-F-E-R-A-G-

FERAG AG • Zürichstrasse 74 • CH-8340 Hinwil • Switzerland
Tel.: +41 1 938 60 00 • Fax: +41 1 938 60 60

INKJET ETHERNET INTERFACE BOX

SYSTEM DESCRIPTION, COMMISSIONING AND OPERATION

VERSION 3.3

REVISION INDEX

Version	Date	Author	Revisions
1.0	21-Apr-2006	Bri	Kodak DP5120 inkjet, basic version
2.0	10-Jul-2006	Bri	Excel 270g added
2.1	26-Apr-2007	Bri	- New download tool: F-Box Downloader.exe - Various corrections
2.2	14-Dec-2007	Bri	- Excel 270g: - Character set, specifications - Menu, parameters added - Character set table - Multistroke parameter removed - Various parameter descriptions added - Sample printouts: Kodak DP5120 & Excel 270g - Control panels, troubleshooting on Kodak and Excel 270g - Document renamed, version number no longer included in file name - Error list for Excel 270g:
2.3	18-Mar-2008	Bri	Kodak DP5120: instructions for adjusting X/Y position for various fonts corrected
2.4	09-Apr-2008	Bri	Explanation of message types on the production display
2.5	25-Jun-2008	Bri	Description of jumpers and LEDs on Excel 270g
2.6	26-Sep-2008	Bri	- Configuration number is shown on the display - Excel: New NOHEAD status on display - Kodak DP5120: Signals on all connectors X12-X19 identical
2.7	02-Oct-2008	Bri	- Description of trace switches - Description of most important jumpers (Excel 270g)
2.8	13-Jan-2009	Bri	PRA-PC trace switch description
3.0	16-Feb-2009	Bri	- Printing graphics (2D barcode and fixed graphics) - Transferring configuration values from the control system - 120/240 DPI fonts - New menu items: Serial trace / load default values - Display: - Displays the current preselected configuration number - Quick pulses now per 1-pulse, rather than sequential - Kodak: New font default number 6148 (120 and 240 DPI font)
3.1	30-Mar-2009	Bri	- Correction page 9: sss = number of quick pulses /10 - PRA-PC sample traces font changed to Courier
3.2	09-Apr-2009	Bri	- Section 6.2: Note to say that Kodak inkjet must be switched on first.
3.3	27-May-2009	Bri	New section 7.3, recording traces

CONTENTS

1 OVERVIEW

The Inkjet Interface Box (referred to below as the box) provides a uniform, standardized interface between the Ferag control system (PRA-PC or CsPak) and the various inkjet models. Each inkjet model that is supported has its own software, which must be installed on the box.

2 VIEW

2.1 FRONT PANEL
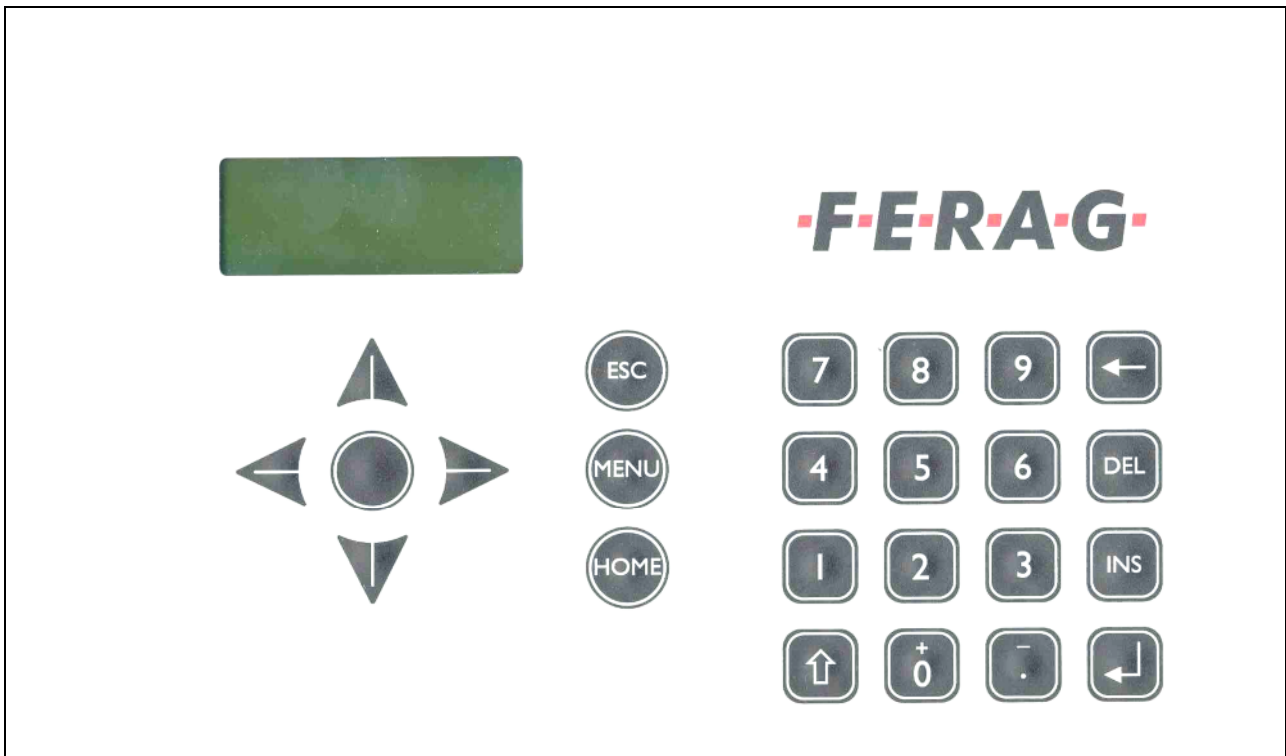
2.2 FRONT
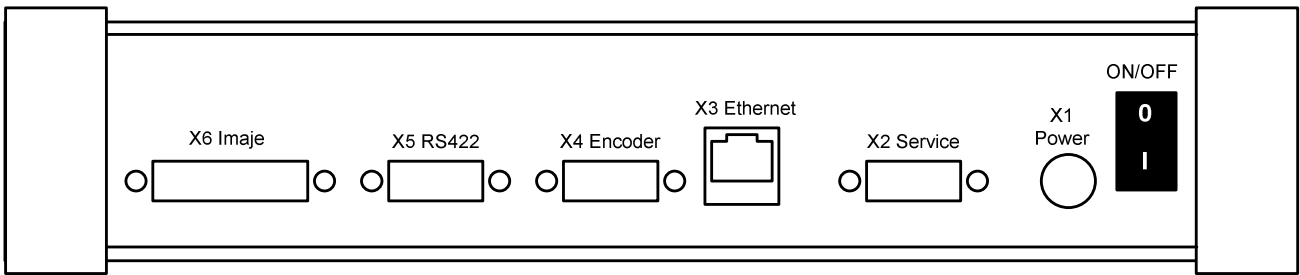
Connector	Description
X6 IMAJE	RS-422 interface to Image Mailjet 1000
X5 RS-422	RS-422 interface: 1-pulse messages Baud rate: 57,600 bps / 8 data bits / ODD parity / 1 stop bit
X4 Encoder	RS-422 encoder input (A/B signal): Quick pulse input
X3 Ethernet	RJ-45 network connector
X2 Service	RS-232 programming interface for software download/trace messages Baud rate 38,400 bps / 8 data bits / no parity / 1 stop bit
X1 Power	24 V DC power supply
ON/OFF	Main switch

2.3 BACK
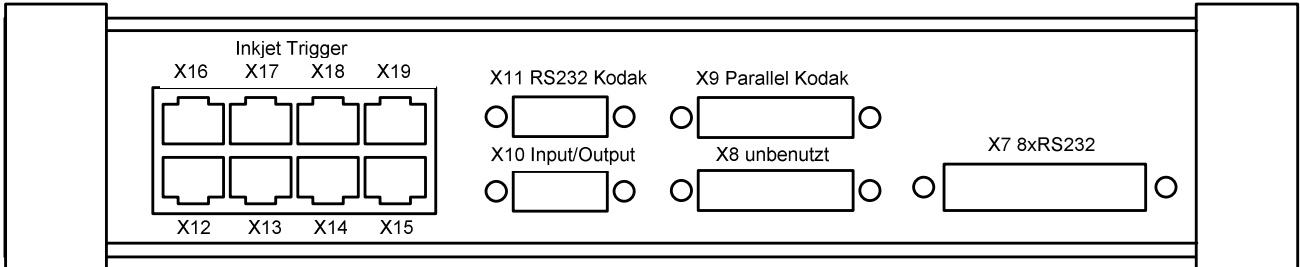
Connector	Description
X7 8 x RS-232	8 x RS-232 interfaces to Excel 270g
X8 Not in use	Not in use
X9 Parallel Kodak	Parallel interface to Kodak DP5120
X10 Input/Output	Inputs/outputs
X11 RS-232 Kodak	RS-232 interface to Kodak 5xx0
X12 – X19 Inkjet Trigger	Inkjet connection for PrintGo and encoder signal **Kodak DP5120:** From software version 1.18 onwards, the signals are output identically at all connectors. In the event of a fault on a connector, you can switch to a different connector instead.

3 OPERATION

ESC — Switches to the display showing the last error

MENU — Switches to the configuration menu
to change configuration parameters

HOME — Back to production display, i.e. overview of all
interfaces and inkjet status

Choose menu options
UP

ENTER
- Accepts an entered value
- Switches to the selected menu item

LEFT
- Back one menu level
- Position cursor to enter a
  parameter value

RIGHT
- Down one menu level
- Position cursor to enter a
  parameter value

DOWN
Choose menu options
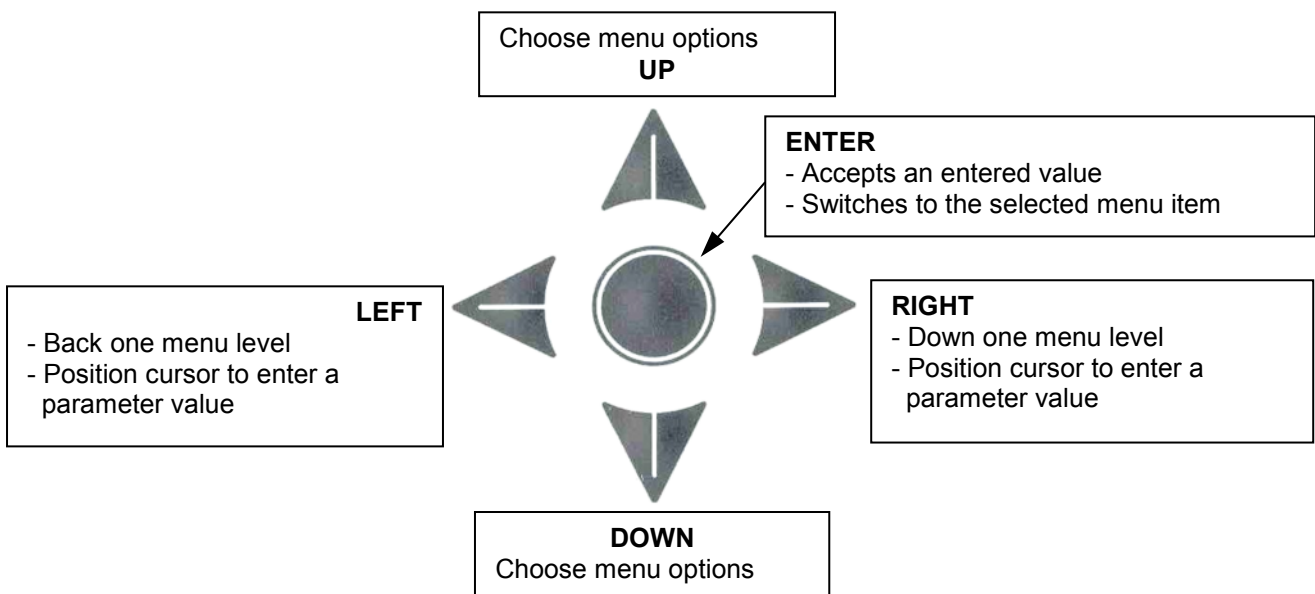
3.1 CONFIGURATION MENU

Press the <MENU> button to switch to the configuration menu. All configuration parameters are write-protected as standard. If you wish to write parameters, you must enter the password **1132** each time you open the configuration menu. **When you return to the production menu by pressing the <HOME> button, the parameters are saved and copied to the inkjet and the inkjet is reset.**

> **Notes:**
> ▪ After an inactivity period of 10 minutes the box automatically reverts from the configuration menu back to the production display, **without** saving any parameter changes and without resetting the inkjet.
>
> ▪ Configuration values should not be changed during production, as switching back to the production display causes the inkjet to be reset.

3.2 DISPLAY MODES

3.2.1 STARTUP DISPLAY

This display mode appears for 3 seconds after POWER ON before switching automatically to the production display.

I	N	K	J	E	T		I	N	T	E	R	F	A	C	E	
V	x	x	.	x	x	-	y	y	.	y	y					
B	U	I	L	D			2	1	.	0	2	.	0	6		
I	n	k	j	e	t	T	y	p								

Version: xx.xx   Inkjet Interface box version
            yy.yy   Inkjet version
Inkjet type: KODAK DP5120 (formerly Scitex)
            EXCEL 270g

3.2.2 PRODUCTION DISPLAY

This is the standard display mode. It shows an overview of all interfaces and the inkjet status.

P	G		p	p	p	p	P	C		c	c	c	c
E	T	H		c	c		n	n	n	n		C	x
S	E	R		m		z	t	t		n	n	n	n
S				s	s	s		I	n	k	s	t	a	t

Line 1: Print-Go, print confirm
pppp: Print-Go counter:
        Print order to the inkjet. The following conditions must be met for a Print-Go to be initiated:
        - Print data (print commands) received via Ethernet
        - Serial interface: Message type = 1 (1 pulse message) AND additional info = 1 (product)
cccc: Print confirm counter:
        Inkjet confirmation of a Print-Go

Line 2: Ethernet interface
cc: Command:
        1: Status Request
        2: Print Command (print data)
        3: Pace Command (empty grippers)
        6: Init Command
nnnn: Message counter
x: Configuration currently in use 1 - 8

Line 3: Serial interface
m: Message type:
        1: 1-pulse
        2: Keep-alive message (message sent every 5 secs if no 1-pulse message is received)
z: Additional info:
        Bit 0: (1 = product, / 0 = no product)
        Bit 1: Waste (not implemented)
tt: Pulse number (hexadecimal display 0 - 7F)
nnnn: Message counter

Line 4: Strokes, inkjet status
sss: Number of quick pulses per 1-pulse from serial interface / 10
Inkstat: Inkjet status: ONLINE, OFFLINE, STANDBY, ERROR, WARNING, NOHEAD[1], NOTREADY[1]

NOHEAD: No print head configured (from version 2.14 onwards, this is displayed in place of ONLINE).

[1] Excel 270g only

3.2.3 ERROR DISPLAY

Press the <ESC> button to switch to the display mode showing the last error. The error message consists of an error number and a text. Error messages are dependent on the inkjet model used. Press the <HOME> button to return to production mode.

				E	R	R	O	R					

3.3 KODAK DP5120

3.3.1 CONTROL PANEL
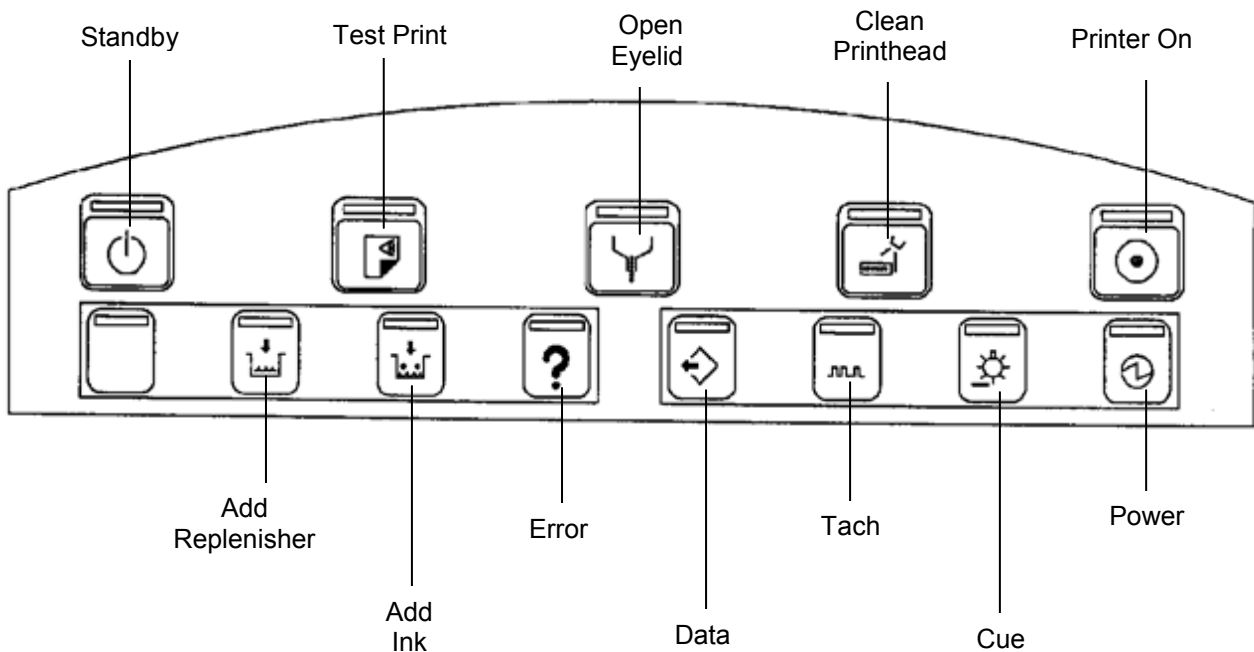
3.3.2 TROUBLESHOOTING

The "Error" LED flashes to indicate an inkjet error. Acknowledge the error by pressing the "Open eyelid" button. The print head is cleaned and the inkjet is then ready for use again.

3.4 EXCEL 270G

3.4.1 CONTROL PANEL

The Excel 270g inkjet is in online mode when the two heads are switched on (HEAD ON) and printing is switched on for both heads (PRINT ON). Printing is switched on automatically by the Inkjet Interface Box.
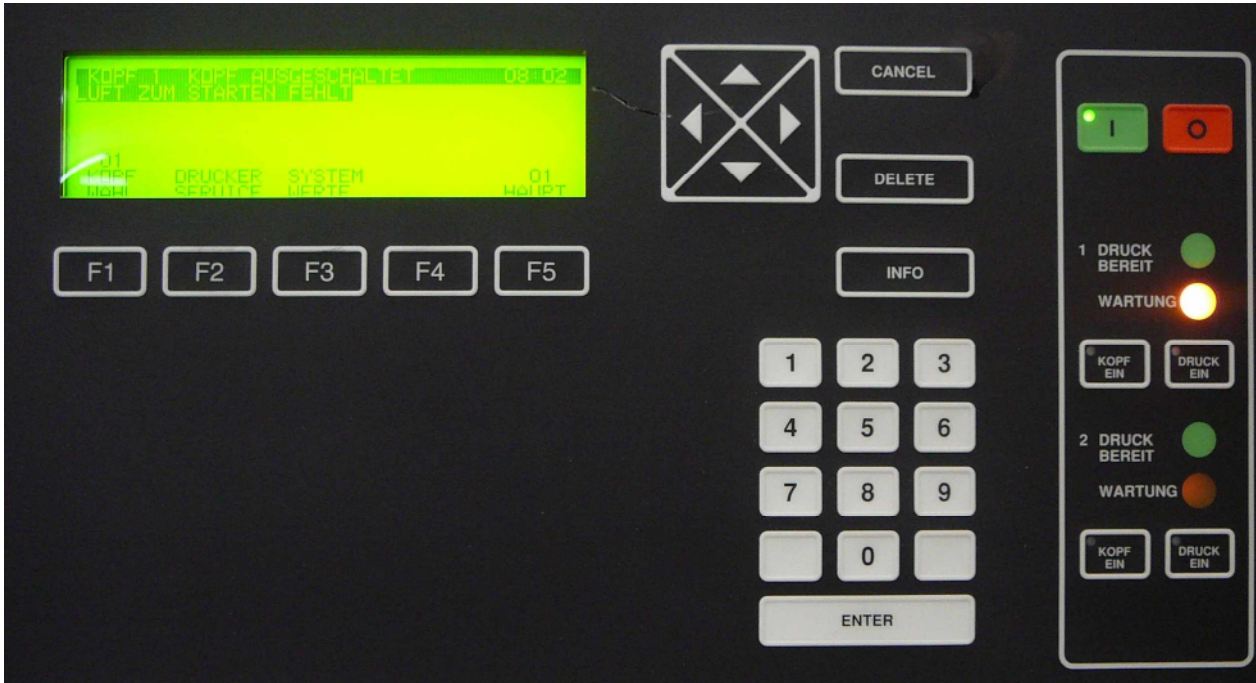
3.4.2 TROUBLESHOOTING

An inkjet error at one of the heads is indicated on the control panel by a flashing yellow "SERVICE" LED. To acknowledge the error and return the inkjet to online mode, proceed as follows:

- Press <F1> "02 SELECT HEAD" to select the head that caused the error. The error is displayed in the second line
- Press <F2> "PRINTER SERVICE" to switch the inkjet to service mode
- Press <F4> "ERROR RESET" to acknowledge the error → The "SERVICE" LED goes out
- Press <ENTER> about 3 times to return to the basic menu and quit service mode
- Press <HEAD ON>. After about 1 minute the interface automatically switches <PRINT ON> and the inkjet is back in online mode

4 CONFIGURATION

4.1 GENERAL PARAMETERS

Before you can edit configuration values you must enter the valid password in the Password menu option. The following examples show whether writing is disabled or enabled.

Example of read-only parameter:

−	S	t	r	o	k	e	s		p	e	r		m		
				1	0	2	4	0							

Example of read/write parameter:

*	S	t	r	o	k	e	s		p	e	r		m		
				1	0	2	4	0							

No.	Parameter	Range, description	Default
	Machine		
1	Strokes per m	1-60,000 encoder pulses per [m]	10240
	Encoder		
2	Encoder Mode	* 1 / * 2 / * 4 / * 8 Multiplication factor for encoder frequency	* 2
3	Encoder Divider	1 - 32 Division factor for encoder frequency Determines the length of the text image. The smaller the value, the shorter the length of the text image. → See sample printouts in section 0 **Inkjet frequency:** Encoder freq. x Encoder Mode / Encoder Divider	3
4	Signal Delay	Fixed compensation value for signal delay [0.1 ms]	45
5	Simulation	ON / OFF Operation with/without inkjet	OFF
	Serial Trace	ON / OFF Switches on traces for the serial interface (X2 Service, see page 6)	OFF
	Default	Load all default values	
	Configuration		
	Config Number	Configuration 1-8 8 different configuration sets, i.e. different products or production runs, can be defined. Use the Init command to select the configuration you require.	1
	Other parameters depend on the type of inkjet see: - Section 4.2 Kodak DP5120 - Section 4.3 Excel 270g		

| | **Password** | Password to enable write access to all configuration parameters | 1132 |
| | | If no password is entered, the parameters are available for read access only. | |

4.1.1 SAMPLE PRINTOUTS

The following samples were printed with a line length of 35 characters using a Kodak DP5120.

Encoder Mode: 2
Divider: 3
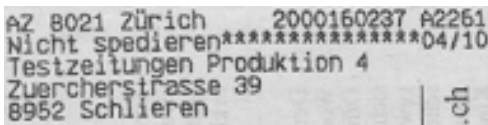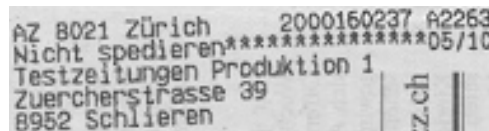
Encoder Mode: 4
Divider: 6

(Same as Encoder Mode 2/Divider 3)

Encoder Mode: 4
Divider: 5
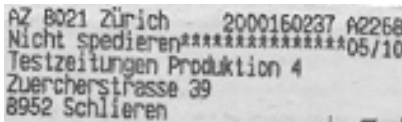
Encoder Mode: 4
Divider: 7

Encoder Mode: 8
Divider: 13
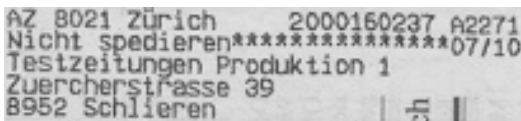
The following samples were printed with a line length of 40 characters using an Excel 270g inkjet.

Encoder Mode: 2
Divider: 3

Encoder Mode: 4
Divider: 6

(Same as Encoder Mode 2 / Divider 3)

Encoder Mode: 4
Divider: 5

Encoder Mode: 4
Divider: 7

Encoder Mode: 8
Divider: 13

4.2 KODAK DP5120 PARAMETERS

No.	Parameter	Range, description	Value via control system	Default
	Configuration			
1	Drop mode	Number of ink drops per dot One drop / dot Two drop / dot Odd / Even –print Odd / Even –skip Echo current	 1 2 3 4 5	One drop / dot
2	Print Direction	normal reverse	0 1	reverse
3	Orientation	Text orientation [degrees] 0 90 180 270	 1 2 3 4	0
4	Print Position	100 - 300 [mm] Distance from PrintGo to start of printing		160
5	Windows Size	10 - 300 [mm] Length of print area Max. 80 characters per line		90
6	Language Table	See table, section 4.2.1		USA-ASCII
7	Character Table	See table, section 4.2.2		PC-8
	Layout			
	Line 1			
	Font [1]	See font table, section 4.2.4		6148
	x-position	1 - 2160 [pixels] For explanation see section 4.2.3.		1
	y-position	1 - 128 [pixels] For explanation see section 4.2.3		15
	Line 2			
	Font [1]	See font table, section 4.2.4		6148
	x-position	1 - 2160 [pixels] For explanation see section 4.2.3.		1
	y-position	1 - 128 [pixels] For explanation see section 4.2.3		29
	Line 3			
	Font [1]	See font table, section 4.2.4		6148
	x-position	1 - 2160 [pixels] For explanation see section 4.2.3		1
	y-position	1 - 128 [pixels] For explanation see section 4.2.3		43
	Line 4			
	Font [1]	See font table, section 4.2.4		6148
	x-position	1 - 2160 [pixels] For explanation see section 4.2.3		1
	y-position	1 - 128 [pixels] For explanation see section 4.2.3		57
	Line 5			
	Font [1]	See font table, section 4.2.4		6148
	x-position	1 - 2160 [pixels] For explanation see section 4.2.3		1
	y-position	1 - 128 [pixels] For explanation see section 4.2.3		71
	Line 6			
	Font [1]	See font table, section 4.2.4		6148

	x-position	1 - 2160 [pixels] For explanation see section 4.2.3	1
	y-position	1 - 128 [pixels] For explanation see section 4.2.3	85
Line 7			
	Font [1]	See font table, section 4.2.4	6148
	x-position	1 - 2160 [pixels] For explanation see section 4.2.3	1
	y-position	1 - 128 [pixels] For explanation see section 4.2.3	99
Line 8			
	Font [1]	See font table, section 4.2.4	6148
	x-position	1 - 2160 [pixels] For explanation see section 4.2.3	1
	y-position	1 - 128 [pixels] For explanation see section 4.2.3	113
Speed Compens.			
	Head Distance	0 - 199 [mm] Distance from inkjet head to product (not implemented)	20

[1] Only fonts available on the inkjet can be set. In order for the fonts to be available
 in the menu, the Kodak inkjet must be connected and must have been switched on at least once.
[2] Not yet implemented

4.2.1 LANGUAGE TABLE

No.	Language
1	USA ASCII
2	IRV-2
3	United Kingdom
4	Sweden ISO-11
5	Finland/Sweden
6	Canada
7	Japan
8	Italian-1
9	Italian-2
10	Italian-3
11	Portuguese-1
12	Portuguese-2
13	Spanish-1
14	Spanish-2
15	Spanish-3
16	Spanish-4
17	Latin America
18	German
19	French-1
20	French-2
21	China
22	Danish
23	Danish/Norway
24	Norway
25	Hungary
26	Serbia-Croatian

4.2.2 CHARACTER TABLE

No.	Character Table
1	USA ASCII-7
2	PC-8
3	Danish/Norway-8
4	Roman-8
5	ISO-90/142
6	ECMA-94 → Equivalent to ANSI ISO-8859 Latin 1

4.2.3 TEXT POSITIONING
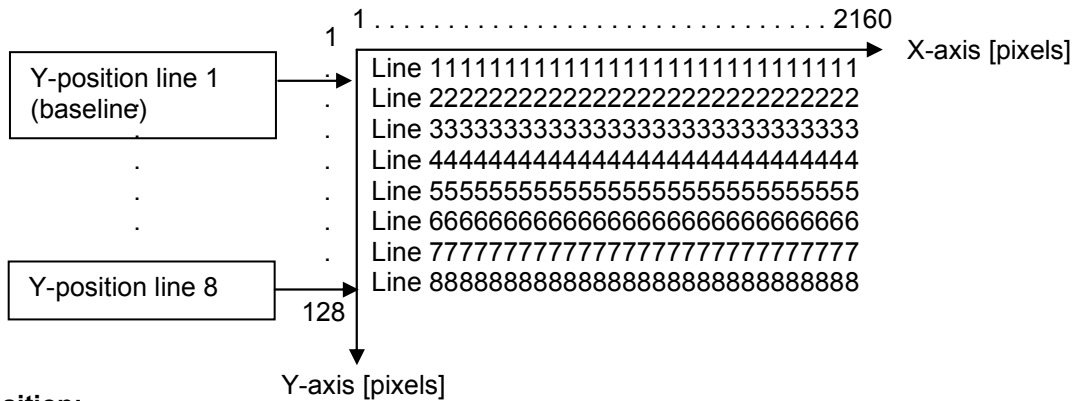
Y-position:

The line positions on the Y-axis are dependent on the height of the selected font.

Example of font 6148:

8 lines per inch with a resolution of 120 dpi → 120 / 8 = 15 pixels per line (= default value)

Line 1 = 15
Line 2 = 29
Line 3 = 43
. . . . . .

4.2.4 GRAPHICS POSITIONING
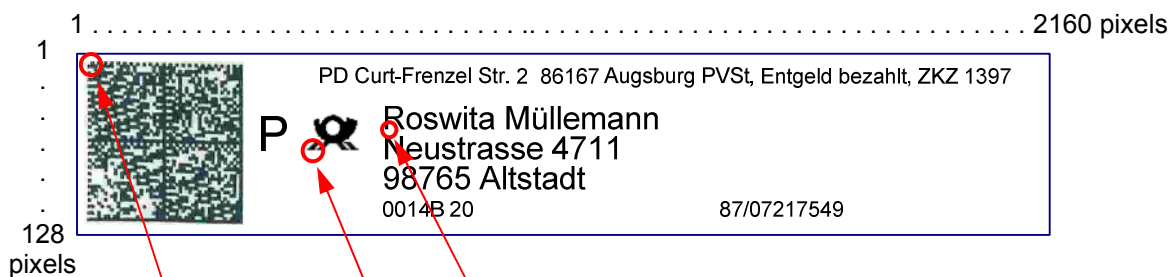
For text lines, the reference point for positioning is the bottom left corner of the first character (see above).

For fixed graphics (sent as a Kodak font), the reference point is the bottom left corner.

For dynamically generated graphics, the reference point is the bottom left corner.

4.2.5 AVAILABLE FONTS

Important: On a new inkjet interface box, the fonts are not visible in the menu until the box and the Kodak inkjet have both been switched on together.

240 DPI fonts

Font number	Font name
6148	GOTHIC^B-S10.0PVMS-0
6738	PLANET20--09PTPVPS-0
6742	PLANET22--09PTPVPS-0
6746	PLANET24--09PTPVPS-0
7369	POSTNET24-09PTPVPS-0
7576	POSTBAR-------PVMS-0
8000	GOTHIC----17.1PVMS-0
8016	GOTHIC^M--15.0PVMS-0
8032	GOTHIC^---12.0PVMS-0
6148	GOTHIC^--S10.0PVMS-0
8128	ELITE-^M--10.0PVMS-0
8144	POSTNET22-09PTPVPS-0
8148	GOTHIC^b-S10.0PVMS-0
8164	GOTHIC^B--10.0PVMS-0
8180	GOTHIC-B-S10.0PVMS-0
8184	GP-BARCODES---PVPS-0
8196	GOTHIC^M-S10.0PVMS-0
8244	GOTHIC----12.0PVMS-0
8268	GOTHIC-B--12.0PVMS-0
8272	GOTHIC^B--12.0PVMS-0
8288	GOTHIC---S10.0PVMS-0
8292	GOTHIC-M-S10.0PVMS-0
8296	ELITE--M--12.0PVMS-0
8300	ELITE-^M--12.0PVMS-0
8336	OCR-A-----10.0PVMS-0
8352	OCR-B-----10.0PVMS-0
8368	SCRIPT----14PTPVPS-0
8372	SCRIPT----22PTPVPS-0
8376	BLOCK-----5.00PVMS-0
8380	BLOCK-----3.00PVMS-0
8384	CURSIV----14PTPVPS-0
8388	CURSIV----20PTPVPS-0
8392	GEORGN----20PTPVPS-0
8430	BARCODE39-6.49PVMS-0
8434	BARCODE39-5.33PVMS-0
8438	BARCODE39-4.80PVMS-0
8442	BARCODE39-4.14PVMS-0
8446	BARCODE39-3.64PVMS-0
8450	BARCODE39-2.61PVMS-0
8466	I-2OF5----11.7PVMS-0
9999	TEST-PATTERNS-PVPS-0

Shaded: 120 and 240 DPI fonts

120 DPI Fonts

Font number	Font name
6000	GOTHIC----17.1PUMS-0
6016	GOTHIC^M--15.0PUMS-0
6128	ELITE-^M--10.0PUMS-0
6144	POSTNET20-09PTPUPS-0
6148	GOTHIC^B-S10.0PUMS-0
6164	GOTHIC^B--10.0PUMS-0
6180	GOTHIC-B-S10.0PUMS-0
6184	GP-BARCODES---PUPS-0
6188	GP6X16BC--20.0PUMS-0
6196	GOTHIC^M-S10.0PUMS-0
6248	GOTHIC-M--12.0PUMS-0
6252	GOTHIC^M--12.0PUMS-0
6268	GOTHIC-B--12.0PUMS-0
6272	GOTHIC^B--12.0PUMS-0
6292	GOTHIC-M-S10.0PUMS-0
6296	ELITE--M--12.0PUMS-0
6300	ELITE-^M--12.0PUMS-0
6320	ELITE-^B--10.0PUMS-0
6336	OCR-A-----10.0PUMS-0
6368	SCRIPT----14PTPUPS-0
6372	SCRIPT----22PTPUPS-0
6376	BLOCK-----5.00PUMS-0
6380	BLOCK-----3.00PUMS-0
6384	CURSIV----14PTPUPS-0
6388	CURSIV----20PTPUPS-0
6392	GEORGN----20PTPUPS-0
6396	ADM9X12M/B10.0PUMS-0
6398	ADM9X12M/X10.0PUMS-0
6400	ADM7X12B/X12.0PUMS-0
6402	ADM-BROKAW8.00PUMS-0
6412	BORDERS---7.50PUMS-0
6416	GRAPHIC-1-72PTPUPS-0
6426	BARCODE39-7.50PUMS-0
6430	BARCODE39-5.71PUMS-0
6434	BARCODE39-5.00PUMS-0
6438	BARCODE39-4.14PUMS-0
6442	BARCODE39-3.24PUMS-0
6454	BARCODE39-2.40PUMS-0
6474	I-2OF5----8.89PUMS-0
6490	I-2OF5----5.86PUMS-0
6514	I-2OF5----4.36PUMS-0
6530	UPC-A-----8.57PUMS-0
6534	UPC-E-----8.57PUMS-0
6538	UPC-A-----5.71PUMS-0
6542	UPC-E-----5.71PUMS-0
6546	USCODABAR-7.50PUPS-0
6550	USCODABAR-6.67PUPS-0
6554	USCODABAR-5.45PUPS-0
6558	USCODABAR-4.29PUPS-0
6562	USCODABAR-3.53PUPS-0
6566	USCODABAR-3.16PUPS-0
6574	USS-93----6.67PUPS-0
6578	USS-93----4.44PUPS-0
6586	USS-128---5.45PUPS-0
6602	BPO4SC----6.00PUPS-0
6610	ELITE-^M--8.00PUMS-0

Font number	Font name
6626	ELITE-^B--8.00PUMS-0
6642	ELITE-^M--6.66PUMS-0
6658	ELITE-^B--6.66PUMS-0
6674	GOTHIC^M--6.32PUMS-0
6690	GOTHIC^B--6.32PUMS-0
6706	GOTHIC^M--5.22PUMS-0
6722	GOTHIC^B--5.22PUMS-0
6738	PLANET20--09PTPUPS-0
6746	PLANET24--09PTPUPS-0
6750	POSTNET---21.4PUPS-0
6754	POSTNET---22.2PUPS-0
6758	PLANET----21.4PUPS-0
6762	PLANET----22.2PUPS-0
7060	12X24B70608.00PUMS-0
7068	12PTAR70687.00PUMS-0
7070	12PTCU70708.57PUMS-0
7072	18PTAR70725.00PUMS-0
7105	ID7105710510.0PUMS-0
7106	ID7106710610.0PUMS-0
7107	ID7107710712.0PUMS-0
7108	ID7108710812.0PUMS-0
7109	ID7109710910.0PUMS-0
7110	ID7110711010.0PUMS-0
7111	ID7111711110.0PUMS-0
7369	POSTNET24-09PTPUPS-0
7576	POSTBAR-------PUMS-0
9999	TEST-PATTERNS-PUPS-0

Shaded: 120 and 240 DPI fonts

4.3 EXCEL 270G PARAMETERS

Parameter	Range, description	Default
Configuration		
Inkjet Head	Assignment of the print heads to corresponding positions, which can be configured separately (see positions below).	
Head 1	inactive / Position 1 - Position 8	inactive
Head 2	inactive / Position 1 - Position 8	inactive
Head 3	inactive / Position 1 - Position 8	inactive
Head 4	inactive / Position 1 - Position 8	inactive
Head 5	inactive / Position 1 - Position 8	inactive
Head 6	inactive / Position 1 - Position 8	inactive
Head 7	inactive / Position 1 - Position 8	inactive
Head 8	inactive / Position 1 - Position 8	inactive
Position	Configuration of the positions defined under "Inkjet Head".	
Position 1		
Line 1	Defines which data line is printed on line 1 of the print head in position 1. Range: Line 1 - line 8	Line 1
Line 2	Defines which data line is printed on line 2 of the print head in position 1. Range: Line 1 - line 8 Note: Only applies to Twin or Tri-Line fonts	not used
Line 3	Defines which data line is printed on line 3 of the print head in position 1. Range: Line 1 - line 8 Note Only applies to Tri-Line font	not used
Reverse Line	Reverse print direction, variant 1:	deactivate
Reverse Char	Reverse Line AND Reverse Char = activate	deactivate
Invert Char	Reverse print direction, variant 2: Invert Char = activate, Reverse Line AND Reverse Line = deactivate	deactivate
Font Height	0 - 120 [0.1mm] Font height	50
ReductionFactor	2 - 9999 Internal pulse divider in Videojet inkjet	2
Font	Font selection See table below	5x7 SL
Print Position	100 - 300 [mm] Distance from PrintGo to start of printing	160

Position 2		
Line 1	Defines which data line is printed on line 1 of the print head in position 2. Range: Line 1 - line 8	Line 2
Line 2	Defines which data line is printed on line 2 of the print head in position 2. Range: Line 1 - line 8 Note: Only applies to Twin or Tri-Line fonts	not used
Line 3	Defines which data line is printed on line 3 of the print head in position 2. Range: Line 1 - line 8 Note Only applies to Tri-Line font	not used
Reverse Line	Reverse print direction, variant 1:	deactivate
Reverse Char	Reverse Line AND Reverse Char = activate	deactivate
Invert Char	Reverse print direction, variant 2: Invert Char = activate, Reverse Line AND Reverse Line = deactivate	deactivate
Font Height	Font height 32 - 64 [0.1mm]	50
ReductionFactor	1 - 8 Internal pulse divider in Videojet inkjet	2
Font	Font selection See table below	5x7 SL
Print Position	100 - 300 [mm] Distance from PrintGo to start of printing	160
Position 3…Position 8		
Line 1	Defines which data line is printed on line 1 of the print head in position 3 - 8. Range: Line 1 - line 8	not used
Line 2	Defines which data line is printed on line 2 of the print head in position 3 - 8. Range: Line 1 - line 8 Note: Only applies to Twin or Tri-Line fonts	not used
Line 3	Defines which data line is printed on line 3 of the print head in position 3 - 8. Range: Line 1 - line 8 Note Only applies to Tri-Line font	not used
Reverse Line	Reverse print direction, variant 1:	deactivate
Reverse Char	Reverse Line AND Reverse Char = activate	deactivate
Invert Char	Reverse print direction, variant 2: Invert Char = activate, Reverse Line AND Reverse Line = deactivate	deactivate
Multistroke	?? Does not work, inkjet always NOTREADY	deactivate
Font Height	Font height 32 - 64 [0.1mm]	50
ReductionFactor	1 - 8 Internal pulse divider in Videojet inkjet	2
Font	Font selection See table below	5x7 SL

Global Settings		
Menu Language	German/English Language selection on inkjet control panel	German
Character Table	Character set table selection See section 4.3.2 Code Page 850 / Norway	Code Page 850

Example of 2 print heads, 4 lines to print:

- Head 1 = Position 1 → Head 1 assigned to position 1
- Head 2 = Position 2 → Head 2 assigned to position 2
- Position 1:   Line 1 = Line 1   → Lines 2 and 1 are printed at head 1
                 Line 2 = Line 2
                 Line 3 = not used
                 Font = 5x7 HSTL   Twin Line font required
- Position 2:   Line 1 = Line 3   → Lines 3 and 4 are printed at head 2
                 Line 2 = Line 4
                 Line 3 = not used
                 Font = 5x7 HSTL   Twin Line font required

Important: Max. 80 characters per line

4.3.1 AVAILABLE FONTS

5x5 SL (single-line)	5x7 SL (single-line)	7x9 SL (single-line)	10x16
5x7 HSTL (high-speed twin-line)	5x7 STL (single tri-line??)	5x7 TRI-LINE	16x24
5x7 SL HQ (single-line high-quality)			

Notes:

Single Line: 1 line per print head
Twin Line: 2 lines per print head
Tri-Line: 3 lines per print head (Please note: Speed is reduced, see table in Appendix)

4.3.2 CHARACTER SET TABLE

The inkjet character set is used by default (code page 850, see appendix), so no conversion takes place. If a country-specific character table is selected, the following characters are converted:

	0x23	0x24	0x40	0x5D	0x7B	0x7C	0x7D	0x7E
Norway	Æ	Å	Ø	o	æ	ø	å	ü

5 HARDWARE

5.1 PLUG ASSIGNMENTS

5.1.1 X1 POWER

Signal	Pin
24V +	2
GND	1

5.1.2 X2 SERVICE

D-sub 9-pin. Male

Signal	Pin
CD	1
RX	2
TX	3
DTR	4
GND	5
DSR	6
RTS	7
CTS	8
RI	9

5.1.3 X3 ETHERNET

RJ-45

Signal	Pin
TX+	1
TX-	2
RX+	3
RX-	6

5.1.4 X4 RS-422 ENCODER

D-sub 9-pin. Female

Signal	Pin
A-Signal+	1
A-Signal-	2
B-Signal+	3
B-Signal-	4
RGnd (100 Ohm to Gnd)	5

5.1.5 X5 RS-422 PULSE INFORMATION

D-sub 9-pin. Female

Signal	Pin
Rx-	3
Rx+	8
Tx-	4
Tx+	9
RGnd (100 Ohm to Gnd)	5

5.1.6 X6 RS-422 IMAJE MAILJET 1000

D-sub 25-pin. Female

Signal	Pin
CTS-	14
CTS+	2
CLK-	15
CLK+	3
TX+	16
TX-	4
RX+	17
RX-	5
PG12	7
PG34	20
PULSE	8
ACC1	21
ACC2	9
DEF1	22
GND	24
24V +	12

5.1.7 X7 8 X RS-232 EXCEL 270G AND IMAJE S7

D-sub 78-pin. Female

Signal	Pin
TX1	60
RX1	61
RTS1	40
CTS1	41
DTR1	62
CD1	63
TX2	65
RX2	66
RTS2	45
CTS2	46
DTR2	67
CD2	68
TX3	69
RX3	70
RTS3	49
CTS3	50
DTR3	71
CD3	72
TX4	74
RX4	75
RTS4	54
CTS4	55
DTR4	76
CD4	77
TX5	21
RX5	22
RTS5	1
CTS5	2
DTR5	23
CD5	24
TX6	26
RX6	27
RTS6	6

CTS6	7
DTR6	28
CD6	29
TX7	30
RX7	31
RTS7	10
CTS7	11
DTR7	32
CD7	33
TX8	35
RX8	36
RTS8	15
CTS8	16
DTR8	37
CD8	38
GND	5, 25,44,64,14,53,73,39

5.1.8 X8 NOT IN USE

D-sub 25-pin. Male

5.1.9 X9 PARALLEL KODAK DP5120

D-sub 25-pin. Female

Signal	*Pin*
Strobe	1
D0	2
D1	3 (24V push/pull)
D2	4
D3	5
D4	6
D5	7
D6	8
D7	9
ACK	10
BUSY	11
PE	12
SLCT	13
AUTOFEED	14
ERROR	15
INIT	16
SLC	17
0 V	18 - 25

5.1.10 X10 INPUT / OUTPUT

24 V signals, outputs max. 50 mA, not resistant to short-circuits.

D-sub 9-pin. Female

Signal	Pin
IN0	1
IN1	2
IN2	6
IN3	7
OUT0	9
OUT1	8
OUT2	4
OUT3	3
GND	5

5.1.11 X11 RS-232 KODAK DP5120

D-sub 9-pin. Male

Signal	Pin
RX	2
TX	3
DTR	4
GND	5
DSR	6
RTS	7
CTS	8
RI	9 POK

5.1.12 X12 – X19 INKJET TRIGGER

8-way RJ45

Signal	Pin
Pulse	1 (24V push/pull)
GND	2
Print Go	3 (24V push/pull)
Print Done	4
GND	5
GND	6
24V +	7
GND	8

Kodak DP5120: From software version 1.18 onwards, the signals are output identically at all connectors. In the event of a fault on a connector, you can switch to a different connector instead.

5.2 SCHEMATIC (INTERFACES)
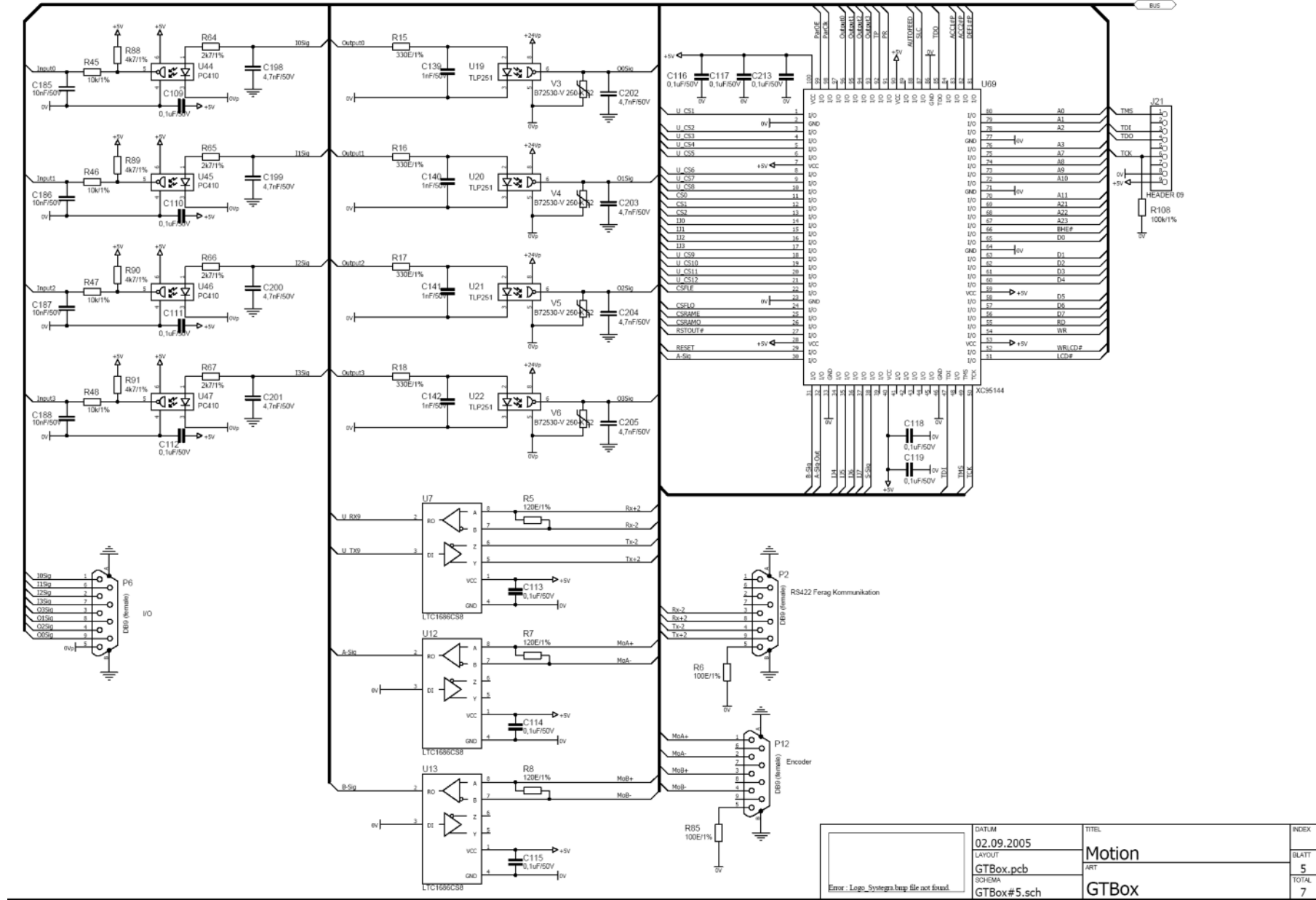
DATUM	TITEL	INDEX
02.09.2005	Motion	
LAYOUT		BLATT
GTBox.pcb	ART	5
SCHEMA		TOTAL
GTBox#5.sch	GTBox	7

Error : Logo_Systegra.bmp file not found.

6 COMMISSIONING

6.1 JUMPER

Important note!

Before the inkjet interface box and the inkjet are switched on for the first time, it is essential that you check the jumpers.

Excel 270g: Remove all jumpers
Kodak DP5120:   Set all jumpers

The jumpers are located on the rear of the casing under the cover plate.

Jumper settings for Kodak DP5120 inkjet:

Jumper settings for other inkjets (remove all jumpers):
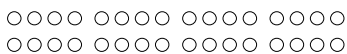
6.2 SWITCHING ON THE KODAK INKJET FOR THE FIRST TIME

When a new inkjet interface box is first commissioned with a Kodak inkjet, you must ensure that the inkjet is switched on and ready before the box is switched on.
Reason: A new factory-configured inkjet interface box does not yet have a font list. The font list must first be loaded from the inkjet.

6.3 DETERMINING AND SETTING THE IP ADDRESS WITH THE DIGI DEVICE DISCOVERY TOOL

The box is factory-set to the default IP address of 192.168.0.1 on delivery. If the IP address is unknown (in other words it has already been used), you can use the **Digi Device Discovery Tool** (dgdiscvr.exe) to find the device in the network. Each device that is found in the network is displayed in a list (see example below).

Digi Device Discovery

IP Address ▲	MAC Address	Name	Device
172.16.90.193	00:40:9D:27:7D:36		Digi Connect ME

Device Tasks

Open web interface
Telnet to command line
Configure network settings
Restart device

Other Tasks

Refresh view
Help and Support

If a red exclamation mark is visible in the symbol on the left, it means that a device was found but no connection could be established to the PC because the IP address is located in an accessible sub-network.

The IP address and the subnet mask can be set with this tool.
More advanced configuration settings must be made using a standard browser (see next page).

Details

Digi Connect ME
Configured (Static)

IP address: 172.16.90.193
Subnet mask: 255.255.255.0
Default gateway: 0.0.0.0
Serial ports: 1
Firmware: 82000856_F5

1 device

Configure Network Settings

The network settings can be assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate network settings.

Device: Digi Connect ME

MAC Address: 00:40:9D:27:7D:36

○ Obtain network settings automatically

● Manually configure network settings

IP Address: 172 . 16 . 90 . 193

Subnet Mask: 255 . 255 . 255 . 0

Default Gateway: 0 . 0 . 0 . 0

Save   Cancel

Important note:
If a firewall is enabled, it may prevent the Digi Device Discovery Tool from finding the Inkjet Interface Box in the network.

6.4 DETERMINING AND SETTING THE IP ADDRESS WITH A STANDARD BROWSER

The IP address and additional configuration parameters can be set using a standard browser. This is mainly of use if the Digi Device Discovery Tool is not available. The IP address must be known, however.

Enter the IP address in the browser address field: e.g. http://172.16.90.193/login.htm
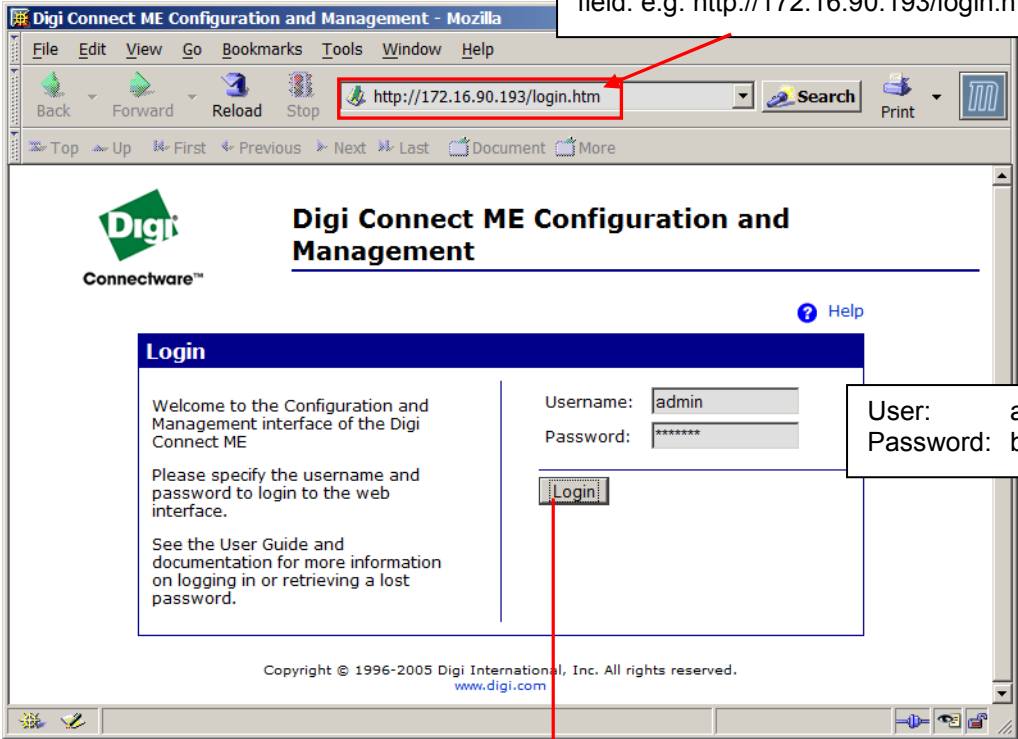
User: admin
Password: bahamas
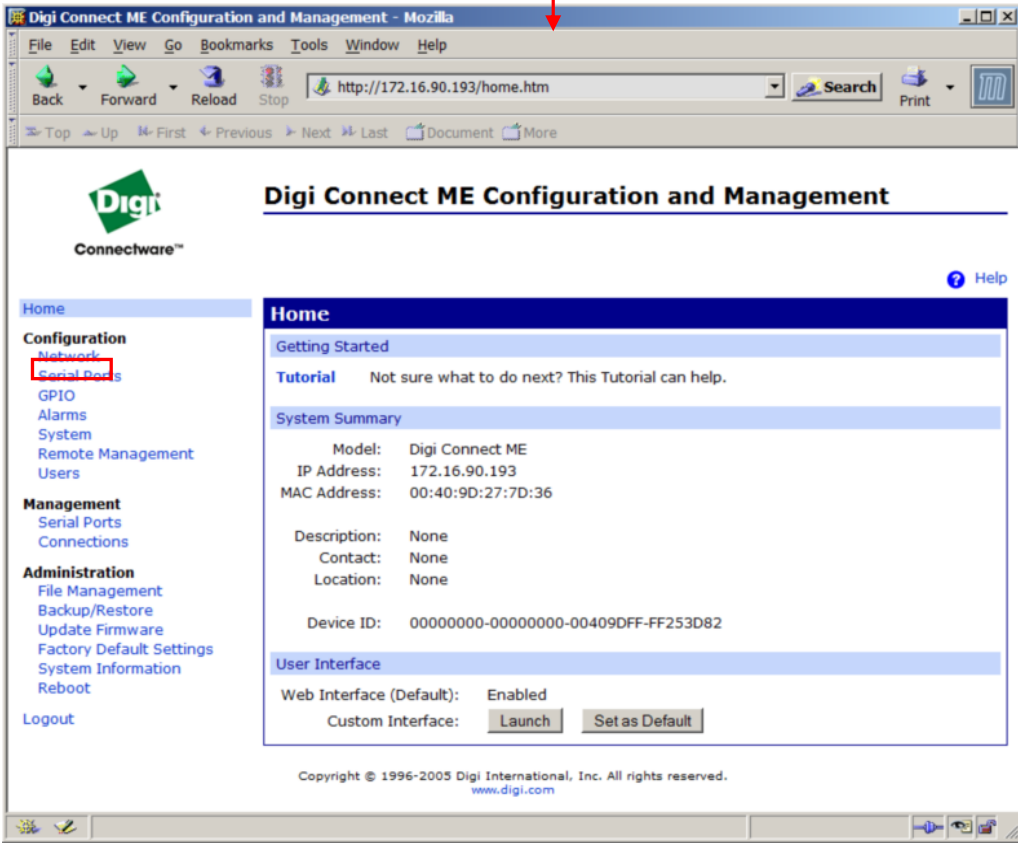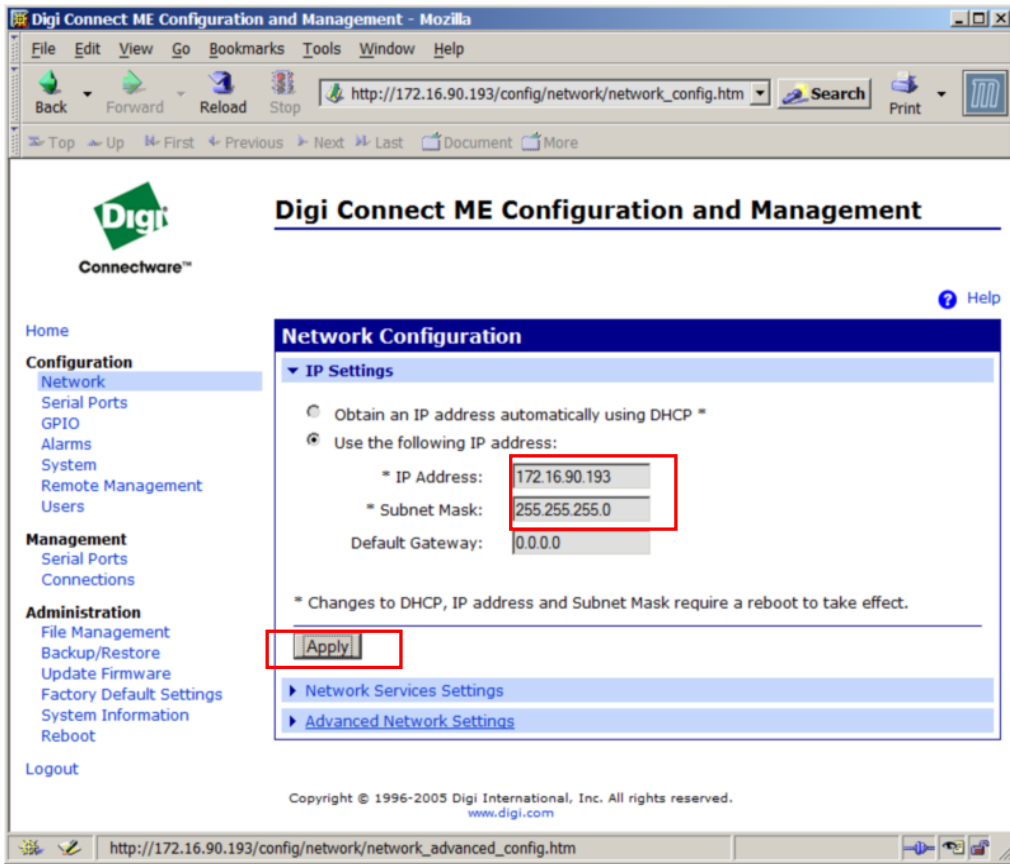
6.5 SOFTWARE DOWNLOAD / UPDATE

Software is downloaded using the serial interface by connecting the COM port on a PC/notebook to the X2 Service plug on the box via a null modem cable.

Each inkjet model has its own software version, so the version corresponding to the inkjet model being used must be installed.
Standard (supply model): Kodak DP5120

Overview of versions:

Inkjet model	Version
Kodak DP5120	1.xx
Excel 270g	2.xx

The **F-Box Downloader.exe** program must be used to download the software. See below for instructions.

Important note:
F-Box Downloader.exe only works with Inkjet Interface Box version V01.11 or higher.
If an older version is installed, **ST10Flasher.exe** must be used for downloading.

---

3. Start the download

1. Select COM port

2. Select the HEX file

Note:
The download tool can also be started directly by double-clicking an .H86 file. The .H86 file is then selected automatically.

7 APPENDIX

7.1 EMERGENCY DOWNLOAD

If the software version is older than version V01.11, or if the box will not start at all (e.g. power off during software download), the software will have to be downloaded using the flash tool **ST10Flasher.exe**. Before starting the download you must first move the switch at the small opening on the rear of the casing and switch the box off and then on again (display is blank). When the download has been completed, reset the switch and switch the box off and then on again.
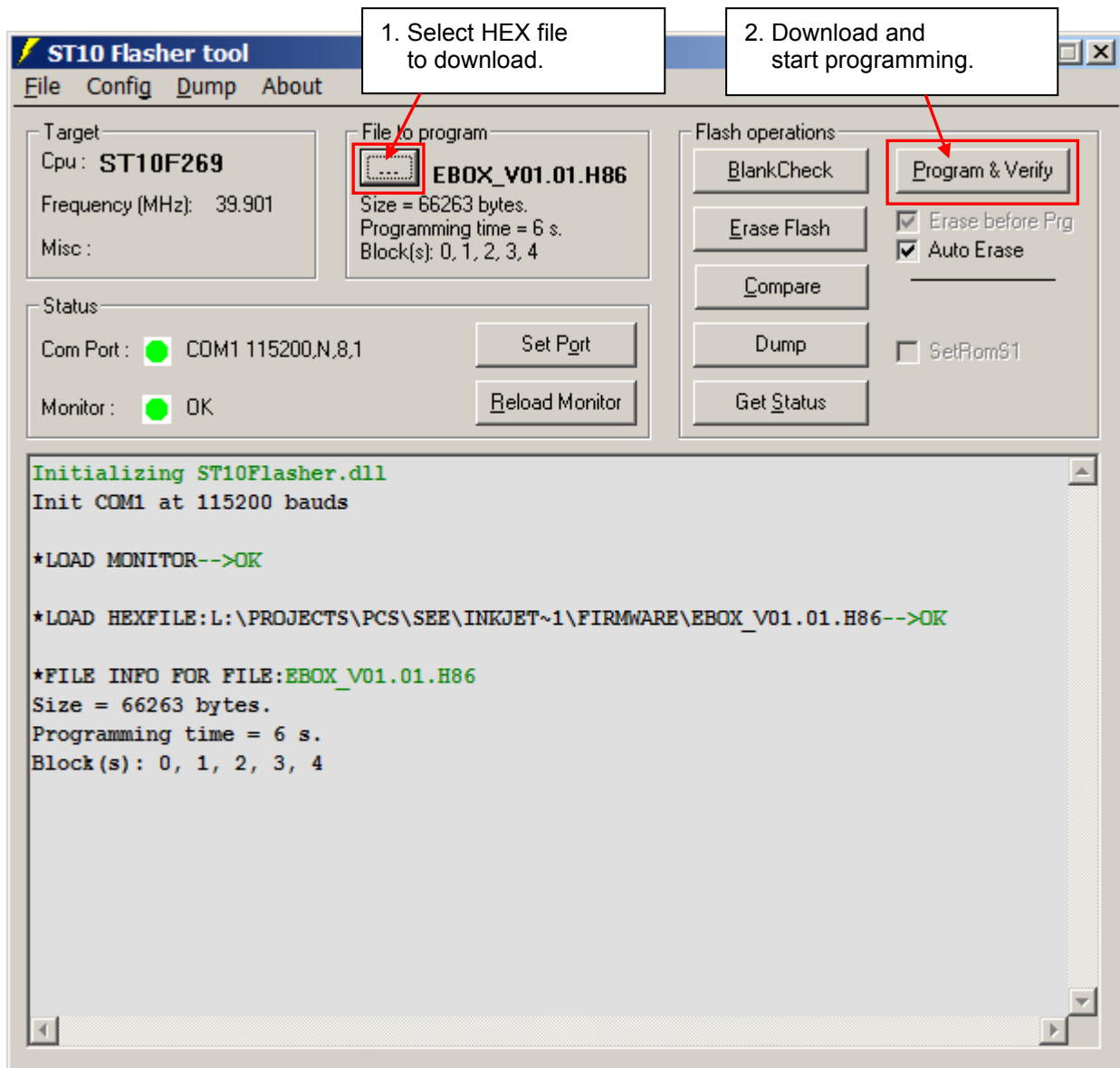
7.2 TRACE SWITCHES

7.2.1 PRA-PC

The trace switches can either be activated in the relevant production configurations of the PRA-PC configuration utility CNF, or they can be switched on and off during production using the PRA-PC control panel.

The only traces described here are those that are specifically used to control the Ethernet inkjet interface box.

The traces are written to the EA.OUT file.

Trace switch name	*Description*

Address management	Accesses to the bundle and address buffers are written to the trace.
	
	Examples:
	Data request for bundle 16 from schedule A:
	`13:08:03 ETHER:1:data:request:pak = A00016`
	`13:08:03 ETHER:1:data:pak:alloc:index = 00001`
	`13:08:03 ETHER:1:data:addr:alloc:key, count = 00001, 00050`
	
	Data release for bundle 16 from schedule A:
	`13:08:35 ETHER:1:data:release:pak = A00016`
	`13:08:35 ETHER:1:data:addr:free:key, count = 00001, 00050`
	`13:08:35 ETHER:1:data:pak:free:index = 00001`

Address commands	The address commands are written to the trace. Each layer of a bundle has its own address command.
	
	Examples:
	Address request for the two layers of bundle 1 from schedule A:
	`14:53:59 ETHER:1:data:acmd:alloc:pak = A00001, index = 1`
	`14:54:08 ETHER:1:data:acmd:alloc:pak = A00001, index = 2`
	
	The address commands are then removed from the command buffer:
	`14:54:13 ETHER:1:data:acmd:free:pak = A00001, index = 1`
	`14:54:22 ETHER:1:data:acmd:free:pak = A00001, index = 2`

Copy tracking	Accesses to the copy tracking are written to the trace.
	
	Examples:
	An address command for bundle 1 from schedule A is entered from Pace-ID 76 into the
	copy tracking. Pace-ID 76 corresponds to ALS gripper 77:
	`14:53:59 ETHER:1:pace:acmd:start:pak = A00001, index = 76, klnr = 77`
	`14:53:59 ETHER:1:pace:acmd:expl:pak = A00001, index = 76, adnr = 0`
	`14:53:59 ETHER:1:pace:acmd:expl:pak = A00001, index = 77, adnr = 1`
	
	Print commands generated from the copy tracking to the inkjet interface box, which are sent via the COM interface.
	`14:54:03 ETHER:1:pace:iicom:print:pak = A00001, index = 76, adnr = 0`
	`14:54:03 ETHER:1:pace:iicom:print:pak = A00001, index = 77, adnr = 1`
	
	On completion of tracking, a check is made to verify that the print process has been acknowledged:
	`14:54:04 ETHER:1:pace:check:ok:pak = A00001, index = 76, adnr = 0`
	`14:54:04 ETHER:1:pace:check:ok:pak = A00001, index = 77, adnr = 1`

Communication with the interface box	The commands and responses that pass through the Ethernet interface are written to the trace.
	
	Examples:
	Status request with an expected status of "Online" and the following reply:
	`15:42:37 ETHER:1:iibox:cmd_status_req( IkjState=Online ) | 1,3`
	`15:42:37 ETHER:1:iibox:rsp_status( IkjState=Online, ECode=0, ENr=0 )`
	
	An empty gripper is announced, and acknowledged:
	`15:42:39 ETHER:1:iibox:cmd_pace( Pace=9 ) | 3,9`
	`15:42:39 ETHER:1:iibox:rsp_nack( Pace=9, D=100, Q=1, ECode=0, ENr=0 )`
	
	Print command and acknowledgement. The first 4 fields contain address data:
	`15:43:28 ETHER:1:iibox:cmd_print( Pace=61, Data=AAAA_____ ) | 2,61`
	`15:43:32 ETHER:1:iibox:rsp_ack( Pace=61, D=100, Q=1, ECode=0, ENr=0 )`
	
	The value "D=x" is equal to the distance between two grippers [mm].
	The value "Q=y" is equal to the number of addresses that have been sent to the interface box, but not yet printed.

Data transfer	The data that is sent and received through the Ethernet interface is written to the trace.
	
	Examples in combination with the "Communication with the interface box" switch:
	Transfer of address data:
	`16:16:56 ETHER:1:iibox:cmd_print( Pace=84, Data=AAAA_____ ) | 2,84`
	`16:16:56 ETHER:1:iibox:send:{A|30|1042204                }`
	`16:16:56 ETHER:1:iibox:send:{A|30|Bundespolizeidirektion    }`
	`16:16:56 ETHER:1:iibox:send:{A|30|Postfach 9               }`
	`16:16:56 ETHER:1:iibox:send:{A|30|5033 Salzburg            }`
	
	Receiving a status response from the interface box:
	`16:16:56 ETHER:1:iibox:rsp_status( IkjState=Online, ECode=0, ENr=0 )`
	`16:16:56 ETHER:1:iibox:recv: 32 31 2C 7B 41 7C 31 36 | 21,{A|16`
	`16:16:56 ETHER:1:iibox:recv: 7C 30 30 2E 30 30 2D 53 | |00.00-S`
	`16:16:56 ETHER:1:iibox:recv: 69 6D 75 6C 61 74 69 6F | imulatio`
	`16:16:56 ETHER:1:iibox:recv: 6E 7D 2C 30 2C 33 2C 30 | n},0,3,0`
	`16:16:56 ETHER:1:iibox:recv: 2C 30 0D 0A            | ,0..`

Pacing commands to the interface box	The commands and responses between the PRA-PC and the inkjet interface box that pass through the serial interface are written to the trace.
	
	Example:
	Empty gripper and response:
	`15:44:21 ETHER:1:iicom:cmd_pace( Pace=71 )`
	`15:44:22 ETHER:1:iicom:rsp = OK`

Pacing command data to the interface box	The data that passes through the Serial interface is written to the trace.
	
	Example in combination with the "Pacing commands to the interface box" switch:
	`16:41:19 ETHER:1:iicom:cmd_pace( Pace=38 )`
	`16:41:19 ETHER:1:iicom:send: 10 A6`
	`16:41:19 ETHER:1:iicom:recv: 80`
	`16:41:19 ETHER:1:iicom:rsp = OK`

Interface box: Serial interface	The interface box announces the data that is received via the serial interface. This is written to the trace. Example: `17:34:18 ETHER:1:iibox:trace:com: 32 30 2C 38 30	20,80`
Interface box: Address data	The interface box announces the data that is received via the Ethernet interface. This is written to the trace. Example: `17:34:18 ETHER:1:iibox:trace:adr: <Hex data>`
Interface box: Internal traces	The interface box announces internal traces, which are written to the trace. Example: `17:34:18 ETHER:1:iibox:trace:int: <Hex data>`

7.2.2 LINEMASTER

To switch on trace switches, the following entry must be made in the [TraceSwitches] section of the **D:\Pcs\CshApp\Pcs.ini** file:

```
[TraceSwitches]
LCsPak=TraceSwitchName1,TraceSwitchName2,...
```

Trace switch name	*Description*

SingleAddressTrc	Writes all Ethernet messages to and from the inkjet interface box to the trace file.
	Examples:
	
	`.. 10:10:40 <-SAP  43,658,100,0,0,0`
	`.. 10:10:57 ->SAP  2,862,{A|40|METZ - VALLEE DE L'ORNE      B0061    }`

WandlerboxAdressTrc	The inkjet interface box sends the printed address data to the CsPak, and it is written to the trace file. → The CsPak application needs to be restarted
WandlerboxSeriellTrc	The serial messages from the inkjet interface box and the ALS are written to the trace file. → The CsPak application needs to be restarted
WandlerboxDataTrc	Internal inkjet interface traces →Not yet implemented
SingleAddressCharTest	Test print mode, instead of sending the print data, an internal test print image is printed (standard: 8 lines @ 40 characters per line).

7.3 RECORDING TRACES

In order to efficiently analyse a problem, it may be necessary to record traces from the inkjet box and to store them in a file. The traces are output through the inkjet box's X2 serial interface.

Requirements:

- Notebook or PC with serial interface
- Null modem cable
- Terminal emulation program (standard Windows: HyperTerminal)

Procedure for recording traces with HyperTerminal

- Switch trace on: Kodak inkjet: From version 1.16 onwards the trace output can be switched on / off from the Machine / Serial Trace menu item.
    → After changing this parameter, the box must be switched off and on.

    For earlier versions, the trace output is always active.

    Videojet inkjet: Trace output is always active

- Use a null modem cable to connect the PC or notebook's COM1 port to the inkjet box's X2 port.
- Serial settings: Baud rate 38,400 bps / 8 data bits / no parity / 1 stop bit
  Menu item File / Properties / Button Configure…
- Start recording to a file:
  Menu item Transfer / Capture Text… / - enter path and file name
- Stop recording to a file:
  Menu item Transfer / Capture Text… / Stop

7.4 KODAK DP5120
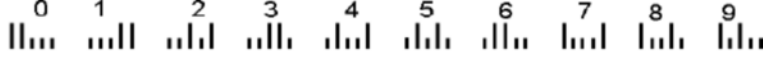
7.4.1 FONTS

Font Number:	6000
Family Name:	Gothic
Family Type:	International
Face:	Normal
Char. per Inch	17.1
Lines per Inch:	12
Lines Spacing:	.083 in
Dots Above Baseline:	.083 in
Dots Below Baseline:	.017 in
Resolutions:	120x120 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	GOT

abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789
!"#$%&'()*+,-./:;<=>?@[\]^_`{|}~

Font Number:	6016
Family Name:	Gothic
Family Type:	International
Face:	Medium
Char. per Inch	15.0
Lines per Inch:	9
Lines Spacing:	.117 in
Dots Above Baseline:	.100 in
Dots Below Baseline:	.033 in
Resolutions:	120x120 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	GOT; ISO; PC8; RM8

abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789
!"#$%&'()*+,-./:;<=>?@[\]^_`{|}~

Font Number:	6128
Family Name:	Elite
Family Type:	International
Face:	Medium
Char. per Inch	10.0
Lines per Inch:	6
Lines Spacing:	.175 in
Dots Above Baseline:	.133 in
Dots Below Baseline:	.050 in
Resolutions:	120x120 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	ELI; ISO; PC8; RM8

abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789
!"#$%&'()*+,-./:;<=>?@[\]^_`{|}~

Font Number:	6144
Family Name:	Postnet
Family Type:	
Face:	
Bars Per Inch	20
Lines per Inch::	8
Lines Spacing:	.125 in
Dots Above Baseline:	.125 in
Dots Below Baseline:	.000 in
Resolutions:	120x120 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	POS

0   1   2   3   4   5   6   7   8   9

Font Number:	6148
Family Name:	Gothic
Family Type:	International
Face:	Bold
Char. per Inch	10.0
Lines per Inch:	8
Lines Spacing:	.133 in
Dots Above Baseline:	.117 in
Dots Below Baseline:	.042 in
Resolutions:	120x120 dpi
Subfonts:	GOT; ISO; PC8; RM8

abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789
 !"#$%&'()*+,-./:;<=>?@[\]^_`{|}~

Font Number:	6164
Family Name:	Gothic
Family Type:	International
Face:	Bold
Char. per Inch	10.0
Lines per Inch:	6
Lines Spacing:	.175 in
Dots Above Baseline:	.133 in
Dots Below Baseline:	.050 in
Resolutions:	120x120 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	GOT; ISO; PC8; RM8

abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789
 !"#$%&'()*+,-./:;<=>?@[\]^_`{|}~

Font Number:	6180
Family Name:	Gothic
Family Type:	Domestic
Face:	Bold
Char. per Inch	10.0
Lines per Inch:	8
Lines Spacing:	.133 in
Dots Above Baseline:	.100 in
Dots Below Baseline:	.033 in
Resolutions:	120x120 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	GOT

```
abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789
 !"#$%&'()*+,-./:;<=>?@[\]^_`{|}~
```

Font Number:	6184
Family Name:	Bar Codes
Family Type:	N/A
Face:	Normal
Char. per Inch	Proportional
Lines per Inch:	7
Lines Spacing:	.133 in
Dots Above Baseline:	.133 in
Dots Below Baseline:	.000 in
Resolutions:	120x120 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	GP-

Font Number 6184 is a General Purpose Bar Code Font. This font consists of a series of vertical bars and spaces, which can be combined to create very special "do it yourself" bar codes. The user must have a very through knowledge of bar code symbology and is responsible for transmitting the data that will produce every required stroke and space. This is a proportional mode font, which consists of varying width vertical strokes and spaces.

Font Number:	6188
Family Name:	Bar Codes
Family Type:	N/A
Face:	Normal
Char. per Inch	Proportional
Lines per Inch:	7
Lines Spacing:	.133 in
Dots Above Baseline:	.133 in
Dots Below Baseline:	.000 in
Resolutions:	120x120 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	GP6

Font Number 6188 is a General Purpose Bar Code Font. This font consists of a series of vertical bars and spaces, which can be combined to create very special "do it yourself" bar codes. The user must have a very through knowledge of bar code symbology and is responsible for transmitting the data that will produce every required stroke and space. This font contains character patters in a 6- wide and 16- high cell. It is useful when mono-spaced printing is necessary.

Font Number:	6196
Family Name:	Gothic
Family Type:	International
Face:	Medium
Char. per Inch	10.0
Lines per Inch:	8
Lines Spacing:	.133 in
Dots Above Baseline:	.117 in
Dots Below Baseline:	.042 in
Resolutions:	120x120 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	GOT; ISO;
	PC8; RM8

abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQURSTVWXYZ
0123456789
!"#$%&'()*+,-.

Font Number:	6248
Family Name:	Gothic
Family Type:	Domestic
Face:	Medium
Char. per Inch	12.0
Lines per Inch:	8
Lines Spacing:	.133 in
Dots Above Baseline:	.100 in
Dots Below Baseline:	.033 in
Resolutions:	120x120 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	GOT;

abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789
!"#$%&'()*+,-.

Font Number:	6252
Family Name:	Gothic
Family Type:	International
Face:	Medium
Char. per Inch	12.0
Lines per Inch:	8
Lines Spacing:	.133 in
Dots Above Baseline:	.117 in
Dots Below Baseline:	.042 in
Resolutions:	120x120 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	GOT; ISO;
	PC8; RM8

abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789
!"#$%&'()*+,,-.

Font Number: 6268   abcdefghijklmnopqrstuvwxyz
Family Name: Gothic   ABCDEFGHIJKLMNOPQRSTUVWXYZ
Family Type: Domestic   0123456789
Face: Bold   !"#$%&'()*+,-./:;<=>?@[\]^_`{|}~
Char. per Inch   12.0
Lines per Inch: 8
Lines Spacing: .133 in
Dots Above Baseline: .100 in
Dots Below Baseline: .033 in
Resolutions: 120x120 dpi
                      240x240 dpi
                      240x480 dpi
Subfonts: GOT

Font Number: 6272   abcdefghijklmnopqrstuvwxyz
Family Name: Gothic   ABCDEFGHIJKLMNOPQRSTUVWXYZ
Family Type: International 0123456789
Face: Bold   !"#$%&'()*+,-./:;<=>?@[\]^_`{|}~
Char. per Inch   12.0
Lines per Inch: 8
Lines Spacing: .133 in
Dots Above Baseline: .117 in
Dots Below Baseline: .042 in
Resolutions: 120x120 dpi
                      240x240 dpi
                      240x480 dpi
Subfonts: GOT; ISO;
                      PC8; RM8

Font Number: 6292   abcdefghijklmnopqrstuvwxyz
Family Name: Gothic   ABCDEFGHIJKLMNOPQRSTUVWXYZ
Family Type: Domestic   0123456789
Face: Medium   !"#$%&'()*+,-.
Char. per Inch   10.0
Lines per Inch: 8
Lines Spacing: .133 in
Dots Above Baseline: .100 in
Dots Below Baseline: .033 in
Resolutions: 120x120 dpi
                      240x240 dpi
                      240x480 dpi
Subfonts: GOT

Font Number:	6296	abcdefghijklmnopqrstuvwxyz
Family Name:	Elite	ABCDEFGHIJKLMNOPQRSTUVWXYZ
Family Type:	Domestic	0123456789
Face:	Medium	!"#$%&'()*+,-..
Char. per Inch	12.0	
Lines per Inch:	8	
Lines Spacing:	.133 in	
Dots Above Baseline:	.117 in	
Dots Below Baseline:	.033 in	
Resolutions:	120x120 dpi	
	240x240 dpi	
	240x480 dpi	
Subfonts:	ELI	

Font Number:	6300	abcdefghijklmnopqrstuvwxyz
Family Name:	Elite	ABCDEFGHIJKLMNOPQRSTUVWXYZ
Family Type:	International	0123456789
Face:	Medium	!"#$%&'()*+,-./:;<=>?@[\]^_`{|}~
Char. per Inch	12.0	
Lines per Inch:	8	
Lines Spacing:	.133 in	
Dots Above Baseline:	.117 in	
Dots Below Baseline:	.042 in	
Resolutions:	120x120 dpi	
	240x240 dpi	
	240x480 dpi	
Subfonts:	ELI; ISO; PC8; RM8	

Font Number:	6320	abcdefghijklmnopqrstuvwxyz
Family Name:	Elite	ABCDEFGHIJKLMNOPQRSTUVWXYZ
Family Type:	International	0123456789
Face:	Bold	!"#$%&'()*+,-.
Char. per Inch	10.0	
Lines per Inch:	6	
Lines Spacing:	.175 in	
Dots Above Baseline:	.133 in	
Dots Below Baseline:	.050 in	
Resolutions:	120x120 dpi	
	240x240 dpi	
	240x480 dpi	
Subfonts:	ELI; ISO; PC8; RM8	

Font Number:	6336
Family Name:	OCR A
Family Type:	Domestic
Face:	Normal
Char. per Inch	10.0
Lines per Inch:	6
Lines Spacing:	.167 in
Dots Above Baseline:	.100 in
Dots Below Baseline:	.033 in
Resolutions:	120x120 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	OCR

abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789
!"#$%&'()*+,-.

Font Number:	6352
Family Name:	OCR B
Family Type:	Domestic
Face:	Normal
Char. per Inch	10.0
Lines per Inch:	6
Lines Spacing:	.167 in
Dots Above Baseline:	.108 in
Dots Below Baseline:	.033 in
Resolutions:	
	240x240 dpi
	240x480 dpi
Subfonts:	OCR

abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789
!"#$%&'()*+,-./:;<=>?@[\]^_`{|}~

Font Number:	6368
Family Name:	Script
Family Type:	Domestic
Face:	Normal
Char. per Inch:	Proportional
Lines per Inch:	4
Lines Spacing:	.250 in
Dots Above Baseline:	.167 in
Dots Below Baseline:	.033 in
Resolutions:	120x120 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	SCR

abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789
!"#$%&'()*+,-.

Font Number:	6372
Family Name:	Script
Family Type:	Domestic
Face:	Normal
Char. per Inch	Proportional
Lines per Inch::	3
Lines Spacing:	.350 in
Dots Above Baseline:	.242 in
Dots Below Baseline:	.108 in
Resolutions:	120x120 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	SCR

abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOP
QRSTUVWXYZ
!"#$'()+,-. 0123456789*

Font Number:	6376
Family Name:	Block
Family Type:	Domestic
Face:	Normal
Char. per Inch	5.0
Lines. per Inch	3
Lines Spacing:	.333 in
Dots Above Baseline:	.283 in
Dots Below Baseline:	.067 in
Resolutions:	120x120 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	BLO

ABCDEFGHIJ
ABCDEFGHIJ
0123456789

Font Number:	6380
Family Name:	Block
Family Type:	Domestic
Face:	Normal
Char. per Inch	3.0
Lines per Inch	2
Lines Spacing:	.533 in
Dots Above Baseline:	.433 in
Dots Below Baseline:	.067 in
Resolutions:	120x120 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	BLO

ABCDEFGHI
ABCDEFGHI
012345678

Font Number:	6384
Family Name:	Cursive
Family Type:	Domestic
Face:	Normal
Char. per Inch	Proportional
Lines per Inch::	5
Lines Spacing:	.200 in
Dots Above Baseline:	.133 in
Dots Below Baseline:	.067 in
Resolutions:	120x120 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	CUR

abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789
!"#$%&'()*+,-./:;<=>?@[\]^_`{|}~

Font Number:	6388
Family Name:	Cursive
Family Type:	Domestic
Face:	Normal
Char. per Inch	Proportional
Lines per Inch::	4
Lines Spacing:	.267 in
Dots Above Baseline:	.183 in
Dots Below Baseline:	.075 in
Resolutions:	120x120 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	CUR

abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789
!"#$%&'()*+,-./:;<=>?@[\]^_`{|}~

Font Number:	6392
Family Name:	Georgine
Family Type:	Domestic
Face:	Normal
Char. per Inch	Proportional
Lines per Inch::	4
Lines Spacing:	.267 in
Dots Above Baseline:	.167 in
Dots Below Baseline:	.100 in
Resolutions:	120x120 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	GEO

abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789
!"#$%&'()*+,-./:;<=>?@[\]^_`

Font Number:	6396
Family Name:	Admark
Family Type:	9x12
Face:	Medium
Char. per Inch	10.0
Lines. per Inch	8
Lines Spacing:	.133 in
Dots Above Baseline:	.092 in
Dots Below Baseline:	.042 in
Resolutions:	120x120 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	ADM

ABCDEFGHIJKLMNOPQRSTUVWXYZ
ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789
 ! "#$%&' ()*+, -. /:; =?@

Font Number:	6398
Family Name:	Admark
Family Type:	9x12
Face:	Medium
Char. per Inch	10.0
Lines. per Inch	8
Lines Spacing:	.133 in
Dots Above Baseline:	.092 in
Dots Below Baseline:	.042 in
Resolutions:	120x120 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	ADM

abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789
 ! "#$%&' ()*+, -. /:; <=>?@[\]^_`{|}~

Font Number:	6400
Family Name:	Admark
Family Type:	7x12
Face:	Bold
Char. per Inch	12.0
Lines. per Inch	8
Lines Spacing:	.133 in
Dots Above Baseline:	.075 in
Dots Below Baseline:	.058 in
Resolutions:	120x120 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	ADM

abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789
 ! "#$%&' ()*+, -. /:; <=>?@[\]^_`{|}~

Font Number:	6402
Family Name:	Admark
Family Type:	Brokaw
Face:	
Char. per Inch	8.0
Lines. per Inch	5
Lines Spacing:	.200 in
Dots Above Baseline:	.158 in
Dots Below Baseline:	.042 in
Resolutions:	120x120 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	ADM

abcdefghijk1mnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789
! "#$%&' () *+, -. /: ; <=>? @ [\] ^_`{|}~

Font Number:	6412
Family Name:	Borders
Family Type:	Domestic
Face:	Normal
Char. per Inch	7.50
Lines. per Inch	8
Lines Spacing:	.133 in
Dots Above Baseline:	.100 in
Dots Below Baseline:	.033 in
Resolutions:	120x120 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	BOR
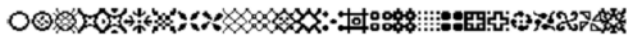
Font Number:	6416
Family Name:	Graphics
Family Type:	Domestic
Face:	Normal
Char. per Inch	Proportional
Lines per Inch::	2
Lines Spacing:	.500 in
Dots Above Baseline:	.250 in
Dots Below Baseline:	.250 in
Resolutions:	120x120 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	

Font Number:	6426
Family Name:	Bar Code
Family Type:	Code 39
Face:	Normal
Char. per Inch	7.50
Lines Spacing:	.133 in
Dots Above Baseline:	.133 in
Dots Below Baseline:	.000 in
Resolutions:	120x120 dpi
Subfonts:	BAR

ABCDEFGHIJKLMNOP

Font Number:	6430
Family Name:	Bar Code
Family Type:	Code 39
Face:	Normal
Char. per Inch	5.71
Lines Spacing:	.133 in
Dots Above Baseline:	.133 in
Dots Below Baseline:	.000 in
Resolutions:	120x120 dpi
Subfonts:	BAR

ABCDEFGHIJKLMNOP

Font Number:	6434
Family Name:	Bar Code
Family Type:	Code 39
Face:	Normal
Char. per Inch	5.00
Lines Spacing:	.133 in
Dots Above Baseline:	.133 in
Dots Below Baseline:	.000 in
Resolutions:	120x120 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	BAR

ABCDEFGHIJKLMOP

Font Number:	6438
Family Name:	Bar Code
Family Type:	Code 39
Face:	Normal
Char. per Inch	4.14
Lines Spacing:	.133 in
Dots Above Baseline:	.133 in
Dots Below Baseline:	.000 in
Resolutions:	120x120 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	BAR

ABCDEFGHIJKLMN0

Font Number:	6442
Family Name:	Bar Code
Family Type:	Code 39
Face:	Normal
Char. per Inch	3.24
Lines Spacing:	.133 in
Dots Above Baseline:	.133 in
Dots Below Baseline:	.000 in
Resolutions:	120x120 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	BAR

ABCDEFGHIJKLM

Font Number:	6454
Family Name:	Bar Code
Family Type:	Code 39
Face:	Normal
Char. per Inch	2.40
Lines Spacing:	.133 in
Dots Above Baseline:	.133 in
Dots Below Baseline:	.000 in
Resolutions:	120x120 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	BAR

ABCDEF

Font Number:	6474
Family Name:	Bar Code
Family Type:	I 2 of 5
Face:	Normal
Char. per Inch	8.89
Lines Spacing:	.133 in
Dots Above Baseline:	.133 in
Dots Below Baseline:	.000 in
Resolutions:	120x120 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	PC8

656667686970

Font Number:	6490
Family Name:	Bar Code
Family Type:	I 2 of 5
Face:	Normal
Char. per Inch	5.86
Lines Spacing:	.133 in
Dots Above Baseline:	.133 in
Dots Below Baseline:	.000 in
Resolutions:	120x120 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	PC8

656667686970

Font Number:	6514
Family Name:	Bar Code
Family Type:	I 2 of 5
Face:	Normal
Char. per Inch	4.36
Lines Spacing:	.133 in
Dots Above Baseline:	.133 in
Dots Below Baseline:	.000 in
Resolutions:	120x120 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	PC8

656667686970

Font Number:	6530
Family Name:	Bar Code
Family Type:	UPC A
Face:	Normal
Char. per Inch	8.57
Lines Spacing:	.133 in
Dots Above Baseline:	.133 in
Dots Below Baseline:	.000 in
Resolutions:	120x120 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	UPC

Font Number:	6534
Family Name:	Bar Code
Family Type:	UPC E
Face:	Normal
Char. per Inch	8.57
Lines Spacing:	.133 in
Dots Above Baseline:	.133 in
Dots Below Baseline:	.000 in
Resolutions:	120x120 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	UPC

Font Number:	6538
Family Name:	Bar Code
Family Type:	UPC A
Face:	Normal
Char. per Inch	5.71
Lines Spacing:	.133 in
Dots Above Baseline:	.133 in
Dots Below Baseline:	.000 in
Resolutions:	120x120 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	UPC

Font Number:	6542
Family Name:	Bar Code
Family Type:	UPC E
Face:	Normal
Char. per Inch	5.71
Lines Spacing:	.133 in
Dots Above Baseline:	.133 in
Dots Below Baseline:	.000 in
Resolutions:	120x120 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	UPC

12364 (3)

Font Number:	6546
Family Name:	Bar Code
Family Type:	US Codabar
Face:	Normal
Char. per Inch	7.50
Lines Spacing:	.133 in
Dots Above Baseline:	.133 in
Dots Below Baseline:	.000 in
Resolutions:	120x120 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	USC

A123456789A

Font Number:	6550
Family Name:	Bar Code
Family Type:	US Codabar
Face:	Normal
Char. per Inch	6.67
Lines Spacing:	.133 in
Dots Above Baseline:	.133 in
Dots Below Baseline:	.000 in
Resolutions:	120x120 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	USC

A123456789A

Font Number:	6554
Family Name:	Bar Code
Family Type:	US Codabar
Face:	Normal
Char. per Inch	5.45
Lines Spacing:	.133 in
Dots Above Baseline:	.133 in
Dots Below Baseline:	.000 in
Resolutions:	120x120 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	USC

A123456789A

Font Number:	6558
Family Name:	Bar Code
Family Type:	US Codabar
Face:	Normal
Char. per Inch	4.29
Lines Spacing:	.133 in
Dots Above Baseline:	.133 in
Dots Below Baseline:	.000 in
Resolutions:	120x120 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	USC

A123456789A

Font Number:	6562
Family Name:	Bar Code
Family Type:	US Codabar
Face:	Normal
Char. per Inch	3.53
Lines Spacing:	.133 in
Dots Above Baseline:	.133 in
Dots Below Baseline:	.000 in
Resolutions:	120x120 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	USC

A123456789A

Font Number:	6566
Family Name:	Bar Code
Family Type:	US Codabar
Face:	Normal
Char. per Inch	3.16
Lines Spacing:	.133 in
Dots Above Baseline:	.133 in
Dots Below Baseline:	.000 in
Resolutions:	120x120 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	USC

A123456789A

Font Number:	6574
Family Name:	Bar Code
Family Type:	USS 93
Face:	Normal
Char. per Inch	4.44
Lines Spacing:	.133 in
Dots Above Baseline:	.133 in
Dots Below Baseline:	.000 in
Resolutions:	120x120 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	USS

(1234567890M%)

Font Number:	6578
Family Name:	Bar Code
Family Type:	USS 93
Face:	Normal
Char. per Inch	4.44
Lines Spacing:	.133 in
Dots Above Baseline:	.133 in
Dots Below Baseline:	.000 in
Resolutions:	120x120 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	USC

(1234567890M%)

Font Number:	6586
Family Name:	Bar Code
Family Type:	USS 128
Face:	Normal
Char. per Inch	5.54
Lines Spacing:	.133 in
Dots Above Baseline:	.133 in
Dots Below Baseline:	.000 in
Resolutions:	120x120 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	USC

12345678997575

Font Number:	6590
Family Name:	Bar Code
Family Type:	USS 128
Face:	Normal
Char. per Inch	3.64
Lines Spacing:	.133 in
Dots Above Baseline:	.133 in
Dots Below Baseline:	.000 in
Resolutions:	
	240x240 dpi
	240x480 dpi
Subfonts:	USC

12345678997575

Font Number:	6602
Family Name:	Royal British
Family Type:	Postal Code
Face:	Normal
Char. per Inch	6.00
Lines Spacing:	.183 in
Dots Above Baseline:	.117 in
Dots Below Baseline:	.067 in
Resolutions:	120x120 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	BPO

Font Number:	7060	abcdefghijklmnopqrstuvwxyz
Family Name:	Admark	ABCDEFGHIJKLMNOPQRSTUVWXYZ
Family Type:	Donnelley	0123456789
Face:	Normal	! "#$%&' () *+, -.
Char. per Inch	8.00	
Lines. per Inch	5	
Lines Spacing:	.200 in	
Dots Above Baseline:	.158 in	
Dots Below Baseline:	.042 in	
Resolutions:	120x120 dpi	
	240x240 dpi	
Subfonts:	12X	

Font Number:	7068	abcdefghijklmnopqrstuvwxyz
Family Name:	Admark	ABCDEFGHIJKLMNOPQRSTUVWXYZ
Family Type:	Donnelley	0123456789
Face:	Normal	!"#$%&'()*+,-.
Char. per Inch	7.00	
Lines. per Inch	5	
Lines Spacing:	.200 in	
Dots Above Baseline:	.158 in	
Dots Below Baseline:	.042 in	
Resolutions:	120x120 dpi	
	240x240 dpi	
Subfonts:	12P	

Font Number:	7070	abcdefghijklmnopqrstuvwxyz
Family Name:	Admark	ABCDEFGHIJKLMNOPQRSTUVWXYZ
Family Type:	Donnelley	0123456789
Face:	Normal	!"#$%&'()*+,-.
Char. per Inch	8.57	
Lines. per Inch	5	
Lines Spacing:	.200 in	
Dots Above Baseline:	.133 in	
Dots Below Baseline:	.067 in	
Resolutions:	120x120 dpi	
	240x240 dpi	
Subfonts:	12P	

Font Number:	7072
Family Name:	Admark
Family Type:	Donnelley
Face:	Normal
Char. per Inch	5.00
Lines. per Inch	3
Lines Spacing:	.267 in
Dots Above Baseline:	.192 in
Dots Below Baseline:	.075 in
Resolutions:	120x120 dpi
	240x240 dpi
Subfonts:	18P

ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789   #&'()*,-./:

Font Number:	7105
Family Name:	Admark
Family Type:	Donnelley
Face:	Normal
Char. per Inch	10.0
Lines. per Inch	8
Lines Spacing:	.133 in
Dots Above Baseline:	.000 in
Dots Below Baseline:	.133 in
Resolutions:	120x120 dpi
	240x240 dpi
Subfonts:	ID7

abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789
! "#$%&'()*+,-.

Font Number:	7106
Family Name:	Admark
Family Type:	Donnelley
Face:	Normal
Char. per Inch	10.0
Lines. per Inch	8
Lines Spacing:	.133 in
Dots Above Baseline:	.000 in
Dots Below Baseline:	.133 in
Resolutions:	120x120 dpi
	240x240 dpi
Subfonts:	ID7

ABCDEFGHIJKLMNOPQRSTUVWXYZ
ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789
! "#$%&'()*+,-.

Font Number:	7107
Family Name:	Admark
Family Type:	Donnelley
Face:	Normal
Char. per Inch	12.0
Lines. per Inch	8
Lines Spacing:	.133 in
Dots Above Baseline:	.000 in
Dots Below Baseline:	.133 in
Resolutions:	120x120 dpi
	240x240 dpi
Subfonts:	ID7

abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789
!"#$%&'()*+,-.

Font Number:	7108
Family Name:	Admark
Family Type:	Donnelley
Face:	Normal
Char. per Inch	12.0
Lines. per Inch	8
Lines Spacing:	.133 in
Dots Above Baseline:	.000 in
Dots Below Baseline:	.133 in
Resolutions:	120x120 dpi
	240x240 dpi
Subfonts:	ID7

abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789
!"#$%&'()*+,-.

Font Number:	7109
Family Name:	Admark
Family Type:	Donnelley
Face:	Normal
Char. per Inch	10.0
Lines. per Inch	8
Lines Spacing:	.133 in
Dots Above Baseline:	.000 in
Dots Below Baseline:	.133 in
Resolutions:	120x120 dpi
	240x240 dpi
Subfonts:	ID7

abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789
!"#$%&'()*+,-.

Font Number:	7110
Family Name:	Admark
Family Type:	Donnelley
Face:	Normal
Char. per Inch	10.0
Lines. per Inch	8
Lines Spacing:	.133 in
Dots Above Baseline:	.000 in
Dots Below Baseline:	.133 in
Resolutions:	120x120 dpi
	240x240 dpi
Subfonts:	ID7

ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789
!"#$%&'()*+,-./:;=?

Font Number:	7111
Family Name:	Admark
Family Type:	Donnelley
Face:	Normal
Char. per Inch	10.0
Lines. per Inch	8
Lines Spacing:	.133 in
Dots Above Baseline:	.000 in
Dots Below Baseline:	.133 in
Resolutions:	120x120 dpi
	240x240 dpi
Subfonts:	ID7

ABCDEFGHIJKLMNOPQRSTUVWXYZ
ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789
!|#$%&'()*+,-./:; ¢=&?@/:.+$'(=;

Font Number:	7369
Family Name:	Postnet
Family Type:	
Face:	
Bars Per Inch	24
Lines per Inch::	8
Lines Spacing:	.125 in
Dots Above Baseline:	.125 in
Dots Below Baseline:	.000 in
Resolutions:	120x120 dpi
	120x240 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	POS

0   1   2   3   4   5   6   7   8   9

Font Number:	7576
Family Name:	Postnet
Family Type:	Canadian
Face:	Normal
Bars per Inch	24
Lines per Inch::	6
Lines Spacing:	.167 in
Dots Above Baseline:	.167 in
Dots Below Baseline:	.000 in
Resolutions:	120x120 dpi
	120x240 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	POS
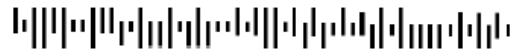
Font Number:	8000
Family Name:	Gothic
Family Type:	International
Face:	Normal
Char. per Inch	17.1
Lines per Inch:	12
Lines Spacing:	.083 in
Dots Above Baseline:	.083 in
Dots Below Baseline:	.017 in
Resolutions:	120x240 dpi
Subfonts:	GOT

abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789
 !"#$%&'()*+,-./:;<=>?@[\]^_`{|}~

Font Number:	8016
Family Name:	Gothic
Family Type:	International
Face:	Medium
Char. per Inch	15.0
Lines per Inch:	9
Lines Spacing:	.117 in
Dots Above Baseline:	.100 in
Dots Below Baseline:	.033 in
Resolutions:	120x240 dpi
Subfonts:	GOT; ISO; PC8; RM8

abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789
 !"#$%&'()*+,-./:;<=>?@[\]^_`{|}~

Font Number:	8032
Family Name:	Gothic
Family Type:	International
Face:	Normal
Char. per Inch	12.0
Lines per Inch:	8
Lines Spacing:	.133 in
Dots Above Baseline:	.117 in
Dots Below Baseline:	.042 in
Resolutions:	120x240 dpi
Subfonts:	GOT;ISO; PC8;RM8

abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789
!"#$%&'()*+,-./:;<=>?@[\]^_`{|}~

Font Number:	8064
Family Name:	Gothic
Family Type:	International
Face:	Normal
Char. per Inch	10.0
Lines per Inch:	8
Lines Spacing:	.133 in
Dots Above Baseline:	.117 in
Dots Below Baseline:	.042 in
Resolutions:	120x240 dpi
Subfonts:	GOT;ISO; PC8;RM8

abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789
!"#$%&'()*+,-./:;<=>?@[\]^_`{|}~

Font Number:	8128
Family Name:	Elite
Family Type:	International
Face:	Medium
Char. per Inch	10.0
Lines per Inch:	8
Lines Spacing:	.175 in
Dots Above Baseline:	.133 in
Dots Below Baseline:	.050 in
Resolutions:	120x240 dpi
Subfonts:	ELI; ISO; PC8;RM8

abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789
!"#$%&'()*+,-./:;<=>?@[\]^_`{|}~

Font Number:	8144	
Family Name:	Postnet	
Family Type:		
Face:		
Lines per Inch::	9.0	
Bars per Inch	22	
Lines Spacing:	.125 in	
Dots Above Baseline:	.125 in	
Dots Below Baseline:	.000 in	
Resolutions:	120x240 dpi	
Subfonts:	POS	

Font Number:	8148
Family Name:	Gothic
Family Type:	International
Face:	Bold
Char. per Inch	10.0
Lines per Inch:	8
Lines Spacing:	.133 in
Dots Above Baseline:	.117 in
Dots Below Baseline:	.042 in
Resolutions:	120x240 dpi

abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789
 !"#$%&'()*+,-./:;<=>?@[\]^_`{|}~

Subfonts: GOT; ISO;
                 PC8; RM8

Font Number:	8164
Family Name:	Gothic
Family Type:	International
Face:	Bold
Char. per Inch	10.0
Lines per Inch:	6
Lines Spacing:	.175 in
Dots Above Baseline:	.133 in
Dots Below Baseline:	.050 in
Resolutions:	120x240 dpi

abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789
 !"#$%&'()*+,-./:;<=>?@[\]^_`{|}~

Subfonts: GOT; ISO;
                 PC8; RM8

Font Number:	8180
Family Name:	Gothic
Family Type:	Domestic
Face:	Bold
Char. per Inch:	10.0
Lines per Inch	8
Lines Spacing:	.133 in
Dots Above Baseline:	.100 in
Dots Below Baseline:	.033 in
Resolutions:	120x120 dpi
	240x240 dpi
	240x480 dpi
Subfonts:	GOT

abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789
 !"#$%&'()*+,-./:;<=>?@[\]^_`{|}~

Font Number:	8184
Family Name:	Bar Codes
Family Type:	N/A
Face:	Normal
Char. per Inch:	Proportional
Lines per Inch	8
Lines Spacing:	.133 in
Dots Above Baseline:	.133 in
Dots Below Baseline:	.000 in
Resolutions:	120x240 dpi
Subfonts:	GP-

Font Number 6184 is a General Purpose Bar Code Font. This font consists of a series of vertical bars and spaces, which can be combined to create very special "do it yourself" bar codes. The user must have a very through knowledge of bar code symbology and is responsible for transmitting the data that will produce every required stroke and space. This is a proportional mode font which consists of varying width vertical strokes and spaces.

Font Number:	8196
Family Name:	Gothic
Family Type:	International
Face:	Medium
Char. per Inch:	10.0
Lines per Inch:	8
Lines Spacing:	.133 in
Dots Above Baseline:	.117 in
Dots Below Baseline:	.042 in
Resolutions:	120x240 dpi
Subfonts:	GOT; ISO; PC8; RM8

abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTVWXYZ
0123456789
!"#$%&'()*+,-.

Font Number:	8244
Family Name:	Gothic
Family Type:	International
Face:	
Char. per Inch	12.0
Lines per Inch:	8
Lines Spacing:	.133 in
Dots Above Baseline:	.100 in
Dots Below Baseline:	.042 in
Resolutions:	120x240 dpi
Subfonts:	GOT;ISO; PC8;RM8

```
abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789
 !"#$%&'()*+,-./:;<=>?@[\]^_`{|}~
```

Font Number:	8268
Family Name:	Gothic
Family Type:	Domestic
Face:	Bold
Char. per Inch	12.0
Lines per Inch:	8
Lines Spacing:	.133 in
Dots Above Baseline:	.100 in
Dots Below Baseline:	.033 in
Resolutions:	120x240 dpi
Subfonts:	GOT

```
abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789
 !"#$%&'()*+,-./:;<=>?@[\]^_`{|}~
```

Font Number:	8272
Family Name:	Gothic
Family Type:	International
Face:	Bold
Char. per Inch	12.0
Lines per Inch:	8
Lines Spacing:	.133 in
Dots Above Baseline:	.117 in
Dots Below Baseline:	.042 in
Resolutions:	120x240 dpi
Subfonts:	GOT; ISO; PC8; RM8

```
abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789
 !"#$%&'()*+,-./:;<=>?@[\]^_`{|}~
```

Font Number:	8288
Family Name:	Gothic
Family Type:	International
Face:	Normal
Char. per Inch	10.0
Lines per Inch:	8
Lines Spacing:	.133 in
Dots Above Baseline:	.100 in
Dots Below Baseline:	.033 in
Resolutions:	120x240 dpi

```
abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789
 !"#$%&'()*+,-./:;<=>?@[\]^_`{|}~
```

Subfonts: GOT;

Font Number:	8292
Family Name:	Gothic
Family Type:	Domestic
Face:	Medium
Char. per Inch	10.0
Lines per Inch:	8
Lines Spacing:	.133 in
Dots Above Baseline:	.100 in
Dots Below Baseline:	.033 in
Resolutions:	120x240 dpi

```
abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789
!"#$%&'()*+,-.
```

Subfonts: GOT

Font Number:	8296
Family Name:	Elite
Family Type:	Domestic
Face:	Medium
Char. per Inch	12.0
Lines per Inch:	8
Lines Spacing:	.133 in
Dots Above Baseline:	.117 in
Dots Below Baseline:	.033 in
Resolutions:	120x240 dpi

```
abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789
!"#$%&'()*+,-..
```

Subfonts: ELI

Font Number:	8300	abcdefghijklmnopqrstuvwxyz
Family Name:	Elite	ABCDEFGHIJKLMNOPQRSTUVWXYZ
Family Type:	International	0123456789
Face:	Medium	!"#$%&'()*+,-./:;<=>?@[\]^_`{|}~
Char. per Inch	12.0	
Lines per Inch:	8	
Lines Spacing:	.133 in	
Dots Above Baseline:	.117 in	
Dots Below Baseline:	.042 in	
Resolutions:	120x240 dpi	
Subfonts:	ELI; ISO; PC8; RM8	

Font Number:	8336	abcdefghijklmnopqrstuvwxyz
Family Name:	OCR A	ABCDEFGHIJKLMNOPQRSTUVWXYZ
Family Type:	Domestic	0123456789
Face:	Normal	!"#$%&'()*+,-.
Char. per Inch	10.0	
Lines per Inch:	6	
Lines Spacing:	.167 in	
Dots Above Baseline:	.100 in	
Dots Below Baseline:	.033 in	
Resolutions:	120x240 dpi	
Subfonts:	OCR	

Font Number:	8352	abcdefghijklmnopqrstuvwxyz
Family Name:	OCR B	ABCDEFGHIJKLMNOPQRSTUVWXYZ
Family Type:	Domestic	0123456789
Face:	Normal	!"#$%&'()*+,-./:;<=>?@[\]^_`{|}~
Char. per Inch	10.0	
Lines per Inch:	6	
Lines Spacing:	.167 in	
Dots Above Baseline:	.108 in	
Dots Below Baseline:	.033 in	
Resolutions:	120x240 dpi	
Subfonts:	OCR	

Font Number:	8368
Family Name:	Script
Family Type:	Domestic
Face:	Normal
Char. per Inch	Proportional
Lines per Inch:	4
Lines Spacing:	.250 in
Dots Above Baseline:	.167 in
Dots Below Baseline:	.033 in
Resolutions:	120x240 dpi
Subfonts:	SCR

Font Number:	8372
Family Name:	Script
Family Type:	Domestic
Face:	Normal
Char. per Inch	Proportional
Lines per Inch::	3
Lines Spacing:	.350 in
Dots Above Baseline:	.242 in
Dots Below Baseline:	.108 in
Resolutions:	120x240 dpi
Subfonts:	SCR

Font Number:	8376
Family Name:	Block
Family Type:	Domestic
Face:	Normal
Char. per Inch	5.0
Lines per Inch	3
Lines Spacing:	.333 in
Dots Above Baseline:	.283 in
Dots Below Baseline:	.067 in
Resolutions:	120x240 dpi
Subfonts:	BLO

Font Number:	8380
Family Name:	Block
Family Type:	Domestic
Face:	Normal
Char. per Inch	3.0
Lines per Inch	2
Lines Spacing:	.533 in
Dots Above Baseline:	.433 in
Dots Below Baseline:	.067 in
Resolutions:	120x240 dpi

ABCDEFGHI
ABCDEFGHI
012345678

Subfonts:	BLO

Font Number:	8384
Family Name:	Cursive
Family Type:	Domestic
Face:	Normal
Char. per Inch	Proportional
Lines per Inch::	5
Lines Spacing:	.200 in
Dots Above Baseline:	.133 in
Dots Below Baseline:	.067 in
Resolutions:	120x240 dpi

abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789
!"#$%&'()*+,-./:;<=>?@[\]^_`{|}~

Subfonts:	CUR

Font Number:	8388
Family Name:	Cursive
Family Type:	Domestic
Face:	Normal
Char. per Inch	Proportional
Lines per Inch::	4
Lines Spacing:	.267 in
Dots Above Baseline:	.183 in
Dots Below Baseline:	.075 in
Resolutions:	120x240 dpi

abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789
!"#$%&'()*+,-./:;<=>?@[\]^_`{|}~

Subfonts:	CUR

Font Number:	8392
Family Name:	Georgine
Family Type:	Domestic
Face:	Normal
Char. per Inch	Proportional
Lines per Inch::	3
Lines Spacing:	.267 in
Dots Above Baseline:	.167 in
Dots Below Baseline:	.100 in
Resolutions:	120x240 dpi
Subfonts:	GEO

abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789
!"#$%&'()*+,-./:;<=>?@[\]^_`

Font Number:	8430
Family Name:	Bar Code
Family Type:	Code 39
Face:	Normal
Char. per Inch	5.71
Lines Spacing:	.133 in
Dots Above Baseline:	.133 in
Dots Below Baseline:	.000 in
Resolutions:	120x240 dpi
Subfonts:	BAR

ABCDEFGHIJKLMNOP

Font Number:	8434
Family Name:	Bar Code
Family Type:	Code 39
Face:	Normal
Char. per Inch	5.33
Lines Spacing:	.133 in
Dots Above Baseline:	.133 in
Dots Below Baseline:	.000 in
Resolutions:	120x240 dpi
Subfonts:	BAR

ABCDEFGHIJKLMNOP

Font Number:	8438
Family Name:	Bar Code
Family Type:	Code 39
Face:	Normal
Char. per Inch	4.80
Lines Spacing:	.133 in
Dots Above Baseline:	.133 in
Dots Below Baseline:	.000 in
Resolutions:	120x240 dpi
Subfonts:	BAR

ABCDEFGHIJKLMNO

Font Number:	8442
Family Name:	Bar Code
Family Type:	Code 39
Face:	Normal
Char. per Inch	4.14
Lines Spacing:	.133 in
Dots Above Baseline:	.133 in
Dots Below Baseline:	.000 in
Resolutions:	120x240 dpi
Subfonts:	BAR

ABCDEFGHIJKLMN

Font Number:	8446
Family Name:	Bar Code
Family Type:	Code 39
Face:	Normal
Char. per Inch	3.64
Lines Spacing:	.133 in
Dots Above Baseline:	.133 in
Dots Below Baseline:	.000 in
Resolutions:	120x240 dpi
Subfonts:	BAR

ABCDEFGHIJKLM

Font Number:	8450
Family Name:	Bar Code
Family Type:	Code 39
Face:	Normal
Char. per Inch	2.61
Lines Spacing:	.133 in
Dots Above Baseline:	.133 in
Dots Below Baseline:	.000 in
Resolutions:	120x240 dpi
Subfonts:	BAR

ABCDEFGH

Font Number:	8466
Family Name:	Bar Code
Family Type:	I 2 of 5
Face:	Normal
Char. per Inch	11.7
Lines Spacing:	.133 in
Dots Above Baseline:	.133 in
Dots Below Baseline:	.000 in
Resolutions:	120x240 dpi
Subfonts:	I-2 ; PC8

656667686970

Character sets

This appendix presents character sets available through NIC commands. In addition this appendix begins with a short synopsis of character set conversion. This guide is presented with ASCII commands throughout for consistency. In this appendix you will find charts for converting ASCII to hexadecimal, ASCII to decimal, and hexadecimal to decimal (and the reverse direction for all conversions).

Table B.1 presents a procedure for determining hexadecimal values from the following charts, sets, and tables.

Table B.1   Procedure for determining character values

You can use Table B.2 to convert characters for printing purposes of using this guide for your printing needs.

Table B.2   Hexadecimal to decimal conversion

hex	dec	hex	dec	hex	dec	hex	dec	hex	dec
00 = 00		33 = 51		66 = 102		99 = 153		CC = 204	
01 = 01		34 = 52		67 = 103		9A = 154		CD = 205	
02 = 02		35 = 53		68 = 104		9B = 155		CE = 206	
03 = 03		36 = 54		69 = 105		9C = 156		CF = 207	
04 = 04		37 = 55		6A = 106		9D = 157		D0 = 208	
05 = 05		38 = 56		6B = 107		9E = 158		D1 = 209	
06 = 06		39 = 57		6C = 108		9F = 159		D2 = 210	
07 = 07		3A = 58		6D = 109		A0 = 160		D3 = 211	
08 = 08		3B = 59		6E = 110		A1 = 161		D4 = 212	
09 = 09		3C = 60		6F = 111		A2 = 162		D5 = 213	
0A = 10		3D = 61		70 = 112		A3 = 163		D6 = 214	
0B = 11		3E = 62		71 = 113		A4 = 164		D7 = 215	
0C = 12		3F = 63		72 = 114		A5 = 165		D8 = 216	
0D = 13		40 = 64		73 = 115		A6 = 166		D9 = 217	
0E = 14		41 = 65		74 = 116		A7 = 167		DA = 218	
0F = 15		42 = 66		75 = 117		A8 = 168		DB = 219	
10 = 16		43 = 67		76 = 118		A9 = 169		DC = 220	
11 = 17		44 = 68		77 = 119		AA = 170		DD = 221	
12 = 18		45 = 69		78 = 120		AB = 171		DE = 222	
13 = 19		46 = 70		79 = 121		AC = 172		DF = 223	
14 = 20		47 = 71		7A = 122		AD = 173		E0 = 224	
15 = 21		48 = 72		7B = 123		AE = 174		E1 = 225	
16 = 22		49 = 73		7C = 124		AF = 175		E2 = 226	
17 = 23		4A = 74		7D = 125		B0 = 176		E3 = 227	
18 = 24		4B = 75		7E = 126		B1 = 177		E4 = 228	
19 = 25		4C = 76		7F = 127		B2 = 178		E5 = 229	
1A = 26		4D = 77		80 = 128		B3 = 179		E6 = 230	
1B = 27		4E = 78		81 = 129		B4 = 180		E7 = 231	
1C = 28		4F = 79		82 = 130		B5 = 181		E8 = 232	
1D = 29		50 = 80		83 = 131		B6 = 182		E9 = 233	
1E = 30		51 = 81		84 = 132		B7 = 183		EA = 234	
1F = 31		52 = 82		85 = 133		B8 = 184		EB = 235	
20 = 32		53 = 83		86 = 134		B9 = 185		EC = 236	
21 = 33		54 = 84		87 = 135		BA = 186		ED = 237	
22 = 34		55 = 85		88 = 136		BB = 187		EE = 238	
23 = 35		56 = 86		89 = 137		BC = 188		EF = 239	
24 = 36		57 = 87		8A = 138		BD = 189		F0 = 240	
25 = 37		58 = 88		8B = 139		BE = 190		F1 = 241	
26 = 38		59 = 89		8C = 140		BF = 191		F2 = 242	
27 = 39		5A = 90		8D = 141		C0 = 192		F3 = 243	
28 = 40		5B = 91		8E = 142		C1 = 193		F4 = 244	
29 = 41		5C = 92		8F = 143		C2 = 194		F5 = 245	
2A = 42		5D = 93		90 = 144		C3 = 195		F6 = 246	
2B = 43		5E = 94		91 = 145		C4 = 196		F7 = 247	
2C = 44		5F = 95		92 = 146		C5 = 197		F8 = 248	
2D = 45		60 = 96		93 = 147		C6 = 198		F9 = 249	
2E = 46		61 = 97		94 = 148		C7 = 199		FA = 250	
2F = 47		62 = 98		95 = 149		C8 = 200		FB = 251	
30 = 48		63 = 99		96 = 150		C9 = 201		FC = 252	
31 = 49		64 = 100		97 = 151		CA = 202		FD = 253	
32 = 50		65 = 101		98 = 152		CB = 203		FE = 254	
								FF = 255	

Table B.3 shows the languages available through the Select Language Command ({esc}E0, page 4-8).

Table B.3   Language translation

Hexadecimal Decimal	23 35	24 36	40 69	5B 91	5C 92	5D 93	5E 94	60 96	7B 123	7C 124	7D 125	7E 126	7F 127
USA ASCII	#	$	@	[	\	]	^	`	{	|	}	~	
IRV2	#	¤	@	[	\	]	^	`	{	|	}	_	
U.K. ENGLISH DUTCH	£	$	@	[	\	]	^	`	{	|	}	~	
SWEDISH	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü	
FINNISH SWEDISH	#	¤	É	Ä	Ö	Å	Ü	`	ä	ö	å	ü	é
CANADIAN	#	$	à	â	ç	ê	î	ô	é	ù	è	û	
JAPANESE	#	$	@	[	¥	]	^	`	{	|	}	~	
ITALIAN-1	£	$	§	°	ç	é	^	ù	à	ò	è	ì	
ITALIAN-2	#	$	@	°	\	é	^	ù	à	ò	è	ì	
ITALIAN-3	£	$	§	°	é	|	^	ù	à	ò	è	ì	
PORTUGUESE-1	#	$	§	Ã	Ç	Õ	^	`	ã	ç	õ	°	
PORTUGUESE-2	#	$	´	Ã	Ç	Õ	^	`	ã	ç	õ	~	
SPANISH-1	£	$	§	¡	Ñ	¿	^	`	°	ñ	ç	~	
SPANISH-2	#	$	·	¡	Ñ	Ç	¿	`	´	ñ	ç	¨	
SPANISH-3	Pt	$	@	¡	Ñ	¿	^	`	¨	ñ	}	~	
SPANISH-4	#	$	@	Ã	Ñ	Õ	Ç	`	ã	ñ	õ	ç	

	23 35	24 36	40 69	5B 91	5C 92	5D 93	5E 94	60 96	7B 123	7C 124	7D 125	7E 126	7F 127
LATIN AMERICAN	#	$	á	¡	Ñ	¿	é	ü	í	ñ	ó	ú	
GERMAN	#	$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß	
FRENCH-1	#	$	à	°	ç	§	^	`	é	ù	è	¨	
FRENCH-2	£	$	à	°	ç	§	^	µ	é	ù	è	¨	
CHINESE	#	¥	@	[	\	]	^	`	{	|	}	_	
DANISH	#	$	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü	
DANISH NORWEGIAN	#	¤	É	Æ	Ø	Å	Ü	`	æ	ø	å	ü	é
NORWEGIAN	#	¤	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü	
HUNGARIAN	#	¤	Á	É	Ö	Ü	^	á	é	ö	ü	˝	

The following character sets are used to create a customer-defined language through the use of NIC commands.

Table B.4 USA ASCII-7 character set

HEX	0-8-	1-9-	2-A-	3-B-	4-C-	5-D-	6-E-	7-F-
.0	⊟	►		0	@	P	`	p
.1	☺	◄	!	1	A	Q	a	q
.2	☻	↕	"	2	B	R	b	r
.3	♥	‼	#	3	C	S	c	s
.4	♦	¶	$	4	D	T	d	t
.5	♣	§	%	5	E	U	e	u
.6	♠	▬	&	6	F	V	f	v
.7	•	↨	'	7	G	W	g	w
.8	◘	↑	(	8	H	X	h	x
.9	○	↓	)	9	I	Y	i	y
.A	◙	→	*	:	J	Z	j	z
.B	♂	←	+	;	K	[	k	{
.C	♀	∟	,	<	L	\	l	|
.D	♪	↔	–	=	M	]	m	}
.E	♫	▲	.	>	N	^	n	~
.F	☼	▼	/	?	O	_	o	▓

Table B.5 PC-8 character set

HEX	0-8-	1-9-	2-A-	3-B-	4-C-	5-D-	6-E-	7-F-
.0	Ç	É	á	░	└	╨	α	≡
.1	ü	æ	í	▒	┴	╤	β	±
.2	é	Æ	ó	▓	┬	╥	Γ	≥
.3	â	ô	ú	│	├	╙	π	≤
.4	ä	ö	ñ	┤	─	╘	Σ	⌠
.5	à	ò	Ñ	╡	┼	╒	σ	⌡
.6	å	û	ª	╢	╞	╓	µ	÷
.7	ç	ù	º	╖	╟	╫	τ	≈
.8	ê	ÿ	¿	╕	╚	╪	Φ	°
.9	ë	Ö	⌐	╣	╔	┘	Θ	∙
.A	è	Ü	¬	║	╩	┌	Ω	·
.B	ï	¢	½	╗	╦	█	δ	√
.C	î	£	¼	╝	╠	▄	∞	ⁿ
.D	ì	¥	¡	╜	═	▌	φ	²
.E	Ä	₧	«	╛	╬	▐	ε	■
.F	Å	ƒ	»	┐	╧	▀	∩	⊟

Table B.6 Roman-8 language, positions 0 to 127

HEX	8-	9-	A-	B-	C-	D-	E-	F-
-0	NU	DL		—	â	Å	Á	Þ
-1	SH	D1	À	Ý	ê	Î	Ã	þ
-2	SX	D2	Â	ý	ô	Ø	ã	·
-3	EX	D3	È	°	û	Æ	Ð	µ
-4	ET	D4	Ê	Ç	á	å	đ	¶
-5	EQ	NK	Ë	ç	é	í	Í	¾
-6	AK	SY	Î	Ñ	ó	ø	Ì	—
-7	₽	EB	Ï	ñ	ú	æ	Ó	¼
-8	BS	CN	´	¡	à	Ä	Ò	½
-9	HT	EM	`	¿	è	ì	Õ	ª
-A	LF	SU	^	¤	ò	Ö	õ	º
-B	VT	EC	¨	£	ù	Ü	Š	«
-C	FF	FS	~	¥	ä	É	š	■
-D	CR	GS	Ù	§	ë	ï	Ú	»
-E	SO	RS	Û	ƒ	ö	ß	Ÿ	±
-F	SI	US	£	¢	ü	Ô	ÿ	☰

Table B.7 ISO-90/142 language, positions 0 through 127

HEX	0-	1-	2-	3-	4-	5-	6-	7-
-0				Ž		—		K
-1	`	☰	Ⓐ	ž	`	1		%
-2	´		Ⓑ	Ć	´	®		fi
-3	^		Ⓒ	3	^	©		ð
-4	~		Ⓓ	x	~	™	Ħ	ħ
-5	¯		Ⓔ	ć	¯	☉	J	ı
-6	˘			Č	˘	Ø	IJ	ij
-7	·		₮	č	·	¦	Ŀ	ŀ
-8	¨		n		¨		Ł	ł
-9	¨		‘	‚	¨	”	ffl	fl
-A	°		“	”	°	‚	Œ	œ
-B	¸			△	¸	ℓ		ff
-C	̳		□	≠	̳	⅛		ffi
-D	̋		■	＿	̋	⅜	Ŧ	ŧ
-E	̦		☐	†	̦	⅝	Ŋ	ŋ
-F	̌		■	‡	̌	⅞	ħ	–

Note: The following mode tables are identical to the language table. For values 80 through FF, use Table B.4 (USA ASCII-7) and Table B.5 (PC-8).

Table B.8 PC-8/Danish-Norwegian mode

HEX	0-/8-	1-/9-	2-/A-	3-/B-	4-/C-	5-/D-	6-/E-	7-/F-
-0	Ç	É	á	⠿	└	╨	α	≡
-1	ü	æ	í	▒	┴	╤	β	±
-2	é	Æ	ó	▓	┬	╥	Γ	≥
-3	â	ô	ú	│	├	╙	π	≤
-4	ä	ö	ñ	┤	─	╘	Σ	⌠
-5	à	ò	Ñ	╡	┼	╒	σ	⌡
-6	å	û	ª	╢	╞	╓	μ	÷
-7	ç	ù	º	╖	╟	╫	τ	≈
-8	ê	ÿ	¿	╕	╚	╪	Φ	°
-9	ë	Ö	⌐	╣	╔	┘	Θ	∙
-A	è	Ü	¬	║	╩	┌	Ω	·
-B	ï	¢	½	╗	╦	█	δ	√
-C	î	£	¼	╝	╠	▄	∞	η
-D	ì	¥	¡	╜	=	▌	φ	²
-E	Ä	Pt	«	╛	╧	▐	ε	■
-F	Å	ƒ	»	┐	╤	▀	∩	⌐

Table B.9 Roman-8 mode, positions 128 through 255

HEX	8-	9-	A-	B-	C-	D-	E-	F-
-0	NU	DL		─	â	Å	Á	Þ
-1	SH	D1	À	Ý	ê	î	Ã	þ
-2	SX	D2	Â	ý	ô	Ø	ã	·
-3	EX	D3	È	°	û	Æ	Ð	μ
-4	ET	D4	Ê	Ç	á	å	đ	¶
-5	EQ	NK	Ë	ç	é	í	Í	¾
-6	AK	SY	Î	Ñ	ó	ø	Ì	─
-7	4	EB	Ï	ñ	ú	æ	Ó	¼
-8	BS	CN	´	¡	à	Ä	Ò	½
-9	HT	EM	`	¿	è	ì	Õ	ª
-A	LF	SU	^	¤	ò	Ö	õ	º
-B	VT	EC	¨	£	ù	Ü	Š	«
-C	FF	FS	~	¥	ä	É	š	■
-D	CR	GS	Ù	§	ë	ï	Ú	»
-E	SO	RS	Û	ƒ	ö	ß	Ÿ	±
-F	SI	US	£	¢	ü	Ô	ÿ	⌐

Table B.10   ECMA-94 mode

HEX	8-	9-	A-	B-	C-	D-	E-	F-
-0				°	À	Ð	à	ð
-1			¡	±	Á	Ñ	á	ñ
-2			¢	²	Â	Ò	â	ò
-3			£	³	Ã	Ó	ã	ó
-4			¤	´	Ä	Ô	ä	ô
-5			¥	µ	Å	Õ	å	õ
-6			¦	¶	Æ	Ö	æ	ö
-7			§	·	Ç	×	ç	÷
-8			¨	¸	È	Ø	è	ø
-9			©	¹	É	Ù	é	ù
-A			ª	º	Ê	Ú	ê	ú
-B			«	»	Ë	Û	ë	û
-C			¬	¼	Ì	Ü	ì	ü
-D				½	Í	Ý	í	ý
-E			®	¾	Î	Þ	î	þ
-F			¯	¿	Ï	ß	ï	ÿ

Table B.11   ISO-90/142 mode, positions 128 through 255

HEX	8-	9-	A-	B-	C-	D-	E-	F-
-0				°		—	Ω	ĸ
-1	`	目	¡	±	ˋ	1	Æ	æ
-2	´		¢	²	´	®	Đ	đ
-3	^		£	³	^	©	ª	ð
-4	~		$	×	~	™	Ħ	ħ
-5	¯		¥	µ	¯	♪	J	ı
-6	˘		#	¶	˘	¬	IJ	ij
-7	˙		§	·	˙	¦	Ŀ	ŀ
-8	¨	¬	¤	÷	¨		Ł	ł
-9	˝			'	,	¨		Ø	ø
-A	˚		"	"	°		Œ	œ
-B	�¸		«	»	�¸		º	ß
-C	¯		←	¼	_	⅛	Þ	þ
-D	˝		↑	½	˝	⅜	Ŧ	ŧ
-E	˛		→	¾	˛	⅝	Ŋ	ŋ
-F	ˇ		↓	¿	ˇ	⅞	ṅ	—

The tables in this appendix present conversion tables for ASCII to hexadecimal, EBCDIC to hexadecimal, and English measurements to metric measurements. Hexadecimal to decimal conversion are found in Table B.2.

Table C.1   ASCII equivalents in hexadecimal

First Hexadecimal Digit \ Second Hexadecimal Digit	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
0_	NUL	SOH	STX	ETX	EOT	ENQ	ACK	BEL	BS	HT	LF	VT	FF	CR	SO	SI
1_	DLE	DC1	DC2	DC3	DC4	NAK	SYN	ETB	CAN	EM	SUB	ESC	FS	GS	RS	US
2_	SP	!	"	#	$	%	&	'	(	)	*	+	,	–	.	/
3_	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
4_	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5_	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
6_	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
7_	p	q	r	s	t	u	v	w	x	y	z	{	|	}	~	DEL

Table C.2   EBCDIC equivalents in decimal

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
NUL	SOH	STX	ETX	EOT	ENQ	ACK	BEL	BS	HT	LF	VT	FF	CR	SO	SI	DLE	DC1	DC2	DC3

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
DC4	NAK	SYN	ETB	CAN	EM	SUB	ESC	FS	GS	RS	US	SP	!	'	#	$	%	&	'

40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59
(	)	*	+	,	–	.	/	0	1	2	3	4	5	6	7	8	9	:	;

60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
<	=	>	?	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O

80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99
P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_	`	a	b	c

100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119
d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w

120	121	122	123	124	125	126	127
x	y	z	{	|	}	~	DEL

7.5 EXCEL 270G

7.5.1 CHARACTER SET

The Excel 270g inkjet only supports one character set, code page 850:

Characters from 0 to 31:

	*0	*1	*2	*3	*4	*5	*6	*7	*8	*9	*A	*B	*C	*D	*E	*F
0*		☺	●	♥	♦	♣	♠	·	■	○	▣	♂	♀	♪	♫	☼
1*	►	◄	↕	‼	¶	§	▬	↨	↑	↓	→	←	∟	↔	▲	▼

Characters from 32 to 255:

032		033	!	034	"	035	#	036	$	037	%	038		039	
040	(	041	)	042	*	043	+	044	,	045	-	046	.	047	/
048	0	049	1	050	2	051	3	052	4	053	5	054	6	055	7
056	8	057	9	058	:	059	;	060	<	061	=	062	>	063	?
064	@	065	A	066	B	067	C	068	D	069	E	070	F	071	G
072	H	073	I	074	J	075	K	076	L	077	M	078	N	079	O
080	P	081	Q	082	R	083	S	084	T	085	U	086	V	087	W
088	X	089	Y	090	Z	091	[	092	\	093	]	094	^	095	_
096	`	097	a	098	b	099	c	100	d	101	e	102	f	103	g
104	h	105	i	106	j	107	k	108	l	109	m	110	n	111	o
112	p	113	q	114	r	115	s	116	t	117	u	118	v	119	w
120	x	121	y	122	z	123	{	124			125	}	126	~	127	▫
128	Ç	129	ü	130	é	131	â	132	ä	133	à	134	å	135	ç
136	ê	137	ë	138	è	139	ï	140	î	141	ì	142	Ä	143	Å
144	É	145	æ	146	Æ	147	ô	148	ö	149	ò	150	û	151	ù
152	ÿ	153	Ö	154	Ü	155	ø	156	£	157	Ø	158	×	159	ƒ
160	á	161	í	162	ó	163	ú	164	ñ	165	Ñ	166	ª	167	º
168	¿	169	®	170	¬	171	½	172	¼	173	¡	174	«	175	»
176	░	177	▒	178	▓	179	│	180	┤	181	Á	182	Â	183	À
184	©	185	╣	186	║	187	╗	188	╝	189	¢	190	¥	191	┐
192	└	193	┴	194	┬	195	├	196	─	197	┼	198	ã	199	Ã
200	╚	201	╔	202	╩	203	╦	204	╠	205	=	206	╬	207	¤
208	ð	209	Ð	210	Ê	211	Ë	212	È	213	ı	214	Í	215	Î
216	Ï	217	┘	218	┌	219	█	220	▄	221	¦	222	Ì	223	▀
224	Ó	225	ß	226	Ô	227	Ò	228	õ	229	Õ	230	µ	231	þ
232	þ	233	Ú	234	Û	235	Ù	236	ý	237	Ý	238	¯	239	´
240		241	±	242	‗	243	¾	244	¶	245	§	246	÷	247	¸
248	°	249	¨	250	·	251	¹	252	³	253	²	254	■	255	

7.5.2 PRINT SPECIFICATIONS

Matrixgröße	Bandge-schwindigkeit Ft/Min.	Bandge-schwindigkeit m/Sek.1.1	Zeichen pro Sekunde	Zeichenab-stand (Zei-chen pro Zoll)
5 x 5 einzeilig	916	4.65	1833	10
5 x 7 einzeilig	611	3.10	1222	10
7 x 9 einzeilig	203	1.03	407	10
7 x 9 einzeilig – gedehnt	254	1.29	407	8
7 x 9 einzeilig – gedehnt	290	1.47	407	7
5 x 7 zweizeilig	262	1.33	1028	10
5 x 7 zweizeilig (10 x 16)	196	1.00	784	10
10 x 16 einzeilig	157	0.80	157	5
16 x 24 einzeilig	55	0.28	36	3.3
16 x 24 dreizeilig (5 x 7, 5 x 7, 5 x 7)	55	0.28	330	10
5 x 7 dreizeilig (5 x 7, 5 x 7, 5 x 7)	110	0.56	660	10
9 x 9 einzeilig (OCR−A)	127	0.65	254	10
Postnet	254	1.29	N/A	24
Postnet	290	1.47	N/A	21
Code 39 (16 hoch)	157	0.80	N/A	N/A
I2 von 5 (16 hoch)	157	0.80	N/A	N/A
Code 39 (24 hoch)	55	0.28	N/A	N/A
I2 von 5 (24 hoch)	55	0.28	N/A	N/A

Tabelle 5−2. Druckspezifikationen

HINWEIS: N/A = Nicht zutreffend

7.5.3 ERROR LIST

The error numbers are not displayed but are simply sent via Ethernet.

Error numbers 1-89

Error number = (inkjet head number x 10) + number

Number	Error text displayed
1	"Hx Print off "
2	"Hx Serial error "
3	"Hx Buf overflow "
4	"Hx Too many chars"
5	"Hx Unknown Cmd. "
6	"Hx Context error"
7	"Hx Too many Msgs"
8	"Hx Print once "
9	"Hx Illegal BarCo"

Hx: Inkjet head number 1 - 8

Error numbers 257-501

Error number inkjet head 1 = 256 + number
Error number inkjet head 2 = 288 + number
Error number inkjet head 3 = 320 + number
Error number inkjet head 4 = 352 + number
Error number inkjet head 5 = 384 + number
Error number inkjet head 6 = 416 + number
Error number inkjet head 7 = 448 + number
Error number inkjet head 8 = 480 + number

Number	Error text displayed
1	"Hx No Air to boot"
2	"Hx Fluids too low "
3	"Hx +12V error "
4	"Hx Reservoir full"
5	"Hx Air pressure "
6	"Hx No Ink "
7	"Hx 300V error "
8	"Hx Hi voltage err"
9	"Hx CPU 1 error "
10	"Hx RTC fault "
11	"Hx No Phase Time "
12	"Hx Phasing fault "
13	"Hx No Signal "
14	"Hx Fluids too long"
15	"Hx Pumpreq. long "
16	"Hx Filltime long "
17	"Hx Emptytime long"
18	"Hx Flowtime short"
19	"Hx Flowtime long "
20	"Hx CPU 2 error "
21	"Hx CPU 4 error "

x: Inkjet head number 1 - 8

7.5.4 JUMPERS

Description of jumpers:

Batteriewechsel (Bild 8-7)		
Ort	**Installiert**	**Bezeichnung**
E74	nein	Batterie kann entfernt werden.
E79	ja	
E74	ja	Verbindet Speicher wieder mit Batterie.
E79	nein	
Wahl des Produktsensors – Eingang aktiv low (siehe Bild 8-9)		
E108	ja	Abstiegsflanke löst aus.
E109	nein	
E108	nein	Anstiegsflanke löst aus.
E109	ja	
Wahl der Strichrate interne/externe Kodierung (siehe Bild 8-11)		
E39	ja	Zugriff auf interne Strichrate und externen und externen Taktgeber
E40	nein	
E43	nein	
E44	ja	
E39	ja	Zugriff auf elektrisch geteilten externen Taktgeber
E40	nein	
E43	ja	
E44	nein	
E39	nein	Zugriff auf direkt angeschlossenen externen Taktgeber
E40	ja	
E43	nein	
E44	ja	

Jumper settings:

```
E43                      E112
--                       --
--
E39
--


                                   --
E102                     E24       --
--                       --        --
E104                     --        --
--                       E27       E13
E108
--
                         --
                         E5
E74                      E6
--                       --
```

7.5.5 SOFTWARE VERSION

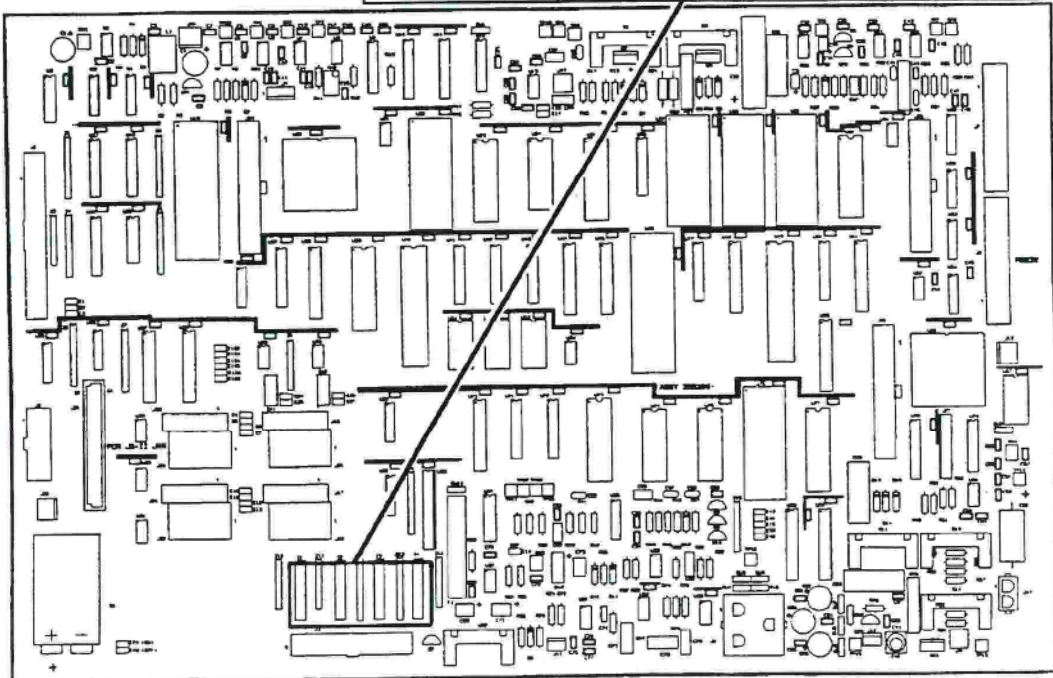Versions tested: G0047, S0021, H0015

7.5.6 LEDs ON THE BOARD

LED—Leuchten für den Druckerstatus

Auf den Platinen sind mehrere LED—Leuchten (Leuchtdioden) installiert. Diese LED—Leuchten eignen sich zur Bestimmung der exakten Ursache einer Druckerstörung. Im allgemeinen gilt, daß die LED—Leuchten aufleuchten, wenn eine Komponente aktiviert ist.

Die LED—Beschreibung definiert jede LED—Leuchte. Die Hauptgruppe von LED—Leuchten ist in einem Block unten an den einzelnen Platinen angeordnet. (Siehe Abbildung 9—1.)

AC EIN BENUTZER +12 V BENUTZER +5 V		UP3 COMM MUIS		PD1 EXTS EXT1 EXT2	INPUTS	PHASEWAHL	PH0 PH1 PH2 PH3
HV +312 +5 +12 −12 RSET	NETZTEILE	SENSORSCHALTER	TXSW STSW OFIL IREQ ILOW MUSW AIR	RDY SERV LEDA LEDB LEDC ALRT	DRUCKERSTATUS	VENTILE	AVAL TVAL NVAL IVAL MVAL NDRV

BANK 1	BANK 2	BANK 3	BANK 4
LED	**LED**	**LED EINGÄNGE**	**LED PHASENWAHL**
ACON AC ein	**UP3** BLINKEN – SYSTEM LÄUFT	**PD1** PRODUKTERKENNUNG	**PH0** PHASE O
US12 BENUTZER +12 V	**COMM** STATUS – SERIELLE SCHNITTSTELLE	**EXTS** EXTERNER STRICH	PHASE O GEWÄHLT
US5 BENUTZER +5 V	**MUIS** MAKE–UP UN-TERDRÜCKUNGSSTA-TUS	**EXT1** EXTERNER EINGANG 1	**PH1** PHASE 1
		EXT2 EXTERNER EINGANG 2	PHASE 1 GEWÄHLT
			PH2 PHASE 2
			PHASE 2 GEWÄHLT
			PH3 PHASE 3
LED NETZTEILE	**LED SENSORSCHALTER**	**LED DRUCKERSTATUS**	PHASE 3 GEWÄHLT
HV HOCHSPANNUNG	**TXSW** PUMPENANFORDER-UNGSSCHALTER	**RDY** Drucker BEREIT	**LED VENTILE**
+312 +312 VOLT	Signalisiert dem Mikro-prozessor, das Pumpen-magnetventil zu erregen. Stoppt die Fießzeitmes-sung.	EIN bedeutet, daß das System OK ist.	**AVAL** SYSTEMLUFTDRUCK EIN
+5 +5 VOLT		**SERV** SERVICE–ANFORDER-UNG	**TVAL** PUMPE EIN
+12 +12 VOLT	**STSW** PUMPENANFORDER-UNGS–STOPPSCHAL-TER	EIN bedeutet ein Ab-schalten aufgrund einer Störung. AUS bedeutet, daß das System OK ist.	**NVAL** TINTE EIN
−12 −12 VOLT	Stoppt das Pumpen-magnetventil. Signalisiert dem Mikroprozessor, die Messung der Fließzeit zu beginnen.		**IVAL** TINTENZUFUHR EIN
RSET RÜCKSTELLUNG AKTIVIERT		**LEDA** KOPF EIN	**MVAL** MAKE–UP–ZUFUHR EIN
	OFIL SCHWIMMERKAMMER VOLL	EIN bedeutet Tinte und Hochspannung sind an. Blinken bedeutet, daß die Tinte an und die Hochspannung aus ist. AUS bedeutet, daß Tinte und Hochspannung aus sind.	**NDRV** DÜSENANREGUNG
	Der obere Schalter im Behälter. Steht normaler-weise auf AUS. Bei Eins-chaltung ist die Schwim-merkammer voll.		EIN = Düsenanregung ein
	IREQ TINTENANFORDER-UNGSSCHALTER	**LEDB** DRUCK BEREIT	AUS = Düsenanregung aus
	Der untere Schalter im Behälter. Sobald der Schwimmer in die Nähe des Schalters kommt, wird frische Tinte zu-geführt.	EIN bedeutet, daß Daten vom Druckkopf an den Druckpuffer gesandt werden können.	oder Düsenanregungs-transistor offen;
	ILOW TINTENMANGEL–KON-TROLLSCHALTER	**LEDC** UNBENUTZT	HELL = Kurzschluß im Düsenanregungstransis-tor
	Kontrolliert den Stau-druck in den Flaschen mit der frischen Tinte und dem Make–Up.	**ALRT** ALARMLEUCHTENSTA-TUS MARS	
	MUSW MAKE–UP–UN-TERDRÜCKUNGS–AN-FORDERUNGSSCHALT-ER	EIN bedeutet eine Sys-temstörung. AUS bedeu-tet, daß das System OK ist.	
	Der mittlere Schalter im Behälter. Verhindert, daß der Behälter mit frischer Tinte oder Make–Up überfüllt wird.		
	AIR LUFTDRUCK–KON-TROLLSCHALTER		
	Kontrolliert den Druck der Eingangsluft. EIN bedeutet einen Luft-druck über 4,1 bar.		