

Appendix A System Interface Description

There are two system interfaces:

- one RS-232C serial interface
- one Parallel Centronics interface.

The interfaces can be operated in three different modes:

- serial interface active
- parallel interface active
- both interfaces active in shared mode

The following chapter gives an overview about interface characteristics, control signals, protocols, and cabling.

Any change of the operation mode (Serial, Parallel or Shared) and of the size of the interface buffer is possible only when the interface buffer is completely empty of data.

Display messages: **READY 4 ELQ** , **BUSY 4 ELQ**, or **LOCAL**.

1 Serial Interface RS-232C

Interface Characteristics

Signal Description		Pin No.	Direction
PG	Protective Ground	1	-
TXD	Transmit Data (from printer to host)	2	OUTPUT
RXD	Receive Data (from host to printer)	3	INPUT
RTS	Request to Send (printer is ready to send data) *)	4	OUTPUT
CTS	Clear to Send (host is ready to receive data) *)	5	INPUT
DSR	Data Set Ready	6	INPUT
SG	Signal Ground	7	-
DTR	Data Terminal Ready (printer is ready to receive - see also on the following pages the data communication protocols for detail meaning)	20	OUTPUT

*) with internal pull-up

- Transmission rate: 600, 1200, 2400, 4800, 9600, or 19200 baud
- Parity: even, odd, none, or ignore
- Word length: 7, or 8 bits
- Number of stop bits: In receive mode the printer accepts 1, or 2 stop bits. The printer transmits always two stop bits.

Transmission Protocols:

- DTR - Ready/Busy
- XON/XOFF
- XON/XOFF + DTR

2 Transmission Protocols

2.1 DTR - Ready/Busy

(Supported RS-232C Protocols) - Full Duplex Local Connection

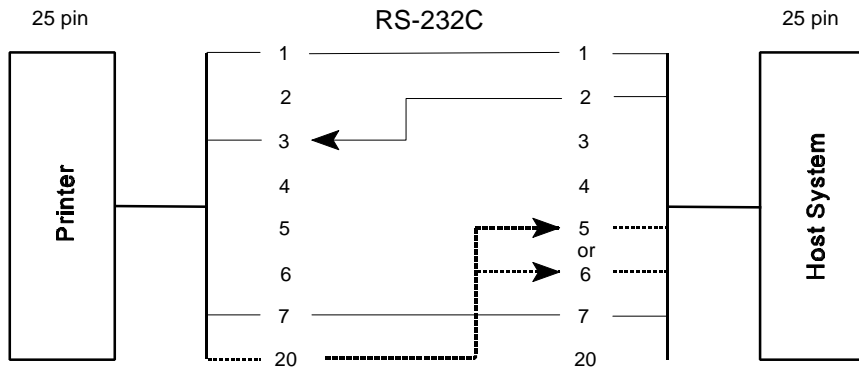
This protocol uses the following signal lines:

- Pin 1 Protective Ground (PG)
- Pin 2 Transmit Data (TXD)
- Pin 3 Receive Data (RXD) (with internal **Pull-up**)¹⁾
- Pin 5 Clear to Send (CTS) (with internal **Pull-up**)¹⁾
- Pin 7 Signal Ground (SG)
- Pin 20 Data Terminal Ready (DTR)

The **READY / BUSY DTR** protocol uses the DATA TERMINAL READY line to control the transmission of data from the host to prevent a buffer overflow.

Note: The signal lines TXD (pin 2) and CTS (pin 5) are only necessary if the Device Status Report is required (see picture "Connection for Unidirectional Transfer Mode").

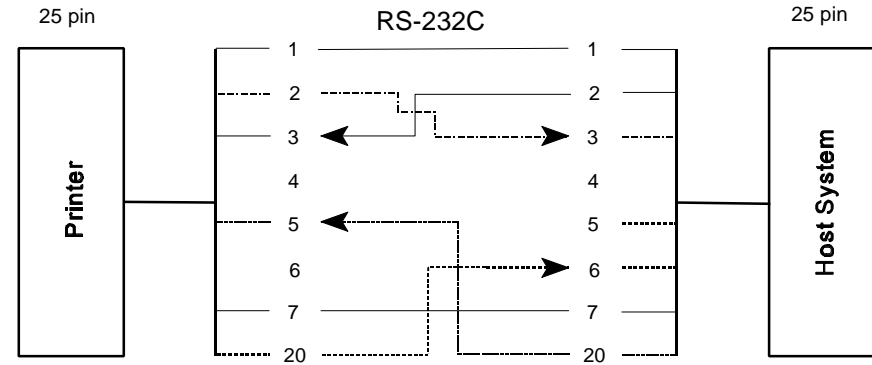
- Version 1 - Connection for Unidirectional Transfer Mode



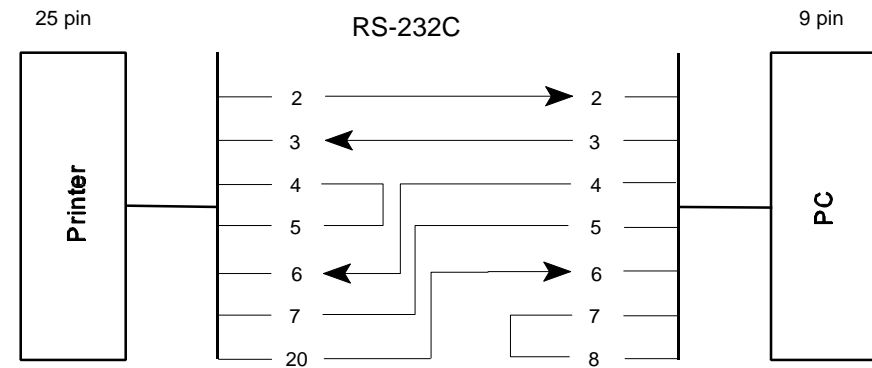
¹⁾ Cables with bridges at printer side (4 to 5) for older PMs (lower than **PM-40A4**) can also be used!

- Version 2 - Connection full Duplex Transfer Mode

The **READY / BUSY DTR** protocol uses the DATA TERMINAL READY line to control the transmission of data from the host to prevent a buffer overflow.



- Version 3 - PC Connection for full Duplex Transfer Mode



Note: Bridge between 7 and 8 on PC side means alternative **RTS** to **CTS**.

Additional Information

After Power-ON DTR is activated and the printer is ready to receive data.

DTR is deactivated when the interface buffer has only space left only for 256 more characters. Further incoming data will be stored until the interface buffer is full. All data sent in addition will get lost.

DTR is activated again if there is a free interface buffer space of 512 characters.

DTR is immediately deactivated, if local mode is entered.

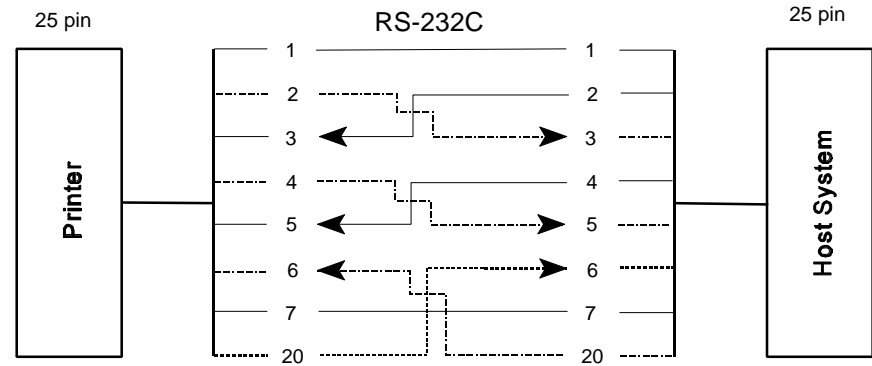
It is activated again, if local mode is left and a minimum of 512 bytes interface buffer is available.

2.2 XON / XOFF

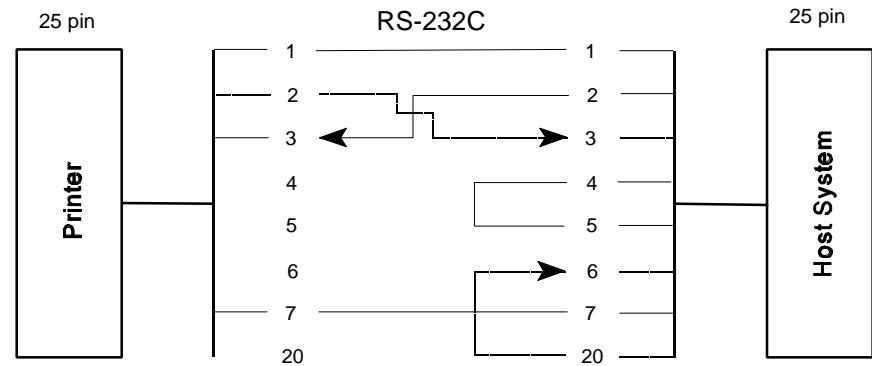
This protocol requires the signal lines.

- | | | | |
|---------|------------------------|----------|---------------------------|
| - Pin 1 | Protective Ground (PG) | - Pin 5 | Clear to Send (CTS) |
| - Pin 2 | Transmit Data (TXD) | - Pin 6 | Data Set Ready (DSR) |
| - Pin 3 | Receive Data (RXD) | - Pin 7 | Signal Ground (SG) |
| - Pin 4 | Request to Send (RTS) | - Pin 20 | Data Terminal Ready (DTR) |

Standard Connection



For local connections **RTS** with **CTS** can be connected and likewise **DTR** with **DSR**.



Note: Bridge between 4 and 5 means alternative **RTS** to **CTS**.
Cables with bridges at printer side (4 to 5 and 20 to 6) for older PMs (lower than **PM-40A4**) can also be used!

Additional Information

After Power-ON DTR and RTS are activated and the printer is ready to receive data.

XOFF is sent, when the interface buffer has only space left for 256 more characters. **XOFF** is sent again, at a level of 128 characters buffer space. Further incoming data will be stored until the interface buffer is full. All data sent in addition will get lost.

XON is sent when the interface buffer provides space for a minimum of 512 characters.

XON/XOFF can only be sent successfully when **CTS** and (**DSR**) is at active state.

XOFF will be sent immediately if local mode is entered.

XON is sent again, if local mode is left and a minimum of 512 byte interface buffer is available.

3 Parallel Centronics® Interface**Interface Characteristics - Connector pin assignment / signal definition**

Signal Description		Pin No.	Return line Pin No.	Direction
<u>STROBE</u> ¹⁾	Control Signal from the Host. Printer reads data line (Data 1 to Data 8) when going low.	1	19	Input
Data 1 - 8	Data lines transfer the characters from the host to the printer. Data 8 = most significant bit.	2 - 9	20 - 27	Input
<u>ACKN</u> ¹⁾	Acknowledge - Control signal from the printer. Logical 0 indicates that the printer has received a print/control character and is ready for the next data transfer.	10	28	Output
BUSY	Control signal from the printer. Logical 1 indicates that the printer is unable to receive any more data. ²⁾	11	29	Output
PE	Paper Empty - Control signal from the printer. This signal goes high when paper runs out, i.e. load upper or lower tractor, paper jam.	12	--	Output
SELECT	Control signal from the printer. Always logical 1. Indicates that the printer is ON-LINE and ready.	13	--	Output
LG	Logic Ground	14	--	
--	not used	15	--	
LG	Logic Ground	16	--	
CG	Chassis Ground	17	--	
VCC	+ 5 volt	18	--	
SG	Signal Ground	19 - 30	--	
<u>INIT</u> ¹⁾	Control signal from the host. Does not reset the printer but generates an acknowledge pulse (logical 1).	31	--	Input
<u>FAULT</u> ¹⁾	Control signal from the printer. Always logical 1. If it goes to logical 0 the printer has been switched off.	32	--	Output
LG	Logic Ground	33	--	
--	not used	34 - 36	--	

¹⁾ Overlined signal names indicate that the signal is true when the signal level is low.

²⁾ When the interface buffer is full except for the last character, **BUSY** will not be reset. **BUSY** will be reset when space is available again for least 256 characters in the interface buffer. While the printer is offline (Stop Mode) **BUSY** remains active until the printer enters the online state again.

- Maximal Transfer Speed

The maximum throughput for data transfer is 5,000 characters per second.

3.1 Transmission Protocol Description

After Power-ON the **PE** (Paper End) signal is set to logic 0 and the **SELECT** and $\overline{\text{FAULT}}$ signals are set to logic 1.

The printer is now **ON-LINE** and ready to receive data.

Timing

The host sets a print/control character to the 8 data lines.

After a time delay of a minimum of $0.5 \mu\text{s}$, the host sends a $\overline{\text{STROBE}}$ pulse of a minimum of $0.5 \mu\text{s}$. The print/control character is accepted into the interface buffer and the printer transmits a **BUSY** signal to the host. When the data byte is accepted into the interface buffer the printer transmits a **BUSY** signal and an $\overline{\text{ACKN}}$ pulse.

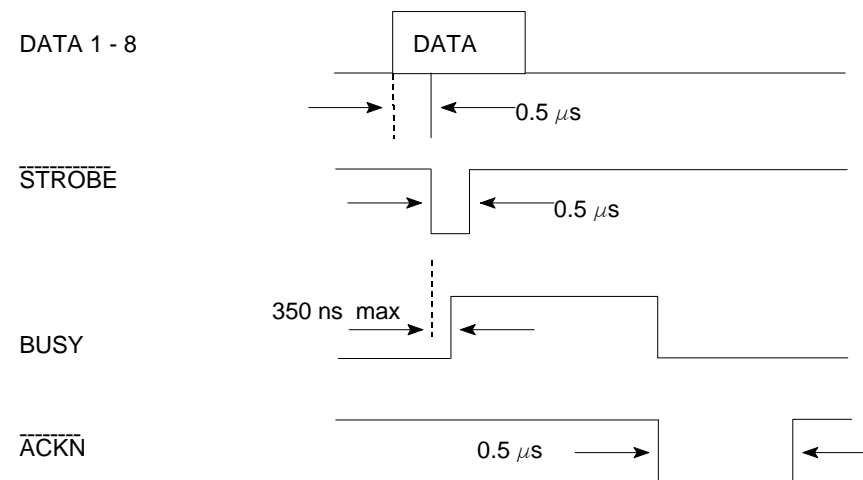
The $\overline{\text{ACKN}}$ pulse informs the host that the data has been received and that the printer is ready to receive new data.

If the interface buffer is full except for the last character the **BUSY** is not reset in order to stop the data transfer from the host. The **BUSY** signal is only reset if space is available in the interface buffer for a minimum of 256 characters.

When pressing [START/STOP] the **BUSY** remains high and no $\overline{\text{ACKN}}$ is sent.

Provided a minimum of 256 characters are available in the interface buffer, pressing [START/STOP] will reset **BUSY** and transmit the $\overline{\text{ACKN}}$ pulse.

3.2 Timing Diagram



4 Shared Operation

In shared operation the interface buffer capacity is reduced by 256 bytes.

After Power-ON both the serial and the parallel interfaces are available for data transfer.

If a byte is first recognized by the serial interface the parallel interface is immediately disabled by the **BUSY** signal. The serial interface is now active and will operate, using the installed protocols.

If a byte is first recognized by the parallel interface either the **DTR** signal of the serial interface is set to **OFF** or **XOFF** is sent, depending on the protocol.

If the serial interface starts to receive data while the parallel interface is active, it is possible to receive 256 bytes of serial data. Any additional serial data will be lost.

When the interface buffer is completely empty of serial data, and no new data has been received by the serial interface for more than 10 seconds, both interfaces are available for data transfer again.

When the interface buffer is completely empty of parallel data and no data has been received by the parallel interface for more than 10 seconds, the 256 bytes of serial data will be processed. Afterwards, both interfaces are available for data transfer again.

Appendix B Print Samples of Resident Fonts

Equipped with the Personality Module (PM SER/PAR), the Printer provides the following resident fonts:

Resident Fonts 10 CPI

DATA

1234567890β,#+!"j\$%&/()=?;'*
 ABCDEFGHIJKLMNOPQRSTUVWXYZÄÖÜ
 abcdefghijklmnopqrstuvwxyzäöü

LETTER GOTHIC

1234567890β,#+!"j\$%&/()=?;'*
 ABCDEFGHIJKLMNOPQRSTUVWXYZÄÖÜ
 abcdefghijklmnopqrstuvwxyzäöü

LETTER GOTHIC ITALIC

1234567890β,#+!"j\$%&/()=?;'*
 ABCDEFGHIJKLMNOPQRSTUVWXYZÄÖÜ
 abcdefghijklmnopqrstuvwxyzäöü

COURIER

1234567890β,#+!"j\$%&/()=?;'*
 ABCDEFGHIJKLMNOPQRSTUVWXYZÄÖÜ
 abcdefghijklmnopqrstuvwxyzäöü

Resident Fonts 10 CPI

MICRO

1234567890β,#+!"j\$%&/()=?;'*
 ABCDEFGHIJKLMNOPQRSTUVWXYZÄÖÜ
 abcdefghijklmnopqrstuvwxyzäöü

ORATOR

1234567890β,#+!"j\$%&/()=?;'*
 ABCDEFGHIJKLMNOPQRSTUVWXYZÄÖÜ
 abcdefghijklmnopqrstuvwxyzäöü

ORATOR-C

1234567890β,#+!"j\$%&/()=?;'*
 ABCDEFGHIJKLMNOPQRSTUVWXYZÄÖÜ
 ABCDEFGHIJKLMNOPQRSTUVWXYZÄÖÜ

ROMAN

1234567890β,#+!"j\$%&/()=?;'*
 ABCDEFGHIJKLMNOPQRSTUVWXYZÄÖÜ
 abcdefghijklmnopqrstuvwxyzäöü

Resident Fonts, 10 CPI

PRESTIGE

1234567890β,#+!"'j\$%&/()=?;'*
ABCDEFGHIJKLMN0PQRSTUVWXYZA0U
abcdefghijklmnopqr stuvwxyzäöü

SCRIPT

1234567890β,#+!"'j\$%&/()=?;'*
ABCDEFGHIJKLMN0PQRSTUVWXYZA0U
abcdefghijklmnopqr stuvwxyzäöü

OCR-A

1234567890β,#+!"'j\$%&/()=?;'*
ABCDEFGHIJKLMN0PQRSTUVWXYZA0U
abcdefghijklmnopqr stuvwxyzäöü

OCR-B

1234567890β,#+!"'j\$%&/()=?;'*
ABCDEFGHIJKLMN0PQRSTUVWXYZA0U
abcdefghijklmnopqr stuvwxyzäöü

Resident Fonts DATABLOCK

1 2 3 4 5
6 7 8 9 0
A B C D E
F G H I J
a b c d e
f g h i j

Character Pitches

COURIER LQ, 20 CPI 0123456789ABCDEF

COURIER LQ, 18 CPI 0123456789ABCDEF

COURIER LQ, 17.1 CPI 0123456789ABCDEF

COURIER LQ, 15 CPI 0123456789ABCDEF

COURIER LQ, 14.4 CPI 0123456789ABCDEF

COURIER LQ, 12 CPI 0123456789ABCDEF

COURIER LQ, 10 CPI 0123456789ABCDEF

COURIER LQ, proport. 0123456789ABCDEF

Character Style Samples

COURIER outline

1234567890@,#+!"|\$%&/()=?; '*
ABCDEFGHIJKLMN O PQRSTU VWXYZAOU
abcdefghijklmnopqr stuvwxyzäöü

COURIER shadow

1234567890@,#+!"|\$%&/()=?; '*
ABCDEFGHIJKLMN O PQRSTU VWXYZAOU
abcdefghijklmnopqr stuvwxyzäöü

COURIER outline + shadow

1234567890@,#+!"|\$%&/()=?; '*
ABCDEFGHIJKLMN O PQRSTU VWXYZAOU
abcdefghijklmnopqr stuvwxyzäöü

Character Style Samples

COURIER
4xHeight 4xWidth outline

1 2 3 ABC abc

COURIER
4xHeight 4xWidth shadow

1 2 3 ABC abc

COURIER
4xHeight 4xWidth shadow + outline

1 2 3 ABC abc

Character Size Modification

DATA, 10 CPI

0123456789ABCDEF

DATA, 1x HEIGHT 2x WIDTH

0123456789ABCDEF

DATA, 1x HEIGHT 3x WIDTH

01234ABCDEF

DATA, 1x HEIGHT 4x WIDTH

01234ABC

DATA, 1x HEIGHT 4x WIDTH, BOLD

01234ABC

Character Size Modification

DATA, 2x HEIGHT 1x WIDTH

0123456789ABCDEF

DATA, 3x HEIGHT 1x WIDTH

0123456789ABCDEF

DATA, 4x HEIGHT 1x WIDTH

0123456789ABCDEF

DATA, 4x HEIGHT 1x WIDTH, BOLD

0123456789ABCDEF

Character Size Modification

DATA, 2x HEIGHT 2x WIDTH

0123456789ABCDEF

DATA, 3x HEIGHT 3x WIDTH

01234ABCDEF

DATA, 4x HEIGHT 4x WIDTH

01234ABC

DATA, 4x HEIGHT 4x WIDTH, BOLD

01234ABC

Character Size Modification

COURIER LQ, 10 CPI

0123456789ABCDEF

COURIER LQ, 1x HEIGHT 2x WIDTH

0123456789ABCDEF

COURIER LQ, 1x HEIGHT 3x WIDTH

01234ABCDEF

COURIER LQ, 1x HEIGHT 4x WIDTH

01234ABC

COURIER LQ, 1x HEIGHT 4x WIDTH, BOLD

01234ABC

Character Size Modification

COURIER LQ, 2x HEIGHT 1x WIDTH

0123456789ABCDEF

COURIER LQ, 3x HEIGHT 1x WIDTH

0123456789ABCDEF

COURIER LQ, 4x HEIGHT 1x WIDTH

0123456789ABCDEF

COURIER LQ, 4x HEIGHT 1x WIDTH, BOLD

0123456789ABCDEF

Character Size Modification

COURIER LQ, 2x HEIGHT 2x WIDTH
0123456789ABCDEF

COURIER LQ, 3x HEIGHT 3x WIDTH
01234ABCDEF

COURIER LQ, 4x HEIGHT 4x WIDTH
01234ABC

COURIER LQ, 4x HEIGHT 4x WIDTH, BOLD
01234ABC

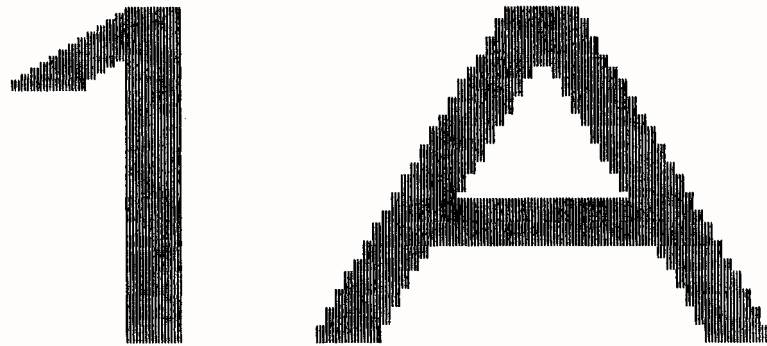
DATABLOCK with Character Size Modification

DATABLOCK 1x HEIGHT 1x WIDTH
123ABC

DATABLOCK 2x HEIGHT 2x WIDTH
12A

DATABLOCK with Character Size Modification

DATABLOCK 3x HEIGHT 3x WIDTH



DATABLOCK 3x HEIGHT 3x WIDTH BOLD



DATA LARGE

DATA LARGE

§ ! " # \$ % & ' ()

/ 0 1 2 3 4 5 6 7 8 9

? § A B C D E F G H I

O P Q R S T U V W X Y

_ ' a b c d e f g h i

o p q r s t u v w x y

ç ü é â ä à ã ç ê ë

å é æ œ ô ö ó ù ü ö

ƒ á í ó ú ð ñ ã ã ã ã

Appendix C Character Set Tables

1. Basis Code Table for National Versions (GP-Mode)
 NV-1.0, NV-2.3, NV-2.5, NV-2.6, NV-2.8

	2	3	4	5	6	7		A	B	C	D	E	F
0		0	NV	P	NV	p		\$	\$	\$	\$	\$	\$
1	!	1	A	Q	a	q		◇	\$	\$	\$	\$	\$
2	"	2	B	R	b	r		%	\$	\$	\$	\$	\$
3	NV	3	C	S	c	s		~	\$	\$	\$	\$	\$
4	\$	4	D	T	d	t		\$	\$	\$	\$	\$	\$
5	%	5	E	U	e	u		NV	\$	\$	\$	\$	\$
6	&	6	F	V	f	v		NV	\$	\$	\$	\$	\$
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	NV	k	NV		\$	\$	\$	\$	\$	\$
C	'	<	L	NV	l	NV		\$	\$	\$	\$	\$	\$
D	-	=	M	NV	m	NV		\$	\$	\$	\$	\$	\$
E	.	>	N	NV	n	NV		\$	\$	\$	\$	\$	\$
F	/	?	O	_	o			\$	\$	\$	\$	\$	\$

NV = National Version

1.1 National Version NV-1.0

	Zeichensatz Code (Hex)												
	23	40	5B	5C	5D	5E	60	7B	7C	7D	7E	A5	A6
1: D	#	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß	◇	* _
2: GB	£	@	[	\	\]	^	`	{	|	}	~	◇	* _
3: F	£	à	°	ç	§	^	`	é	ù	è	"	◇	* _
4: E	£	@	[	Ñ	]	^	`	{	ñ	}	~	◇	* _
5: I	£	§	°	ç	é	^	ù	à	ò	è	ì	◇	* _
6: S	#	É	Ä	Ö	À	^	é	ä	ö	å	~	◇	* _
7: DK	£	@	Æ	Ø	Å	^	`	æ	ø	å	~	◇	* _
8: P	£	@	Ã	Ç	Õ	^	`	ã	ç	õ	~	◇	* _
9: YU	£	Ž	Ć	Č	Š	^	ž	ć	č	š	~	◇	* _
10: USA	#	@	[	\	\]	^	`	{	|	}	~	QR	CR
11: SIS	£	@	Ä	Ö	Å	^	`	ä	ö	å	~	◇	* _

1.2 National Version NV-2.3

	Zeichensatz Code (Hex)												
	23	40	5B	5C	5D	5E	60	7B	7C	7D	7E	A5	A6
1: D	#	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß	◇	* _
2: GB	£	@	[	\	\]	^	`	{	|	}	~	◇	* _
3: F1	£	à	°	ç	§	^	`	é	ù	è	"	◇	* _
4: E	£	@	[	Ñ	]	^	`	{	ñ	}	~	◇	* _
5: I	£	§	°	ç	é	^	ù	à	ò	è	ì	◇	* _
6: S	#	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü	◇	* _
7: DK2	£	@	Æ	Ø	Å	^	`	æ	ø	å	~	◇	* _
8: SW2	£	|	ä	ö	ü	^	#	ç	é	è	à	◇	* _
9: F2	â	à	ê	ç	î	^	ô	é	ù	è	û	◇	* _
10: USA	#	@	[	\	\]	^	`	{	|	}	~	CR	CR
11: DK1	#	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü	◇	* _

1.3 National Version NV-2.5

	Zeichensatz Code (Hex)												
	23	40	5B	5C	5D	5E	60	7B	7C	7D	7E	A5	A6
1: D	#	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß	◇	* _
2: GB	£	@	[	\	\]	^	`	{	|	}	~	◇	* _
3: F	£	à	°	ç	§	^	#	é	ù	è	"	◇	* _
4: E	£	@	[	Ñ	]	^	`	{	ñ	}	~	◇	* _
5: I	£	§	°	ç	é	^	ù	à	ò	è	ì	◇	* _
6: S	£	\$	Ä	Ö	Å	^	`	ä	ö	å	ü	◇	* _
7: DK	£	@	Æ	Ø	Å	^	`	æ	ø	å	"	◇	* _
8: P	£	@	Ã	Ç	Õ	^	`	ã	ç	õ	~	◇	* _
9: SW2	£	|	ä	ö	ü	^	#	ç	é	è	à	◇	* _
10: USA	#	@	[	\	\]	^	`	{	|	}	~	CR	CR
11: SF	£	@	Ä	Ö	Å	^	`	ä	ö	å	"	◇	* _

1.4 National Version NV-2.6

	Zeichensatz Code (Hex)												
	23	40	5B	5C	5D	5E	60	7B	7C	7D	7E	A5	A6
1: D	#	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß	◇	* _
2: GB	£	@	[	\	\]	^	`	{	|	}	~	◇	* _
3: F	£	à	°	ç	§	^	`	é	ù	è	"	◇	* _
4: E	£	@	[	Ñ	]	^	`	{	ñ	}	~	◇	* _
5: I	£	§	°	ç	é	^	ù	à	ò	è	ì	◇	* _
6: S	#	É	Ä	Ö	Å	^	é	ä	ö	å	~	◇	* _
7: DK	£	@	Æ	Ø	Å	^	`	æ	ø	å	~	◇	* _
8: P	£	@	Ã	Ç	Õ	^	`	ã	ç	õ	~	◇	* _
9: SW2	#	§	à	è	é	^	ù	ä	ö	ü	ç	◇	* _
10: USA	#	@	[	\	\]	^	`	{	|	}	~	CR	CR
11: SIS	#	@	Ä	Ö	Å	^	`	ä	ö	å	~	◇	* _

1.5 National Version NV-2.8

	Zeichensatz Code (Hex)												
	23	40	5B	5C	5D	5E	60	7B	7C	7D	7E	A5	A6
1: D	#	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß	◇	* _
2: GB	£	@	[	\	\]	^	`	{	|	}	~	◇	* _
3: F	£	à	°	ç	§	^	#	é	ù	è	"	◇	* _
4: E	£	@	[	Ñ	]	^	`	{	ñ	}	~	◇	* _
5: I	£	§	°	ç	é	^	ù	à	ò	è	ì	◇	* _
6: S	£	§	Ä	Ö	Å	^	`	ä	ö	å	ü	◇	* _
7: DK	£	@	Æ	Ø	Å	^	`	æ	ø	å	"	◇	* _
8: P	£	@	Ã	Ç	Õ	^	`	ã	ç	õ	~	◇	* _
9: SW2	£	"	ä	ö	ü	^	`	ç	é	è	à	◇	* _
10: USA	#	@	[	\	\]	^	`	{	|	}	~	CR	CR
11: SF	£	@	Ä	Ö	Å	^	`	ä	ö	å	"	◇	* _

2.1 Code Table ISO 8859-1

	2	3	4	5	6	7		A	B	C	D	E	F
0		0	@	P	`	p		◊	°	À	Ð	à	Ó
1	!	1	A	Q	a	q		ı	±	Á	Ñ	á	ñ
2	"	2	B	R	b	r		¢	²	Â	Ò	â	ò
3	#	3	C	S	c	s		£	³	Ã	Ó	ã	ó
4	\$	4	D	T	d	t		¤	'	Ä	Ô	ä	ô
5	%	5	E	U	e	u		¥	μ	Å	Õ	å	õ
6	&	6	F	V	f	v		|	¶	Æ	Ö	æ	ö
7	'	7	G	W	g	w		§	•	Ç	×	ç	÷
8	(	8	H	X	h	x		¨	,	È	Ø	è	ø
9	)	9	I	Y	i	y		©	¹	É	Ù	é	ù
A	*	:	J	Z	j	z		ª	º	Ê	Ú	ê	ú
B	+	;	K	[	k	{		«	»	Ë	Û	ë	û
C	'	<	L	\	l	|		¬	¼	Ì	Ü	ì	ü
D	-	=	M	]	m	}		–	½	Í	Ý	í	ý
E	.	>	N	^	n	~		®	¾	Î	Þ	î	þ
F	/	?	O	_	o			–	¿	Ï	ß	ï	ÿ

2.2 Code Table ISO 8859-15

	2	3	4	5	6	7		A	B	C	D	E	F
0		0	@	P	`	p		◊	°	À	Ð	à	Ó
1	!	1	A	Q	a	q		ı	±	Á	Ñ	á	ñ
2	"	2	B	R	b	r		¢	²	Â	Ò	â	ò
3	#	3	C	S	c	s		£	³	Ã	Ó	ã	ó
4	\$	4	D	T	d	t		€	ž	Ä	Ô	ä	ô
5	%	5	E	U	e	u		¥	μ	Å		å	õ
6	&	6	F	V	f	v		Š	¶	Æ	Ö	æ	ö
7	'	7	G	W	g	w		§	•	Ç	×	ç	÷
8	(	8	H	X	h	x		š	ž	È	Ø	è	ø
9	)	9	I	Y	i	y		©	¹	É	Ù	é	ù
A	*	:	J	Z	j	z		ª	º	Ê	Ú	ê	ú
B	+	;	K	[	k	{		«	»	Ë	Û	ë	û
C	'	<	L	\	l	|		¬	Œ	Ì	Ü	ì	ü
D	-	=	M	]	m	}		–	œ	Í	Ý	í	ý
E	.	>	N	^	n	~		®	Ÿ	Î	Þ	î	þ
F	/	?	O	_	o			–	¿	Ï	ß	ï	ÿ

3 Code Table IBM All Character Set

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	ø	►	SP	0	@	P	`	p	Ç	É	á	!	.	J	α	≡
1	☺	◄	!	1	A	Q	a	q	ü	æ	í	"	2	L	β	±
2	☹	↑	"	2	B	R	b	r	é	Æ	ó	#	0	H	Γ	≥
3	♥	!!	#	3	C	S	c	s	â	ô	ú	*	/	F	Π	≤
4	♦	¶	\$	4	D	T	d	t	ä	ö	ñ	1	)	B	Σ	¡
5	♣	§	%	5	E	U	e	u	à	ò	Ñ	I	3	?	σ	¡
6	♠	_	&	6	F	V	f	v	â	û	ª	M	G	C	μ	÷
7	●	‡	'	7	G	W	g	w	ç	ù	º	D	K	O	τ	≈
8	■	†	(	8	H	X	h	x	ê	ÿ	¿	@	9	P	Φ	°
9	○	‡	)	9	I	Y	i	y	ë	Ö	¬	<	6	-	Θ	·
A	◼	→	*	:	J	Z	j	z	è	Ü	¬	5	=	+	Ω	·
B	♂	←	+	;	K	[	k	{	ï	ø	½	7	;	\$	δ	√
C	♀	↳	'	<	L	\	l	|	î	£	¼	8	:	(	∞	n
D	♪	↔	-	=	M	]	m	}	ì	¥	¡	E	4	%	ø	²
E	♫	▲	.	>	N	^	n	~	Ä	Þ	«	A	>	'	e	■
F	⊗	▼	/	?	O	_	o		Å	f	»	,	N	&	∩	SP

Applicable for Code Table IBM Set 1 and 2

4 Code Table IBM Set 1

National Version = USA

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	NUL		SP	0	@	P	`	p	NUL		á	!	.	J	α	≡
1		DC1	!	1	A	Q	a	q		DC1	í	"	2	L	β	±
2		DC2	"	2	B	R	b	r		DC2	ó	#	0	H	Γ	≥
3		DC3	#	3	C	S	c	s		DC3	ú	*	/	F	Π	≤
4		DC4	\$	4	D	T	d	t		DC4	ñ	1	)	B	Σ	¡
5			%	5	E	U	e	u			Ñ	I	3	?	σ	¡
6			&	6	F	V	f	v			ª	M	G	C	μ	÷
7	BEL		'	7	G	W	g	w	BEL		º	D	K	O	τ	≈
8	BS	CAN	(	8	H	X	h	x	BS	CAN	¿	@	9	P	Φ	°
9	HT		)	9	I	Y	i	y	HT		¬	<	6	-	Θ	·
A	LF		*	:	J	Z	j	z	LF		¬	5	=	+	Ω	·
B	VT	ESC	+	;	K	[	k	{	VT	ESC	½	7	;	\$	δ	√
C	FF		'	<	L	\	l	|	FF		¼	8	:	(	∞	n
D	CR		-	=	M	]	m	}	CR		¡	E	4	%	ø	²
E	SO		.	>	N	^	n	~	SO		«	A	>	'	e	■
F	SI		/	?	O	_	o		SI		»	,	N	&	∩	SP

4.1 National Version IBM Set 1

	Character Code (Hex)											
	23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
1: USA	#	\$	@	[	\	\]	^	`	{	|	}	~
2: FRANCE	#	\$	à	°	ç	§	^	`	é	ù	è	¨
3: GERMANY	#	\$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß
4: U.K.	£	\$	@	[	\	\]	^	`	{	|	}	~
5: DENMARK	#	\$	@	Æ	Ø	Å	^	`	æ	ø	å	~
6: SWEDEN	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
7: ITALY	#	\$	@	°	\	é	^	ù	à	ò	è	ì
8: SPAIN	₧	\$	@	ı	Ñ	¿	^	`	ñ	}	~	
9: JAPAN	#	\$	@	[	¥	]	^	`	{	|	}	~
10: NORWAY	#	¤	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
11: DENMARK 2	#	\$	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
12: SPAIN 2	#	\$	á	ı	Ñ	¿	é	`	í	ñ	ó	ú
13: LATIN AM.	#	\$	á	ı	Ñ	¿	é	Ü	í	ñ	ó	ú
14: TURKEY	#	ı	İ	Ç	Ö	Ş	Ü	ğ	ç	ö	ş	ü

5 Code Table IBM Set 2

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	NUL		SP	0	@	P	`	p	Ç	É	á	!	.	J	α	≡
1		DC1	!	1	A	Q	a	q	ü	æ	í	"	2	L	β	±
2		DC2	"	2	B	R	b	r	é	Æ	ó	#	0	H	Γ	≥
3	♥	DC3	#	3	C	S	c	s	â	ô	ú	*	/	F	π	≤
4	♦	DC4	\$	4	D	T	d	t	ä	ö	ñ	1	)	B	Σ	∫
5	♣		%	5	E	U	e	u	à	ò	Ñ	I	3	?	σ	∫
6	♠		&	6	F	V	f	v	â	û	ª	M	G	C	μ	÷
7	BEL		'	7	G	W	g	w	ç	ù	º	D	K	O	τ	≈
8	BS	CAN	(	8	H	X	h	x	ê	ÿ	¿	@	9	P	Φ	°
9	HT		)	9	I	Y	i	y	ë	Ö	¬	<	6	-	Θ	·
A	LF		*	:	J	Z	j	z	è	Ü	¬	5	=	+	Ω	·
B	VT	ESC	+	;	K	[	k	{	ï	ø	½	7	;	\$	δ	√
C	FF		'	<	L	\	l	|	î	£	¼	8	:	(∞	∞
D	CR		-	=	M	]	m	}	ì	¥	ı	E	4	%	ø	²
E	SO		.	>	N	^	n	~	Ä	₧	«	A	>	'	e	■
F	SI		/	?	O	_	o		Å	f	»	,	N	&	∩	SP

5.1 National Version IBM Set 2

	Character Code (Hex)													
	23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E	9B	9D
1: USA	#	\$	@	[	\	\]	^	`	{	|	}	~	¢	¥
2: FRANCE	#	\$	à	°	ç	§	^	`	é	ù	è	¨	¢	¥
3: GERMANY	#	\$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß	¢	¥
4: U.K.	£	\$	@	[	\	\]	^	`	{	|	}	~	¢	¥
5: DENMARK	#	\$	@	[	\	\]	^	`	{	|	}	~	ø	Ø
6: SWEDEN	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü	¢	¥
7: ITALY	#	\$	@	°	\	é	^	ù	à	ò	è	ì	¢	¥
8: SPAIN	₧	\$	@	ı	Ñ	ı	^	`	ñ	}	~	¢	¥	
9: JAPAN	#	\$	@	[	¥	]	^	`	{	|	}	~	¢	¥
10: NORWAY	#	\$	@	[	\	\]	^	`	{	|	}	~	ø	Ø
11: DEMARK 2	#	\$	@	[	\	\]	^	`	{	|	}	~	ø	Ø
12: SPAIN 2	#	\$	á	ı	Ñ	ı	é	`	ı	ñ	ó	ú	¢	¥
13: LATIN AM.	#	\$	á	ı	Ñ	ı	é	Ü	ı	ñ	ó	ú	¢	¥
14: TURKEY	#	ı	İ	Ç	Ö	Ş	Ü	ğ	ç	ö	ş	ü	¢	¥

6 Code Table IBM IBM Code Page

Code Page	Countries
1: Code Page 437	USA
2: Code Page 850	Germany, U.K., Denmark, Sweden, Italy, Spain, Japan, Latin Am., Turkey
3: Code Page 858	Germany, U.K., Denmark, Sweden, Italy, Spain, Japan, Latin Am., Turkey inc. EURO Symbol €
4: Code Page 860	Portugal
5: Code Page 863	France
6: Code Page 865	Norway

6.1 IBM Code Page 437

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	ø	►	SP	0	@	P	`	p	Ç	É	á	!	.	J	α	≡
1	☺	◄	!	1	A	Q	a	q	ü	æ	í	"	2	L	β	±
2	☹	↑	"	2	B	R	b	r	é	Æ	ó	#	0	H	Γ	≥
3	♥	!!	#	3	C	S	c	s	â	ô	ú	*	/	F	π	≤
4	♦	¶	\$	4	D	T	d	t	ä	ö	ñ	1	)	B	Σ	∫
5	♣	§	%	5	E	U	e	u	à	ò	Ñ	I	3	?	σ	∫
6	♠	_	&	6	F	V	f	v	â	û	ª	M	G	C	μ	÷
7	•	‡	'	7	G	W	g	w	ç	ù	º	D	K	O	τ	≈
8	■	†	(	8	H	X	h	x	ê	ÿ	¿	@	9	P	Φ	°
9	○	‡	)	9	I	Y	i	y	ë	Ö	¬	<	6	-	Θ	·
A	◼	→	*	:	J	Z	j	z	è	Ü	¬	5	=	+	Ω	·
B	♂	←	+	;	K	[	k	{	ï	ø	½	7	;	§	ð	√
C	♀	↳	'	<	L	\	l	|	î	£	¼	8	:	(	∞	ⁿ
D	♫	↔	-	=	M	]	m	}	ì	¥	¡	E	4	%	ø	²
E	♫	▲	.	>	N	^	n	~	Ä	℞	«	A	>	'	e	■
F	⊛	▼	/	?	O	_	o		Å	f	»	,	N	&	∩	SP

6.2 IBM Code Page 850

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	ø	►	SP	0	@	P	`	p	Ç	É	á	!	.	ð	Ó	-
1	☺	◄	!	1	A	Q	a	q	ü	æ	í	"	2	Ð	β	±
2	☹	↑	"	2	B	R	b	r	é	Æ	ó	#	0	Ê	Ô	=
3	♥	!!	#	3	C	S	c	s	â	ô	ú	*	/	Ë	Ò	¾
4	♦	¶	\$	4	D	T	d	t	ä	ö	ñ	1	)	È	ø	¶
5	♣	§	%	5	E	U	e	u	à	ò	Ñ	Á	3	ï	Õ	§
6	♠	_	&	6	F	V	f	v	â	û	ª	Â	ã	Ī	μ	÷
7	•	‡	'	7	G	W	g	w	ç	ù	º	À	Ã	Î	þ	¸
8	■	†	(	8	H	X	h	x	ê	ÿ	¿	©	9	Ï	Ɔ	˘
9	○	‡	)	9	I	Y	i	y	ë	Ö	®	<	6	-	Ú	ˆ
A	◼	→	*	:	J	Z	j	z	è	Ü	¬	5	=	+	Û	°
B	♂	←	+	;	K	[	k	{	ï	ø	½	7	;	§	Ù	¹
C	♀	↳	'	<	L	\	l	|	î	£	¼	8	:	(	Ý	³
D	♫	↔	-	=	M	]	m	}	ì	Ø	¡	¢	4	|	Ý	²
E	♫	▲	.	>	N	^	n	~	Ä	x	«	¥	>	ì	-	■
F	⊛	▼	/	?	O	_	o		Å	f	»	,	¤	&	'	SP

6.3 IBM Code Page 858

6.4 IBM Code Page 860

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	ø	►	SP	0	@	P	`	p	Ç	É	á	!	.	ð	Ó	-
1	☺	◄	!	1	A	Q	a	q	ü	æ	í	"	2	Ð	β	±
2	☹	↑	"	2	B	R	b	r	é	Æ	ó	#	0	Ê	Ô	=
3	♥	!!	#	3	C	S	c	s	â	ô	ú	*	/	Ë	Ò	¾
4	♦	¶	\$	4	D	T	d	t	ä	ö	ñ	1	)	È	õ	¶
5	♣	§	%	5	E	U	e	u	à	ò	Ñ	Á	3	€	Õ	§
6	♠	_	&	6	F	V	f	v	á	û	ª	Â	ã	Ī	μ	÷
7	●	‡	'	7	G	W	g	w	ç	ù	º	À	Ã	Î	þ	¸
8	■	†	(	8	H	X	h	x	ê	ÿ	¿	©	9	Ï	Ɔ	˘
9	○	‡	)	9	I	Y	i	y	ë	Ö	®	<	6	-	Ú	˙
A	◼	→	*	:	J	Z	j	z	è	Ü	¬	5	=	+	Û	°
B	♂	←	+	;	K	[	k	{	ï	ø	½	7	;	š	Ù	¹
C	♀	↳	'	<	L	\	l	|	î	£	¼	8	:	(	ý	³
D	♫	↔	-	=	M	]	m	}	ì	Ø	ı	¢	4	|	Ý	²
E	♫	▲	.	>	N	^	n	~	Ä	x	«	¥	>	ı	-	■
F	⊛	▼	/	?	O	_	o		Å	f	»	,	¤	&	'	SP

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	ø	►	SP	0	@	P	`	p	Ç	É	á	!	.	J	α	≡
1	☺	◄	!	1	A	Q	a	q	ü	À	í	"	2	L	β	±
2	☹	↑	"	2	B	R	b	r	é	È	ó	#	0	H	Γ	≥
3	♥	!!	#	3	C	S	c	s	â	ô	ú	*	/	F	π	≤
4	♦	¶	\$	4	D	T	d	t	ä	ö	ñ	1	)	B	Σ	∫
5	♣	§	%	5	E	U	e	u	à	ò	Ñ	I	3	?	σ	∫
6	♠	_	&	6	F	V	f	v	Á	Ú	ª	M	G	C	μ	÷
7	●	‡	'	7	G	W	g	w	ç	ù	º	D	K	O	τ	≈
8	■	†	(	8	H	X	h	x	ê	ÿ	¿	@	9	P	Φ	°
9	○	‡	)	9	I	Y	i	y	Ê	Ë	Ò	<	6	-	Θ	·
A	◼	→	*	:	J	Z	j	z	è	Ü	¬	5	=	+	Ω	·
B	♂	←	+	;	K	[	k	{	ï	ø	½	7	;	š	ð	√
C	♀	↳	'	<	L	\	l	|	î	£	¼	8	:	(	∞	ˆ
D	♫	↔	-	=	M	]	m	}	ì	Ù	ı	E	4	%	ø	²
E	♫	▲	.	>	N	^	n	~	Ä	Ɔ	«	A	>	'	e	■
F	⊛	▼	/	?	O	_	o		Å	Ó	»	,	N	&	∩	SP

6.5 IBM Code Page 863

6.6 IBM Code Page 865

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	ø	►	SP	0	@	P	`	p	Ç	É	|	!	.	J	α	≡
1	☺	◄	!	1	A	Q	a	q	ü	È	'	"	2	L	β	±
2	☹	↑	"	2	B	R	b	r	é	Ê	ó	#	0	H	Γ	≥
3	♥	!!	#	3	C	S	c	s	â	ô	ú	*	/	F	π	≤
4	♦	¶	\$	4	D	T	d	t	Â	Ë	"	1	)	B	Σ	∫
5	♣	§	%	5	E	U	e	u	à	ï	,	I	3	?	σ	∫
6	♠	_	&	6	F	V	f	v	¶	û	³	M	G	C	μ	÷
7	●	‡	'	7	G	W	g	w	ç	ù	-	D	K	0	τ	≈
8	■	↑	(	8	H	X	h	x	ê	ÿ	¿	@	9	P	Φ	°
9	○	↓	)	9	I	Y	i	y	ë	Ö	¬	<	6	-	Θ	·
A	◼	→	*	:	J	Z	j	z	è	Ü	¬	5	=	+	Ω	·
B	♂	←	+	;	K	[	k	{	ï	ø	½	7	;	\$	δ	√
C	♀	↳	'	<	L	\	l	|	î	£	¼	8	:	(	∞	ⁿ
D	♫	↔	-	=	M	]	m	}	=	Ù	¾	E	4	%	ø	²
E	♫	▲	.	>	N	^	n	~	À	Û	«	A	>	'	e	■
F	⊛	▼	/	?	O	_	o		§	f	»	,	N	&	∩	SP

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	ø	►	SP	0	@	P	`	p	Ç	É	á	!	.	J	α	≡
1	☺	◄	!	1	A	Q	a	q	ü	Æ	í	"	2	L	β	±
2	☹	↑	"	2	B	R	b	r	é	Æ	ó	#	0	H	Γ	≥
3	♥	!!	#	3	C	S	c	s	â	ô	ú	*	/	F	π	≤
4	♦	¶	\$	4	D	T	d	t	ä	ö	ñ	1	)	B	Σ	∫
5	♣	§	%	5	E	U	e	u	à	ò	Ñ	I	3	?	σ	∫
6	♠	_	&	6	F	V	f	v	â	û	ª	M	G	C	μ	÷
7	●	‡	'	7	G	W	g	w	ç	ù	º	D	K	0	τ	≈
8	■	↑	(	8	H	X	h	x	ê	ÿ	¿	@	9	P	Φ	°
9	○	↓	)	9	I	Y	i	y	ë	Ö	¬	<	6	-	Θ	·
A	◼	→	*	:	J	Z	j	z	è	Ü	¬	5	=	+	Ω	·
B	♂	←	+	;	K	[	k	{	ï	ø	½	7	;	\$	δ	√
C	♀	↳	'	<	L	\	l	|	î	£	¼	8	:	(	∞	ⁿ
D	♫	↔	-	=	M	]	m	}	ì	Ø	ì	E	4	%	ø	²
E	♫	▲	.	>	N	^	n	~	Ä	Û	«	A	>	'	e	■
F	⊛	▼	/	?	O	_	o		Å	f	»	,	N	&	∩	SP

7 EPSON Extended Graphics Character Table

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0			SP	0	@	P	`	p	Ç	É	á	!	.	J	α	≡
1			!	1	A	Q	a	q	ü	æ	í	"	2	L	β	±
2			"	2	B	R	b	r	é	Æ	ó	#	0	H	Γ	≥
3			#	3	C	S	c	s	â	ô	ú	*	/	F	π	≤
4			\$	4	D	T	d	t	ä	ö	ñ	1	)	B	Σ	∫
5		§	%	5	E	U	e	u	à	ò	Ñ	I	3	?	σ	∫
6			&	6	F	V	f	v	â	û	ª	M	G	C	μ	÷
7			'	7	G	W	g	w	ç	ù	º	D	K	0	τ	≈
8			(	8	H	X	h	x	ê	ÿ	¿	@	9	P	Φ	°
9			)	9	I	Y	i	y	ë	Ö	¬	<	6	-	Θ	·
A			*	:	J	Z	j	z	è	Ü	¬	5	=	+	Ω	·
B			+	;	K	[	k	{	ï	ø	½	7	;	\$	ð	√
C			'	<	L	\	l	|	î	£	¼	8	:	(	∞	ª
D			-	=	M	]	m	}	ì	¥	ì	E	4	%	ø	²
E			.	>	N	^	n	~	Ä	℞	«	A	>	'	ε	■
F			/	?	O	_	o		Å	f	»	,	N	&	∩	SP

7.1 National Version EPSON Extended graphics Character Table

	Character Code (Hex)											
	23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
1: USA	#	\$	@	[	\	\]	^	`	{	|	}	~
2: FRANCE	#	\$	à	°	ç	§	^	`	é	ù	è	¨
3: GERMANY	#	\$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß
4: U.K.	£	\$	@	[	\	\]	^	`	{	|	}	~
5: DENMARK	#	\$	@	Æ	Ø	Å	^	`	æ	ø	å	~
6: SWEDEN	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
7: ITALY	#	\$	@	°	\	é	^	ù	à	ò	è	ì
8: SPAIN	℞	\$	@	ì	Ñ	¿	^	`	¨	ñ	}	~
9: JAPAN	#	\$	@	[	¥	]	^	`	{	|	}	~
10: NORWAY	#	¤	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
11: DENMARK 2	#	\$	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
12: SPAIN 2	#	\$	á	ì	Ñ	¿	é	`	í	ñ	ó	ú
13: LATIN AM.	#	\$	á	ì	Ñ	¿	é	Ü	í	ñ	ó	ú
14: TURKEY	#	ı	İ	Ç	Ö	Ş	Ü	ğ	ç	ö	ş	ü
15: LEGAL	#	\$	§	°	'	"	¶	`	©	®	†	™

7.2 EPSON Italic Character Table

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0			SP	0	@	P	`	p		SP	0	@	P	`	p	
1			!	1	A	Q	a	q		!	1	A	Q	a	q	
2			"	2	B	R	b	r		"	2	B	R	b	r	
3			#	3	C	S	c	s		#	3	C	S	c	s	
4			\$	4	D	T	d	t		\$	4	D	T	d	t	
5			%	5	E	U	e	u		%	5	E	U	e	u	
6			&	6	F	V	f	v		&	6	F	V	f	v	
7			'	7	G	W	g	w		'	7	G	W	g	w	
8			(	8	H	X	h	x		(	8	H	X	h	x	
9			)	9	I	Y	i	y		)	9	I	Y	i	y	
A			*	:	J	Z	j	z		*	:	J	Z	j	z	
B			+	;	K	[	k	{		+	;	K	[	k	{	
C			'	<	L	\	l	|		'	<	L	\	l	|	
D			-	=	M	]	m	}		-	=	M	]	m	}	
E			.	>	N	^	n	~		.	>	N	^	n	~	
F			/	?	O	_	o			/	?	O	_	o		

This character table is selected by the command **ESC t**.

7.3 National Version EPSON Italic Character Table (part 1)

	Character Code (Hex)											
	23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
1: USA	#	\$	@	[	\	\]	^	`	{	|	}	~
2: FRANCE	#	\$	à	°	ç	§	^	`	é	ù	è	¨
3: GERMANY	#	\$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß
4: U.K.	£	\$	@	[	\	\]	^	`	{	|	}	~
5: DENMARK	#	\$	@	Æ	Ø	Å	^	`	æ	ø	å	~
6: SWEDEN	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
7: ITALY	#	\$	@	°	\	é	^	ù	à	ò	è	ì
8: SPAIN	¤	\$	@	ı	Ñ	ı	^	`	¨	ñ	}	~
9: JAPAN	#	\$	@	[	¥	]	^	`	{	|	}	~
10: NORWAY	#	¤	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
11: DENMARK 2	#	\$	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
12: SPAIN 2	#	\$	á	ı	Ñ	ı	é	`	ı	ñ	ó	ú
13: LATIN AM.	#	\$	á	ı	Ñ	ı	é	Ü	ı	ñ	ó	ú
14: TURKEY	#	ı	İ	Ç	Ö	Ş	Ü	ğ	ç	ö	ş	ü
15: LEGAL	#	\$	§	°	'	"	¶	`	©	®	†	™

7.3 National Version EPSON Italic Character Table (part 2)

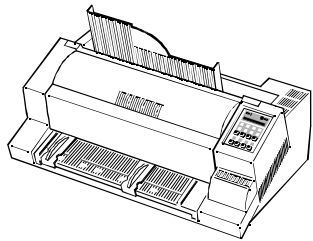
	Character Code (Hex)											
	A3	A4	C0	DB	DC	DD	DE	E0	FB	FC	FD	FE
1: USA	#	\$	@	[	\	\]	^	`	{	|	}	~
2: FRANCE	#	\$	à	°	ç	§	^	`	é	ù	è	¨
3: GERMANY	#	\$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß
4: U.K.	£	\$	@	[	\	\]	^	`	{	|	}	~
5: DENMARK	#	\$	@	Æ	Ø	Å	^	`	æ	ø	å	~
6: SWEDEN	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
7: ITALY	#	\$	@	°	ì	é	^	ù	à	ò	è	ì
8: SPAIN	₧	\$	@	ì	Ñ	¿	^	`	¨	ñ	}	~
9: JAPAN	#	\$	@	[	¥	]	^	`	{	|	}	~
10: NORWAY	#	¤	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
11: DENMARK 2	#	\$	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
12: SPAIN 2	#	\$	á	ì	Ñ	¿	é	`	í	ñ	ó	ú
13: LATIN AM.	#	\$	á	ì	Ñ	¿	é	Ü	í	ñ	ó	ú
14: TURKEY	#	ı	İ	Ç	Ö	Ş	Ü	ğ	ç	ö	ş	ü
15: LEGAL	#	\$	§	°	'	"	¶	`	©	®	†	™

8 Code Table OCR-A

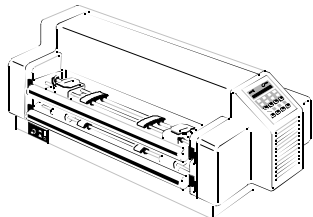
	0	1	2	3	4	5	6	7
0	NUL	DLE	SP	0	@	P	┌	p
1	SOH	DC1	!	1	A	Q	a	q
2	STX	DC2	"	2	B	R	b	r
3	ETX	DC3	#	3	C	S	c	s
4	EOT	DC4	\$	4	D	T	d	t
5	ENQ	NAK	%	5	E	U	e	u
6	ACK	SYN	&	6	F	V	f	v
7	BEL	ETB	'	7	G	W	g	w
8	BS	CAN	(	8	H	X	h	x
9	HT	EM	)	9	I	Y	i	y
A	LF	SUB	*	:	J	Z	j	z
B	VT	ESC	+	;	K	[	k	{
C	FF	FS	¬	<	L	\	l	|
D	CR	GR	-	=	M	]	m	}
E	SO	RS	.	>	N	^	n	┐
F	SI	US	/	?	O	└	o	¸

Appendix D Philips General Printer (GP) QUICK REFERENCE

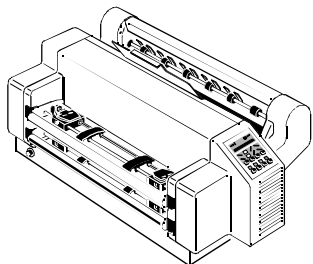
This appendix contains basic information on the Philips GP Emulation commands supported in three Printer types:



PRINTER TYPE 1



PRINTER TYPE 2



PRINTER TYPE 3

Some commands or parameters may be different for a specific **PRINTER TYPE**. In those cases it will be indicated to which **PRINTER TYPE** a command or parameter applies.

Characters used in control functions appear in monospaced type. Table 1 explains some of the conventions used.

A pair of numbers separated by a slash (/) character indicates Column/Row notation. This notation refers to the location of a character in a standard code table, such as ASCII. (example: 1/B = 1B is the hex-code for Escape)

Spaces appear between characters in sequence for clarity; they are not part of the format.

At the end of this chapter you will find a listing of the GP-emulation commands classified by Hex Code and a Hex - Decimal conversion table.

The following conventions are used in the command listings:

Table 1 Conventions

ESC Escape (1/B), introduces an escape sequence

Pn Numeric parameter, or number of units that specify a distance or quantity pertaining to the escape sequence, control function or control string. Accepted values are 0...9999, may be preceded by + or -.
If the parameter is in normal notation like "200" the programming in hex-code is according to a ASCII table. ("200" = 32,30,30 in hex).
If the parameter must be programmed in hex-code the notation is with a slash. (1/A = 1A in hex-code)

Par To specify different parameters in an ESC sequence. Accepted values are numbers 0...9 and ASCII characters.

SP Is standing for Space (hex 20)

Table 2: Control Codes

Column/Row	Mnemonic	Function
0/0	NUL	Null
0/8	BS	Backspace
0/9	HT	Horizontal Tab
0/A	LF	Line Feed
0/B	VT	Vertical Tab
0/C	FF	Form Feed
0/D	CR	Carriage Return
0/E	SO	Double Width Printing By Line (Shift Out)
0/F	SI	Condensed Printing (Shift In)
1/A	SUB	Substitute
1/B	ESC	Initiate Escape Sequence
2/0	SP	Space
7/F	DEL	Delete

Table 3: Special Code Sequences

Escape Sequence	Mnemonic	Function
ESC c	RIS	Reset to Initial State
ESC ?	TON	Start OFF-LINE-Test
ESC >	TOF	Stop OFF-LINE-Test
ESC [5 n	DSR	Device Status Report Poll
ESC P P1 ; P2 ; P3 ESC \	DSRR	Device Status Report Response P1 = primary status code P2 = secondary status code P3 = service status code
ESC [P1 ; P2 SP r	SM #	Select Macro and Change Emulation P1 = 1: Macro 1 P1 = 2: Macro 2 P1 = 3: Macro 3 P1 = 4: Macro 4 P2 = 0: no change of emulation P2 = 1: GP Emulation P2 = 2: IBM ProPrinter Emulation P2 = 3: IBM ProPrinter AGM Emulation P2 = 4: EPSON Emulation
ESC [	\$\$	Control String Introducer (CSI) for ESC [
ESC	\$\$\	Control String Introducer (CSI) for ESC

Table 4: Vertical Form Handling

Escape Sequence	Mnemonic	Function
ESC =	LTOF	Load Top of Form
ESC J	VTS	Set Vertical Tabulation at Current Line
ESC K	PLD	Subscript
ESC L	PLU	Superscript
ESC M	RLF	Reverse Line Feed (default 1/6 inch)
ESC [; P2 s	AGC/PCC	AGC/PCC Procedure (Print Gap Control) P2 = 0 : Automatic Gap Control P2 = 1 : Print Gap for 1-ply copy P2 = 2 : Print Gap for 2-ply copies P2 = 3 : Print Gap for 3-ply copies P2 = 4 : Print Gap for 4-ply copies P2 = 5 : Print Gap for 5-ply copies P2 = 6 : Print Gap for 6-ply copies
ESC [< s	EJF	Eject Form
ESC [> s	IF	Inset Form
ESC [P1 h	SM	Set Mode - Select Paper Source *) P1 = 2 0 : Tractor Feed (if selected at operator panel) else AFS, Bin 3 (if selected at operator panel) or Manual (if selected at operator panel) P1 = 2 1 : ASF, Bin 1 P1 = 2 2 : ASF, Bin 2

*) only **PRINTER TYPE 1****Table 4: (Cont.) Vertical Form Handling**

Escape Sequence	Mnemonic	Function
ESC [P1 /	RM	Reset Mode - Select Paper Source *) P1 = 2 0 : Tractor Feed (if selected at operator panel) else AFS, Bin 3 (if selected at operator panel) or Manual (if selected at operator panel) P1 = 2 1 : ASF, Bin 1 P1 = 2 2 : ASF, Bin 2
ESC [> P1; P2 ; P3 ; P4 s	SPSIF	Select Paper Source and Insert Form P1 = 0 : Manual Feed **) P1 = 1 : ASF, Bin 1 *) P1 = 2 : ASF, Bin 2 *) P1 = 3 : ASF, Bin 3 *) P1 = 6 : upper Tractor *****) P1 = 7 : Tractor Feed (lower Tractor) P1 = 8 : ASF, Bins 1 or 2 *) P1 = 9 : ASF, Bins 2 or 3 *) P1 = 1 0 : ASF, Bins 1 or 2 or 3 *) P1 = 1 5 : upper and lower tractor *****) P2 = : see ACG/PCC above P3 = 0 : Paper Exit Stacker ***) P3 = 1 : Paper Exit Front Side *) (confirmed by Start/Stop) P3 = 2 : Paper Exit Front Side *) (not confirmed by Start/Stop, controlled by application) P3 = 3 : Batch output; rear side P4 Cut Mode On/Off: *****) P4 = 0 : Cut Mode Off P4 = 1 : Cut Mode On P4 = 2 : Cut on actual position (cutting edge is approximate 4 mm above the base of the actual line)

*) only **PRINTER TYPE 1****) only **PRINTER TYPE 1** and **PRINTER TYPE 2******) only **PRINTER TYPE 2** and **PRINTER TYPE 3*****) only **PRINTER TYPE 1** and **PRINTER TYPE 3*******) only **PRINTER TYPE 3**

Table 4: (Cont.) Vertical Form Handling

Escape Sequence	Mnemonic	Function
ESC [> s	IF	Insert Form
ESC [P1 s	SPS	Select Paper Source P1 = 0 : Manual Feed **) P1 = 1 : ASF, Bin 1 *) P1 = 2 : ASF, Bin 2 *) P1 = 3 : ASF, Bin 3 *) P1 = 6 : upper Tractor ****) P1 = 7 : Tractor Feed (lower Tractor) P1 = 8 : ASF, Bins 1 or 2 *) P1 = 9 : ASF, Bins 2 or 3 *) P1 = 1 0 : ASF, Bins 1 or 2 or 3 *) P1 = 1 5 : upper and lower Tractor ****)
ESC [P1 d	VPA	Vertical Position Absolute P1 : print line position with reference to Top of Form/Top Margin P1 = 0 or 1 : print position to Top of Form / Top Margin
ESC [P1 e	VPR	Vertical Position Relative P1 : print line position with reference to current position
ESC [P1 v	SPL	Select Page Length (tractor feed only) P1 : numbers of lines P1 = equivalent to 3-22 inches
ESC [P1 ; P2 r	STBM	Set Top and Bottom Margin P1 : position of top print line P2 : position of bottom print line range for P1 and P2 is 1 to 999

) only **PRINTER TYPE 1 and **PRINTER TYPE 2***) only **PRINTER TYPE 1******) only **PRINTER TYPE 2** and **PRINTER TYPE 3****Table 4: (Cont.) Vertical Form Handling**

Escape Sequence	Mnemonic	Function
ESC [P1 {	LSL	Line Space Load P1 = 1, 2, 3, 4, 6, 8, 12, 16, 24, 48, 60, 72, 90, 144, 180, 360
ESC [P1 SP G	SPIV	Spacing Increment Vertical P1 : 1/720" = vertical increment P1 = 1 - 999
ESC [P1 ; P2 SP G	SPIVH	Spacing Increment Vertical and Horizontal P1 : 1/720" = vertical increment P1 = 0-999 P2 : 1/720" = horizontal increment P2 = 0-999
ESC [; P2 SP G	SPIH	Spacing Increment Horizontal P2 : 1/720" = horizontal increment P2 = 0-999

Table 5: Horizontal Form Handling

Escape Sequence	Mnemonic	Function
ESC [P1 `	HPA	Horizontal Position Absolute P1 : print position; P1 = 0-9999 Note: Character ` = 60 hex
ESC [P1 a	HPR	Horizontal Position Relative P1 : print position; P1 = 0-9999
ESC [P1 b	RPT	Repeat Character for graphics dot pattern P1 : number of repetitions; P1 = 1-999 Note: the last graphics byte before the RPT-Command will be repeated
ESC [P1 b	RPT	Repeat Character *, ., or ; P1 = number of repetitions; P1 = 1-999 Note: the last character before the RPT-Command will be repeated
ESC H	HTS	Set Horizontal Tab at current print position
ESC [P1 g	TBC	Tabulation Clear P1 = 0 : at active print pos. reset of tab and margin marker, at actual print position P1 = 3 : reset of all horizontal tabs and margin markers P1 = 4 : reset of all vertical tabs and margin markers
ESC [P1 ; P2 q	SLRM	Set Left and Right Margin P1 : left margin P2 : right margin
ESC ;	SLM	Set Left Margin at current print position
ESC 9	SRM	Set Right Margin at current print position

Table 5 (Cont.): Horizontal Form Handling

Escape Sequence	Mnemonic	Function																																																															
ESC [P1 SP F	JFY	Justify P1 = 0 justification or centring off, P1 = 2 justify text using word spacing P1 = 3 justify text using letter spacing P1 = 6 centre text between margins P1 = 7 flush to right margin																																																															
ESC [P1 ; P2 SP G	SPIVH	Spacing Increment Vertical and Horizontal P1 : 1/720" = vertical increment P1 = 0-999 P2 : 1/720" = horizontal increment P2 = 0-999																																																															
ESC [24 h	SM	Set Mode Unidirectional Printing Note: the operator panel setting UNI-DIRECT.CMD must be set to YES																																																															
ESC [24 /	RM	Reset Mode Unidirectional Printing																																																															
ESC [P1 y	SSS	Select Horizontal Step Size; P1 = 0 - 7																																																															
		<table border="1"> <thead> <tr> <th>P1</th> <th>10 cpi</th> <th>12 cpi</th> <th>15 cpi</th> <th>prop.</th> <th>14.4 cpi</th> <th>18 cpi</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>1/10</td> <td>1/12</td> <td>1/15</td> <td>prop.</td> <td>1/14.4</td> <td>1/18</td> </tr> <tr> <td>1</td> <td>1/10</td> <td>1/12</td> <td>1/15</td> <td>1/10</td> <td>1/14.4</td> <td>1/18</td> </tr> <tr> <td>2</td> <td>1/20</td> <td>1/24</td> <td>1/30</td> <td>1/30</td> <td>1/20</td> <td>1/20</td> </tr> <tr> <td>3</td> <td>1/30</td> <td>1/36</td> <td>1/45</td> <td>1/30</td> <td>1/30</td> <td>1/30</td> </tr> <tr> <td>4</td> <td>1/60</td> <td>1/72</td> <td>1/90</td> <td>1/60</td> <td>1/60</td> <td>1/60</td> </tr> <tr> <td>5</td> <td>1/120</td> <td>1/120</td> <td>1/120</td> <td>1/120</td> <td>1/120</td> <td>1/120</td> </tr> <tr> <td>6</td> <td>1/180</td> <td>1/180</td> <td>1/180</td> <td>1/180</td> <td>1/180</td> <td>1/180</td> </tr> <tr> <td>7</td> <td>1/360</td> <td>1/360</td> <td>1/360</td> <td>1/360</td> <td>1/360</td> <td>1/360</td> </tr> </tbody> </table>	P1	10 cpi	12 cpi	15 cpi	prop.	14.4 cpi	18 cpi	0	1/10	1/12	1/15	prop.	1/14.4	1/18	1	1/10	1/12	1/15	1/10	1/14.4	1/18	2	1/20	1/24	1/30	1/30	1/20	1/20	3	1/30	1/36	1/45	1/30	1/30	1/30	4	1/60	1/72	1/90	1/60	1/60	1/60	5	1/120	1/120	1/120	1/120	1/120	1/120	6	1/180	1/180	1/180	1/180	1/180	1/180	7	1/360	1/360	1/360	1/360	1/360	1/360
P1	10 cpi	12 cpi	15 cpi	prop.	14.4 cpi	18 cpi																																																											
0	1/10	1/12	1/15	prop.	1/14.4	1/18																																																											
1	1/10	1/12	1/15	1/10	1/14.4	1/18																																																											
2	1/20	1/24	1/30	1/30	1/20	1/20																																																											
3	1/30	1/36	1/45	1/30	1/30	1/30																																																											
4	1/60	1/72	1/90	1/60	1/60	1/60																																																											
5	1/120	1/120	1/120	1/120	1/120	1/120																																																											
6	1/180	1/180	1/180	1/180	1/180	1/180																																																											
7	1/360	1/360	1/360	1/360	1/360	1/360																																																											
		Note: the values in the table are in inches																																																															

Table 6: Font Selection, National Version and Code Table Handling

Escape Sequence	Mnemonic	Function
ESC [; P2 w	SCT	Set Code Table P2 = 3 digit code of the code table P2 = 0 1 1 : NV 1.0 P2 = 0 1 2 : NV 2.3 P2 = 0 1 3 : NV 2.5 P2 = 0 1 4 : NV 2.6 P2 = 0 1 5 : NV 2.8 P2 = 0 3 1 : ISO 8859/1; ECMA 94 P2 = 0 3 2 : ISO 8859/15 P2 = 0 6 1 : IBM Set 1 P2 = 0 6 2 : IBM Set 2 P2 = 0 6 3 : IBM Code Page ¹⁾ P2 = 0 7 1 : EPSON Ext. G. C. T

1) depending on selected character set (P1 in SNV or SNVCT) the IBM CODE PAGE 437, 850, 860, 863, 865, or 858 will be activated!

ESC [P1 ; P2 SP B	GSM	Graphic Size Modification P1 = 1 0 0 : normal height P1 = 2 0 0 : double height P1 = 3 0 0 : triple height P1 = 4 0 0 : quadruple height P1 = max. 800 in steps of 100 P2 = 1 0 0 : normal width P2 = 2 0 0 : double width P2 = 3 0 0 : triple width P2 = 4 0 0 : quadruple width P2 = max. 800 in steps of 100 Graphic Size Modification for DATA LARGE P1 = 100 : normal height P2 = 100 : normal width P1 and P2 max. 9 9 0 0 in steps of 100
--------------------	-----	--

Table 6 (Cont.): Font Selection, National Version and Code Table Handling

Escape Sequence	Mnemonic	Function
ESC [P1 ; P2 SP D	FNT	Font Selection P1 = 1: Data P1 = 2: Letter Gothic P1 = 3: Letter Gothic Italic P1 = 4: Courier P1 = 5: Micro P1 = 6: Orator P1 = 7: Orator-C P1 = 8: Roman P1 = 9: Prestige P1 = 10: Script P1 = 11: OCR A P1 = 12: OCR B P1 = 13: DATA BLOCK P1 = 14: DATA LARGE P2 = an 8 bit parameter specifying the font characteristics as follows: P2 = 0 0 1 1 1 0 1 1 1 : Data P2 = 0 1 2 1 1 0 1 1 1 : Letter Gothic P2 = 0 1 2 2 1 0 1 1 1 : Letter Gothic Italic P2 = 0 2 2 1 1 0 1 1 1 : Courier P2 = 0 3 2 1 1 0 1 1 1 : Micro P2 = 0 6 2 1 1 0 1 1 1 : Orator P2 = 1 3 2 1 1 0 1 1 1 : Orator-C P2 = 1 0 2 1 1 0 1 1 1 : Roman P2 = 1 1 2 1 1 0 1 1 1 : Prestige P2 = 1 2 2 1 1 0 1 1 1 : Script P2 = 7 0 2 1 1 0 1 1 1 : OCR A P2 = 7 1 2 1 1 0 1 1 1 : OCR B P2 = 6 0 3 1 5 4 1 1 1 : Data Block P2 = 0 7 1 1 0 0 1 1 1 : Data Large

Table 6 (Cont.): Font Selection, National Version and Code Table Handling

Escape Sequence	Mnemonic	Function
ESC [P1 ; P2 w	SNVCT	<p>Set National Version and Code Table</p> <p>P1 = 1 - 15 national version depending on selected character set (see Appendix C Character Set Tables)</p> <p>P1 for national version NV-2.5:</p> <p>P1 = 1 : Germany P1 = 2 : Great Britain P1 = 3 : France P1 = 4 : Spain P1 = 5 : Italy P1 = 6 : Sweden P1 = 7 : Denmark P1 = 8 : Portugal P1 = 9 : Sweden 2 P1 = 10 : USA P1 = 11 : Finland</p> <p>P2 = 3 digit code of the code table (see Appendix C Character Set Tables)</p> <p>P2 = 0 1 1 : NV-1.0 P2 = 0 1 2 : NV-2.3 P2 = 0 1 3 : NV-2.5 P2 = 0 1 4 : NV-2.6 P2 = 0 1 5 : NV-2.8 P2 = 0 3 1 : ISO 8859/1, ECMA-94 P2 = 0 3 2 : ISO 8859/15 P2 = 0 6 1 : IBM Set 1 P2 = 0 6 2 : IBM Set 2 P2 = 0 6 3 : IBM Code Page ¹⁾ P2 = 0 7 1 : EPSON EXT. GCT</p>

1) depending on selected character set (P1) the IBM CODE PAGE 437, 850, 860, 863, 865, or 858 (P1 = &; P2 = 63) will be activated!

ESC [P1 w	SNV	<p>Set National Version</p> <p>P1 = 1 - 15 national version depending on selected character set (see Appendix C Character Set Tables and SNVCT above)</p>
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Table 6 (Cont.): Font Selection, National Version and Code Table Handling

Escape Sequence	Mnemonic	Function
ESC [P1 ; P2 x	CPL	<p>Select Font (P1) and Character Pitch (P2)</p> <p>P1 = 1: Data P1 = 2: Letter Gothic P1 = 3: Letter Gothic Italic P1 = 4: Courier P1 = 5: Micro P1 = 6: Orator P1 = 7: Orator-C P1 = 8: Roman P1 = 9: Prestige P1 = 10: Script P1 = 11: OCR A P1 = 12: OCR B P1 = 13: DATA BLOCK P1 = 14: DATA LARGE</p> <p>P2 = 1: 10 cpi P2 = 2: 12 cpi P2 = 3: 15 cpi P2 = 4: proportional P2 = 5: proportional P2 = 6: 14,4 cpi P2 = 7: 18 cpi P2 = 8: 17 cpi P2 = 9: 20 cpi</p>

Table 6 (Cont.): Font Selection, National Version and Code Table Handling

Escape Sequence	Mnemonic	Function
ESC [P1 m	SGR	Set Graphic Rendition P1 = 0: default - no rendition or rendition reset P1 = 1: bold P1 = 3: italics P1 = 4: underline P1 = 9: crossed out or strike through P1 = 2 0: double width P1 = 2 1: double underline P1 = 2 2: bold reset P1 = 2 3: italics reset P1 = 2 4: underline reset P1 = 2 9: crossed out reset P1 = 3 0: black *) P1 = 3 1: orange *) P1 = 3 2: green *) P1 = 3 3: yellow *) P1 = 3 4: purple *) P1 = 3 5: magenta (red) *) P1 = 3 6: cyan (blue) *) P1 = 5 3: over-lined P1 = 5 5: over-lined reset
ESC [P1 SP X	SPQ	Select Print Quality P1 = 0: LQ P1 = 1: NLQ

*) only **PRINTER TYPE 1**

Table 7: Graphics Modes

Escape Sequence	Mnemonic	Function
ESC * P1 P2 P3 v1 . . . vn		Select Various Graphics Modes P2 + P3 * 256 = number of columns (P2,P3 = 0/0...F/F) v1 .. vn = binary data in hex code
<i>Parameter Table Graphic Density:</i>		
P1	Graphic type	dots per column max. of columns (dpi) hor. density vert. density no AGM vert. density AGM
0/0	Standard Density (K)	8 816 60 72 60
0/1	Double Density (L)	8 1632 120 72 60
0/2	2xDensity / 2xSpeed (Y)	8 1632 120 72 60 *)
0/3	Quadruple Density (Z)	8 3264 240 72 60 *)
0/4	CRT I	8 1088 80 72 60
0/5	Plotter	8 979 72 72 60
0/6	CRT II	8 1224 90 72 60
0/B	Double Density Plotter	8 1958 144 72 60 *)
2/0	Standard Density	24 816 60 180 180
2/1	Double Density	24 1632 120 180 180
2/6	CRT III	24 1224 90 180 180
2/7	Triple Density	24 2448 180 180 180
2/8	Hex Density	24 4896 360 180 180 *)

*) *consecutive horizontal dots cannot be printed.*

Example: box 8x8 dots with center point 2x2 dots, standard density, 8 dots / column
 hex: 1B 2A 00 08 00 FF 81 81 99 99 81 81 FF

Table 7 (Cont.): Graphics Modes

Escape Sequence	Mnemonic	Function
ESC [P1 h	SM	Set Mode Dot Graphics P1 = graphics resolution P1 = 2 5: 72x60 dpi dot format (VxH) P1 = 2 6: 72x72 dpi dot format (VxH) P1 = 2 7: 144x120 dpi dot format (VxH) P1 = 2 8: 144x144 dpi dot format (VxH)
ESC [P1 /	RM	Reset Mode Dot Graphics P1 = graphics resolution P1 = 2 5: 72x60 dpi dot format (VxH) P1 = 2 6: 72x72 dpi dot format (VxH) P1 = 2 7: 144x120 dpi dot format (VxH) P1 = 2 8: 144x144 dpi dot format (VxH)

Table 8: Barcode Printing (for detail information see Appendix G)

Escape Sequence	Mnemonic	Function
ESC [; P2 ; P3 ; P4 ; P5 ; P6 ; P7 SP z		
	BH	Barcode Header P2 : Barcode typ P3 : Height of barcode P4 : Width of the thin bars P5 : Width of the thin gaps P6 : Ratio width to thin P7 : Uni-directional or bidirectional printing P7 = 0 : or not programmed: means no changes P7 = 1 : uni-directional printing in LQ P7 = 2 : bi-directional printing in LQ P7 = 3 : uni-directional printing in NLQ P7 = 4 : bi-directional printing in NLQ
	Note:	A switch from uni-directional to bi-directional printing is only possible if the parameter UNI-DIRECT.CMD is set to YES via operator panel or ESC-sequence.
ESC [? 0 h	SMBC	Set Mode Barcode
ESC [? 0 /	RMBC	Reset Mode Barcode

GP - Emulation classified by Hex Code

Hex Code	Mnemonic	Page
00	Null	D-3
08	Backspace	D-3
09	Horizontal Tab	D-3
0A	Line Feed	D-3
0B	Vertical Tab	D-3
0C	Form Feed	D-3
0D	Carriage Return	D-3
0E	Shift Out	D-3
0F	Shift In	D-3
1A	Substitute	D-3
1B	Escape	D-3
20	Space	D-3
7F	Delete	D-3
1B 39	Set Right Margin at Current	D-9
1B 3B	Set Left Margin at Current	D-9
1B 3D	Load Top Of Form	D-5
1B 3E	Stop OFF-Line Test	D-4
76 3F	Start OFF-Line Test	D-4
1B 48	Set Horizontal Tab at Current	D-9
1B 4A	Set Vertical Tab at Current	D-5
1B 4B	Subscript	D-5
1B 4C	Superscript	D-5
1B 4D	Reverse Line Feed	D-5

Hex Code	Mnemonic	Page
1B 63	Reset to Initial State	D-4
24 24	Control String Introducer for ESC [	D-4
24 24 2F	Control String Introducer for ESC	D-4
1B 2A P ₁ P ₂ P ₃ data	Select Various Graphic Modes	D-16
1B 50 P ₁ 3B P ₂ 3B P ₃ 1B 5C	Device Status Report Response	D-4
1B 5B 35 6E	Device Status Report Poll	D-4
1B 5B 3B P ₂ 20 47	Spacing Increment Horizontal	D-8
1B 5B 3B P ₂ 73	AGC/PCC Procedure	D-5
1B 5B 3B P ₂ 77	Set Code Table	D-11
1B 5B 3B P ₂ 3B P ₃ 3B P ₄ 3B P ₅ 3B P ₆ 3B P ₇ 20 7A	Barcode Header	D-18
1B 5B 3C 73	Eject Form	D-5
1B 5B 3E 73	Insert Form	D-6
1B 5B 3E P ₁ 3B P ₂ 3B P ₃ 3B P ₄ 73	Select Paper Source and Insert Form	D-6
1B 5B 3F 30 68	Set Mode Barcode	D-18
1B 5B 3F 30 6C	Reset Mode Barcode	D-18
1B 5B P ₁ 20 46	Justify	D-10
1B 5B P ₁ 20 47	Spacing Increment Vertical	D-8
1B 5B P ₁ 20 58	Select Print Quality	D-15
1B 5B P ₁ 3B P ₂ 20 72	Select Makro and Change Emulation	D-4
1B 5B P ₁ 3B P ₂ 20 42	Graphic Size Modification	D-11
1B 5B P ₁ 3B P ₂ 20 47	Spacing Increment Vert. and Horiz.	D-8
1B 5B P ₁ 3B P ₂ 71	Set Left and Right Margin	D-9
1B 5B P ₁ 3B P ₂ 72	Set Top and Bottom Margin	D-7
1B 5B P ₁ 3B P ₂ 77	Set National version and Code Table	D-13

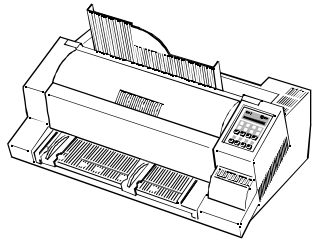
Hex Code	Mnemonic	Page
1B 5B P ₁ 3B P ₂ 78	Select Font and Character Pitch	D-14
1B 5B P ₁ 60	Horizontal Position Absolute	D-9
1B 5B P ₁ 61	Horizontal Position Relative	D-9
1B 5B P ₁ 62	Repeat Character	D-9
1B 5B P ₁ 64	Vertical Position Absolute	D-7
1B 5B P ₁ 65	Vertical Position Relative	D-7
1B 5B P ₁ 67	Tabulation Clear	D-9
1B 5B 32 34 68	Set Mode Unidirectional Printing	D-10
1B 5B P ₁ 68	Set Mode Select Paper Source	D-10
1B 5B P ₁ 68	Set Mode Select Dot Graphics	D-17
1B 5B 32 34 6C	Reset Mode Unidirectional Printing	D-10
1B 5B P ₁ 6C	Reset Mode Select Paper Source	D-10
1B 5B P ₁ 6C	Reset Mode Dot Graphics	D-17
1B 5B P ₁ 6D	Set Graphic Rendition	D-15
1B 5B P ₁ 73	Select Paper Source	D-7
1B 5B P ₁ 76	Select Page Length	D-7
1B 5B P ₁ 77	Set National Version and Code Table	D-13
1B 5B P ₁ 79	Select Horizontal Step Size	D-10
1B 5B P ₁ 7B	Line Space Load	D-8
1B 5B P ₁ 3B P ₂ 20 44	Font Selection	D-12

Hex - Decimal Conversion Table

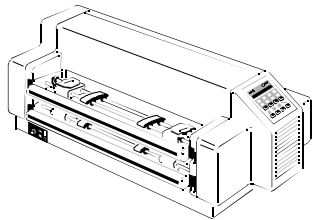
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	0	16	32	48	64	80	96	112	128	144	160	176	192	208	224	240
1	1	17	33	49	65	81	97	113	129	145	161	177	193	209	225	241
2	2	18	34	50	66	82	98	114	130	146	162	178	194	210	226	242
3	3	19	35	51	67	83	99	115	131	147	163	179	195	211	227	243
4	4	20	36	52	68	84	100	116	132	148	164	180	196	212	228	244
5	5	21	37	53	69	85	101	117	133	149	165	181	197	213	229	245
6	6	22	38	54	70	86	102	118	134	150	166	182	198	214	230	246
7	7	23	39	55	71	87	103	119	135	151	167	183	199	215	231	247
8	8	24	40	56	72	88	104	120	136	152	168	184	200	216	232	248
9	9	25	41	57	73	89	105	121	137	153	169	185	201	217	233	249
A	10	26	42	58	74	90	106	122	138	154	170	186	202	218	234	250
B	11	27	43	59	75	91	107	123	139	155	171	187	203	219	235	251
C	12	28	44	60	76	92	108	124	140	156	172	188	204	220	236	252
D	13	29	45	61	77	93	109	125	141	157	173	189	205	221	237	253
E	14	30	46	62	78	94	110	126	142	158	174	190	206	222	238	254
F	15	31	47	63	79	95	111	127	143	159	175	191	207	223	239	255

Appendix E IBM ProPrinter Quick Reference

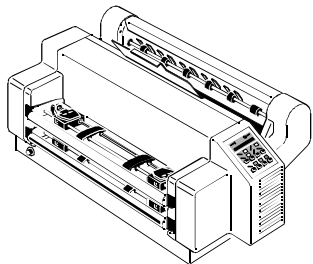
This appendix contains basic information on the IBM ProPrinter 4207, 4208 XL 24 Emulation commands supported in three Printer types:



PRINTER TYPE 1



PRINTER TYPE 2



PRINTER TYPE 3

Some commands or parameters may be different for a specific **PRINTER TYPE**. In those cases it will be indicated to which **PRINTER TYPE** a command or parameter applies.

Characters used in control functions appear in monospaced type. Table 1 explains some of the conventions used.

A pair of numbers separated by a slash (/) character indicates Column/Row notation. This notation refers to the location of a character in a standard code table, such as ASCII. (example: 1/B = 1B is the hex-code for Escape)

Spaces appear between characters in sequence for clarity; they are not part of the format.

At the end of this chapter you will find a listing of the IBM ProPrinter Emulation commands classified by Hex Code and a Hex - Decimal conversion table.

The following conventions are used in the command listings:

Table 1 Conventions

ESC	Escape (1/B), introduces an escape sequence
Pn	Numeric parameter, or number of units that specify a distance or quantity pertaining to the escape sequence, control function or control string. Accepted values are 0...9999, may be preceded by + or -. If the parameter is in normal notation like "200" the programming in hex-code is according to a ASCII table. ("200" = 32,30,30 in hex). If the parameter must be programmed in hex-code the notation is with a slash. (1/A = 1A in hex-code)
v1...vn	A series of parameters pertaining to the escape sequence, control function or control string.
SP	Is standing for Space (hex 20)

Table 2: Control Codes

Column/Row	Mnemonic	Function
0/0	NUL	Null
0/8	BS	Backspace
0/9	HT	Horizontal Tab
0/A	LF	Line Feed
0/B	VT	Vertical Tab
0/C	FF	Form Feed
0/D	CR	Carriage Return
0/E	SO	Double Width Printing By Line
0/F	SI	Condensed Printing (17.1 cpi)
1/1	DC1	Select Printer
1/2	DC2	Select Pica (10 cpi)
1/3	DC3	Buffer Data Flow Control
1/4	DC4	Cancel Double Width Printing By Line
1/8	CAN	Cancel Buffer
1/B	ESC	Initiate Escape Sequence
2/0	SP	Space
7/F	DEL	Delete
1/B 6/A	ESC j	Set Printer Off Line
1/B 5/1 2/3	ESC Q	Deselect Printer
1/B 5/1 2/4	ESC Q	Deselect Printer

Table 3: Vertical Form Handling

Escape Sequence	Mnemonic	Function
ESC 0		Set Line Space to $\frac{1}{8}$ "
ESC 1		Set Line Space to $\frac{7}{72}$ "
ESC 2		Start Variable Line Space
ESC 4		Set Top of Form
ESC 5 P1		Automatic Line Feed ON/OFF P1 = 1 or 0/1: select CR + LF P1 = 0 or 0/0: no LF
ESC A P1		Set Line Space to $P1 \frac{1}{72}$ " ($P1 \frac{1}{60}$ ") P1 = $P1 \frac{1}{72}$ " lpi (non AGM) P1 = $P1 \frac{1}{60}$ " lpi (AGM) (P1 = 0/1...5/5) Note: Default = $\frac{12}{72}$ " or 6 lpi
ESC B NUL		Clear all Vertical Tabs
ESC B P1 P2 . . . P64 NUL		Set Vertical Tabs (Pn = 0/1...F/F)
ESC C P1		Set Form Length in Lines (P1 = 0/1...7/F)
ESC C NUL P1		Set Form Length in Inch (P1 = 0/1...1/6)
ESC N P1		Set Automatic Perforation Skip P1: is the number of lines from bottom of paper to skip. (P1 = 0/0...F/F)
ESC O		Cancel Automatic Perforation Skip
ESC [\ EOT NUL NUL NUL P1 NUL		Set Line Space Unit EOT = 0/4 P1 = B/4 : select 1/180" P1 = D/8 : select 1/216" P1 = 0/0 : setting remains unchanged

Table 3 (Cont.): Vertical Form Handling

Escape Sequence	Mnemonic	Function
ESC]		Reverse Line Feed
ESC] > s <i>Native Command</i>	IF	Insert Form
ESC [> P1 ; P2 ; P3 ; P4 s <i>Native Command</i>	SPSIF	Select Paper Source and Insert Form, Print Gap, Paper Exit, Cut-Mode (any parameter > or P may be skipped, see following alternative command sequences); > = Insert Form
ESC [P1 s <i>Native Command</i>	SPS	Paper Source: P1 = 0 : Manual Feed **) P1 = 1 : ASF, Bin 1 *) P1 = 2 : ASF, Bin 2 *) P1 = 3 : ASF, Bin 3 *) P1 = 6 : upper Tractor ***) P1 = 7 : Tractor Feed (lower Tractor) P1 = 8 : ASF, Bins 1 or 2 *) P1 = 9 : ASF, Bins 2 or 3 *) P1 = 10 : ASF, Bins 1 or 2 or 3 *) P1 = 15 : upper and lower tractor ***)
ESC [; P2 s <i>Native Command</i>	AGC/PCC	Procedure: P2 = 0 : Automatic Gap Control P2 = 1 : Print Gap for 1-ply copy P2 = 2 : Print Gap for 2-ply copies P2 = 3 : Print Gap for 3-ply copies P2 = 4 : Print Gap for 4-ply copies P2 = 5 : Print Gap for 5-ply copies P2 = 6 : Print Gap for 6-ply copies

) only **PRINTER TYPE 1 and **PRINTER TYPE 2***) only **PRINTER TYPE 1*****) only **PRINTER TYPE 2** and **PRINTER TYPE 3**

Table 3 (Cont.): Vertical Form Handling

Escape Sequence	Mnemonic	Function
ESC [; ; P3 s <i>Native Command</i>		Paper Exit: P3 = 0 : Paper Exit Stacker ***) P3 = 1 : Paper Exit Front Side *) (confirmed by Start/Stop key) P3 = 2 : Paper Exit Front Side *) (not confirmed by Start/Stop key, controlled by application) P3 = 3 : Batch output; rear side
ESC [; ; ; P4 s <i>Native Command</i>		Cut Mode On/Off: ****) P4 = 0 : Cut Mode Off P4 = 1 : Cut Mode On P4 = 2 : Cut on actual position (cutting edge is approximate 4 mm above the base of the actual line)

) only **PRINTER TYPE 1** and **PRINTER TYPE 3) only **PRINTER TYPE 1******) only **PRINTER TYPE 3**

Table 4: Horizontal Form Handling and Printing Modes

Escape Sequence	Function
ESC :	Select Elite (12 cpi)
ESC - P1	Cancel / Select Underline P1 = 0/0 cancel Underline Printing P1 = 0/1 set Underline Printing
ESC _ P1	Cancel / Select Overline Printing P1 = 0/0 cancel Overline Printing P1 = 0/1 set Overline Printing
ESC [@ EOT NUL NUL NUL P1 P2	Double, Multiple -Width/ - Height Mode P1 controls line spacing (e.g. 0/x) and character height (e.g. x/0) P2 controls character width P1 = 0/x line spacing unchanged P1 = 1/x single line space P1 = 2/x double line space P1 = 3/x triple line space P1 = 4/x quadruple line space P1 = x/0 character height unchanged P1 = x/1 single character height P1 = x/2 double character height P1 = x/3 triple character height P1 = x/4 quadruple character height P2 = 0/0 character width unchanged P2 = 0/1 single character width P2 = 0/2 double character width P2 = 0/3 triple character width P2 = 0/4 quadruple character width
<i>Example:</i>	Coding to select "double line space", "double character height", and "double character width" in Hex: 1B 5B 40 04 00 00 00 22 02
ESC D NUL	Clear all Horizontal Tabs
ESC D P1 P2 ... P32 NUL	Set Horizontal Tabs (P1...P32 = 0/1...F/F)

Table 4 (Cont.): Horizontal Form Handling and Printing Modes

Escape Sequence	Function
ESC E	Select Emphasized Printing (bold)
ESC F	Cancel Emphasized Printing (bold)
ESC G	Select Double Strike Printing (bold)
ESC H	Cancel Double Strike Printing
ESC I P1	Select Character Mode P1 = 0/0 : Draft, 10 cpi P1 = 0/1 : Draft, Proportional P1 = 0/2 : Courier, 10 cpi P1 = 0/3 : Courier, Proportional P1 = 0/8 : Draft, 12 cpi P1 = 0/A : Courier, 12 cpi P1 = 1/0 : Draft, 17 cpi P1 = 1/2 : Courier, 17 cpi
ESC P P1	Cancel / Select Proportional Printing P1 = 0/0 or 0 : cancel Proportional P1 = 0/1 or 1 : select Proportional
ESC R	Restore Horizontal Tabs to Default
ESC S P1	Select Superscript/Subscript P1 = 0/0 or 0 : select Superscript P1 = 0/1 or 1 : select Subscript
ESC T	Cancel Superscript/Subscript
ESC U P1	Cancel / Select Unidirectional Printing P1 = 0/0 or 0 : cancel Unidirectional P1 = 0/1 or 1 : select Unidirectional

Table 4 (Cont.): Horizontal Form Handling and Printing Modes

Escape Sequence	Mnemonic	Function
ESC W P1		Cancel / Select Double Width P1 = 0/0 or 0 : cancel Double Width P1 = 0/1 or 1 : select Double Width
ESC X P1 P2		Set Left and Right Margins P1 : Left Margin P2 : Right Margin (Pn = 0/0...F/F)
ESC d P1 P2		Set Relative Horizontal Dot Position (P1 + P2 x 256)/120" (Pn = 0/0...F/F)
ESC <		Home Position of Printhead (left margin)
ESC ;		Set Left Margin at Current Position
ESC [P1 SP r <i>Native Command</i>	SPQ	Select Print Quality LQ / NLQ P1 = 0 : LQ P1 = 1 : NLQ

Table 4 (Cont.): Horizontal Form Handling and Printing Modes

Escape Sequence	Mnemonic	Function
ESC [P1 ; P2 x <i>Native Command</i>	CPL	Select Font and Character Pitch (parameter P1 or P2 may be skipped, see following alternative command sequences)
ESC [P1 x <i>possible format of Native Command CPL</i>		P1 selects the font P1 = 0 or missing : Font is unchanged P1 = 1 : Data P1 = 2 : Letter Gothic P1 = 3 : Letter Gothic Italic P1 = 4 : Courier P1 = 5 : Micro P1 = 6 : Orator P1 = 7 : Orator-C P1 = 8 : Roman P1 = 9 : Prestige P1 = 10 : Script P1 = 11 : OCR A P1 = 12 : OCR B P1 = 13 : Data Block P1 = 14 : Data Large
ESC [; P2 x <i>possible format of Native Command CPL</i>		P2 selects the character pitch P2 = 0 or missing : Pitch is unchanged P2 = 1 : 10 cpi P2 = 2 : 12 cpi P2 = 3 : 15 cpi P2 = 4 : (proportional) P2 = 5 : proportional P2 = 6 : 14.4 cpi P2 = 7 : 18 cpi P2 = 8 : 17 cpi P2 = 9 : 20 cpi

Table 5: Character Set Selection

Escape Sequence	Mnemonic	Function
ESC 6		Select Character Set 2
ESC 7		Select Character Set 1
ESC \ P1 P2		Print from All Character Set Number of codes = (P1 + P2 * 256) (Pn = 0/0...F/F)
ESC ^ P1		Print Single Character from All Character Set P1 = Number of Char. Set or Code Page (Pn = 0/0...F/F)
ESC [T n1 n2 NUL NUL P1 P2		Code Page Switching n1 = 4, n2 = 0 P1 P2 for Code-Page number, most significant byte first. P1 P2 1 181 : CP 437 U.S.A. 3 82 : CP 850 Multilingual 3 90 : CP 858 Multilingual + Euro 3 92 : CP 860 Portugal 3 95 : CP 863 French 3 97 : CP 865 Norway

Table 6: Graphics Modes

Escape Sequence	Mnemonic	Function
ESC 3 P1		Set Line Space to $P1/_{216}$ " ($P1/_{180}$ ") $P1/_{216}$ lpi (non AGM), $P1/_{180}$ lpi (AGM) (P1 = 0/1...F/F)
ESC J P1		Perform $P1/_{216}$ " ($P1/_{180}$ ") Line Feed $P1/_{216}$ lpi (non AGM), $P1/_{180}$ lpi (AGM) (P1 = 0/0...F/F)
ESC K P1 P2 v1 . . . vn		Standard Density Graphics Mode (P1 + P2 * 256) = number of data (Pn = 0/0...F/F)
ESC L P1 P2 v1 . . . vn		Double Density Graphics Mode (P1 + P2 * 256) = number of data (Pn = 0/0...F/F)
ESC Y P1 P2 v1 . . . vn		Double Speed & Density Graphics Mode (P1 + P2 * 256) = number of data (Pn = 0/0...F/F)
ESC Z P1 P2 v1 . . . vn		Quadruple Density Graphics Mode (P1 + P2 * 256) = number of data (Pn = 0/0...F/F)

Table 6 (Cont.): Graphics Modes

Escape Sequence	Mnemonic	Function																																																														
ESC [g P1 P2 P3 v1 . . . vn		Select Various Graphics Modes (IBM) $P1 + P2 * 256 = \text{number of data bytes} + 1$ (P1,P2 = 0/0...F/F) v1 .. vn = binary data in hex code																																																														
<i>Parameter Table Graphic Density:</i>																																																																
P3	Graphic type	<table border="1"> <thead> <tr> <th>dots per column</th> <th>max. of columns</th> <th>hor. density (dpi)</th> <th>vert. density no AGM</th> <th>vert. density AGM</th> <th></th> </tr> </thead> <tbody> <tr> <td>0/0</td> <td>Standard Density (K)</td> <td>8</td> <td>816</td> <td>60</td> <td>72</td> <td>60</td> </tr> <tr> <td>0/1</td> <td>Double Density (L)</td> <td>8</td> <td>1632</td> <td>120</td> <td>72</td> <td>60</td> </tr> <tr> <td>0/2</td> <td>2xDensity / 2xSpeed (Y)</td> <td>8</td> <td>1632</td> <td>120</td> <td>72</td> <td>60 *)</td> </tr> <tr> <td>0/3</td> <td>Quadruple Density (Z)</td> <td>8</td> <td>3264</td> <td>240</td> <td>72</td> <td>60 *)</td> </tr> <tr> <td>0/8</td> <td>Standard Density</td> <td>24</td> <td>816</td> <td>60</td> <td>180</td> <td>180</td> </tr> <tr> <td>0/9</td> <td>Double Density</td> <td>24</td> <td>1632</td> <td>120</td> <td>180</td> <td>180</td> </tr> <tr> <td>0/B</td> <td>Triple Density</td> <td>24</td> <td>2448</td> <td>180</td> <td>180</td> <td>180</td> </tr> <tr> <td>0/C</td> <td>Hex Density</td> <td>24</td> <td>4896</td> <td>360</td> <td>180</td> <td>180 *)</td> </tr> </tbody> </table>	dots per column	max. of columns	hor. density (dpi)	vert. density no AGM	vert. density AGM		0/0	Standard Density (K)	8	816	60	72	60	0/1	Double Density (L)	8	1632	120	72	60	0/2	2xDensity / 2xSpeed (Y)	8	1632	120	72	60 *)	0/3	Quadruple Density (Z)	8	3264	240	72	60 *)	0/8	Standard Density	24	816	60	180	180	0/9	Double Density	24	1632	120	180	180	0/B	Triple Density	24	2448	180	180	180	0/C	Hex Density	24	4896	360	180	180 *)
dots per column	max. of columns	hor. density (dpi)	vert. density no AGM	vert. density AGM																																																												
0/0	Standard Density (K)	8	816	60	72	60																																																										
0/1	Double Density (L)	8	1632	120	72	60																																																										
0/2	2xDensity / 2xSpeed (Y)	8	1632	120	72	60 *)																																																										
0/3	Quadruple Density (Z)	8	3264	240	72	60 *)																																																										
0/8	Standard Density	24	816	60	180	180																																																										
0/9	Double Density	24	1632	120	180	180																																																										
0/B	Triple Density	24	2448	180	180	180																																																										
0/C	Hex Density	24	4896	360	180	180 *)																																																										
*) consecutive horizontal dots cannot be printed.																																																																
Example: box 8x8 dots with center point 2x2 dots, standard density, 8 dots / column hex: 1B 5B 67 09 00 00 FF 81 81 99 99 81 81 FF																																																																

Table 7: Further Control Sequences, supported by IBM Emulation Mode (Native Commands)

Escape Sequence	Mnemonic	Function																																																																																																	
ESC [\$\$	Control String Introducer (CSI) for 'ESC ['																																																																																																	
ESC	\$\$/	Control String Introducer (CSI) for 'ESC'																																																																																																	
ESC * P1 P2 P3 v1 . . . vn		Select Various Graphics Modes $P2 + P3 * 256 = \text{number of columns}$ (P2,P3 = 0/0...F/F) v1 .. vn = binary data in hex code																																																																																																	
<i>Parameter Table Graphic Density:</i>																																																																																																			
P1	Graphic type	<table border="1"> <thead> <tr> <th>dots per column</th> <th>max. of columns</th> <th>hor. density (dpi)</th> <th>vert. density no AGM</th> <th>vert. density AGM</th> <th></th> </tr> </thead> <tbody> <tr> <td>0/0</td> <td>Standard Density (K)</td> <td>8</td> <td>816</td> <td>60</td> <td>72</td> <td>60</td> </tr> <tr> <td>0/1</td> <td>Double Density (L)</td> <td>8</td> <td>1632</td> <td>120</td> <td>72</td> <td>60</td> </tr> <tr> <td>0/2</td> <td>2xDensity / 2xSpeed (Y)</td> <td>8</td> <td>1632</td> <td>120</td> <td>72</td> <td>60 *)</td> </tr> <tr> <td>0/3</td> <td>Quadruple Density (Z)</td> <td>8</td> <td>3264</td> <td>240</td> <td>72</td> <td>60 *)</td> </tr> <tr> <td>0/4</td> <td>CRT I</td> <td>8</td> <td>1088</td> <td>80</td> <td>72</td> <td>60</td> </tr> <tr> <td>0/5</td> <td>Plotter</td> <td>8</td> <td>979</td> <td>72</td> <td>72</td> <td></td> </tr> <tr> <td>0/6</td> <td>CRT II</td> <td>8</td> <td>1224</td> <td>90</td> <td>72</td> <td>60</td> </tr> <tr> <td>0/B</td> <td>Double Density Plotter</td> <td>8</td> <td>1958</td> <td>144</td> <td>72</td> <td>60 *)</td> </tr> <tr> <td>2/0</td> <td>Standard Density</td> <td>24</td> <td>816</td> <td>60</td> <td>180</td> <td>180</td> </tr> <tr> <td>2/1</td> <td>Double Density</td> <td>24</td> <td>1632</td> <td>120</td> <td>180</td> <td>180</td> </tr> <tr> <td>2/6</td> <td>CRT III</td> <td>24</td> <td>1224</td> <td>90</td> <td>180</td> <td>180</td> </tr> <tr> <td>2/7</td> <td>Triple Density</td> <td>24</td> <td>2448</td> <td>180</td> <td>180</td> <td>180</td> </tr> <tr> <td>2/8</td> <td>Hex Density</td> <td>24</td> <td>4896</td> <td>360</td> <td>180</td> <td>180 *)</td> </tr> </tbody> </table>	dots per column	max. of columns	hor. density (dpi)	vert. density no AGM	vert. density AGM		0/0	Standard Density (K)	8	816	60	72	60	0/1	Double Density (L)	8	1632	120	72	60	0/2	2xDensity / 2xSpeed (Y)	8	1632	120	72	60 *)	0/3	Quadruple Density (Z)	8	3264	240	72	60 *)	0/4	CRT I	8	1088	80	72	60	0/5	Plotter	8	979	72	72		0/6	CRT II	8	1224	90	72	60	0/B	Double Density Plotter	8	1958	144	72	60 *)	2/0	Standard Density	24	816	60	180	180	2/1	Double Density	24	1632	120	180	180	2/6	CRT III	24	1224	90	180	180	2/7	Triple Density	24	2448	180	180	180	2/8	Hex Density	24	4896	360	180	180 *)
dots per column	max. of columns	hor. density (dpi)	vert. density no AGM	vert. density AGM																																																																																															
0/0	Standard Density (K)	8	816	60	72	60																																																																																													
0/1	Double Density (L)	8	1632	120	72	60																																																																																													
0/2	2xDensity / 2xSpeed (Y)	8	1632	120	72	60 *)																																																																																													
0/3	Quadruple Density (Z)	8	3264	240	72	60 *)																																																																																													
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**Table 7 (Cont.): Further Control Sequences, supported by
IBM Emulation Mode (Native Commands)**

Escape Sequence	Mnemonic	Function
ESC [P1 ; P2 w	SNVCT	Set National Version and Code Table P1 = 1 - 15 national version depending on selected character set (see Appendix C Char. Set Tables) P2 = 3 digit code of the code table (see command SCT) P1 for national version IBM SET 2: P1 = 1 : U.S.A P1 = 2 : France P1 = 3 : Germany P1 = 4 : U.K. P1 = 5 : Denmark P1 = 6 : Sweden P1 = 7 : Italy P1 = 8 : Spain P1 = 9 : Japan P1 = 1 0 : Norway P1 = 1 1 : Denmark 2 P1 = 1 2 : Spain 2 P1 = 1 3 : Latin AM P1 = 1 4 : Turkey P1 for IBM CODE PAGE: P1 = 1 : Page 437 P1 = 2 : Page 850 P1 = 3 : Page 860 P1 = 4 : Page 863 P1 = 5 : Page 865 P1 = 6 : Page 858
ESC [; P2 w	SCT	Set Code Table P2 = 3 digit code of the code table P2 = 0 3 1 : ISO 8859/1; ECMA 94 P2 = 0 3 2 : ISO 8859/15 P2 = 0 6 1 : IBM Set 1 P2 = 0 6 2 : IBM Set 2 P2 = 0 6 3 : IBM Code Page ¹⁾ P2 = 0 7 1 : EPSON Ext. G. C. T

1) depending on selected character set (P1) the IBM CODE PAGE 437, 850, 860, 863, 865, or 858 will be activated!

**Table 7 (Cont.): Further Control Sequences, supported by
IBM Emulation Mode (Native Commands)**

Escape Sequence	Mnemonic	Function
ESC [P1 ; P2 SP r	SM #	Select Macro and Change Emulation P1 = 1: Macro 1 P1 = 2: Macro 2 P1 = 3: Macro 3 P1 = 4: Macro 4 P2 = 0: no change of emulation P2 = 1: GP Emulation P2 = 2: IBM ProPrinter Emulation P2 = 3: IBM ProPrinter AGM Emulation P2 = 4: EPSON Emulation
ESC M	RLF	Reverse Line Feed
ESC [< s	EJF	Eject Form
ESC [P1 ; P2 SP B	GSM	Graphic Size Modification P1 = 100 : normal height P1 = 200 : double height P1 = 300 : triple height P1 = 400 : quadruple height P1 = max. 800 in steps of 100 P2 = 100 : normal width P2 = 200 : double width P2 = 300 : triple width P2 = 400 : quadruple width P2 = max. 800 in steps of 100 Graphic Size Modification for DATA LARGE P1 = 100 : normal height P2 = 100 : normal width P1 and P2 max. 9 9 0 0 in steps of 100
ESC [P1 `	HPA	Set Horizontal Position Absolute P1 = print column (P1 = 0...9999)

**Table 7 (Cont.): Further Control Sequences, supported by
IBM Emulation Mode (Native Commands)**

Escape Sequence	Mnemonic	Function
ESC [P1 a	HPR	Set Horizontal Position Relative P1 = print column (P1 = 0...9999)
ESC [P1 b	RPT	Repeat Character P1 = number of repetitions (P1 = 1...999)
ESC [P1 d	VPA	Set Vertical Position Absolute P1 = 0 or 1: Top of Form / Top Margin P1 = 2... 9999: Vertical Line
ESC [P1 e	VPR	Set Vertical Position Relative P1 = 0 or 1: moves the position one line P1 = 2... 9999: Vertical Line
ESC [P1 g	TBC	Tabulation Clear P1 = 0: at active print pos. all tabs and margin marker, P1 = 3: all horizontal-, P1 = 4: all vertical tabs and margin marker
ESC [P1 w	SNV	Set National Version P1 = 1 - 14 national version depending on selected character set (see SNVCT and Appendix C Character Set Tables)
ESC [P1 {	LSL	Line Space Load P1 = 1, 2, 3, 4, 6, 8, 12, 16, 24, 48, 60, 72, 90, 144, 180, 360

**Table 7 (Cont.): Further Control Sequences, supported by
IBM Emulation Mode (Native Commands)**

Escape Sequence	Mnemonic	Function
ESC [P1 m	SGR	Set Graphic Rendition P1 = 0: default - no rendition or rendition reset P1 = 1: bold P1 = 3: italics P1 = 4: underline P1 = 9: crossed out or strike through printing P1 = 20: enlarged double width printing P1 = 21: double underline P1 = 22: bold reset P1 = 23: italics reset P1 = 24: underline reset P1 = 29: crossed out reset P1 = 30: black *) P1 = 31: orange *) P1 = 32: green *) P1 = 33: yellow *) P1 = 34: purple *) P1 = 35: magenta (red) *) P1 = 36: cyan (blue) *) P1 = 53: over lined P1 = 55: over lined reset

*) only **PRINTER TYPE 1**

**Table 7 (Cont.): Further Control Sequences, supported by
IBM Emulation Mode (Native Commands)**

Escape Sequence	Mnemonic	Function
ESC [; P2 ; P3 ; P4 ; P5 ; P6 ; P7 SP z see Appendix G BARCODE Programming	BH	Barcode Header P2: Barcode typ P3: Height of barcode P4: Width of the thin bars P5: Width of the thin gaps P6: Ratio width to thin P7: Uni-directional or bi-directional printing 0: or not programmed: means no changes 1: uni-directional printing in LQ 2: bi-directional printing in LQ 3: uni-directional printing in NLQ 4: bi-directional printing in NLQ
	Note:	A switch from uni-directional to bi-directional printing is only possible if the parameter UNI-DIRECT.CMD is set to YES via operator panel or ESC-sequence.
ESC [? 0 h	SMBC	Set Mode Barcode
ESC [? 0 l	RSBC	Reset Mode Barcode

Hex Code	Format	Page
00	Null	E-3
08	Backspace	E-3
09	Horizontal Tab	E-3
0A	Line Feed	E-3
0B	Vertical Tab	E-3
0C	Form Feed	E-3
0D	Carriage Return	E-3
0E	Select Double Width (one line)	E-3
0F	Select Condensed Mode (17,1 cpi)	E-3
11	Select Printer	E-3
12	Select Pica (10 cpi)	E-3
13	Buffer Data Flow Control	E-3
14	Cancel Double Width	E-3
18	Cancel Buffer	E-3
1B	Escape	E-3
20	Space	E-3
7F	Delete	E-3
1B 30	Set Line Space to $\frac{1}{8}$ "	E-4
1B 31	Set Line Space to $\frac{7}{72}$ "	E-4
1B 32	Start Variable Line Space	E-4
1B 34	Set Top Of Form	E-4
1B 36	Select Character Set 2	E-11
1B 37	Select CHaracter Set 1	E-11
1B 3A	Select Elite (12 cpi)	E-7
1B 3B	Set Left Margin at Current	E-9
1B 3C	Home Position of Printhead	E-9
1B 45	Select Emphasized (bold)	E-8
1B 46	Cancel Emphasized	E-8
1B 47	Select Double Strike (bold)	E-8
1B 48	Cancel Double Strike	E-8
1B 4D	Reverse Line Feed	E-16
1B 4F	Cancel Automatic Perforation Skip	E-4
1B 52	Restore Horizontal Tabs to Default	E-8

Hex Code	Format	Page
1B 54	Cancel Superscript/Subscript	E-8
1B 5D	Reverse Line Feed	E-5
1B 6A	Set Printer Off Line	E-3
24 24	Control String Introducer for ESC [	E-14
24 24 2F	Control String Introducer for ESC	E-14
1B 2D 00 / 1B 2D 01	Cancel / Select / Underline	E-7
1B 33 P ₁	Set Line Space to $P_1/_{216}$ " ($P_1/_{180}$ ")	E-12
1B 35 01 / 1B 35 00	Automatic Line Feed ON/OFF	E-4
1B 41 P ₁	Set Line Space to $P_1/_{72}$ " ($P_1/_{60}$ ")	E-4
1B 42 00	Clear all Vertical Tabs	E-4
1B 43 P ₁	Set Form Length in Lines	E-4
1B 44 00	Clear all Horizontal Tabs	E-7
1B 49 P ₁	Select Character Mode	E-8
1B 4A P ₁	Perform $P_1/_{216}$ " ($P_1/_{180}$ ") Line feed	E-12
1B 4E P ₁	Set Skip Over Perforation	E-4
1B 50 00 / 1B 50 01	Cancel / Select Proportional	E-8
1B 51 23 or 1B 51 24	Deselect Printer	E-3
1B 53 00 / 1B 53 01	Select Superscript / Subscript	E-8
1B 55 00 / 1B 55 01	Cancel / Select Unidirectional Printing	E-8
1B 57 00 / 1B 57 01	Cancel / Select Double Width	E-9
1B 5E P ₁	Single Character from All Char. Set	E-11
1B 5F 00 / 1B 5F 01	Cancel / Select Overline	E-7
1B 2A P ₁ P ₂ P ₃ data	Select Various Graphics Modes	E-14
1B 42 P ₁ ...P ₆₄ 00	Set Vertical Tabs	E-4
1B 43 00 P ₁	Set Form Length in Inches	E-4
1B 44 P ₁ ...P _n 00	Set Horizontal Tabs	E-7
1B 4B P ₁ P ₂ data	Standard Density Graphics Mode	E-12
1B 4C P ₁ P ₂ data	Double Density Graphics Mode	E-12
1B 58 P ₁ P ₂	Set Left and Right Margins	E-9
1B 59 P ₁ P ₂ data	Double Speed & Double Density Graphics Mode	E-12
1B 5A P ₁ P ₂ data	Quadruple density Graphics Mode	E-12
1B 5B 3B P ₂ 73	AGC / PCC Procedure	E-5

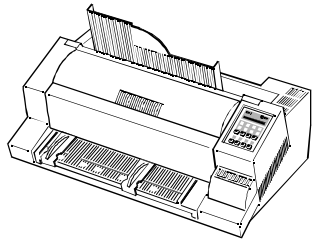
Hex Code	Format	Page
1B 5B 3B P ₂ 77	Set Code Table	E-15
1B 5B 3B P ₂ 3B P ₃ 3B P ₄ 3B P ₅ 3B P ₆ 3B P ₇ 20 7A	Barcode Header	E-20
1B 5B 3C 73	Eject Form	E-16
1B 5B 3E 73	Insert Form	E-5
1B 5B 3E P ₁ 3B P ₂ 3B P ₃ 3B P ₄ 73	Select Paper Source and Insert Form	E-5
1B 5B 3F 30 68	Set Mode Barcode	E-20
1B 5B 3F 30 6C	Reset Mode Barcode	E-20
1B 5B 40 04 00 00 00 P ₁ P ₂	Double, Multiple -Width/-Height Mode	E-7
1B 5B 54 n ₁ n ₂ NUL NUL P ₁ P ₂	Code Page Switching	E-11
1B 5B 5C 04 00 00 00 P ₁ 00	Select Line Space Unit	E-4
1B 5B 67 P ₁ P ₂ P ₃ data	Select Various Graphics Modes (IBM)	E-13
1B 5B P ₁ 20 58	Select Print Quality LQ / NLQ	E-9
1B 5B P ₁ 3B P ₂ 20 72	Select Macro and Change Emulation	E-16
1B 5B P ₁ 3B P ₂ 20 42	Graphic Size Modification	E-16
1B 5B P ₁ 3B P ₂ 77	Set National Version and Code Table	E-15
1B 5B P ₁ 3B P ₂ 78	Select Font and Character Pitch	E-10
1B 5B P ₁ 60	Set Horizontal Position Absolute	E-16
1B 5B P ₁ 61	Set Horizontal Position Relative	E-17
1B 5B P ₁ 62	Repeat Character	E-17
1B 5B P ₁ 64	Set Vertical Position Absolute	E-17
1B 5B P ₁ 65	Set Vertical Position Relative	E-17
1B 5B P ₁ 67	Tabulation Clear	E-17
1B 5B P ₁ 6D	Set Graphic Rendition	E-18
1B 5B P ₁ 73	Select Paper Source	E-5
1B 5B P ₁ 77	Set National Version	E-17
1B 5B P ₁ 7B	Line Space Load	E-17
1B 5C P ₁ P ₂	Print from All Character Set	E-11
1B 64 P ₁ P ₂	Set Relative Horizontal Dot Position	E-9

Hex - Decimal Conversion Table

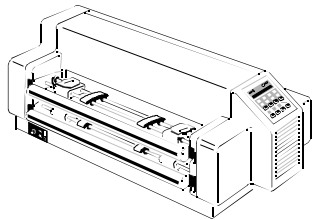
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	0	16	32	48	64	80	96	112	128	144	160	176	192	208	224	240
1	1	17	33	49	65	81	97	113	129	145	161	177	193	209	225	241
2	2	18	34	50	66	82	98	114	130	146	162	178	194	210	226	242
3	3	19	35	51	67	83	99	115	131	147	163	179	195	211	227	243
4	4	20	36	52	68	84	100	116	132	148	164	180	196	212	228	244
5	5	21	37	53	69	85	101	117	133	149	165	181	197	213	229	245
6	6	22	38	54	70	86	102	118	134	150	166	182	198	214	230	246
7	7	23	39	55	71	87	103	119	135	151	167	183	199	215	231	247
8	8	24	40	56	72	88	104	120	136	152	168	184	200	216	232	248
9	9	25	41	57	73	89	105	121	137	153	169	185	201	217	233	249
A	10	26	42	58	74	90	106	122	138	154	170	186	202	218	234	250
B	11	27	43	59	75	91	107	123	139	155	171	187	203	219	235	251
C	12	28	44	60	76	92	108	124	140	156	172	188	204	220	236	252
D	13	29	45	61	77	93	109	125	141	157	173	189	205	221	237	253
E	14	30	46	62	78	94	110	126	142	158	174	190	206	222	238	254
F	15	31	47	63	79	95	111	127	143	159	175	191	207	223	239	255

Appendix F EPSON LQ 2550 and ESC/P2 Quick Reference

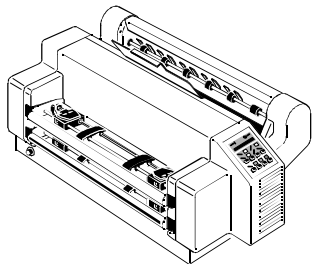
This appendix contains basic information on the EPSON LQ 2550 Printer Emulation commands supported in three Printer types:



PRINTER TYPE 1



PRINTER TYPE 2



PRINTER TYPE 3

Some commands or parameters may be different for a specific **PRINTER TYPE**. In those cases it will be indicated to which **PRINTER TYPE** a command or parameter applies.

Characters used in control functions appear in monospaced type. Table 1 explains some of the conventions used.

A pair of numbers separated by a slash (/) character indicates Column/Row notation. This notation refers to the location of a character in a standard code table, such as ASCII. (example: 1/B = 1B is the hex-code for Escape)

Spaces appear between characters in sequence for clarity; they are not part of the format.

At the end of this chapter you will find a listing of the EPSON LQ 2550 Emulation commands classified by Hex Code and a Hex - Decimal conversion table.

The following conventions are used in the command listings:

Table 1 Conventions

ESC	Escape (1/B), introduces an escape sequence
P1	Numeric parameter, or number of units that specify a distance or quantity pertaining to the escape sequence, control function or control string. Accepted values are 0...9999, may be preceded by + or -. If the parameter is in normal notation like "200" the programming in hex-code is according to a ASCII table. ("200" = 32,30,30 in hex). If the parameter must be programmed in hex-code the notation is with a slash. (1/A = 1A in hex-code)
v1...vn	A series of parameters pertaining to the escape sequence, control function or control string.
SP	Is standing for Space (hex 20)

Table B-2: Control Codes

Column/Row	Mnemonic	Function
0/0	NUL	Null
0/8	BS	Backspace
0/9	HT	Horizontal Tab
0/A	LF	Line Feed
0/B	VT	Vertical Tab
0/C	FF	Form Feed
0/D	CR	Carriage Return
0/E	SO	Double Width Printing By Line
0/F	SI	Condensed Printing
1/1	DC1	Select Printer
1/2	DC2	Select Pica (10 cpi)
1/3	DC3	Deselct Printer
1/4	DC4	Cancel Double Width Printing By Line
1/8	CAN	Cancel Buffer
1/B	ESC	Initiate Escape Sequence
2/0	SP	Space
7/F	DEL	Delete

Table B-3: Terminal Management

Escape Sequence	Mnemonic	Function
ESC @		Initialize Printer
ESC =		Set Most Significant Bit to 0
ESC >		Set Most Significant Bit to 1
ESC #		Cancel Most Significant Bit Control

Table B-4: Vertical Form Handling

Escape Sequence	Mnemonic	Function
ESC 0		Set Line Space to $\frac{1}{8}$ "
ESC 2		Set Line Space to $\frac{1}{6}$ "
ESC 3 P1		Set Line Space to $\frac{P1}{180}$ " (P1 = 0...255)
ESC + P1		Set Line Space to $\frac{P1}{360}$ " (P1 = 0/0...F/F)
ESC A P1		Set Line Space to $\frac{P1}{60}$ " (P1 = 0/0...0/F)
ESC B <i>NUL</i>		Clear Vertical Tabs
ESC B P1 P2 . . . P16 <i>NUL</i>		Set Vertical Tabs (P1...P16 = 0/1...F/F)
ESC C P1		Set Form Length in Lines (P1 = 0/1...F/F)
ESC C <i>NUL</i> P1		Set Form Length in Inches (P1 = 0/1...0/C)
ESC J P1		Perform $\frac{P1}{180}$ " Line Feed (P1 = 0/0...F/F)
ESC N P1		Set Automatic Perforation Skip P1 is the number of lines from bottom of paper to skip. (P1 = 0/1...7/F)
ESC O		Cancel Automatic Perforation Skip
ESC b P1 P2 .. P16 <i>NUL</i>		Set Vertical Tabs in Channel P1 P1 = 0/0 .. 0/7 : channel 0 - 7 P2..P16 = line number (P2..P16 = 0/1..F/F)
ESC b P1 <i>NUL</i>		Clear all Tabs in Channel P1 P1 = 0/0 .. 0/7 : channel 0 - 7
ESC j P1		Perform $\frac{P1}{180}$ " Reverse Line Feed (P1 = 0/0...F/F)
ESC / P1		Select Vertical Tab Channel P1 = 0/0 .. 0/7 : channel 0 .. 7

Table B-4: (Cont.) Vertical Form Handling

Escape Sequence	Mnemonic	Function
ESC <i>EM</i> P1		Form Feed and ASF Control *) <i>EM</i> = 1/9 P1 = 0/1 or 1: ASF Bin 1 P1 = 0/2 or 2: ASF Bin 2 P1 = 0/3 or 3: ASF Bin 3 P1 = 8/2 or R: (5/2) eject sheet
ESC [> P1 ; P2 ; P3 ; P4 s <i>Native Command</i>	SPSIF	Select Paper Source and Insert Form, Print Gap, Paper Exit, Cut-Mode (any parameter > or P1 to P4 may be skipped, see following alternative command sequences); > = Insert Form
ESC [P1 s <i>Native Command</i>	SPS	Paper Source: P1 = 0 : Manual Feed **) P1 = 1 : ASF, Bin 1 *) P1 = 2 : ASF, Bin 2 *) P1 = 3 : ASF, Bin 3 *) P1 = 6 : upper Tractor ***) P1 = 7 : Tractor Feed (lower Tractor) P1 = 8 : ASF, Bins 1 or 2 *) P1 = 9 : ASF, Bins 2 or 3 *) P1 = 1 0 : ASF, Bins 1 or 2 or 3 *) P1 = 1 5 : upper and lower tractor ***)
ESC [; P2 s <i>Native Command</i> , <i>see also GP Emulation</i>	AGC/PCC	Print Gap Control: P2 = 0 : Automatic Gap Control P2 = 1 : Print Gap for 1-ply copy P2 = 2 : Print Gap for 2-ply copies P2 = 3 : Print Gap for 3-ply copies P2 = 4 : Print Gap for 4-ply copies P2 = 5 : Print Gap for 5-ply copies P2 = 6 : Print Gap for 6-ply copies

*) only **PRINTER TYPE 1****) only **PRINTER TYPE 1** and **PRINTER TYPE 2*****) only **PRINTER TYPE 2** and **PRINTER TYPE 3**

Table B-4: (Cont.) Vertical Form Handling

Escape Sequence	Mnemonic	Function
ESC [; ; P3 s <i>Native Command</i>		Paper Exit: P3 = 0 : Paper Exit Stacker ***) P3 = 1 : Paper Exit Front Side *) (confirmed by Start/Stop key) P3 = 2 : Paper Exit Front Side *) (not confirmed by Start/Stop key, controlled by application) P3 = 3 : Batch output; rear side
ESC [; ; ; P4 s <i>Native Command</i>		Cut Mode On/Off: ****) P4 = 0 : Cut Mode Off P4 = 1 : Cut Mode On P4 = 2 : Cut on actual position (cutting edge is approximate 4 mm above the base of the actual line)

) only **PRINTER TYPE 1** and **PRINTER TYPE 3) only **PRINTER TYPE 1******) only **PRINTER TYPE 3**

Table B-5: Horizontal Form Handling and Printing Modes

Escape Sequence	Function
ESC SO	Select Double Width for One Line
ESC SI	Select Condensed 10 cpi -> 17 cpi 12 cpi -> 20 cpi 15 cpi -> 15 cpi (unchanged) proportional -> proportional cond.
ESC SP P1	Select Intercharacter Space Unit 1/120" for DRAFT (P1 = 0/0...7/F) Unit 1/180" for NLQ/LQ (P1 = 0/0...7/F)
ESC ! P1	Select Multiple Print Mode P1 selects: Bit0 = 0 : 10 cpi (Pica) Bit0 = 1 : 12 cpi (Elite) Bit1 = 1 : proportional Bit2 = 1 : Condensed Bit3 = 1 : Emphasized Bit4 = 1 : Double Strike Bit5 = 1 : Double Width Bit6 = 1 : Italics Bit7 = 1 : Underline
ESC \$ P1 P2	Set Absolute Horizontal Position $(P1 + P2 * 256) * \frac{1}{60}"$ (P1 = 0/0...F/F) (P2 = 0/0...0/3)
ESC \ P1 P2	Set Relative Horizontal Position Draft: $(P1 + P2 * 256) * \frac{1}{120}"$ (P1 = 0/0...F/F) (P2 = 0/0...0/6) NLQ/LQ: $(P1 + P2 * 256) * \frac{1}{180}"$ (P1 = 0/0...F/F) (P2 = 0/0...0/9)
ESC % P1	Select Standard / User Defined Character Set Set P1 = 0/0 : Standard Character Set P1 = 0/1 : User Defined Character Set

Table B-5 (Cont.): Horizontal Form Handling and Printing Modes

Escape Sequence	Function
ESC & NUL P1 P2 P3 P4 P5 v1 .. vn	Define User Defined Characters P1 = first code table position (P1 = 0/0...P2) P2 = last code table position (P2 = P1...7/F) P3 = front space (P3 = 0/0...5/0) P4 = body length Draft: (P4 = 0/0...0/F) LQ: (P4 = 0/0...2/5) P5 = rear space (P5 = 0/0...5/0) v1 .. vn = binary data in hex (vn = 0/0...F/F)
Notes:	<ul style="list-style-type: none"> - This Command defines one or more characters in a RAM character table. - All User Defined Characters are erased when the printer is switched off. - Set the Interface Buffer to 1k or 8K (max 50 defined char in LQ, 128 in draft), or use a RAM card for up to 128 User Defined Characters in LQ. - Set maximum every second dot to "1" in a horizontal line ! - User Defined Characters can be defined in four different print modes: resolution (vertical x horizontal) Normal Size with Draft: 24 x 15 Normal Size with LQ / proport.: 24 x 37 Sub-/ Superscript with Draft: 16 x 15 Sub-/ Superscript with LQ / proport.: 16 x 37 - The characters can only be activated in the same mode as defined. - The character layout is coded in three bytes (24 bit vertical) or two bytes (16 bit vertical) per column, top to bottom. - To print the character change to the User Defined Character Set with ESC % . <p>Example: vertical box, normal size with draft at code table position "41" (P3=8, P4=5, P5=8)</p> <p>hex: 1B 26 00 41 41 08 05 08 FF FF FF 00 00 00 80 00 01 00 00 00 FF FF FF</p>

Table B-5: (Cont.) Horizontal Form Handling and Printing Modes

Escape Sequence	Function
ESC (- P1 P2 P3 P4 P5	Select Line Marking P1 = 0/3 (fixed value) P2 = 0/0 (fixed value) P3 = 0/1 (fixed value) P4 = 0/1 : underline P4 = 0/2 : strike through P4 = 0/3 : overscore P5 = 0/0 : cancel score line selected by P4 P5 = 0/1 : single continuous line P5 = 0/2 : double continuous line P5 = 0/5 : single broken line P5 = 0/6 : double broken line
ESC 4	Set Italics
ESC 5	Cancel Italics
ESC <	Select Unidirectional Mode (one line)
ESC : NUL P1 NUL	Copy ROM Character Set to RAM P1 = 0/0 : S. ROMAN P1 = 0/1 : L. GOTHIC P1 = 0/2 : COURIER P1 = 0/3 : PRESTIGE P1 = 0/4 : SCRIPT P1 = 0/5 : OCR-B P1 = 0/6 : OCR-A P1 = 0/7 : ORATOR-C P1 = 0/8 : ORATOR
ESC - P1	Underline Printing P1 = 0/1 : set Underline Printing P1 = 0/0 : cancel Underline Printing
ESC D NUL	Clear Horizontal Tabs

Table B-5: (Cont.) Horizontal Form Handling and Printing Modes

Escape Sequence	Function
ESC D P1 P2 . . . P32 NUL	Set Horizontal Tabs P1 ... P32 = tab position (Pn = 0/1..F/F)
ESC E	Select Emphasized Printing (bold)
ESC F	Cancel Emphasized Printing
ESC G	Select Double Strike Printing (bold)
ESC H	Cancel Double Strike Printing
ESC M	Select Elite (12 cpi)
ESC P	Select Pica (10 cpi)
ESC Q P1	Set Right Margin (P1 = 0/3 ... F/F)
ESC S P1	Select Superscript/Subscript P1 = 0/0 or 3/0 : select Superscript P1 = 0/1 or 3/1 : select Subscript
ESC T	Cancel Superscript/Subscript
ESC U P1	Cancel/Select Unidirectional Printing P1 = 0/0 or 3/0 : cancel Unidirectional P1 = 0/1 or 3/1 : select Unidirectional
ESC W P1	Cancel/Select Double Width P1 = 0/0 or 3/0 : cancel Double Width P1 = 0/1 or 3/1 : select Double Width
ESC a P1	Select Justification P1 = 0/0 : select left justification P1 = 0/1 : center between margins P1 = 0/2 : select right justification P1 = 0/3 : select full justification

Table B-5: (Cont.) Horizontal Form Handling and Printing Modes

Escape Sequence	Function
ESC g	Select Pitch 15 cpi
ESC k P1	Select Font P1 = 0/0 : S. ROMAN P1 = 0/1 : L. GOTHIC P1 = 0/2 : COURIER P1 = 0/3 : PRESTIGE P1 = 0/4 : SCRIPT P1 = 0/5 : OCR-B P1 = 0/6 : OCR-A P1 = 0/7 : ORATOR-C P1 = 0/8 : ORATOR P1 = 1/0 : DATA BLOCK P1 = 1/1 : DATA LARGE
ESC l P1	Set Left Margin (P1 = 0/0...F/C)
ESC p P1	Cancel/Select Proportional P1 = 0/0 or 3/0 : cancel proportional P1 = 0/1 or 3/1 : select proportional
ESC q P1	Select Character Style P1 = 0/0 : normal style P1 = 0/1 : outline P1 = 0/2 : shadow P1 = 0/3 : outline + shadow
ESC r P1	Select Printing Colour *) P1 = 0/0 : Black P1 = 0/1 : Magenta P1 = 0/2 : Cyan P1 = 0/3 : Violet P1 = 0/4 : Yellow P1 = 0/5 : Red P1 = 0/6 : Green

*) only **PRINTER TYPE 1**

Table B-5: (Cont.) Horizontal Form Handling and Printing Modes

Escape Sequence	Mnemonic	Function
ESC w P1		Cancel/Select Double Height P1 = 0/0 or 3/0 : cancel P1 = 0/1 or 3/1 : select
ESC x P1		Select Character Quality P1 = 0/0 or 3/0 : select Draft P1 = 0/1 or 3/1 : select LQ or NLQ dep. on set-up
ESC [P1 ; P2 SP B <i>Native Command, see also GP Emulation</i>	GSM	Graphic Size Modification P1 = 100 : normal height P1 = 200 : double height P1 = 300 : triple height P1 = 400 : quadruple height P1 = max. 800 in steps of 100 P2 = 100 : normal width P2 = 200 : double width P2 = 300 : triple width P2 = 400 : quadruple width P2 = max. 800 in steps of 100
		Graphic Size Modification for DATA LARGE P1 = 100 : normal height P2 = 100 : normal width P1 and P2 max. 9900 in steps of 100

Table B-5: (Cont.) Horizontal Form Handling and Printing Modes

Escape Sequence	Mnemonic	Function
ESC [P1 ; P2 x <i>Native Command, see also GP Emulation</i>	CPL	Select Font and Character Pitch (any parameter P1 or P2 may be skipped, see following alternative command sequences)
ESC [P1 x <i>possible format of Native Command CPL</i>		P1 selects the font: P1 = 0 or missing : Font is unchanged P1 = 1 : DATA P1 = 2 : Letter GOTHIC P1 = 3 : LETTER GOTHIC ITALIC P1 = 4 : COURIER P1 = 5 : MICRO P1 = 6 : ORATOR P1 = 7 : ORATOR-C P1 = 8 : ROMAN P1 = 9 : PRESTIGE P1 = 10 : SRIPT P1 = 11 : OCR A P1 = 12 : OCR B P1 = 13 : DATA BLOCK P1 = 14 : DATA LARGE
ESC [; P2 x <i>possible format of Native Command CPL</i>		P2 selects the character pitch: P2 = 0 or missing : Pitch is unchanged P2 = 1 : 10 cpi P2 = 2 : 12 cpi P2 = 3 : 15 cpi P2 = 5 : proportional P2 = 6 : 14.4 cpi P2 = 7 : 18 cpi P2 = 8 : 17.1 cpi P2 = 9 : 20 cpi

Table B-6: Graphics Modes

Escape Sequence	Function
ESC ? K P1	Reassign Graphics Mode K ¹⁾ Standard Density, 8 dpc
ESC ? L P1	Reassign Graphics Mode L ¹⁾ Double Density, 8 dot per column
ESC ? Y P1	Reassign Graphics Mode Y ¹⁾ Double Density & -Speed, 8 dot per col.
ESC ? Z P1	Reassign Graphics Mode Z ¹⁾ Quadruple Density, 8 dot per column
ESC K P2 P3 v1 . . . vn	Standard Density Graphics Mode ¹⁾
ESC L P2 P3 v1 . . . vn	Double Density Graphics Mode ¹⁾
ESC Y P2 P3 v1 . . . vn	Double Density / Double Speed Graphics Mode ¹⁾
ESC Z P2 P3 v1 . . . vn	Quadruple Density Graphics Mode ¹⁾

¹⁾ : for coding of P1, P2, P3 see **ESC *** on the next page

Table B-6: Graphics Modes

Escape Sequence	Function				
ESC * P1 P2 P3 v1 . . . vn	Select Various Graphics Modes P2 + P3 * 256 = number of columns (0/0...F/F) v1 .. vn = binary data in hex code (0/0...F/F)				
<i>Parameter Table Graphic Density:</i>					
P1	Graphic type				
	dots / column				
	max. number of columns				
	hor. density (dpi)				
0/0	Standard Density (K)	8	816	60	
0/1	Double Density (L)	8	1632	120	
0/2	2xDensity / 2xSpeed (Y)	8	1632	120	*)
0/3	Quadruple Density (Z)	8	3264	240	*)
0/4	CRT I	8	1088	80	
0/6	CRT II	8	1224	90	
2/0	Standard Density	24	816	60	
2/1	Double Density	24	1632	120	
2/6	CRT III	24	1224	90	
2/7	Triple Density	24	2448	180	
2/8	Hex Density	24	4896	360	*)

*) *consecutive horizontal dots cannot be printed.*

Example: box 8x8 dots with center point 2x2 dots, standard density, 8 dots / column
hex: 1B 2A 00 08 00 FF 81 81 99 99 81 81 FF

Table B-7: Character Set Selection

Escape Sequence	Function
ESC 6	Enlarge Print Code Area (128-159 dec.)
ESC 7	Enable Upper Control Code (128-159 dec.)
ESC R P1	Select National Version P1 = 0/0 : U.S.A. P1 = 0/1 : FRANCE P1 = 0/2 : GERMANY P1 = 0/3 : U.K. P1 = 0/4 : DENMARK P1 = 0/5 : SWEDEN P1 = 0/6 : ITALY P1 = 0/7 : SPAIN P1 = 0/8 : JAPAN P1 = 0/9 : NORWAY P1 = 0/A : DENMARK 2 P1 = 0/B : SPAIN 2 P1 = 0/C : LATIN AM. P1 = 0/D : TURKEY P1 = 4/0 : LEGAL
ESC t P1	Select Character Table P1 = 0/0 : Italics Character Table P1 = 0/1 : Extended Graphics Character Table P1 = 0/2 : User Defined Character Table

**Table B-8: Further GP - Control Sequences, supported by
EPSON LQ Emulation Mode (Native Commands)**

Escape Sequence	Mnemonic	Function
ESC [	\$\$	Control String Introducer (CSI) for ESC [
ESC	\$\$/	control String Introducer for ESC
ESC [< s	EJF	Eject Form
ESC [> s	IF	Insert Form
ESC [P1 SP X	SPQ	Select Print Quality P1 = 0: LQ P1 = 1: NLQ
ESC [P1 ; P2 SP r	SM #	Select Macro and Change Emulation P1 = 1: Macro 1 P1 = 2: Macro 2 P1 = 3: Macro 3 P1 = 4: Macro 4 P2 = 0: no change of emulation P2 = 1: GP Emulation P2 = 2: IBM ProPrinter Emulation P2 = 3: IBM ProPrinter AGM Emulation P2 = 4: EPSON Emulation

**Table B-8 (Cont.): Further GP - Control Sequences, supported by
EPSON LQ Emulation Mode (Native Commands)**

Escape Sequence	Mnemonic	Function
ESC [P1 ; P2 w	SNVCT	Set National Version and Code Table P1 = 1 - 15 national version depending on selected character set (see Appendix C Char. Set Tables) P2 = 3 digit code of the code table (see command SCT below) P1 for national version EPSON EXT. GCT: P1 = 1 : U.S.A P1 = 2 : France P1 = 3 : Germany P1 = 4 : U.K. P1 = 5 : Denmark P1 = 6 : Sweden P1 = 7 : Italy P1 = 8 : Spain P1 = 9 : Japan P1 = 1 0 : Norway P1 = 1 1 : Denmark 2 P1 = 1 2 : Spain 2 P1 = 1 3 : Latin AM P1 = 1 4 : Turkey P1 = 1 5 : Legal
ESC [P1 w	SNV	Set National Version P1 = 1 - 15 national version depending on selected character set (see command SNVCT above)
ESC [; P2 w	SCT	Set Code Table P2 = 3 digit code of the code table P2 = 0 3 1 : ISO 8859/1; ECMA 94 P2 = 0 3 2 : ISO 8859/15 P2 = 0 6 1 : IBM Set 1 P2 = 0 6 2 : IBM Set 2 P2 = 0 6 3 : IBM Code Page ¹⁾ P2 = 0 7 1 : EPSON Ext. G. C. T

1) depending on selected character set (P1 in SNV) the IBM CODE PAGE 437, 850, 860, 863, 865, or 858 will be activated!

Table B-8 (Cont.): Further GP - Control Sequences, supported by EPSON LQ Emulation Mode (Native Commands)

Escape Sequence	Mnemonic	Function
ESC [; P2 ; P3 ; P4 ; P5 ; P6 ; P7 SP z see Appendix G BARCODE Programming	BH	Barcode Header P2: Barcode type P3: Height of barcode P4: Width of the thin bars P5: Width of the thin gaps P6: Ratio width to thin (bars / gaps) P7: Uni-directional or bi-directional printing 0: or not programmed: means no changes 1: uni-directional printing in LQ 2: bi-directional printing in LQ 3: uni-directional printing in NLQ 4: bi-directional printing in NLQ Note: A switch from uni-directional to bi-directional printing is only possible if the parameter UNI-DIRECT.COMD is set to YES via operator panel or ESC-sequence.
ESC [? 0 h	SMBC	Set Mode Barcode
ESC [? 0 l	RSBC	Reset Mode Barcode

Table 9: ESC / P2 Commands

Escape Sequence	Function
ESC (c P1 P2 P3 P4 P5	Set page format Sets top and bottom margins in the defined units. P1 = 04 00 tm = P2 + P3 x 256 tm: top margin in units tm bm = P4 + P5 x 256 bm: bottom margin in units bm
ESC (C P1 P2 P3	Set page length in defined unit Define page length in units P1 = 02 00 pl = P2 + P3 x 256
ESC (V P1 P2 P3	Set absolute vertical print position Define absolute vertical print position in units P1 = 02 00 avpp = P2 + P3 x 256 avpp: define print position from top margin in defined units
ESC (v P1 P2 P3	Set relative vertical print position Define relative vertical print position in units P1 = 02 00 rvpp = P2 + P3 x 256 rvpp: moves the print position in defined units.

Table 9: (Cont.) ESC / P2 Commands

Escape Sequence	Function
ESC X P1 P2 P3	<p>Select font by pitch and point</p> <p>P1 = 0 : No change in pitch P1 = 1 : Selects proportional spacing P1 = 18, 24, 30, 36, 42, 48, 60 or 72 Selects fixed pitch equal to 360/m cpi pz = P2 + P3 x 256 pz: Point size in 0,5 points; 1 point equals 1/72 inch pz = 0: No change in point size pz = 16, 20, 21, 24, 28, 32, 36, 40, 42, 44, 48, 52, 56, 60, 64</p>
ESC (U P1 P2	<p>Set unit</p> <p>P1 = 01 00 P2 = 10, 20, 30, 40, 50, 60 /3600" P2 = 10; Standard</p>
ESC c P1 P2	<p>Set horizontal motion index (HMI)</p> <p>Define HMI-Index Change pitch value in n/360"-steps HMI = P1 + P2 x 256 HMI max. 3 inch</p>

Table 9: (Cont.) ESC / P2 Commands

Escape Sequence	Function
ESC (t n1 n2 Pn P1 P2	<p>Assign character table n1 = 3, n2 = 0 Pn = Parameter of ESC t : 0, 1, 2, 3, "0", "1", "2" or "3" P1 P2 = character table 0 0 : italic 1 0 : PC 437 (USA) 3 0 : PC 850 (Multilingual) 7 0 : PC 860 (Portugal) 8 0 : PC 863 (French-Canada) 9 0 : PC 865 (Norway) 29 15 : ISO 8859-15 29 16 : ISO 8859-1 44 0 : PC 858 (Multilingual + Euro)</p>
ESC t Pn	<p>The character table assigned by Pn is one of the four tables which will be selected by the ESC t command.</p> <p>Select character table Selects the character table to be used for printing from among the four character tables which are assigned by ESC (t command. Pn = 0/0 or 3/0 : Character Table 0 Pn = 0/1 or 3/1 : Character Table 1 Pn = 0/2 or 3/2 : Character Table 2 Re-maps downloaded Characters from the positions 0 to 127 to the positions 128 to 255. Pn = 0/3 or 3/3 : Character Table 3</p> <p>Default Setting Pn = 0/0 or 3/0 : Italics Character Table Pn = 0/1 or 3/1 : CP 437 Pn = 0/2 or 3/2 : User Defined Character Table Pn = 0/3 or 3/3 : CP 437</p>

Table 9: (Cont.) ESC / P2 Commands

Escape Sequence	Function
ESC (^ P1 P2	<p>Print data as characters</p> <p>Prints n data bytes as characters, not control codes $pd = P1 + P2 \times 256$</p>
ESC (G P1 P2	<p>Select graphics mode</p> <p>P1 = 01 00 P2 = 1 or 49</p> <p>Graphics mode may be reset by ESC @.</p>
ESC . P1 P2 P 3 P4 P5 P6	<p>Print raster graphics</p> <p>P1 = 0 : graphics mode non compressed P1 = 1 : graphics mode compressed P2 = 10, 20 : vertical resolution in 3600/v DPI P3 = 10, 20 : horizontal resolution in 3600/h DPI P4 : vertical dot count (rows of dot graphics) $1 < P4 < 24$ hzd : horizont dot count (columns of dot graphics) $hzd = P5 + P6 \times 256$ Combination P2 = 10, P3 = 20 is not possible.</p>

Hex Code	Format	Page
00	Null	F-3
08	Backspace	F-3
09	Horizontal Tab	F-3
0A	Line Feed	F-3
0B	Vertical Tab	F-3
0C	Form Feed	F-3
0D	Carriage Return	F-3
11	Select Printer	F-3
12	Cancel Condensed Mode	F-3
13	Deselect Printer	F-3
14	Cancel Double Width	F-3
18	Cancel Buffer	F-3
1B	Escape	F-3
20	Space	F-3
7F	Delete	F-3
1B 0E or 0E	Select Double Width for One Line	F-3/7
1B 0F or 0F	Select Condensed Mode	F-3/7
1B 23	Cancel Most Significant Bit Control	F-3
1B 30	Set Line Space to $\frac{1}{8}$ "	F-4
1B 32	Set Line Space to $\frac{1}{6}$ "	F-4
1B 34	Set Italics	F-9
1B 35	Cancel Italics	F-9
1B 36	Enlarge Print Code Area	F-16
1B 37	Enable Upper Control Code Area	F-16
1B 3C	Select Unidirectional Mode (one line)	F-9
1B 3D	Set Most Significant Bit to 0	F-3
1B 3E	Set Most Significant Bit to 1	F-3
1B 40	Initialize Printer	F-3
1B 45	Select Emphasized (bold)	F-10
1B 46	Cancel Emphasized	F-10

Hex Code	Format	Page
1B 47	Select Double Strike (bold)	F-10
1B 48	Cancel Double Strike	F-10
1B 4D	Select Elite (12 cpi)	F-10
1B 4F	Cancel Automatic Perforation Skip	F-4
1B 50	Select Pica (10 cpi)	F-10
1B 54	Cancel Superscript/Subscript	F-10
1B 67	Select Pitch 15 cpi	F-11
24 24	Control String Introducer for ESC [	F-17
24 24 2F	Control String Introducer for ESC	F-17
1B 19 P ₁	Formfeed and ASF Control	F-5
1B 20 P ₁	Select Intercharacter Space	F-7
1B 21 P ₁	Select Multiple Print Mode	F-7
1B 25 00 / 1B 25 01	Select Standard- / User Defined Char. Set	F-7
1B 2B P ₁	Set line Space to $P_1/_{360}$ "	F-4
1B 2F P ₁	Select Variable Tab Channel	F-4
1B 2D 01 / 1B 2D 00	Select / Cancel Underline	F-9
1B 33 P ₁	Set Line Space to $P_1/_{180}$ "	F-4
1B 41 P ₁	Set line Space to $P_1/_{60}$ "	F-4
1B 42 00	Clear Vertical Tabs	F-4
1B 43 P ₁	Set Form Length in Lines	F-4
1B 44 00	Clear Horizontal Tabs	F-9
1B 4A P ₁	Perform $P_1/_{180}$ Line Feed	F-4
1B 4E P ₁	Set Automatic Perforation Skip	F-4
1B 51 P ₁	Set Right Margin	F-10
1B 52 P ₁	Set National Version	F-16
1B 53 00 / 1B 53 01	Select Superscript / Subscript	F-10
1B 55 00 / 1B 55 01	Cancel / Select Unidirectional Printing	F-10
1B 57 00 / 1B 57 01	Cancel / Select Double Width	F-10
1B 61 P ₁	Select Justification	F-10

Hex Code	Format	Page
1B 6A P ₁	Perform $P_1/_{180}$ Reverse Line Feed	F-4
1B 6B P ₁	Select Font	F-11
1B 6C P ₁	Set Left Margin	F-11
1B 70 00 / 1B 70 01	Cancel / Select Proportional	F-11
1B 71 P ₁	Select Character Style	F-11
1B 72 P ₁	Select Printing Colour	F-11
1B 74 P ₁	Select Character Table	F-16 F-22
1B 77 00 / 1B 77 01	Cancel / Select Double Height	F-12
1B 78 P ₁	Select Character Quality	F-12
1B 24 P ₁ P ₂	Set Absolute Horizontal Position	F-7
1B 26 00 P ₁ P ₂ P ₃ P ₄ P ₅ data	Define User Defined Characters	F-8
1B 28 2D P ₁ P ₂ P ₃ P ₄ P ₅	Select Line Marking	F-9
1B 28 43 P ₁ P ₂ P ₃	Set Page Length in defined Unit	F-20
1B 28 47 P ₁ P ₂	Select Graphics Mode	F-23
1B 28 55 P ₁ P ₂	Set Unit	F-21
1B 28 56 P ₁ P ₂ P ₃	Set absolute vertical Print Position	F-20
1B 28 63 P ₁ P ₂ P ₃ P ₄ P ₅	Set Page Format	F-20
1B 28 74 P ₁ P ₂ P ₃ P ₄	Assign Character Table	F-22
1B 28 76 P ₁ P ₂ P ₃	Set relative vertical Print Position	F-20
1B 28 5E P ₁ P ₂	Print Data as Character	F-23
1B 2A P ₁ P ₂ P ₃ data	Select Various Graphics Modes	F-15
1B 2E P ₁ P ₂ P ₃ P ₄ P ₅ P ₆	Print Raster Graphics	F-23
1B 3A 00 P ₁ 00	Copy ROM Character Set to RAM	F-9
1B 3F 4B P ₁	Reassign Graphics Mode K	F-14
1B 3F 4C P ₁	Reassign Graphics Mode L	F-14
1B 3F 59 P ₁	Reassign Graphics Mode Y	F-14
1B 3F 5A P ₁	Reassign Graphics Mode Z	F-14
1B 42 P ₁ ...P ₁₆ 00	Set Vertical Tabs	F-4
1B 43 00 P ₁	Set Form Length in Inches	F-4

Hex Code	Format	Page
1B 44 P ₁ P ₂ ...P ₃₂ 00	Set Horizontal Tabs	F-10
1B 4B P ₂ P ₃ data	Standard Density Graphics Mode	F-14
1B 4C P ₂ P ₃ data	Double Density Graphics Mode	F-14
1B 58 P ₁ P ₂ P ₃	Select Font by Pitch and Point	F-21
1B 59 P ₂ P ₃ data	Double Speed & Double Density Graph. Mode	F-14
1B 5A P ₂ P ₃ data	Quadruple Density Graphics Mode	F-14
1B 5B 3B P ₂ 73	AGC / PCC Procedure	F-5
1B 5B 3B P ₂ 77	Set Code Table	F-18
1B 5B 3B P ₂ 3B P ₃ 3B P ₄ 3B P ₅ 3B P ₆ 3B P ₇ 20 7A	Barcode Printing	F-19
1B 5B 3C 73	Eject Form	F-17
1B 5B 3E 73	Insert Form	F-17
1B 5B 3E P ₁ 3B P ₂ 3B P ₃ 3B P ₄ 73	Select Paper Source and Insert Form	F-5
1B 5B 3F 30 68	Set Mode Barcode	F-19
1B 5B 3F 30 6C	Reset Mode Barcode	F-19
1B 5B P ₁ 20 58	Select Print Quality	F-17
1B 5B P ₁ 3B P ₂ 20 72	Select Makro and Change Emulation	F-17
1B 5B P ₁ 3B P ₂ 20 42	Graphic Size Modification	F-12
1B 5B P ₁ 3B P ₂ 77	Set National Version and Code Table	F-18
1B 5B P ₁ 3B P ₂ 78	Select Font and Character Pitch	F-13
1B 5B P ₁ 77	Set National Version	F-18
1B 5C P ₁ P ₂	Set Relative Horizontal Position	F-7
1B 62 P ₁ 00	Clear Vertical Tabs in Channel P ₁	F-4
1B 62 m P ₁ P ₂ ...P ₉ 00	Set Vertical Tab in Channel P ₁	F-4
1B 63 P ₁ P ₂	Set Horizontal Motion Index (HMI)	F-21

Hex - Decimal Conversion Table

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	0	16	32	48	64	80	96	112	128	144	160	176	192	208	224	240
1	1	17	33	49	65	81	97	113	129	145	161	177	193	209	225	241
2	2	18	34	50	66	82	98	114	130	146	162	178	194	210	226	242
3	3	19	35	51	67	83	99	115	131	147	163	179	195	211	227	243
4	4	20	36	52	68	84	100	116	132	148	164	180	196	212	228	244
5	5	21	37	53	69	85	101	117	133	149	165	181	197	213	229	245
6	6	22	38	54	70	86	102	118	134	150	166	182	198	214	230	246
7	7	23	39	55	71	87	103	119	135	151	167	183	199	215	231	247
8	8	24	40	56	72	88	104	120	136	152	168	184	200	216	232	248
9	9	25	41	57	73	89	105	121	137	153	169	185	201	217	233	249
A	10	26	42	58	74	90	106	122	138	154	170	186	202	218	234	250
B	11	27	43	59	75	91	107	123	139	155	171	187	203	219	235	251
C	12	28	44	60	76	92	108	124	140	156	172	188	204	220	236	252
D	13	29	45	61	77	93	109	125	141	157	173	189	205	221	237	253
E	14	30	46	62	78	94	110	126	142	158	174	190	206	222	238	254
F	15	31	47	63	79	95	111	127	143	159	175	191	207	223	239	255

Appendix G Barcode Quick Reference

1. Introduction

The barcode print facility is available in all three emulations.

2. Programming

There are three escape sequences to print barcodes

- The first sequence is to define the Barcode Header. The type of barcode as well as all parameters are selected by a header. The header does not affect any parameters outside the barcode application and remains valid until another header is transmitted or the printer is turned off. This can be done at any time but before barcode printing.

The header has the following format:

`ESC [; P2 ; P3 ; P4 ; P5 ; P6 ; P7 _ z` *Note:* _ = Space

- In step two, the ESC-sequence "Set Mode Barcode (SMBC)" starts the barcode printing.

`ESC [? 0 h`

- Finally, the ESC-sequence "Reset Mode Barcode (RMBC)" will stop printing.

`ESC [? 0 /`

Note: Between **SMBC** and **RMBC** are only printable characters tolerated (no CR or LF).

2.1 Barcode Header

Format	Function/Parameter	Hex Code
BH	Barcode Header P ₂ = Barcode type; P ₃ = Height of barcode; P ₄ = Width of thin bars; P ₅ = Width of thin gaps; P ₆ = Ratio width to height; P ₇ = Uni/Bidirectional printing	1B 5B 3B P ₂ 3B P ₃ 3B P ₄ 3B P ₅ 3B P ₆ 3B P ₇ 20 7A
SMBC	Start of Barcode	1B 5B 3F 30 68
RMBC	Stop Barcode	1B 5B 3F 30 6C

Barcode Header Parameters

P₂ Barcode type

- default = **101** (Code 39 horizontal)

Type	horizontal	horizontal + human readable text	vertical	vertical + human readable text
Code 39	101	201	301	401
2 of 5 industrial	102	202	302	402
2 or 5 interleaved	103	203	303	403
Codabar (Monarch)	104	204	304	404
EAN 8	105	205	not applicable	not applicable
EAN 13	106	206	not applicable	not applicable
Code 93	107	207	307	407
MSI Mod 10/10	108	208	308	408
UPC-E	109	209	not applicable	not applicable
UPC-A	110	210	not applicable	not applicable
Code 128 (EAN 128)	111	211	311	411
Postnet	112	not applicable	not applicable	not applicable
KIX Code	113	not applicable	not applicable	not applicable

P₃ Height of barcode

- default: $\frac{3}{12}$ " - 0.64 cm

All characters in a line are automatically repeated according to the selected barcode height. This is also true for plain text!

- $P_3 * \frac{1}{12}$ "
- possible values from:
0 to 40 (30_H to 34_H,30_H) or (48_D to 52_D,48_D) for vertical barcodes
0 to 99 (30_H to 39_H,39_H) or (48_D to 57_D,57_D) for horizontal barcodes

Barcode	Height in % of barcode length	minimum height in mm
Code 39	25	20 (0.8")
Codabar	25	20 (0.8")
Code 93	15	6.25 (0.25")
Code 128	15	6.25 (0.25")

P₄ Width of the thin bars (default: $\frac{2}{144}$ " = 0.35 mm)

Note: The width of bars and gaps should be equal. For this, the parameters **P₄** and **P₅** should not deviate more than one step.

for horizontal Barcode

P ₄	hex	dec	inch	mm
0	30	48	2/144	0,35
1	31	49	3/144	0,53
2	32	50	4/144	0,70
3	33	51	5/144	0,88
4	34	52	6/144	1,05
5	35	53	7/144	1,23
6	36	54	8/144	1,41
7	37	55	9/144	1,58

for vertical Barcode

P ₄	hex	dec	inch	mm
0	30	48	2/180	0,28
1	31	49	3/180	0,42
2	32	50	4/180	0,56
3	33	51	5/180	0,70
4	34	52	6/180	0,85
5	35	53	7/180	0,99
6	36	54	8/180	1,12
7	37	55	9/180	1,27

P₅ Width of the thin gaps (default: $\frac{2}{144}$ " = 0.35 mm)

The values are the same as in **P₄**

P₆ Ratio Width to Thin (default: **0** (2 to 1))

P ₆ value	Code 39 2 of 5 industrial 2 of 5 interleaved Codabar Code 93 MSI mod 10/10 Code 128	EAN 8 EAN 13 UPC-A UPC-E
0	2.0 to 1	SC3
1	2.5 to 1	SC6
2	3.0 to 1	SC9
3	3.5 to 1	SC3

Note: Code 93, MSI 10/10, Code 128 are fixed 2.0 to 1

Best results for Code 39, 2 of 5 industrial, 2 of 5 interleaved, and Codabar with 2.5 to 1

P₇ Uni-directional or bi-directional printing - standard 0 uni-directional

values are:

- 0 or not programmed means no changes
- 1 uni-directional printing in LQ
- 2 bi-directional printing in LQ
- 3 uni-directional printing in NLQ
- 4 bi-directional printing in NLQ

Note: A switch from uni-directional to bi-directional printing is only possible if the parameter **UNI-DIRECT.CMD** is set to **YES** via operator panel or ESC-sequence.

Start Position of Barcode Printing

The start position for barcode printing is the current print position.

For both horizontal and vertical printing, the print position after printing barcodes is the same line as the start position next to the barcode printed.

2.2 Barcode Programming Examples

Note: All examples are coded in standard uni-directional printing - that means the parameter "P₇" is not used.

In the following examples, _ stands for "Space".

The small square ■ before and after the printed barcode indicates the actual print position.

Between **Start Barcode** and **Stop Barcode** are only printable characters tolerated (no CR or LF).

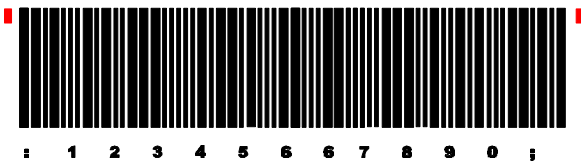
Barcode Example for Code 39

Barcode Header: ESC [; P₂ ; P₃ ; P₄ ; P₅ ; P₆ ; P₇ _ z
 ESC [; 201 ; 8 ; 1 ; 1 ; 1 ; _ z
 Start Barcode: ESC [? 0 h
 Data: * C _ O _ D _ E _ _ _ 3 9 *
 Stop Barcode: ESC [? 0 /



Barcode Example for 2 of 5 Industrial

Barcode Header: ESC [; P₂ ; P₃ ; P₄ ; P₅ ; P₆ ; P₇ _ z
 ESC [; 202 ; 8 ; 1 ; 1 ; 1 ; _ z
 Start Barcode: ESC [? 0 h
 Data: : 1 2 3 4 5 6 7 8 9 0 ;
 Stop Barcode: ESC [? 0 /



Barcode Example for 2 of 5 Interleaved

Barcode Header: ESC [; P₂ ; P₃ ; P₄ ; P₅ ; P₆ ; P₇ _ z
 ESC [; 203 ; 8 ; 1 ; 1 ; 1 ; _ z
 Start Barcode: ESC [? 0 h
 Data: : 1 2 3 4 5 6 7 8 9 0 ;
 Stop Barcode: ESC [? 0 /



Barcode Example for Codabar (Monarch)

Barcode Header: ESC [; P₂ ; P₃ ; P₄ ; P₅ ; P₆ ; P₇ _ z
 ESC [; 204 ; 8 ; 1 ; 1 ; 1 ; _ z
 Start Barcode: ESC [? 0 h
 Data: a 0 1 2 3 4 5 6 7 8 9 t
 Stop Barcode: ESC [? 0 /



Barcode Example for EAN 8

Barcode Header: ESC [; P₂ ; P₃ ; P₄ ; P₅ ; P₆ ; P₇ _ z
 ESC [; 205 ; 8 ; ; ; 1 ; _ z
 Start Barcode: ESC [? 0 h
 Data: 4 0 1 2 3 4 5 5
 Stop Barcode: ESC [? 0 /



Barcode Example for EAN 8 ADD-2

Barcode Header: ESC [; P₂ ; P₃ ; P₄ ; P₅ ; P₆ ; P₇ _ z
 ESC [; 205 ; 8 ; ; ; 1 ; _ z
 Start Barcode: ESC [? 0 h
 Data: 4 0 1 2 3 4 5 5 1 2
 Stop Barcode: ESC [? 0 /



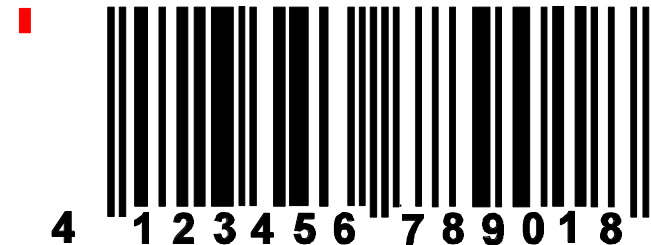
Barcode Example for EAN 8 ADD-5

Barcode Header: ESC [; P₂ ; P₃ ; P₄ ; P₅ ; P₆ ; P₇ _ z
 ESC [; 205 ; 8 ; ; ; 1 ; _ z
 Start Barcode: ESC [? 0 h
 Data: 4 0 1 2 3 4 5 5 8 6 1 0 4
 Stop Barcode: ESC [? 0 /



Barcode Example for EAN 13

Barcode Header: ESC [; P₂ ; P₃ ; P₄ ; P₅ ; P₆ ; P₇ _ z
 ESC [; 206 ; 8 ; ; ; 1 ; _ z
 Start Barcode: ESC [? 0 h
 Data: 4 1 2 3 4 5 6 7 8 9 0 1 8
 Stop Barcode: ESC [? 0 /



Barcode Example for EAN 13 ADD-2

Barcode Header: ESC [; P₂ ; P₃ ; P₄ ; P₅ ; P₆ ; P₇ _ z
 ESC [; 206 ; 8 ; ; ; 1 ; _ z
 Start Barcode: ESC [? 0 h
 Data: 4 1 2 3 4 5 6 7 8 9 0 1 8 1 2
 Stop Barcode: ESC [? 0 /



Barcode Example for EAN 13 ADD-5

Barcode Header: ESC [; P₂ ; P₃ ; P₄ ; P₅ ; P₆ ; P₇ _ z
 ESC [; 206 ; 8 ; ; ; 1 ; _ z
 Start Barcode: ESC [? 0 h
 Data: 4 1 2 3 4 5 6 7 8 9 0 1 8 8 6 1 0 4
 Stop Barcode: ESC [? 0 /



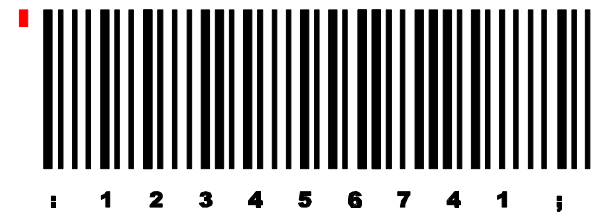
Barcode Example for Code 93

Barcode Header: ESC [; P₂ ; P₃ ; P₄ ; P₅ ; P₆ ; P₇ _ z
 ESC [; 207 ; 8 ; 1 ; 1 ; ; _ z
 Start Barcode: ESC [? 0 h
 Data: a C + O + D + E _ 9 3 W I e
 Stop Barcode: ESC [? 0 /



Barcode Example for MSI Mod 10/10

Barcode Header: ESC [; P₂ ; P₃ ; P₄ ; P₅ ; P₆ ; P₇ _ z
 ESC [; 208 ; 8 ; 1 ; 1 ; ; _ z
 Start Barcode: ESC [? 0 h
 Data: : 1 2 3 4 5 6 7 4 1 ;
 Stop Barcode: ESC [? 0 /



Barcode Example for UPC-E

Barcode Header: ESC [; P₂ ; P₃ ; P₄ ; P₅ ; P₆ ; P₇ _ z
 ESC [; 209 ; 8 ; ; ; 1 ; _ z
 Start Barcode: ESC [? 0 h
 Data: 0 1 2 3 4 5 6 5
 Stop Barcode: ESC [? 0 /



Barcode Example for UPC-E ADD-2

Barcode Header: ESC [; P₂ ; P₃ ; P₄ ; P₅ ; P₆ ; P₇ _ z
 ESC [; 209 ; 8 ; ; ; 1 ; _ z
 Start Barcode: ESC [? 0 h
 Data: 0 1 2 3 4 5 6 5 1 2
 Stop Barcode: ESC [? 0 /



Barcode Example for UPC-E ADD-5

Barcode Header: ESC [; P₂ ; P₃ ; P₄ ; P₅ ; P₆ ; P₇ _ z
 ESC [; 209 ; 8 ; ; ; 1 ; _ z
 Start Barcode: ESC [? 0 h
 Data: 0 1 2 3 4 5 6 5 8 6 1 0 4
 Stop Barcode: ESC [? 0 /



Barcode Example for UPC-A

Barcode Header: ESC [; P₂ ; P₃ ; P₄ ; P₅ ; P₆ ; P₇ _ z
 ESC [; 210 ; 8 ; ; ; 1 ; _ z
 Start Barcode: ESC [? 0 h
 Data: 0 1 2 3 4 5 6 7 8 9 0 5
 Stop Barcode: ESC [? 0 /



Barcode Example for UPC-A ADD-2

Barcode Header: ESC [; P₂ ; P₃ ; P₄ ; P₅ ; P₆ ; P₇ _ z
 ESC [; 210 ; 8 ; ; ; 1 ; _ z
 Start Barcode: ESC [? 0 h
 Data: 0 1 2 3 4 5 6 7 8 9 0 5 1 2
 Stop Barcode: ESC [? 0 /



Barcode Example for UPC-A ADD-5

Barcode Header: ESC [; P₂ ; P₃ ; P₄ ; P₅ ; P₆ ; P₇ _ z
 ESC [; 210 ; 8 ; ; ; 1 ; _ z
 Start Barcode: ESC [? 0 h
 Data: 0 1 2 3 4 5 6 7 8 9 0 5 8 6 1 0 4
 Stop Barcode: ESC [? 0 /



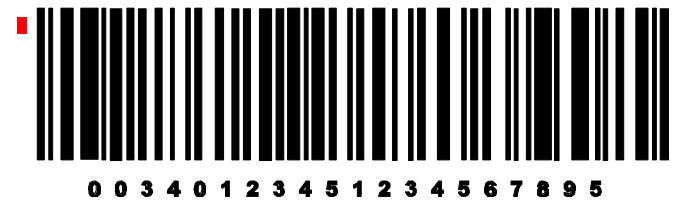
Barcode Example for Code 128

Barcode Header: ESC [; P₂ ; P₃ ; P₄ ; P₅ ; P₆ ; P₇ _ z
 ESC [; 211 ; 8 ; 1 ; 1 ; ; _ z
 Start Barcode: ESC [? 0 h
 Data: C o d e _ 1 2 8
 Stop Barcode: ESC [? 0 /



Barcode Example for Code 128 using FNC1 = Coding] C 1

Barcode Header: ESC [; P₂ ; P₃ ; P₄ ; P₅ ; P₆ ; P₇ _ z
 ESC [; 211 ; 8 ; 1 ; 1 ; ; _ z
 Start Barcode: ESC [? 0 h
 Data:] C 1 0 0 3 4 0 1 2 3 4 5 1 2 3 4 5 6 7 8 9 5
 Stop Barcode: ESC [? 0 /



Barcode Example for POSTNET

Barcode Header: ESC [; P₂ ; P₃ ; P₄ ; P₅ ; P₆ ; P₇ _ z
 ESC [; 112 ; ; ; ; _ z
 Start Barcode: ESC [? 0 h
 Data: 1 2 3 4 5 6 7 8 9 0 1
 Stop Barcode: ESC [? 0 /
 Data: CR LF LF
 Mark Pollan CR LF
 101 Main St CR LF
 Anytown US 12345-6789



Mark Pollan
 101 main St
 Anytown US 12345-6789

Barcode Example for KIX - PTT, Post Nederland

Barcode Header: ESC [; P₂ ; P₃ ; P₄ ; P₅ ; P₆ ; P₇ _ z
 ESC [; 113 ; ; ; ; _ z
 Start Barcode: ESC [? 0 h
 Data: 1 2 3 4 5 6 7 8 9 0
 Stop Barcode: ESC [? 0 /



Programming two Barcodes symbols on the same line

Barcode Header: ESC [; P₂ ; P₃ ; P₄ ; P₅ ; P₆ ; P₇ _ z
 ESC [; 201 ; 7 ; 0 ; 0 ; 1 ; _ z
 Start Barcode: ESC [? 0 h
 Data: * C _ O _ D _ E _ _ _ 3 9 *
 Stop Barcode: ESC [? 0 /
 Blank zone _ _ _
 Start Barcode: ESC [? 0 h
 Data: * C _ O _ D _ E _ _ _ 3 9 *
 Stop Barcode: ESC [? 0 /



Programming two Barcodes symbols separated by CR and LF

Barcode Header: ESC [; P₂ ; P₃ ; P₄ ; P₅ ; P₆ ; P₇ _ z
 ESC [; 201 ; 7 ; 0 ; 0 ; 1 ; _ z
 Start Barcode: ESC [? 0 h
 Data: * C _ O _ D _ E _ _ _ 3 9 *
 Stop Barcode: ESC [? 0 /
 Blank zone: CR LF LF LF LF LF LF LF LF
 Start Barcode: ESC [? 0 h
 Data: * C _ O _ D _ E _ _ _ 3 9 *
 Stop Barcode: ESC [? 0 /



Programming two Barcodes symbols in landscape on the same line

Barcode Header: ESC [; P₂ ; P₃ ; P₄ ; P₅ ; P₆ ; P₇ _ z
 ESC [; 401 ; 7 ; 0 ; 0 ; 1 ; _ z
 Start Barcode: ESC [? 0 h
 Data: * C _ O _ D _ E _ _ _ 3 9 *
 Stop Barcode: ESC [? 0 /
 Blank zone: _ _ _
 Start Barcode: ESC [? 0 h
 Data: * C _ O _ D _ E _ _ _ 3 9 *
 Stop Barcode: ESC [? 0 /



Appendix H Verschiedenes / Miscellaneous**Bestellnummern**

Drucker PP 405 (EURO Version)	8707 240 01003
Drucker PP 405 (US Version)	8707 240 01004
PM SER/PAR 405	8707 240 90105
PM SER/PAR IGP 405	8707 240 90108
PM IPDS-TWX/PAR 405	8707 240 90114
PM TR 405 UTP	8707 240 90129
PM TR 405 STP	8707 240 90131
PM LWSI 405	8707 240 90201
PM IBM COAX 405	8707 240 90307
PM IBM TWINAX 405	8707 240 90308
T-Stück für TWINAX 405	8707 240 90832
PM Open Frame 405	8707 240 90309
PM ETHERNET 405	8707 240 92306
PM S/P DAN 405	8707 240 90144

PM = Personality Modul

Colour Option 405 (Farboption)	8707 240 90801
Platen Assy (Schreibwalze)	8707 240 90802
Pick-up Rolls ASF (Vereinzelungsrollen)	8707 240 90821
24-Needle Print Head (Druckkopf)	9707 240 90861
Print Head 3024 (Druckkopf)	8707 240 90862
Printer Stand 405 (Druckertisch)	8707 240 91811
Autom. Einzelblattzuführung A	8707 240 91821
Autom. Einzelblattzuführung B1 (für Sonderpapiere, Briefumschläge)	8707 240 91829
Autom. Einzelblattzuführung B2 (für schwere Papiere)	8707 240 91831
Parallel Centronics Interface Kabel 2 m	8707 290 90831
Farbband Kassette schwarz	8709 002 37801
Farbband Kassette 4-farbig	8709 002 37901

Die Druckertreiber für Windows® finden Sie im Internet unter der Adresse:
<http://www.psi-si.de>

	Order Numbers	Order Numbers	
Order Numbers		Colour Option 405	8707 240 90801
Printer PP 405 (EURO Version)	8707 240 01003	Platen Assembly	8707 240 90802
Printer PP 405 (US Version)	8707 240 01004	Pick-up Rolls ASF	8707 240 90821
PM SER/PAR 405	8707 240 90105	24-Needle Print Head	8707 240 90861
PM SER/PAR IGP 405	8707 240 90108	Print Head 3024	8707 240 90862
PM IPDS-TWX/PAR 405	8707 240 90114	Printer Stand 405	8707 240 91811
PM TR 405 UPT	8707 240 90129	Automatic Sheet Feeder A	8707 240 91821
PM TR 405 STP	8707 240 90131	Automatic Sheet Feeder B1 (for special paper, envelopes)	8707 240 91829
PM LWSI 405	8707 240 90201	Automatic Sheet Feeder B2 (for thick paper, envelopes)	8707 240 91831
PM IBM COAX 405	8707 240 90307	Parallel Centronics Interface Cable 2 m	8707 290 90831
PM IBM TWINAX 405	8707 240 90308	Ribbon Cassette, black	8709 002 37801
T-Connector for TWINAX 405	8707 240 90832	Ribbon Cassette, 4 colour	8709 002 37901
PM Open Frame Interface	8707 240 90309		
PM ETHERNET 405	8707 240 92306		
PM S/P DAN 405	8707 240 90144		

PM = Personality Modul

Information for the System Manager

Reset off Menu Access

To reactivate the menu access function, perform the following steps:

- Switch off the printer. Press the **MENU** and **START/STOP** keys simultaneously. While holding down the two keys, switch on the printer. When the message **MENU ACCESS** is displayed, release the keys. Now you are able to change the menu access function. If the new setting is supposed to be permanent, don't forget the **SAVE** function.