C6	NO	YES	YES	YES
		DL	NO	YES	YES	NO
		Japanese CHOKEI 3 Envelope	NO	NO	NO	YES
		Japanese CHOKEI 4 Envelope	NO	NO	NO	YES
		Japanese YOKEI 1 Envelope	NO	NO	NO	YES
		Japanese YOKEI 3 Envelope	NO	NO	NO	YES
Japanese YOKEI 4 Envelope	NO	NO	NO	YES		
Iron-On Cool Peel Transfer (EAI) Iron-On Cool Peel Transfer Paper(Other)	Cut sheets	Letter	YES	NO	NO	NO
		A4	NO	YES	YES	YES
Photo Quality Self Adhesive Sheet	Cut sheets	A4	NO	NO	NO	YES
Photo Stickers 16	Cut sheets	A6	NO	NO	YES	NO
		Postcard	NO	NO	NO	YES
フォトシール紙 フリーカット Photo Stickers (Others)	Cut sheets	Postcard	NO	YES	YES	YES
CD/DVD	CD/DVD	Φ12cm	YES	YES	YES	YES
		Φ8cm	YES	YES	YES	YES
CD/DVD Premium Surface	CD/DVD	Φ12cm	YES	YES	YES	YES
		Φ8cm	YES	YES	YES	YES

- The possible number of sheet of paper set is written in the mechanism specifications.

2.2. Paper Size and Orientation

Paper Type	Dimensions W x L	Orientation	
			
Legal	8.5in. x 14in.	Yes	No
Letter	8.5in. x 11in.	Yes	No
8x10in.(六切)	203mm x 254mm	Yes	No
Half Letter	5.5 in. x 8.5 in.	Yes	No
A4	210 mm x 297 mm	Yes	No
A5	148 mm x 210 mm	Yes	No
A6 Index Card / A6	105 mm x 148 mm	Yes	No
B5	182 mm x 257 mm	Yes	No
Index card 5in. x8in.	5 in. x 8 in.	Yes	No
5inx7in. / 2L size	127x178 mm	Yes	No
Photo Paper 4 x 6 in./Photo card	113.6 mm x 164.4 mm*1)	Yes	No
3.5inx5in. / L size	89 x 127 mm	Yes	No
16:9 wide	102mm x152mm	Yes	No
Japanese Postcard	100 mmx148 mm	Yes	No
Japanese Double Postcard	200 mmx148 mm	No	Yes
Envelope #10	9.5 in. x 4 .125 in.	Yes	No
Envelope DL	220 mm x 110 mm	Yes	No
Envelope C6	162 mm x 114 mm	Yes	No
Japanese CHOKEI 3 Envelope	120mm x 235mm *3)	Yes *4)	No
Japanese CHOKEI 4 Envelope	90mm x 205mm *3)	Yes *4)	No
Japanese YOKEI 1 Envelope	120mm x 176mm	Yes	No
Japanese YOKEI 2 Envelope	114mm x 162mm	Yes	No
Japanese YOKEI 3 Envelope	98mm x 148mm	Yes	No
Japanese YOKEI 4 Envelope	105mm x 235mm	Yes	No
User-defined	89 to 215.9 mm x 89 to 1117.6 mm (3.5 in. to 8.5 in. x 3.5 in. to 44 in.)	Yes	No

- 1) Each of the predetermined sizes is inserted only in the orientation indicated by "Yes" in the above table.
- 2) Printing at a rotation of 90° for each of the predetermined sizes must be carried out by the application.
- 3) *1): Photo Paper 4in.x6in. :113.6 mm x 164.4 mm is logical size on printer driver. The actual paper-size is 113.6 mm x 175.4 mm.
- 4) *2): Photo Paper 200 x 300 mm: Top margin non-printable area and Bottom margin non-printable area both length are 14mm.
- 5) *3): Dimension indicates body size without flap.
- 6) *4): Loading envelope, flap edge first, with printable side up.

2.3. Printable Area

For the purpose of printing, a sheet of paper is divided into two regions: the printable area and the non-printable area. These areas are defined as follows.

The printable area is the region within which the printing position can be set, and is the portion which is surrounded by the left margin position, the right margin position, the top margin position, and the bottom margin position. The non-printable area is the region in which the printing position cannot be set, except for the right margin position, and is the region on the paper outside the printable area.

The margins, which determine the printable area, are defined as follows.

The left margin determines the non-printable strip appended to the left side of the printable area. The left margin position, which defines the margin boundary, is set upon the X axis. Moreover, the left margin position is considered as being included in the printable area.

The right margin determines the non-printable strip appended to the right side of the printable area. The right margin position, which defines the margin boundary, is set upon the X axis. Moreover, the right margin position is considered as being included in the non-printable area. However, it is possible to set the printing position to the right margin position.

The top margin determines the non-printable strip appended to the upper side of the printable area. The top margin position, which defines the margin boundary, is set upon the Y axis. Moreover, the top margin position is considered as being included in the printable area.

The bottom margin determines the non-printable strip appended to the lower side of the printable area. The bottom margin position, which defines the margin boundary, is set upon the Y axis. Moreover, the bottom margin position is considered as being included in the printable area.

The page management X-Y discrete coordinate system (hereinafter abbreviated as the page management coordinate system) which is used as the reference for setting the position of each of these margins, is the same as the position management coordinate system, except for the definition of the origin.

The position management coordinate system is the coordinate system for management of the printable area which is set within the page management coordinate system.

The position management coordinate system is set for each page separately.

The origin of the page management coordinate system is defined as follows.

The origin upon the X axis is set to the minimum printing position. The minimum printing position is the farthest leftward printing position that can physically be set upon the paper. The minimum printing position depends upon the horizontal position of the paper when it is inserted.

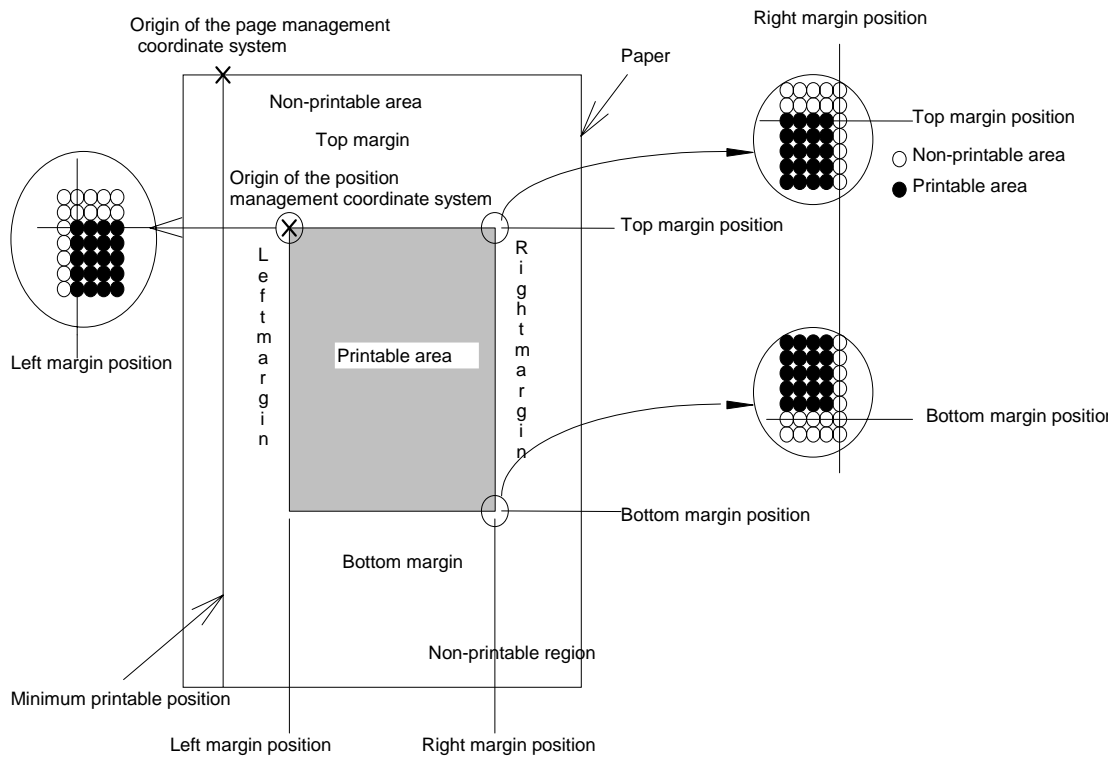
As for the origin upon the Y axis, for the first page directly after paper insertion, the upper edge of the paper is defined as the origin. For the second and subsequent pages, a position advanced by the page length from the origin on the page management coordinate system for the previous page is defined as the origin for the current page. Since in the case of single sheet paper only one page at a time can be inserted, the upper edge of the paper is always taken as the origin.

Here, page and page length are defined as follows.

A page means a unit region in the Y direction, which includes within it a single printable area. If the paper that is inserted is single sheet paper, only one page can be established upon each sheet. If the paper that is inserted is continuous paper, a plurality of pages can be established upon it.

The page length is the length in the Y direction of the page. If the paper that is inserted is single sheet paper, the length of the printing region in the Y direction from the top margin position to just before the bottom margin position is taken as the page length. If the paper that is inserted is continuous paper, the distance from the top margin position on the present page to the top margin position upon the next page is taken as the page length.

Table 2 Coordinate Systems for a Single Sheet of Paper



2.3.1 Printing Area (Standard)

The printable areas of various paper sizes on this printer is defined hereafter. Values are expressed in dot units, where 1 dot = 1/360 inch. As is displayed in the following diagram, printable area can be defined as follows:

A = the width of the unprintable left margin area

A (Centered) = the width of the unprintable left margin area when the printable area is centered

B = the width of the printable area

B (Centered) = the width of the printable area when the printable area is centered

C = the width of the unprintable right margin area

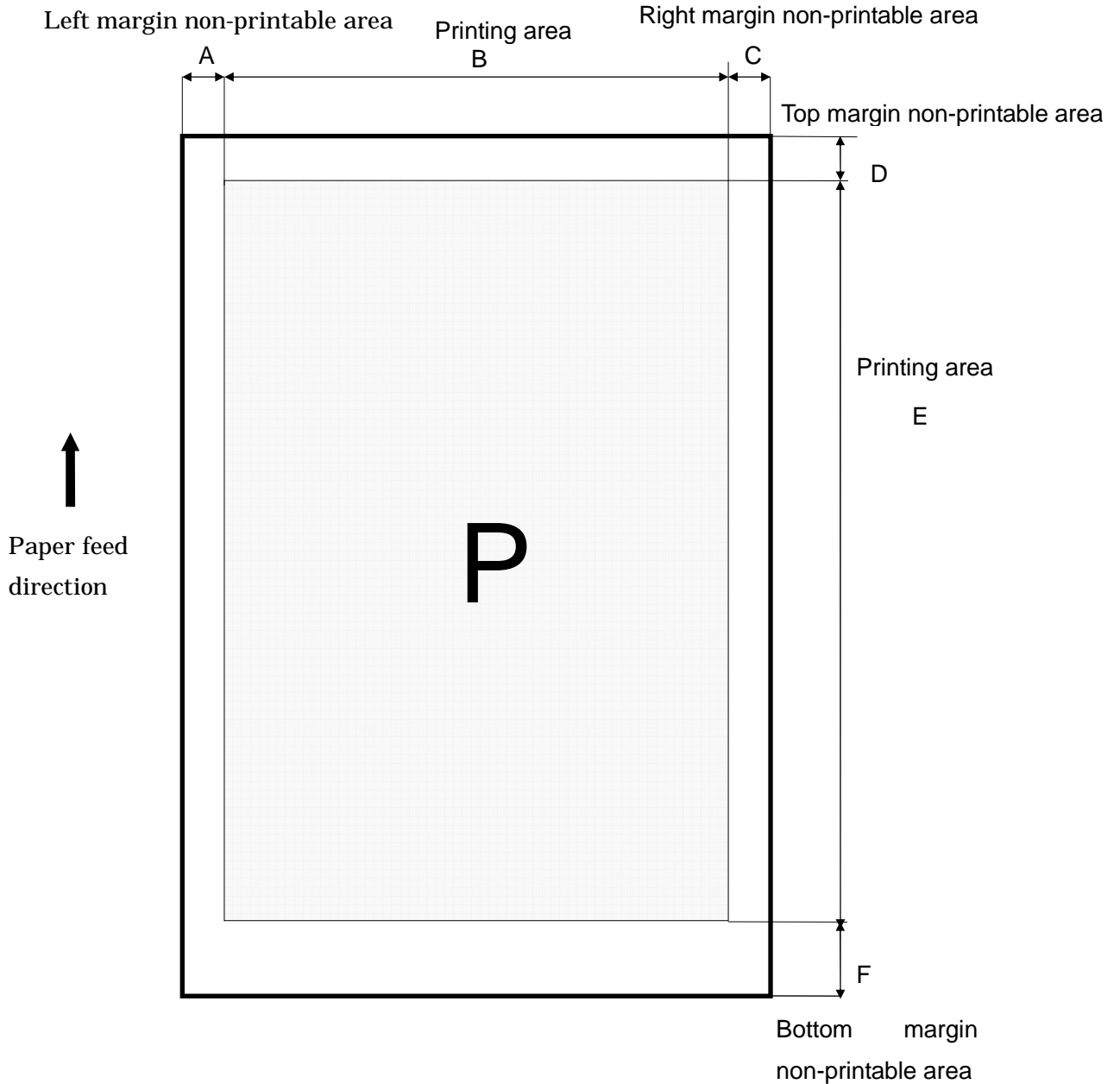
C (Centered) = the width of the unprintable right margin area when the printable area is centered

D = the length of the unprintable top margin area

D (Centered) = the length of the unprintable top margin area when the printable area is centered

E = the length of the printable area

E (Centered) = the length of the printable area when the printable area is centered



Standard Sizes

The printing area is specified by A, B, D, and E.

	A/A(Expanded)	B/B(Expanded)	D/D(Expanded)	E/E(Expanded)
Legal	42/42	2976/2976	42/42	4715/4956
Letter	42/42	2976/2976	42/42	3635/3876
A4	42/42	2892/2892	42/42	3884/4125
A5	42/42	2014/2014	42/42	2651/2892
A6	42/42	1404/1404	42/42	1773/2014
B5	42/42	2496/2496	42/42	3318/3559
Half Letter	42/42	1896/1896	42/42	2735/2976
5x7in. / 2L Size	42/42	1716/1716	42/42	2197/2438
4x6in	42/42	1356/1356	42/42	1835/2076
3.5inx5in. / L Size	42/42	1177/1177	42/42	1475/1716
Index card 8in.x 10in.	42/42	2796/2796	42/42	3275/3516
5x8in	42/42	1716/1716	42/42	2555/2796
Japanese Postcard	42/42	1333/1333	42/42	1773/2014
Japanese Double Postcard	42/42	2751/2751	42/42	1773/2014
#10 Envelope	42/42	1401/1401	42/42	3095/3095
DL Envelope	42/42	1475/1475	42/42	2793/2793
C6 Envelope	42/42	1532/1532	42/42	1971/1971
Japanese YOKEI 1	42/42	1617/1617	42/42	2169/2410
Japanese YOKEI 2	42/42	1532/1532	42/42	1971/2212
Japanese YOKEI 3	42/42	1305/1305	42/42	1773/2014
Japanese YOKEI 4	42/42	1404/1404	42/42	3006/3247
Japanese CHOKEI 3	42/42	1617/1617	42/42	3006/3247
Japanese CHOKEI 4	42/42	1192/1192	42/42	2581/2822
16:9wide	42/42	1356/1356	42/42	2235/2476

Unit [1/360inch]

User-defined

With a paper type set by the user, a printing area defined by A, B, D, and E of at least the following number of dots are reserved.

	A/A(Expanded)	B/B(Expanded)	D/D(Expanded)	E/E(Expanded)
User-defined	42/42	max. 2976 / max. 2976	42/42	max. 15515 / max. 15756

2.3.2 Printing Area (Zero margin/ Borderless)

The printable areas of various paper sizes on the printer are defined hereafter. Values are expressed in dot units, where 1 dot = 1/360 inch. As is displayed in the following diagram, printable area can be defined as follows:

- A' = the width of the left override area
- B' = the width of the printable area
- C' = the width of the right override area
- D' = the length of the top override area
- E' = the length of the printable area
- F' = the length of the bottom override area
- I = the length of the top override area (unprintable area)

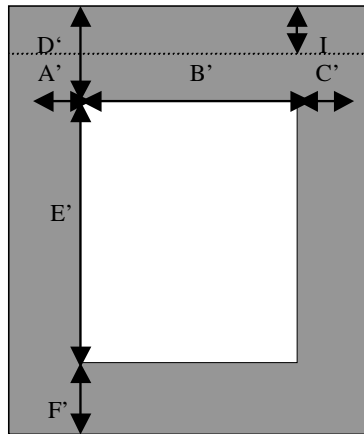


Table 3 Printable Area Dimensions (Zero margin/ Borderless)

The printing area is specified by A', B', D', and E'.

Paper	Size	US	EUR	ASIA/PAC	JPN	A'	B'	C'	D'	E'	F'	I
Cut Paper	A4	YES	YES	YES	YES	0	2976	0	0	4209	0	0
	Letter	YES	NO	NO	NO	0	3060	0	0	3960	0	0
	5x7in. / 2L Size	YES	YES	YES	YES	0	1800	0	0	2522	0	0
	3.5x5in. / L Size	YES	YES	YES	YES	0	1261	0	0	1800	0	0
	4x6in./10x15cm	YES	YES	YES	YES	0	1440	0	0	2160	0	0
	Japanese Postcard	NO	NO	NO	YES	0	1417	0	0	2098	0	0
	8x10in.	YES	NO	NO	YES	0	2880	0	0	3600	0	0
	16:9 wide	YES	YES	YES	YES	0	1440	0	0	2560	0	0

1) Only Photo Paper, Matte Paper – Heavyweight, Card are able to achieve margin less printing

2.4 Enable paper size of zero margin printing

Media type	For USA	For EURO	For ASIA/PAC	For Japan
Ultra Premium Glossy Photo Paper(EAI) Ultra Glossy Photo Paper(Others)	Letter, 8x10in, 5x7in, 4x6in	A4, 5x7in, 4x6in	A4, 4x6in	A4, 8x10in, 5x7in, 4x6in, L
Premium Glossy Photo Paper(EAI) Premium Glossy Photo Paper(Others)	Letter, 8x10in, 5x7in, 4x6in, 16:9wide	A4, 5x7in, 4x6in, 16:9wide	A4, 4x6in, 5x7in	A4, 8x10in, 5x7in, 4x6in, L, 16:9wide
Photo Paper Glossy (EAI) Glossy Photo Paper (Others)	Letter, A4, 4x6in	A4, 5x7in, 4x6in	A4, 4x6in	A4, 5x7in, 4x6in, L
Premium Photo Paper Semi-Gloss(EAI) Premium Semi-Gloss Photo Paper(Others)	Letter, 4x6in	A4, 4x6in	A4, 4x6in	A4, L, 5x7in, Postcard
Ultra Premium Photo Paper Luster	Letter	-	-	-
Photo Paper	-	A4, 5x7in, 4x6in	A4, 4x6in	A4
Premium Presentation Paper Matte(EAI) Matte Paper Heavy-weight(Others)	Letter, 8x10in	A4	A4	A4
郵便ハガキ	-	-	-	Postcard
郵便 IJ ハガキ	-	-	-	Postcard
郵便光沢ハガキ	-	-	-	Postcard

2.5 Enable paper size of duplex printing

Media type	For USA	For EURO	For ASIA/PAC	For Japan
Plain Paper	Letter, A4	Letter, A4, B5	Letter, A4, B5	Letter, A4, B5
Premium Ink Jet Plain Paper	-	A4	-	-
Premium Bright White paper	Letter	-	-	-
Bright White Inkjet Paper	-	A4	A4	A4
写真用紙<絹目調>	-	-	-	Postcard
スーパーファイン専用ハガキ	-	-	-	Postcard
郵便ハガキ	-	-	-	Postcard
郵便 IJ ハガキ	-	-	-	Postcard
郵便光沢ハガキ	-	-	-	Postcard

CHAPTER 3: Printing Option

3.1. Printing Quality

This printer has the capability of printing at eleven different levels of quality.

Color

Print density			Dot size	Raster command density	ESC (D setting horizontal	ESC (D setting vertical	ESC i setting transfer raster image	ESC (e setting dot size
Plain paper	Special Paper	(Horizontal x Vertical)		(H x V)	h / r	v / r	mH*256+mL	n2
Fast Draft	-	360dpi x 180dpi	Economy	360dpi x 180dpi 2bit	4/1440	8/1440	Max 180	10H
Draft	-	360dpi x 180dpi	Economy	360dpi x 180dpi 2bit	4/1440	8/1440	Max 180	10H
Default	-	360dpi x 360dpi	MC2-1	360dpi x 180dpi 2bit	4/1440	8/1440	Max 180	31H
Photo	-	720dpi x 720dpi	MC1-1	720dpi x 180dpi 2bit	2/1440	8/1440	Max 180	21H
-	Photo Draft	720dpi x 360dpi	MC1-1	720dpi x 180dpi 2bit	2/1440	8/1440	Max 180	21H
-	Photo1*1	720dpi x 720dpi	MC1-2	720dpi x 180dpi 2bit	2/1440	8/1440	Max 180	22H
-	Photo2*2	720dpi x 720dpi	MC2-2	360dpi x 180dpi 2bit	4/1440	8/1440	Max 180	32H
-	Super Photo	5760dpi x 1440dpi	MC1-5	720dpi x 180dpi 2bit	2/1440	8/1440	Max 180	25H

*1 except L,4x6,KG,Postcard

*2 L,4x6,KG,Postcard

3.2 Recommended Settings for Color and Monochrome Printing

Monochrome or Color printing mode depends on the ESC (K command). See the individual command specifications.

3.2.1. Recommended Setting Modes (Black&Color) <Windows/All regions except Japan>

Media	Mode	Print quality	Resolution dpi	Bi-directional printing	Dot size	ESC (m)		
						Standerd	Double-Sides	
Plain papers Iron-On Cool Peel Transfer (EAI) Iron-On Cool Peel Transfer Paper(Other)	Draft	Fast Draft	360x180	ON	10H	10H	-	
	&Text	Default	360x360	&ON/OFF	31H	21H	20H	
	Text&Image	Default	360x360	&ON/OFF	31H	21H	20H	
	Photo	Photo	720x720	&ON/OFF	21H	51H	50H	
	Best Photo	Photo	720x720	&ON/OFF	21H	51H	50H	
Ultra Premium Glossy Photo Paper (EAI) Ultra Glossy Photo Paper(Euro)	Draft	Photo2	720x720	&ON/OFF	32H	55H	-	
		Photo1	720x720	&ON/OFF	22H	52H*1/53H*2	-	
	&Text	Photo2	720x720	&ON/OFF	32H	55H	-	
		Photo1	720x720	&ON/OFF	22H	52H*1/53H*2	-	
	Text&Image	Photo2	720x720	&ON/OFF	32H	55H	-	
		Photo1	720x720	&ON/OFF	22H	52H*1/53H*2	-	
	Photo	Photo2	720x720	&ON/OFF	32H	55H	-	
		Photo1	720x720	&ON/OFF	22H	52H*1/53H*2	-	
	Best Photo	Super Photo	5760x1440	&ON/OFF	25H	B2H	-	
	Premium Photo Paper Glossy Premium Photo Paper Semi-Gloss Premium Photo Paper Luster Photo Paper Glossy (EAI) Premium Glossy Photo Paper Premium Semigloss Photo Paper Glossy Photo Papers Photo Paper (Euro)	Draft	Photo Draft	720x360	&ON/OFF	22H	40H*3/41H*4	-
&Text		Photo2	720x720	&ON/OFF	32H	55H	-	
		Photo1	720x720	&ON/OFF	22H	52H*1/53H*2	-	
Text&Image		Photo2	720x720	&ON/OFF	32H	55H	-	
		Photo1	720x720	&ON/OFF	22H	52H*1/53H*2	-	
Photo		Photo2	720x720	&ON/OFF	32H	55H	-	
		Photo1	720x720	&ON/OFF	22H	52H*1/53H*2	-	
Best Photo		Super Photo	5760x1440	&ON/OFF	25H	B2H	-	
Premium Presentation Paper Matte Premium Presentation Paper Matte Double-sided (EAI) Matte Paper Heavy-wight Double-Sided Matte Paper (Euro)		Draft	Photo2	720x720	&ON/OFF	32H	55H	-
		&Text	Photo2	720x720	&ON/OFF	32H	55H	-
	Text&Image	Photo2	720x720	&ON/OFF	32H	55H	-	
	Photo	Photo2	720x720	&ON/OFF	32H	55H	-	
	Best Photo	Super Photo	5760x1440	&ON/OFF	25H	B2H	-	
Photo Quality Ink Jet Paper (EAI) Photo Quality Ink Jet (Euro)	Draft	Photo2	720x720	&ON/OFF	32H	55H	-	
	&Text	Photo2	720x720	&ON/OFF	32H	55H	-	
	Text&Image	Photo2	720x720	&ON/OFF	32H	55H	-	
	Photo	Photo2	720x720	&ON/OFF	32H	55H	-	
	Best Photo	Photo2	720x720	&ON/OFF	32H	55H	-	
CD/DVD CD/DVD Premium Surface	Draft	Super Photo	5760x1440	&ON/OFF	25H	B1H	-	
	&Text	Super Photo	5760x1440	&ON/OFF	25H	B1H	-	
	Text&Image	Super Photo	5760x1440	&ON/OFF	25H	B1H	-	
	Photo	Super Photo	5760x1440	&ON/OFF	25H	B1H	-	
	Best Photo	Super Photo	5760x1440	&ON/OFF	25H	B1H	-	

Media	Mode	Print quality	Resolution dpi	Bi-directional printing	Dot size	ESC (m)	
						Standerd	Double-Sides
Photo Stickers	Draft	Photo2	720x720	&ON/OFF	32H	55H	-
	&Text	Photo2	720x720	&ON/OFF	32H	55H	-
	Text&Image	Photo2	720x720	&ON/OFF	32H	55H	-
	Photo	Photo2	720x720	&ON/OFF	32H	55H	-
	Best Photo	Photo2	720x720	&ON/OFF	32H	55H	-
Envelope	Draft	Default	360x360	OFF	31H	20H	-
	&Text	Default	360x360	OFF	31H	20H	-
	Text&Image	Default	360x360	OFF	31H	20H	-
	Photo	Photo	720x720	OFF	21H	50H	-
	Best Photo	Photo	720x720	OFF	21H	50H	-

- *1 L,4x6,KG
- *2 Postcard
- *3 Except L,4x6,Postcard
- *4 L,4x6,Postcard
- & : default

3.2.2. Recommended Setting Modes (Black&Color) <Macintosh/All regions except Japan>

Media	Mode	Print quality	Resolution dpi	Bi-directional printing	Dot size	ESC (m)	
						Standerd	Double-Sides
Plain papers Iron-On Cool Peel Transfer (EAI) Iron-On Cool Peel Transfer Paper(Other)	&Speed	Default	360x360	&ON/OFF	31H	21H	20H
	Quality	Photo	720x720	&ON/OFF	21H	51H	50H
Ultra Premium Glossy Photo Paper (EAI)	&Speed	Photo2	720x720	&ON/OFF	32H	55H	-
		Photo1	720x720	&ON/OFF	22H	52H*1/53H*2	-
Ultra Glossy Photo Paper(Euro)	Quality	Super Photo	5760x1440	&ON/OFF	25H	B2H	-
Premium Photo Paper Glossy Premium Photo Paper Semi-Gloss Premium Photo Paper Luster Photo Paper Glossy (EAI) Premium Glossy Photo Paper Premium Semigloss Photo Paper Glossy Photo Papers Photo Paper (Euro)	&Speed	Photo2	720x720	&ON/OFF	32H	55H	-
		Photo1	720x720	&ON/OFF	22H	52H*1/53H*2	-
	Quality	Super Photo	5760x1440	&ON/OFF	25H	B2H	-
Premium Presentation Paper Matte Premium Presentation Paper Matte Double-sided (EAI) Matte Paper Heavy-wight Double-Sided Matte Paper (Euro)	&Speed	Photo2	720x720	&ON/OFF	32H	55H	-
	Quality	Super Photo	5760x1440	&ON/OFF	25H	B2H	-
Photo Quality Ink Jet Paper (EAI) Photo Quality Ink Jet (Euro)	---	Photo2	720x720	&ON/OFF	32H	55H	-
CD/DVD CD/DVD Premium Surface	---	Super Photo	5760x1440	&ON/OFF	25H	B1H	-
Photo Stickers	---	Photo2	720x720	&ON/OFF	32H	55H	-
Envelope	&Speed	Default	360x360	OFF	31H	20H	-
	Quality	Photo	720x720	OFF	21H	50H	-

*1 L,4x6,KG

*2 Postcard

& : default

3.2.3. Recommended Setting Modes (Black&Color) <Windows,Macintosh/for Japan>

Media	Mode	Print quality	Resolution dpi	Bi-directional printing	Dot size	ESC (m)	
						Standerd	Double-Sides
普通紙 両面上質紙	&標準	Default	360x360	&ON/OFF	31H	21H	20H
	きれい	Photo	720x720	&ON/OFF	21H	51H	50H
写真用紙クリスピーア	&標準	Photo2	720x720	&ON/OFF	32H	55H	-
		Photo1	720x720	&ON/OFF	22H	52H*1/53H*2	-
	きれい	Super Photo	5760x1440	&ON/OFF	25H	B2H	-
写真用紙<光沢> 写真用紙<絹目調> 写真用紙エントリー<光沢> フォト光沢紙	&標準	Photo2	720x720	&ON/OFF	32H	55H	-
		Photo1	720x720	&ON/OFF	22H	52H*1/53H*2	-
	きれい	Super Photo	5760x1440	&ON/OFF	25H	B2H	-
フォトマット紙	&標準	Photo2	720x720	&ON/OFF	32H	55H	-
	きれい	Super Photo	5760x1440	&ON/OFF	25H	B2H	-
EPSON スーパーファイン紙 スーパーファイン専用ラベルシート スーパーファイン専用ハガキ	&標準	Photo2	720x720	&ON/OFF	32H	55H	-
郵便光沢ハガキ	&標準	Photo1	720x720	&ON/OFF	22H	53H	-
	きれい	Super Photo	5760x1440	&ON/OFF	25H	B2H	-
郵便IJハガキ	&標準	Photo1	720x720	&ON/OFF	22H	53H	-
郵便ハガキ	&標準	Default	360x360	&ON/OFF	31H	21H	20H
	きれい	Photo	720x720	&ON/OFF	21H	51H	50H
CD/DVD CD/DVD 高画質	&きれい	Super Photo	5760x1440	&ON/OFF	25H	B1H	-
フォトシール フリーカット ミニフォトシール	&標準	Photo2	720x720	&ON/OFF	32H	55H	-
アイロンプリントペーパー	&標準	Photo1	720x720	ON/&OFF	22H	51H	
封筒	&標準	Default	360x360	OFF	31H	20H	-
	きれい	Photo	720x720	OFF	21H	50H	-

*1 L,4x6,KG

*2 Postcard

& : default

CHAPTER 4: COMMAND SEQUENCE

4.1 Raster Graphics Modes

The following three modes are available for raster graphics commands:

- 1) Non-compressed mode - the print data is transferred without being compressed.
Effective for printing data with a low compression ratio, such as photographs.
- 2) Run-length encoded mode - the print data is transmitted after run-length encoding compression.
Effective for printing data such as graphs and figures, in which patterns appear repeatedly.
- 3) TIFF compressed mode - the print data is transferred after TIFF compression.
Effective for printing data such as graphs and figures, in which patterns appear repeatedly.

4.2 Command Transfer Procedure

4.2.1 Command transfer sequence for non-compressed and the run-length encoded compression modes

The following are the basic commands used in non-compressed and run-length encoded modes. The commands are listed in order as they are sent:

Table 4 Command Sequence for the Conventional command method of graphics data transmission

Transfer cycle		Details of setting	Items set	Commands used
By document		1. Initialize settings	Exit Packet Mode Enter remote mode Set Printer Timer*** Job Start*** Set Job Name Paper Feed Setup Set paper path Set Media information Set double paper print Set user setting Other Remote Commands (optional) Exit Remote Mode	ESC SOH @EJL... ESC (R TI JS JH SN PP MI DP US ESC 00H 00H 00H
		2. Printing method control	2.1 Turn unidirectional mode on/off 2.2 Select MicroWeave printing mode 2.3 Select Monochrome or Color 2.4 Select Ink Drop Size	ESC U ESC (i ESC (K ESC (e
		3. Set print format (single sheet)	3.1 Set page format 3.2 Set paper dimension 3.3 Set print method ID	ESC (c or ESC (C ESC (S ESC (m
By page	By raster	4. Set vertical position	4.1 Set vertical print position	ESC (V or ESC (v
		5. Transfer data	5.1 Select color 5.2 Set horizontal print position 5.3 Print raster graphics: * repeat above for each color	ESC (r ESC (/ or ESC (\$) ESC .
		6. Form feed	6.1 Form feed	FF
		7. Terminate printing	7.1 Initialize printer 7.2 Enter Remote Mode Load NVR Settings Job End Exit Remote Mode	ESC @ ESC (R LD JE ESC 00H 00H 00H

*Parameters and data format of non-compressed vs. run-length encoded transmissions will differ with the Print Raster Graphics command.

**In the case of micro weave print mode, ESC ACK command is inserted only when the plural passes are specified with no paper feed.

*** It is necessary to send the TI command before the JS command.

Table 5 Command Sequence for the newer Method of ESC (D command method of graphics data transmission

Transfer cycle		Details of setting	Items set	Commands used
By document		1. Initialize settings	Exit Packet Mode Enter remote mode Set Printer Timer** Job Start Set Job Name Paper Feed Setup Other Remote Commands (optional) Exit Remote Mode	ESC SOH @EJL... ESC (R TI JS JH SN ESC 00H 00H 00H
		2. Printing method control	2.1 Turn unidirectional mode on/off 2.2 Select Monochrome or Color 2.3 Select Ink Drop Size 2.4 Set resolution of Raster mode	ESC U ESC (K ESC (e ESC (D
		3. Set print format (single sheet)	3.1 Set page format 3.2 Set paper dimension 3.3 Set print method ID	ESC (c or ESC(C ESC (S ESC (m
By page	By raster	4. Set vertical position	4.1 Set vertical print position	ESC (V or ESC (v
		5. Transfer data	5.1 Set horizontal print position 5.2 Print raster graphics: repeat above for each color	ESC / or ESC (\$ ESC i
		6. Form feed	6.1 Form feed	FF
		7. Terminate printing	7.1 Initialize printer 7.2 Enter Remote Mode Load NVR Settings Job End Exit Remote Mode	ESC @ ESC (R LD JE ESC 00H 00H 00H

*In the case of micro weave print mode, ESC ACK command is inserted only when the plural passes are specified with no paper feed.

** It is necessary to send the TI command before the JS command.

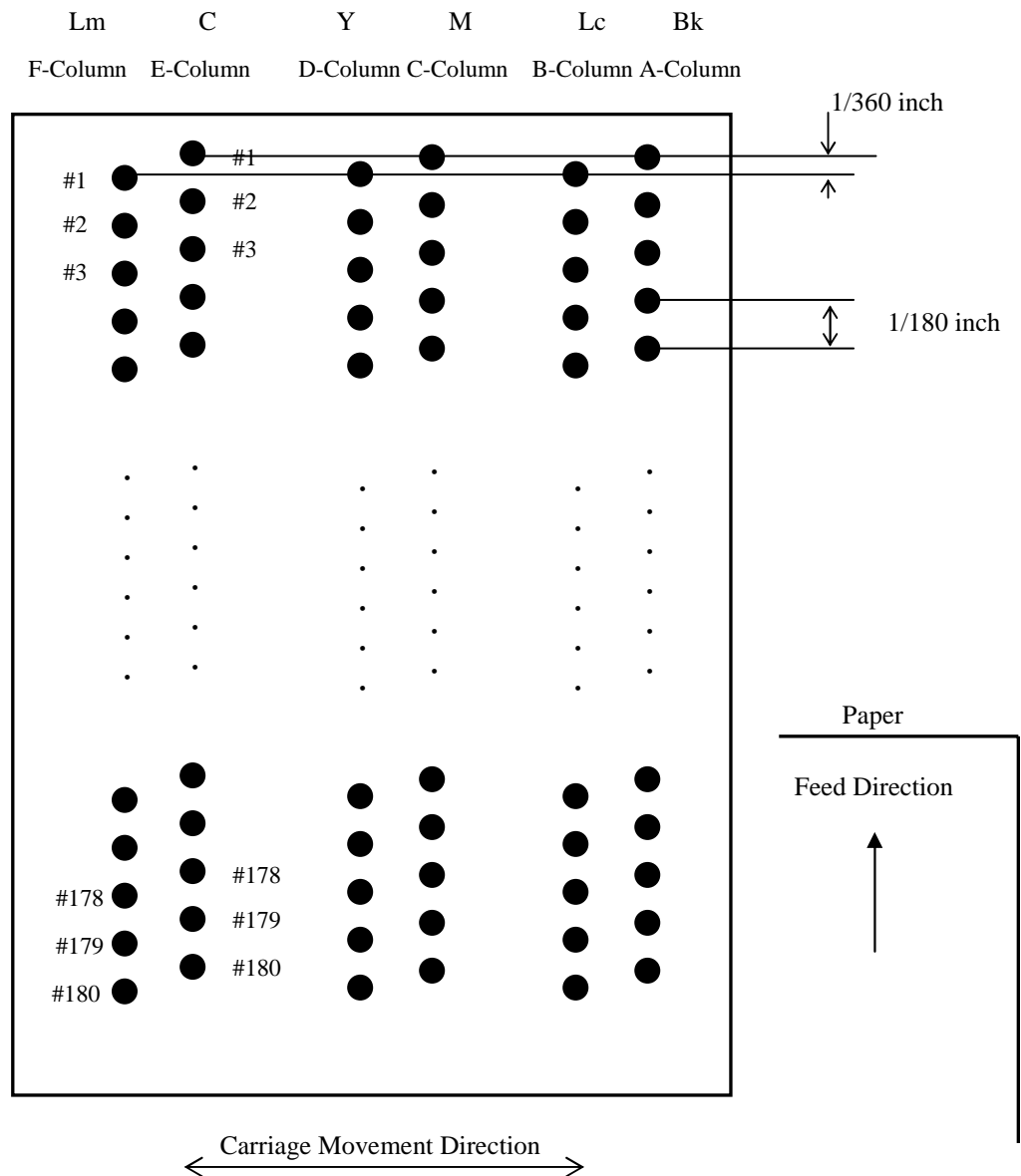
4.3 Limitations of Command Settings

- “Exit Packet Mode”, in many circumstances, command **MUST** be called before any communication or printing can occur on any I/F. This command is described in the “Individual Command Specifications”.
- The “Set absolute vertical print position ESC (V)” and “Set relative vertical print position ESC (v)” commands will set the starting print position of the subsequent data to be printed, including whatever white space may exist within that data. To avoid confusion, it is recommended not to embed large null or white space in the data.
- All null raster data should not be sent to the printer.
- For detailed specifications of the commands that are transmitted, refer to CHAPTER 5, "Individual Command Specifications".

4.4 Raster Graphics Data Format

The driver must generate appropriate data taking into account the nozzle positions in the printer are uniquely vertically aligned.

This printer's nozzle constitution and the color order are shown below.



Head nozzle order	F Column	E Column	D Column	C Column	B Column	A Column
	Light Magenta	Cyan	Yellow	Magenta	Light Cyan	Black
Ink cartridge order	F Column	E Column	D Column	C Column	B Column	A Column
	Light Magenta	Magenta	Black	Light Cyan	Yellow	Cyan

For this printer, the data must be configured bearing in mind the vertical positions of the nozzles. EPSON printers are generally having print heads with nozzles for each color structured in the same vertical position, but this printer head takes the black nozzle as a reference point. The Light Cyan, Yellow and Light Magenta nozzles are 1/360 inch low to the reference point. When transferring data to the printer, these offsets must be taken into consideration.

Correspondence table of raster command row and the nozzle are shown below.

Row ("raster") number	Black/Magenta/Cyan Vertical position	Light Cyan/Yellow/Light Magenta Vertical position
1	α (base position)	$\alpha+1/360$ inch
2	$\alpha+2/360$ inch	$\alpha+3/360$ inch
3	$\alpha+4/360$ inch	$\alpha+5/360$ inch
4	$\alpha+6/360$ inch	$\alpha+7/360$ inch
5	$\alpha+8/360$ inch	$\alpha+9/360$ inch
6	$\alpha+10/360$ inch	$\alpha+11/360$ inch
7	$\alpha+12/360$ inch	$\alpha+13/360$ inch
8	$\alpha+14/360$ inch	$\alpha+15/360$ inch
9	$\alpha+16/360$ inch	$\alpha+17/360$ inch
...
171	$\alpha+340/360$ inch	$\alpha+341/360$ inch
172	$\alpha+342/360$ inch	$\alpha+343/360$ inch
173	$\alpha+344/360$ inch	$\alpha+345/360$ inch
174	$\alpha+346/360$ inch	$\alpha+347/360$ inch
175	$\alpha+348/360$ inch	$\alpha+349/360$ inch
176	$\alpha+350/360$ inch	$\alpha+351/360$ inch
177	$\alpha+352/360$ inch	$\alpha+353/360$ inch
178	$\alpha+354/360$ inch	$\alpha+355/360$ inch
179	$\alpha+356/360$ inch	$\alpha+357/360$ inch
180	$\alpha+358/360$ inch	$\alpha+359/360$ inch

CHAPTER 5: INDIVIDUAL COMMAND SPECIFICATIONS

5.1.1 Exit Packet Mode

00H 00H 00H ESC 01H “@EJL” 20H “1284.4” 0AH “@EJL” 20H 20H 20H 20H 20H 0AH **Ver 1.00**

[Name]	EPSON packet mode exit command (special command)	[Setting]
[Format]	00H,00H,00H,1BH,01H,40H,45H,4AH,4CH,20H,31H,32H,38H,34H,2EH,34H,0AH, 40H,45H4AH,4CH,20H,20H,20H,20H,20H,0AH	
[Range of Definition]	---	
[Function]	1) If the system is in packet mode, this command must be sent before any other commands can be successfully transferred over either USB or Parallel Port, including the basic ESC @ printer initialization command. 2) Packet communication protocol (EPSON packet mode) is cancelled. The command for entering packet mode and the commands utilized in packet mode are EPSON proprietary.	
[Initial State]	The initial state of the printer, unused and unopened, new from the EPSON box, may or may not be in packet mode. However, once the printer has received any print job from any other source (especially a Windows OS printer driver) it will most likely be in packet mode. If the printer is in EPSON packet mode; no typical USB and possibly Parallel Port transmissions can be received or recognized.	
[Related Commands]	---	

5.1.2 Initialize printer ESC @

ESC @

Ver 1.00

[Name]	Initialize printer	[Setting]
[Format]	1BH, 40H	
[Range of Definition]	-	
[Function]	<ol style="list-style-type: none">1) The various settings are returned to their initial values.2) The Y axis origin of the page management coordinate system and the position management coordinate system are set to the current printing position on the Y axis.3) The present printing position on the X axis is set to the origin upon the X axis.4) Text mode printing is selected.	
[Initial State]	-	
[Related Commands]	<p>[Setting] Commands whose settings are affected by this command. The settings for all commands are returned to their initial states.</p> <p>[Setting] Commands that change the effects of this command. None</p> <p>[Operation] Commands whose functionality is affected by this command. None</p> <p>[Operation] Commands that change the effects of this command. None</p>	

[Name]	Line feed	[Operation]
[Format]	0AH	
[Range of Definition]	-	
[Function]	<ol style="list-style-type: none"> 1) Advances the current printing position in the positive Y direction by an amount equal to the current line separation amount. Sets the printing position in the X direction to the starting point (the left margin position) on the X axis of the position management coordinate system. 2) If this command sets the Y direction printing position into the non-printable area, then the page is ejected. The position management coordinate system is set to the next page. In addition the printing position is set to the origin of the position management coordinate system for the new page. 	
[Initial State]	-	
[Related Commands]	<p>Related Command [Setting]s that apply an effect. None</p> <p>Related Command [Setting]s that receive an effect. None</p> <p>Related Command [Operation]s that apply an effect. None</p> <p>Related Commands [Operation]s that receive an effect. The amount of advancement per line is set by the ESC + command. The non-printable area is set by the ESC (c command). The amount of advancement per line, the non-printable area, and the left margin position are reset to their initial state by the ESC @ and ESC (G commands).</p>	

5.1.4 Form feed FF

FF

Ver 1.00

[Name]	Form feed	[Operation]
[Format]	0CH	
[Range of Definition]	-	
[Function]	1) The contents of the print buffer are printed. The current page is ejected. The position management coordinate system is set to the next page. The printing position is set to the origin of the position management coordinate system for the new page. 2) This command is ignored if the printer is out of paper.	
[Initial State]	-	
[Related Commands]	[Setting] Commands whose settings are affected by this command. None [Setting] Commands that change the effects of this command. None [Operation] Commands whose functionality is affected by this command. None [Operation] Commands that change the effects of this command. The page length is set by the ESC (C command). The page length and the left margin position are reset to their initial states by the ESC @ and ESC (G commands).	

5.1.5 Carriage Return CR

CR

Ver 1.00

[Name]	Carriage Return	[Operation]
[Format]	ODH	
[Range of Definition]	-	
[Function]	1) The printing position in the X direction is set to the origin (the left margin) on the X axis of the position management coordinate system.	
[Initial State]	-	
[Related Commands]		
	[Setting] Commands whose settings are affected by this command.	
	None	
	[Setting] Commands that change the effects of this command.	
	None	
	[Operation] Commands whose functionality is affected by this command.	
	None	
	[Operation] Commands that change the effects of this command.	
	None	

5.1.6 Control paper loading/ejecting ESC EM n

ESC EM n

Ver 1.00

[Name]	Control paper loading/ejecting	[Setting]
[Format]	1BH, 19H, n	
[Range of Definition]	n=31H, 52H (="1", "R")	
[Function]	<ol style="list-style-type: none">1) The CSF (cut sheet feeder) receives the following commands, according to the value of n: n=31H select bin 1 for the next paper feeding, and for every paper fed thereafter n=52H eject paper2) If n has any value other than the above, this command is ignored.3) The ESC EM "R" will only eject paper fed from the CSF. If the paper being fed was not fed by the CSF, this command is ignored.4) Bin selection settings apply to the next and subsequent paper feedings.5) After the ESC EM "R" command ejects the paper, the printing position in the X direction is set to the origin on the X axis.	
[Initial State]	-	
[Related Commands]	<p>[Setting] Commands whose settings are affected by this command. None</p> <p>[Setting] Commands that change the effects of this command. Bin selection is reset to its initial state by the ESC @ command.</p> <p>[Operation] Commands whose functionality is affected by this command. None</p> <p>[Operation] Commands that change the effects of this command. None</p>	

5.1.7 Set absolute horizontal print position ESC \$ nL nH

Ver 1.00

ESC \$ nL nH

[Name]	Set absolute horizontal print position	[Operation]																																												
[Format]	1BH, 24H, nL, nH																																													
[Range of Definition]	0 <= n <= 47616 (where nL <= FFH; nH <= BAH)																																													
[Function]	<p>1) The printing position in the positive X direction is set to: The maximum Absolute Horizontal Position (AHP) is 209.973mm or (29760/3600 =) 8.267 inches. From the [ESC (U)] and the [ESC (U)] Extended Command</p> <table border="1"> <thead> <tr> <th>AHP units</th> <th>AHP Value</th> <th>AHP Resolution</th> <th>Abs Horizontal Print Position Value</th> </tr> </thead> <tbody> <tr> <td>—*</td> <td>0.002mm(1/5760 inch)</td> <td>5760*</td> <td>0 <= n <= 47616</td> </tr> <tr> <td>—*</td> <td>0.004mm(1/2880 inch)</td> <td>2880*</td> <td>0 <= n <= 23808</td> </tr> <tr> <td>—*</td> <td>0.008mm(1/1440 inch)</td> <td>1440*</td> <td>0 <= n <= 11904</td> </tr> <tr> <td>5</td> <td>0.035mm(5/3600 inch)</td> <td>720*</td> <td>0 <= n <= 5952</td> </tr> <tr> <td>10</td> <td>0.071mm(10/3600 inch)</td> <td>360*</td> <td>0 <= n <= 2976</td> </tr> <tr> <td>20</td> <td>0.141mm(20/3600 inch)</td> <td>180*</td> <td>0 <= n <= 1488</td> </tr> <tr> <td>30</td> <td>0.211mm(30/3600 inch)</td> <td>120*</td> <td>0 <= n <= 992</td> </tr> <tr> <td>40</td> <td>0.282mm(40/3600 inch)</td> <td>90*</td> <td>0 <= n <= 744</td> </tr> <tr> <td>50</td> <td>0.353mm(50/3600 inch)</td> <td>72</td> <td>0 <= n <= 595</td> </tr> <tr> <td>60</td> <td>0.423mm(60/3600 inch)</td> <td>60</td> <td>0 <= n <= 496</td> </tr> </tbody> </table> <p>*See [ESC (U)] Extended command for APH Units for these resolution in general when using [ESC (U)]</p> $0 \leq \frac{(256 \times nH + nL) \times 3600}{AHP_units} \leq (29760/3600)\text{inch}$ <p>in general when using [ESC (U)] Extended</p> $0 \leq \frac{(256 \times nH + nL) \times \text{Base_Unit}(m)}{AHP_units} \leq (29760/3600)\text{inch}$ <p>from the origin (the left margin position) on the X axis of the position management coordinate system.</p> <p>2) If the Absolute Horizontal Position specified is passed the right margin position, then this command is ignored.</p>	AHP units	AHP Value	AHP Resolution	Abs Horizontal Print Position Value	—*	0.002mm(1/5760 inch)	5760*	0 <= n <= 47616	—*	0.004mm(1/2880 inch)	2880*	0 <= n <= 23808	—*	0.008mm(1/1440 inch)	1440*	0 <= n <= 11904	5	0.035mm(5/3600 inch)	720*	0 <= n <= 5952	10	0.071mm(10/3600 inch)	360*	0 <= n <= 2976	20	0.141mm(20/3600 inch)	180*	0 <= n <= 1488	30	0.211mm(30/3600 inch)	120*	0 <= n <= 992	40	0.282mm(40/3600 inch)	90*	0 <= n <= 744	50	0.353mm(50/3600 inch)	72	0 <= n <= 595	60	0.423mm(60/3600 inch)	60	0 <= n <= 496	
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[Initial State]	-																																													
[Related Commands]	<p>[Setting] Commands whose settings are affected by this command. None</p> <p>[Setting] Commands that change the effects of this command. None</p> <p>[Operation] Commands whose functionality is affected by this command. None</p> <p>[Operation] Commands that change the effects of this command. [ESC (U)] sets the Absolute Horizontal Position units/value. [ESC (G)] initialize the Absolute Horizontal Position units/value. [ESC @] initialize units for page and position values.</p>																																													

5.1.8 Set absolute horizontal print position ESC (\$ nL nH m1 m2 m3 m4

Ver 1.00

ESC (\$ nL nH m1 m2 m3 m4

[Name]	Set absolute horizontal print position	[Operation]																																												
[Format]	1BH, 28H, 24H, nL, nH, m1, m2, m3, m4																																													
[Range of Definition]	nL = 04H, nH = 00H (number of bytes to follow) 0 <= m <= 47616																																													
[Function]	<p>1) The printing position in the positive X direction is set to: The maximum Absolute Horizontal Position (AHP) is 209.973mm or (29760/3600 =) 8.267 inches. Position Count (c) is given by: c = m4*256*256*256 + m3*256*256 + m2*256 + m1</p> <p>From the [ESC (U) and the [ESC (U) Extended Command</p> <table border="1"> <thead> <tr> <th>AHP units</th> <th>AHP Value</th> <th>AHP Resolution</th> <th>Abs Horizontal Print Position Value</th> </tr> </thead> <tbody> <tr> <td>_*</td> <td>0.002mm(1/5760 inch)</td> <td>5760*</td> <td>0 <= n <= 47616</td> </tr> <tr> <td>_*</td> <td>0.004mm(1/2880 inch)</td> <td>2880*</td> <td>0 <= n <= 23808</td> </tr> <tr> <td>_*</td> <td>0.008mm(1/1440 inch)</td> <td>1440*</td> <td>0 <= n <= 11904</td> </tr> <tr> <td>5</td> <td>0.035mm(5/3600 inch)</td> <td>720*</td> <td>0 <= n <= 5952</td> </tr> <tr> <td>10</td> <td>0.071mm(10/3600 inch)</td> <td>360*</td> <td>0 <= n <= 2976</td> </tr> <tr> <td>20</td> <td>0.141mm(20/3600 inch)</td> <td>180*</td> <td>0 <= n <= 1488</td> </tr> <tr> <td>30</td> <td>0.211mm(30/3600 inch)</td> <td>120*</td> <td>0 <= n <= 992</td> </tr> <tr> <td>40</td> <td>0.282mm(40/3600 inch)</td> <td>90*</td> <td>0 <= n <= 744</td> </tr> <tr> <td>50</td> <td>0.353mm(50/3600 inch)</td> <td>72</td> <td>0 <= n <= 595</td> </tr> <tr> <td>60</td> <td>0.423mm(60/3600 inch)</td> <td>60</td> <td>0 <= n <= 496</td> </tr> </tbody> </table> <p>*See [ESC (U) Extended command for APH Units for these resolution in general when using [ESC (U)</p> $0 \leq \frac{(256 \times nH + nL) \times 3600}{AHP_units} \leq (29760/3600)\text{inch}$ <p>in general when using [ESC (U) Extended</p> $0 \leq \frac{(256 \times nH + nL) \times \text{Base_Unit}(m)}{AHP_units} \leq (29760/3600)\text{inch}$ <p>from the origin (the left margin position) on the X axis of the position management coordinate system.</p> <p>2) If the Absolute Horizontal Position specified is passed the right margin position, then this command is ignored.</p>	AHP units	AHP Value	AHP Resolution	Abs Horizontal Print Position Value	_*	0.002mm(1/5760 inch)	5760*	0 <= n <= 47616	_*	0.004mm(1/2880 inch)	2880*	0 <= n <= 23808	_*	0.008mm(1/1440 inch)	1440*	0 <= n <= 11904	5	0.035mm(5/3600 inch)	720*	0 <= n <= 5952	10	0.071mm(10/3600 inch)	360*	0 <= n <= 2976	20	0.141mm(20/3600 inch)	180*	0 <= n <= 1488	30	0.211mm(30/3600 inch)	120*	0 <= n <= 992	40	0.282mm(40/3600 inch)	90*	0 <= n <= 744	50	0.353mm(50/3600 inch)	72	0 <= n <= 595	60	0.423mm(60/3600 inch)	60	0 <= n <= 496	
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[Initial State]	-																																													
[Related Commands]	<p>[Setting] Commands whose settings are affected by this command. None</p> <p>[Setting] Commands that change the effects of this command. None</p> <p>[Operation] Commands whose functionality is affected by this command. None</p> <p>[Operation] Commands that change the effects of this command. [ESC (U) sets the Absolute Horizontal Position units/value. [ESC (G) initialize the Absolute Horizontal Position units/value. [ESC @] initialize units for page and position values.</p>																																													

5.1.9 Set page length in defined unit ESC (C nL nH mL mH

ESC (C nL nH mL mH

Ver 1.00

[Name]	Set page length in defined unit	[Operation]
[Format]	1BH, 28H, 43H, nL, nH, mL, mH	
[Range of Definition]	nL=02H, nH=00H $0 < ((mH \times 256) + mL) \times (\text{page management value}) \leq 1117.6\text{mm}(44 \text{ inches})$	
[Function]	<ol style="list-style-type: none">1) The page length is set to $((mH \times 256) + mL) \times (\text{page management value}) * 25.4\text{mm}$.2) If the formula applied values of mH and mL produces a value outside the Range of Definition, this command is ignored.3) The Y axis origin of the page management coordinate systems and position management coordinate systems are set to the current Y direction printing position. The origin on the X axis is not changed at this time.4) The top margin position is set to the origin on the Y axis. The bottom margin position is set to the position positive Y page length from the top margin.	
[Initial State]	The page length is set to 558.8mm(22 inches).	
[Related Commands]	<p>[Setting] Commands whose settings are affected by this command. The top and bottom margin position settings set by the ESC (c commands are cleared.</p> <p>[Setting] Commands that change the effects of this command. The page length, the page management value, and the top and bottom margin positions are reset to their initial states by the ESC @ and ESC (G commands.</p> <p>[Operation] Commands whose functionality is affected by this command. New page processing by the FF command is affected (the amount of movement is changed). New lines generated by the LF command that go outside the printable area are affected. Processing by the ESC (v command is affected. Processing by the ESC (V command is affected.</p> <p>[Operation] Commands that change the effects of this command. The page management value is set by the ESC (U command.</p>	

5.1.10 Set page length in defined unit (extended) ESC (C nL nH m1 m2 m3 m4

Ver 2.00

ESC (C nL nH m1 m2 m3 m4

[Name]	Set page length in defined unit(extended)	[Operation]
[Format]	1BH, 28H, 43H, nL, nH, m1, m2, m3, m4	
[Range of Definition]	nL=04H, nH=00H $0 \leq (m4 * 100000H + m3 * 10000H + m2 * 100H + m1) * 1440 / (\text{defined value}) \leq 1FFFFFFFH$	
[Function]	<ol style="list-style-type: none">1) The page length is set to $((mH \times 256) + mL) \times (\text{page management value}) * 25.4\text{mm}$.2) If the formula applied values of mH and mL produces a value outside the Range of Definition, this command is ignored.3) The Y axis origin of the page management coordinate systems and position management coordinate systems are set to the current Y direction printing position. The origin on the X axis is not changed at this time.4) The top margin position is set to the origin on the Y axis. The bottom margin position is set to the position positive Y page length from the top margin.	
[Initial State]	The page length is set to 558.8mm(22 inches).	
[Related Commands]	<p>[Setting] Commands whose settings are affected by this command. The top and bottom margin position settings set by the ESC (c commands are cleared.</p> <p>[Setting] Commands that change the effects of this command. The page length, the page management value, and the top and bottom margin positions are reset to their initial states by the ESC @ and ESC (G commands.</p> <p>[Operation] Commands whose functionality is affected by this command. New page processing by the FF command is affected (the amount of movement is changed). New lines generated by the LF command that go outside the printable area are affected. Processing by the ESC (v command is affected. Processing by the ESC (V command is affected.</p> <p>[Operation] Commands that change the effects of this command. The page management value is set by the ESC (U command.</p>	

5.1.11 Select graphics mode ESC (G nL nH m

Ver 1.00

ESC (G nL nH m

[Name]	Select graphics mode	[Operation]
[Format]	1BH, 28H, 47H, nL, nH, m	
[Range of Definition]	nL=01H, nH=00H m=01H or 31H	
[Function]	1) Shifts to graphics mode. 2) If m has any value other than the above, this command is ignored. 3) Printing of lines up to the present line is started, and the printer waits until the printing is completed. 4) The various settings are the same as when the power is turned on. 5) The page management coordinate system and the position management coordinate system are set by taking the printing position in the Y direction at the time of setting as the origin on the Y axis. 6) The printing position in the X direction is set to the origin upon the X axis. 7) The microweave printing mode selection command becomes effective.	
[Initial State]	Character mode.	
[Related Commands]		
[Setting]	Commands whose settings are affected by this command. Default character mode selection made by the ESC @ command is changed.	
[Setting]	Commands that change the effects of this command. The graphics mode is cancelled by the ESC @ command.	
[Operation]	Commands whose functionality is affected by this command. In graphics mode, only the following commands are valid: LF ESC (C FF ESC (\ CR ESC (U ESC EM ESC (V ESC. ESC (r ESC + ESC (v ESC @ ESC \ ESC (c ESC \$ ESC (i ESC r ESC (K ESC U ESC (e	
[Operation]	Commands that change the effects of this command. None	

5.1.12 Set unit (Set the number of 1/3600 inch units per programming value) ESC (U nL nH m

Ver 1.00

ESC (U nL nH m

[Name]	Set unit (Set the number of 1/3600 inch units per programming value)	[Setting]																								
[Format]	1BH, 28H, 55H, nL, nH, m																									
[Range of Definition]	nL=01H, nH=00H m=05H, 0AH, 14H, 1EH, 28H, 32H, 3CH (units 0.0071mm(1/3600 inch)) (=5, 10, 20, 30, 40, 50, 60)																									
[Function]	1) Set the number of 0.0071mm(1/3600 inch) units for each of the following values: Horizontal Position units Vertical Position units Page Management units 2) If m has an out of range value, this command is ignored. 3) Values and meaning <table border="1"><thead><tr><th>units</th><th>Value</th><th>DPI</th></tr></thead><tbody><tr><td>5</td><td>0.035mm(5/3600 inch)</td><td>720</td></tr><tr><td>10</td><td>0.071mm(10/3600 inch)</td><td>360</td></tr><tr><td>20</td><td>0.141mm(20/3600 inch)</td><td>180</td></tr><tr><td>30</td><td>0.211mm(30/3600 inch)</td><td>120</td></tr><tr><td>40</td><td>0.282mm(40/3600 inch)</td><td>90</td></tr><tr><td>50</td><td>0.353mm(50/3600 inch)</td><td>72</td></tr><tr><td>60</td><td>0.423mm(60/3600 inch)</td><td>60</td></tr></tbody></table>	units	Value	DPI	5	0.035mm(5/3600 inch)	720	10	0.071mm(10/3600 inch)	360	20	0.141mm(20/3600 inch)	180	30	0.211mm(30/3600 inch)	120	40	0.282mm(40/3600 inch)	90	50	0.353mm(50/3600 inch)	72	60	0.423mm(60/3600 inch)	60	
units	Value	DPI																								
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60	0.423mm(60/3600 inch)	60																								
[Initial State]	n = 10 => 360 DPI																									
[Related Commands]																										
[Setting]	Commands whose settings are affected by this command. None																									
[Setting]	Commands that change the effects of this command. None																									
[Operation]	Commands whose functionality is affected by this command. The units for the relative horizontal position setting value used by the ESC \ command are set. The units for the absolute horizontal position setting value used by the ESC \$ command are set. The units for the relative vertical position setting value used by the ESC (v command are set. The units for the absolute vertical position setting value used by the ESC (V command are set. The units for the "unit" unit page length specification value used by the ESC (C command are set. The units for the page format specification value used by the ESC (c command are set.																									
[Operation]	Commands that change the effects of this command. All values are restored to their initial state to by the ESC @ command.																									

5.1.13 Set unit (extended) ESC (U nL nH P V H mL mH

Ver 2.00

ESC (U nL nH P V H mL mH

[Name]	Set unit(extended)	[Setting]
[Format]	1BH, 28H, 55H, nL, nH, P, V, H, mL mH	
[Range of Definition]	nL=05H, nH=00H $m = (mH * 256 + mL) = \{90, 120, 180, 360, 720, 1440, 2880, 5760\}$ $P = m / \{90, 120, 180, 360, 720, 1440, 2880\}$ $V = m / \{90, 120, 180, 360, 720, 1440, 2880, 5760\}$ $H = m / \{90, 120, 180, 360, 720, 1440, 2880, 5760\}$ where P, V, H are less or equal to m In general: Unit = m / 'unit dpi'	
[Function]	1) 1) Set the number of 0.0071mm(1/3600 inch) units for each of the following values: Horizontal Position units Vertical Position units Page Management units 2) If m, P, V, H are out of range, this command is ignored.	
[Initial State]	VALUE length of value Based Units (m): 360 Page management: 1/m = 1/360 inch P = V = H: 1 => 360 DPI	
[Related Commands]		

[Setting] Commands whose settings are affected by this command.

None

[Setting] Commands that change the effects of this command.

None

[Operation] Commands whose functionality is affected by this command.

The relative horizontal position setting value used by the ESC \ and ESC(/ commands is set.

The absolute horizontal position setting value used by the ESC \$ and ESC(\$ commands is set.

The relative vertical position setting value used by the ESC (v command is set.

The absolute vertical position setting value used the ESC (V command is set.

The unit page length specification value used by the ESC (C command is set.

The page format specification value used by the ESC (c command is set.

The paper dimension specification value used by the ESC (S command is set.

[Operation] Commands that change the effects of this command.

The printer settings are restored to their initial state to by the ESC @ command.

5.1.14 Set absolute vertical print position ESC (V nL nH mL mH)

ESC (V nL nH mL mH)

Ver 1.00

[Name]	Set absolute vertical print position	[Operation]
[Format]	1BH, 28H, 56H, nL, nH, mL, mH	
[Range of Definition]	nL=02H, nH=00H (Vertical position set) = (mL + mH x 256) x (units set)	
[Function]	<ol style="list-style-type: none">1) The printing position in the Y direction is set to a position spaced in the positive direction by (256 x mH + mL) x (the set absolute vertical position unit) x 25.4 mm from the origin upon the Y axis of the position management coordinate system.2) If this command sets the printing position in the Y direction to a non-printable area, then the paper is ejected. The position management coordinate system is set to the next page. In addition, the printing position in the Y direction is reset to the origin on the Y axis of the new position management coordinate system.3) Settings made in a negative direction are ignored.	
[Initial State]	-	
[Related Commands]		
	[Setting] Commands whose settings are affected by this command. None	
	[Setting] Commands that change the effects of this command. None	
	[Operation] Commands whose functionality is affected by this command. None	
	[Operation] Commands that change the effects of this command. The absolute vertical position unit value is set by the ESC(U commands. The range of unprintable areas are set by the ESC(c, ESC N and ESC O commands. The relative vertical position setting value, the non-printable area and the printing position in the Y direction are reset to their initial states by the ESC @ and ESC (G commands.	

5.1.15 Set absolute vertical print position (extended) ESC (V nL nH m1 m2 m3 m4

ESC (V nL nH m1 m2 m3 m4

Ver 2.00

[Name]	Set absolute vertical print position(extended)	[Operation]
[Format]	1BH, 28H, 56H, nL, nH, m1, m2, m3, m4	
[Range of Definition]	nL=04H, nH=00H (Vertical position set) = (mL + mH x 256) x (units set) $0 \leq (m4*1000000H + m3*10000H + m2*100H + m1) \times 1440 \leq 1FFFFFFFH$ (absolute vertical print position value)	
[Function]	<ol style="list-style-type: none"> 1) The printing position in the Y direction is set to a position spaced in the positive direction by $(m4*256*256*256 + m3*256*256 + m2*256 + m1) \times$ (absolute vertical print position value) from the Y axis of the position management coordinate system. 2) If the printing position in the Y direction has been set by this command to a non-printable area, then the paper is ejected. The position management coordinate system is set to the next page. In addition, the printing position in the Y direction is reset to the origin upon the Y axis of the new position management coordinate system. 3) Settings made in the negative direction are ignored. 	
[Initial State]	-	
[Related Commands]	<p>[Setting] Commands whose settings are affected by this command. None</p> <p>[Setting] Commands that change the effects of this command. None</p> <p>[Operation] Commands whose functionality is affected by this command. None</p> <p>[Operation] Commands that change the effects of this command. The absolute vertical position value is set by the ESC(U commands. The range of unprintable areas are set by the ESC(c, ESC N and ESC O commands. The relative vertical position setting value, the non-printable area and the printing position in the Y direction are reset to their initial states by the ESC @ and ESC (G commands.</p>	

5.1.16 Set page format ESC (c nL nH tL tH bL bH

Ver 1.00

ESC (c nL nH tL tH bL bH

[Name]	Set page format	[Setting]
[Format]	1BH, 28H, 63H, nL, nH, tL, tH, bL, bH	
[Range of Definition]	nL=04H, nH =00H $((tH \times 256) + tL) < ((bH \times 256) + bL)$ $((bH \times 256) + bL) \times (\text{page management value}) \leq 1117.6\text{mm (44 inches)}$	
[Function]	<ol style="list-style-type: none">1) The position management coordinate system origin on the Y axis is set to positive $(256 \times tH + tL) \times (\text{page management value})$ from the origin on the Y axis of the page management coordinate system. The bottom margin is set to $(256 \times bH + bL) \times (\text{page management unit value})$ from the origin of the position management coordinate system along the Y axis.2) The printing position is shifted in the Y direction to the origin of the position management coordinate system. The origin on the X axis is not changed.3) If the distance, from the origin of the position management coordinate system along the Y axis to the bottom margin position, is greater than the page length, then this distance is set as the new page length.4) If the paper which is inserted is cut sheet paper, then the distance from the top margin position to the bottom margin position is set as the page length.	
[Initial State]	The top margin position is set to 8.382mm (0.33 inches). The bottom margin position is set to the page length. The page length is set to 558.8mm (22 inches).	
[Related Commands]	<p>[Setting] Commands whose settings are affected by this command. The set page length is changed by the ESC (C commands).</p> <p>[Setting] Commands that change the effects of this command. The top margin and the bottom margin are set by the ESC commands. The page length and the bottom margin position are returned to their initial states by the ESC @ and the ESC (G commands).</p> <p>[Operation] Commands whose functionality is affected by this command. New page processing by the FF command is affected (the amount of movement is changed). New lines generated by the LF command, which go outside the printable area, are affected. Processing by the ESC (v command is affected. Processing by the ESC (V command is affected.</p> <p>[Operation] Commands that change the effects of this command. The page management value is set by the ESC (U command.</p>	

5.1.17 Set page format (extended) ESC (c nL nH t1 t2 t3 t4 b1 b2 b3 b4

Ver 2.00

ESC (c nL nH t1 t2 t3 t4 b1 b2 b3 b4

[Name]	Set page format(extended)	[Setting]
[Format]	1BH, 28H, 63H, nL, nH, t1, t2, t3, t4, b1, b2, b3, b4	
[Range of Definition]	nL=08H, nH =00H $0 < t1, t2, t3, t4, b1, b2, b3, b4 \leq 255$ $0 \leq \frac{(t4 * 1000000H + t3 * 10000H + t2 * 100H + t1) * 1440}{(defined\ unit)} \leq 1FFFFFFFH$ $0 \leq \frac{(b4 * 1000000H + b3 * 10000H + b2 * 100H + b1) * 1440}{(defined\ unit)} \leq 1FFFFFFFH$ $(t4 * 1000000H + t3 * 10000H + t2 * 100H + t1) < (b4 * 1000000H + b3 * 10000H + b2 * 100H + b1)$	
[Function]	<ol style="list-style-type: none"> The origin on the Y axis of the position management coordinate system is set to: $(t4 * 256 * 256 * 256 + t3 * 256 * 256 + t2 * 256 + t1) \times (defined\ unit)$ from the origin on the Y axis of the page management coordinate system. The bottom margin is set at a position spaced in the positive direction to: $(b4 * 256 * 256 * 256 + b3 * 256 * 256 + b2 * 256 + b1) \times (defined\ unit)$ from the origin on the Y axis of the position management coordinate system. The printing position in the Y direction is shifted to the origin of the position management coordinate system. At this time, the origin on the X axis is not changed. If the distance from the origin on the Y axis of the position management coordinate system to the bottom margin position is greater than the page length, then this distance from the origin on the Y axis to the bottom margin position is set as the new page length. If the paper inserted for printing is cut sheet paper, then the distance from the top margin position to the bottom margin position is set as the page length. This command is only effective in graphics mode. 	
[Initial State]	The top margin position is set to 8.382mm(0.33 inches) . The bottom margin position is set to the page length. The page length is set to 558.8mm(22 inches).	
[Related Commands]	<p>[Setting] Commands whose settings are affected by this command. The set page length is changed by the ESC (C command).</p> <p>[Setting] Commands that change the effects of this command. The top margin and the bottom margin are set by the ESC commands. The page length and the bottom margin position are returned to their initial states by the ESC @ and the ESC (G commands).</p> <p>[Operation] Commands whose functionality is affected by this command. New page processing by the FF command is affected (the amount of movement is changed). New lines generated by the LF command which go outside the printable area are affected. Processing by the ESC (v command is affected). Processing by the ESC (V command is affected).</p> <p>[Operation] Commands that change the effects of this command. The page management units are set by the ESC (U command).</p>	

ESC (K nL nH m n

[Name]	Monochrome Mode / Color Mode Selection	[setting]
[Format]	1BH, 28H, 4BH, nL, nH, m, n	
[Range of Definition]	nL=01H, nH=00H m=00H n=00H, 01H, 02H	
[Function]	<ol style="list-style-type: none"> 1) Monochrome mode or color mode is selected. <ul style="list-style-type: none"> n=00H: Default mode (color mode) n=01H: Monochrome mode n=02H: Color mode 2) When monochrome mode is selected, the color selection commands ESC r and ESC (r are ignored. Furthermore, the results of color raster commands which have been dispatched in monochrome mode are unpredictable. 3) If n has any value other than the above, this command is ignored. 	
[Initial State]	Default mode.	
[Supplementary Note]	Higher throughput speeds may be obtained for printing monochrome data when monochrome mode is selected rather than color mode. For printing in color, the color mode must be selected.	
[Related Commands]	<p>[Setting] Commands whose settings are affected by this command. When monochrome mode is selected, color setting modes using the ESC r and ESC (r commands are ignored.</p> <p>[Setting] Commands that change the effects of this command. The default mode is selected by the ESC @ command.</p> <p>[Operation] Commands whose functionality is affected by this command. None.</p> <p>[Operation] Commands that change the effects of this command. None.</p>	

5.1.19 Select MicroWeave printing mode ESC (i

Ver 1.00

ESC (i

[Name]	Select MicroWeave printing mode	[Operation]
[Format]	1BH, 28H, 69H, 01H, 00H, n	
[Range of Definition]	n=00H, 01H, 30H, 31H	
[Function]	1) Selects / deselects the MicroWeave mode. all parameters : deselects	
[Initial State]	Non-MicroWeave mode	
[Related Commands]	[Setting] Commands whose settings are affected by this command. This command changes the non-selected state set by either the ESC (G or ESC @ commands. [Setting] Commands that change the effects of this command. The ESC (G command sets the non-selected state. The ESC @ command sets the non-selected state. [Operation] Commands whose functionality is affected by this command. None [Operation] Commands that change the effects of this command. None	

5.1.20 Selects dot size ESC (e nL nH m d

Ver 1.00

ESC (e nL nH m d

[Name]	Selects dot size	[Setting]
[Format]	1BH, 28H, 65H, nL, nH, m, d	
[Range of Definition]	nL=02H, nH=00H m=00H, d=00H, 10H, 21H, 22H, 25H, 31H, 32H	
[Function]	1) The dot size is set according to the value of d. 2) The d parameter has the following meaning: d=00H: MC1-1 1 1bit (for DOS) d=10H: Economy 2bit d=21H: MC1-1 2bit d=22H: MC1-2 2bit d=25H: MC1-5 2bit d=31H: MC2-1 2bit d=32H: MC2-2 2bit 3) Default dot sizes are specific to each printer model. 4) Dot control is valid irrespective of printing mode or printing density. 5) If the dot size is changed part way through a page, the results are unpredictable. 6) If n has any value other than the above, this command is ignored.	
[Initial State]	Default	
[Related Commands]	[Setting] Commands whose settings are affected by this command. Use of the ESC . command requires this command to be sent as follows: ESC (e 2 0 0 0 [Setting] Commands that change the effects of this command. Default dot size is automatically selected by the ESC @ or ESC (G commands. [Operation] Commands whose functionality is affected by this command. None [Operation] Commands that change the effects of this command. None	

ESC (r nL nH m n

[Name]	Select color	[Setting]
--------	--------------	-----------

[Format]	1BH, 28H, 72H, nL, nH, m, n	
----------	-----------------------------	--

[Range of Definition]	nL=02H, nH=00H	
-----------------------	----------------	--

	m=00H, 01H	
--	------------	--

	n=00H, 01H, 02H, 04H	
--	----------------------	--

[Function]	1) The print color is selected according to the values of m and n.	
------------	--	--

m	N	Print color
00H	00H	Black
00H	01H	Magenta
00H	02H	Cyan
00H	04H	Yellow
01H	01H	Light Magenta
01H	02H	Light Cyan

2) If either m or n has a value other than those above, this command is ignored.

3) This command is only effective in graphics mode.

[Initial State]	Black is selected.	
-----------------	--------------------	--

[Related Commands]		
--------------------	--	--

	[Setting] Commands whose settings are affected by this command.	
--	---	--

	None	
--	------	--

	[Setting] Commands that change the effects of this command.	
--	---	--

	The ESC @ command selects black.	
--	----------------------------------	--

	[Operation] Commands whose functionality is affected by this command.	
--	---	--

	None	
--	------	--

	[Operation] Commands that change the effects of this command.	
--	---	--

	The ESC (G command puts the printer in graphics mode.	
--	---	--

5.1.22 Set relative vertical print position ESC (v nL nH mL mH

Ver 1.00

ESC (v nL nH mL mH

[Name]	Set relative vertical print position	[Setting]
[Format]	1BH, 28H, 76H, nL, nH, mL, mH	
[Range of Definition]	nL=02H, nH=00H (Relative vertical set position) = (mL + mH x 256) x (set units)	
[Function]	1) The printing position in the Y direction is set to positive: (256 x mH + mL) x (relative vertical position setting value) x 25.4mm from the present Y printing position. 2) If the position set by this command is higher than the top margin position on the current page, this command is ignored. 3) If the Y direction printing position set by this command extends to a non-printable area, then the position management coordinate system is set to the next page; and the printing position in the Y direction is reset to the origin on the Y axis of the new position management coordinate system.	
[Initial State]	-	
[Related Commands]	[Setting] Commands whose settings are affected by this command. None [Setting] Commands that change the effects of this command. None [Operation] Commands whose functionality is affected by this command. None [Operation] Commands that change the effects of this command. The relative vertical position setting value is set by the ESC (U command). The non-printable area is set by the ESC (c command). The relative vertical position setting value, the non-printable area, and the printing position in the Y direction are reset to their initial states by the ESC @ and ESC (G commands.	

5.1.23 Set relative vertical print position (extended) ESC (v nL nH m1 m2 m3 m4

Ver 2.00

ESC (v nL nH m1 m2 m3 m4

[Name]	Set relative vertical print position(extended)	[Setting]
[Format]	1BH, 28H, 76H, nL, nH, m1, m2, m3, m4	
[Range of Definition]	nL=04H, nH=00H $0 \leq (m4*100000H + m3*10000H + m2*10H + m1) \times 1440 \leq 1FFFFFFFH$ (relative vertical print position value)	
[Function]	<ol style="list-style-type: none"> 1) The printing position in the Y direction is set to positive: $(m4*256*256*256 + m3*256*256 + m2*256 + m1) \times$ (relative vertical print position value) from the present Y printing position. 2) If the position set by this command is higher than the top margin position on the current page, this command is ignored. 3) If the Y direction printing position set by this command extends to a non-printable area, then the position management coordinate system is set to the next page; and the printing position in the Y direction is reset to the origin on the Y axis of the new position management coordinate system. 	
[Initial State]	-	
[Related Commands]	<p>[Setting] Commands whose settings are affected by this command. None</p> <p>[Setting] Commands that change the effects of this command. None</p> <p>[Operation] Commands whose functionality is affected by this command. None</p> <p>[Operation] Commands that change the effects of this command. The relative vertical position setting value is set by the ESC (U command). The non-printable area is set by the ESC (c commands). The relative vertical position setting value, the non-printable area, and the printing position in the Y direction are reset to their initial states by the ESC @ and ESC (G commands).</p>	

5.1.24 Print raster graphics ESC . c v h m nL nH d1...dk (c=0,1)

ESC . c v h m nL nH d1...dk (c=0,1)

Ver 1.00

[Name]	Print raster graphics	[Operation]
[Format]	1BH, 2EH, c, v, h m, nL, nH, d1...dk	
[Range of Definition]	c=0, 1, 2 (a description of the behavior of this function when c == 2 is in the next section) v=5, 10 (v/3600 dpi) h=20 (h/3600 dpi) 0 ≤ nL ≤ 255 0 ≤ nH ≤ 127 0 ≤ d ≤ 255 m=1, 8, 24, (color mode)	

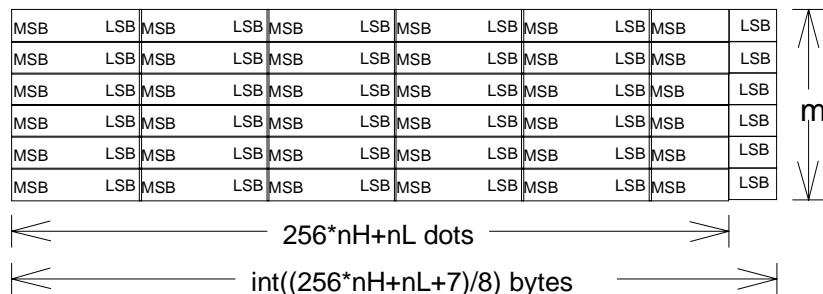
[Function] This function prints raster graphics at c style compression, with v/3600 dpi vertical density, and h/3600 dpi horizontal density, to print out m raster lines, or scan lines, or rows of dots in the vertical direction, covering (nH * 256) + nL total dots, using k subsequent bytes of data.

- 1) If c has any value other than those specified above, this command terminates at the instant that c is processed.
If either v or h has any value other than the above, this command is ignored.
- 2) The actual image pattern is generated according to a raster method determined by the following parameters:

- c: printing mode
 - 00H: full graphics mode (non-compressed mode)
 - 01H: run-length encoded compression mode
 - 02H: TIFF compression mode

If TIFF compression mode is used, then m must be equal to 1.
Explanation of this function where c == 2 is in the next section
- v: printing density in the vertical direction v/3600 (dpi)
- h: printing density in the horizontal direction h/3600 (dpi)
- m: number of dots (rows) in the vertical direction, number of raster or scan lines
- nL, nH: number of dots covered in the horizontal direction = ((256 * nH) + nL)
- k: number of items of data = m * int((nH * 256 + nL + 7)/8) for uncompressed data
= undeterminable amount for compressed data
- d: data

Full graphics mode (non-compressed mode)
In full graphics mode, all of the data is transferred in raster format. Raster data that extends beyond the ((256 * nH) + nL) dot area boundary will be automatically clipped or discarded.
The total amount of data sent is k = int((256 * nH + nL + 7)/8) * m bytes.



Run-length encoding compression mode

In run-length encoding compression mode, the data to be printed is always transferred in the format (counter) + (data), where counter represents one byte of information.

If $0 \leq \text{counter} \leq 127$, then the data following the counter is non-compressed data, and the length of the compressed data is (counter)+1 bytes.

If $128 \leq \text{counter} \leq 255$, then the data following the counter will be one byte of compressed data, . This single compressed byte of data is thereafter to be repeated $257 - (\text{counter})$ times..

- 3) This function also increments the X printing position relative to the current X printing position by the amount: $(256 \times nH + nL) \times h / 3600 \times 25.4\text{mm}$.
If this command specifies an X position in the non-printable area (right margin), the right margin position is automatically reset to the X value of the new printing position.
- 4) If image data is designated for a non-printable area, then the image data designated for that area is ignored.

The following parameter combinations are supported by this command:

This printer doesn't have printer microweave mode.

1. Case of non-microweave mode

Mode (V x H)	Parameter				ESC(e d	Used Nozzle number
	c	v	h	m		
360x180	0/1/2	10	20	1/8/24	00h	180Nozzles

2. Case of printer microweave mode

No support.

*1 In these circumstances, it is recommended that m be set equal to 1.

*2 Whenever the ESC . command is used, the Normal (ESC (e 2 0 0 0)) size must be selected.

[Initial State]

Character mode

[Related Commands]

[Setting] Commands whose settings are affected by this command.

None

[Setting] Commands that change the effects of this command.

None

[Operation] Commands whose functionality is affected by this command.

None

[Operation] Commands that change the effects of this command.

None

ESC . 2 v h 1 0 0

[Name]	Enter TIFF compressed mode	[Setting]												
[Format]	1BH 2EH 32H, v, h, 01H, 00H, 00H													
[Range of Definition]	v=5, 10 (v/3600 dpi) h=5, 10 (h/3600 dpi)													
[Function]	<p>1) TIFF format raster graphics compression mode is set from this command until the <EXIT> command.</p> <p>2) This supports the TIFF compression method.</p> <p>3) Each of the parameters has the following meaning:</p> <p style="margin-left: 40px;">v: printing density in the vertical direction v/3600 (dpi)</p> <p style="margin-left: 40px;">h: printing density in the horizontal direction h/3600 (dpi)</p> <p>Only the following combinations of printing densities in the vertical direction and in the horizontal direction are permitted:</p> <table border="0" style="margin-left: 40px;"> <thead> <tr> <th>v</th> <th>Vertical direction (dpi)</th> <th>h</th> <th>Horizontal direction (dpi)</th> </tr> </thead> <tbody> <tr> <td>10</td> <td>360</td> <td>10</td> <td>360</td> </tr> <tr> <td>5</td> <td>720</td> <td>5</td> <td>720</td> </tr> </tbody> </table> <p>4) The commands which are valid in this mode are the following:</p> <p style="margin-left: 40px;"><XFER>: transfer graphics image data</p> <p style="margin-left: 40px;"><MOVX>: set horizontal position</p> <p style="margin-left: 40px;"><MOVY>: set vertical position</p> <p style="margin-left: 40px;"><COLR>: set color</p> <p style="margin-left: 40px;"><CR>: set printing position in the X direction to the left margin position</p> <p style="margin-left: 40px;"><EXIT>: cancel compressed format mode</p> <p style="margin-left: 40px;"><MOVXBYTE>:make the unit of horizontal direction setting into byte units</p> <p style="margin-left: 40px;"><MOVXDOT>:make the unit of horizontal direction setting into dot units</p> <p>5) The <MOVX> command uses the relative horizontal position setting value set by the ESC (U command. The <MOVY> command uses the relative vertical position setting value set by the ESC (U command.</p> <p>6) The printing position in the X direction is set to the origin upon the X axis.</p>	v	Vertical direction (dpi)	h	Horizontal direction (dpi)	10	360	10	360	5	720	5	720	
v	Vertical direction (dpi)	h	Horizontal direction (dpi)											
10	360	10	360											
5	720	5	720											
[Initial State]	Character mode													
[Related Commands]	<p>[Setting] Commands whose settings are affected by this command.</p> <p style="margin-left: 40px;">The full graphics mode set by the ESC (G command is switched to the run-length encoding compression mode.</p> <p>[Setting] Commands that change the effects of this command.</p> <p style="margin-left: 40px;">The TIFF compression mode is canceled by the EXIT command.</p> <p>[Operation] Commands whose functionality is affected by this command.</p> <p style="margin-left: 40px;">Only the following commands are valid:</p> <table border="0" style="margin-left: 40px;"> <tbody> <tr> <td>XFER</td> <td>CR</td> </tr> <tr> <td>MOVX</td> <td>EXIT</td> </tr> <tr> <td>MOVY</td> <td>MOVXBYTE</td> </tr> <tr> <td>COLR</td> <td>MOVXDOT</td> </tr> </tbody> </table> <p>[Operation] Commands that change the effects of this command.</p> <p style="margin-left: 40px;">The relative horizontal and vertical position setting values are set by the ESC (U command.</p>	XFER	CR	MOVX	EXIT	MOVY	MOVXBYTE	COLR	MOVXDOT					
XFER	CR													
MOVX	EXIT													
MOVY	MOVXBYTE													
COLR	MOVXDOT													

ESC (S nL nH w1 w2 w3 w4 l1 l2 l3 l4

[Name] Set paper dimension

[Format] 1BH, 28H, 53H, nL, nH, w1, w2, w3, w4, l1, l2, l3, l4

[Range of Definition]

nL=08H, nH=00H

 $0 \leq (w4 * 1000000H + w3 * 10000H + w2 * 100H + w1) * 1440 / (\text{defined unit}) \leq 7FFFFFFFH$ $0 \leq (l4 * 1000000H + l3 * 10000H + l2 * 100H + l1) * 1440 / (\text{defined unit}) \leq 7FFFFFFFH$

[Function]

- 1) Set paper length (from top-edge to bottom-edge) and paper width (from left-edge to right-edge) in the defined unit.
- 2) This command is used to expand the bottom-margin (3mm) of printer.
- 3) Paper length and width is defined by the following formula:

$$\text{physical paper length} = (l4 * 1000000H + l3 * 10000H + l2 * 100H + l1) * (\text{defined unit})$$

$$\text{physical paper width} = (w4 * 1000000H + w3 * 10000H + w2 * 100H + w1) * (\text{defined unit})$$
- 4) This command can be used only during graphics mode, entered by sending the ESC (G command.
- 5) This command will work effectively only when the defined paper length is the same as the physical paper length measured by the printer.
- 6) If some portion of an image extends beyond the bottom edge of the page, then that extended portion of the image is deleted.
 Also, if the defined paper length is shorter than the actual paper length, the portion of an image beyond the defined paper length will be deleted.
- 7) Paper width is ignored by the printer.

[Initial State] -

[Related Commands]

[Setting] Commands whose settings are affected by this command.

None

[Setting] Commands that change the effects of this command.

The page control setting unit is set by the ESC (U command.

[Operation] Commands whose functionality is affected by this command.

None

[Operation] Commands that change the effects of this command.

The initial state is returned to by the ESC @ command.

The initial state is returned to by the ESC(G command.

5.1.27 Set the raster image resolution ESC (D nL nH rL rH v h

ESC (D nL nH rL rH v h

[Name] Set the raster image resolution
 [Format] 1BH, 28H, 44H, nL,nH, rL, rH, v,h
 [Range of Definition]
 nL=04H, nH=00H
 0 <= v <= 127
 0 <= h <=127

[Function]
 1) Sets the raster image resolution (ESC i).
 Vertical resolution : (rH*256 + rL) / v dpi
 Horizontal resolution : (rH*256 + rL) / h dpi
 2) Available resolutions are : 360, 720dpi
 3) Following parameters are supported.

This printer doesn't have printer microweave mode.

1. In case of microweave mode off

1. Case of Driver microweave mode

Mode (H x V)	ESC (D		ESC i	ESC(e	Used Nozzle number
	h / r	v / r	mH*256+mL	d	
360x180	4/1440	8/1440	180	10h/31h/32h	180Nozzles
720x180	2/1440	8/1440	180	21h/22h/25h	180Nozzle

2. Case of printer microweave mode

No support.

[Initial State] -

[Related Commands]

[Setting] Commands whose settings are affected by this command.

The Resolution set of Raster image exerts the influence on the processing by the ESC i command .

[Setting] Commands that change the effects of this command.

The Resolution setting of Raster image is returned to the initial states by the ESC @ and the ESC (G commands.

[Operation] Commands whose functionality is affected by this command.

None

[Operation] Commands that change the effects of this command.

None

ESC i r c b nL nH mL mH d1.....dk

[Name] Transfer Raster image
 [Format] 1BH,69H, r, c, b, nL, nH, mL, mH, d1, d2, ..., dk
 [Range of Definition]

r = 00H, 01H, 02H, 04H, 11H, 12H
 c = 00H, 01H
 b = 01H, 02H
 0000H <= (nH*256 + nL) <= 7FFFH
 0001H <= (mH*256 + mL) <= 7FFFH

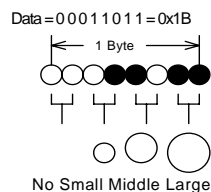
[Function]

- 1) Prints dot graphics in raster format.
- 2) Parameters are used as described below:
 - r : color of ink
 - 00H:black 01H:magenta
 - 02H:cyan 04H:yellow
 - 11H:light magenta 12H:light cyan
 - c : compression method
 - 00H:non-compressed
 - 01H:Run Length Encoding
 - b : bit length required for each pixel of image data
 - 01H:1bit/pixel (for Micro, Normal x 1 x 2 dot)
 - For every 1 bit of data:
 - 0 no dot
 - 1 a normal size dot for the current dpi
 will be printed at the pixel location for that one bit.
 - 02H:2bits per pixel (for dot sizes requiring 2 bits to designate the size)
 - For every 2 bits of data:
 - 00 no dot
 - 01 a small dot
 - 10 a medium size dot
 - 11 a large size dot
 will be printed at the pixel location for those 2 bits.
 Sample bits of data (for 4 pixels of an image), and the results of that data, are displayed in the upcoming diagram.

nL, nH: Horizontal byte count, according to the following formula:
 $nH = INT(\text{horizontal byte count} / 256)$
 $= INT(((\text{horizontal dot count}) * (\text{bit length of each pixel}) + 7) / 8) / 256$
 $nL = MOD(\text{horizontal byte count} / 256)$
 $= MOD(((\text{horizontal dot count}) * (\text{bit length of each pixel}) + 7) / 8) / 256$
 mL, mH: Vertical dot count (rows of dot graphics), according to the following formula:
 $mH = INT(\text{vertical dot count} / 256)$
 $mL = MOD(\text{vertical dot count} / 256)$
 k : Total numbers of data bytes, according to the following formula:
 $k = (nH*256 + nL) * (mH*256 + mL)$

**** Sample bits of data for 4 pixels of an image using 2 bits data/pixel:**

The size of the dot is designated with a binary number, using 2 bits for every 1 picture element.
 No Dot: 00, small dot: 01, medium dot: 10, large dot: 11



[Initial State] -

5.1.29 Turn unidirectional mode on/off ESC U n

Ver 1.00

ESC U n

[Name]	Turn unidirectional mode on/off	[Setting]
[Format]	1BH, 55H, n	
[Range of Definition]	n=00H, 01H, 02H, 30H, 31H, 32H	
[Function]	1) The printing direction is selected according to the value of n in the following manner: n=00H or 30H: selects bi-directional printing n=01H or 31H: selects unidirectional printing (0 to 80 column) n=02H or 32H: selects automatic printing direction control n=03H or 33H: selects unidirectional printing (80 to 0 column) 2) If n has any value other than the above, this command is ignored.	
[Initial State]	Bi-directional printing	
[Related Commands]	[Setting] Commands whose settings are affected by this command. ESC @ initialized values may be cancelled by this command. [Setting] Commands that change the effects of this command. ESC @ command will return the printer to its Initial State values. [Operation] Commands whose functionality is affected by this command. None [Operation] Commands that change the effects of this command. None	

5.1.30 Set relative horizontal printing position ESC \ nL nH

Ver 1.00

ESC \ nL nH

[Name]	Set relative horizontal printing position	[Operation]
[Format]	1BH, 5CH, nL, nH	
[Range of Definition]	$(nL + 256 \times nH) \times (\text{relative horizontal position setting value}) \times 25.4\text{mm}$	
[Function]	<ol style="list-style-type: none">1) If bit 6 of nH is 1, then nH will be negative, and the Most Significant Bit (bit 7) is presumed to be 1. Negative values are expressed in two's complement.2) The printing position in the X direction is incremented from the current X position by the following amount $(256 \times nH + nL) \times (\text{relative horizontal position setting value})$. The relative horizontal position setting value is set with the ESC (U command). The defined default relative horizontal position setting value is 0.141mm(1/180inch).3) If the position set by this command is within the non-printable area, it is ignored. However, it is possible to shift to a position in the right margin area.	
[Initial State]	-	
[Related Commands]	<p>[Setting] Commands whose settings are affected by this command. None</p> <p>[Setting] Commands that change the effects of this command. None</p> <p>[Operation] Commands whose functionality is affected by this command. None</p> <p>[Operation] Commands that change the effects of this command. The relative horizontal position setting value is set by the ESC (U command). The relative horizontal position setting value is reset to its initial state by the ESC @ or the ESC (G commands.</p>	

5.1.31 Set relative horizontal print position ESC (/ nL nH n1 n2 m1 m2

Ver 1.00

ESC (/ nL nH n1 n2 m1 m2

[Name]	Set relative horizontal print position	[Operation]
[Format]	1BH, 28H, 2FH, nL, nH, m1,m2,m3,m4	
[Range of Definition]	nL=04H, nH=00H $0 \leq \frac{(m4 * 100000H) + (m3 * 10000H) + (m2 * 100) + m1}{2880} \leq 209.973 \text{ mm} = \frac{23808}{2880} \text{ inches}$ (relative horizontal position setting value)	

If bit 7 of m4 is 1, then m4 will be a negative value.

- [Function]
- 1) If bit 7 of m4 is 1, then m4 will be a negative value. Negative values are expressed in two's complement.
 - 2) The printing position in the X direction is incremented from the current X position by the following amount

$$(m4 \times 256 \times 256 \times 256 + m3 \times 256 \times 256 + m2 \times 256 + m1) \times (\text{relative horizontal position setting value})$$

OR

$$((m4 \times 256^3) + (m3 \times 256^2) + (m2 \times 256) + m1) \times (\text{relative horizontal position setting value})$$

The relative horizontal position setting value is set with the ESC (U command.

The defined default value for this command is 0.423mm(1/60inch).

- 3) If the position set by this command is within the non-printable area, it is ignored. However, it is possible to shift to a position in the right margin area.
- 4) This command is only effective in graphics mode.

[Initial State]

-

[Related Commands]

[Setting] Commands whose settings are affected by this command.

None

[Setting] Commands that change the effects of this command.

None

[Operation] Commands whose functionality is affected by this command.

None

[Operation] Commands that change the effects of this command.

The relative horizontal position setting value is set by the ESC (U command.

The relative horizontal position setting value is reset to its initial state by the ESC @ or the ESC (G commands.

5.1.32 Select printing color ESC r n

Ver 1.00

ESC r n

[Name]	Select printing color	[Setting]
[Format]	1BH, 72H, n	
[Range of Definition]	00H ≤ n ≤ 04H	
[Function]	1) The printing color is selected according to the value of n, as follows: if n=0: black if n=1: magenta if n=2: cyan if n=4: yellow 2) If n has a value other than the above, this command is ignored.	
[Initial State]	Black selected.	
[Related Commands]	[Setting] Commands whose settings are affected by this command. None [Setting] Commands that change the effects of this command. The ESC @ command selects black. [Operation] Commands whose functionality is affected by this command. None [Operation] Commands that change the effects of this command. None	

5.1.33 Set Print method ID ESC (m n

Ver 1.00

ESC (m nL nH n

[Name]	Set Print method ID	[Setting]
[Format]	1BH, 28H, 6DH, nL, nH, n	
[Range of Definition]	nL=01H,nH=00H 10H, 20H, 21H, 40H, 41H, 50H, 51H, 52H, 53H, 54H, 55H, B0H, B1H, B2H	
[Function]	1) The print mode is selected according to the values of n. 2) If n have a value other than those above, this command is ignored. 3) This command is only effective in graphics mode. 4) The value of setting refers to CHAPTER3.	
[Initial State]	-	
[Related Commands]	[Setting] Commands whose settings are affected by this command. None [Setting] Commands that change the effects of this command. The ESC @ command selects black. [Operation] Commands whose functionality is affected by this command. None [Operation] Commands that change the effects of this command. The ESC (G command puts the printer in graphics mode.	

CHAPTER 6: REMOTE MODE

This section of the Programming Note will provide an overview of EPSON's Remote Mode. The following commands are useful for this printer driver development:

Enter Remote Mode "ESC (R",
Set Meca Sequence "SN",
Exit Remote Mode "ESC NUL"

These Remote Mode commands were used in Chapter 4: Command Sequence – 4.2 Command Transfer Sequence. Individual explanations for these commands, and other remote mode commands referenced in this paper, are provided hereafter.

6.1 Remote Mode Language Description

In addition to EPSON's ESC/P and its extension ESC/P2 serial printer languages, most EPSON printers also implement another EPSON serial printer language that is bi-directional. That language is called Remote Mode. It is entered from ESC/P or ESC/P2 mode.

Remote Mode commands should not be sent to the printer in between consecutive ESC/P2 commands.

The primary purposes for EPSON Remote Mode printer control language are to provide the host with the following:

- 1) Current printer status
- 2) Printer identification
- 3) Capability of setting the printers front panel operations remotely (print the nozzle check pattern, clean print heads, set hardware adjustments for paper size and thickness, save current settings into NVR (non-volatile RAM, print the dot alignment test pattern, etc.)

The Remote Mode command architecture is as follows:

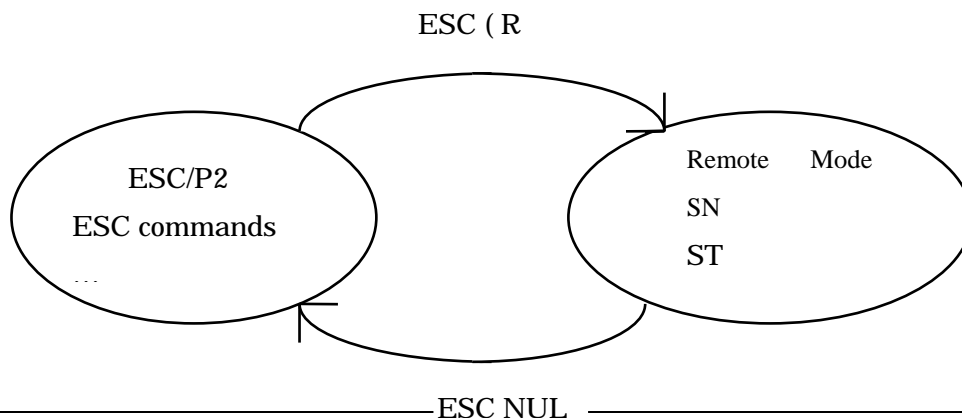
Enter Remote Mode (leave ESC/P or ESC/P 2)

- change printer settings (model dependent) via Remote Mode Set commands and/or
- request printer settings (model dependent) via Remote Mode Reply commands

Exit Remote Mode (enter ESC/P or ESC/P 2)

Printer State Reply (printer state is automatically sent to the host if enabled by the Remote Mode command "ST" 02h 00h 00h m1 Turn printer state reply on/off)

The ESC/P2 - Remote Mode command architecture can be represented by the following simplified State Diagram.



All of the Remote Mode commands, except Enter Remote Mode, are available only in Remote Mode.

The Enter Remote Mode and Exit Remote Mode commands begin with the ESC code, (as do many ESC/P2 commands). Excluding these commands, Remote Mode commands generally follow the following format:

“XX” $n_L n_H < 256 \times n_H + n_L$ - number of parameter bytes>

The “XX” represents 2 ASCII characters that indicate the Remote Mode command primary function, and $n_L + (n_H \times 256)$ indicates the number of subsequent parameters.

If the first parameter following the length count is 00H then the Remote Mode command makes a setting.

Set printer settings: “XX” $n_L n_H$ 00H m1...mx

6.1.1 Enter Remote Mode (Remote Mode) ESC (R 08H 00H 00H "REMOTE1"

ESC "(R" 08H 00H 00H "REMOTE1"

Enter Remote Mode

[Format]

ESC (R 08H 00H 00H "REMOTE1"

[Function]

- * 1) The current emulation mode is terminated
 - * 2) Print data present in the buffer is sent to the printer to be printed
 - * 3) The printer enters remote mode.
 - * Remote mode continues until the "Exit Remote Mode" command is received.
 - * In the remote mode, XX [nL] [nH] [00H] [m1] ... [mx] type control codes are available.
-
- * This command is only valid in text mode.

6.1.2 Load Power-On Default NVR into RAM (Remote Mode) "LD" 00H 00H

[Format]

“LD” 00H 00H

[Function]

Loads the power-on default from a non-volatile memory into RAM, and begins using these values as the current printer operating system settings. This command is only available in Remote Mode.

6.1.3 Set printer timer (Remote Mode) " TI" 08H 00H 00H YYYY MM DD hh mm ss

[Format]

"TI" 08H 00H 00H YYYY MM DD hh mm ss

- * Each of the parameters YYH,YYL,MM,DD,hh,mm and ss is a one byte binary format parameter, and their definitions are as follows:

Parameter	meaning	Range
YYH	Year	0-xxxx
YYL	(YYL+YYH*256)	
MM	Month	1-12
DD	Day	1-31
hh	hour	0-23
mm	minute	0-59
ss	second	0-59

[Function]

- * If the parameter is out of range, this command is ignored, and the previous setting is maintained.

6.1.4 Set horizontal print position (Remote Mode) "FP" 03H 00H 00H m1 m2

[Format]

"FP" 03H 00H 00H m1 m2:

[Function]

* The parameter "m1" , "m2" are each one byte binary data that indicate the below condition according to the following formula.

* The unit of print start position is 1/360 inch.

(print start position) = ((m2 * 256) + m1)

Horizontal Print Start Position	m1	m2
Standard position	00H	00H
Borderless print position	B0H	FFH

* If the parameter is out of range, this command is ignored, and the previous setting is maintained.

6.1.5 Turn printer state reply on/off (Remote Mode) “ST” 02H 00H 00H m1

[Format]

“ST” 02H 00H 00H m1

[Parameters]

- Parameter m1 is a one byte binary parameter, and indicates the setting as follows:

m1	Printer State Reply
10H	Binary state reply Off
11H	Binary state reply On

[Function]

- The default environment status transmission is set. See the paragraph of status transmission for the status transmission.
- This setting depends on interfaces that receive this command. For example, this command is received with the built-in Macintosh serial interface; the status transmission for the built-in Macintosh serial interface is set.
- If the parameter m1 is out of range, or if setting of parameter m1 is not supported by the product, this command is ignored, and the existing setting is maintained.
- This command will be ignored if this command is not supported.
- This command is only available in Remote Mode.

Auto interface select function

- If the status transmission is ON, the interface transmits the status whether the interface is selected or the interface is deselected by the auto interface select function.

6.1.6 Job name set “JH” nL nH 00H m1 m2 m3 m4 m5 <job name>

[Format]

“JH” nL nH 00H m1 m2 m3 m4 m5 <job name>

nL = (length of <job name>) + 6
nH = 00H

[Parameters]

The parameter “m1” is one byte binary data that indicates types of job name information. The parameters “m2”, “m3”, “m4”, “m5” are each one byte binary data that indicate Job ID. “<job name>” is a maximum of 32 bytes of binary codes that describe a job name.
m1=00h:<job name>=Host name(Max 32byte)
m1=01h:<job name>=Product ID
m1=02h:<job name>=Document name
m1=03h:<job name>=User name

[Function]

Set the job name of the job specified by “JS” command.
This command will be ignored and skipped if the product does not support this command.
This command is available only in Remote.

6.1.7 Start job "JS" nn 00H 00H <job name> m1
6.1.8 End job "JE" 01H 00H 00H

[Format]

"JS" nL nH 00H <job name> m1
"JE" 01H 00H 00H

nL = (length of <job name>) + 2
nH = 00H

[Parameters]

The parameter "m1" is one byte binary data that fixed to zero.

[Function]

Construct a print job. Then turn page and line position reply on/off, and set the position reply repeat rate if the position reply is enabled. If the host uses the cancel job command or it needs the page and line position reply, it must send print data as a print job.

The print job is started with the "JS" command and terminated with the "JE" command. After starting a job with the "JS", if the "JS" is sent again without the "JE", the previous print job will be terminated with the second "JS".

After power-on initialization, the print job is not defined, and position reply is disabled.

This command will be ignored and skipped if the product does not support this command.
This command is available only in Remote.

6.1.9 Paper Feed Setup "SN" 01H 00H 00H

[Format]

"SN" 01H 00H 00H

[Parameters]

None

[Function]

- * Changes the mechanical sequence from the default environment to the values specified by the below command. If the below command is not sent, the printer selects the plain paper mechanical sequence.

Item	Command
Paper path	PP command
Duplex Printing	DP command
Color / Monochrome setting	ESC (K command
Set Print method ID	ESC (m command
Paper types	MI command
Platen gap setting	US command
Bottom margin setting	US command
Check paper size	US command

- * This command is only valid in remote mode.

6.1.10 Select paper path “PP” 03H 00H 00H m1 m2

[Format]

“PP” 03H 00H 00H m1 m2

[Parameters]

The parameter “m1” and “m2” are each one byte binary data.
The “m1” describes paper is continuous type or a single sheet in CSF or a manual inserted sheet as shown below.

Paper	m1	m2
Cut Sheet Lower Front	01H	01H
Cut Sheet Upper Front	01H	02H
CD-R	02H	01H

[Function]

Select paper path to be used for the temporary default.
The previous setting will be kept if the parameter “m1” and “m2” exceeds its limit.
Also, this command will be ignored and skipped if the product does not support this command.
This command is available only in Remote.

Paper	Paper path	m1	m2
Except Postcard	Upper Front (Auto) *1	01H	02H
Postcard (Default)	Upper Front	01H	02H
Postcard (Lower Front)	Lower Front	01H	01H

*1 Change the paper path automatically by the paper size.

6.1.11 Select paper media “MP” 04H 00H 00H m1 m2 m3

[Format]

“MP” 04H 00H 00H m1 m2 m3

[Parameters]

The parameter “m1”, “m2” and “m3” are each one byte binary data.

“m1” is always 01H.

The “m2” describes paper media as shown below.

0	普通紙 *1	Plain Paper Bright White Paper
1	ファイン専用紙	360dpi Ink Jet Paper
2	アイロンプリントペーパー	Iron-On Cool Peel Transfer Paper
3	スーパーファイン専用紙	Photo Quality Ink Jet Paper *2
4	スーパーファイン専用ラベルシート	Photo Quality Self Adhesive Sheets
5	フォトマット紙	Matte Paper-Heavyweight
6	フォトプリント紙	Photo Paper (Glossy Photo Paper)
7	スーパーファイン専用光沢フィルム	Photo Quality Glossy Film
8	ミニフォトシール	Photo Stickers 4/16
9	専用 OHP シート	Ink Jet Transparencies
10	スーパーファイン専用バックライトフィルム	Back Light Film
11	写真用紙<光沢>	Premium Glossy Photo Paper
12	写真用紙<絹目調>	Premium Semigloss Photo Paper
13	-----	Premium Luster Photo Paper
14	MC 光沢紙	Glossy Paper -Photo weight
15	フォトマット紙/顔料専用	Archival Matte Paper (Enhanced Matte Paper)
16	画材用紙/顔料専用	Watercolor Paper-Radiant White
17	MC デザイン光沢紙	Professional Glossy Paper
18	マットボード紙	-----
19	スーパーファイン専用光沢紙(薄口)	Photo Quality Glossy Paper
20	-----	Dupont/EPSONSemigloss Proofing Paper-A
21	スーパーファイン専用紙 2	-----
22	-----	Double Sided Matte Paper
23	-----	ColorLife Photo Paper
24	光沢紙	Economy Photo Paper
25	-----	Velvet Fine Art Paper
26	PX ブルーフ用紙ロール<微光沢>	EPSON Proofing Paper Semimatte
27	官製ハガキ(再生紙)	-----
28	官製ハガキ(インクジェット紙)	-----
29	スーパーファイン紙	Photo Quality Ink Jet Paper
30	フォト光沢紙/顔料専用	DURABrite Ink Glossy Photo Paper (for Americas) DURABrite Photo Paper (for Europe)
31	マット名刺	-----
32	ハガキ宛名面	-----
33	フォトアルバムキット	-----
34	フォトスタンドキット	-----
35	-----	RC-B
36	写真用紙<光沢 EG>	Premium Glossy Photo Paper
37	封筒	Envelope
38	写真用紙クリスピー(高光沢)	Ultra Glossy Photo Paper (Europe) Ultra Premium Glossy Photo Paper(Americas)
39	Ultra Smooth Fine Art Paper	Ultra Smooth Fine Art Paper
40	スーパーファイン専用はがき	-----
41	写真用紙スタンダード<光沢>	Premium Glossy Photo Paper (S-RC)
42	郵便光沢はがき	-----

43	写真用紙エントリー<光沢>	Photo Paper Glossy (for America) Glossy Photo Paper (for Europe)
44	フォト光沢紙	EPSON Photo
45	ビジネスインクジェットプリンタ用コート紙	EPSON Professional Flyer Paper
91	CD/DVD レーベル	-----
92	CD/DVD レーベル(高画質対応品)	-----
93	光沢対応 CD/DVD レーベル	-----
99	クリーニングシート	-----

The “m3” describes paper size as shown below.

0	A4	
1	Letter(8 1/2x11 in)	
2	Legal(8 1/2x14 in)	
3	A5	
4	A6	
5	B5	
6	Executive(7 1/4x10 1/2 in)	
7	Half-Letter(5 1/2x8 1/2 in)	
8	Panoramic Photo Paper	
9	Photo Paper(4 x 6 in)with perforated	
10	Photo Paper(4 x 6 in)	
11	5x8 in	
12	8x10 in	
13	Photo Paper(100x150 mm)	
14	Photo Paper(200x300 mm)	
15	L size	
16	Japanese Postcard	
17	Japanese Double Postcard	
18	Envelope #10(4 1/8x9 1/2 in)	Landscape
19	Envelope C6	Landscape
20	Envelope DL	Landscape
21	Envelope(220x132 mm)	Landscape
22	Japanese CHOKEI 3	
23	Japanese CHOKEI 4	
24	Japanese YOKEI 1	
25	Japanese YOKEI 2	
26	Japanese YOKEI 3	
27	Japanese YOKEI 4	
28	5x7 in(2Lsize)	
29	Envelope #10(4 1/8x9 1/2 in)	Portrait
30	Envelope C6	Portrait
31	Envelope DL	Portrait
32	Envelope(220x132 mm)	Portrait
33	Japanese business card 89x55mm	
34	Business card 89x50mm	
35	Card 54x86mm	
36	Business card 55x91mm	
37	フォトアルバム背表紙 127x184mm	
38	フォトアルバム背表紙 210x303mm	
39	フォトアルバム L 判横 127x198mm	
40	フォトアルバム 2L 判 127x177.9mm	
41	フォトアルバム A5 横 210x148.3mm	
42	フォトアルバム A4 210x296.6mm	
43	Hi-vision 102x180mm	
61	A3 ノビ(Super A3/B)	
62	A3	
63	B4	
64	US B(11x17 in)	

65	11x14 in	
66	B3	
67	A2	
68	US C(17x22 in)	
69	四切 254x305mm (10x12")	
70	12x12'' (308.4x308.4 mm)	
99	User-defined	

*1: Unknown and Default mean A4 and Pain Paper.

*2: It includes Photo Quality Ink Jet Paper (for Europe).

[Function]

Set paper type to the temporary default.

The previous setting will be kept if the parameters are out of range.

Also, this command will be ignored and skipped if the product does not support this command.

This command is available only in Remote.

6.1.12 Select Duplex Printing “DP” 02H 00H 00H m1

[Format]

“DP” 02H 00H 00H m1

[Parameters]

The parameter “m1” is one byte binary data that indicates duplex print setting as shown below.

Duplex Printing	m1
Duplex mode off	00H
Duplex mode on	01H
Auto Duplex mode on	02H
Reserved	03H - FFH

[Function]

m1=01H :

- (1)The printer fixes the I/F that this command is received one .
- (2)The printer switches to the duplex printing mode.
- (3)State Reply is changed.

m1=00H :

- (1)The printer releases the fixed I/F.
- (2)The printer switches to the normal mode.

Select a duplex printing mode to be used for the temporary default.

The previous setting will be kept if the product does not have the character set selected with the parameter “m1”.

Also, this command will be ignored and skipped if the product does not support this command.

This command is available only in Remote.

6.1.13 Set drying time “DR” 04H 00H 00H m1 m2 m3

[Format]

“DR” 04H 00H 00H m1 m2 m3

[Parameters]

The parameter “m1”, “m2”, “m3” are each one byte binary data.

The parameter “m1” indicate the item shown as below.

Drying position	m1
A unit of the switch from the face to the back (Auto duplex printing)	42H

The “m2” and “m3” indicate the drying time according to the following formula.

$$(\text{Drying time}) = ((m3 * 256) + m2)$$

$$0 < (\text{Drying time}) < 3600$$

The unit of time is as follows.

$$“m1” = 42H \quad : \text{second}$$

[Function]

Set drying time to the temporary default.

The position unit is set with “m1”, and pause for the time set with “m2” and “m3”.

When the unit is page, this command indicates the waiting time from receiving “FF” command until process the command. (Does not pause when “FF” command is not received.)

The previous setting will be kept if the parameters are out of range.

This command is available only in Remote.

Exception

When roll paper mode is specified, this command is processed after “LD” command is executed (not “FF” command).

6.1.14 User Setting “US” 03H 00H 00H m1 m2

[Format]

“US” 03H 00H 00H m1 m2

[Parameters]

The parameter “m1”, “m2” are each one byte binary data that indicates shown as below.

“m1”	Item	“m2”	Setting
00H	Bottom margin setting	00H	0 = Standard
		01H	1 = Max
		02H	2 = Borderless
01H	Platen Gap setting	00H	Default
		01H	Thick Paper
02H	Data cut flag information	00H	No cut
		01H	Cut
03H	Reserve		
04H	Economy print setting*	00H	Fast-Mode
		01H	Normal-Mode
05H	Load mode setting	00H	Fast-Mode(Default)
		01H	Silent-mode
06 - FFH	Reserved		

*This command (Economy print setting) is effective only the following mode.

If this command is not used, the product is actuated with Fast-Mode.

Print mode	Dot Size
Economy	10H

[Function]

Select a printer setting shown upper to the temporary default.

The previous setting will be kept if the parameters are out of range.

Also, this command will be ignored and skipped if the product does not support this command.

This command is available only in Remote.

6.1.15 Terminate Remote Mode (Remote Mode) ESC 00H 00H 00H

[Format]

ESC 00H 00H 00H

[Function]

- * Copy the default environment to the current setting.
- * Execute the ESC “@” command in ESC/P2. (Execute software initialization.)
- * Exit from Remote mode and enter to the selected printer control language.

CHAPTER 7: STATUS REPLY CODE SPECIFICATION

This printer can send its current state to the host computer via the USB interface. The printer can be set to update the host every few seconds, or when the printer status changes. The Printer Status Reply consists of the string below. Varying parameters of the string reflect the current printer status. By monitoring this information on the host computer, you can provide users with basic yet very practical information that can make it easier for customers to use your software and these ink jet printers.

This printer supports new binary state reply format.

Format of reply strings:
@BDC [SP] ST [CR] [LF]
Reply count (2byte)
each status information
...

The parameter of total bytes are two byte binary codes that indicate the byte counter from next data to the last data by the little endian

The structure of each information field is as shown.

Item	Byte	explanation
Header	1	Header No.
Parameter count	1	Parameter byte counter
Parameter	n	Parameter value

The Header is one binary code that is shown on the list on next page.

The parameter count is one binary code that indicates the parameter byte counter of each field.

The parameters are binary codes that indicate the information of each field.

The structure of the Ink cartridge information field is as shown.

Item	Byte	explanation
Header	1	Header No.
Parameter count	1	Parameter byte counter
Parameter count of each color	1	Parameter byte counter of each color
Parameter	n	Parameter value

The parameter count of each color is one binary code that indicates the parameter byte counter of each color.

7.1 Status code

Structure

Item	Byte (Hex)	Value (Hex)
Header	1	01
Parameter counter	1	01
Parameter	1	<Status code>

The parameter <Status code> is one byte Binary code that indicates status code as follows.

Status	Status code
In the error state	00
In the busy state	02
In the waiting state	03
In the idle state	04
In the cleaning state	07
In the factory shipment state	08

7.2 Error code

Structure

Item	Byte (Hex)	Value (Hex)
Header	1	02
Parameter counter	1	01
Parameter	1	<Error code>

The parameter <Error code> is one byte Binary code that indicates error code as follows.

Error	Error code
Fatal error	00
Other I/F is selected	01
Paper jam	04
Ink out	05
Paper out	06
Paper size error (Auto duplex paper size error)	0A
Ink overflow error	10
Double Feed	12
paper mismathi error(Safety NAVI)	17
Rear cover open error (Auto duplex unit open error)	25
No tray error (Photo tray error)	29
CD/DVD recognize error (CD/DVD media nonexistence error)	2B
Scanner Unit Open Error	37
CD/DVD media existence error	44
CD/DVD media existence error for maintenance	45

7.3 Warning code

Structure

Item	Byte (Hex)	Value (Hex)
Header	1	04
Parameter counter	1	Warning kinds
Parameter	n	Occurred all warning code

The parameter <warning code> is one-byte Binary and indicates the warning code as follows, <warning code> is consisted of the several fields as shown below.

When several warning appears at the same time, reply all the warning codes with the format below.

value [value value].

<warning code> field is recognized in the following warning state. (This field is not recognized in @BDC-ST character string when no warning is received)

For ink low warning, the order depends on the ink cartridge order.

The parameter is as follows.

Warning	Warning code
Ink low (Cyan)	10
Ink low (Yellow)	11
Ink low (Light Cyan)	12
Ink low (Black)	13
Ink low (Magenta)	14
Ink low (Light Magenta)	15
Maintenance request will occur soon	20
Cleaning disable (Cyan)	51
Cleaning disable (Yellow)	52
Cleaning disable (Light Cyan)	53
Cleaning disable (Black)	54
Cleaning disable (Magenta)	55
Cleaning disable (Light Magenta)	56

7.4 Paper path

Structure

Item	Byte (Hex)	Value (Hex)
Header	1	06
Parameter counter	1	02
Parameter	2	Paper path information

The parameter <paper path> is two bytes Binary code that indicate current paper path.

Following information is replied.

Paper Path	code
Cut sheet Font (Lower path)	0101
Cut sheet Font (Upper path)	0102
CD-R	0201

7.5 Cleaning time information

Structure

Item	Byte (Hex)	Value (Hex)
Header	1	0C
Parameter counter	1	02
Parameter	2	Cleaning time information

The parameter <cleaning time information> is two bytes Binary codes that indicate cleaning time or ink filling time.

The unit is second. (This time is total time not passage time or remains time.)

This parameter is added only when status code ST = 07H.

7.6 Replace cartridge information

Structure

Item	Byte (Hex)	Value (Hex)
Header	1	0E
Parameter counter	1	01
Parameter	1	Replace cartridge information

The parameter <change cartridge information> is one byte Binary code that indicates the information about ink cartridge. 00 means that any ink cartridge is changed.

Bit0: The 1st data of 0F field

Bit1: The 2nd data of 0F field

Bit2: The 3rd data of 0F field

Bit3: The 4th data of 0F field

Bit4: The 5th data of 0F field

Bit5: The 6th data of 0F field

If the plural ink cartridges are changed at the same time, the both bits set 1.

7.7 Ink information

Structure

Item	Byte (Hex)	Value (Hex)
Header	1	0F
Parameter total counter	1	13
Parameter counter for 1 I/C	1	3
Parameter	3 per 1 I/C	Ink information

The ink information order is Cyan, Yellow, Light Cyan, Black, Magenta, Light Magenta.
Each ink cartridge information is consisted of m1, m2, m3.

Ink information	code
m1	Ink cartridge name 01h: "Black Ink Cartridge" 03h: "Cyan Ink Cartridge" 04h: "Magenta Ink Cartridge" 05h: "Yellow Ink Cartridge" 06h: "Light Cyan Ink Cartridge" 07h: "Light Magenta Ink Cartridge"
m2	Ink color 00H:Black 01H:Cyan 02H:Magenta 03H:Yellow 04H:Light Cyan 05H:Light Magenta
m3	Ink remain counter:00H-64H no cartridge : "n" cartridge in : "i"

Ink levels are estimated and actual ink levels may vary.

7.8 Loading path information

Structure

Item	Byte (Hex)	Value (Hex)
Header	1	10
Parameter counter	1	3
Parameter	3	040C4E060C4E084E4E

("040C4E" :FRONT / "060C4E" :FRONT2 / "084E4E" :CD-R)

7.9 Cancel code

Structure

Item	Byte (Hex)	Value (Hex)
Header	1	13h
Parameter counter	1	01
Parameter	1	Cancel request

The parameter <cancel code> is one byte Binary code that indicates the cancel request.

Cancel request	Code
No request	01
The status during received cancel command and initialize the printer	A1
Request	81

7.10 Paper Jam error information

Structure

Item	Byte(Hex)	Value(Hex)
Header	1	17h
Parameter counter	1	1
Parameter	1	Paper Jam error information

The parameter < Paper Jam error information > is one byte Binary code that indicates the Sensor to meet the paper jam. This field is recognized only in the paper jam error state.

Paper Jam error information	
Sensor 2	02 : ASF Front Jam
Sensor 4	04 : Duplex Paper Jam
Reserved	00, 01,03,05-FFH

7.11 Job name Information

Structure

Item	Byte (Hex)	Value (Hex)
Header	1	19
Parameter counter	1	n (Max 37)
Parameter	Max 37	Job name information

The parameter <Job name information> is n bytes Binary codes.
It indicates the m1 to m5 parameter and Job name specified by JH command.

If the JH command is not send of printing job, it replies “unknown”.

Item	Byte (Hex)	Value (Hex)
Header	1	19
Parameter counter	1	0C
Parameter	0C	0000000000 “unknown”

7.12 Product own information

Structure

Item	Byte(Hex)	Value(Hex)
Header	1	28h
Parameter counter	1	4
Parameter	4	Product own information

The parameter < Product own information > are four bytes Binary code that indicates the below information.
The parameter < Product own information > are composed of n1, n2, n3, n4.

	Product own information	Value
Bit 1	Reserved	
Bit 2	Auto duplex unit sensor	0 : Open / 1 : Close
Bit 3	Reserved	
Bit 4	Reserved	
Bit 5	Reserved	
Bit 6	Reserved	
Bit 7	Reserved	
Bit 8	Reserved	

n2, n3, n4 : Reserved.

CHAPTER 8: Device ID

This printer can send its device ID when it is requested.

<EP-904F/Artisan 837/Epson Stylus Photo PX830FWD>

When IEEE1284.4 is enabled,

```
@EJL<SP>ID<CR><LF>
MFG:EPSON;
CMD:ESCPL2,BDC,D4,D4PX,ESCPR2;
MDL:Model Name;
CLS:PRINTER;
DES:EPSON<SP>Model Name;
CID:EpsonRGB;
FID: FXD,DPA,WFA,ETA,AFA,DAN;
```

When IEEE1284.4 is disabled,

```
@EJL<SP>ID<CR><LF>
MFG:EPSON;
CMD:ESCPL2,BDC,ESCPR2;
MDL:Model Name;
CLS:PRINTER;
DES:EPSON<SP>Model Name;
CID:EpsonRGB;
FID: FXD,DPA,WFA,ETA,AFA,DAN;
```

<i>Model Name</i>	
Artisan 837	for North America/Pacific
Epson Stylus Photo PX830	for Euro
EP-904F	for Japan

<EP-904A>

When IEEE1284.4 is enabled,

```
@EJL<SP>ID<CR><LF>
MFG:EPSON;
CMD:ESCPL2,BDC,D4,D4PX,ESCPR2;
MDL:Model Name;
CLS:PRINTER;
DES:EPSON<SP>Model Name;
CID:EpsonRGB;
FID: FXD,DPA,WFA,ETA,AFA,DAN;
```

When IEEE1284.4 is disabled,

```
@EJL<SP>ID<CR><LF>
MFG:EPSON;
CMD:ESCPL2,BDC,ESCPR2;
MDL:Model Name;
CLS:PRINTER;
DES:EPSON<SP>Model Name;
CID:EpsonRGB;
FID: FXD,DPA,WFA,ETA,AFA,DAN;
```

<i>Model Name</i>	
EP-904A	for Japan

<EP-804A/EP-804AW/EP-804AR/Artisan 730/Epson Stylus Photo PX730WD/TX730WD>

When IEEE1284.4 is enabled,

@EJL<SP>ID<CR><LF>
MFG:EPSON;
CMD:ESCPL2,BDC,D4,D4PX,ESCPR2;
MDL:*Model Name*;
CLS:PRINTER;
DES:EPSON<SP>*Model Name*;
CID:EpsonRGB;
FID: FXN,DPA,WFA,ETA,AFN,DAN;

When IEEE1284.4 is disabled,

@EJL<SP>ID<CR><LF>
MFG:EPSON;
CMD:ESCPL2,BDC,ESCPR2;
MDL:*Model Name*;
CLS:PRINTER;
DES:EPSON<SP>*Model Name*;
CID:EpsonRGB;
FID: FXN,DPA,WFA,ETA,AFN,DAN;

<i>Model Name</i>	
Artisan 730	for North America/Pacific
Epson Stylus Photo PX730WD	for Euro
Epson Stylus Photo TX730WD	for Latin
EP-804A	for Japan
EP-804AW	for Japan
EP-804AR	for Japan