

THERMAL PRINTING SOLUTIONS

A711 PRINTER SERIES REFERENCES NSKGG****

USER MANUAL

Reference 31 10 242

Z Issue

June 2010



AXIOHM

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EVOLUTIONS

Date	Issue	Modifications
04/2009	Preliminary	
06/2010	Z	Update for standard A711 versions

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1. YOUR PRINTER A711

1.1. Getting ready to use the printer

The packing box contains:

- One NSKGG printer
- One Spindle
- One Universal Power Supply
- One Power cable to be set between power supply and power network
- One starter paper roll
- One Set-Up Guide
- One Safety Notice

1.2. General description

The A711 printer is ideal for printing on paper rolls or labels.



1.2.1.Buttons

On/off button: The on/off power button is the left button on the front panel of the printer. Once you have the power cord plugged in, printer is On.
Push the On/Off button to turn the printer Off, press it again to turn the printer On. (Delays).

Form Feed Button: *In label mode:* For printing labels push this button once to advance the label roll one label, so the next set of three guide holes or Silicon on the label roll aligns with the label tear bar. The label roll advances one label each time you press the form feed button.

Paper feed button: *In listing mode:* As long as you push this button the paper advances.

1.2.2.Light indicator

Power light: When the printer is on, the power light located on the front panel of the printer will glow green.

The light goes off when you turn the printer off.

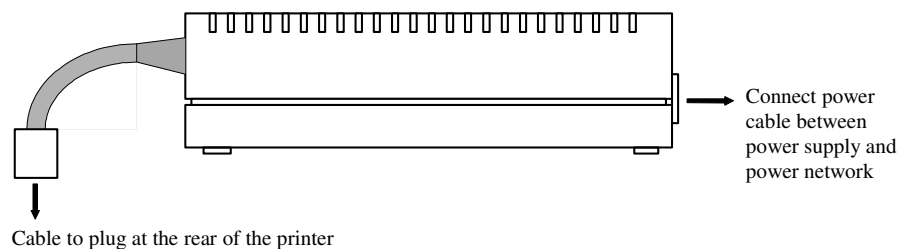
Status Printer: When light is on continuously, the printer is ready to operate.

When light is flashing, an error occurs or printer's maintenance mode.

1.2.3.Tear Bar

Tear-Bar: The serrated tear bar on the exit slot allows cut paper or label removal.

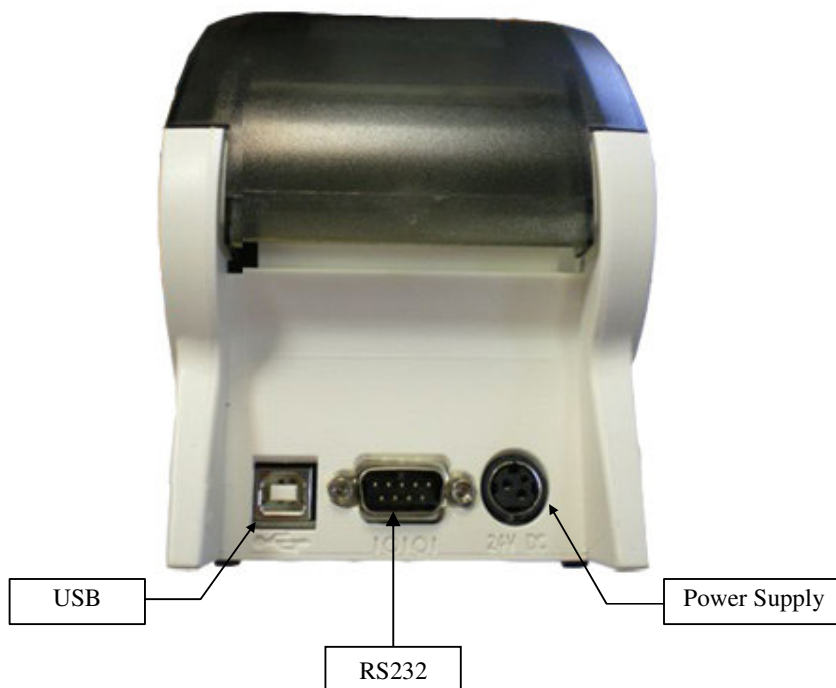
1.3.Connecting the power supply



Connections are achieved with the two cables provided in the printer package.

1.4.Connecting the printer

Connections have to be set at the rear of the printer: power supply and interface cables, as shown on the following picture:



1.5.Paper Loading

Both the paper roll and the roll of labels can be quickly and easily loaded into the printer.

1.5.1.Loading the paper roll:

- Open the cover so that you have access to the interior of the printer. Remove any packing material.
- Be certain that the power cord is connected. Now turn on the printer. The green power light will flash.
- Feed the free end of the roll into the feed slot on the inside of the printer. The paper roll is placed directly into the reservoir.
- Push the end into the slot until you feel a slight resistance. Continue pushing gently. The feed motor will grab the end of the paper through the printer and out the exit slot, stopping automatically.
- If the motor stops turning while you are still in the process of loading the paper, just press the form feed button to get it started again. *(To protect itself, the motor stops turning after a few seconds.)*
- Tear off the paper coming out of the printer by grasping the end and pulling downward and sideways across the edge of the tear bar.
- Close the cover. Your printer is ready to go!

1.5.2.Loading Labels

- Open the cover so that you have access to the interior of the printer. Remove any packing material.
- Locate your free starter roll of labels and remove the tape from the end of the roll. **Cut the lead label in half** to create a nice straight edge.
- The printer grabs a straight edge much easier.



Inserting the label into the feed slot before placing the label roll into the printer

- Be certain that the power cord is connected. Now turn on the printer. The green power light will flash.
- Feed the free end of the roll into the feed slot on the inside of the printer.
- Push the end into the slot until you feel a slight resistance. Continue pushing gently. The label feed motor will grab the end and carry the labels through the printer and out the exit slot, stopping automatically at the end of the first label.
If the motor stops turning while you are still in the process of loading labels, just press the form feed button to get it started again. (To protect itself, the motor stops turning after a few seconds)
- Move the label roll into the bucket
- Tear off the labels coming out the front of the printer by grasping the end and pulling downward and sideways across the edge of the label tear bar.
- Close the cover.

1.5.3.Loading Labels with spindle

Refer to Figures 1-1, 1-2 and 1-3.

- Open the cover so that you have access to the interior of the printer. Remove any packing material.
- Remove the label spindle by lifting it straight up from the label spindle holder. The spindle is used uniquely for printing labels.
- Locate your free starter roll of labels and remove the tape from the end of the roll. **Cut the lead label in half** to create a nice straight edge.

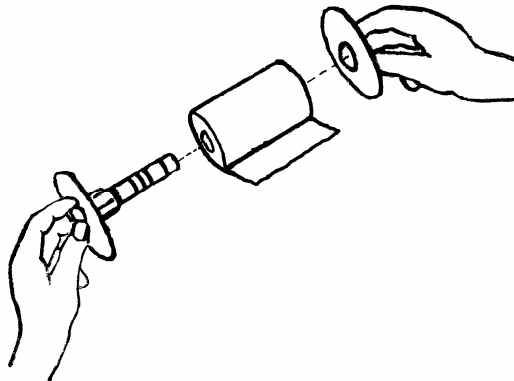


Figure 1-1: Loading narrow labels onto the label spindle.

The printer grabs a straight edge much easier.

- Refer to Figure 1-1 while following these instructions: For narrow labels, remove the right half of the label spindle and put the label on the label spindle so that the end feeds from the bottom of the roll. Reconnect the right half of the spindle with the label roll snugly secured between the circular plates of the spindle.

If you're using wide labels, remove the right half of the label spindle and turn it around, so that the long end the spindle is on the inside. An illustration indicating how to position the spindle is moulded into the back plastic base inside printer. Put the labels on the label spindle so that the end feeds from the bottom of the roll.

Reconnect the right half of the spindle, with the label roll snugly secured between the circular plates of the spindle.

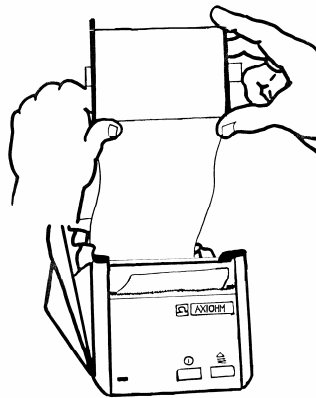


Figure 1-2: Inserting the label into the feed slot before placing the label roll into the printer.

- Be certain that the power cord is connected. Now turn on the printer. The green power light will flash and you will hear the printer's motor turning as it looks for labels to feed.
- While holding the spindle of labels in one hand, use your other hand to feed the free end of the roll into the feed slot on the inside of the printer as shown in Figure 1-2. (If it is easier, you can rest the label spindle on the top edge of the printer, freeing both hands to help with getting the label feeding started).
- Push the end into the slot until you feel a slight resistance. Continue pushing gently. The label feed motor will grab the end and carry the labels through the printer and out the exit slot, stopping automatically at the end of the first label.
- If the motor stops turning while you are still in the process of loading labels, just press the form feed button to get it started again. (To protect itself, the motor stops turning after a few seconds)
- Return the label roll spindle with the labels to the spindle holder. The spindle will settle into the raised shoulder slots in the printer. See Figure 1-3.

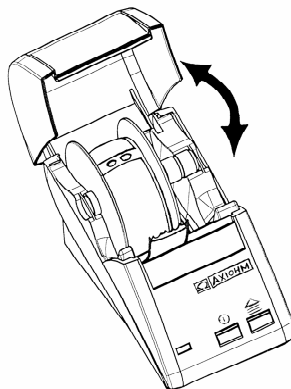


Figure 1-3: After the labels have been properly fed past the label tear bar, rest the label spindle holder and close the cover.

- Tear off the labels coming out the front of the printer by grasping the end and pulling downward and sideways across the edge of the label tear bar.
- Close the cover.

2. A711 GENERAL SPECIFICATIONS

2.1. Features

Supported mechanism:	NSKGG 24.0V		
Communication Interfaces:	RS232 Up to 115200b/s 2Kb reception buffer USB full speed (12Mb) 2Kb reception buffer		
Standard Flash Memory Size :	512kb		
Hardware Option Flash data Size :	2Mb		
Amount of Flash Memory accessible for user storage:	Standard :	192Kb internal flash memory	
	Option :	2Mb external flash memory	
Standard Ram Memory Size:	128kb	~80Kb User features mode.	
Hardware Option Ram Memory Size :	256kb		
Resident Character per Size (dot*dot) :	16*24	28 columns	Elite
	12*24	37 columns	Pica
Available Print modes	Standard / Double High / Double wide/ Upside Down / Rotated / Underlines / Bold / Italic / Reverse / Scaled / Graphics		
Resident character set:	Code Page :	437, 737, 850, 852, 858, 860, 862, 863, 865, 866, 1252, 1253, Katakana	
User Fonts :	Yes	224 Kb Max. ⁽¹⁾	
Easy font support (Character User defined)	Yes	Singles fonts - Double Font ⁽¹⁾	
Logo support :	Yes	256 Kb Max. ⁽¹⁾	
User data storage	Yes ⁽¹⁾		
Bar code support :	Yes	Code 39, 93, Code 128, EAN 128, UPC-A, UPC-E, JAN8 (EAN),JAN13 (EAN), Interleaved 2 of 5 (ITF), PDF-417	
Bar code Print modes :	Standard / Upside Down / Rotated		
Paper Loading :	Auto Load		
Top of Form management Support	Yes automatic detection	(Label Mode)	
Label Length (mm) :	Min. 37.0 Max 187.5	Default 105.0	
Out of paper / Label detection	Optical sensor		
Auxiliary Sensor :	1	(Hardware Option)	
Print resolution :	8 dots/mm		
Speed : ⁽²⁾	Up to 150 mm/second		
Media Separation :	Tear Bar		
Additional :	Page Mode – Side Writing Mode ⁽¹⁾ Firmware update Dot line measurement		
Drivers available :	Linux , Windows 2000, XP,VISTA,Seven		
Human Interface :	Configuration software commands		

⁽¹⁾ Max. Memory User Storage (Ram/Flash)

⁽²⁾ Reaching and maintaining this print speed requires that data throughput of communication with host matches or exceeds print throughput; with the paper quality adapted.

2.2. Dimensions

Size (L x W x H) mm	190 x 103 x 141
Weight (without paper roll)	645g
Width of accepted documents	62.0 mm
Max paper label bucket diameter	80.0 mm

2.3. Print Head Specifications

Printing method	Direct thermal line dot method
Head Resolution	8 dots / mm - 203 dpi
Number of dots /line	448
Printing width	56 mm
Head dot life	1x10 ⁸ Pulses
Printing speed ⁽¹⁾	Up to 150 mm/second
Mechanical life time (abrasion)	50 km

2.4. Interface Specifications

Input Voltage	24VDC Mini Din Hosiden 3 points at the rear of the printer
RS232	1 DB9 at the rear of the printer
USB	1 Connector Type B (square) at the rear of the printer
LED	1 Green Led. At the front of the printer
BUTTONS	2 On/Off Button / Form Feed Button

2.5. Power Supply

Power Supply	Universal power supply external to the printer
Input Rated Voltage	100-240 VAC
Input Frequency	50-60 Hz
Output Voltage	24 VDC
Output Current	2,5A
Output Watt	60W
Case size (L x W x H) mm	122 x 60 x 34
Weight	330g

2.6. Environnemental specifications

Operating temperature :	+5 to 40 °C
Humidity :	65% to 85% RH (non-condensing)
Storage temperature :	-10 °C to 60 °C
Maximum humidity :	85% RH (non-condensing)

2.7. Reliability

Reliability MTBF	240 000h
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2.8. Compliance to legal approval (EMI, ESS, CE and FCC)

Regulation For Printer	UL60950-1 (USA) and CSA22.2 n°60950-1 (Canada) CE : IEC60950- EN55022 EN61000-3-2 EN61000-3-3
Regulation For Power Supply	IEC 601-1 (Medical) UL60950-1 and CSA22.2 n°60950-1 CE
ROHS	Yes

The printer meets safety standards when used with AXIOHM recommended Power Supply. The use of different power supply equipment will require new safety certifications.

2.9. General safety specification

All communication connectors should be SELV connectors in order to meet safety standards.

Use of an inappropriate cable or power supply may seriously damage your printer and affect safety standards of the printer. The power supply main connector should be easily accessed to enable power disconnection.

The power supply cable is a disconnect device.

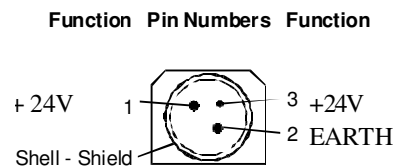
Power supply input requirements: 110/240 VAC, 50/60 Hz.

Operating temperature: +5 to 40 °C.

3. POWER SUPPLY

3.1. Connecteur MiniDin Hosiden :

On the board the connector is a shielded 3-pin female mini-Din plug and is located at the rear of the printer.



3.2. Specification External Power supply :

MODEL : SA 165A – 2425V -3 ROHS

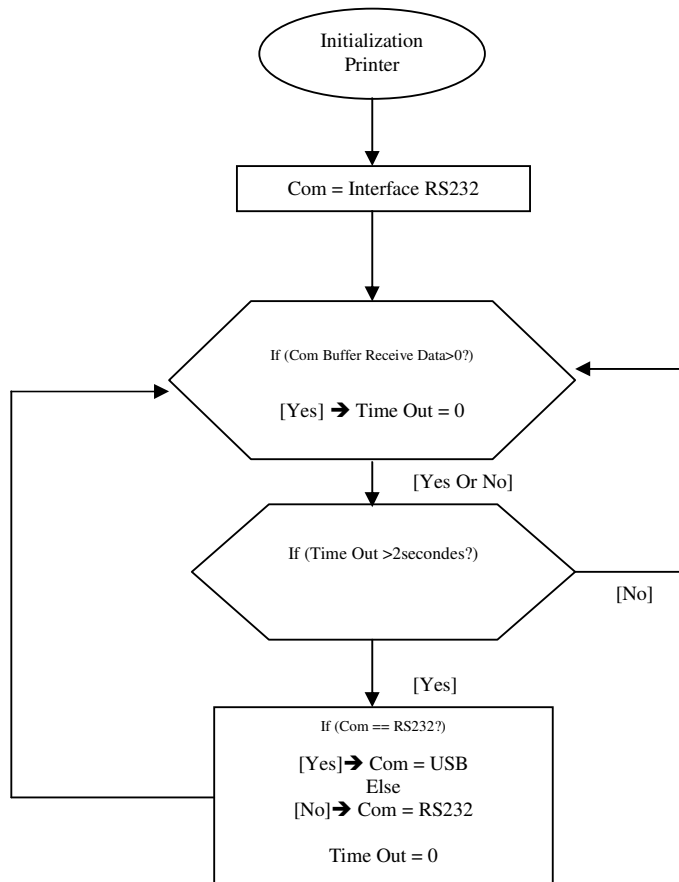
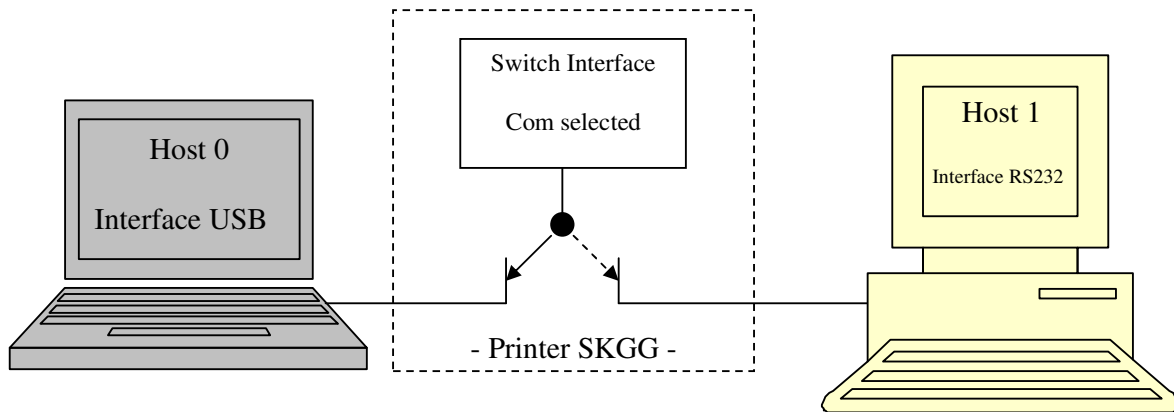
INPUT :	100 – 240V 50 – 60Hz 1,5A	Voltage AC Frequency Current
OUTPUT :	24V 2,5A	Voltage DC Current

	60W	Power
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4. COMMUNICATION SWITCHING INTERFACES

Availability of USB and RS232 interfaces at the same time that allows connecting the printer to 2 terminals for alternative printing if required.

4.1. Schema fonctional Switch Interface

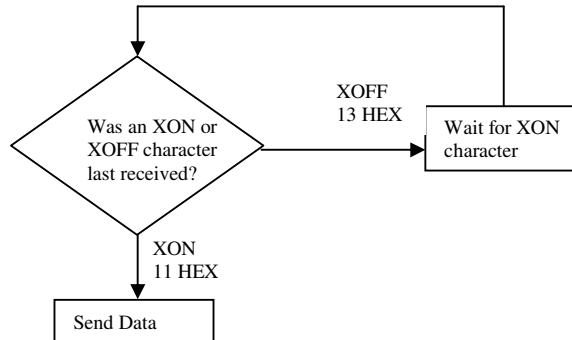


5. RS232 PARAMETERS

- The RS-232C interface uses either XON/XOFF (software) or DTR/DSR (hardware) protocol to control the flow of information between the computer and the printer.
- In XON/XOFF mode, a particular character is sent back and forth between the host and the printer to regulate the communication.
- In DTR/DSR mode, changes in the DTR/DSR signal on the RS-232C interface controls the information flow.

5.1.Xon/Xoff Protocol

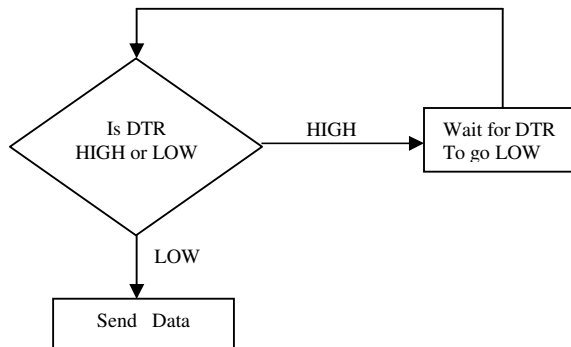
The XON/XOFF characters controls the information transfer between the printer and the host computer. The printer sends an XON character when it is ready to receive data and it sends an XOFF character when it cannot accept any more data. The software on the host computer must monitor the communication link as shown in the following flowchart in order to send data at the appropriate times.



XON character = hexadecimal 11.
XOFF character = hexadecimal 13.

5.2.DTR/DSR Protocol

The DTR signal is used to control data transmission to the printer. It is driven low when the printer is ready to receive data and driven high when it cannot accept any more data.

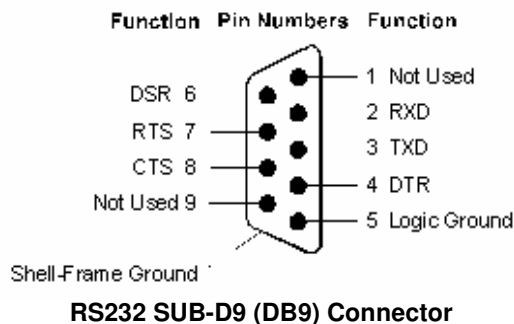


5.3.Dual Protocol

The XON/XOFF characters controls and the DTR/DSR signal is used to control data transmission to the printer.

5.4.Connector

RS232 interface uses 9-pin D-type male connectors.
Pin CTS and RTS connected on the board.



6. USB PARAMETERS

Axiohm's implementation of USB complies with "Universal Serial Bus Specification" revision 2.0

6.1. Capabilities

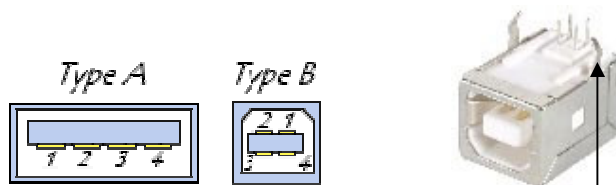
NSKGG is a device only, and doesn't provide hub capabilities.

The maximum recommended cable length is 3 meters.

Low Speed (1,5Mbits/sec) and full speed communications (12Mbits/sec) are supported.

6.2. Connector Type B :

The connector is located at the rear of the printer, and is of B-type



Pin 1:	Power VUSB
Pin 2:	Data D-
Pin 3:	Data D+
Pin 4:	GND
Pin 5:	Shielding

Refer to USB specification rev 2.0 for more information.

6.3. Interface Configuration

The data are exchanged between host and printer via four endpoints (One configuration only):

Number	Type	Direction	Size	During	Description
00	Control	IN / OUT	16	-	Control end point (Default End Point)
01	Interrupt	OUT	16	-	Real time commands from Host to Printer
81	Interrupt	IN	16	-	Real time reply from Printer to Host
02	Bulk	OUT	64	-	For transmission of all printable data and commands from host to printer
82	Bulk	IN	64	-	For return of all synchronous data, status or other types of information except unsolicited status mode messages, from printer to host.

6.4. Other information

<u>Vendor Id</u>	AXIOHM USB Vendor Id = 0x05D9
<u>Product Id</u>	NSKGG Product Id = 0xA000
<u>Remark:</u>	The interface USB is automatically detected.

7. PRINT SPECIFICATION

7.1.Duty cycle restrictions

25 °C Duty cycle is 33%

7.2.Characters Print Modes

Available print modes:

- ◆ Standard (Elite)
- ◆ Compressed (Pica)
- ◆ Double High
- ◆ Double Wide
- ◆ Upside Down
- ◆ Rotated
- ◆ Underlined
- ◆ Bold
- ◆ Reverse
- ◆ Italic
- ◆ Scaled

Characters sizes for the Standard, Compressed modes:

Standard (Elite)

- ◆ Characters per Inch: 12.70
- ◆ Characters per Line : 28 for 62.0 mm Paper
- ◆ Cell Size: 16 x 24 Dots
- ◆

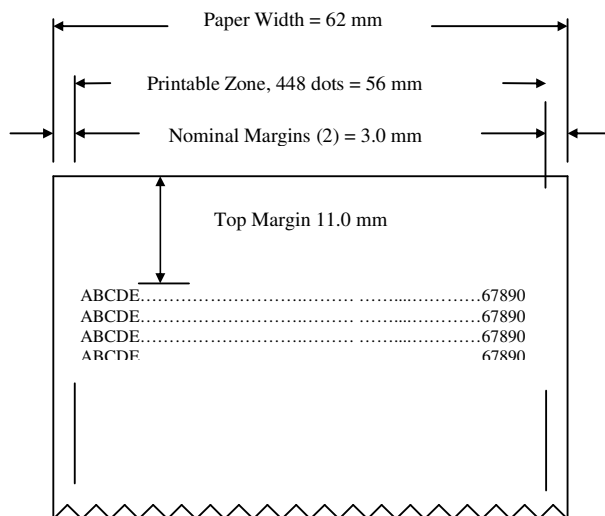
Compressed (Pica)

- ◆ Characters per Inch: 16.93
- ◆ Characters per line : 37 for 62.0 mm Paper
- ◆ Cell Size: 12 x 24 Dots

7.3.Print zone

Print Zones for 62 mm (2.44 inches) paper:

- ◆ 448 dots (addressable) @ 8 dots/mm, centered on 62 mm
- ◆ Standard mode: 28 columns = 56 mm (2.20 inches)
- ◆ Standard Mode: minimum margins: 3.0 mm (.118 inches)
- ◆ Top margin to Tear Bar cut: 11.0 mm (0.43 inches)



7.4.Character sets

7.4.1.Code Page 437

00	10	20	30	40	50	60	70	80	90	A0	B0	C0	D0	E0	F0
0	16	SP	0	@	P	`	p	Ç	É	á	⋮	┐	└	∞	≡
01	11	!	1	A	Q	a	q	ü	æ	í	⋮	┐	└	β	±
1	17	33	49	65	81	97	113	129	145	161	177	193	209	225	241
02	12	"	2	B	R	b	r	é	Æ	ó	⋮	┐	└	Γ	≥
2	18	34	50	66	82	98	114	130	146	162	178	194	210	226	242
03	13	#	3	C	S	c	s	â	ô	ú	⋮	┐	└	π	≤
3	19	35	51	67	83	99	115	131	147	163	179	195	211	227	243
04	14	\$	4	D	T	d	t	ä	ö	ñ	⋮	┐	└	Σ	∫
4	20	36	52	68	84	100	116	132	148	164	180	196	212	228	244
05	15	%	5	E	U	e	u	à	ò	Ñ	⋮	┐	└	σ	∫
5	21	37	53	69	85	101	117	133	149	165	181	197	213	229	245
06	16	&	6	F	V	f	v	å	û	a	⋮	┐	└	μ	÷
6	22	38	54	70	86	102	118	134	150	166	182	198	214	230	246
07	17	'	7	G	W	g	w	ç	ù	o	⋮	┐	└	τ	≈
7	23	39	55	71	87	103	119	135	151	167	183	199	215	231	247
08	18	(	8	H	X	h	x	ê	ÿ	¿	⋮	┐	└	φ	°
8	24	40	56	72	88	104	120	136	152	168	184	200	216	232	248
09	19	)	9	I	Y	i	y	ë	Ö	¬	⋮	┐	└	Θ	•
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15	31	47	63	79	95	111	127	143	159	175	191	207	223	239	255

7.4.2.Code Page 737

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0-	NUL 0000	SOH 0001	STX 0002	ETX 0003	EOT 0004	ENQ 0005	ACK 0006	BEL 0007	BS 0008	HT 0009	LF 000A	VT 000B	FF 000C	CR 000D	SO 000E	SI 000F
1-	DLE 0010	DC1 0011	DC2 0012	DC3 0013	DC4 0014	NAK 0015	SYN 0016	ETB 0017	CAN 0018	EM 0019	SUB 001A	ESC 001B	FS 001C	GS 001D	RS 001E	US 001F
2-	SP 0020	! 0021	« 0022	# 0023	\$ 0024	% 0025	& 0026	' 0027	(0028	) 0029	* 002A	+ 002B	, 002C	- 002D	. 002E	/ 002F
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4-	@ 0040	A 0041	B 0042	C 0043	D 0044	E 0045	F 0046	G 0047	H 0048	I 0049	J 004A	K 004B	L 004C	M 004D	N 004E	O 004F
5-	P 0050	Q 0051	R 0052	S 0053	T 0054	U 0055	V 0056	W 0057	X 0058	Y 0059	Z 005A	[005B	\ 005C	] 005D	^ 005E	<u> 005F</u>
6-	` 0060	a 0061	b 0062	c 0063	d 0064	e 0065	f 0066	g 0067	h 0068	i 0069	j 006A	k 006B	l 006C	m 006D	n 006E	o 006F
7-	p 0070	q 0071	r 0072	s 0073	t 0074	u 0075	v 0076	w 0077	x 0078	y 0079	z 007A	{ 007B	 007C	} 007D	~ 007E	␣ 2302
8-	À 391	Á 392	Â 393	Ã 394	Ä 395	Å 396	Æ 397	Ç 398	Ð 399	Ñ 39A	Ò 39B	Ó 39C	Ô 39D	Õ 39E	Ö 39F	× 3A0
9-	Ð 3A1	Σ 3A3	Τ 3A4	Υ 3A5	Φ 3A6	Χ 3A7	Ψ 3A8	Ω 3A9	α 3B1	β 3B2	γ 3B3	δ 3B4	ε 3B5	ζ 3B6	η 3B7	θ 3B8
A-	Ι 3B9	Κ 3BA	Λ 3BB	Μ 3BC	Ν 3BD	Ξ 3BE	Ο 3BF	Π 3C0	Ρ 3C1	Σ 3C3	Ζ 3C2	Τ 3C4	Υ 3C5	Φ 3C6	Χ 3C7	Ψ 3C8
B-	␣ 2591	␣ 2592	␣ 2593	 2502	⌋ 2524	⌋ 2561	⌋ 2562	⌋ 2556	⌋ 2555	⌋ 2563	⌋ 2551	⌋ 2557	⌋ 255D	⌋ 255C	⌋ 255B	⌋ 2510
C-	⌋ 2514	⌋ 2534	⌋ 252C	⌋ 251C	— 2500	⌋ 253C	⌋ 255E	⌋ 255F	⌋ 255A	⌋ 2554	⌋ 2569	⌋ 2566	⌋ 2560	= 2550	⌋ 256C	⌋ 2567
D-	⌋ 2568	⌋ 2564	⌋ 2565	⌋ 2559	⌋ 2558	⌋ 2552	⌋ 2553	⌋ 256B	⌋ 256A	⌋ 2518	⌋ 250C	■ 2588	■ 2584	■ 258C	■ 2590	■ 2580
E-	ω 3C9	ά 3AC	έ 3AD	ή 3AE	ï 3CA	í 3AF	ó 3CC	ú 3CD	ü 3CB	ώ 3CE	À 386	É 388	Η 389	Ι 38A	Ο 38C	Υ 38E
F-	Ω 38F	± B1	≥ 2265	≤ 2264	Ï 3AA	ÿ 3AB	÷ F7	≈ 2248	° B0	· 2219	· B7	√ 221A	n 207F	2 B2	■ 25A0	■ A0

7.4.3.Code Page 850

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06	16	26	36	46	56	66	76	86	96	A6	B6	C6	D6	E6	F6
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7.4.4.Code Page 852

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7.4.5.Code Page 858

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

7.4.6.Code Page 860

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1	17	33	49	65	81	97	113	129	145	161	177	193	209	225	241
02	12	22	32	42	52	62	72	82	92	A2	B2	C2	D2	E2	F2
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04	14	24	34	44	54	64	74	84	94	A4	B4	C4	D4	E4	F4
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4	20	36	52	68	84	100	116	132	148	164	180	196	212	228	244
05	15	25	35	45	55	65	75	85	95	A5	B5	C5	D5	E5	F5
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5	21	37	53	69	85	101	117	133	149	165	181	197	213	229	245
06	16	26	36	46	56	66	76	86	96	A6	B6	C6	D6	E6	F6
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6	22	38	54	70	86	102	118	134	150	166	182	198	214	230	246
07	17	27	37	47	57	67	77	87	97	A7	B7	C7	D7	E7	F7
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7	23	39	55	71	87	103	119	135	151	167	183	199	215	231	247
08	18	28	38	48	58	68	78	88	98	A8	B8	C8	D8	E8	F8
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8	24	40	56	72	88	104	120	136	152	168	184	200	216	232	248
09	19	29	39	49	59	69	79	89	99	A9	B9	C9	D9	E9	F9
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10	26	42	58	74	90	106	122	138	154	170	186	202	218	234	250
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7.4.7.Code Page 862

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

7.4.8.Code Page 863

00	10	20	30	40	50	60	70	80	90	A0	B0	C0	D0	E0	F0
NUL		SP	0	@	P	`	p	Ç	É		⋮	L	⌌	α	≡
0	16	32	48	64	80	96	112	128	144	160	176	192	208	224	240
01	11	21	31	41	51	61	71	81	91	A1	B1	C1	D1	E1	F1
XON	!	1	A	Q	a	q	ü	È	'	⌘	⌞	⌟	⌠	β	±
1	17	33	49	65	81	97	113	129	145	161	177	193	209	225	241
02	12	22	32	42	52	62	72	82	92	A2	B2	C2	D2	E2	F2
		"	2	B	R	b	r	é	Ê	ó	⌚	⌡	⌢	Γ	≥
2	18	34	50	66	82	98	114	130	146	162	178	194	210	226	242
03	13	23	33	43	53	63	73	83	93	A3	B3	C3	D3	E3	F3
XOFF	#	3	C	S	c	s	â	ô	ú			⌣	⌤	π	≤
3	19	35	51	67	83	99	115	131	147	163	179	195	211	227	243
04	14	24	34	44	54	64	74	84	94	A4	B4	C4	D4	E4	F4
		\$	4	D	T	d	t	Â	Ë	..	⌥	—	⌦	Σ	ƒ
4	20	36	52	68	84	100	116	132	148	164	180	196	212	228	244
05	15	25	35	45	55	65	75	85	95	A5	B5	C5	D5	E5	F5
		%	5	E	U	e	u	à	ï	³	⌧	⌧	⌧	σ	J
5	21	37	53	69	85	101	117	133	149	165	181	197	213	229	245
06	16	26	36	46	56	66	76	86	96	A6	B6	C6	D6	E6	F6
		&	6	F	V	f	v	¶	û	'	⌨	〈	〉	μ	÷
6	22	38	54	70	86	102	118	134	150	166	182	198	214	230	246
07	17	27	37	47	57	67	77	87	97	A7	B7	C7	D7	E7	F7
		'	7	G	W	g	w	ç	ù	—	⌫	⌬	⌭	τ	≈
7	23	39	55	71	87	103	119	135	151	167	183	199	215	231	247
08	18	28	38	48	58	68	78	88	98	A8	B8	C8	D8	E8	F8
		(	8	H	X	h	x	ê	æ	î	⌮	⌯	⌰	φ	°
8	24	40	56	72	88	104	120	136	152	168	184	200	216	232	248
09	19	29	39	49	59	69	79	89	99	A9	B9	C9	D9	E9	F9
		)	9	I	Y	i	y	ë	ô	⌱	⌲	⌳	⌴	Θ	•
9	25	41	57	73	89	105	121	137	153	169	185	201	217	233	249
0A	1A	2A	3A	4A	5A	6A	7A	8A	9A	AA	BA	CA	DA	EA	FA
LF		*	:	J	Z	j	z	è	Ü	⌵	⌶	⌷	⌸	Ω	•
10	26	42	58	74	90	106	122	138	154	170	186	202	218	234	250
0B	1B	2B	3B	4B	5B	6B	7B	8B	9B	AB	BB	CB	DB	EB	FB
ESC	+	;	K	[	k	{	ï	¢	½	⌹	⌺	⌻	⌼	δ	√
11	27	43	59	75	91	107	123	139	155	171	187	203	219	235	251
0C	1C	2C	3C	4C	5C	6C	7C	8C	9C	AC	BC	CC	DC	EC	FC
		,	<	L	\	l		î	£	¼	⌽	⌿	⌿	∞	n
12	28	44	60	76	92	108	124	140	156	172	188	204	220	236	252
0D	1D	2D	3D	4D	5D	6D	7D	8D	9D	AD	BD	CD	DD	ED	FD
CR	GS	-	=	M	]	m	}	=	ù	¾	⌿	=	⌿	∅	²
13	29	45	61	77	93	109	125	141	157	173	189	205	221	237	253
0E	1E	2E	3E	4E	5E	6E	7E	8E	9E	AE	BE	CE	DE	EE	FE
		.	>	N	^	n	~	À	Û	«	⌿	⌿	⌿	ε	■
14	30	46	62	78	94	110	126	142	158	174	190	206	222	238	254
0F	1F	2F	3F	4F	5F	6F	7F	8F	9F	AF	BF	CF	DF	EF	FF
		/	?	O	_	o	SP	§	f	»	⌿	⌿	⌿	⌿	
15	31	47	63	79	95	111	127	143	159	175	191	207	223	239	255

7.4.9.Code Page 865

00	10	20	30	40	50	60	70	80	90	A0	B0	C0	D0	E0	F0
0	16	32	0	@	P	`	p	Ç	É	á	⋮	⌒	⌒	∞	≡
01	11	21	31	41	51	61	71	81	91	A1	B1	C1	D1	E1	F1
1	17	33	!	1	A	Q	a	q	ü	æ	í	⌒	⌒	β	±
02	12	22	32	42	52	62	72	82	92	A2	B2	C2	D2	E2	F2
2	18	34	"	2	B	R	b	r	é	Æ	ó	⌒	⌒	Γ	≥
03	13	23	33	43	53	63	73	83	93	A3	B3	C3	D3	E3	F3
3	19	35	#	3	C	S	c	s	â	ô	ú	⌒	⌒	π	≤
04	14	24	34	44	54	64	74	84	94	A4	B4	C4	D4	E4	F4
4	20	36	\$	4	D	T	d	t	ä	ö	ñ	⌒	⌒	Σ	∫
05	15	25	35	45	55	65	75	85	95	A5	B5	C5	D5	E5	F5
5	21	37	%	5	E	U	e	u	à	ò	Ñ	⌒	⌒	σ	J
06	16	26	36	46	56	66	76	86	96	A6	B6	C6	D6	E6	F6
6	22	38	&	6	F	V	f	v	å	û	ä	⌒	⌒	μ	÷
07	17	27	37	47	57	67	77	87	97	A7	B7	C7	D7	E7	F7
7	23	39	'	7	G	W	g	w	ç	ù	ó	⌒	⌒	τ	≈
08	18	28	38	48	58	68	78	88	98	A8	B8	C8	D8	E8	F8
8	24	40	(	8	H	X	h	x	ê	ÿ	ı	⌒	⌒	φ	°
09	19	29	39	49	59	69	79	89	99	A9	B9	C9	D9	E9	F9
9	25	41	)	9	I	Y	i	y	ë	Ö	ı	⌒	⌒	Θ	•
0A	1A	2A	3A	4A	5A	6A	7A	8A	9A	AA	BA	CA	DA	EA	FA
10	26	42	*	: J	Z	j	z	è	Ü	ı	⌒	⌒	⌒	Ω	•
0B	1B	2B	3B	4B	5B	6B	7B	8B	9B	AB	BB	CB	DB	EB	FB
11	27	43	+	; K	[	k	{	ï	ø	½	⌒	⌒	⌒	δ	√
0C	1C	2C	3C	4C	5C	6C	7C	8C	9C	AC	BC	CC	DC	EC	FC
12	28	44	,	< L	\	ı		î	£	¼	⌒	⌒	⌒	∞	n
0D	1D	2D	3D	4D	5D	6D	7D	8D	9D	AD	BD	CD	DD	ED	FD
13	29	45	-	= M	] m	}	ı	ø	ı	ı	⌒	⌒	⌒	∅	²
0E	1E	2E	3E	4E	5E	6E	7E	8E	9E	AE	BE	CE	DE	EE	FE
14	30	46	.	> N	^	n	~	Ä	Pt	«	⌒	⌒	⌒	ε	■
0F	1F	2F	3F	4F	5F	6F	7F	8F	9F	AF	BF	CF	DF	EF	FF
15	31	47	/	? O	_	o	△	À	f	œ	⌒	⌒	⌒	⌒	255

7.4.10.Code Page 866

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

7.4.11.Code Page 1252

00	10	20	30	40	50	60	70	80	90	A0	B0	C0	D0	E0	F0
0	16	32	48	64	80	96	112	128	Not Used 144	NBSP 160	° 176	À 192	Đ 208	à 224	đ 240
01	11	21	31	41	51	61	71	81	Not Used 129	ı 161	± 177	Á 193	Ñ 209	á 225	ñ 241
02	12	22	32	42	52	62	72	82	92	¢ 162	² 178	Â 194	Ò 210	â 226	ò 242
03	13	23	33	43	53	63	73	83	93	£ 163	³ 179	Ã 195	Ó 211	ã 227	ó 243
04	14	24	34	44	54	64	74	84	94	¤ 164	´ 180	Ä 196	Ô 212	ä 228	ô 244
05	15	25	35	45	55	65	75	85	95	¥ 165	µ 181	Å 197	Õ 213	å 229	õ 245
06	16	26	36	46	56	66	76	86	96	¦ 166	¶ 182	Æ 198	Ö 214	æ 230	ö 246
07	17	27	37	47	57	67	77	87	97	§ 167	· 183	Ç 199	× 215	ç 231	÷ 247
08	18	28	38	48	58	68	78	88	98	¨ 168	¸ 184	È 200	Ø 216	è 232	ø 248
09	19	29	39	49	59	69	79	89	99	© 169	¹ 185	É 201	Ù 217	é 233	ù 249
0A	1A	2A	3A	4A	5A	6A	7A	8A	9A	ª 170	º 186	Ê 202	Ú 218	ê 234	ú 250
0B	1B	2B	3B	4B	5B	6B	7B	8B	9B	« 171	» 187	Ë 203	Û 219	ë 235	û 251
0C	1C	2C	3C	4C	5C	6C	7C	8C	9C	¬ 172	¼ 188	Ì 204	Ü 220	ì 236	ü 252
0D	1D	2D	3D	4D	5D	6D	7D	8D	9D	Not Used 141	Not Used 157	í 205	Ý 221	í 237	ý 253
0E	1E	2E	3E	4E	5E	6E	7E	8E	9E	® 174	¾ 190	Î 206	Þ 222	î 238	þ 254
0F	1F	2F	3F	4F	5F	6F	7F	8F	9F	Not Used 143	ÿ 191	Ï 207	ß 223	ï 239	ÿ 255

7.4.12.Code Page 1253

	—0	—1	—2	—3	—4	—5	—6	—7	—8	—9	—A	—B	—C	—D	—E	—F
0-	NUL 0000	SOH 0001	STX 0002	ETX 0003	EOT 0004	ENQ 0005	ACK 0006	BEL 0007	BS 0008	HT 0009	LF 000A	VT 000B	FF 000C	CR 000D	SO 000E	SI 000F
1-	DLE 0010	DC1 0011	DC2 0012	DC3 0013	DC4 0014	NAK 0015	SYN 0016	ETB 0017	CAN 0018	EM 0019	SUB 001A	ESC 001B	FS 001C	GS 001D	RS 001E	US 001F
2-	SP 0020	! 0021	« 0022	# 0023	\$ 0024	% 0025	& 0026	' 0027	(0028	) 0029	* 002A	+ 002B	, 002C	- 002D	. 002E	/ 002F
3-	0 0030	1 0031	2 0032	3 0033	4 0034	5 0035	6 0036	7 0037	8 0038	9 0039	: 003A	; 003B	< 003C	= 003D	> 003E	? 003F
4-	@ 0040	A 0041	B 0042	C 0043	D 0044	E 0045	F 0046	G 0047	H 0048	I 0049	J 004A	K 004B	L 004C	M 004D	N 004E	O 004F
5-	P 0050	Q 0051	R 0052	S 0053	T 0054	U 0055	V 0056	W 0057	X 0058	Y 0059	Z 005A	[005B	\ 005C	] 005D	^ 005E	_ 005F
6-	` 0060	a 0061	b 0062	c 0063	d 0064	e 0065	f 0066	g 0067	h 0068	i 0069	j 006A	k 006B	l 006C	m 006D	n 006E	o 006F
7-	p 0070	q 0071	r 0072	s 0073	t 0074	u 0075	v 0076	w 0077	x 0078	y 0079	z 007A	{ 007B	 007C	} 007D	~ 007E	␣ 2302
8-	€ 20AC		‘ 201A	ƒ 192	” 201E	… 2026	† 2020	‡ 2021		% 2030		◁ 2039				
9-		‘ 2018	’ 2019	“ 201C	” 201D	• 2022	— 2013	— 2014		™ 2122		▷ 203A				
A-		“ 385	À 386	£ A3	¤ A4	¥ A5	¦ A6	§ A7	¨ A8	© A9		« AB	¬ AC	AD	® AE	— 2015
B-	° B0	± B1	² B2	³ B3	´ 384	µ B5	¶ B6	· B7	ˆ 388	˜ 389	ı 38A	» BB	ˆ 38C	½ BD	ˆ 38E	Ω 38F
C-	ı 390	À 391	B 392	Γ 393	Δ 394	E 395	Z 396	H 397	Θ 398	I 399	K 39A	Λ 39B	M 39C	N 39D	Ξ 39E	O 39F
D-	Π 3A0	P 3A1		Σ 3A3	T 3A4	Υ 3A5	Φ 3A6	X 3A7	Ψ 3A8	Ω 3A9	İ 3AA	ÿ 3AB	ά 3AC	έ 3AD	ή 3AE	ί 3AF
E-	Û 3B0	α 3B1	β 3B2	γ 3B3	δ 3B4	ε 3B5	ζ 3B6	η 3B7	θ 3B8	ι 3B9	κ 3BA	λ 3BB	μ 3BC	ν 3BD	ξ 3BE	ο 3BF
F-	π 3C0	ρ 3C1	ς 3C2	σ 3C3	τ 3C4	υ 3C5	φ 3C6	χ 3C7	ψ 3C8	ω 3C9	ï 3CA	ü 3CB	ó 3CC	ú 3CD	ώ 3CE	

7.4.13.Code Page KATAKANA

	—0	—1	—2	—3	—4	—5	—6	—7	—8	—9	—A	—B	—C	—D	—E	—F
8-	0080 —	0081 —	0082 —	0083 —	0084 —	0085 —	0086 —	0087 —	0088 	0089 	008A 	008B 	008C 	008D 	008E 	008F +
9-	0090 ⊥	0091 ⊥	0092 ⊥	0093 ⊥	0094 —	0095 —	0096 	0097 	0098 ┐	0099 ┐	009A ┐	009B ┐	009C ┐	009D ┐	009E ┐	009F ┐
A-	00A0 	00A1 。	00A2 「	00A3 」	00A4 、	00A5 ・	00A6 ヲ	00A7 ヲ	00A8 イ	00A9 ウ	00AA エ	00AB オ	00AC ヤ	00AD ユ	00AE ヨ	00AF ツ
B-	00B0 ー	00B1 ア	00B2 イ	00B3 ウ	00B4 エ	00B5 オ	00B6 カ	00B7 キ	00B8 ク	00B9 ケ	00BA コ	00BB サ	00BC シ	00BD ス	00BE セ	00BF ソ
C-	00C0 タ	00C1 チ	00C2 ツ	00C3 テ	00C4 ト	00C5 ナ	00C6 ニ	00C7 ヌ	00C8 ネ	00C9 ノ	00CA ハ	00CB ヒ	00CC フ	00CD ヘ	00CE ホ	00CF マ
D-	00D0 ミ	00D1 ム	00D2 メ	00D3 モ	00D4 ヤ	00D5 ユ	00D6 ヨ	00D7 ラ	00D8 リ	00D9 ル	00DA レ	00DB ロ	00DC ワ	00DD ン	00DE ゝ	00DF ・
E-	00E0 ニ	00E1 ト	00E2 ナ	00E3 ノ	00E4 ▲	00E5 ▲	00E6 ▲	00E7 ▲	00E8 ♠	00E9 ♥	00EA ♦	00EB ♣	00EC ●	00ED ○	00EE ／	00EF ＼
F-	00F0 ×	00F1 円	00F2 年	00F3 月	00F4 日	00F5 時	00F6 分	00F7 秒	00F8 〒	00F9 市	00FA 区	00FB 町	00FC 村	00FD 人	00FE ■	00FF

8. SELF TEST TICKET DESCRIPTION

8.1. Self Test

You can run a self-test by doing the following process:

- If a paper or label roll is not already loaded, load a roll.
- Turn the printer off by pressing the On/Off button. The LED will turn off.
- Press the form feed button and *hold it down* as you turn the printer on. This will cause the printer to print a self-test.

Here is the description of all the lines that you can read when you print a self test:

During the self test, the printer is offline.

Model number	: NSKGG	- This is a 15 digit number fixed by AXIOHM.
Serial number	: 0000000000	- This is a 10 digits number fixed by AXIOHM. (see definition below)
Revision nbr	: 0000000000	- This is a 10 digits number. Settable by user.
Version	: 7300457 02.48 1B37	- Identify main program layer fixed by AXIOHM.
Comm. RS232	: 9600,N,8,1	- This is a RS232 setting parameters
Label length	: 105 mm	- Indicates the distance between TOF marks.(Search distance)
Threshold TOF	: 102	- Indicates the value of TOF detection threshold.
Paper Type	: POS CLASS	- Indicates the reference of the paper used.
Density	: 100 %	- Percentage of the nominal heating time value.
Max. Speed	: 150 mm/sec	- Printer top speed limit.
Default Font	: 16x24	- Indicates default font selected upon reset.
Code Page	: 437	- Indicates default code page selected upon reset.
Press and hold Paper Feed Button One second after printing Self-Test to Enter Sub-menus		- How enter to Sub Menu.
Ready.		

8.2. Sub -Menus

During the Sub-Menus execution, the printer is offline. (Busy Mode)

Select Code Number :

- EXIT → 1 click
- Self-Test → 2 clicks
- Auto Calibration → 3 clicks
- TOF
- Print Diagnostic → 4 clicks

- Short click : Feed Button is quickly pressed then released.

- Long click : Feed Button is held down more than 1 second then released.

Enter Code Number [Sort click], and validate [Long click].

8.3. Diagnostic Form

** NSKGG - Diagnostics Form **

Model number : NSKGG
Serial number : 0000000000

Revision number : 0000000000

- Firmware (Id_Rev_Crc) -
Boot Strap 7300456_00.59_B22E
Boot Loader 7300456_03.87_F04D
Client 7300457_02.47_18F3

- Hardware -
Board Id. : 3109947
CPU Clock Freq. : 48 MHz
Max Power : 60 W
System Watchdog : On
:
Eeprom Rev. : 0.002
.Cluster Erasing : 00001

- Mechanism parameters -
Type : NSKGG
Paper Type : POS CLASS
Print Density : 100 %
Pre-Heating : Disabled
Max. Speed : 150 mm/sec
- Motor Current :
Paper PM35S_024 : 505.60 mA
Pwm(Cyc./Period) : 32/100
- Distance (mm) :
Label Length (*) : 105.0
Offset Tear-Off : 0.00
Add. Search : 10 +3/2(*)
- Detection Sensor :
Pwm(Cyc./Period) : 12/27
Threshold :
Top Of form : 102
Paper Out : 128
Auxiliary : 128

- Communication Interface -
Fault Recovery : Automatic
:
USM Count Mode : Disabled
- USB :
RX Buffer Size : 2048
:
USM Mode : Disabled
- RS232 :
RX Buffer Size : 2048
:
USM Mode : Disabled
Baud Rate : 9600
Data Bits : 8
Stop Bit(s) : 1
Parity : No Parity
Flow Control : Dual Mode
Reception Errors : Ignore
:
:

- This is a 15 digit number fixed by AXIOHM.
- This is a 10 digits number fixed by AXIOHM.
First letter: always D
Next two digits: year of production
Next two digits: week of production
Next 5 digits: incremental number that is reset every Monday morning.
- This is a 10 digits number. Settable by user.

- Printer firmware Identification, Revision, CRC
- Identify boot Strap layer fixed by AXIOHM.
- Identify boot Loader layer fixed by AXIOHM.
- Identify main program layer fixed by AXIOHM.

- Internal electronic board identification number.
- Microprocessor Clock frequency.
- Maximum average power drawn from power supply.
- Status system watchdog.

- NVRAM firmware revision.
- Indicates the number of cluster initialization.

- Indicates the mechanism series.
- Indicates the reference of the paper used matching with the mechanism. See code (1F 03 8F m).
- Percentage of the nominal heating time value for specified paper. See code (1F 0B 4E 52 4A n) or (1D 4E n).
- This mode is used to maintain print head temperature above minimum value (15°C when enabled). See code (1F 03 0B m).
- Printer top speed limit. See code (1F 0C 53 50 46 nL nH).

- Motor output current.
- Select current reference.

- Indicates the distance between TOF marks. See code (1D 4C n1 n2).
- See code (1F 03 99 d) or (1D 43 n).
- Addition distance for detection mark. See code (1F 03 97 d).

- Set voltage reference.

- Indicates the TOF detection threshold. See code (1D 73 05 n) and (1A 1D 74).
- Indicates the paper out detection threshold. See code (1D 73 01 n).
- Indicates the auxiliary sensor detection threshold. (Option Hardware).

-Indicated whether printer restarts automatically when a fault condition disappears or if an action from the host is required. See code (1F 03 90 m)

- Indicates operating mode: Normal or extended. In extended mode, Position count modification triggers USM transmission. See code (1F 03 9D m).

- This indicates the size of the data Input buffer (Bytes).

- USM USB transmission On/Off status. See code (1D 61 n).

- This indicates the size of the data Input buffer (Bytes).

- USM RS232 transmission On/Off status. See code (1D 61 n).

- See code (1F 02 n0 ... n5).
Baud rate Value.
Number of data bits.
Number of stop bit(s).
Type of parity to control frame validity.
Hardware or software handshaking or dual.
Indicates which action is to be done when a wrong data is received

- User Storage -					- Total size of the flash memory for user storage.
Flash Size	:	192 Kbytes			- Flash memory allocated for logos or user defined fonts.
Flash Logos/Fonts	:	64 Kbytes			
:					
Flash User Storage	:	64 Kbytes			- Flash memory allocated for user data storage (ex: electronic journal).
:					
Easy Font Storage	:	64 Kbytes			- Flash memory allocated for Easy font storage (ex: Asian font).
:					
- Printer Options -					
Emulation	:	Native			- See code (1F 03 07 n).
Diagnostics	:	Off			- See code (1F 03 00 n). This line indicates in which mode the board is :
					- Off corresponds to a standard mode
					- Data Scope is used to print data in ASCII and HEX format received from the host.
					- Demo mode.
Default LPI	:	8.13			- Default inter-lines spacing. See code (1F 03 94 m).
Carriage Return	:	Ignored			- Select how to process a 0DH character received from the host. See code (1F 03 94 m).
Logo(s) defined	:	No			- Current status = YES if at least one logo is defined.
User Char(s) def.	:	No			- Current status = YES if at least one character is defined
- Fonts -					
Default	:	16*24			- Indicates default font (Resident/User/EasyFont) selected upon reset. See Code (1F 03 0F m).
Resident	:	12*24, 16*24			- List of internal fonts.
- Code Page -					
Default	:	437			- Indicates default code page (resident/ EasyFont) selected upon reset. See Code (1F 03 80 n).
Resident	:	437, 737, 850			- List of internal codes pages.
	:	852, 858, 860			
	:	862, 863, 865			
	:	866, 1252, 1253			
	:	Katakana			
EasyFont Defined	:	No			- Current status = YES if at least one character font is defined.
:					
- User Tallies - ⁽¹⁾					
Max Temp	:	26.20			- Indicates the maximum temperature (in C degrees) reached by the print-head.
Lines written	:	96			- Indicates the number of lines printed.
Flash cycles	:	0			- Indicates the number of flash download program.
Hours ON	:	0			- Indicates the number of hours the board has been turned ON.
Meter Print	:	0			- Indicates the number of meters printed.
Reboot Device	:	1			- Number of time that the printer controller board had been reset.
Head Damaged	:	NO			- Indicates if the print-head is damaged or not.
:					

⁽¹⁾ Tallies are updated every 1/2 hour.

(For further information, please contact your distributor or Axiohm Technical Support Team at www.axiohm.com)

8.3.1. List of parameters that can be changed

Set Hardware Options Maximum Power 60 W System Watchdog On Off 	Set Communication Options Fault Recovery Automatic From Host USM Count Mode Disabled Enabled USB USM Mode Disabled EP Bulk EP Interrupt 	Set Print Options Emulation Native NSKGG+
Set Mechanism Options Type NSKGG Paper Type POS CLASS KP440 Print density 80% 100% 120% Pre-Heating Enabled Disabled Print Speed 55 mm/sec 150 mm/sec 155 mm/sec Label Length 37.0 mm 105.0 mm 187.5 mm Offset Tear-Off -10.0 mm 0.0 mm +10.0 mm Addition search 10.0 mm 255.0 mm 	RS232 USM Mode Disabled Enabled RS232 Baud Rate 115200 57600 38400 19200 9600 4800 2400 1200 RS232 Data Bits 8 7 RS232 Stop Bit(s) 1 RS232 Parity No Parity Even Parity Odd Parity RS232 Flow Control DTR/DSR XON/XOFF DUAL Reception Errors Print '?' Ignore 	Diagnostics Mode Off Data-scope Receipt Test Demo Default LPI 6.00 7.52 8.13 CR Usage Ignored Print CMD Default Font 12*24 16*24 User Defined Easy[0] Easy[1] Easy[2] Easy[3] Easy[4] Default Code Page CP 437 CP 850 CP 852 CP 858 CP 860 CP 862 CP 863 CP 865 CP 866 CP 1252 Katakana
Top Of Form 51 102 205 Paper Out 0 128 255 Auxiliary 128 	User Storage (Kbytes) Logos/Fonts storage 0 64 192 User Storage 0 64 192 Easy Font storage 0 64 192 	

9. FUNCTION COMMANDS

9.1. Reset Commands

Synopsis: Clear Printer Attributes.

ASCII	DLE
Hexadecimal	10
Decimal	16

Synopsis: Initialize printer (emulation).

ASCII	ESC	@
Hexadecimal	1B	40
Decimal	27	64

Synopsis: Reboots the firmware.

ASCII	GS	SP
Hexadecimal	1D	FF
Decimal	29	255

9.2. Vertical Positioning And Print Commands

The vertical positioning and print commands control the vertical print positions of characters on the receipt.

The commands are described in order of their hexadecimal codes.

Synopsis: Print and feed one line (emulation).

ASCII	LF
Hexadecimal	0A
Decimal	10

Synopsis: Activate carriage return (emulation).

ASCII	CR
Hexadecimal	0D
Decimal	13

Synopsis: Feed n dot rows.

ASCII	NAK	n
Hexadecimal	15	n
Decimal	21	n

Synopsis: Add n extra dot rows.

ASCII	SYN	n
Hexadecimal	16	n
Decimal	22	n

Synopsis: Print.

ASCII	ETB
Hexadecimal	17
Decimal	23

Synopsis: Print and feed one line.

ASCII	SUB	LF
Hexadecimal	1A	0A
Decimal	26	10

Synopsis: Carriage return.

ASCII	SUB	CR
Hexadecimal	1A	0D
Decimal	26	13

Synopsis: Feed n print lines.

ASCII	SUB	DC4	n
Hexadecimal	1A	14	n
Decimal	26	20	n

Synopsis: Print and feed paper.

ASCII	SUB	ESC	J	n
Hexadecimal	1A	1B	4A	n
Decimal	26	27	74	n

Synopsis: Set Column.

ASCII	ESC	DC4	n
Hexadecimal	1B	14	n
Decimal	27	20	n

Synopsis: Set line spacing to 1/6 inch.

ASCII	ESC	2
Hexadecimal	1B	32
Decimal	27	50

Synopsis: Set line spacing.

ASCII	ESC	3	n
Hexadecimal	1B	33	n
Decimal	27	51	n

Synopsis: Print and feed paper (emulation).

ASCII	ESC	J	n
Hexadecimal	1B	4A	n
Decimal	27	74	n

Synopsis: Print and feed n lines.

ASCII	ESC	d	n
Hexadecimal	1B	64	n
Decimal	27	100	n

Synopsis: Feed n print lines (emulation).

ASCII	GS	d	n
Hexadecimal	1D	64	n
Decimal	29	100	n

Synopsis: Reverse paper feed.

ASCII	US	M	nL	nH
Hexadecimal	1F	4D	nL	nH
Decimal	31	77	nL	nH

9.3. Horizontal positioning Commands

The horizontal positioning commands control the horizontal print positions of characters on the receipt.

The commands are described in order of their hexadecimal codes.

Synopsis: Horizontal tab (emulation).

ASCII	HT
Hexadecimal	09
Decimal	9

Synopsis: Set left margin.

ASCII	SUB	GS	L	<i>nL</i>	<i>nH</i>
Hexadecimal	1A	1D	4C	nL	nH
Decimal	26	29	76	<i>nL</i>	<i>nH</i>

Synopsis: Set printing area width.

ASCII	SUB	GS	W	<i>nL</i>	<i>nH</i>
Hexadecimal	1A	1D	57	nL	nH
Decimal	26	29	87	<i>nL</i>	<i>nH</i>

Synopsis: Set right- side character spacing.

ASCII	ESC	SP	n
Hexadecimal	1B	20	n
Decimal	27	32	n

Synopsis: Set absolute starting position.

ASCII	ESC	\$	<i>nL</i>	<i>nH</i>
Hexadecimal	1B	24	nL	nH
Decimal	27	36	<i>nL</i>	<i>nH</i>

Synopsis: Set horizontal tab positions.

ASCII	ESC	D	[n]	...k	NUL
Hexadecimal	1B	44	[n]	...k	0
Decimal	27	68	[n]	...k	0

Synopsis: Set relative print position.

ASCII	ESC	\	<i>nL</i>	<i>nH</i>
Hexadecimal	1B	5C	nL	nH
Decimal	27	92	<i>nL</i>	<i>nH</i>

Synopsis: Select justification.

ASCII	ESC	a	n
Hexadecimal	1B	61	n
Decimal	27	97	n

Synopsis: Set Horizontal and Vertical Minimum motion units.

ASCII	GS	P	x	y
Hexadecimal	1D	50	x	y
Decimal	29	80	x	y

9.4. Printer Configuration

The commands are described in order of their hexadecimal codes.

Synopsis: Store user revision number.

ASCII	GS	u	d0 ... d9
Hexadecimal	1D	75	d0 ... d9
Decimal	29	117	d0 ... d9

Synopsis: Transmit user revision number.

ASCII	GS	x
Hexadecimal	1D	78
Decimal	29	120

Synopsis: Read Com port specific information (n=68 read print Diagnostic form).

ASCII	US	LF	t	=	n
Hexadecimal	1F	0A	74	3D	n
Decimal	31	10	116	61	n

Synopsis: Print Diagnostic form.

ASCII	US	t
Hexadecimal	1F	74
Decimal	31	116

9.5. Print characteristic Commands

These commands control what the printed information looks like, selection of character sets, and setting of margins. The commands are described in order of their hexadecimal codes.

▪ Commands:

Synopsis: Set enlarged print (Set double wide) (emulation).

ASCII	SO
Hexadecimal	0E
Decimal	14

Synopsis: Select Double-Wide Characters.

ASCII	DC2
Hexadecimal	12
Decimal	18

Synopsis: Select Single-Wide Characters.

ASCII	DC2
Hexadecimal	13
Decimal	19

Synopsis: Enlarged print mode cancels (Abort double wide) (emulation).

ASCII	DC4
Hexadecimal	14
Decimal	20

Synopsis: Select print mode.

ASCII	SUB	ESC	!	<i>n</i>
Hexadecimal	1A	1B	21	n
Decimal	26	27	33	<i>n</i>

Synopsis: Select character size.

ASCII	SUB	GS	!	<i>n</i>
Hexadecimal	1A	1D	21	n
Decimal	26	29	33	<i>n</i>

Synopsis: Select or cancel white/black reverse print mode.

ASCII	SUB	GS	B	<i>n</i>
Hexadecimal	1A	1D	42	n
Decimal	26	29	66	<i>n</i>

Synopsis: Set enlarged print (Set double wide) (emulation).

ASCII	ESC	SO
Hexadecimal	1B	0E
Decimal	27	14

Synopsis: Rotate characters counter-clockwise.

ASCII	ESC	DC2
Hexadecimal	1B	12
Decimal	27	18

Synopsis: Select print mode type E (emulation).

ASCII	ESC	!	<i>n</i>
Hexadecimal	1B	21	n
Decimal	27	33	<i>n</i>

Synopsis: Select or cancel underlined mode.

ASCII	ESC	-	<i>n</i>
Hexadecimal	1B	2D	n
Decimal	27	45	<i>n</i>

Synopsis: Turn emphasized mode on/off.

ASCII	ESC	E	n
Hexadecimal	1B	45	n
Decimal	27	69	n

Synopsis: Turn double strike mode On/Off.

ASCII	ESC	G	n
Hexadecimal	1B	47	n
Decimal	27	71	n

Synopsis: Turn Italic mode On/Off.

ASCII	ESC	I	n
Hexadecimal	1B	49	n
Decimal	27	73	n

Synopsis: Turn 90 degree clockwise mode on/off.

ASCII	ESC	V	n
Hexadecimal	1B	56	n
Decimal	27	86	n

Synopsis: Set or reset enlarged mode (double wide mode on/off).

ASCII	ESC	W	n
Hexadecimal	1B	57	n
Decimal	27	45	n

Synopsis: Turn on/off upside down printing mode.

ASCII	ESC	{	n
Hexadecimal	1B	7B	n
Decimal	27	123	n

Synopsis: Double height character set.

ASCII	GS	DC2
Hexadecimal	1D	12
Decimal	29	18

Synopsis: Reset Double height.

ASCII	GS	DC3
Hexadecimal	1D	13
Decimal	29	19

Synopsis: Set inverse video mode.

ASCII	GS	RS
Hexadecimal	1D	1E
Decimal	29	30

Synopsis: Reset Inverse video mode.

ASCII	GS	US
Hexadecimal	1D	1F
Decimal	29	31

Synopsis: Select print mode type A (emulation).

ASCII	GS	!	<i>n</i>
Hexadecimal	1D	21	n
Decimal	29	33	<i>n</i>

Synopsis: Select or cancel white/black reverse print mode.

ASCII	GS	B	<i>n</i>
Hexadecimal	1D	42	n
Decimal	29	66	<i>n</i>

Synopsis: Select superscript or subscript mode (on/off).

ASCII	US	ENQ	<i>n</i>
Hexadecimal	1F	05	n
Decimal	31	5	<i>n</i>

9.5.1. Summary of rotated printing

Description: The table shows the combinations of upside-down print, 90 degree clockwise rotated print, and 90 degree counterclockwise rotated print.
90 degree clockwise rotated and 90 degree counterclockwise rotated print commands are mutually exclusive: The setting of the last received command is effective.

The samples of the print show only the normal size characters. Double-wide and double-high characters are printed in the same orientation. They may also be mixed on the same line.

Note: Right-side up and upside down print modes cannot be mixed on the same line.

Upside Down 1B 7B <i>n</i>	Rotated CW 1B 56 <i>n</i>	Rotated CCW 1B 12	Resulting Output
Cancelled	Cancelled	Cancelled	1 (See Below)
Cancelled	Set	Cancelled	2 (See Below)
Set	Cancelled	Cancelled	3 (See Below)
Set	Set	Cancelled	4 (See Below)
Cancelled	Cancelled	Set	5 (See Below)
Set	Cancelled	Set	6 (See Below)

1. ABC 2. >B C 3. CBA 4. C B A 5. A B C 6. A B C

9.6. Graphic Commands

These commands are used to enter and print graphics data and are described in order of their hexadecimal codes.

- Print commands:

Synopsis: Print raster graphics.

ASCII	DC1	n...nX
Hexadecimal	11	n...nX
Decimal	17	n1...nX

Synopsis: Select character set.

ASCII	ESC	&	s	c1	c2	n1	d1	...	nn	dn
Hexadecimal	1B	26	s	c1	c2	n1	d1	...	nn	dn
Decimal	27	38	s	c1	c2	n1	d1	...	nn	dn

Synopsis: Select bit image mode.

ASCII	ESC	*	m	n1	n2	d1	...	dn
Hexadecimal	1B	2A	m	n1	n2	d1	...	dn
Decimal	27	42	m	n1	n2	d1	...	dn

Synopsis: Print advanced raster graphics.

ASCII	ESC	.	m	n	rL	rH	d1	...	dn
Hexadecimal	1B	2E	m	n	rL	rH	d1	...	dn
Decimal	27	46	m	n	rL	rH	d1	...	dn

Synopsis: Select single density graphics.

ASCII	ESC	K	n1	n2	d1	...	dn
Hexadecimal	1B	4B	n1	n2	d1	...	dn
Decimal	27	75	n1	n2	d1	...	dn

Synopsis: Select Double density graphics.

ASCII	ESC	Y	n1	n2	d1	...	dn
Hexadecimal	1B	59	n1	n2	d1	...	dn
Decimal	27	89	n1	n2	d1	...	dn

Synopsis: Print raster graphics (emulation).

ASCII	GS	*	d1...dm
Hexadecimal	1D	2A	d1...dm
Decimal	29	42	d1...dm

Synopsis: Print raster bit image.

ASCII	GS	U	0	xL	xH	yL	yH	d1 ... dk
Hexadecimal	1D	76	30	xL	xH	yL	yH	d1 ... dk
Decimal	29	117	48	xL	xH	yL	yH	d1 ... dk

▪ Set commands:

Synopsis: Set GFX print area width.

ASCII	US	LF	ī	<i>n</i>
Hexadecimal	1F	0A	8B	n
Decimal	31	10	139	<i>n</i>

Synopsis: Select or cancel low resolution raster graphics status.

ASCII	US	y	<i>n</i>
Hexadecimal	1F	79	n
Decimal	31	121	<i>n</i>

9.7. User font Commands

Description: The downloadable fonts are stored in Flash memory in a dedicated area (same logos storage area), separate from the code and user storage and Easy font's storage areas.

The area size is multiple of 64kbytes and is adjustable using command "Flash Memory User Sectors Allocation".

Note: Fonts may be downloaded at any given time, but cannot be deleted individually.
See also chapter "Memory allocation" for information about potential limitations.

▪ Downloaded Commands:

Synopsis: Select character set.

ASCII	ESC	&	s	c1	c2	n1	d1	...	nn	dn
Hexadecimal	1B	26	s	c1	c2	n1	d1	...	nn	dn
Decimal	27	38	s	c1	c2	n1	d1	...	nn	dn

Synopsis: Define character set (emulation).

ASCII	GS	&	NUL	<i>n</i>	NUL	NUL	<i>d1...dk</i>
Hexadecimal	1D	26	0	n	0	0	d1...dk
Decimal	29	38	0	<i>n</i>	0	0	<i>d1...dk</i>

Synopsis: Define User-Defined character set with variables height.

ASCII	US	&	<i>H</i>	<i>cn</i>	<i>cm</i>	<i>ln</i>	<i>[dn1 ... dnk]</i>	...	<i>Lm</i>	<i>[dm1 ... dmk]</i>
Hexadecimal	1F	26	H	cn	cm	ln	[dn1... dnk]	...	lm	[dm1... dmk]
Decimal	31	38	<i>H</i>	<i>cn</i>	<i>cm</i>	<i>ln</i>	<i>[dn1 ... dnk]</i>	...	<i>lm</i>	<i>[dm1 ... dmk]</i>

- Related Downloaded Commands:

Synopsis: Select Memory type SRAM or Flash.

ASCII	GS	"	<i>n</i>
Hexadecimal	1D	22	n
Decimal	29	34	<i>n</i>

- Selected user character Commands:

The commands are described in order of their hexadecimal codes.

Synopsis: Select pitch for Column width.

ASCII	ESC	SYN	<i>n</i>
Hexadecimal	1B	16	n
Decimal	27	22	<i>n</i>

Synopsis: Select character set.

ASCII	ESC	DC2	<i>n</i>
Hexadecimal	1B	25	n
Decimal	27	37	<i>n</i>

Synopsis: Cancel use-defined character.

ASCII	ESC	?	<i>n</i>
Hexadecimal	1B	3F	n
Decimal	27	63	<i>n</i>

Synopsis: Elite character set (Emulation).

ASCII	ESC	M	
Hexadecimal	1B	4D	
Decimal	27	77	

Synopsis: Pica character set (Emulation).

ASCII	ESC	P	
Hexadecimal	1B	50	
Decimal	27	80	

Synopsis: Select international character set (Emulation).

ASCII	ESC	R	<i>n</i>
Hexadecimal	1B	52	n
Decimal	27	82	<i>n</i>

Synopsis: Select character code table or active user-defined font selection.

ASCII	ESC	t	n
Hexadecimal	1B	74	n
Decimal	27	116	n

Synopsis: Select font type.

ASCII	US	F	n
Hexadecimal	1F	46	n
Decimal	31	70	n

Synopsis: Select active user defined character

ASCII	US	i	n
Hexadecimal	1F	69	n
Decimal	31	105	n

▪ Utilities commands:

Synopsis: Copy character set from Rom to Ram.

ASCII	ESC	:	0	0	0
Hexadecimal	1B	3A	30	30	30
Decimal	27	58	48	48	48

Synopsis: Upload font.

ASCII	US	k
Hexadecimal	1F	6B
Decimal	31	107

▪ Related Status Commands:

Synopsis: Transmit status. (n=04 or 34)

ASCII	GS	l	n
Hexadecimal	1D	72	n
Decimal	29	114	n

Synopsis: Reply SRAM or flash memory allocation in user section (n=0 or n=1).

ASCII	US	v	n
Hexadecimal	1F	77	n
Decimal	31	119	n

Synopsis: Return user font status.

ASCII	US	z	n
Hexadecimal	1F	7A	n
Decimal	31	122	n

- Related Configuration Commands:

Synopsis: Set default resident or user font option (NVRAM).

ASCII	US	ETX	VT	m
Hexadecimal	1F	03	0F	m
Decimal	31	3	15	m

Synopsis: Set default code page resident font (NVRAM).

ASCII	US	ETX	Ç	n
Hexadecimal	1F	03	80	n
Decimal	31	3	128	n

9.8.EasyFont Commands

Description:	The downloadable fonts are stored in Flash memory in a dedicated area, separate from the code and usual logos and user font's storage areas. The area size is multiple of 64kbytes and is adjustable using command "Flash Memory User Sectors Allocation".
Note:	Fonts may be downloaded at any given time, but cannot be deleted individually. See also chapter "Memory allocation" for information about potential limitations.
Single Byte Fonts:	Single byte fonts (code pages) are downloaded differently from double byte fonts. Single byte fonts may be downloaded with the new (1C 4C) command. Up to four single byte fonts can be downloaded to the printer at any given time, with each font identified as a code page. 224 characters, with an address range of 20h to FFh, are downloaded for each code page. One of the operands of the (1C 4C) command designates the operand for the (1B 74 n) command that will select that code page. If a font is downloaded with the same name as an existing font, the current one is invalidated and replaced by the new one. Note that the old one is not erased, but just not accessible anymore, so it still takes up some space in memory. To restore this amount of memory, all fonts have to be erased.
Double Byte Fonts :	One double byte font (Asian character set, for example) may be downloaded at any given time with the new (1C 44) and (1C 45) commands. If a double byte font is to be downloaded into a printer with an existing double byte font, the existing font first needs to be deleted with (1D 40 33) command before the new font can be downloaded. One of the operands of the (1C 44) command designates the operand for the (1B 74 n) command that will select that code page. This operand is fixed and must be equal to 34h.
Font Names:	A font name is downloaded with each font, which is printed on the diagnostic or configuration form, allows a user to determine which fonts are downloaded in a particular printer.
Printer response:	When a font is downloaded to the printer, the printer will respond with an 'ACK' (06h) or 'NAK' (15h) character once the download is complete. The host must wait for the 'ACK' or 'NAK' to be returned before transmitting any additional information to the printer. If the download is successful, an 'ACK' is automatically returned. If the download is unsuccessful, a 'NAK' will be returned. A font download is unsuccessful when: ▪ Insufficient printer memory exists for the downloaded data ▪ Attempting to download a double byte font in a printer with an existing double byte font without first deleting the existing font.

■ Commands:

The commands are described in order of their hexadecimal codes.

Synopsis: Download double byte font.

ASCII	FS	D	f8	t	w	h	{d}
Hexadecimal	1C	44	f8	t	w	h	{d}
Decimal	28	68	f8	t	w	h	{d}

Synopsis: Download double byte font complete.

ASCII	FS	E	f8
Hexadecimal	1C	45	f8
Decimal	28	69	f8

Synopsis: Read font information.

ASCII	FS	F	t
Hexadecimal	1C	46	t
Decimal	28	70	t

Synopsis: Check Easy Font compatibility.

ASCII	FS	H
Hexadecimal	1C	48
Decimal	28	72

Synopsis: Set Maximum number of character band.

ASCII	FS	l	n
Hexadecimal	1C	49	n
Decimal	28	73	n

Synopsis: Read maximum number of characters band.

ASCII	FS	K
Hexadecimal	1C	4B
Decimal	28	75

Synopsis: Download single byte printer font in User flash memory.

ASCII	FS	L	f8	t	w	h	{d}
Hexadecimal	1C	4C	f8	t	w	h	{d}
Decimal	28	76	f8	t	w	h	{d}

■ Selected Commands:

Synopsis: Select character code table or active user-defined font selection

ASCII	ESC	t	n
Hexadecimal	1B	74	n
Decimal	27	116	n

- Related Downloaded command:

Synopsis: Erase user flash sector.

ASCII	GS	@	<i>n</i>
Hexadecimal	1D	40	n
Decimal	29	64	<i>n</i>

- Utilities commands:

Synopsis: Copy character set from Rom to Ram.

ASCII	ESC	:	0	0	0
Hexadecimal	1B	3A	30	30	30
Decimal	27	58	48	48	48

Synopsis: Upload font.

ASCII	US	k
Hexadecimal	1F	6B
Decimal	31	107

- Related Status Commands:

Synopsis: Reply SRAM or flash memory allocation in user section (n=02).

ASCII	US	v	<i>n</i>
Hexadecimal	1F	77	n
Decimal	31	119	<i>n</i>

- Related Configuration Commands:

Synopsis: Set default resident or user font option (NVRAM).

ASCII	US	ETX	VT	m
Hexadecimal	1F	03	0F	m
Decimal	31	3	15	<i>m</i>

Synopsis: Set default code page resident font (NVRAM).

ASCII	US	ETX	Ç	<i>n</i>
Hexadecimal	1F	03	80	n
Decimal	31	3	128	<i>n</i>

9.9. Logo Commands

- Downloaded Commands:

Synopsis: Define downloaded bit image in flash memory (User flash memory).

ASCII	SUB	GS	*	<i>n1</i>	<i>n2</i>	<i>d1...dn</i>
Hexadecimal	1A	1D	2A	n1	n2	d1...dn
Decimal	26	29	42	<i>n1</i>	<i>n2</i>	<i>d1...dn</i>

Synopsis: Download BMP file.

ASCII	ESC	B	M	...	ESC	"BMP File"
Hexadecimal	1B	42	4D	...	1B	"BMP File"
Decimal	27	66	77	...	27	"BMP File"

Synopsis: Select the current Logo.

ASCII	GS	#	<i>n</i>
Hexadecimal	1D	23	n
Decimal	29	35	<i>n</i>

Synopsis: Return the checksum of a logo.

ASCII	US	V	<i>n</i>
Hexadecimal	1F	65	n
Decimal	31	101	<i>n</i>

▪ Related Downloaded Command:

Synopsis: Select Memory type SRAM or Flash.

ASCII	GS	"	<i>n</i>
Hexadecimal	1D	22	n
Decimal	29	34	<i>n</i>

Synopsis: Erase user flash sector.

ASCII	GS	@	<i>n</i>
Hexadecimal	1D	40	n
Decimal	29	64	<i>n</i>

▪ Printed Logo Commands:

Synopsis: Select the current Logo.

ASCII	GS	#	<i>n</i>
Hexadecimal	1D	23	n
Decimal	29	35	<i>n</i>

Synopsis: Print downloaded bit image.

ASCII	GS	/	<i>m</i>
Hexadecimal	1D	2F	m
Decimal	29	47	<i>m</i>

▪ Utilities Commands:

Synopsis: Upload logo.

ASCII	US	j
Hexadecimal	1F	6A
Decimal	31	106

- Related status Commands:

Synopsis: Transmit status. (n=04 or 34)

ASCII	GS	I	n
Hexadecimal	1D	72	n
Decimal	29	114	n

Synopsis: Reply SRAM or flash memory allocation in user section (n=0 or n=1).

ASCII	US	v	n
Hexadecimal	1F	77	n
Decimal	31	119	n

9.10. User Flash And Static Ram Memories Commands

- Commands:

Synopsis: Select Memory type SRAM or Flash where to save logos or user-defined fonts.

ASCII	GS	"	n
Hexadecimal	1D	22	n
Decimal	29	34	n

Synopsis: Flash Memory user sector allocation.

ASCII	GS	"	U	n1	n2
Hexadecimal	1D	22	55	n1	n2
Decimal	29	34	85	n1	n2

Synopsis: Erase user flash sector.

ASCII	GS	@	n
Hexadecimal	1D	40	n
Decimal	29	64	n

- Status Commands:

Synopsis: Return User flash memory size.

ASCII	GS	VT
Hexadecimal	1D	0B
Decimal	29	11

Synopsis: Reply memory allocation status.

ASCII	US	v	n
Hexadecimal	1F	77	n
Decimal	31	119	n

9.11. User Data Storage Commands

Description: The downloadable Data Storage are stored in Flash memory in a dedicated area, separate from the code and others storage areas.

The area size is multiple of 64kbytes and is adjustable using command “Flash Memory User Sectors Allocation”.

Note: See also chapter “Memory allocation” for information about potential limitations.

Synopsis: Write to user data storage.

ASCII	ESC	'	m	a2	a1	a0	d1	...	dm
Hexadecimal	1B	27	m	a2	a1	a0	d1	...	dm
Decimal	27	39	m	a2	a1	a0	d1	...	dm

Synopsis: Read from user data storage.

ASCII	ESC	3	m	a2	a1	a0
Hexadecimal	1B	34	m	a2	a1	a0
Decimal	27	51	m	a2	a1	a0

9.12. Peripheral Control Commands

Synopsis: Select peripheral device for multi drop.

ASCII	ESC	=	n
Hexadecimal	1B	3D	n
Decimal	27	61	n

Synopsis: Enable or Disable Panel switch.

ASCII	ESC	c	5	n
Hexadecimal	1B	63	35	n
Decimal	27	99	53	n

Synopsis: Serial Communication Setting

ASCII	GS	l	m
Hexadecimal	1D	42	m
Decimal	29	66	m

9.13.Position Count Commands

Synopsis: Real time current position.

ASCII	DLE	ACK
Hexadecimal	10	06
Decimal	16	6

Synopsis: Increment current position count.

ASCII	ESC	+
Hexadecimal	1B	2B
Decimal	27	43

Synopsis: Clear current position count.

ASCII	ESC	z
Hexadecimal	1B	7A
Decimal	27	122

9.14.Transaction Monitoring Commands

Description: The following commands are provided as tools to monitor actual transaction completion, by providing synchronisation mechanisms with tickets commands.

Synopsis: Process ticket number.

ASCII	US	a	n
Hexadecimal	1F	61	n
Decimal	31	97	n

Synopsis: Request ticket number.

ASCII	US	b
Hexadecimal	1F	62
Decimal	31	98

9.15. Printer Status Commands

These commands enable the printer to communicate with the host computer. They are stored in the printer's data buffer as they are received, and are handled by the firmware in the order in which they were received.

When a fault occurs, the printer will go busy at the communication interface and not respond to either of the Printer Status commands. If the fault causing the busy condition can be cleared, such as by loading paper, or letting the thermal print head cool down, the printer will resume processing the data in its receive buffer.

Real Time commands allow the printer to respond immediately, even though it is busy at the communication interface. See the following section, Real Time Commands, for details about these commands.

Synopsis: Sends status data to the host computer.

ASCII	ESC	v
Hexadecimal	1B	76
Decimal	27	118

Synopsis: Return hardware information.

ASCII	GS	LF
Hexadecimal	1D	0A
Decimal	29	10

Synopsis: Transmit printer Identify.

ASCII	GS	I	n
Hexadecimal	1D	49	n
Decimal	29	73	n

Synopsis: Performs the remote diagnostic functions specified by *n*.

ASCII	GS	I	@	n
Hexadecimal	1D	49	40	n
Decimal	29	73	64	n

Synopsis: Reply software client version (Emulation).

ASCII	ESC	D
Hexadecimal	1D	52
Decimal	29	82

Synopsis: Return printer status n (Emulation).

ASCII	GS	S
Hexadecimal	1D	53
Decimal	29	83

Synopsis: Select or cancel unsolicited status mode.

ASCII	GS	a	n
Hexadecimal	1D	61	n
Decimal	29	97	n

Synopsis: Transmit selected A/D channel (Voltage, Temperature ...).

ASCII	GS	I	<i>m</i>
Hexadecimal	1D	6C	m
Decimal	29	108	<i>m</i>

Synopsis: Transmit status (Paper sensor Status, Flash memory User Sector status).

ASCII	GS	I	<i>n</i>
Hexadecimal	1D	72	n
Decimal	29	114	<i>n</i>

Synopsis: Read layers information (CRC and version).

ASCII	US	LF	I	=	<i>n1</i>	<i>n2</i>
Hexadecimal	1F	0A	6C	3D	n1	n2
Decimal	31	10	108	61	<i>n1</i>	<i>n2</i>

Synopsis: Voltage and temperature monitoring.

ASCII	US	LF	<i>n</i>
Hexadecimal	1F	0A	n
Decimal	31	10	<i>n</i>

Synopsis: Send printer software version.

ASCII	US	V
Hexadecimal	1F	56
Decimal	31	86

Synopsis: Buffered status transmission (head-dots Status).

ASCII	US	v	<i>n</i>
Hexadecimal	1F	76	n
Decimal	31	118	<i>n</i>

9.16.Real Time Commands

The Real Time commands provide an application interface to the printer even when the printer is not handling other commands.

- ◆ Real Time Status Transmission: DLE (Hex 10) Sequence
- ◆ Real Time Request to Printer: DLE (Hex 10) Sequence
- ◆ Real Time Printer Status Transmission

The original Printer Status commands, Transmit Printer Status (Hex 1B 76, ASCII ESC v) are placed in the printer's data buffer as they are received and handled by the firmware in the order in which they were received. If the paper exhausts while printing data that was in the buffer ahead of the status command, the printer goes busy at the communication interface and suspends processing the data in the buffer until paper is reloaded. This is true for all error conditions: low voltage error, thermal print head overheating, etc. In addition, there is no way to restart the printer after a paper jam or other error.

The Real Time commands are provided to overcome these restrictions.

9.16.1.Rules for Using Real Time Commands

RS232 interface

Three situations must be understood when using real time commands:

- 1) The printer executes the Real Time command upon receiving it and will transmit status regardless of the condition of the host being ready to receive or not.
- 2) The printer transmits status whenever it recognizes a Real Time Status Transmission command sequence, even if that sequence happens to occur naturally within the data of another command, such as graphics data.
In this case the sequence will be processed both ways: as a real time command and as the graphics data it is intended to be when the graphics command is executed from the buffer. The result is that the host might receive status messages it has not requested.
- 3) If the printer is in error condition, meaning that the communication interface is likely to be busy, the host must be able to send the real time commands regardless of this busy state at the interface. Otherwise those commands wouldn't be received and processed.

USB interface

Real time commands are sent on a specific endpoint 0x01 (INTERRUPT OUT), so that those commands are not mixed with the main command stream carried on endpoint 0x02 (BULK OUT).

Responses to real times commands are transmitted back to the host on endpoint 0x81 (INTERRUPT IN).

9.16.2.Moving Data Through the Buffer

Applications should not let the buffer fill up with Real Time commands when the printer is busy at the communication interface. A busy condition can be determined by bit 3 of the response to DLE EOT 1. Other responses to DLE EOT n can determine the reason for a particular busy condition.

Although the printer responds to Real Time commands when it is busy, it will place them into the buffer behind any other data there, and flush them out in the order in which they were received. When the printer is busy due simply to buffer full (that is, it can't print data as fast as it can receive it), then data continues to be processed out of the buffer at approximately print speed and the Real Time commands will eventually get flushed out.

When the printer is busy due to an error condition, then data stops being processed of the buffer until the condition clears one way or another. In either case, but more quickly in the case of an error condition, the buffer can fill with Real Time commands.

To guard against this situation, the application must determine the cause of a busy condition and take appropriate action or pace the Real Time commands to avoid filling the buffer. There is a minimum of 256 bytes available in the printer's buffer when it goes busy.

9.16.3. Busy Line and Fault Conditions

If the printer is in error condition (paper is exhausted...), the printer will go busy immediately. Then it will stay busy and stop processing data out of the receive buffer until the condition clears. It will respond to the Real Time commands as described below.

Synopsis: Real time status transmission.

ASCII	DLE	EOT	n
Hexadecimal	10	04	n
Decimal	16	4	n

Synopsis: Real time recovery from fault.

ASCII	DLE	ENQ	n
Hexadecimal	10	05	n
Decimal	16	5	n

Synopsis: Extended Real time status transmission.

ASCII	DLE	EM	n
Hexadecimal	10	19	n
Decimal	16	25	n

Synopsis: Real time recovery from fault.

ASCII	GS	EOT	n
Hexadecimal	1D	03	n
Decimal	29	3	n

Synopsis: Real time status transmission.

ASCII	GS	EOT	n
Hexadecimal	1D	04	n
Decimal	29	4	n

Synopsis: Real time status transmission.

ASCII	GS	ENQ
Hexadecimal	1D	05
Decimal	29	5

9.17.Bar Code Commands

These commands format and print bar codes, and are described in order of their hexadecimal codes.

Synopsis: Selects the bar code type and prints a bar code for the ASCII characters entered.

	First Variation						Second Variation					
ASCII	SUB	GS	k	m	d1...dn	NUL	SUB	GS	k	m	n	d1...dn
Hexadecimal	1A	1D	6B	m	d1...d n	00	1A	1D	6B	m	n	d1...dn
Decimal	26	29	107	m	d1...dn	0	26	29	107	m	n	d1...dn

Synopsis: Set starting position bar code (Emulation).

ASCII	GS	A	n1	n2
Hexadecimal	1D	41	n1	n2
Decimal	29	65	n1	n2

Synopsis: Select printing position for HRI characters (Emulation).

ASCII	GS	H	n
Hexadecimal	1D	48	n
Decimal	29	72	n

Synopsis: Set Bar code orientation (Emulation).

ASCII	GS	h	n
Hexadecimal	1D	4F	n
Decimal	29	79	n

Synopsis: Horizontal size of bar code (Emulation).

ASCII	GS	W	n	m
Hexadecimal	1D	57	n	m
Decimal	29	87	n	m

Synopsis: Select pitch of HRI character.

ASCII	GS	f	n
Hexadecimal	1D	66	n
Decimal	29	102	n

Synopsis: Select bar code height (Emulation).

ASCII	GS	h	n
Hexadecimal	1D	68	n
Decimal	29	104	n

Synopsis: Selects the bar code type and prints a bar code for the ASCII characters entered (Emulation).

ASCII	GS	k	<i>m</i>	<i>n</i>	<i>d1...dn</i>
Hexadecimal	1D	6B	<i>m</i>	n	d1...dn
Decimal	29	107	<i>m</i>	<i>n</i>	<i>d1...dn</i>

Synopsis: Set Bar code aspect ratio (ITF and Code39 only).

ASCII	GS	m	<i>nthick</i>	<i>nthin</i>
Hexadecimal	1D	6D	nthick	nthin
Decimal	29	109	<i>nthick</i>	<i>nthin</i>

Synopsis: Set PDF417 barcode dimensions.

ASCII	GS	p	nA	nB	nC	nD	nE	nF
Hexadecimal	1D	70	nA	nB	nC	nD	nE	nF
Decimal	29	112	nA	nB	nC	nD	nE	nF

Synopsis: Set PDF 417 barcode error level.

ASCII	GS	q	ErrLevel
Hexadecimal	1D	71	ErrLevel
Decimal	29	113	ErrLevel

Synopsis: Select bar code width (Emulation).

ASCII	GS	w	<i>n</i>
Hexadecimal	1D	77	n
Decimal	29	119	<i>n</i>

9.18.Landscape Mode Commands (Side Writting mode)

Descriptio n: Side writing (Landscape Mode) is one of three modes that the NSKGG controller uses to operate. Side writing mode is a specific page mode to emulate NSKGG landscape mode. Modification of page printing orientation.

■ Commands

Synopsis: Select portrait or landscape mode (emulation).

ASCII	GS	V	n
Hexadecimal	1D	56	n
Decimal	29	86	n

Synopsis: Set number of character in side writing mode (emulation).

ASCII	GS	t	n
Hexadecimal	1D	74	n
Decimal	29	116	n

■ Code emulation in landscape mode

NAME ASCII	DESCRIPTION	LPRINT EXPRESSION
HT	Horizontal Tabulation	CHR\$(9);
LF	Line Feed	CHR\$(10);
CR	Carriage Return	CHR\$(13);
SO	Set Enlarged Print	CHR\$(14);
DC4	Cancel Enlarged Print	CHR\$(20);
ESC - n	Underlined Print Mode	CHR\$(27);"-" ;CHR\$(n);
ESC @	Printer Reset	CHR\$(27);"@";
ESC W n	Select Enlarged Print	CHR\$(27);"W";CHR\$(n);
ESC SO	Set Enlarged Print	CHR\$(27);CHR\$(14);
ESC ! n	Set Print Mode type E	CHR\$(27);"!";CHR\$(n);
GS ! n	Set Print Mode	CHR\$(29);"!";CHR\$(n);
GS d n	Print Buffer	CHR\$(29);"d";CHR\$(n);
GS S	Get Printer Status	CHR\$(29);"S";
GS DC2	Set Double Height	CHR\$(29); CHR\$(18);
GS DC3	Cancel Double Height	CHR\$(29); CHR\$(19);
GS RS	Set Inverse Print	CHR\$(29); CHR\$(30);
GS US	Cancel Inverse Print	CHR\$(29); CHR\$(31);

9.19. Page Mode Commands

Description: Page mode is one of three modes that the NSKGG controller uses to operate. Standard mode is typical of how most printers operate by printing data as it is received and feeding paper as the various paper feed commands are received. Side writing mode is specific page mode to emulate landscape mode.

Page mode is different in that it processes or prepares the data as a "page" in memory before it prints it. Think of this as a virtual page. The page can be any area within certain parameters that you define. The page is printed using either the SUB FF (1A 0C) or the ESC FF (1B 0C) command.

The Select Page Mode command ESC L (1B 4C) puts the printer into page mode. Any commands that are received are interpreted as page mode commands. Several commands react differently when in standard mode and page mode. The descriptions of these individual commands in this chapter indicate the differences in how they operate in the two modes.

Synopsis: Print and return to standard mode.

ASCII	SUB	FF
Hexadecimal	1A	0C
Decimal	26	12

Synopsis: Cancel print data in page mode.

ASCII	CAN
Hexadecimal	18
Decimal	24

Synopsis: Print Data in page mode.

ASCII	ESC	FF
Hexadecimal	1B	0C
Decimal	27	12

Synopsis: Select standard Mode (Cancel page mode).

ASCII	ESC	S
Hexadecimal	1B	53
Decimal	27	83

Synopsis: Select print direction in page mode.

ASCII	ESC	T	n
Hexadecimal	1B	54	n
Decimal	27	84	n

Synopsis: Set printing area in page mode.

ASCII	SUB	ESC	W	xL	xH	yL	yH	dxL	dxH	dyL	dyH
Hexadecimal	1A	1B	57	xL	xH	yL	yH	dxL	dxH	dyL	dyH
Decimal	26	27	87	xL	xH	yL	yH	dxL	dxH	dyL	dyH

Synopsis: Set absolute vertical print in page mode.

ASCII	GS	\$	<i>nL</i>	<i>nH</i>
Hexadecimal	1D	24	nL	nH
Decimal	29	36	<i>nL</i>	<i>nH</i>

Synopsis: Set relative vertical print position in page mode.

ASCII	GS	\	<i>nL</i>	<i>nH</i>
Hexadecimal	1D	5C	nL	nH
Decimal	29	92	<i>nL</i>	<i>nH</i>

9.20. Macro Commands

These commands are used to select and perform a user-defined sequence of printer operations.

Synopsis: Start / End macro definition.

ASCII	GS	:
Hexadecimal	1D	3A
Decimal	29	58

Synopsis: Execute macro.

ASCII	GS	^	<i>r</i>	<i>t</i>	<i>m</i>
Hexadecimal	1D	5E	r	t	m
Decimal	29	94	<i>r</i>	<i>t</i>	<i>m</i>

9.21. Label Mode Commands (Top Of Form)

Description: When you switch on, you are in label mode by default.
n: Automatic detection Label mode. If a hole is not detected the printer change to listing mode.
Calibration : The calibration sensor is fixed by AXIOHM (parameters pre-set at the factory).
 If you have new specific definition paper? It is possible to change the calibration with command (1A 1D 74) or with sub Menu.

▪ Commands

Synopsis:	Form feed (Emulation).
ASCII	FF
Hexadecimal	0C
Decimal	12

Synopsis:	Feed to top of Form.
ASCII	SUB SO
Hexadecimal	1A 0E
Decimal	26 14

Synopsis:	Positions start line (Emulation).
ASCII	GS D n
Hexadecimal	1D 43 n
Decimal	29 67 n

Synopsis:	Form feed (Emulation).
ASCII	GS E
Hexadecimal	1D 44
Decimal	29 68

Synopsis:	This command configures the length of label (NVRAM).
ASCII	GS L nH nL
Hexadecimal	1D 4C nH nL
Decimal	29 115 nH nL

▪ Related Configuration Commands:

Synopsis:	Automatically calibrate top of form sensor (NVRAM).
ASCII	SUB GS T
Hexadecimal	1A 1D 74
Decimal	26 29 116

Synopsis:	This command configures the sensors detection threshold (NVRAM).
ASCII	GS s m n
Hexadecimal	1D 73 m n
Decimal	29 115 m n

Synopsis: Set additional distance search to find one top of form mark (NVRAM).

ASCII	US	ETX	ù	<i>d</i>
Hexadecimal	1F	03	97	d
Decimal	31	3	151	<i>d</i>

Synopsis: Set offset tear-off value (NVRAM).

ASCII	US	ETX	Ö	<i>d</i>
Hexadecimal	1F	03	99	d
Decimal	31	3	153	<i>d</i>

9.22.Flash firmware download commands

These commands are used to load firmware into the printer.

There are three ways to enter the download mode:

1. Disconnected the power-supply and cable connections. Waiting few seconds (30s). Press the Form feed button and in the same time connected the power-supply and cable connections.
2. While the printer is running normally, send the command, "Switch to Flash Download Mode (1B 5B 7D)" to leave normal operation and enter the download mode.
3. If the Flash is found corrupted during Level 0 diagnostics the download mode is automatically entered after the printer has reset.

The printer never goes directly from the download mode to normal printer operation. To return to normal printer operation either the operator must turn the power off and then on to reboot or the application must send a command to cancel download mode and reboot.

When each flash download command is received, the printer returns either ACK or NAK to the host computer when each command is received:

ACK (hexadecimal 06) Sent when the printer has received a host transmission and has completed the request successfully.

NAK (hexadecimal 15) Sent when a request is unsuccessful.

The commands are listed in numerical order according to their hexadecimal codes.

Each command is described and the hexadecimal, decimal, and ASCII codes are listed.

Communicates to the printer information downloaded from applications.

Data is downloaded to flash memory to query the state of the firmware, calculate the firmware CRC and other functions.

9.22.1.Firmware Download Sequence:

By providing a set of low-level commands, great freedom of implementation is given to customer application to customize the sequence to match its specific requirements.

Following is the description of a typical Firmware download sequence.

Only the main steps are mentioned.

Error checking and error recovery is not described:

- 1) Switch to Flash Download Mode
- 2) Check Flash Memory Size
- 3) Erase all Flash Memory sectors, except Boot Sector
- 4) Download Code to Active Flash Sector
 - 4.1) Select Flash memory sector #n (each sector contains 64kbytes)
 - 4.1.1) Program segment of n bytes
 - 4.1.2) if more segments, loop back to 4.1.1)
 - 4.2) if more sectors to program, loop back to 4.1)
- 5) Check Flash CRC
- 6) Reboot Printer

9.22.2.Commands:

Synopsis: Switch to flash download mode.

ASCII	ESC	[	]
Hexadecimal	1B	5B	7D
Decimal	27	91	125

Synopsis: Request flash memory Size.

ASCII	GS	SOH
Hexadecimal	1D	01
Decimal	29	1

Synopsis: Select flash memory sector to download.

ASCII	GS	STX	n
Hexadecimal	1D	02	n
Decimal	29	2	n

Synopsis: Get flash firmware Sector CRC.

ASCII	GS	ACK
Hexadecimal	1D	06
Decimal	29	6

Synopsis: Return Boot Sector CRC.

ASCII	GS	BEL
Hexadecimal	1D	07
Decimal	29	7

Synopsis: Erase all flash contents except boot sector.

ASCII	GS	SO
Hexadecimal	1D	0E
Decimal	29	14

Synopsis: Return main program flash CRC.

ASCII	GS	SI
Hexadecimal	1D	0F
Decimal	29	15

Synopsis: Erase selected flash sector.

ASCII	GS	DLE	n
Hexadecimal	1D	10	n
Decimal	29	16	n

Synopsis: Download to active flash sector.

ASCII	GS	DC1	al	ah	cl	ch	d1...dn
Hexadecimal	1D	11	al	ah	cl	ch	d1...dn
Decimal	29	17	al	ah	cl	ch	d1...dn

Synopsis: Return flash memory device Identify.

ASCII	GS	■
Hexadecimal	1D	FE
Decimal	29	254

9.22.3.Boot Download Commands

Synopsis: Erase boot sector and download new boot code.

ASCII	US	SOH	<i>d1...dn</i>
Hexadecimal	1F	01	d1...dn
Decimal	31	1	<i>d1...dn</i>

Synopsis: Set Boot size.

ASCII	US	BS	<i>n</i>
Hexadecimal	1F	08	n
Decimal	31	8	<i>n</i>

Synopsis: Erase boot sector and download new boot code with reply information.

ASCII	US	HT	<i>d1...dn</i>
Hexadecimal	1F	09	d1...dn
Decimal	31	9	<i>d1...dn</i>

Synopsis: Set boot program safety.

ASCII	US	FF	S	A	F	<i>n</i>
Hexadecimal	1F	0C	53	41	46	n
Decimal	31	12	83	65	69	<i>n</i>

10. CONFIGURATION COMMANDS

The following commands are designed to modify the controller configuration and store the new settings in NVRAM.

Those commands are typically used in factory environment, when assembling the controller board with the mechanism.

Note that the new settings become active after the printer is rebooted.

10.1.- Hardware -

Synopsis: Set maximum power consumption (NVRAM).

ASCII	US	ETX	EOT	<i>n</i>
Hexadecimal	1F	03	04	n
Decimal	31	3	4	<i>n</i>

10.2.- Mechanism Parameters -

Synopsis: This command configures the brightness (NVRAM) (Emulation).

ASCII	GS	L	<i>n</i>
Hexadecimal	1D	4E	n
Decimal	29	78	<i>n</i>

Synopsis: This command configures the sensors detection threshold (NVRAM).

ASCII	GS	s	<i>m</i>	<i>n</i>
Hexadecimal	1D	73	m	n
Decimal	29	115	<i>m</i>	<i>n</i>

Synopsis: Set preheating Option (NVRAM).

ASCII	US	ETX	VT	<i>n</i>
Hexadecimal	1F	03	0B	n
Decimal	31	3	11	<i>n</i>

Synopsis: Select paper type option (NVRAM).

ASCII	US	ETX	Å	<i>m</i>
Hexadecimal	1F	03	8F	m
Decimal	31	3	143	<i>m</i>

Synopsis: Set additional distance search to find one top of form mark (NVRAM).

ASCII	US	ETX	Ù	<i>d</i>
Hexadecimal	1F	03	97	d
Decimal	31	3	151	<i>d</i>

Synopsis: Set offset tear-off value (NVRAM).

ASCII	US	ETX	Ö	<i>d</i>
Hexadecimal	1F	03	99	d
Decimal	31	3	153	<i>d</i>

Synopsis: Set 2nd paper out option (NVRAM).

ASCII	US	ETX	@	<i>n</i>
Hexadecimal	1F	03	A9	n
Decimal	31	3	169	<i>n</i>

Synopsis: Set print density (NVRAM).

ASCII	US	VT	N	R	J	<i>n</i>
Hexadecimal	1F	0B	4E	52	4A	n
Decimal	31	11	78	82	74	<i>n</i>

Synopsis: Set maximum speed (NVRAM).

ASCII	US	FF	S	P	F	<i>nL</i>	<i>nH</i>
Hexadecimal	1F	0C	53	50	46	nL	nH
Decimal	31	12	83	83	65	<i>nL</i>	<i>nH</i>

10.3.- Communication Interface -

Synopsis: Set communication interface parameters (NVRAM).

ASCII	US	STX	<i>n1</i>	<i>n2</i>	<i>n3</i>	<i>n4</i>	<i>n5</i>	<i>n6</i>
Hexadecimal	1F	02	n1	n2	n3	n4	n5	n6
Decimal	31	2	<i>n1</i>	<i>n2</i>	<i>n3</i>	<i>n4</i>	<i>n5</i>	<i>n6</i>

Synopsis: Select fault recovery mode (NVRAM).

ASCII	US	ETX	É	<i>m</i>
Hexadecimal	1F	03	90	m
Decimal	31	3	144	<i>m</i>

Synopsis: Set USM count trigger mode (NVRAM).

ASCII	US	ETX	Ø	<i>n</i>
Hexadecimal	1F	03	9D	n
Decimal	31	3	157	<i>n</i>

10.4.- Printer Options -

Synopsis: Set diagnostic mode (NVRAM).

ASCII	US	ETX	NUL	<i>n</i>
Hexadecimal	1F	03	00	n
Decimal	31	3	0	<i>n</i>

Synopsis: Set printer emulation (NVRAM).

ASCII	US	ETX	BEL	n
Hexadecimal	1F	03	07	n
Decimal	31	3	7	n

Synopsis: Select carriage return usage option (NVRAM).

ASCII	US	ETX	ô	m
Hexadecimal	1F	03	93	m
Decimal	31	3	147	m

Synopsis: Select lines per inch setting (NVRAM).

ASCII	US	ETX	ö	m
Hexadecimal	1F	03	94	m
Decimal	31	3	148	m

10.5.- Fonts - / - Code Page -

Synopsis: Set default resident or user font option (NVRAM).

ASCII	US	ETX	VT	m
Hexadecimal	1F	03	0F	m
Decimal	31	3	15	m

Synopsis: Set default code page option (NVRAM).

ASCII	US	ETX	Ç	m
Hexadecimal	1F	03	80	m
Decimal	31	3	128	m

10.6. Read Current Configuration

Synopsis: Return static ram size.

ASCII	GS	BS
Hexadecimal	1D	08
Decimal	29	8

Synopsis: Return CPU frequency.

ASCII	GS	HT
Hexadecimal	1D	09
Decimal	29	9

Synopsis: Return NVRAM type.

ASCII	GS	²
Hexadecimal	1D	FD
Decimal	29	253

Synopsis: Read configuration setting (read NVRAM)

ASCII	US	BEL	<i>n</i>
Hexadecimal	1F	07	n
Decimal	31	5	<i>n</i>

Synopsis: Read current PWM Value.

ASCII	US	VT	ENQ	T	<i>n</i>	00	00
Hexadecimal	1F	0A	05	54	n	00	00
Decimal	31	10	5	84	<i>n</i>	0	0

Synopsis: Read current motor value in NVRAM.

ASCII	US	LF	ø
Hexadecimal	1F	0A	9B
Decimal	31	10	155

10.7. Default mode (Reset NVRAM)

Synopsis: Reset all NVRAM parameters to default mode.

ASCII	US	CR	C	L	E	<i>n</i>
Hexadecimal	1F	0D	43	4C	45	n
Decimal	31	13	67	76	69	<i>n</i>

11. OTHER INFORMATIONS

11.1. Switching Communication Interfaces Limits control codes

Hex sequence	ASCII Command	Description	Limits
Base Commands			
10	DLE	Clear Printer	Clear Print buffer
10 05 n	DLE ENQ n	Real Time Request to printer	Absolute Command
1A 1B 57 xL xH dxL dxH dyL dyH	SUB ESC W xL xH yH dxL dxH dyL dyH	Set printing area in page mode	Global Action
1A 1D 2A n1 n2 d1 ...dn	SUB GS * n1 n2 d1 ...dn	Set download bit image	Same memory space
1A 1D 57 nL nH	SUB GS W nL nH	Set printing area width	Global Action
Hex sequence	ASCII Command	Description	Limits
ESC Commands			
1B 26 y c1 c2 x1 d1... dn	ESC & y c1 c2 x1 d1...dn	Define user-def char	Same memory space
1B 27 m a0 a1 a2 d1... dn	ESC ' m a0 a1 a2 d1... dn	Write to User Data Storage	Same memory space
1B 2B	ESC +	Increment current position count	Same Data
1B 3A 30 30 30	ESC : 0 0 0	Copy character set from ROM to RAM	Absolute Command
1B 3D n	ESC = n	Set peripheral device (for multi-drop)	Absolute Command
1B 40	ESC @	Initialize printer	Memory SRAM User
1B 42 4D	ESC BM	Download Bmp Logo	Same Memory space
1B 44 [n] k NUL	ESC D [n] k NUL	Set Horizontal Tab Positions	Absolute Command
1B 5B 7D	ESC []	Switch to Flash Download Mode	Absolute Command
1B 7A	ESC z	Clear current position count	Same Data
Hex sequence	ASCII Command	Description	Limits
FS Commands			
1C 44 f8 t w h sl sh nl nh d1...dn	FS D f8 t w h sl sh nl nh d1...dn	Download double byte font (Easy Font)	Same memory space
1C 45 f8	FS E f8	Download double byte font complete (Easy Font)	Same memory space
1C 47 w h d1...dn	FS G w h d1...dn	Download and print 1 character (Easy Font)	Same memory space
1C 49 n	FS I n	Set max number of characters bands	Global Command
1C 4C f8 t w h d1...dn	FS L f8 t w h d1...dn	Download single Byte font (Easy Font)	Same memory space
Hex sequence	ASCII Command	Description	Limits
GS Commands			
1D 03 n	GS ETX n	Real Time Request to printer	Absolute Command
1D 0E	GS SO	Erase all Flash contents except Boot sector	Absolute Command
1D 10 n	GS DLE	Erase selected Flash Sector	Absolute Command
1D 11 al ah cl ch d1... dn	GS DC1 al ah cl ch d1... dn	Download to Active Flash Sector	Absolute Command
1D 22 55 n1 n2	GS * U n1 n2	Flash memory User Sectors Allocation	Absolute Command
1D 26 00 n 00 00 d1...dn	GS & NUL n NUL NUL Data	Download Character Set	Same memory space
1D 3A	GS :	Start/end macro definition	Same memory space
1D 40 n	GS @ n	Erase User Flash sector	Absolute Command
1D 41 nH nL	GS A nH nL	Bar Code Start Position	Global Action
1D 49 40 20	GS I @	Write Serial Number to EEPROM	Absolute Command
1D 49 40 21	GS I @ !	Write Serial Number to EEPROM and Print	Absolute Command
1D 49 40 24	GS I @ \$	Write Model Number to EEPROM	Absolute Command
1D 49 40 25	GS I @ %	Write Model Number to EEPROM and Print	Absolute Command
1D 49 40 80	GS I @ Ç	Write lines tallies to EEPROM	Absolute Command
1D 49 40 81	GS I @ ù	Write lines tallies to EEPROM and print	Absolute Command
1D 49 40 82	GS I @ é	Clear lines tallies in EEPROM	Absolute Command
1D 49 40 90	GS I @ É	Write hours ON tallies to EEPROM	Absolute Command
1D 49 40 91	GS I @ æ	Write hours ON tallies to EEPROM and print	Absolute Command
1D 49 40 92	GS I @ Æ	Clear hours ON tallies in EEPROM	Absolute Command
1D 49 40 A4	GS I @ ñ	Write Flash cycles tallies to EEPROM	Absolute Command
1D 49 40 A5	GS I @ Ñ	Write Flash cycles tallies to EEPROM and print	Absolute Command
1D 49 40 A6	GS I @ º	Clear Flash cycles tallies in EEPROM	Absolute Command
1D 49 40 B2	GS I @ █	Clear Max Temp tallies in EEPROM	Absolute Command
1D 49 40 B4	GS I @ -	Write Reboot tallies to EEPROM	Absolute Command
1D 49 40 B5	GS I @ A	Write Reboot tallies to EEPROM and print	Absolute Command
1D 49 40 B6	GS I @ Å	Clear Reboot tallies in EEPROM	Absolute Command
1D 49 40 D8	GS I @ I	Write Print Distance tallies to EEPROM	Absolute Command
1D 49 40 D9	GS I @ J	Write Print Distance tallies to EEPROM and print	Absolute Command
1D 49 40 DA	GS I @ ¸	Clear Print Distance tallies in EEPROM	Absolute Command

Hex sequence	ASCII Command	Description	Limits
GS Commands			
1D 49 40 80	GS I @ Ç	Write lines tallies to EEPROM	Absolute Command
1D 49 40 81	GS I @ ü	Write lines tallies to EEPROM and print	Absolute Command
1D 49 40 82	GS I @ é	Clear lines tallies in EEPROM	Absolute Command
1D 49 40 90	GS I @ É	Write hours ON tallies to EEPROM	Absolute Command
1D 49 40 91	GS I @ æ	Write hours ON tallies to EEPROM and print	Absolute Command
1D 49 40 92	GS I @ Æ	Clear hours ON tallies in EEPROM	Absolute Command
1D 49 40 A4	GS I @ ñ	Write Flash cycles tallies to EEPROM	Absolute Command
1D 49 40 A5	GS I @ N	Write Flash cycles tallies to EEPROM and print	Absolute Command
1D 49 40 A6	GS I @ º	Clear Flash cycles tallies in EEPROM	Absolute Command
1D 49 40 B2	GS I @ º	Clear Max Temp tallies in EEPROM	Absolute Command
1D 49 40 B4	GS I @ º	Write Reboot tallies to EEPROM	Absolute Command
1D 49 40 B5	GS I @ A	Write Reboot tallies to EEPROM and print	Absolute Command
1D 49 40 B6	GS I @ Á	Clear Reboot tallies in EEPROM	Absolute Command
1D 49 40 D8	GS I @ I	Write Print Distance tallies to EEPROM	Absolute Command
1D 49 40 D9	GS I @ J	Write Print Distance tallies to EEPROM and print	Absolute Command
1D 49 40 DA	GS I @ J	Clear Print Distance tallies in EEPROM	Absolute Command
1D 4C nH nL	GS L nH nL	Set Label Length	Global Command
1D 4E n	GS N n	Adjust Black Level	Global Command
1D 4F n	GS O n	Bar Code Orientation	Global Action
1D 56 n	GS V n	Set Portrait / Landscape Mode	Global Action
1D 57 t0 t1	GS W t0 t1	Horizontal Size of Bar Code	Global Action
1D 5E r t m	GS ^ r t m	Execute macro	Global Command
1D 66 n	GS f n	Select pitch of HRI char	Global Action
1D 68 n	GS h n	Select bar code height	Global Action
1D 6D n1 n2	GS m n1 n2	Set variable barcode column width	Global Action
1D 71 a	GS q a	Set PDF417 barcode error level	Global Action
1D 73 m n	GS s m n	Store selected sensor threshold	Absolute Command
1D 74	GS t	Run TOF sensor calibration	Absolute Command
1D 74 n	GS t n	Set Windows Size LandScape Mode	Global Action
1D 75 d0..d9	GS u d0..d9	Store 10 digit user revision number	Absolute Command
1D 77 n	GS w n	Set bar code width	Global Action
1D FF	GS	Firmware Reset	Absolute Command
Hex sequence	ASCII Command	Description	Limits
GS Commands			
1F 01 d1... dn	US SOH d1 ... dn	Erase Boot Sector + download new boot code	Absolute Command
1F 03 00 m	US ETX NUL m	Set Diagnostics mode	Absolute Command
1F 03 04 m	US ETX EOT m	Set Max Power Consumption	Absolute Command
1F 03 07 m	US ETX BEL m	Set Printer Emulation	Absolute Command
1F 03 0B m	US ETX VT m	Set Preheating option	Absolute Command
1F 03 0F m	US ETX SI m	Set Default font (Resident/User)	Absolute Command
1F 03 80 m	US ETX Ç m	Set Default code page	Absolute Command
1F 03 8F m	US ETX Á m	Set Paper Type	Absolute Command
1F 03 90 m	US ETX É m	Set Fault Recovery Mode	Absolute Command
1F 03 93 m	US ETX ô m	Set Carriage Return Usage	Absolute Command
1F 03 94 m	US ETX ô m	Set Default LPI	Absolute Command
1F 03 97 m	US ETX ý m	Set TOF mark distance to search	Absolute Command
1F 03 99 m	US ETX Ó m	Set TOF Offset mark to cutter distance	Absolute Command
1F 03 9D m	US ETX Ý m	Set USM count trigger mode	Absolute Command
1F 03 A9 m	US ETX © m	Set 2nd paper out option	Absolute Command
1F 09 n	US HT n	Program Boot with reply Information	Absolute Command
1F 0B 4E 52 4A n	US VT N R J n	Set Print Density	Absolute Command
1F 0C 53 50 46 nL nH	US FF S P F nL nH	Set Max Speed	Absolute Command
1F 0D 43 4C 45 n	US CR C L E n	Clear all EEPROM contents	Absolute Command
1F 26 y c1 c2 x1 d1... dn	US & y c1 c2 x1 d1...dn	Extended Define user-def char	Same memory space
1F 61 n	US a n	Process Ticket Counter	Same Data

11.2. List of Control Codes SKGG series

NAME	DESCRIPTION	LPRINT EXPRESSION
* HT	Horizontal Tab	CHR\$(9);
* LF	Line Feed	CHR\$(10);
* FF	Form Feed	CHR\$(12);
* CR	Carriage Return	CHR\$(13);
* SO	Set Enlarged Print	CHR\$(14);
* DC4	Cancel Enlarged Print	CHR\$(20);
ESC p	Drawer Kick out	CHR\$(27); "p", CHR\$(n);
ESC u	Status Drawer kick out	CHR\$(27); "u";
* ESC-	Underlined Print Mode	CHR\$(27); "-"; CHR\$(n);
* ESC @	Printer Reset	CHR\$(27); "@" ;
ESC J	Feed n Sublines	CHR\$(27); "J"; CHR\$(n);
ESC M	Elite Character Set	CHR\$(27); "M";
ESC P	Pica Character Set	CHR\$(27); "P";
ESC R	Select internat. Char. Set	CHR\$(27); "R";CHR\$(n);
* ESC W	Set Enlarged Print	CHR\$(27); "W"; CHR\$(n);
* ESC SO	Set Enlarged Print	CHR\$(27); CHR\$(14);
* ESC !	Set Print Mode type E	CHR\$(27); "!"; CHR\$(n)
* GS !	Set Print Mode	CHR\$(29); "!"; CHR\$(n);
GS&	Download Character Set	CHR\$(29); "&"; CHR\$(0); CHR(n); CHR\$(0); CHR\$(0); CHR\$(d1); CHR\$(dk);
GS *	Print Graphic Data	CHR\$(29); "***"; CHR\$(d1); CHR\$(m);
GS A	Bar Code Start Position	CHR\$(29); "A"; CHR\$(n1); CHR\$(n2);
GS B	Communications Settings	CHR\$(29); "B"; CHR\$(n);
GS D	First Printable Line	CHR\$(29); "D"; CHR\$(n);
* GS d	Print Buffer	CHR\$(29); "d"; CHR\$(n);
GS E	Top of Form	CHR\$(29); "E";
GS h	Barcode Height	CHR\$(29); "h"; CHR\$(n);
GS k	Print Bar Code	CHR\$(29); "k"; CHR\$(n); CHR\$(m);
GS H	Barcode text mode	CHR\$(29); "H"; CHR\$(n);
GS L	Set Label Length	CHR\$(29); "L"; CHR\$(n1); CHR\$(n2);
GS N	Adjust Black Level	CHR\$(29); "N"; CHR\$(n);
GS O	Bar Code Orientation	CHR\$(29); "O"; CHR\$(n);
GS R	Get Firmware Version	CHR\$(29); "R";
* GS S	Get Printer Status	CHR\$(29); "S";

GS t	Set Characters per Line	CHR\$(29);"t"; CHR\$(n);
GS V	Set Portrait/Landscape Mode	CHR\$(29);"V"; CHR\$(n);
GS W	Horizontal Size of Bar Code	CHR\$(29);"W"; CHR\$(thin); CHR\$(thick);
GS w	Horizontal Size of Bar Code	CHR\$(29);"w"; CHR\$(n);
* GS DC2	Set Double Height	CHR\$(29); CHR\$(18);
* GS DC3	Cancel Double Height	CHR\$(29); CHR\$(19);
* GS RS	Set Inverse Print	CHR\$(29); CHR\$(30);
* GS US	Cancel Inverse Print	CHR\$(29); CHR\$(31);
* <i>Code possible in landscape mode</i>		

12. COMMAND DESCRIPTION

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12.2. Command conventions

The following information describes how each command is organized:

Command Name = Synopsis: A designation (not the ASCII code) used to identify the command.

Command Name, Synopsis: A designation (not the ASCII code) used to identify the command.

ASCII the ASCII control code

Hexadecimal the Hexadecimal control code

Decimal the Decimal control code

Value or Values a description of the command operand values

Range , Limit The upper and lower limits of the command operand

Default The command operand default after printer reset

Formulas Any formula used for this command.

Description: A brief summary of the command, followed by detailed information, if necessary.

Exceptions, Notes: Describes any exceptions to this command, for example, other commands that the command cannot be used with.

Related Information: This section describes any related information for this command and provides references to other sections for additional information.

[BP] = Boot Program command (ASCII Title).

[MP] = Main Program command (ASCII Title).

[EM] = Emulation NSKGGxxxx series Command (ASCII Title).

[DBG] = Debug command (ASCII Title).

12.3. List of control commands

HT - [MP] [EM]

09

Horizontal TAB

Synopsis: Horizontal tab.

ASCII HT

Hexadecimal 09

Decimal 9

Description: Moves the print position to the next tab position set by the Set Horizontal Tab Positions command (1B 44 *n1 n2 ... 00*).

When no tabs are defined to the right of the current position, or if the next tab is past the right margin, Line Feed is executed. The print position is reset to column one after each line.

Print initialization sets 32 tabs at column 9, 17, 25...

Note: Tab treats the left margin as column one, therefore changes to the left margin will move the tab position.

Expression: CHR\$(9);

Example: LPRINT CHR\$(9);

LF - [MP] [EM]

0A

Print and Feed One Line

Synopsis: Print and feed one line.

ASCII LF

Hexadecimal 0A

Decimal 10

Description: In Portrait mode; prints one line from the buffer and feeds paper one line.

In Landscape mode; moves the line pointer to the next line, but does print out until buffer is full.

Note: If a Carriage Return precedes Line Feed, Line Feed is ignored.

Expression: CHR\$(10);

Example: LPRINT CHR\$(10);

FF - [MP] [EM]

0C

Form Feed

Synopsis: Form feed.

ASCII FF

Hexadecimal **0C**

Decimal 12

Description: Advance paper to the next Top Of form position. In Label mode TOF is the beginning of the next label. In landscape mode print the buffer. (Maximum search distance = 3/2 Label Length + Addition Search value. See code 1D 4C n1 n2 and 1F 03 97 n)

Note: In listing mode, form feed is ignored.

Expression: CHR\$(12);

Example: LPRINT CHR\$(12);

CR - [MP] [EM]

0D

Activate Carriage Return

Synopsis: Activate carriage return.

ASCII CR

Hexadecimal **0D**

Decimal 13

Description If line buffer isn't empty, prints one line from the buffer and feeds paper one line.
: Else command is ignored

Expression: CHR\$(13);

Example: LPRINT CHR\$(13);

SO - [MP] [EM]

0E

Enlarged print

Synopsis: Double wide.

ASCII SO

Hexadecimal **0E**

Decimal 14

Description: When the SO code is input, all data that follows this code on the same is printed out in enlarged characters. This code is cancelled by the input of DC4 or ESC W code.

Expression: CHR\$(14);

Example: LPRINT CHR\$(14);

DLE - [MP]

10

Clear Printer

Synopsis: Clear Printer Attributes.

ASCII DLE

Hexadecimal 10

Decimal 16

Description: Clears the print line buffer without printing and sets the printer to the default attributes parameters.

DLE EOT n - [MP]

10 04 n

Real Time Status Transmission

Synopsis: Real time status transmission.

ASCII DLE EOT n

Hexadecimal 10 04 n

Decimal 16 4 n

Operand: n = DLE Sequence

Value of n:	Hex:	Dec:	
	01	1	Transmit printer status.
	02	2	Transmit communication interface busy status.
	03	3	Transmit error status.
	04	4	Transmit receipt paper status.
	76	118	Transmit paper Status In Real Time (Same command reply 1B 76).

Description: Transmits the selected one byte printer status specified by *n* in Real Time according to the following parameters.

Exception: The command is ignored if *n* is out of range.

Related Information :

"DLE EOT" n = 1 = Transmit Printer Status

Bit	Status	Hex	Decimal	Function
0	Off	00	0	Fixed to Off.
1	On	02	2	Fixed to On.
2	Low	00	0	Fixed to On.
3	Off	00	0	Not busy at the communication interface.
	On	08	8	Printer is Busy at the communication interface.
4	On	10	16	Fixed to On.
5 ⁽¹⁾	On	40	32	Data received in buffer
	Off	00	0	Buffer empty
6	-	00	0	Undefined.
7	Off	00	0	Fixed to Off.

⁽¹⁾ In RS232 interface for correct bit status waiting reply status before sending another data.

“DLE EOT” n = 2 = Transmit communication interface Busy Status

Bit	Status	Hex	Decimal	Function
0	Off	00	0	Fixed to Off.
1	On	02	2	Fixed to On.
2	-	00	0	Undefined.
3	Off	00	0	Paper feed button is not pressed.
	On	08	8	Paper feed button is pressed.
4	On	10	16	Fixed to On.
5	Off	00	0	Printing not stopped due to paper condition.
	On	20	32	Printing stopped due to paper condition.
6	Off	00	0	No error condition.
	On	40	64	Error condition exists in the printer.
7	Off	00	0	Fixed to Off.

“DLE EOT” n = 3 = Transmit Error Status

Bit	Status	Hex	Decimal	Function
0	Off	00	0	Fixed to Off.
1	On	02	2	Fixed to On.
2	Off	00	0	Fixed to Off.
3	-	00	0	Undefined.
4	On	10	16	Fixed to On.
5	Off	00	0	No unrecoverable error.
	On	20	32	Unrecoverable error occurred.
6	Off	00	0	Thermal print head temperature and power supply voltage are in range.
	On	40	64	Thermal print head temperature or power supply voltages are out of range.
7	Off	00	0	Fixed to Off

“DLE EOT” n = 4 = Transmit Receipt Paper Status

Bit	Status	Hex	Decimal	Function
0	Off	00	0	Fixed to Off
1	On	02	2	Fixed to On
2	Off	00	0	Undefined.
3	Off	00	0	Undefined.
4	On	10	16	Fixed to On
5	Off	00	0	Paper present
	On	20	32	Paper exhausted
6	Off	00	0	Paper present
	On	40	64	Paper exhausted
7	Off	00	0	Fixed to Off

“DLE EOT” n = 118 = Transmit Paper Status In Real Time (Same command reply 1B 76)

Bit	Status	Hex	Decimal	Function
0	Off	00	0	Undefined.
1	On	02	2	Undefined.
2	Off	00	0	Receipt Paper Present.
	On	04	4	Receipt Paper Out.
3	Off	00	0	Undefined.
4	Off	00	0	Fixed to Off.
5	Off	00	0	Temperature in valid range.
	On	20	32	Temperature too hot or too cold.
6	Off	00	0	Voltage In valid range.
	On	40	64	Voltage Too high or too low.
7	Off	00	0	Fixed to Off.

DLE ENQ n - [MP]

10 05 n

Real Time Recovery from Fault

Synopsis: Real time recovery from fault.

ASCII DLE ENQ n

Hexadecimal **10** **05** **n**

Decimal 16 5 n

Operand: n = Recovery mode

Limit
Dec: n = 2
Hex: n = 02

Description: When the printer is an error status, this command clearing the data in the receive buffer and print buffer. Print settings that are normally preserved from line to line, such as character height and width, are still preserved with this operand.

Notes: This command will attempt recovery from any fault that prevents printing.
Recovering from a print head over temperature condition is only accomplished by waiting until the print head has returned to its operating temperature range.
Recovering from a under or over voltage condition is only accomplished by waiting until voltage returned to its operating voltage range.
This command will be ignored until manual intervention has occurred to clear the fault condition.

DLE ACK - [MP]

10 06

Real Time Current position count transmission

Synopsis: Real time current position.

ASCII DLE ACK

Hexadecimal 10 06

Decimal 16 6

Description: Immediately returns a single byte containing the current position count.

The count is calculated by adding the value for each of the bits that equal one (see table below).

Notes: The maximum range of the count will be from 0 – 63.

The returned count has bits 4 and 7 fixed to zero to avoid confusion with other returned data including XOn and XOff.

“DLE ACK” RETURNED COUNTER DEFINITION			
Bit	Function	Value	
		0	1
0	Bit 0 of count (LSB)	0	1
1	Bit 1 of count	0	2
2	Bit 2 of count	0	4
3	Bit 3 of count	0	8
4	fixed	Always 0	-
5	Bit 4 of count	0	16
6	Bit 5 of count (MSB)	0	32
7	fixed	Always 0	-

DLE EM n - [MP]

10 19 n

Extended Real Time Status Transmission

Synopsis: Immediately transmits the selected status.

ASCII DLE EM n

Hexadecimal 10 19 n

Decimal 16 25 n

Operand: n = Status Select

Limit	Hex:	Dec:	
0	0	0	Memory Allocation Status (reply 1 byte).
1	1	1	Printer Status (reply 1 byte).
2	2	2	Error Status (reply 1 byte).
3	3	3	No defined (Reply 1 byte = 0x80).
4	4	4	Environmental Status (reply 1 byte).
5	5	5	Print buffer Status (reply 2 bytes).
6	6	6	Communication receives buffer status (reply 2 bytes).
7	7	7	Print command processing data (reply 2 bytes).
8	8	8	Clear counter of processed print commands (no reply).
9	9	9	Clear SRAM and Flash memory allocation error (no reply).
A	10	10	Return serial number (reply 10 bytes).
B	11	11	Return printer software revision (reply 8 bytes).
C	12	12	Return model number (reply 15 bytes).

Description: Transmits the selected x byte(s) printer status specified by *n* in Real Time according to the following parameters.

Notes: The command is ignored if *n* is out of range.

The awaiting error recovery command status indicates that a fault condition existed and was cleared. The "DLE ENQ" or "GS ETX" command must be sent to clear the fault condition.

The counter of Processed Print Commands "DLE EM 07" is incremented when processing any command that generates a paper motion, i.e. print or paper feed commands.

Commands DLE EM 05, 06, 07, 08 are designed to help user application monitor the contents of main buffers, for example in default condition.

"DLE EM" n = 0: MEMORY ALLOCATION STATUS			
Bit	Function	Value	
		0	1
0	Flash Memory Error	OK	Failure
1	Sram Memory Error	OK	Failure
2	Reserved	-	-
3	Reserved	-	-
4	Reserved	-	-
5	Reserved	-	-
6	Reserved	-	-
7	Reserved	-	-

“DLE EM” $n = 1$: PRINTER STATUS			
Bit	Function	Value	
		0	1
0	Paper status	Present	Out
1	Reserved	-	-
2	Reserved	-	-
3	Reserved	-	-
4	Fixed	Always 0	-
5	Reserved	-	-
6	Printer reset ⁽¹⁾	Reported	Reset
7	Fixed	-	Always 1

⁽¹⁾The printer reset bit will be zero after the reset condition has been reported to the host for the first time.

“DLE EM” $n = 2$: ERROR STATUS			
Bit	Function	Value	
		0	1
0	Reserved	-	-
1	Reserved	-	-
2	Reserved	-	-
3	Reserved	-	-
4	Fixed	Always 0	-
5	TOF detect status	OK	Failure
6	Reserved	-	-
7	Fixed	-	Always 1

“DLE EM” $n = 4$: ENVIRONMENTAL STATUS			
Bit	Function	Value	
		0	1
0	⁽¹⁾ Power Supply Voltage Status	OK	Failure
1	⁽²⁾ Print head Temperature Status	OK	Failure
2	Undefined	-	-
3	Undefined	-	-
4	Fixed	Always 0	-
5	Undefined	-	-
6	Undefined	-	-
7	Fixed	-	Always 1

⁽¹⁾ Correct Voltage range is +18.7V ~ +26.4 V Failure → +21.5V ~ +26.0V

⁽²⁾ Correct Temperature range is +0.5°C ~ +67.7°C Failure → +3.3°C ~ +65.2°C

“DLE EM” $n = 5$: PRINT BUFFER STATUS	
Byte	Function
0	(LSB) Number of raster left in Print Buffer
1	(MSB) Number of raster left in Print Buffer

“DLE EM” $n = 6$: COMMUNICATION RECEIVE BUFFER STATUS	
Byte	Function
0	(LSB) Number of bytes left in Receive Buffer
1	(MSB) Number of bytes left in Receive Buffer

“DLE EM” $n = 7$: PRINT COMMANDS PROCESSING STATUS	
Byte	Function
0	(LSB) Number of processed Print Commands
1	(MSB) Number of processed Print Commands

DC1 n1...nX - [MP]

11 n1...nX

Print Raster Graphics

Synopsis: Print raster graphics.

ASCII DC1 n...nX

Hexadecimal 11 n...nX

Decimal 17 n1...nX

Value of n: n1...nX = 56 Data bytes

Range: 0 – 255

Description: Prints one row of data. n1 ... nX: bytes describing the line to print nX=56.

Notes: Raster graphics is not available in Page Mode or side writing.

DC2 - [MP]

12

Select Double-Wide Characters

Synopsis: Select Double-Wide Characters.

ASCII DC2

Hexadecimal 12

Decimal 18

Description: Prints double-wide characters. The printer is reset to single-wide mode after a line has been printed or the Clear Printer (10) command is received. Double-wide characters may be used in the same line with single-wide characters.

Note : Double-wide characters may not be used in the same line with single or double-density graphics.

DC3 - [MP]

13

Select Single-Wide Characters

Synopsis: Select Single-Wide Characters.

ASCII DC2

Hexadecimal 13

Decimal 19

Description: Prints single-wide characters. Single-wide characters may be used in the same line with double-wide characters.

Note : Single-wide characters may not be used in the same line with single or double-density graphics.

DC4 - [MP] [EM]

14

Enlarged print mode Cancel

Synopsis: Abort double wide.

ASCII DC4

Hexadecimal 14

Decimal 20

Description: Cancel enlarged print mode.

Expression: CHR\$(20);

Example: LPRINT CHR\$(20);

NAK n - [MP]

15 n

Feed n Dots Rows

Synopsis: Feed n dots rows.

ASCII NAK n

Hexadecimal 15 n

Decimal 21 n

Value of n: n/203 inch

Range: 0 – 255

Description: Feeds the paper *n* dot rows (*n*/203 inch, *n*/8 mm), without printing.

SYN n - [MP]

16 n

Add n Extra dot Rows

Synopsis: Add n extra dot rows.

ASCII SYN n

Hexadecimal 16 n

Decimal 22 n

Value of n: Number of extra dot rows

Range: 0-16

Default: 3 extra dot rows.

Description: Adds *n* extra dot rows (*n*/203 inch, *n*/8 mm) to the character height to increase space between print lines or decrease the number of lines per inch.

Formulas: The following table shows the relationship between the number of lines per inch and each extra dot row added:

Extra Rows	Lines Per Inch	Dot Rows	Extra Rows	Lines Per Inch	Dot Rows
0	8.5	24	9	6.1	33
1	8.1	25	10	6.0	34
2	7.8	26	11	5.8	35
3	7.5	27	12	5.6	36
4	7.2	28	13	5.5	37
5	7.0	29	14	5.3	38
6	6.8	30	15	5.2	39
7	6.5	31	16	5.1	40
8	6.3	32			

ETB - [MP]

17

Print

Synopsis: Print.

ASCII ETB

Hexadecimal 17

Decimal 23

Description: Prints one line from the buffer and feeds paper one line.

CAN - [MP]

18

Cancel Print Data in Page mode

Synopsis: Cancel print data in page mode.

ASCII CAN

Hexadecimal 18

Decimal 24

Description: Deletes all the data to be printed in the “page” area. Any data from the previously selected “page” area that is also part of the current data to be printed is deleted.

Note: This command is only used in page mode.

SUB LF - [MP]

1A 0A

Print and Feed One Line

Synopsis: Print and feed one line.

ASCII SUB LF

Hexadecimal 1A 0A

Decimal 26 10

Description: Prints one line from the buffer and feeds paper one line.

SUB FF - [MP]

1A 0C

Print and Return to Standard mode

Synopsis: Print and return to standard mode.

ASCII SUB FF

Hexadecimal 1A 0C

Decimal 26 12

Description: When printing is completed, values for Select Print Direction in Page Mode (ESC T) and Set Print Area in Page Mode (ESC W) and the position for buffering character data are set. Buffered data is not deleted from the printer.

The processed data is printed and the printer returns to standard mode. The developed data is deleted after being printed. For more information see Page Mode in this document.

Note: This command is enabled only in page mode.

SUB CR - [MP]

1A 0D

Activate Carriage Return

Synopsis: Carriage return.

ASCII SUB CR

Hexadecimal 1A 0D

Decimal 26 13

Description: Prints one line from the buffer and feeds paper one line. The printer can be set through the configuration menu to ignore or use this command.

Some applications expect the command to be ignored while others use it as print command.

Note: See Ignoring/Using the Carriage Return in *Diagnostics* for more information or code (1F 03 93 n).

SUB SO - [MP]

1A 0E

Feed to TOF

Synopsis: Feed to top of Form.

ASCII SUB SO

Hexadecimal 1A 0E

Decimal 26 14

Description: Feeds the paper so that the next mark is positioned at selected distance "TOF to Cut" from the Tear Off.

SUB DC4 n - [MP]

1A 14 n

Feed n Print Lines

Synopsis: Feed n print lines.

ASCII SUB DC4 n

Hexadecimal 1A 14 n

Decimal 26 20 n

Value of *n* The number of lines to feed at current line height setting.

Range of *n* 1-255

Description: Feeds the paper *n* lines at the current line height without printing.

Note: Ignored if not at start of line.

SUB ESC ! n - [MP]

1A 1B 21 n

Select Print Mode

Synopsis: Select print mode.

ASCII	SUB	ESC	!	n
Hexadecimal	1A	1B	21	n
Decimal	26	27	33	n

Value of n See table above.

Range of n 0-255

Default 0

Description: Selects the print mode: Standard, compressed, emphasized, underlined, double high or double wide.

Note: This command and select pitch (column width) command (1B 16 n) affect pitch selection.

Value of n

Bit ¹	Function	0	1
Bit 0	Pitch (See chart below)	Standard Pitch	Compressed Pitch
Bit 3	Emphasized Mode	Cancelled	Set
Bit 4	Double High	Cancelled	Set
Bit 5	Double Wide	Cancelled	Set
Bit 7	Underlined Mode	Cancelled	Set (bar thickness = 2)

¹ Bits 1, 2 and 6 are not used.

Pitch	Columns 60 mm Paper	CPI
Standard	28	12.7
Compressed	37	16.9

SUB ESC J n - [MP]

1A 1B 4A n

Print And Feed paper

Synopsis: Print and feed paper.

ASCII	SUB	ESC	J	n
Hexadecimal	1A	1B	4A	n
Decimal	26	27	74	n

Value of n n/203 inch

Range of n 0-255

Description: Prints one line from the buffer and feeds the paper n/203 inch (n/8 mm). The line height equals the character height when n is too small.

If the Set Horizontal and Vertical Minimum Motion Units command (1D 50) is used to change the horizontal and vertical minimum motion units, the parameters of this command (Print and Feed Paper) will be interpreted accordingly.

SUB ESC W xL xH dxL dxH dyL dyH - [MP]

1A 1B 57 xL xH dxL dxH dyL dyH

Set Printing Area in Page Mode

Synopsis: Set printing area in page mode.

ASCII	SUB	ESC	W	xL	xH	yL	yH	dxL	dxH	dyL	dyH
Hexadecimal	1A	1B	57	xL	xH	yL	yH	dxL	dxH	dyL	dyH
Decimal	26	27	87	xL	xH	yL	yH	dxL	dxH	dyL	dyH

Range of _x_ , _y_ 0-255

Default (Dec.) xL = xH = yL = yH = 0

dxL = 192 ; dxH = 1 → dx size = 448.

dyL = 112 ; dyH = 3 → dy size = 880.

Description: Sets the position and size of the printing area in page mode.

The command can be sent multiple times so that several different print areas, aligned in different print directions, can be developed in the printer's page buffer before being printed using the Print Page Mode commands (ESC FF).

Formulas: The starting position of the print area is the upper left of the area to be printed (x0, y0). The length of the area to be printed in the y direction is set to dy inches. The length of the area to be printed in the x direction is set to dx inches. Use the equations to determine the Value of x0, y0, dx, and dy.

See the illustration for a graphic representation of the printing area. For more information about the fundamental calculation pitch, see the Set Horizontal and Vertical Motion Units command (1D 50).

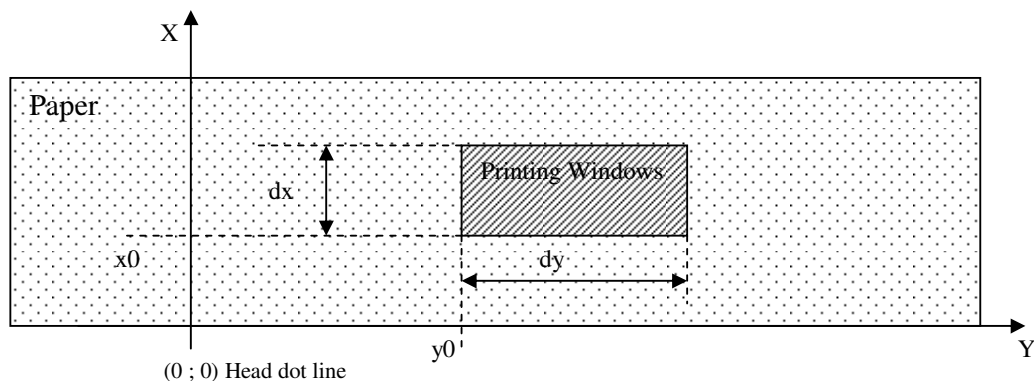
$$x0 = [(xL + xH \times 256) \times (\text{horizontal direction of the fundamental calculation pitch})]$$

$$y0 = [(yL + yH \times 256) \times (\text{vertical direction of the fundamental calculation pitch})]$$

$$dx = [(dxL + dxH \times 256) \times (\text{horizontal direction of the fundamental calculation pitch})]$$

$$dy = [(dyL + dyH \times 256) \times (\text{vertical direction of the fundamental calculation pitch})]$$

Keep the following notes in mind for this command. The fundamental calculation pitch depends on the vertical or horizontal direction. The maximum printable area in the x direction is 448/203 inches for 60 mm paper.



SUB GS ! n - [MP]

1A 1D 21 n

Select Char Size

Synopsis: Select character size.

ASCII SUB GS ! n

Hexadecimal 1A 1D 21 n

Decimal 26 29 33 n

Value of n 1-8 = vertical number of times normal font.
1-8 = horizontal number of times normal font.

Range of n 00-07, 10-17, ..., 70-77 (bits 0,1,2;4,5,6)

Default 00

Description: This command is effective for all characters (except for HRI characters).
In standard mode (non page mode), the vertical direction is the paper feed direction, and the horizontal direction is perpendicular to the paper feed direction. However, when character orientation changes in 90 degree clockwise-rotation mode, the relationship between vertical and horizontal directions is reversed.
Selects height using bits 0 to 2 and selects the character width using bits 4 to 6, as tables follows:

Exception: If n is out of the defined range, this command is ignored.

Character Width Selection bits 4,5,6		
Hex	Decimal	Width
00	0	1 (normal)
10	16	2 (two times width)
20	32	3 (three times width)
30	48	4 (four times width)
40	64	5 (five times width)
50	80	6 (six times width)
60	96	7 (seven times width)
70	112	8 (eight times width)

Character Height Selection bits 0,1,2		
Hex	Decimal	Height
00	0	1 (normal)
01	1	2 (two times height)
02	2	3 (three times height)
03	3	4 (four times height)
04	4	5 (five times height)
05	5	6 (six times height)
06	6	7 (seven times height)
07	7	8 (eight times height)

SUB GS * n1 n2 d1...dn - [MP]

1A 1D 2A n1 n2 d1 ... dn

Define Downloaded Bit Image

Synopsis: Define downloaded bit image in memory.

ASCII SUB GS * n1 n2 d1...dn

Hexadecimal 1A 1D 2A n1 n2 d1...dn

Decimal 26 29 42 n1 n2 d1...dn

Operands:

Value of <i>n1</i>	Value of <i>n2</i>	Value of <i>d</i>
1-56 (8 x <i>n1</i> = Number of Horizontal Dot Columns)	1-64 (Number of Vertical Bytes) ¹	Bytes of Data (Printed Down, Then Across)

¹The number of bytes sent is represented by the following formula:

$n = 8 \times n1 \times n2$ (*n1* x *n2* must be less than or equal to 3584).

See the illustration below for a graphic representation of the downloaded bit image :

Return : OK Fault

ASCII ACK NAK

Hexadecimal 06 15

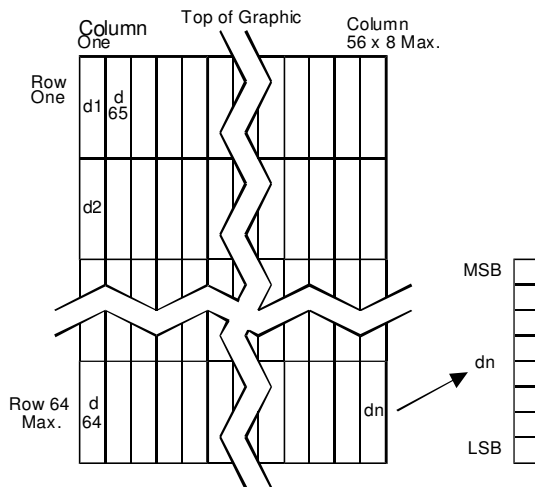
Decimal 6 21

Description: Enters a downloaded bit image (such as a logo) into RAM or Flash with the number of dots specified by *n1* and *n2*. The downloaded bit image is available until power is turned off, another bit image is defined, or either Initialize Printer (1B 40), command is received.

Note: See the illustration below for a graphic representation of the downloaded bit image.

See also chapter "Memory allocation" for information about potential limitations.

60 mm paper



SUB GS B n - [MP]

1A 1D 42 n

Select or Cancel White/Black Reverse Print Mode

Synopsis: Select or cancel white/black reverse print mode.

ASCII	SUB	GS	B	<i>n</i>
Hexadecimal	1A	1D	42	n
Decimal	26	29	66	<i>n</i>

Operand: n = mode selection:

Value of *n* 0 Off

1 On

Default 0 (Off)

Description: In White/Black reverse printing mode, print dots and non-print dots are reversed, which means that white characters are printed on a black background.

When the White/Black reverse printing mode is selected it is also applied to character spacing which is set by Right-Side Character Spacing (ESC SP).

This command can be used with built-in characters and user-defined characters, but does not affect the space between lines.

White/Black Reverse Print Mode does not affect graphics, logos, bar code, HRI characters, and spacing skipped by Horizontal Tab (HT), Set Absolute Starting Position (ESC \$), and Set Relative Print Position (ESC \).

Exceptions: Only the lowest bit of *n* is valid.

SUB GS L nL nH - [MP]

1A 1D 4C nL nH

Set Left Margin

Synopsis: Set left margin.

ASCII SUB GS L nL nH

Hexadecimal 1A 1D 4C nL nH

Decimal 26 29 76 nL nH

Operand: $n = ((nH * 256) + nL)$

Limits: Printable area size.

Range of nL 0-255

Range of nH 0-255

Default 0

Description: Sets the left margin of the printing area. The left margin is set to $((nH * 256) + nL)$ dots. The Set Printing Area Width command (1A 1D 57), sets the width of the printing area. See the Set Printing Area Width command (1A 1D 57) in this document for a description of that command.

Note: If the setting exceeds the printable area, the maximum value of the printable area is used ($n=0$).

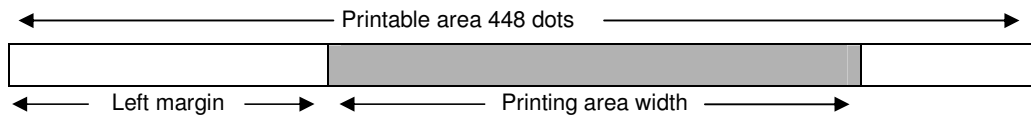
The maximum printable area is 448 dots. See the illustration.

The command is ignored if it is not at the beginning of the line.

Formulas: To set the left margin to one inch, send the four-byte string: SUB GS L 203 0

Or, to set the left margin to two inches, send the four-byte string: SUB GS L 150 1

Where 2 inches = 406/203, and 406 = $(1 * 256) + 150$.



SUB GS W nL nH - [MP]

1A 1D 57 nL nH

Set Printing Area Width

Synopsis: Set printing area width.

ASCII SUB GS W nL nH

Hexadecimal 1A 1D 57 nL nH

Decimal 26 29 87 nL nH

Operand: $n = ((nH * 256) + nL)$ dots

Range of nL 0-255

Range of nH 0-255

Default : 448

Limits : 448 dots (the maximum printable area)

Description: The width of the printing area is set to n dots.

If the setting exceeds the printable area, the maximum value of the printable area is used.

The width of the printing area follows the Set Left Margin command (1D 4C).

See the Set Left Margin command (GS L) earlier in this document for a description.

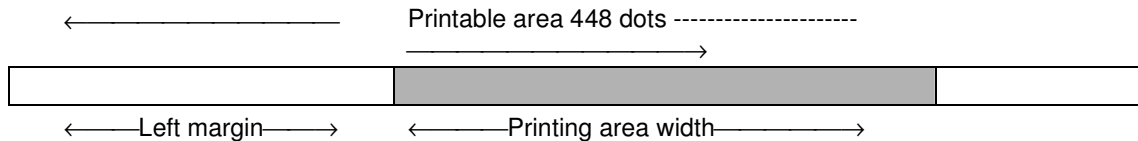
Notes: The command is ignored if it is not at the beginning of the line.

If the setting exceeds the printable area, the maximum value of the printable area is used.

Formulas: To set the width of the printing area to one inch, send the four-byte string: SUB GS W 203 0

Or, to set the width of the printing area to two inches, send the four-byte string: SUB GS W 150 1

Where 2 inches = 406/203, and 406 = (1 X 256) + 150.



SUB GS k m d1...dk NUL - [MP]

1A 1D 6B m d1...dk NUL

Print Bar Code first variation

SUB GS k m n d1...dn - [MP]

1A 1D 6B m n d1...dk

Print Bar Code second variation

Synopsis: Selects the bar code type and prints a bar code for the ASCII characters entered.

	<u>First Variation</u>						<u>Second Variation</u>					
ASCII	SUB	GS	k	m	d1...dn	NUL	SUB	GS	k	m	n	d1...dn
Hexadecimal	1A	1D	6B	m	d1...d n	00	1A	1D	6B	m	n	d1...dn
Decimal	26	29	107	m	d1...dn	0	26	29	107	m	n	d1...dn

(0 = End of command)

Operands: See tables below.

Description: There are two variations to this command.

The first variation uses a NULL character to terminate the string; the second uses a length byte at the beginning of the string to compensate for the Code 128 bar code that can accept a NULL character as part of the data.

With the second variation the length of byte is specified at the beginning of the string.

Bar codes can be aligned left, center, or right using the Align Positions command (1B 61 n).

The check digit is calculated for UPC and JAN (EAN) codes if it is not sent from the host computer.

Six-character zero-suppressed UPC-E tags are generated from full 11 or 12 characters sent from the host computer according to standard UPC-E rules.

Start/Stop characters are added for Code 39 if they are not included.

Rotated barcodes set with small modules (select bar code width command 1D 77 n, n=2 and PDF417 barcodes in any orientation are printed at low speed, for better readability.

Exceptions: The command is only valid at the beginning of a line.

Illegal data cancels the command.

If the width of the bar code exceeds one line, the bar code is not printed.

First Variation: Data string terminated with NULL Character

Description: The value of m selects the bar code system as described in the table.

The variable d indicates the character code to be encoded into the specified bar code system. See the table.

Exceptions: If character code d cannot be encoded, the printer prints the bar code data processed so far, and the following data is treated as normal data.

m	Bar Code	d	n, Length
0	UPC-A	48- 57 (ASCII numerals)	Fixed Length: 11, 12
1	UPC-E	48- 57	Fixed Length: 11, 12
2	JAN13 (EAN)	48- 57	Fixed Length: 12, 13
3	JAN8 (EAN)	48- 57	Fixed Length: 7,8
4	Code 39	48- 57, 65- 90 (ASCII alphabet), 32, 36, 37, 43, 45, 46, 47 (ASCII special characters) $d1 = dk = 42$ (start/stop code is supplied by printer if necessary)	Variable Length
5	Interleaved 2 of 5	48- 57	Variable Length (Even Number)
6	Coda bar	65- 68, start code 48- 57, 36, 43, 45, 46, 47, 58	Variable Length
10	PDF 417	32-255	Variable Length

Second Variation: Length of Byte Specified at Beginning of String

Description: The value of m selects the bar code system as described in the table.

The value of n specified length of byte.

The variable d indicates the character code to be encoded into the specified bar code system. See the table.

Exceptions: If character code d cannot be encoded, the printer prints the bar code data processed so far, and the following data is treated as normal data.

m	Bar Code	d	n, Length
65	UPC-A	48- 57 (ASCII numerals)	Fixed Length: 11, 12
66	UPC-E	48- 57	Fixed Length: 11, 12
67	JAN13 (EAN)	48- 57	Fixed Length: 12, 13
68	JAN8 (EAN)	48- 57	Fixed Length: 7, 8
69	CODE39	48- 57, 65- 90 (ASCII alphabet), 32, 36, 37, 43, 45, 46, 47 (ASCII special characters) $d1 = dk = 42$ (start/stop code is supplied by printer if necessary)	Variable
70	Interleaved 2 of 5 (ITF)	48- 57	Variable (Even Number)
71	CODABAR (NW-7)	65- 68, start code 48- 57, 36, 43, 45, 46, 47, 58	Variable
72	Code 93	0-127	Variable
73	Code 128	0-105 $d1 = 103-105$ (must be a Start code) $d2 = 0-102$ (data bytes) (Stop code is provided by the printer)	Variable
75	PDF 417	0-255	Variable Length

SUB GS t - [MP]

1A 1D 74

Top Of Form sensor Auto calibration

Synopsis: Automatically calibrate top of form sensor (NVRAM).

ASCII SUB GS t

Hexadecimal 1A 1D 74

Decimal 26 29 116

Return : One byte Status.

ASCII ACK NAK

Hexadecimal 06 15

Decimal 6 21

Description: This command will calibrate the TOF sensor for specific label paper.

When this command is received, the paper will advance until the next three TOF marks are detected. The sensor threshold will then be automatically calibrated to the average value for the three TOF marks.

Once the calibration is complete, Printer reply status (ACK = Calibration ok and saving, NAK = Fault).

Formulas : Max. Paper advanced = (Label length * 2)+ (3/2 * Label length+ Addition search)

See parameters (Label length, Addition search) value in "Diagnostic Form" code 1F 74.

ESC FF - [MP]

1B 0C

Print Data in Page Mode

Synopsis: Print Data

ASCII ESC FF

Hexadecimal 1B 0C

Decimal 27 12

Description: Collectively prints all buffered data in the printing area.

After printing, the printer does not clear the buffered data and sets values for Select Print Direction in Page Mode (ESC T) and Set Print Area in Page Mode (SUB ESC W), and sets the position for buffering character data.

Note : This command is enabled only in page mode.

ESC SO - [MP] [EM]

1B 0E

Set Enlarged print

Synopsis: Set double wide.

ASCII ESC SO

Hexadecimal **1B 0E**

Decimal 27 14

Description: Set enlarged print mode. Same SO code.

Expression: CHR\$(27); CHR\$(14);

Example: LPRINT CHR\$(27); CHR\$(14);

ESC DC2 - [MP]

1B 12

Select 90 Degree Counter-Clockwise Rotated Print

Synopsis: Rotate characters counter-clockwise.

ASCII ESC DC2

Hexadecimal **1B 12**

Decimal 27 18

Description: Rotates characters 90 degrees counter-clockwise. The command remains in effect until the printer is reset or until a Clear Printer (10) or Cancel Rotated Print (1B 56) command is received.

ESC DC4 n - [MP]

1B 14 n

Set Column

Synopsis: Set Column.

ASCII ESC DC4 n

Hexadecimal **1B 14 n**

Decimal 27 20 n

Limit n : 1-28 = Standard pitch (Elite character).

1-37 = Compressed pitch (Pica character).

Default : n = 1 (decimal)

Description: Prints the first character of the next print line in column *n*. It must be sent for each line not printed at column one. The value of *n* is set to one after each line.

Note: This command cannot be used with Single- or Double-Density graphics.

ESC SYN n - [MP]

1B 16 n

Select pitch (Column Width)

Synopsis: Select pitch for Column width.

ASCII ESC SYN n

Hexadecimal **1B 16 n**

Decimal 27 22 n

Value of n 0 = Standard pitch.
1 = Compressed pitch.

Default 0 (Standard pitch).

Description: Selects the character pitch for a print line.

Formulas The following table provides the print characteristics for both pitches

Pitch	Columns	CPI
Standard (Elite)	28	12.7
Compressed (pica)	37	16.9

ESC SP n - [MP]

1B 20 n

Set Right-Side Character Spacing

Synopsis: Set right-side character spacing.

ASCII ESC SP n

Hexadecimal **1B 20 n**

Decimal 27 32 n

Range of n : 0 - 32

Default 0

Description: Sets the right side character spacing to [n x horizontal or vertical motion units]. Values for this command are set independently in standard and page mode.

The units of horizontal and vertical motion are specified by the Set Horizontal and Vertical Minimum Motion Units (GS P) command. Changes in the horizontal or vertical units do not affect the current right side character spacing. When the horizontal or vertical motion unit is changed by the Set Horizontal and Vertical Minimum Motion Units (GS P) command the value must be in even units and not less than the minimum amount of horizontal movement.

In standard mode the horizontal motion unit is used.

In page mode the horizontal or vertical motion unit differs and depends on the starting position of the printable area. When the starting printing position is the upper left or lower right of the printable area (set by Select Print Direction in Page Mode, ESC T) the horizontal motion unit (x) is used. When the starting printing position is the upper right or lower left of the printable area (set by Select Print Direction in Page Mode, ESC T) the vertical motion unit (y) is used.

ESC ! n - [MP] [EM]

1B 21 n

Select Print Mode

Synopsis: Select print mode type E.

ASCII ESC ! n

Hexadecimal 1B 21 n

Decimal 27 33 n

Value of n:

Bit ¹	Function	0	1
Bit 0	Pitch (See chart below)	Standard Pitch	Compressed Pitch
Bit 3	Emphasized Mode	Cancelled	Set
Bit 4	Double High	Cancelled	Set
Bit 5	Double Wide	Cancelled	Set
Bit 7	Underlined Mode	Cancelled	Set (bar thickness = 2)

¹ Bits 1,2 and 6 are not used "0"

Default: 0 (for bits 0,3,4, 5, 7)

Description: Selects the print mode: standard, compressed, emphasized, underlined, double high, or double wide. This command selects the print mode and select pitch (column width) command (1B 16 n) affects pitch selection.

Expression: CHR\$(27); "!" ; CHR\$(n);

Example: LPRINT CHR\$(27); "!" ; CHR\$(129);

Pitch	Columns	CPI
Standard (Elite)	28	12.7
Compressed (pica)	37	16.9

ESC \$ nL nH - [MP]

1B 24 nL nH

Set Absolute Starting Position

Synopsis: Set absolute starting position.

ASCII ESC \$ nL nH

Hexadecimal 1B 24 nL nH

Decimal 27 36 nL nH

Value of n: nn = Number of dots to be moved from the beginning of the line.

nL = Remainder after dividing n by 256

nH = Integer after dividing n by 256

The values for nL and nH are two bytes in low byte, high byte word orientation :

$((nH * 256) + nL)$.

Description: Sets the print starting position to the specified number of dots (up to the right margin) from the beginning of the line. The print starting position is reset to the first column after each line.

If the Set Horizontal and Vertical Minimum Motion Units command (1D 50) is used to change the horizontal and vertical minimum motion unit, the parameters of this command (Set Absolute Print Position) will be interpreted accordingly.

Note: This command is also used in graphics mode.

Formulas: The example shows how to calculate 280 dots as the absolute starting position :
 $280/256 = 1$, remainder of 24 $nL = 24$ $nH = 1$

ESC % n - [MP]

1B 25 n

Select Character Set

Synopsis: Select character set.

ASCII ESC DC2 n

Hexadecimal 1B 25 n

Decimal 27 37 n

Value of n : 0 = Code Page 437.

1 = User Defined (RAM).

2 = Code Page 850.

Range of n : 0 – 2

Default : 0 (Code Page 437).

Description: Selects the character set. When an undefined RAM character is selected, current active ROM Code Page character is used.

ESC & s c1 c2 n1 d1 ... nn dn - [MP]

1B 26 s c1 c2 n1 d1 ... nn dn

Select Character Set

Synopsis: Select character set.

ASCII	ESC	&	s	c1	c2	n1	d1	...	nn	dn
Hexadecimal	1B	26	s	c1	c2	n1	d1	...	nn	dn
Decimal	27	38	s	c1	c2	n1	d1	...	nn	dn

Value and Ranges :

s = 3, the number of bytes (vertically) in the character cell.

c = the ASCII codes of the first (c1) and last (c2) characters respectively

c1 = Hex 20-FF (20 is always printed as a space).

c2 = Hex 20-FF (20 is always printed as a space).

To define only one character, use the same code for both c1 and c2.

n = the number of dot columns for the nth character as specified by n1 ... nn

n = 1-16.

d = the column data for the nth character as specified by d1 ... dn

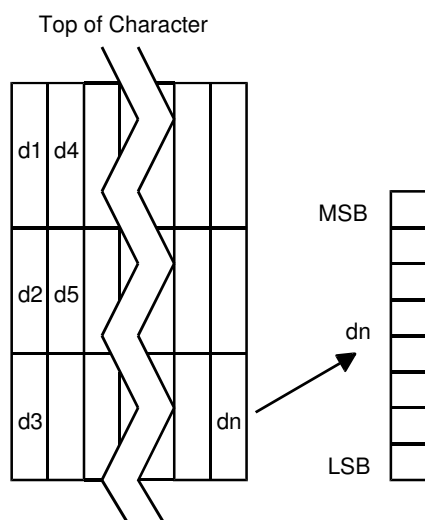
The number of bytes for a character cell is s x n1.

The bytes are printed down and across each cell. See the illustration below.

Description: Defines and enters downloaded characters into RAM. The command may be used to overwrite single characters. User-defined characters are available until power is turned off or the Initialize printer command (1B 40) is received.

Note: Any invalid byte (s, c1, c2, n1, n2) aborts the command.

See (1D 22 n) "Select memory type" to save User Defined characters.



ESC ' m a2 a1 a0 d1 ...dm - [MP]

1B 27 m a2 a1 a0 d1 ... dm

Write to User Data Storage

Synopsis: Write to user data storage.

ASCII	ESC	'	m	a2	a1	a0	d1	...	dm
Hexadecimal	1B	27	m	a2	a1	a0	d1	...	dm
Decimal	27	39	m	a2	a1	a0	d1	...	dm

Value of :

m 0 – 255

Addr (65536 x a2) + (256 x a1) + a0

Description: Writes *m* bytes of data to the user data storage flash page at the address specified. The printer waits for *m* bytes of data following the 3-bytes address, *addr*.

Exception: If any of the memory locations addressed by this command are not currently erased, the command is not executed.

ESC * m n1 n2 d1 ...dn - [MP]

1B 2A m n1 n2 d1 ...dn

Select Bit Image Mode

Synopsis: Select bit image mode.

ASCII	ESC	*	m	n1	n2	d1	...	dn
Hexadecimal	1B	2A	m	n1	n2	d1	...	dn
Decimal	27	42	m	n1	n2	d1	...	dn

Value of m	Mode	No. of Dots (Vertical)	No. of Dots (Horizontal)	No. of Dots/Line
0	8 Dot Single Density	8 (68 DPI)	0-224 (101 DPI)	8 x 224
1	8 Dot Double Density	8 (68 DPI)	0-448 (203 DPI)	8 x 448
32	24 Dot Single Density	24 (203 DPI)	0-224 (101 DPI)	24 x 224
33	24 Dot Double Density	24 (203 DPI)	0-448 (203 DPI)	24 x 448

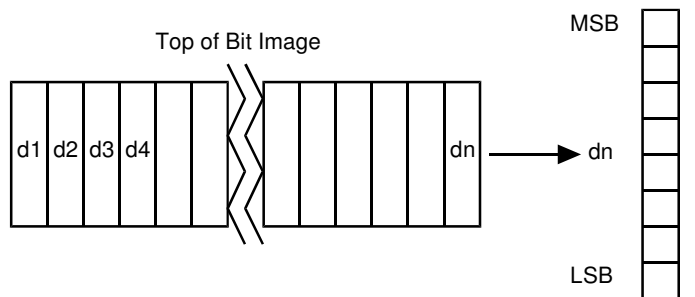
Value of n	(8-Dot Single Density Mode)	(24-Dot Single Density Mode)
	$n1 + (256 \times n2)$	$3 \times [n1 + (256 \times n2)]$

Value of d Number of Bytes of Data (Printed Down, Then Across)

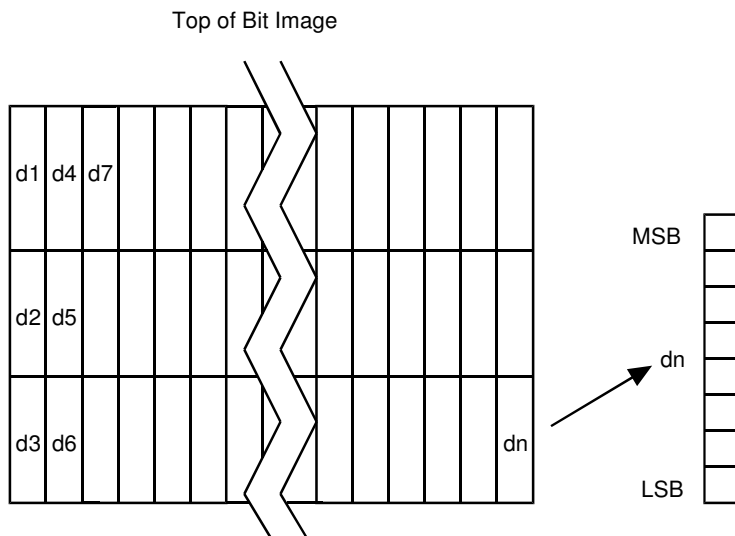
Description: Sets the print resolution and enters one line of graphics data into the print buffer. Excess data is accepted but ignored. Any print command is required to print the data, after which the printer returns to normal processing mode.

Note : See the illustrations for graphic representations of the bit image.

8-Dot Single-Density Mode



24-Dot Single-Density Mode



ESC + - [MP]

1B 2B

Increment Current Position Count

Synopsis: Increment current position count.

ASCII ESC +

Hexadecimal **1B 2B**

Decimal 27 43

Description: A buffered command that increments the current position count.

Note : If the count is 63 when it is incremented, the count will become 0.

ESC - n - [MP] [EM]

1B 2D n

Select or Cancel Underline Mode

Synopsis: Select or cancel underlined mode.

ASCII	ESC	-	n
Hexadecimal	1B	2D	n
Decimal	27	45	n

Value of n:

0-48 = Cancel underline mode.

1- 7,49-55 = Select underline mode and bar thickness in number of dots.

Default: 0-48 (Cancel underline mode).

Description: Turns underline mode on or off. Underlines cannot be printed for spaces set by the Horizontal Tab, Set Absolute Start Position, or Set Relative Print Position commands.
Underline mode may also be turned ON and OFF with the Select Print Mode(s) command (1B 21). However with that command the bar thickness is not selectable.

Note : This command is ignored if n is out of the specified range.

Expression: CHR\$(27);"-"; CHR\$(n);

Example: LPRINT CHR\$(27);"-"; CHR\$(1);

ESC . m n rL rH d1 ... dn - [MP]

1B 2E m n rL rH d1 ... dn

Print Advanced Raster Graphics

Synopsis: Print advanced raster graphics.

ASCII	ESC	.	m	n	rL	rH	d1	...	dn
Hexadecimal	1B	2E	m	n	rL	rH	d1	...	dn
Decimal	27	46	m	n	rL	rH	d1	...	dn

Value of m : Horizontal offset from left margin = 8 x m dots.

Value of n : Number of data bytes that compose the raster.

Value of r : Number of times the raster has to be printed = 256 x rH + rL.

d1 ... dn : Data bytes.

Range:

$$0 \leq m \leq 48$$

$$0 \leq n \leq 48$$

$$0 \leq r \leq 65535$$

$$0 \leq d1 \dots dn \leq 255$$

Description: Prints a horizontal raster of graphics data one or multiple times. Horizontal offset and number of data bytes are variable and specified by parameters.

Note : Advanced Raster graphics is not available in Page Mode.

ESC 2 - [MP]

1B 32

Set Line Spacing to 1/6 Inch

Synopsis: Set line spacing to 1/6 inch.

ASCII	ESC	2
Hexadecimal	1B	32
Decimal	27	50

Description: Sets the default line spacing to 1/6 of an inch (4, 23 mm).

ESC 3 n - [MP]

1B 33 n

Set Line Spacing

Synopsis: Set line spacing.

ASCII	ESC	3	n
Hexadecimal	1B	33	n
Decimal	27	51	n

Value of n n/406 inch

Range of n 0-255

Default 0.13 inch (3.37 mm)

Description: Sets the line spacing to $n/406$ inch ($n/16$ mm).

The minimum line spacing is 8.5 lines per inch. The line spacing equals the character height when n is too small.

If the Set Horizontal and Vertical Minimum Motion Units command (1D 50) is used to change the horizontal and vertical minimum motion unit, the parameters of this command (Set Line Spacing) will be interpreted accordingly

ESC 4 m a2 a1 a0 - [MP]

1B 34 m a2 a1 a0

Read from User Data Storage

Synopsis: Read from user data storage.

ASCII	ESC	3	m	a2	a1	a0
Hexadecimal	1B	34	m	a2	a1	a0
Decimal	27	51	m	a2	a1	a0

Value of m : 0-255

Addr : $(65536 \times a2) + (256 \times a1) + a0$

Description: Reads m bytes of data to the user data storage flash page at the address specified.

ESC : 0 0 0 - [MP]

1B 3A 30 30 30

Copy Character Set from Rom to Ram

Synopsis: Copy character set from Rom to Ram.

ASCII ESC : 0 0 0

Hexadecimal **1B 3A 30 30 30**

Decimal 27 58 48 48 48

Default : Current active ROM Code Page.

Description: Copies characters in the active ROM set to RAM. Use this command to re-initialize the User-Defined Character Set.

Note: To modify characters in one of the character set variations, such as Rotated Print, Select one of the Rotated Print commands, copy to RAM, then use the Define User-Defined Character Set command (1B 26).

ESC = n - [MP]

1B 3D n

Select Peripheral Device (for Multi Drop)

Synopsis: Select peripheral device.

ASCII ESC = n

Hexadecimal **1B 3D n**

Decimal 27 61 n

Value of n 0 (bit 0), device not selected.

1 (bit 0), device selected.

Default : 1 (bit 0), device selected.

Description: Selects the device to which the host computer sends data.

When the printer is disabled by this command, it ignores transmitted data until the printer is re-enabled by the same command.

Note: Other bits of *n* (1-7) are undefined and ignored.

ESC ? n - [MP]

1B 3F n

Cancel User-Defined Character

Synopsis: Cancel use-defined character.

ASCII	ESC	?	n
Hexadecimal	1B	3F	n
Decimal	27	63	n

Range of n 32-255

Description: Cancels the pattern defined for the character code specified by *n*. After the user-defined character is cancelled, the corresponding pattern from current active ROM Code Page is printed.

Note: This command is ignored if *n* is out of range or if the user-defined character is not defined.

ESC @ - [MP] [EM]

1B 40

Initialize Printer

Synopsis: Initialize printer.

ASCII	ESC	@
Hexadecimal	1B	40
Decimal	27	64

Description: Clears the print line buffer and resets the printer to the default settings for the startup configuration (refer to Default settings below).

Note: Print line buffer Landscape mode / Not clear line buffer → Emulation mode.

Expression: CHR\$(27);"@";

Example: LPRINT CHR\$(27);"@";
LINPUT STATUS\$

Default: Single Wide, Single-High and Left-Aligned characters and reset active logo.

Default bar code settings	
Character Pitch Elite ⁽¹⁾	12.7 CPI
Number of Columns Width	28
Extra Dot Rows	3
Character Set	Default ⁽¹⁾
Code Page	Default ⁽²⁾
Printing Position	Column One
Form feed paper	Label Mode.

⁽¹⁾ Mode resident user m=0 see code Set or Read default font 1F 03 0F m or 1F 07 0F.

⁽²⁾ Mode See code Set or Read 1F 03 80 m or 1F 07 80.

ESC "BMP file" - [MP]

1B 42 4D ...

Download BMP Logo

Synopsis: Download BMP file.

ASCII	ESC	B	M	...	ESC	"BMP File"
Hexadecimal	1B	42	4D	...	1B	"BMP File"
Decimal	27	66	77	...	27	"BMP File"

Value Maximum width = 448 for 60mm paper.

Description: Enters a downloaded BMP logo into RAM or Flash.

The downloaded BMP logo can be printed by using the Print Downloaded Image (1D 2F n) command.

To download a BMP file to save it as a logo, send the ESC (1Bh) character followed by the whole BMP file.

The printer decodes the BMP file header and will save the image data after checking important parameters, such as :

- Width.
- Height.
- Number of colours (only monochrome images are accepted).

Note: BMP file images that are not monochrome are ignored.

Microsoft BMP bitmap file format.

See command "Return Logo Checksum" (1F 65 n)

See also chapter "Memory allocation" for information about potential limitations.

ESC D [n]...k NUL - [MP]

1B 44 [n]...k NUL

Set Horizontal Tab Positions

Synopsis: Set horizontal tab positions.

ASCII ESC D [n] ...k NUL

Hexadecimal 1B 44 [n] ...k 0

Decimal 27 68 [n] ...k 0

Value of n: Column number for tab minus one
(*n* is always less than or equal to the current selected column width)

Value of k: 0-32

Default: Every 8 characters from column. 1 (9, 17, etc.) for normal print

Description: Sets up to 32 horizontal tab-position *n* columns from column one, but does not move the print position. See the Horizontal Tab command (09).

The tab positions remain unchanged if the character widths are changed after the tabs are set. The command ends with hexadecimal 00; hexadecimal 1B 44 00 clears all tabs.

The tabs cannot be set higher than the column width of the current pitch.

Formulas: Set the tab positions in ascending order and put Hex 00 at the end.
Hex 1B 44 00 (number of tabs not specified) clears all tab positions.

Example: 1B 44 03 04 07 0A 0D 18 00

09 41 09 42 09 43 09 44 09 45 09 46 0A

To obtain (in standard pitch): ---A---B--C--D-----EF

ESC E n - [MP]

1B 45 n

Select or cancel Emphasized Mode

Synopsis: Turn emphasized mode on/off.

ASCII ESC E n

Hexadecimal 1B 45 n

Decimal 27 69 n

Value of n 0 = Off
1 = On (When 0 and 1 are the Least Significant Bit, LSB)

Default: 0 (Off)

Description: Starts or stops emphasized printing. The printer is reset to the standard print mode after a Clear Printer (10) command is received.

Note: Only the lowest bit of *n* is effective.

Emphasized printing cannot be used with bit-images or downloaded bit-images.

This command and the Select Print Mode(s) command (1B 21) function identically. They should have the same setting when used together.

ESC G n - [MP]

1B 47 n

Select or Cancel Double Strike

Synopsis: Turn double strike mode On/Off.

ASCII ESC G n

Hexadecimal **1B** **47** **n**

Decimal 27 71 n

Value of n 0 = Off
1 = On (When 0 and 1 are the Least Significant Bit, LSB)

Default: 0 (Off)

Description: Turns double strike mode on or off. Identical to Emphasized mode. The printer is reset to the standard print mode after a Clear Printer (10) command is received.

Note: Only the lowest bit of *n* is effective.
Double-strike printing cannot be used with bit-images or downloaded bit-images.

ESC I n - [MP]

1B 49 n

Select or Cancel Italic Print

Synopsis: Turn Italic mode On/Off.

ASCII ESC I n

Hexadecimal **1B** **49** **n**

Decimal 27 73 n

Value of n 0 = Off
1 = On (When 0 and 1 are the Least Significant Bit, LSB)

Default: 0 (Off)

Description: Turns Italic print mode on or off. The printer is reset to the standard print mode after a Clear Printer (10) command is received.

Note: Only the lowest bit of *n* is valid.

ESC J n - [MP] [EM]

1B 4A n

Print and Feed Paper

Synopsis: Print and feed paper.

ASCII	ESC	J	n
Hexadecimal	1B	4A	n
Decimal	27	74	n

Value of n $n/203$ inch or $n/8$ mm

Range of n: 0-255

Description: Prints one line from the buffer and feeds the paper $n/203$ inch ($n/8$ mm). The line height equals the character height when n is too small.
If the Set Horizontal and Vertical Minimum Motion Units command (1D 50) is used to change the horizontal and vertical minimum motion units, the parameters of this command (Print and Feed Paper) will be interpreted accordingly.

Expression: CHR\$(27);"J";CHR\$(n);

Example: LPRINT CHR\$(27);"J";CHR\$(20);

ESC K n1 n2 d1 ... dn - [MP]

1B 4B n1 n2 d1 ... dn

Select Single Density Graphics

Synopsis: Select single density graphics.

ASCII	ESC	K	n1	n2	d1	...	dn
Hexadecimal	1B	4B	n1	n2	d1	...	dn
Decimal	27	75	n1	n2	d1	...	dn

Value of n **(8-Dot Single Density Mode)**
 $n1 + (256 \times n2)$

(24-Dot Single Density Mode)
 $3 \times [n1 + (256 \times n2)]$

Value of d Number of Bytes of Data (Printed Down, Then Across)

Description: Enters one line of 8-dot single-density graphics into the print buffer. Any print command is required to print the line, after which the printer returns to normal processing mode. Single-density mode allows 0-224 dot columns for 60 mm paper.

Each bit corresponds to two horizontal dots. Compare to Set Bit Image Mode (1B 2A, m=0) earlier in this document.

ESC L - [MP]

1B 4C

Select Page Mode

Synopsis: Select page mode.

ASCII ESC L

Hexadecimal **1B 4C**

Decimal 27 76

Description: Switches from standard mode to page mode. After printing has been completed either by the Print and Return to Standard Mode (FF) command or Select Standard Mode (ESC S) the printer returns to standard mode. The developed data is deleted after being printed.

This command sets the position where data is buffered to the position specified by Select Print Direction in Page Mode (ESC T) within the printing area defined by Set Print Area in Page Mode (ESC W).

This command switches the settings for the following commands (which values can be set independently in standard mode and page mode) to those for page mode.

- Set Right-Side Character Spacing (ESC SP)
- Select 1/6-Inch Line Spacing (ESC 2)
- Set Line Spacing (ESC 3)

It is possible only to set values for the following commands in page mode. These commands are not executed.

- Select or Cancel 90 Degree Clockwise Rotation (ESC V)
- Set Counter Clockwise Rotation (ESC DC2)
- Select Justification (ESC a)
- Select or Cancel Upside-Down Printing (1B 7B).
- Set Left Margin (SUB GS L)
- Set Print Area Width (SUB GS W)

Note: The command is enabled only when input at the beginning of a line
The command has no effect if page mode has previously been selected.

ESC M - [MP] [EM]

1B 4D

Elite character Set

Synopsis: Select pitch 16*24.

ASCII ESC M

Hexadecimal **1B 4D**

Decimal 27 77

Description: Set elite –sized character (16x24 char, set).
Default mode.

Expression: CHR\$(27);"M";

Example: LPRINT CHR\$(27);"M";

ESC P - [MP] [EM]

1B 50

Pica character Set

Synopsis: Select pitch 12*24.

ASCII ESC P

Hexadecimal **1B 50**

Decimal 27 80

Description: Set pica –sized character (12x24 char, set).

Expression: CHR\$(27);"P";

Example: LPRINT CHR\$(27);"P";

ESC R n - [MP] [EM]

1B 52 n

Select International Character Set

Synopsis: Select international character set.

ASCII ESC R n

Hexadecimal **1B 52 n**

Decimal 27 82 n

Operand: n = mode selection

Limits : 0 – 10

Default: 0 (Code Page 437)

n	Country
0	USA
1	France
2	Germany
3	UK
4	Denmark I
5	Sweden
6	Italy
7	Spain
8	Japan
9	Norway
10	Denmark II

Description: Modifies the set of printable character in accordance with the table below.

Note: Set default Code Page 437, selectable through configuration menu with code 1F 03 80 n (= 0).
See also code 1B 74 n (=0).

Expression: CHR\$(27);"R";CHR\$(n);

Example: LPRINT CHR\$(27);"R";CHR\$(1);

Additional codes

	n	35 _D 23 _H	36 _D 24 _H	64 _D 40 _H	91 _D 5B _H	92 _D 5C _H	93 _D 5D _H	94 _D 5E _H	96 _D 60 _H	123 _D 7B _H	124 _D 7C _H	125 _D 7D _H	126 _D 7E _H
U.S.A.	0	#	\$	@	[	\	]	^	`	{		}	~
France	1	#	\$	à	°	ç	§	^	`	é	ù	è	"
Germany	2	#	\$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß
U.K.	3	£	\$	@	[	\	]	^	`	{		}	~
Denmark I	4	#	\$	@	Æ	Ø	Å	^	`	æ	ø	å	~
Sweden	5	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
Italy	6	#	\$	@	°	\	é	^	ù	à	ò	è	ì
Spain	7	Pt	\$	@	ì	Ñ	¿	^	`	"	ñ	}	~
Japan	8	#	\$	@	[	¥	]	^	`	{		}	~
Norway	9	#	¤	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
Denmark II	10	#	\$	E	Æ	Ø	Å	Ü	é	æ	ø	å	ü

ESC S - [MP]

1B 53

Select Standard Mode

Synopsis: Select standard Mode (Cancel page mode).

ASCII ESC S

Hexadecimal **1B 53**

Decimal 27 83

Description: Switches from page mode to standard mode. In switching from page mode to standard mode, data buffered in page mode are cleared, the printing area set by Set Print Area in Page Mode (SUB ESC W) is initialized and the print position is set to the beginning of the line.

This command switches the settings for the following commands (the values for these commands can be set independently in standard mode and page mode) to those for standard mode:

Set Right-Side Character Spacing (ESC SP)

Select 1/6 Inch Line Spacing (ESC 2)

Set Line Spacing (ESC 3)

Standard mode is automatically selected when power is turned on, the printer is reset, or the Initialize Printer command (ESC @) is used.

Note: This command is effective only in page mode.

ESC T n - [MP]

1B 54 n

Select Print Direction in Page Mode

Synopsis: Select print direction in page mode.

ASCII ESC T n

Hexadecimal 1B 54 n

Decimal 27 84 n

Value of n Start position

0 = Upper left corner proceeding across page to the right (A).

1 = Lower left corner proceeding up the page (B).

2 = Lower right corner proceeding across page to the left (upside down) (C).

3 = Upper right corner proceeding down page (D).

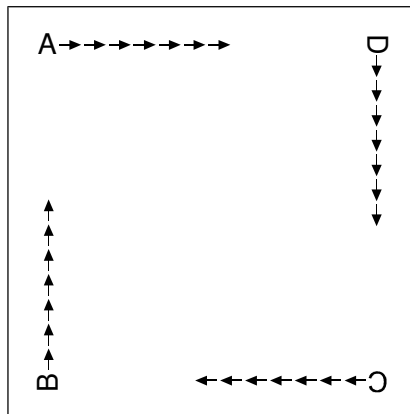
Default: 0

Description: Selects the printing direction and start position in page mode. See the illustration below.

The command can be sent multiple times so that several different print areas, aligned in different print directions, can be developed in the printer's page buffer before being printed using the Print Page Mode commands (SUB FF or ESC FF).

Note: The command is valid only in page mode.

The command is ignored if the value of *n* is out of the specified range.



ESC V n - [MP]

1B 56 n

Select or Cancel 90 Degree Clockwise Rotated Print

Synopsis: Turn 90 degree clockwise mode on/off.

ASCII ESC V n

Hexadecimal **1B 56 n**

Decimal 27 86 n

Value of n 0 = Cancel.

1 = Set.

Default: 0 (Cancel)

Description: Rotates characters 90 degrees clockwise. The command remains in effect until the printer is reset or until a Clear Printer (10) or Rotated Print (1B 12) command is received..

ESC W n - [MP] [EM]

1B 57 n

Enlarged mode

Synopsis: Set or reset double wide mode.

ASCII ESC W n

Hexadecimal **1B 57 n**

Decimal 27 45 n

Value of n decimal : 1 or 49 → Set Enlarged print mode.
0 or 48 → Cancels Enlarged print mode.

Description: When ESC W is input, all data that follows this code on the same line is printed out in enlarged characters. This code is cancelled by the input of DC4 or ESC W code.
Same code as SO.

Note: This code isn't canceled by linefeed → Emulation.

Expression: CHR\$(27);"W";CHR\$(n);

Example: LPRINT CHR\$(27);"W";CHR\$(49)

ESC Y n1 n2 d1 ... dn - [MP]

1B 59 n1 n2 d1 ... dn

Select Double Density Graphics

Synopsis: Select Double density graphics.

ASCII	ESC	Y	n1	n2	d1	...	dn
Hexadecimal	1B	59	n1	n2	d1	...	dn
Decimal	27	89	n1	n2	d1	...	dn

Value of n (8-Dot Single Density Mode)
 $n1 + (256 \times n2)$

(24-Dot Single Density Mode)
 $3 \times [n1 + (256 \times n2)]$

Value of d Number of Bytes of Data (Printed Down, Then Across)

Description: Enters one line of 8-dot double-density graphics into the print buffer. Any print command is required to print the line, after which the printer returns to normal processing mode. Double-density mode allows 0-448 dot columns for 60mm paper. The number of bytes sent is represented by the formulas in the table. Each bit corresponds to one horizontal dot. Compare to Set Bit Image Mode (1B 2A, m=1) earlier in this document.

ESC [] - [MP]

1B 5B 7D

Switch to Flash Download Mode

Synopsis: Switch to flash download mode.

ASCII	ESC	[	]
Hexadecimal	1B	5B	7D
Decimal	27	91	125

Description: Puts the printer in flash download mode in preparation to receive commands controlling the downloading of objects into flash memory. When this command is received, the printer leaves normal operation and can no longer print transactions until the Reboot the Printer command (1D FF) is received or the printer is rebooted. This command does not affect the current communication parameters. Once the printer is in flash download mode, this command is no longer available.

Note: This command does not affect the current communication parameters. Once the printer is in flash download mode, this command is no longer available.

ESC \ nL nH - [MP]

1B 5C nL nH

Set Relative Print Position

Synopsis: Set relative print position.

ASCII ESC \ nL nH

Hexadecimal 1B 5C nL nH

Decimal 27 92 nL nH

Value of n :

To Move the Relative Starting Position Right of the Current Position:

n = Number of dots to be moved right of the current position

nL = Remainder after dividing n by 256

nH = Integer after dividing n by 256

The values for nL and nH are two bytes in low byte, high byte word orientation.

To Move the Relative Starting-Position Left of the Current Position:

n = Number of dots to be moved left of the current position

nL = Remainder after dividing $(65536-n)$ by 256

nH = Integer after dividing $(65536-n)$ by 256

The values for nL and nH are two bytes in low byte, high byte word orientation.

Description: Moves the print-starting position the specified number of dots either right (up to the right margin) or left (up to the left margin) of the current position.

The print starting position is reset to the first column after each line.

Any setting that exceeds the printable area is ignored.

Note: If the Set Horizontal and Vertical Minimum Motion Units command (1D 50) is used to change the horizontal and vertical minimum motion unit, the parameters of this command (Set Relative Print Position) will be interpreted accordingly. For more information, see the description of the Set Horizontal and Vertical Minimum Motion Units command (1D 50) in this document.

Formulas: To move to the left:

The example shows how to set the relative position 20 dots to the left of the current position.

$65536-20 = 65516$ $65516/256 = 255$, remainder of 236 $nL = 236$, $nH = 255$

To move to the right:

The example shows how to set the relative position 260 dots to the right of the current position.

$260/256 = 1$, remainder of 4 $nL = 04$, $nH = 01$

ESC a n - [MP]

1B 61 n

Select Justification

Synopsis: Select justification.

ASCII ESC a n

Hexadecimal **1B 61 n**

Decimal 27 97 n

Operand: n = mode selection

Value of n 0, 48 = Left aligned

1, 49 = Center aligned

2, 50 = Right aligned

Limits : 0-2, 48-50

Default 0 (Left aligned)

Description: Specifies the alignment of characters, logos, and bar codes (see the value of n).

Exceptions: The command is valid only at the beginning of a line.

ESC c 5 n - [MP]

1B 63 35 n

Enable or Disable Panel Switch

Synopsis: Enable or Disable Panel switch.

ASCII ESC c 5 n

Hexadecimal **1B 63 35 n**

Decimal 27 99 53 n

Value of n 0 = Enable

1 = Disable

Default 0 (Enable)

Description: Enables or disables the paper feed button by toggling the paper feed button on and off. Only the lowest bit is used to toggle the paper feed button. If the last bit is 0, the paper feed button is enabled. If the last bit is 1, the paper feed button is disabled.

Exceptions: Functions that require the panel button cannot be used when it has been disabled with this command.

ESC d n - [MP]]

1B 64 n

Print and Feed *n* Lines

Synopsis: Print and feed *n* lines.

ASCII ESC d n

Hexadecimal **1B** **64** **n**

Decimal 27 100 n

Operand: n = range

Limits : 0-255 (0 is interpreted as 1)

Description: Prints one line from the buffer and feeds paper *n* lines at the current line height.

ESC t n - [MP]

1B 74 n

Select Character Code Table or Active User-defined Font Selection

Synopsis: Select character code table or active user-defined font selection

ASCII ESC t n

Hexadecimal 1B 74 n

Decimal 27 116 n

Operand: n = mode selection

Limits :

n		Code Page
Decimal	Hex	
0	00	437 : US
1	01	850 : Multilingual
2	02	852 : Latin 2, Slavic
3	03	860 : Portuguese
4	04	863 : Canadian French
5	05	865 : Nordic
6	06	858 : Multilingual Latin 1 + Euro
7	07	866 : Cyrillic, Russian
8	08	1252 : Windows, Latin 1
9	09	862 : Hebrew
10	0A	Katakana
11	0B	1253 : Windows, Greek
21	0C	737 : Greek
48	30	Easy Font Single Byte 0
49	31	Easy Font Single Byte 1
50	32	Easy Font Single Byte 2
51	33	Easy Font Single Byte 3
52	34	Easy Font Double Byte

Default: 0 (Code Page 437), selectable through configuration menu

Description: Selects the character set to be used.

ESC v n - [MP]
1B 76 n
Transmit Paper Sensor Status

Synopsis: Transmit paper sensor Status.

ASCII ESC v n

Hexadecimal **1B 76 n**

Decimal 27 118 n

Description: Sends status data to the host computer. The printer sends one byte to the host computer when it is not busy or in a fault condition. See the following table.

**Status
Byte**

Bit	Function	0 Signifies	1 Signifies
0	Reserved	0	-
1	Reserved	0	-
2	Receipt Paper	Present	Out
3	Reserved	0	-
4	Not Used	Fixed to Zero	Fixed to Zero
5	Temperature	In valid range	Too hot or too cold
6	Voltage	In valid range	Too high or too low
7	Not Used	Fixed to Zero	Fixed to Zero

ESC z - [MP]
1B 7A
Clear Current Position Count

Synopsis: Clear current position count.

ASCII ESC z

Hexadecimal **1B 7A**

Decimal 27 122

Description: A buffered command that clears the current position count.

ESC { n - [MP]

1B 7B n

Select or Cancel Upside-Down Print Mode

Synopsis: Turn on/off upside down printing mode.

ASCII ESC { n

Hexadecimal **1B** **7B** **n**

Decimal 27 123 n

Value of n 0 = Cancel

1 = Set

Default 0 (Cancel)

Description: Prints upside-down characters. The command may be combined with Clock Wise Rotated print (1B 56) or Counter Clock Wise Rotated print (1B 12). The character order is inverted in the buffer so text is readable. Only bit 0 is used. Bits 1-7 are not used. See Summary of Rotated Printing in this document for more information.

FS D f8 t w h sL sH nL nH {d} - [MP]

1C 44 f8 t w h sL sH nL nH {d}

Download Double Byte Font

Synopsis: Download double byte font.

ASCII	FS	D	f8	t	w	h	{d}
Hexadecimal	1C	44	f8	t	w	h	{d}
Decimal	28	68	f8	t	w	h	{d}

Operand

f: 8 character font name.

t: Font storage Id.

w: Font character width in dots, including inter-character space.

h: Font character height in dots, not including inter-line space.

sL, sH: Band Start address = 256 x sH + sL

nL, nH: Number of characters in the band = 256 x nH + nL

d: Downloaded data bytes.

Limit:

Hex: $0x20 \leq f \leq 0x7F$
 $t = 0x34$
 $0x11 \leq w, h \leq 0x20$
 $0x2000 \leq s \leq 0xFFFF$
 $0x0001 \leq n \leq 0xFFFF$, limited to available memory
 $0x00 \leq d \leq 0xFF$

Return:

ASCII: OK: ACK
Fault: NACK

Hex: OK: 0x06
Fault: 0x15

Description: Download a single band of a double byte font characters to the printer. If the download is successful, an ACK will be returned. If unsuccessful, a NAK will be returned.

If multiple font character bands are to be downloaded, the font name, code page selection, width, and height must be the same for all download commands. The start address of each command should be greater than the start address of the preceding download command.

The font name is used to identify the font. It will be printed on the diagnostics or configuration form. When a downloaded font is to be deleted, the font name is used to identify the font.

Only one double byte font can be downloaded into the printer at any given time. An existing double byte font needs to be deleted prior to downloading a new double byte font.

FS E f8 - [MP]

1C 45 f8

Download Double Byte Font Complete

Synopsis: Download double byte font complete.

ASCII FS E f8

Hexadecimal 1C 45 f8

Decimal 28 69 f8

Operand: f8 character font name

Limit: Hex: $0x20 \leq f \leq 0x7F$

Returns:

ASCII:	OK:	ACK
	NOK:	NACK
Hex:	OK:	0x06
	Fault:	0x15

Description: Tells the printers that all bands for selected font are downloaded. If the download is successful, an ACK will be returned. If unsuccessful, a NAK will be returned.

FS F t - [MP]

1C 46 t

Read Font information

Synopsis: Read font information.

ASCII	FS	F	t
Hexadecimal	1C	46	t
Decimal	28	70	t

Operand: t = Font storage Identify

Value of t:	48	0x30 (ASCII $n = 0$)	Single Font n°00
	49	0x31 (ASCII $n = 1$)	Single Font n°01
	50	0x32 (ASCII $n = 2$)	Single Font n°02
	51	0x33 (ASCII $n = 3$)	Single Font n°03
	52	0x34 (ASCII $n = 4$)	Double Font n°04

Returns:	OK	ACK (Hex = 06)	1 byte
		Font Id	1 byte
		Font Name	8 bytes
		Font width	1 byte
		Font Height	1 byte
		Number of characters	2 bytes < LSB , MSB>
		Checksum (Hex)	2 bytes < LSB , MSB>
	Fault	NAK (Hex = 15)	1 Byte

Description: If selected font exists, this command returns ACK followed by font information.
Else it returns NAK.

FS H - [MP]

1C 48

Check Easy Font compatibility

Synopsis: Check Easy Font compatibility.

ASCII	FS	H
Hexadecimal	1C	48
Decimal	28	72

Returns ASCII: OK ACK + list of available font Ids + 00
Fault NAK

Returns Hex: OK 06 + list of available font Ids + 00
Fault 15

Description: This command asks the printer whether it supports or not Font download.
If it does, it also returns the list of available font Ids (single byte, double byte) that can be used to download a font.

FS I n - [MP]

1C 49 n

Set Maximum Number of Characters Band (Easy Font)

Synopsis: Set maximum number of characters band.

ASCII FS I n

Hexadecimal 1C 49 n

Decimal 28 73 n

Value of n Maximum Number Characters Band

Default: 400

Limit: $10 \leq n \leq 500$

Description: Specifies Maximum of characters Band for optimize used memories.

FS K - [MP]

1C 4B

Read maximum number of character bands

Synopsis: Read maximum number of characters band.

ASCII FS K

Hexadecimal 1C 4B

Decimal 28 75

Return 3 bytes : ID + sL + sH

Limits: ID = 75

sL = 0 to 255

sH = 0 to 1

Formulas: Size of characters band = $[sL + (256 \times sH)]$ (Default 400)

Description: Read maximum of characters Band. See "Set Maximum Number characters Band" command (1C 49 n).

FS L f8 t w n {d} - [MP]

1C 4C f8 t w h { d }

Download Single Byte Font

Synopsis: Download single byte printer font in User flash memory.

ASCII	FS	L	f8	t	w	h	{d}
Hexadecimal	1C	4C	f8	t	w	h	{d}
Decimal	28	76	f8	t	w	h	{d}

Operands:	f8	8 characters font name.
	t	Font storage Id.
	w	Font character width in dots, including inter-character space.
	h	Font character height in dots, not including inter-line space.
	d	Downloaded data bytes.

Limit Hex:	0x20 ≤ f8 ≤ 0x7F
	0x30 ≤ t ≤ 0x33
	0x01 ≤ w, h ≤ 0x20
	0x00 ≤ d ≤ 0xFF

Returns :	OK	Fault
ASCII	ACK	NAK
Hexadecimal	06	15
Decimal	6	21

Description: This command will download a single byte font code page to the printer.
If the download is successful, an ACK will be returned.
If unsuccessful, a NAK will be returned. A font must always be downloaded completely, which corresponds to 224 characters.
The font name is used to identify the font. It will be printed on the diagnostics or configuration form. When a downloaded font is to be deleted, the font name is used to identify the font. Two fonts cannot have the same name. Each character is downloaded as raster, from top to bottom, and for each raster, from leftmost byte to rightmost byte. Two fonts cannot have the same storage Id.

Notes: See command select ... (1Bh 74h n).

GS SOH - [BP] [MP]

1D 01

Request Flash Memory Size

Synopsis: Request flash memory Size.

ASCII	GS	SOH
Hexadecimal	1D	01
Decimal	29	1

Return : 1 bytes

Description: Returns the size of the flash used.
There may be 2 sectors (64K each) in flash memory.
This command assures that the firmware to be downloaded is the appropriate size for flash memory.
The returned value corresponds to the highest sector number that can be accepted by the Select Sector to Download (1D 02 nn) command :

- 1 = 128k bytes Flash
- 7 = 512k bytes Flash
- 15 = 1M byte Flash

GS STX n - [BP]

1D 02 n

Select Flash Memory Sector to Download

Synopsis: Select flash memory sector to download.

ASCII	GS	STX	n
Hexadecimal	1D	02	n
Decimal	29	2	n

Value and range

n :	0-7	= 512k bytes Flash
	0-15	= 1M bytes Flash
	0-31	= 2M bytes Flash

Description: Selects the flash sector (n) for which the next download operation applies.
The values of the possible sector are restricted, depending upon the flash part type. The printer transmits an ACK if the sector number is acceptable or an NAK if the sector number is not acceptable. Sector numbers start at 0.

Exceptions: Available only in download mode.

GS EOT n - [MP]

1D 03 n

Real Time Recovery from Fault

Synopsis: Real time recovery from fault.

ASCII GS EOT n

Hexadecimal 1D 03 n

Decimal 29 3 n

Operand: n = Recovery mode

Description: See information command 10 05 n. Same command.

GS EOT n - [MP]

1D 04 n

Real Time Status Transmission

Synopsis: Real time status transmission.

ASCII GS EOT n

Hexadecimal 1D 04 n

Decimal 29 4 n

Operand: n = Sequence

Description: See information command 10 04 n. Same command.

GS ENQ - [MP]

1D 05

Real Time Status Transmission

Synopsis: Real time status transmission.

ASCII GS ENQ

Hexadecimal **1D 05**

Decimal 29 5

Reply Status 1 byte (See value of byte table below)

Description: Transmits one byte status of the printer in real time.

Bit	Status	Hex	Decimal	Function
0	Off	00	0	Reserved
1	Off	00	0	Reserved
2	Off	00	0	Reserved
3	Off On	00 08	0 8	Not busy at the communication interface. Printer is busy at the communication interface.
4	On	10	16	Fixed to On.
5	Off	00	0	Fixed to Off.
6	Off On	00 40	0 64	No error condition. Error condition exists in the printer.
7	On	80	128	Fixed to On.

GS ACK - [BP] [MP]

1D 06

Get Flash Firmware CRC Status

Synopsis: Get flash firmware Sector CRC.

ASCII GS ACK

Hexadecimal 1D 06

Decimal 29 6

Returns: OK Fault

ASCII ACK NAK

Hexadecimal 06 15

Decimal 6 21

Description: Causes the printer to calculate the CRC for the Flash firmware code space and transmits the result.

This is performed normally after downloading completely a new firmware to verify that the downloaded firmware is valid.

The printer transmits ACK if the calculated CRC is correct; NAK if the CRC is incorrect

GS BEL - [BP] [MP]

1D 07

Return Boot Sector CRC

Synopsis: Return Boot Sector CRC.

ASCII GS BEL

Hexadecimal 1D 07

Decimal 29 7

Returns: 3 byte

Values: ACK <low byte> <high byte>

Description: Returns the CRC calculated over the boot sector code space.

GS BS -[MP]

1D 08

Return Static RAM Size

Synopsis: Return static ram size.

ASCII GS BS

Hexadecimal 1D 08

Decimal 29 8

Return: 1 byte = SRAM sizes

Values (Dec): (128Kb =) 2

Description: Returns the size of SRAM on board, on one byte as number of 64 Kbytes sectors.

GS HT -[MP]

1D 09

Return CPU frequency

Synopsis: Return CPU frequency.

ASCII GS HT

Hexadecimal 1D 09

Decimal 29 9

Return: 1 byte = Frequency

Values (Dec): 48 (MHz)

Description: Returns the CPU board frequency in MHz.

GS LF -[MP]

1D 0A

Return Hardware information

Synopsis: Return hardware information.

ASCII GS LF

Hexadecimal 1D 0A

Decimal 29 10

Returns: 1 bytes = Status Byte reply

Value:

Bit	Function	0 Signifies	1 Signifies
1	Temperature Low	No	Yes
4	Pre Heating	Off	On
5	Reserved	Fixed to Zero	Fixed to Zero

¹ Bits 0,2,3,6 and 7 are not used "0"

Description: Sends status data to the host computer.

GS VT -[MP]

1D 0B

Return User Flash Size

Synopsis: Return User flash memory size.

ASCII GS VT

Hexadecimal **1D 0B**

Decimal 29 11

Return: 1 byte

Description: Returns the total amount of Flash memory accessible for user operations. This is the sum of memory allocated to Logos/fonts storage, User data storage, Easy font storage

Formulas: The User Flash Size is returned on one 1 byte, and the returned value corresponds the size divided by 65535 (64k).

For example, if the User Flash Size is 512kb, the command would return 8 as $512/64 = 8$.

GS SO -[BP]

1D 0E

Erase All Flash Contents except Boot Sector

Synopsis: Erase all flash contents except boot sector.

ASCII GS SO

Hexadecimal **1D 0E**

Decimal 29 14

Return value : **OK** **Fault**

ASCII ACK NAK

Hexadecimal **06** **15**

Decimal 6 21

Description: Causes the entire flash memory to be erased.

The printer returns ACK if the command is successful; NAK if it is unsuccessful.

Note: Available only in download mode.

GS SI - [BP] [MP]

1D 0F

Return Main Program Flash CRC

Synopsis: Return main program flash CRC.

ASCII GS SI

Hexadecimal 1D 0F

Decimal 29 15

Returns: 3 bytes

Values: ACK <low byte> <high byte>

Note: Returns the CRC calculated over the flash firmware code space.

GS DLE n - [BP]

1D 10 n

Erase Selected Flash Sector

Synopsis: Erase selected flash sector.

ASCII GS DLE n

Hexadecimal 1D 10 n

Decimal 29 16 n

Value and range n : 0-7 = 512k bytes Flash
0-15 = 1M bytes Flash
0-31 = 2M bytes Flash

Note: Erases the previously selected sector. The printer transmits ACK when the sector has been erased. If the previous sector is not successfully erased, or if no sector was selected, the printer transmits NAK.

Exceptions: Available only in download mode.

GS DC1 al ah cl ch d1...dn -[BP]

1D 11 al ah cl ch d1...dn

Download to Active Flash Sector

Synopsis: Download to active flash sector.

ASCII	GS	DC1	al	ah	cl	ch	d1...dn
Hexadecimal	1D	11	al	ah	cl	ch	d1...dn
Decimal	29	17	al	ah	cl	ch	d1...dn

Value of :

- al = Low byte of address.
- ah = High byte of address.
- cl = Low byte of the count.
- ch = high byte of the count.
- d = Data bytes , from 1 to n.

Formulas:

Address start = $((ah * 256) + al)$
 Count = n = $((ch * 256) + cl)$

Limits: Address start + Count ≤ 10000 (Hex)

n number of data bytes	Range of address (al ah)	Range of Count (cl ch)
$((ch * 256) + cl)$	0000 - FFFF (Hex)	0001 - FFFF (Hex)

Description: Contains a start address (ah x 256 + al) and count (ch x 256 + cl) of binary bytes to load into the selected sector, followed by that many bytes. The start address is relative to the start of the sector. Addresses run from 0 to xxK.

The printer may return one of several responses. ACK means that the data was written correctly and the host should transmit the next block. NAK means that, for some reason, the data was not written correctly. This could mean that communications failed or that the write to flash failed. The alternatives seem to be to retry the block or halt loading and assume a hardware failure.

Notes:

- Number data byte must be modulo 4kbytes.
- Available only in download mode.

GS DC2 - [MP] [EM]

1D 12

Set Double Height Character Set

Synopsis: Double height.

ASCII	GS	DC2
Hexadecimal	1D	12
Decimal	29	18

Description: Set double height character size.

Expression: CHR\$(29);CHR\$(18);

Example: LPRINT CHR\$(29);CHR\$(18);

GS DC3 - [MP] [EM]

1D 13

Cancel Double Height Character Set

Synopsis: Reset Double height.

ASCII GS DC3

Hexadecimal 1D 13

Decimal 29 19

Description: Cancel double height character size.

Expression: CHR\$(29);CHR\$(19);

Example: LPRINT CHR\$(29);CHR\$(19);

GS RS - [MP] [EM]

1D 1E

Set Inverse Video Mode

Synopsis: Inverse video mode.

ASCII GS RS

Hexadecimal 1D 1E

Decimal 29 30

Description: Set inverse video mode.

Expression: CHR\$(29);CHR\$(30);

Example: LPRINT CHR\$(29);CHR\$(30);

GS US - [MP] [EM]

1D 1F

Cancel Inverse Video Mode

Synopsis: Reset Inverse video mode.

ASCII GS US

Hexadecimal 1D 1F

Decimal 29 31

Description: Cancel inverse video mode.

Expression: CHR\$(29);CHR\$(31);

Example: LPRINT CHR\$(29);CHR\$(31);

GS ! n - [MP] [EM]

1D 21 n

Select Print Mode type A

Synopsis: Select print mode.

ASCII GS ! n

Hexadecimal 1D 21 n

Decimal 29 33 n

Value of n:

Bit ¹	Function	0	1
Bit 0	Char set	Elite	Pica
Bit 1	Underlined Mode	Canceled	Set (bar thickness = 2)
Bit 2	Reverse video	Canceled	Set
Bit 4	Double High	Canceled	Set
Bit 5	Double Wide	Canceled	Set

¹ Bits 3,6 and 7 are not used "0"

Default: 0 (for bits 0, 1, 2, 4, 5)

Description: Selects the print mode: standard, underlined, reversed, double high or double wide.

Note: Elite = font 16*24 Default mode ; Pica = font 12*24

Expression: CHR\$(29);CHR\$(33);

Example: LPRINT CHR\$(29);CHR\$(33);

GS “ n - [MP]

1D 22 n

Select Memory Type (SRAM/FLASH) Where to save Logos or User-defined Fonts

Synopsis: Select Memory type SRAM or Flash.

ASCII GS “ n

Hexadecimal 1D 22 n

Decimal 29 34 n

Value of n 48-51

- = 48 (ASCII n = 0) Loads active logo to RAM only. This is used to print a special logo but not have it take up flash memory. A logo defined following this command is not preserved over a power cycle.
- = 49 (ASCII n = 1) Loads active logo to flash memory. This is the default condition for logo flash storage. A logo defined following this command is stored in flash memory.
- = 50 (ASCII n = 2) Loads user-defined characters to RAM only. This is the default condition for user-defined character storage. Any user-defined characters defined following this command are not preserved over a power cycle
- = 51 (ASCII n = 3) Loads user-defined characters to flash memory. An application must use this command to store user-defined characters in flash memory. Any user-defined characters defined following this command are stored in flash memory. A user-defined character cannot be redefined in flash memory. The flash memory page must be erased by an application before redefining user-defined characters. For more information, see the Erase User Flash Sector (1D 40 n) Command earlier in this section.

Description: Specifies whether to load the logos or user-defined characters to flash memory or to RAM (volatile memory). The selection remains in effect until it is changed via this command or until the power cycles.

GS “ U n - [MP]

1D 22 55 n

Flash Memory User Sector Allocation

Synopsis: Flash Memory user sector allocation.

ASCII GS “ U n1 n2

Hexadecimal 1D 22 55 n1 n2

Decimal 29 34 85 n1 n2

Value of n1 is the number of 64K sectors used for logos and user defined characters

n2 is the number of 64K sectors used for user data storage

Default n1 = 1

n2 = 1

Formulas The amount of Flash memory allocated to Easy Font is defined as :

Easy Font Size = User Flash Size – (n1+n2)* 64 kb

Description: This command sets the allocation of flash sectors between user data storage, logos/user defined characters and Easy Font. This allocation is saved in the EEPROM of the printer and is therefore saved across power cycles.

Note: If (n1 + n2) is greater than the maximum number of sectors available, the command is ignored.

See also Command “Return User Flash Size” (1D 0B) to retrieve User Flash Size from printer.

See also command (1F 77 n) “return memory allocation status”.

GS # n -[MP]

1D 23 n

Select the Current Logo

Synopsis: Select the current Logo.

ASCII GS # n

Hexadecimal 1D 23 n

Decimal 29 35 n

Operand: n = mode selection

Range of n: 0 – 255

Description: Selects a logo to be defined or printed. The active logo *n* remains in use until this command is sent again with a different logo *n*, or command 1B40 is sent or printer reboots.

When this command precedes a logo definition, that definition is stored in flash memory as logo *n*.

If there is already a different definition in flash memory for logo *n*, the first is inactivated and the new definition is used. The inactive definition is not erased from flash and continues to take up space in flash memory.

When this command precedes a logo print command and *n* is different from the previously active logo selected, the printer retrieves the logo definition for *n* from memory and prints it. If there is no definition for logo *n*, then no logo is printed.

Note: An application using multiple logos, into flash memory, is responsible for erasing the flash. memory page when the logo area is full.

GS \$ nL nH -[MP]

1D 24 nL nH

Set Absolute Vertical Print Position in Page Mode

Synopsis: Set absolute vertical print in page mode.

ASCII GS \$ nL nH

Hexadecimal 1D 24 nL nH

Decimal 29 36 nL nH

Formulas $[(nL + nH \times 256) \times (\text{vertical or horizontal motion unit})]$ inches.

Description: Sets the absolute vertical print starting position for buffer character data in page mode. The absolute print position is set to $[(nL + nH \times 256) \times (\text{vertical or horizontal motion unit})]$ inches. The vertical or horizontal motion unit for the paper roll is used and the horizontal starting buffer position does not move. The references starting position is set by Select Print Direction in Page Mode (ESC T) and operates setting the absolute position in the vertical direction when the starting position is set to the upper left or lower right; and sets the absolute position in the horizontal when the starting position is set to the upper rights or lower left. The horizontal and vertical motion units are specified by the Set Horizontal and Vertical Minimum Motion Units (GS P) command. The Set Horizontal and Vertical Minimum Motion Units (GS P) command can be used to change the horizontal and vertical motion unit. However, the value cannot be less than the minimum horizontal movement amount, and it must be in even units of the minimum horizontal movement amount.

Note: This command is effective only in page mode. If the $[(nL + nH \times 256) \times (\text{vertical or horizontal motion unit})]$ exceeds the specified printing area, this command is ignored.

GS & NUL n1 NUL NUL d1...dk - [MP][EM]

1D 26 0 n 0 0 d1 ... dk

Define Downloaded character set in Ram memory

Synopsis: Define character set

ASCII	GS	&	NUL	n	NUL	NUL	d1...dk
Hexadecimal	1D	26	0	n	0	0	d1...dk
Decimal	29	38	0	n	0	0	d1...dk

Operands

decimal :

Range of *n* $32 \leq n \leq 255$ Download character ASCII number *n*

Value of *k* = 48 for 16x24 and 12x24 char set (Elite and Pica).

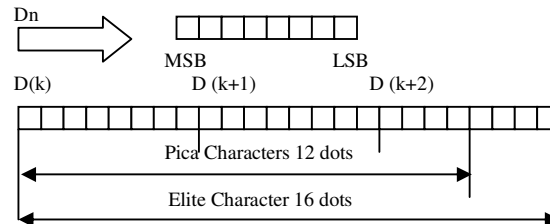
See the illustration below for a graphic representation of the downloaded bit image :

Description: Download character ASCII number *n* width *d1* to *dk* 8 bit bitmap value.

Expression: CHR\$(29);"&";CHR\$(0);CHR\$(n); CHR\$(0); CHR\$(0); CHR\$(d1); ... ; CHR\$(dk)

Example: LPRINT CHR\$(29);"&";CHR\$(0);CHR\$(32); CHR\$(0); CHR\$(0); CHR\$(85); ... ; CHR\$(85);
LPRINT CHR\$(32); CHR\$(10);

d0	d1	d2
d6	d7	d8
...	...	...
		d48



GS * d1...dm - [MP] [EM]

1D 2A d1...dm

Print Graphics data

Synopsis: Print raster graphics.

ASCII	GS	*	d1...dm
Hexadecimal	1D	2A	d1...dm
Decimal	29	42	d1...dm

Value of *m*: $d1...dm = 56$ Data bytes

Range of *d*: 0 – 255

Description: Prints one row of data. *d1* ... *dm*: bytes describing the line to print $m=56$.

Expression: CHR\$(29);"*";CHR\$(d1); ... ; CHR\$(dm);

Example: LPRINT CHR\$(29);"*";CHR\$(d1); ... ; CHR\$(d56);

GS / m - [MP]

1D 2F m

Print Downloaded Bit Image

Synopsis: Print downloaded bit image (Logo).

ASCII GS / m

Hexadecimal 1D 2F m

Decimal 29 47 m

Operand: m = mode selection:

Value of m	Print Mode	Vertical DPI ¹	Horizontal DPI*
0	Normal	203	203
1	Double Wide	203	101
2	Double High	101	203
3	Quadruple	101	101

¹Dot density measured in dots per inch

Description: Prints the downloaded bit image at a density specified by m. It is ignored if any data is in the print buffer, if the downloaded bit image is undefined.

Note: See the illustration on the previous page for a representation of the bit image (1A 1D 2A).

GS : - [MP]

1D 3A

Select or Cancel Macro Definition

Synopsis: Start / End macro definition.

ASCII GS :

Hexadecimal 1D 3A

Decimal 29 58

Description: Starts or ends macro definition. Macro definition begins when this command is received during normal operation and ends when this command is received during macro definition. The macro definition is cleared, during definition of the macro when the Execute Macro (GS ^) command is received. Normal printing occurs while the macro is defined. When the power is turned on the macro is not defined. The defined contents of the macro are not cleared by the Initialize Printer (ESC @), thus, the Initialize Printer (ESC @) command may be used as part of the macro definition. If the printer receives a second Select or Cancel Macro Definition (GS :) command immediately after previously receiving a Select or Cancel Macro Definition (GS :) the printer remains in the macro undefined state.

Formulas: The contents of the macro can be defined up to 2048 bytes.

Exception: If the macro definition exceeds 2048 bytes, excess data is not stored.

GS @ n - [MP]

1D 40 n

Erase Sections of User Flash Sector

Synopsis: Erase sections of user flash sector.

ASCII GS @ n

Hexadecimal 1D 40 n

Decimal 29 64 n

Operand: n = mode selection:

Value of n: 49 n = 49 (ASCII n = 1)

This command erases all 64K Flash memory sectors allocated to user-defined characters and logos storage. Those sectors should be erased in two situations: when the logo definition areas is full and an application is attempting to define new logos, and when an application wants to replace one user-defined character set with another. In both cases, all logos and character set definitions are erased and must be redefined.

50 n = 50 (ASCII n = 2)

This command erases all 64K Flash memory sectors allocated to user data storage.

51 n = 51 (ASCII n = 3)

This command erases all 64K Flash memory sectors allocated to Easy Font storage.

Returns : = Operation completed

ASCII CR

Hexadecimal 0D

Decimal 13

Description: Erases a section of user flash memory and sends a carriage return when the operation is complete.

Note: See command "Flash Memory User Sectors Allocation (1D 22 55 n1 n2).

Important: While erasing flash memory, all communication is disabled. To provide feedback to the application, the printer responds to the application when the erase is complete. After sending the Erase User Flash Sector (1D 40 n) command, an application should wait for the response from the printer before sending data. Otherwise, data will be lost. If an application is unable to receive data, it should wait a minimum of five seconds after sending the Erase User Flash Sector (1D 40 n) command before sending data.

GS A n1 n2- [MP] [EM]

1D 41 n1 n2

Starting position of bar code

Synopsis: Set x position bar code.

ASCII GS A n1 n2

Hexadecimal **1D 41 n1 n2**

Decimal 29 65 n1 n2

Parameters: n1 = byte MSB.

n2 = byte LSB.

Formulas : $X = (n1 * 256 + n2) ; (X/203 \text{ inch or } X/8 \text{ mm}).$

Limit : $0 \leq X < 320$

Default : $X = 64 (0.31 \text{ inch or } 8 \text{ mm}).$

Description: Select X dots position of bar code.

Note: Width of the bar code + X > printing area → the bar code is not printed.

Expression: `CHR$(29);"A";CHR$(n1); CHR$(n2);`

Example: `LPRINT CHR$(29);"A";CHR$(0); CHR$(120);`

GS B m - [MP] [EM]

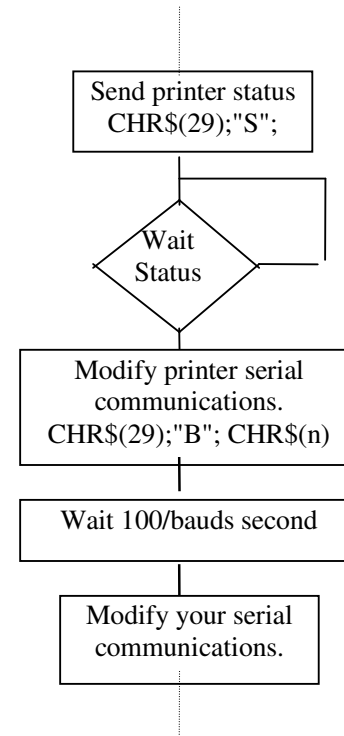
1D 42 m

Serial communication setting

Synopsis: Serial Communication Setting

ASCII	GS	I	m
Hexadecimal	1D	42	m
Decimal	29	66	m

Operand:	Bit(s)	Value
Value of m	7	0 → 1 bit de stops.
	5 ; 6	00 → No Used. 01 → No Used. 10 → 7 data bits. 11 → 8 data bits.
	4	0 → Parity Odd. 1 → Parity Even
	3	0 → Parity Off 1 → Parity On.
	2 ; 1 ; 0	000 → 38400 Baud. 001 → 19200 Baud. 010 → 9600 Baud. 011 → 4800 Baud. 100 → 2400 Baud. 101 → 1200 Baud. 110 → 600 Baud. 111 → 300 Baud.



Description: On power up , The printer default is 9600,n,8,1 (*)

Note: (*) See command "Set Communication Interface" (1F 02 ...) saving parameters in NVRAM memories.

Important: Before sending this control code ,ensure that the printer buffer is empty by using the method described

Expression: CHR\$(29);"B";CHR\$(n);

Example: LPRINT CHR\$(29);"B";CHR\$(n);

GS D n - [MP] [EM]

1D 43 n

First printable line

Synopsis: Positions start line.

ASCII GS D n

Hexadecimal 1D 43 n

Decimal 29 67 n

Description: Length (in dots) from mark detection to first printable line.

Formulas: Line (default d = 185). **With 130 < n < 255 & L-D > 115**

Expression: CHR\$(29) ; »D » ; CHR\$(n) ;

Example: LPRINT CHR\$(29) ; »D » ; CHR\$(185) ;

GS E - [MP] [EM]

1D 44

Form Feed

Synopsis: Form feed.

ASCII GS E

Hexadecimal 1D 44

Decimal 29 68

Description: Advance paper to the next Top Of form position. In Label mode TOF is the beginning of the next label.
In landscape mode print the buffer.

Note: In listing mode, form feed is ignored. Same command (FF).

Expression: CHR\$(29);"E";

Example: LPRINT CHR\$(29);"E";

GS H n - [MP] [EM]

1D 48 n

Select Printing Position of HRI Characters

Synopsis: Select printing position for HRI characters. Barcode Text Mode

ASCII GS H n

Hexadecimal **1D** **48** **n**

Decimal 29 72 n

Operand: n = **Printing position**

0 = Not printed

1 = Above the bar code

2 = Below the bar code

3 = Both above and below the bar code

Default: 0

Description: Prints HRI (Human Readable Interface) characters above or below the bar code.

Expression: CHR\$(29);"H";CHR\$(n);

Example: LPRINT CHR\$(29);"H";CHR\$(2);

GS I n - [MP]

1D 49 n

Transmit Printer ID

Synopsis: Transmit printer Identify

ASCII GS I n

Hexadecimal 1D 49 n

Decimal 29 73 n

Operand: n = Printer ID select

Limit decimal: $1 \leq n \leq 2$; $49 \leq n \leq 50$; $n = 66, 67, 68$

Limit hex: $01 \leq n \leq 02$; $31 \leq n \leq 32$; $n = 42, 43, 44$

Description: Transmits the printer model, type of version as defined below.

This command is processed as normal printer data.

Note: For n = 66, 67, 68 the printer response is sent back in the following format:

Header: 5F (hex)

Data: ASCII string

NULL: 00 (hex)

“GS I” OPERAND AND RETURNED STATUS DEFINITION						
<i>n</i>		Printer ID	Function		Value	
Decim al	Hex				Decimal	Hex
1, 49	01, 31	Model	NSKGG		64	40
2, 50	02, 32	Type	Bit	Function	Value	
					0	1
			0	2-byte character code	Not installed	Installed
			1	Knife	No knife	Installed
			2	Undefined		
			3	Undefined		
			4	Fixed	Always 0	-
			5	Undefined		
			6	Undefined		
			7	Fixed	Always 0	-
66	42	Manufacturer	_AXIOHM			
67	43	Printer name	_NSKGG			
68	44	Serial number	Depends on actual S/N			

GS I @ n - [MP]

1D 49 40 n

Transmit Printer ID, Remote Diagnostics Extension

Synopsis: Performs the remote diagnostic functions specified by *n*.

ASCII GS I @ n

Hexadecimal 1D 49 40 n

Decimal 29 73 64 n

Operand: n mode selection

Values of n: Refer to table below

Return format:: n + data +<CR>

Description: Performs functions specified by *n* (Refer to table).

Exceptions: If any digit is out of the defined range, Write to NVRAM is ignored.

Value of <i>n</i>		Remote diagnostic item	Function
Hex	Dec		
20	32	Serial #, 10 digit ASCII	(*) Write to NVRAM Example, send 14 bytes to printer: GS I @ 0x20 1234567890
21	33	Serial #	Write to NVRAM, and print on receipt to verify Example, send 14 bytes to printer: GS I @ ! 1234567890 This will print on receipt: Serial # written: 1234567890
23	35	Serial #	Return Serial #, preceded by <i>n</i> to identify Printer returns 12 bytes in above example: #1234567890<CR>
(*) 0x20 ≤ digit ≤ 0x79			
24	36	Class/model #, 15 digit ASCII	(*) Write to NVRAM
25	37	Class/model #	Write to NVRAM, and print on receipt to verify
27	39	Class/model #	Return Class/model #, returns 17 bytes
2B	43	Boot firmware part Number	Return boot firmware part number, return 14 bytes
2F	47	Boot firmware CRC, 4 digit ASCII	Return Boot firmware CRC, returns 6 bytes
33	51	Client firmware part number	Return client firmware part number, returns 14 bytes
37	55	Client firmware CRC, 4 digit ASCII	Return Client firmware CRC, returns 6 bytes

Value of <i>n</i>		Remote diagnostic item	Function
Hex	Dec		
80	128	Receipt lines tally, 8 digit ASCII numeric, max 99,999,999	Write to NVRAM Example, send 12 bytes to printer: GS I @ Ç00010000 To set receipt lines tally to 10,000
81	129	Receipt lines tally	Write to NVRAM, and print on receipt to verify Example, send 12 bytes to printer: GS I @ ü00010000 This will print on receipt: Receipt tally written: 10,000
82	130	Receipt lines tally	Clear receipt lines tally to 0
83	131	Receipt lines tally	Return receipt lines tally, preceded by <i>n</i> to identify Printer returns 10 bytes in above example: â00010000<CR>
90	144	Hours on tally, 8 digit ASCII numeric, max 99,999,999	Write to NVRAM
91	145	Hours on tally	Write to NVRAM, and print on receipt to verify
92	146	Hours on tally	Clear Hours on tally to 0
93	147	Hours on tally	Return Hours on tally, returns 10 bytes
97	151	Boot firmware version	Return Boot firmware version, returns 6 bytes
A3	163	Flash firmware version	Return Flash firmware version, returns 6 bytes
A4	164	Flash cycles tally, 8 digit ASCII numeric, max 99,999,999	Write to NVRAM
A5	165	Flash cycles tally	Write to NVRAM, and print on receipt to verify
A6	166	Flash cycles tally	Clear Flash cycles cut tally to 0
A7	167	Flash cycles tally	Return Flash cycles cut tally, returns 10 bytes
B2	178	MAX Temperature tally	Set MAX temp tally to -273
B3	179	MAX Temperature tally	Return Temperature tally
B4	180	Reboot device tally, 8 digit ASCII numeric, max 99,999,999	Write to NVRAM
B5	181	Reboot device tally	Write to NVRAM, and print on receipt to verify
B6	182	Reboot device tally	Clear Flash cycles cut tally to 0
B7	183	Reboot device tally	Return reboot device tally , return 10 bytes
D8		Line written tally, 8 digit ASCII numeric, max 99,999,999	Write to NVRAM
D9		Line written tally	Write to NVRAM, and print on receipt to verify
DA		Line written tally	Clear Flash cycles cut tally to 0
DB		Line written tally	Return line written tally, return 10 bytes

GS L nH nL - [MP] [EM]

1D 4C nH nL
Set Label Length

Synopsis: This command configures the length of label (NVRAM).

ASCII GS L nH nL

Hexadecimal 1D 4C nH nL

Decimal 29 115 nH nL

Operands : nH = msb value in dot

nL = lsb value in dot

Limit : Dec: $296 \leq (nH * 256 + nL) \leq 1500$ $\longleftrightarrow$ [37.0mm;187.5mm]

Hex: $128 \leq (nH * 256 + nL) \leq 05DC$

Description: This command will store the label length in non-volatile memory (NVRAM).

Default value = 840 $\longleftrightarrow$ 105 mm.

Resolution head = 8 dots or 203.2 DPI

Note: To switch in continuous feed mode (listing mode) send command with nH = nL = 0.

This mode is lost after reset software or hardware.

Expression: CHR\$(29);"L";CHR\$(n1);CHR\$(n2);

Example: Length = 520 dots (hexadecimal 208) ; line = 65mm

LPRINT CHR\$(29);"L";CHR\$(2);CHR\$(8);

GS N n - [MP] [EM]

1D 4E n

Adjust brightness

Synopsis: This command configures the brightness (NVRAM).

ASCII GS L n

Hexadecimal 1D 4E n

Decimal 29 78 n

Operands : n = value in %

Limit : Dec: $40 < n < 120$

Hex: $28 < n < 78$

Description: This command will store the brightness in non-volatile memory (NVRAM).

Default value is 100%.

Note: This command must be followed by a reset.

Expression: CHR\$(29);"N";CHR\$(n);

Example: LPRINT CHR\$(29);"N";CHR\$(60);

GS O n - [MP] [EM]

1D 4F n

Bar Code orientation

Synopsis: Set Bar code orientation.

ASCII GS h n

Hexadecimal **1D** **4F** **n**

Decimal 29 79 n

Operand: n
0 Vertical bar code.
1 Horizontal bar code.

Default 0

Description: Orientation of bar code.

Expression: CHR\$(29);"O";CHR\$(n);

Example: LPRINT CHR\$(29);"O";CHR\$(0);

GS P x y - [MP]

1D 50 x y

Set Horizontal and Vertical Minimum Motion Units

Synopsis: Set Horizontal and Vertical Minimum motion units.

ASCII GS P x y

Hexadecimal **1D** **50** **x** **y**

Decimal 29 80 x y

Value of x Horizontal

Value of y Vertical

Range of x 0-255

Range of y 0-255

Default of x 203

Default of y 203

Description: Sets the horizontal and vertical motion units to 1/x inch and 1/y inch respectively.

When x or y is set to 0, the default setting for that motion unit is used.

GS R - [MP] [EM]

1D 52

Send Printer Software Version

Synopsis: Reply software client version.

ASCII ESC D

Hexadecimal 1D 52

Decimal 29 82

Description: Printer replies the software version number.

Reply format: «Ver: 1.30» 10 digits.

Expression: CHR\$(29);"R";

Example: LINPUT VERSION\$

GS S - [MP] [EM]

1D 53

Printer Status

Synopsis: Return printer status n.

ASCII GS S

Hexadecimal 1D 53

Decimal 29 83

Reply byte :

Bit ¹	Function	0	1
Bit 0	Ready	N	Yes
Bit 1	Top Of Form	No	Yes
Bit 2	Size Head	1 "	2.25"
Bit 3	Paper mode	Listing	Label (default)
Bit 4	Configuration loss (*)	No	Yes
Bit 5	No paper	No	Yes
Bit 6	Unused	-	-
Bit 7	Error	No	Yes

Description: Transmit printer status. printer returns status byte

Note: (*)When you turn On or when you reset , this bit is set to 1.after the first printer status this bit is set to 0. if this bit return one during.

Expression: CHR\$(29);"S";

Example: LINPUT STATUS\$

GS V n - [MP] [EM]

1D 56 n

Set Portrait or Landscape mode

Synopsis: Select portrait or landscape mode.

ASCII GS V n

Hexadecimal 1D 56 n

Decimal 29 86 n

Value of n decimal : 0 → Portraits.
1 → Landscape.

Default of n : 0 (Portrait)

Description: Change printer orientation to portrait or landscape (sideways) mode.

Note: Before issuing this command, the number of characters per line should be set using the command "GS t".

Expression: CHR\$(29);"S"; CHR\$(n);

Example: LPRINT CHR(29);"V"CHR\$(1);
FOR LINE =1 TO 17
LPRINT "Side Writing"
NEXT LINE

GS W n m - [MP] [EM]

1D 57 n m

Horizontal Size of bar code

Synopsis: Horizontal size of bar code.

ASCII GS W n m

Hexadecimal 1D 57 n m

Decimal 29 87 n m

Operands: n = thin → thickness of thin bars.
m = thick → thickness of thick bars.

Default: n = 1
m = 2

Description: Select horizontal size of bar code.

Note : Command, only used for barcode ITF and code 39.
For other code barcodes see command "GS w n" (1D 77 n)

Expression: CHR\$(29);"W";CHR\$(thin); CHR\$(thick);

Example: LPRINT CHR\$(29);"W";CHR\$(2); CHR\$(3);

GS \ nL nH - [MP]

1D 5C nL nH

Set Relative Vertical Print Position in Page Mode

Synopsis: Set relative vertical print position in page mode.

ASCII	GS	\	nL	nH
Hexadecimal	1D	5C	nL	nH
Decimal	29	92	nL	nH

Value: The value for the horizontal and vertical movement cannot be less than the minimum horizontal movement amount, and, must be in even units of the minimum horizontal movement amount.

Formulas: The distance from the current position is set to $[(nL + nH \times 256) \times \text{vertical or horizontal motion unit}]$ inches.

For downward movement, pitch n is specified as :

$$n = nL + nH \times 256$$

For upward movement, $(nL + nH \times 256)$ is negative and pitch n is specified as :

$$n = 65536 - (nL + nH \times 256)$$

Description: Sets the relative vertical print starting position from the current position. This command can also change the horizontal and vertical motion unit. The unit of horizontal and vertical motion is specified by this command.

This command functions as follows, depending on the print starting position set by Select Print Direction in Page Mode (ESC T):

When the starting position is set to the upper left or lower right of the printing area, the vertical motion unit (y) is used.

When the starting position is set to the upper right or lower left of the printing area, the horizontal motion unit (x) is used.

Note : This command is used only in page mode, otherwise it is ignored.
Any setting that exceeds the specified printing area is ignored.

GS ^ r t m - [MP]

1D 5E r t m

Execute Macro

Synopsis: Execute macro.

ASCII GS ^ r t m

Hexadecimal 1D 5E r t m

Decimal 29 94 r t m

Value of r The number of times to execute the macro.

Value of t The waiting time for executing the macro.

Formulas: The waiting time is $t \times 100$ ms for every macro execution.
 m specifies macro executing mode when the LSB (Least significant bit)
 $m = 0$
The macro executes r times continuously at the interval specified by t
when the LSB (Least significant bit) of $m = 1$.

Description: Executes a macro. After waiting for a specified period the printer waits for the Paper Feed Button to be pressed. After the button is pressed, the printer executes the macro once. The printer repeats this operation the number of specified times.

When the macro is executed by pressing the Paper Feed Button ($m = 1$), paper cannot be fed by using the Paper Feed Button.

Note : If this command is received while a macro is being defined, the macro definition is aborted and the definition is cleared.
If the macro is not defined or if r is 0, nothing is executed.

GS a n - [MP]

1D 61 n

Select or Cancel Unsolicited Status Mode (USM)

Synopsis: Select or cancel unsolicited status mode.

ASCII	GS	a	n
Hexadecimal	1D	61	n
Decimal	29	97	n

Value of n : 0 turns mode off.
Any non-zero value turns mode on.

Communication Interface USB : End point Reply	
Interrupt	Bulk
n=[1;127] or [129;255]	n= 128

Default: n = 0 (USM disabled)

Reply:

Byte 1	= Printer information
Byte 2	= Error information
Byte 3	= Paper information
Byte 4	= Paper information
Byte 5	= Count information (*)

Description: Selects whether the printer is to automatically return a 4 or 5 bytes status string whenever the status changes.

Notes: This command uses the same sequence as older ASB (Auto Status Back) but has the following differences :

- The parameter n is an on/off switch. It does not select trigger subset

Any change in any of the following conditions will trigger the USM response

- Out of range Print head Temperature
- Out of range Voltage
- Paper exhaust Status
- Flow Control
- Paper Feed Button Status

(*) If count trigger USM (1F 03 9D m) is enabled, all five bytes of status are always transmitted else only 4 bytes of status are transmitted.

Recoverable errors include paper out, temperature or voltage is out of range. This command is processed as normal printer data.

When the printer is disabled by the Select Peripheral Device command (ESC =), this command is disabled. If this command was previously enabled, status will still be returned.

“GS a” RETURNED STATUS DEFINITION BYTE 1: PRINTER STATUS			
Bit ⁽¹⁾	Function	Value	
		0	1
0	Flash Memory Error	OK	Failure
1	Sram Memory Error	OK	Failure
2	Unused	-	-
3	Printer Busy	Not Busy	Busy
4	fixed	-	Always 1
5	Cover Position	Closed	Open
6	Feed Switch	No Media Feed	Media Feeding
7	fixed	Always 0	-

“GS a” RETURNED STATUS DEFINITION BYTE 2: ERROR STATUS			
Bit ⁽¹⁾	Function	Value	
		0	1
0	Unused	-	-
1	Unused	-	-
2	Unused	-	-
3	Unused	-	-
4	Fixed	Always 0	-
5	Unused	-	-
6	Recoverable Error Status	OK	Failure
7	fixed	Always 0	-

“GS a” RETURNED STATUS DEFINITION BYTE 3: MEDIA SENSOR STATUS			
Bit ⁽¹⁾	Function	Value	
		0	1
0	Media Low	Present	Low
1	Media Low	Present	Low
2	Media Out	Present	Out
3	Media Out	Present	Out
4	fixed	Always 0	-
5	undefined	-	-
6	undefined	-	-
7	fixed	Always 0	-

“GS a” RETURNED STATUS DEFINITION BYTE 4: COMMUNICATIONS STATUS			
Bit ⁽¹⁾	Function	Value	
		0	1
0	undefined	-	-
1	undefined	-	-
2	undefined	-	-
3	undefined	-	-
4	fixed	Always 0	-
5	undefined	-	-
6	undefined	-	-
7	fixed	Always 0	-

"GS a" RETURNED COUNT BYTE 5			
Bit ⁽¹⁾	Function	Value	
		0	1
0	Bit 0 of count (LSB)	0	1
1	Bit 1 of count	0	2
2	Bit 2 of count	0	4
3	Bit 3 of count	0	8
4	fixed	Always 0	-
5	Bit 4 of count	0	16
6	Bit 5 of count (MSB)	0	32
7	fixed	Always 0	-

⁽¹⁾ Unused or undefined bit(s) set to 0.

GS d n - [MP] [EM]

1D 64 n

Feed n Print Lines

Synopsis: Feed n print lines.

ASCII GS d n

Hexadecimal 1D 64 n

Decimal 29 100 n

Value of n The number of lines to feed at current line height setting.

Range of n 0-255

Description: Print buffer line. And feeds the paper n lines at the current line height without printing.

Expression: CHR\$(29);"d"; CHR\$(n);

Example: LPRINT CHR\$(29);"d"; CHR\$(5);

GS f n - [MP]

1D 66 n

Select Pitch of HRI Character

Synopsis: Select pitch of HRI character.

ASCII GS f n

Hexadecimal 1D 66 n

Decimal 29 102 n

Value of n 0 = Standard Pitch at 12 CPI (Elite).

1 = Compressed Pitch at 16 CPI (Pica)

Default : 0 (Compressed Pitch at 16 CPI)

Description: Select font used to print HRI characters.

GS h n - [MP] [EM]

1D 68 n

Select Bar Code Height

Synopsis: Select bar code height.

ASCII GS h n

Hexadecimal 1D 68 n

Decimal 29 104 n

Operand: n = Number of dots

Limits: $1 \leq n \leq 255$

Default = 216 dots

Description: Sets the bar code height to n dots or $n/203$ inch ($n/8$ mm).

Expression: CHR\$(29);"h"; CHR\$(n);

Example: LPRINT CHR\$(29);"h"; CHR\$(n);

GS k m n d1...dn - [MP] [EM]

1D 6B m n d1...dn

Print Bar Code

Synopsis: Selects the bar code type and prints a bar code for the ASCII characters entered.

ASCII GS k m n d1...dn

Hexadecimal 1D 6B m n d1...dn

Decimal 29 107 m n d1...dn

Operands: See tables below.

The value of m selects the bar code system as described in the table.

The variable d indicates the character code to be encoded into the specified bar code system. See the table.

Description: The length of byte is specified at the beginning of the string.

The check digit is calculated for UPC and JAN (EAN) codes if it is not sent from the host computer.

Start/Stop characters are added for Code 39 if they are not included.

Exceptions: The command is only valid at the beginning of a line.

Illegal data cancels the command.

If the width of the bar code exceeds one line, the bar code is not printed.

If character code d cannot be encoded, the printer prints the bar code data processed so far, and the following data is treated as normal data.

Expression: CHR\$(29);"k"; CHR\$(m); CHR\$(n); CHR\$(d); ... ; CHR\$(dn);

Example LPRINT CHR\$(29);"k"; CHR\$(6); CHR\$(5); CHR\$(d); ... ; CHR\$(d5);

m	Bar Code	d	n, Length
2	JAN13 (EAN)	48- 57	Fixed Length: 12, 13
3	JAN8 (EAN)	48- 57	Fixed Length: 7, 8
4	CODE39	48- 57, 65- 90 (ASCII alphabet), 32, 36, 37, 43, 45, 46, 47 (ASCII special characters) $d1 = dn = 42$ (start/stop code is supplied by printer if necessary)	Variable
6	CODABAR ,Monarch	65- 68, start code 48- 57, 36, 43, 45, 46, 47, 58	Variable Length
7	Interleaved 2 of 5 (ITF)	48- 57	Variable (Even Number)
8	Code 128 type A	0-105	Variable
9	Code 128 type B	$d1 = 103-105$ (must be a Start code)	
10	Code 128 type C	$d2 = 0-102$ (data bytes) (Stop code is provided by the printer)	

m	Bar Code	d	n, Length
65	UPC-A	48- 57 (ASCII numerals)	Fixed Length: 11, 12
66	UPC-E	48- 57	Fixed Length: 11, 12
67	JAN13 (EAN)	48- 57	Fixed Length: 12, 13
68	JAN8 (EAN)	48- 57	Fixed Length: 7, 8
69	CODE39	48- 57, 65- 90 (ASCII alphabet), 32, 36, 37, 43, 45, 46, 47 (ASCII special characters) $d1 = dn = 42$ (start/stop code is supplied by printer if necessary)	Variable
70	Interleaved 2 of 5 (ITF)	48- 57	Variable (Even Number)
71	CODABAR (NW-7)	65- 68, start code 48- 57, 36, 43, 45, 46, 47, 58	Variable
72	Code 93	0-127	Variable
73	Code 128	0-105 $d1 = 103-105$ (must be a Start code) $d2 = 0-102$ (data bytes) (Stop code is provided by the printer)	Variable
75	PDF 417	0-255	Variable Length

GS I m - [MP]

1D 6C m

Transmit Selected A/D Channel

Synopsis: Transmit selected A/D channel (Voltage, Temperature ...).

ASCII	GS	I	m
Hexadecimal	1D	6C	m
Decimal	29	108	m

Operand: m = Selected channel :

Value of m

1	= Paper Out Value.
5	= TOF Value.
8	= Voltage Value.
9	= Temperature Value.
13	= Auxiliary Sensor (Hardware option)
14	= Vref TOF.
15	= Vref Motor.

Returns: 1 Byte , see below

Description: Returns the value of sensors, voltage or temperature or reference.

Note : See also command (1F 0A...)

GS m nthick nthin[MP]

1D 6D nthick nthin

Set Bar Code Aspect Ratio (ITF and Code39 only)

Synopsis: Set Bar code aspect ratio (ITF and Code39 only).

ASCII	GS	m	nthick	nthin
Hexadecimal	1D	6D	nthick	nthin
Decimal	29	109	nthick	nthin

Value of *nthick* $2 \leq nthick \leq 6$ $nthick > nthin$

Value of *nthin* $1 \leq nthin \leq 5$

Default: *nthick* = 2

nthin = 1

Description: For ITF and Code39 bar codes, set elementary bar thickness for thin and thick bars.

GS p nA nB nC nD nE nF [MP]

1D 70 nA nB nC nD nE nF

Set PDF 417 Barcode Dimensions

Synopsis: Set PDF417 barcode dimensions.

ASCII	GS	p	nA	nB	nC	nD	nE	nF
Hexadecimal	1D	70	nA	nB	nC	nD	nE	nF
Decimal	29	112	nA	nB	nC	nD	nE	nF

Value of :	nA	= Aspect Ratio Height	$1 \leq nA \leq 10$
	nB	= Aspect Ratio Width	$1 \leq nB \leq 100$
	nC	= Rows limit	$3 \leq nC \leq 90$
	nD	= Columns Limit	$1 \leq nD \leq 30$
	nE	= X Dimension	$1 \leq nE \leq 7$
	nF	= Row Height	$2 \leq nF \leq 25$

Description: Sets various parameters used to define the PDF417 dimensions.

GS q ErrLevel [MP]

1D 71 ErrLevel

Set PDF 417 Barcode Error Level

Synopsis: Set PDF 417 barcode error level.

ASCII	GS	q	ErrLevel
Hexadecimal	1D	71	ErrLevel
Decimal	29	113	ErrLevel

Value of : $0 \leq \text{errLevel} \leq 8$

Description: Set error level.

GS s n - [MP]

1D 72 n

Transmit status (Paper sensor Status, Flash memory User Sector status).

Synopsis: Transmit status (Paper sensor Status, Flash memory User Sector status).

ASCII GS I n

Hexadecimal 1D 72 n

Decimal 29 114 n

Operand: n = Mode selection

Value of n 1, 49 = Paper sensor Status

2, 50 = Reserved

4, 52 = Flash memory User Sector status

Returns: 1 Byte. The status bytes to be transmitted are described in the following tables:

Description: Transmits the status specified by n.

This is a batch mode command which transmits the response after all prior data in the receive buffer has been processed.

There may be a time lag between the printer receiving this command and transmitting the response, depending on the receive buffer status.

Note: When n is out of the specified range, the command is ignored.

Paper sensor Status (n = 1 or n = 49)

Bit	Off/On	Hex	Decimal	Status for Transmit Status
0	Off	00	0	Paper Present
	On	01	1	Paper exhausted
1	-	-	-	Undefined
2	Off	00	0	Paper Present
	On	04	4	Paper exhausted
3	-	-	-	Undefined
4	Off	00	0	Not used. Fixed to off.
5	-	-	-	Undefined
6	-	-	-	Undefined
7	Off	00	0	Not used. Fixed to off.

Flash memory User Sector Status (n = 4 or n = 52)

Bit	Off/On	Hex	Decimal	Status for Transmit Status
0	-	-	-	Undefined.
1	-	-	-	Undefined.
2	Off	00	0	Not Used. Fixed to off
3	Off	00	0	Flash Logo area adequate, definition stored.
	On	08	8	Flash logo area not adequate.
4	Off	00	0	Not used. Fixed to off.
5	Off	00	0	No user-defined characters written to flash.
	On	20	32	User-defined characters written to flash
6	Off	00	0	Not used. Fixed to off.
7	-	-	-	Undefined.

GS s m n - [MP]

1D 73 m n

Store Selected Sensor Threshold

Synopsis: This command configures the sensors detection threshold (NVRAM).

ASCII GS s m n

Hexadecimal 1D 73 m n

Decimal 29 115 m n

Operands : m = Sensor select
n = Threshold value

Limit : Dec: $0 \leq m \leq 7$
Hex: $00 \leq m \leq 07$
See Table below

Description: This command will store the sensor detection threshold in non-volatile memory (NVRAM).

Note: This command must be followed by a reset.

"GS s" OPERAND DEFINITION						
m		Sensor			n (Decimal)	
Decimal	Hex	Connector	Sensor	Mechanism	Limit	Default
0	00	-	-	-	-	-
1	01	-	Paper Out	NSKGG	$0 \leq n \leq 255$	128
2	02	-	-	-	-	-
3	03	-	-	-	-	-
4	04	-	-	-	-	-
5	05	-	Top Of Form	NSKGG	$51 \leq n \leq 204$	102
6	06	-	-	-	-	-
7	07	-	-	-	-	-

GS t n - [MP] [EM]

1D 74 n

Number of character Landscape mode

Synopsis: Set number of character in side writing mode.

ASCII GS t n

Hexadecimal 1D 74 n

Decimal 29 116 n

Range of n decimal : $1 \leq n \leq 55$

Default Value decimal : n = 55

Description: Select a number of characters per line in landscape mode.

Note: Must be executed before entering landscape mode (code GS V).

Expression: CHR\$(29);"t"; CHR\$(n);

Example: LPRINT CHR\$(29);"t"; CHR\$(n);

GS u d0 ... d9 - [MP] [EM]

1D 75 d0 ... d9

Store User Revision Number

Synopsis: Store user revision number.

ASCII GS u d0 ... d9

Hexadecimal 1D 75 d0 ... d9

Decimal 29 117 d0 ... d9

Operand : dn = downloaded revision number

Limits Decimal : $32 \leq dn \leq 126$

Hex : $20 \leq dn \leq 7E$

Default: Decimal : dn = 47

Hex : dn = 30

Description: This command will store a 10-character user defined revision number downloaded to the printer.

Note: The user defined revision number is printed on the configuration menu.

GS v 30 xL xH yL yH d1 ... dK - [MP]

1D 76 30 xL xH yL yH d1 ... dK

Print Raster Bit Image

Synopsis: Print raster bit image.

ASCII GS U 0 xL xH yL yH d1 ... dK

Hexadecimal 1D 76 30 xL xH yL yH d1 ... dK

Decimal 29 117 48 xL xH yL yH d1 ... dK

Operand : (xL + xH*256) = Width

(yL + yH*256) = Height

k = (Width * Height)

Limits Decimal : $1 \leq \text{Width} \leq 56$

Hex : $01 \leq \text{Width} \leq 38$

Decimal : $1 \leq \text{Height} \leq 65535$

Hex : $01 \leq \text{Height} \leq \text{FFFF}$

Description: Print windows raster bit image.

Note: When Width or Height is out of the specified range, the command is ignored.

GS w n - [MP] [EM]

1D 77 n

Select Bar Code Width

Synopsis: Select bar code width.

ASCII GS w n

Hexadecimal 1D 77 n

Decimal 29 119 n

Operand: n = thickness of thin line in dots.

Range 1, 2, 3, 4, 5, 6

Default 3

Formulas $n/203$ inch ($n/8$ mm).
Thick line is always $n*2$ dots.

Description: Sets the bar code module to $n/203$ inch ($n/8$ mm).

Note : If $n=1$, then the thin bars will be 1 dot in the thickness and thick bars will be 2 dots.

Expression: `CHR$(29);"w"; CHR$(n);`

Example: `LPRINT CHR$(29);"w"; CHR$(2);`

GS x - [MP]

1D 78

Transmit User Revision Number

Synopsis: Transmit user revision number.

ASCII GS x

Hexadecimal 1D 78

Decimal 29 120

Description: This command will transmit the 10-character printable ASCII user defined revision number.

Note : The returned revision number may contain a bit pattern that is valid for returned status. Care should be taken not to confuse this returned data with any other returned data.

GS ² - [BP]

1D FD

Return EEPROM Type (NVRAM)

Synopsis: Return NVRAM type.

ASCII GS ²

Hexadecimal 1D FD

Decimal 29 253

Description: Reply one byte. "I" for internal NVRAM.

GS ■ - [BP]

1D FE

Return Flash Memory Type

Synopsis: Return flash type.

ASCII GS ■

Hexadecimal 1D FE

Decimal 29 254

Description: Reply five bytes. "No ID" for internal flash.

GS SP – [BP] [MP]

1D FF

Reset Firmware

Synopsis: Reset firmware.

ASCII GS SP

Hexadecimal 1D FF

Decimal 29 255

Description: Reboots the printer.

US SOH d1...dn - [BP]

1F 01 d1...dn

Erase Boot Sector, Download New Code

Synopsis: Erase boot sector and download new boot code.

ASCII US SOH d1...dn

Hexadecimal 1F 01 d1...dn

Decimal 31 1 d1...dn

Value and range n 40960

Description: Wait for new boot code to be downloaded, then check CRC on this new boot code, and if valid, boot code sector is erased and reprogrammed with new code. Printer automatically reboots after program sequence is complete (Boot = boot Strap + Boot Loader).

Note : Available only in download mode.

During erase and download sequence, power supply must be maintained at all times and no reset sequence should be performed.

US STX n1 n2 n3 n4 n5 n6 - [BP]

1F 02 n1 n2 n3 n4 n5 n6

Set Communication Interface Parameters

Synopsis: Set communication interface parameters (NVRAM).

ASCII	US	STX	n1	n2	n3	n4	n5	n6
Hexadecimal	1F	02	n1	n2	n3	n4	n5	n6
Decimal	31	2	n1	n2	n3	n4	n5	n6

Operands: n1 Interface selection
n2 – n6 Parameters
Default (*) RS232 , 9600, n , 8 , 1

Values (Hex)

n1 :	-	= x00 = Interface → RS232	(*)
n2 :	Bit [0..2]	= x00 = Baud rate → 1200	
“	“	= x01 = Baud rate → 2400	
“	“	= x02 = Baud rate → 4800	
“	“	= x03 = Baud rate → 9600	(*)
“	“	= x04 = Baud rate → 19200	
“	“	= x05 = Baud rate → 38400	
“	“	= x06 = Baud rate → 57400	
“	“	= x07 = Baud rate → 115200	
“	Bit 4	= x00 = Number of stop bits → 1	
“	Bit 5	= x00 = Number of Data bits → 8	(*)
“	“	= x10 = Number of data bits → 7	
n3 :	-	= x00 = Parity → Odd	
“	-	= x01 = Parity → Even	
n4 :	-	= x00 = Parity Mode → No parity	(*)
“	-	= x01 = Parity Mode → Enable parity	
n5 :	-	= x00 = Handshaking → Xon / Xoff	
“	-	= x01 = Handshaking → Dtr / Dsr	
“	-	= x01 = Handshaking → Dual	(*)
n6 :	-	= x00 = Error processing → Ignore	(*)
“	-	= x00 = Error processing → Print: “?”	

(Parity Error, Framing Error, Over run Error).

Description: This command will store the communication options in non-volatile memory. (NVRAM)

- Notes:**
- This command is processed only in boot mode. If the printer is running in normal mode, send first command “switch to Boot Mode” (1B 5B 7D).**
 - This command must be followed by “Printer Reset” command (1D FF).**

US ETX NUL n - [MP]

1F 03 00 n

Set Diagnostic Mode (NVRAM)

Synopsis: Set diagnostic mode (NVRAM).

ASCII	US	ETX	NUL	n
Hexadecimal	1F	03	00	n
Decimal	31	3	0	n

Operand:	n	= mode selection
Value Decimal	0	Normal Operation
	1	Data Scope Mode
	2	Receipt Print Test
	3	Demo Mode
Default	0	

Limit:
Dec : $0 \leq n \leq 3$
Hex: $00 \leq n \leq 03$

Description: This command will store the printer diagnostics mode in non-volatile memory (NVRAM).
This mode is used to select a test mode

Note: This command must be followed by a reset.

US ETX EOT n - [MP]

1F 03 04 n

Set Maximum Power Consumption (NVRAM)

Synopsis: Set maximum power consumption (NVRAM).

ASCII	US	ETX	EOT	n
Hexadecimal	1F	03	04	n
Decimal	31	3	4	n

Operand:	n	= Power in Watt
Default Dec :	60	Watt
Hex:	3C	

Limit:
Dec: $31 \leq n \leq 255$
Hex: $1F \leq n \leq FF$

Description: This command will store the paper low sensor option in non-volatile memory (NVRAM).

Note: This command must be followed by a reset.

Example:

Dec.	Hex.	Value
55	37	55 Watt
75	4B	75 Watt.
90	5A	90 Watt.

US ETX BEL m - [MP]

1F 03 07 m

Set Printer Emulation (NVRAM)

Synopsis: Set printer emulation (NVRAM).

ASCII US ETX BEL n

Hexadecimal 1F 03 07 n

Decimal 31 3 7 n

Operand: n = Mode selection

Value 6 NSKGG = Emulation NSKGG = Native

Decimal: 7 NSKGG +

Default: 6 (Native)

Limit: Dec: $6 \leq n \leq 7$
Hex: $06 \leq n \leq 07$

Description: This command will store the printer emulation option in non-volatile memory (NVRAM).

Note: This command must be followed by a reset.

US ETX VT m - [MP]

1F 03 0B m

Set Preheating Option (NVRAM)

Synopsis: Set preheating Option (NVRAM).

ASCII US ETX VT n

Hexadecimal 1F 03 0B n

Decimal 31 3 11 n

Operand: n = Mode selection

Value 0 Preheating Off

Decimal: 1 Preheating On

Default: 0 (Off)

Limit: Dec: $0 \leq n \leq 1$
Hex: $00 \leq n \leq 01$

Description: This command will store the preheating option in non-volatile memory (NVRAM).
If set, preheating start if head temperature is below 15.0°C and stop under 30.0°C.

Note: See code (1D 0A) preheating status informations.
This command must be followed by a reset.

US ETX VT m - [MP]

1F 03 0F m

Set Default Font (NVRAM)

Synopsis: Set default resident or user font option (NVRAM).

ASCII	US	ETX	VT	m
Hexadecimal	1F	03	0F	m
Decimal	31	3	15	m

Operand: m = Mode selection

Value 0 Resident font n°0 (16x24 = Elite).

Decimal:

- 1 User font.
- 2 Resident font n°1 (12x24 = Pica).
- 3 Resident font n°2 (Same n°0).
- 48 Easy font n°0
- 49 Easy font n°1
- 50 Easy font n°2
- 51 Easy font n°3
- 52 Easy font n°4

Default: 0 (16x24 Elite)

Limit:

Dec: $0 \leq m \leq 3$ and $48 \leq m \leq 52$

Hex: $00 \leq m \leq 03$ and $30 \leq m \leq 34$

Description: This command will store the default font option in non-volatile memory (NVRAM).

Note: The default font selects which font will be initially used by the printer.
If user or easy font is selected and no present in memory, the default font n°0 is used.
This command must be followed by a reset.

US ETX Ç m - [MP]

1F 03 80 m

Set Default Code Page (NVRAM)

Synopsis: Set default code page option (NVRAM).

ASCII	US	ETX	Ç	m
Hexadecimal	1F	03	80	m
Decimal	31	3	128	m

Operand: m = Mode Code Page

Value 0 437 : US

Decimal:	1	850	: Multilingual
	2	852	: Latin 2, Slavic
	3	860	: Portuguese
	4	863	: Canadian French
	5	865	: Nordic
	6	858	: Multilingual Latin 1 + Euro
	7	866	: Cyrillic, Russian
	8	1252	: Windows, Latin 1
	9	862	: Hebrew
	10	-	: KATAKANA
	11	1253	: Windows, Greek
	12	737	: Greek

Default: 0 (437)

Limit:
Dec: $0 \leq m \leq 12$
Hex: $00 \leq m \leq 0B$

Description: This command will store the default code page option in non-volatile memory (NVRAM).

Note: The default code page selects which code page will be initially used by the printer until it is changed using the "ESC t" command.
This command must be followed by a reset.

US ETX Å m - [MP]

1F 03 8F m

Set Paper Type (NVRAM)

Synopsis: Select paper type option (NVRAM).

ASCII	US	ETX	Å	m
Hexadecimal	1F	03	8F	m
Decimal	31	3	143	m

Operand: m = Select paper type

Value 2 KP 440

Decimal: 10 POS CLASS

Default: 10 (Pos Class)

Limit: Dec: 2 and 10
Hex: 02 and 0A

Description: This command will store the paper type option in non-volatile memory (NVRAM).

Note: This command must be followed by a reset.

US ETX É m - [MP]

1F 03 90 m

Set Fault Recovery Mode (NVRAM)

Synopsis: Select fault recovery mode (NVRAM).

ASCII	US	ETX	É	m
Hexadecimal	1F	03	90	m
Decimal	31	3	144	m

Operand: m = Select mode

Value 0 Automatic Restart

Decimal: 1 Host Controlled

Default: 0 (automatic restart)

Limit: Dec: $0 \leq m \leq 1$
Hex: $00 \leq m \leq 01$

Description: This command will store the fault recovery mode option in non-volatile memory (NVRAM).

Note: This mode is used to select the printer behaviour after all fault conditions are cleared : The printer can either automatically restart from where it stops, or wait until it receives a specific real time command "Real Time Recovery From Fault"

This command must be followed by a reset.

US ETX ô m - [MP]

1F 03 93 m

Set Carriage Return Usage (NVRAM)

Synopsis: Select carriage return usage option (NVRAM).

ASCII	US	ETX	ô	m
Hexadecimal	1F	03	93	m
Decimal	31	3	147	m

Operand: m = Select mode

Value 0 Ignored

Decimal: 1 Used as Print Command

Default: 0 (ignored)

Limit: Dec: $0 \leq m \leq 1$
Hex: $00 \leq m \leq 01$

Description: This command will store the carriage return usage option in non-volatile memory (NVRAM).

Note: This option determines how carriage return command (1A 0D) or (0D, emulation NSKGG+) is processed.
This command must be followed by a reset.

US ETX ö m - [MP]

1F 03 94 m

Set Lines per Inch Default Setting (NVRAM)

Synopsis: Select lines per inch setting (NVRAM).

ASCII	US	ETX	ö	m
Hexadecimal	1F	03	94	m
Decimal	31	3	148	m

Operand: m = Select LPI mode

Value 0 = 6

Decimal: 1 = 7.52
2 = 8.13

Default: 2 (8.13 Line Per Inch)

Limit: Dec: $0 \leq m \leq 2$
Hex: $00 \leq m \leq 02$

Description: This command will store the lines per Inch default setting option in non-volatile memory (NVRAM).

Note: This option determines the LPI used after reset.
This command must be followed by a reset.

US ETX ù d - [MP]

1F 03 97 d

Set additional distance search to find one TOF (NVRAM)

Synopsis: Set additional distance search to find one top of form mark (NVRAM).

ASCII US ETX ù d

Hexadecimal 1F 03 97 d

Decimal 31 3 151 d

Operand: d = Additional distance search value mm

Limit: Dec: $10 \leq d \leq 255$

Hex: $0A \leq d \leq FF$

Formulas: Maximum Search Mark (mm) = $(1.5 \cdot \text{Label Length}) + d$.

Description: This command will store the additional distance search TOF option in non-volatile memory.
See also command set label length "GS L".

Note: This command must be followed by a reset.

US ETX Ö d - [MP]

1F 03 99 d

Set Offset Tear Off (NVRAM)

Synopsis: Set offset tear-off value (NVRAM).

ASCII US ETX Ö d

Hexadecimal 1F 03 99 d

Decimal 31 3 153 d

Operand: d = offset distance tear off / TOF mark (value mm)

Limit: Dec: $-10 \leq d \leq +10$

Hex: $F6 \leq d \leq 10$

Description: This command will store the Offset tear-off value in non-volatile memory.
See also command First Printable Line "GS D n".

Note: This command must be followed by a reset.

US ETX Ø n - [MP]

1F 03 9D n

Set USM Count Trigger Mode (NVRAM)

Synopsis: Set USM count trigger mode (NVRAM).

ASCII	US	ETX	Ø	n
Hexadecimal	1F	03	9D	n
Decimal	31	3	157	n

Operand: n = Select Mode
0 Normal
1 Extended

Limit: Dec: $0 \leq n \leq 1$
Hex: $00 \leq n \leq 01$

Description: This command will store the USM count trigger mode option in non-volatile memory.

Note: This option determines whether position count change can originate USM messages :
In normal mode, position count change doesn't generate USM message
In extended mode, position count change does generate USM message
This command must be followed by a reset.

US ETX @ n - [MP]

1F 03 A9 n

Set 2nd Paper out Option (NVRAM)

Synopsis: Set 2nd paper out option (NVRAM).

ASCII	US	ETX	@	n
Hexadecimal	1F	03	A9	n
Decimal	31	3	169	n

Operand: n = Select Mode (Option Hardware)
0 Disable (Off)
1 Enable (On)

Default: 0 (Off)

Limit: Dec: $0 \leq n \leq 1$
Hex: $00 \leq n \leq 01$

Description: This command will store the 2nd paper out option in non-volatile memory.

Note: This option is also hardware (specific electronic design).
This command must be followed by a reset.

US ENQ n - [MP]

1F 05 n

Select Superscript or Subscript Modes

Synopsis: Select superscript or subscript mode (on/off).

ASCII	US	ENQ	n
Hexadecimal	1F	05	n
Decimal	31	5	n

Operand: n = Select Size Mode

0	Normal character size.
1	Select subscript size.
2	Select superscript size.

Default: 0 (Normal size)

Limit:

Dec:	$0 \leq n \leq 2$
Hex:	$00 \leq n \leq 02$

Description: Turns superscript or subscript modes on or off. This attribute may be combined with other characters size settings commands (12, 13, 1B 21 n, 1D 21 n, ...)

Note: This command is ignored if n is out of the specified range.

US BEL n - [MP]

1F 07 n

Read Configuration Setting

Synopsis: Read configuration setting (read NVRAM)

ASCII	US	BEL	n
Hexadecimal	1F	07	n
Decimal	31	5	n

Operand: n = Header byte

Limit: See table below.

Reply bytes

- (1) Header byte = n
- (2) Configuration Setting made of one or more bytes, and using the same values as in the command used to set those parameters.

Description: Reply configuration setting.

Note: This command is ignored if n is out of the specified range.

Example: Command (1F 07 8F m) returns the Paper Type.
If the current paper type setting is "POS CLASS ", the returned string would be 8F 0A
8F as header byte for command 1F 07 8F,
0A as seen in parameter table for command 1F 03 8F

n (HEX)	Setting	See Command
00	Diagnostics Mode	1F 03 00
04	Max Power	1F 03 04
07	Printer Emulation	1F 03 07
0B	Preheating	1F 03 0B
0F	Default Font	1F 03 0F
10	Communication	1F 02 ...
46	Max Print Speed	1F 0C 53 50 46
4A	Print Density	1F 0B 4E 52 4A
55	User Flash Mapping	1D 22 55
73	Sensor Threshold ⁽¹⁾	1D 73
80	Default Code Page	1F 03 80
8B	Mechanism Type (0x13)	-
8F	Paper Type	1F 03 8F
90	Fault Recovery	1F 03 90
93	Carriage Return Usage	1F 03 93
94	Default LPI	1F 03 94
97	Add. Search distance	1F 03 97
99	Offset Tear-Off	1F 03 99
9D	USM Count Mode	1F 03 9D
A9	Set 2 nd paper Out ⁽²⁾	1F 03 A9

⁽¹⁾ An additional parameter is required for sensor selection.

⁽²⁾ Hardware Option.

US BS n - [BP]

1F 08 n

Set Boot Size

Synopsis: Set Boot size.

ASCII US BS n

Hexadecimal 1F 08 n

Decimal 31 8 n

Operand: n = New Size Boot

Formulas: Size = n*1024 bytes

Default: 36 (Current size)

Limit: Dec: $0 \leq n \leq 255$

Hex: $00 \leq n \leq FF$

Description: Set new boot loader size.

Select Boot sector erase.

Note: Available only in download mode.

US HT n - [BP]

1F 09 n

Erase Boot Sector + Download new Boot code with Reply Information

Synopsis: Erase boot sector and download new boot code with reply information.

ASCII	US	HT	<i>d1...dn</i>
Hexadecimal	1F	09	d1...dn
Decimal	31	9	<i>d1...dn</i>

Value and range

n	40960
---	-------

Reply byte:

(1)	Received data	→ Reply byte = 1
(2)	Check received data	→ Reply byte = ACK or NAK
(3)	Erase + Downloaded data	→ Reply byte = 2
(4)	Check download data	→ Reply byte = ACK or NAK

ASCII:	ACK	: OK
	NACK	: NOK
Hex:	06	: Ok
	15	: Fault

Description: Wait for new boot code to be downloaded, then check CRC on this new boot code, and if valid, boot code sector is erased and reprogrammed with new code. Printer automatically reboots after program sequence is complete (Boot = boot Strap + Boot Loader).

Note : Available only in download mode.

During erase and download sequence, power supply must be maintained at all times and no reset sequence should be performed.

US LF ENQ n NUL NUL – [MP] [DBG]

1F 0A 05 n 00 00

Read current PWM Value

Synopsis: Read current PWM Value.

ASCII	US	VT	ENQ	<i>n</i>	<i>00</i>	<i>00</i>
Hexadecimal	1F	0A	05	n	00	00
Decimal	31	10	5	<i>n</i>	<i>0</i>	<i>0</i>

Operand:

n	= Select PWM
"T"	0x54 = PWM TOF
"M"	0x4D = PWM Motor

Reply:

	« r=xx ; p=yyyy ACK »
r	= Rapport cyclic (1 byte).
P	= Period (2 bytes).
ACK	= 0x06

Description: Returns the value of PWM TOF or PWM Motor.

US LF I = n1 n2 - [BP][MP]

1F 0A 6C 3D n1 n2

Read Layers Information

Synopsis: Read layers information (CRC and version).

ASCII US LF I = n1 n2

Hexadecimal **1F 0A 6C 3D n1 n2**

Decimal 31 10 108 61 n1 n2

- (n1 n2) $\leftrightarrow$ parameters = Select layer (2 bytes)

Operand	ASCII	Hexadecimal	Description
Values of Op:	BS	42 53	- Read information Boot Strap layer.
	BL	42 4C	- Read information Boot Loader layer.
	CL	43 4C	- Read information Client or main application layer.

Description: Reply layer CRC (CCCC) and version number (v.vv)

Reply format : BS = CCCC ; v.vv or BL = CCCC ; v.vv or CL = CCCC ; v.vv

Note: Main application absent reply format : CL = DEAD ; x.xx

US LF I = n - [MP]

1F 0A 74 3D n

Read Com Port specific Information

Synopsis: Read Com port specific information.

ASCII US LF t = n

Hexadecimal **1F** **0A** **74** **3D** **n**

Decimal 31 10 116 61 n

Operand :	ASCII	Hexadecimal	Description
Value of n:	D	44	- Read Diagnostic Form.
	V	56	- Get current ticket speed.

Description: Read Com (= USB or RS232) information.

US LF n - [MP]

1F 0A n

Voltage and Temperature Monitoring

Synopsis: Voltage and temperature monitoring.

ASCII US LF n

Hexadecimal 1F 0A n

Decimal 31 10 n

Operand : n = select reply type

Limits: Dec: $132 \leq n \leq 133$

Hexa: $84 \leq n \leq 85$

Return : Always returns 7 Bytes (see tables below)
Command ID + zero terminated ASCII string.

Description: Returns the results of latest voltage and temperature measurements.

RETURNED STATUS DEFINITION n = 0x84: Read Voltage (in Volt)		
Byte	Function	Value
0	Command Id	0x84
1-5	ASCII string	
6	End of String	0x00

RETURNED STATUS DEFINITION n = 0x85: Read Print head Temperature (in °C)		
Byte	Function	Value
0	Command Id	0x85
1-5	ASCII string	
6	End of String	0x00

US LF ĩ - [MP] [DBG]

1F 0A 8B n

Set GFX Print Area Width

Synopsis: Set GFX print area width.

ASCII US LF ĩ n

Hexadecimal 1F 0A 8B n

Decimal 31 10 139 n

Operand : n = select width

Default Dec: 56

Limits: Dec: $1 \leq n \leq 80$

Hexa: $01 \leq n \leq 50$

:

Description: Set graphic print area width.

US LF ø - [MP] [DBG]

1F 0A 9B

Read Current Paper Motor Value

Synopsis: Read current motor value in NVRAM.

ASCII	US	LF	ø
Hexadecimal	1F	0A	9B
Decimal	31	10	155

Reply: 2 bytes

Formulas: $(b0+b1 \times 256) = \text{Current}$

Description: Read Current (mA) paper motor.

Example: Hexadecimal value byte0 = F4 and byte1 = 01 → Decimal value Current = 500 mA.

US VT N R J n - [MP]

1F 0B 4E 52 4A n

Set Print Density NVRAM

Synopsis: Set print density (NVRAM).

ASCII	US	VT	N	R	J	n
Hexadecimal	1F	0B	4E	52	4A	n
Decimal	31	11	78	82	74	n

Operand: n = Percentage of the nominal heating time value

Default 100
%

Limit:
Dec: $70 \leq n \leq 120$
Hex: $46 \leq n \leq 78$

Description: Set the print density (energy applied to paper) in percent relative to nominal energy.
This command will store the Value in non-volatile memory (NVRAM).

Note : This command must be followed by a reset.

WARNINGS!!

- Choose a print density setting no higher than necessary to achieve acceptable print density.
- Failure to observe this rule may result in a printer service call.
- Failure to observe this rule may void the printer warranty.
- Consult your AXIOHM technical support specialist if you have questions.

US FF S A F n - [BP] [DBG]

1F 0C 53 41 46 n

Set Boot Program Safety

Synopsis: Set boot program safety.

ASCII US FF S A F n

Hexadecimal 1F 0C 53 41 46 n

Decimal 31 12 83 65 69 n

Operand: n = Select safety mode

0 Disable mode safety

1 Enable mode safety

Default: 1 (Mode safety On)

Description: Turn On/Off mode safety for boot program.

US FF S P F n - [MP]

1F 0C 53 50 46 n

Set Max Speed NVRAM

Synopsis: Set maximum speed (NVRAM).

ASCII US FF S P F nL nH

Hexadecimal 1F 0C 53 50 46 nL nH

Decimal 31 12 83 83 65 nL nH

Operand: n = (nL+256xnH) = Select speed (mm/s)

Default Dec: 150

Limit: Dec: $50 \leq n \leq 155$

Hex: $0032 \leq n \leq 009B$

Description: Set maximum speed.

This command will store the Value in non-volatile memory (NVRAM).

Note : This command must be followed by a reset.

US CR C L E n - [BP]

1F 0D 43 4C 45 n

Reset NVRAM parameters

Synopsis: Reset NVRAM parameters.

ASCII US CR C L E n

Hexadecimal 1F 0D 43 4C 45 n

Decimal 31 13 67 76 69 n

Operand: n = Security byte

Limit Dec: n = 0

Hex: n = 00

Description: This command will reset the non-volatile memory configuration items to their default values.
Followed by reboot printer.

Note : This command is processed only in boot mode.

If the printer is running in main program mode, send first command "switch to Boot Mode" (1B 5B 7D).

US & H cn cm ln [dnk] ... lm [dmk] - [MP]

1F 26 H cn cm ln [dnk] ... lm [dmk]

Define User-Defined Character Set with Variables Height

Synopsis: Define User-Defined character set with variables height.

ASCII US & H cn cm ln [dn1 ... dnk] ... Lm [dm1 ... dmk]

Hexadecimal 1F 26 H cn cm ln [dn1... dnk] ... lm [dm1... dmk]

Decimal 31 38 H cn cm ln [dn1 ... dnk] ... lm [dm1 ... dmk]

Value of range: H Parameter H indicates character height in number of dots, and does not have to be dividable by 8.

From 1 to 8 dots high => 1 data byte per

From 9 to 16 dots high => 2 data bytes per column

From 17 to 24 dots high => 3 data bytes per column

Etc...

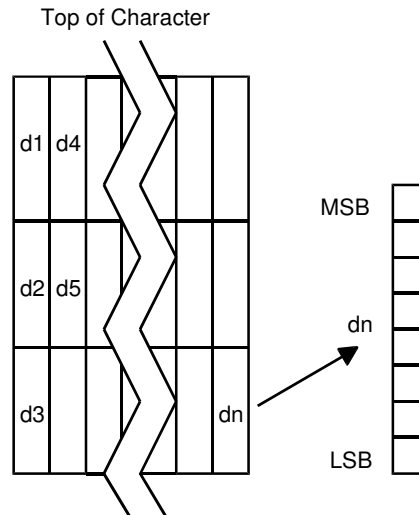
Description: Command format is similar to existing command (1B 26). The only difference resides in the height encoding H indicates the height in number of dots instead of number of bytes (1B 26) to provide better resolution.

Data are still encoded vertically.

Note : max dimensions : H max = 64, W max = 48

See (1D 22 n) "Select memory type" to save User Defined characters.

See chapter "Memory allocation" for information about potential limitations.



US F n - [MP]

1F 46 n

Select Font User

Synopsis: Select font type.

ASCII	US	F	n
Hexadecimal	1F	46	n
Decimal	31	70	n

Operand: n = font Selection
 0 16 x 24 Font A (standard pitch)
 1 12 x 24 Font B (compressed pitch)
 2 16 x 24 Font C (large pitch = standard pitch)

Default: 0

Limit Dec: $0 \leq n \leq 2$
 Hex: $00 \leq n \leq 02$

Description:

Note : This command will overwrite the previous font selection made by the (ESC!) command.

US M nL nH - [MP]

1F 4D nL nH

Reverse paper feed

Synopsis: Reverse paper feed.

ASCII	US	M	nL	nH
Hexadecimal	1F	4D	nL	nH
Decimal	31	77	nL	nH

Operand: n = ((nH * 256) + nL)
 = Distance number of dot line (1/8 mm)

Limit : Dec: $0 < n < 65535$
 Hex: $00 < n < FFFF$
 Note that the backup distance is actually limited so that the edge of the paper doesn't go beyond the print line, leading to loss of paper drive.

Description: Feeds the paper in reverse $n/203$ inch ($n/8$ mm).

If the Set Horizontal and Vertical Minimum Motion Units command (1D 50) is used to change the horizontal and vertical minimum motion units, the parameters of this command (Reverse Paper Feed Paper) will be interpreted accordingly.

Note : The reverse feed is accomplished at low speed.

If the paper is fed back at its maximum reverse position, it is not recommended to leave it in such position for a long period of time, to prevent the edge from sticking to the roller as this could potentially generate paper jam.

US V – [BP][MP]

1F 56

Send Printer Software Version

Synopsis: Send printer software version.

ASCII US V

Hexadecimal 1F 56

Decimal 31 86

Return : 8 bytes ASCII

Description: The printer returns 8 bytes containing the boot and Client or Main program version.

The first 4 bytes returned are an ASCII string for the boot loader version.

The second 4 bytes are an ASCII string for the main program version.

Example: The printer returns 3.842.26

This means the boot loader version is 3.84 and the main program version is 2.26

US a n – [MP]

1F 61 n

Process Ticket Number

Synopsis: Process ticket number.

ASCII US a n

Hexadecimal 1F 61 n

Decimal 31 97 n

Value of: n = Select process

01 Clear Ticket Counter.

02 Increment Ticket Counter.

Description: The ticket counter is a 16-bit counter in memory that gets incremented or cleared by sending a corresponding command to the printer.

Note: Note that this command may be used to monitor actual transaction completion, as it is synchronised with cut commands.

This means that if this command is sent immediately after a cut command, it won't be processed until the cut cycle is complete.

US b – [MP]

1F 62

Request Ticket Number

Synopsis: Request ticket number.

ASCII	US	b
Hexadecimal	1F	62
Decimal	31	98

Return 3 bytes: Command ID followed by the contents of Ticket Counter.

Byte 1	= 62h
Byte 2	= Ticket Counter (LSB).
Byte 3	= Ticket Counter (MSB).

Range :

Dec:	0 ≤ Ticket Counter ≤ 65535
Hex:	0000 ≤ Ticket Counter ≤ FFFF

Description: Returns the contents of 16-bit Ticket Counter.

US e n - [MP]

1F 65 n

Return Logo Checksum

Synopsis: Return the checksum of a logo.

ASCII	US	V	n
Hexadecimal	1F	65	n
Decimal	31	101	n

Operand: n = Selected logo

Limit :

Dec:	0 ≤ n ≤ 255
Hex:	0 ≤ n ≤ FF

Return : 4 Bytes :

Format

Byte 1	= 65 (Hex) = Command ID
Byte 2	= 01 (Hex) = Logo present = 00 (Hex) = Logo absent
Byte 3	= Checksum (LSB) = 00 (Hex)
Byte 4	= Checksum (MSB) = 00 (Hex)

Description: Returns the checksum of a logo downloaded in flash memory (see command 1D 2A...)
Reply 4 bytes [Command ID + Flag + checksum of the logo] specified by n.
Checksum is two's complement of sum of **all** bytes in the download sequence.

Example: Checksum = - (0x1D + 0x2A + ...) For the "Define Downloaded Bit Image" command.

US i n - [MP]

1F 69 n

Select Active User Defined Character

Synopsis: Select active user defined character

ASCII	US	i	n
Hexadecimal	1F	69	n
Decimal	31	105	n

Operand n: n = Select active User-font

Default: 0

Limits:
Dec: $0 \leq n \leq 255$
Hex: $0 \leq n \leq FF$

Description: Selects the active user defined font used by commands 1B 26, 1F 26, 1B 25, 1B 3A, 1B 3F, 1F 6B.

Note : Setting remains unchanged until printer reboots, or command 1B 40 resets active user defined font to default.

US j - [MP]

1F 6A

Upload Logo

Synopsis: Upload logo.

ASCII	US	j
Hexadecimal	1F	6A
Decimal	31	106

Description: Upload current Logo in BMP format.

If current logo doesn't exist, the printer returns 3 byte string 6A 00 00

If current logo exists, the printer returns the byte 6A, followed by the logo description in Microsoft BMP format.

Note : Microsoft BMP bitmap file format.

See Also command "Select Current Logo" (1D 23) to change logo selection.

US k - [MP]

1F 6B

Upload Font

Synopsis: Upload font.

ASCII	US	k
Hexadecimal	1F	6B
Decimal	31	107

Description: Upload current Font/codepage in Easy Font DAT format.

All printer fonts are accessible: Resident, user-defined, Easy font.

Note : Double byte fonts are not supported, for now at least.

US t - [MP]

1F 74

Print Test Form

Synopsis: Print test form.

ASCII US t

Hexadecimal 1F 74

Decimal 31 116

Description: Prints the current configuration settings on the receipt.

Note : During the self test, the printer is offline.

See also command (1F 0A 74 3D 44) or

US v n - [MP]

1F 76 n

Buffered Status Transmission (Print-head Status)

Synopsis: Buffered status transmission.

ASCII US v n

Hexadecimal 1F 76 n

Decimal 31 118 n

Operand: n = Reply status select
5 = Print-head Status
7 = Print-head dots Status

Limit
Dec: n= 5 n= 7
Hex: n= n=
05 07

Return : n Byte(s) See Table below.

Description: Returns the selected status when this command is processed as normal printer data.

"US v" RETURNED STATUS DEFINITION n = 5: PRINthead STATUS One byte is returned.			
byte Bit	Function	Value	
		0	1
0	Status for dots 0-63	OK	Damaged
1	Status for dots 64-127	OK	Damaged
2	Status for dots 128-191	OK	Damaged
3	Status for dots 192-255	OK	Damaged
4	Status for dots 256-319	OK	Damaged
5	Status for dots 320-383	OK	Damaged
6	Status for dots 384-447	OK	Damaged
7	Unused	Fixed to zero	

"US v" RETURNED STATUS DEFINITION n = 7: PRINthead STATUS 56 bytes are returned.			
1 st byte Bit	Function	Value	
		0	1
0	Status for dot 0	OK	Damaged

1	Status for dot 1	OK	Damaged
...	...	...	...
7	Status for dot 7	OK	Damaged

2 nd byte Bit	Function	Value	
		0	1
0	Status for dot 8	OK	Damaged
1	Status for dot 9	OK	Damaged
...	...	...	...
7	Status for dot 15	OK	Damaged

...

...

56 th byte Bit	Function	Value	
		0	1
0	Status for dot 440	OK	Damaged
1	Status for dot 441	OK	Damaged
...	...	...	...
7	Status for dot 447	OK	Damaged

US w n - [MP]

1F 77 n

Return Memory Allocation status

Synopsis: Reply SRAM or flash memory allocation in user section.

ASCII US v n

Hexadecimal 1F 77 n

Decimal 31 119 n

Operand: n = Status select

Return

- 0 Reply the amount of SRAM memory available in user section.
- 1 Reply the amount of Flash memory available in user *download Logo/Font* section.
- 2 Reply the amount of Flash memory available in user *download Easy Font* section.
- 3 Reply the amount of Flash memory available in user *data* section.

Limit Dec: $0 \leq n \leq 3$

Hex: $0 \leq n \leq 03$

Description: Returns the amount of Flash memory or SRAM memory available in user sections.

Note: Returns the number of bytes available as a zero terminated ASCII string.

Each digit is coded in decimal.

For n=0, the returned value corresponds to the size of the biggest chunk of memory available, not the total amount of memory available.

US y n - [MP]

1F 79 n

Set low Resolution Raster Graphics Status

Synopsis: Select or cancel low resolution raster graphics status.

ASCII US y n

Hexadecimal 1F 79 n

Decimal 31 121 n

Operand: n = Select resolution mode.
0 = Disabled. 8 dot/mm mode.
1 = Enabled. 4 dot/mm emulation mode.

Default: 0 (Disabled)

Limit Dec: $0 \leq n \leq 1$
Hex: $00 \leq n \leq 01$

Description: Returns the selected status when this command is processed as normal printer data.

Note: Used in combination with command "Print Raster Graphics" (11 n1...dn).
When this mode is enabled, the number of data bytes of command "Print Raster Graphics" is divided by two.
Each pixel is doubled in horizontal direction, and the raster is printed twice.
This mode can be used to emulate 4 dots/mm graphics.

US z n - [MP]

1F 7A n

Return User Font Status

Synopsis: Return user font status.

ASCII US z n

Hexadecimal 1F 7A n

Decimal 31 122 n

Operand: n = Select font status.

Limit Dec: $0 \leq n \leq 255$
Hex: $00 \leq n \leq FF$

Reply : Always returns 2 Bytes : Command ID + Status
of font n.

Id = Command 7A (hex)
Status = 0 if no character in this font is defined.
= 1 if at least one character in font n is defined.

Description: Returns the status of selected user font.

13. MEMORY ALLOCATION

A pool of SRAM memory is shared by different functions, and is allocated dynamically. The size of this pool depends on the SRAM chip fitted on the board.

With a 128kbytes SRAM chip (64KWords), the pool buffer size is 80kbytes

With a 256kbytes SRAM chip (128KWords), the pool buffer size is 464kbytes

To avoid memory allocation errors and unexpected behaviour as a consequence, it is important to understand the allocation process.

The following functions use dynamically allocated memory in SRAM:

13.1.1.Right Side Character Spacing

A 2560 bytes buffer for right side character spacing processing is allocated if right side spacing is not equal to 0.

13.1.2.Character Scaling

A 7680 bytes buffer for character scaling processing is allocated if character width or height ratio defined with command (1D 21) is greater than 2.

13.1.3.Upside Down Printing

A buffer is allocated to process upside down printing. Its size is variable and depends on character scaling height ratio, and font height.

If this ratio equals 1 and font height equals 24, the buffer size is 3840 bytes, but it can take up to 31040 bytes in worst case.

13.1.4.Logo download

As soon as at least one logo is downloaded to either SRAM or FLASH memory, a 4096 bytes buffer is allocated to store information structures.

This buffer is freed:

- When processing command (1B 40), unless there is at least one logo stored in Flash memory.
- When processing command (1D 40 31) to erase user font / logos flash storage area, unless there is at least one logo stored in SRAM.

For each logo, a data buffer is allocated in SRAM. Its size corresponds to the logo bitmap size. If the logo is stored in FLASH, this buffer is freed after transfer to FLASH.

If the logo is SRAM, this buffer is freed when processing command (1B 40).

13.1.5. User fonts download

As soon as at least one user font is downloaded to either SRAM or FLASH memory, a 1024 bytes buffer is allocated to store information structures.

This buffer is freed:

- When processing command (1B 40), unless there is at least one user defined character stored in Flash memory
- When processing command (1D 40 31) to erase user font / logos flash storage area, unless there is at least one user defined character stored in SRAM.

For each user font (collection of multiple characters) downloaded in either SRAM or FLASH memory, a 3584 bytes buffer is allocated to store information structures.

This buffer is freed:

- When processing command (1B 40), unless there is at least one user defined character stored in FLASH memory
- When processing command (1D 40 31) to erase user font / logos flash storage area, unless there is at least one user defined character stored in SRAM.

For each character stored in SRAM, a data buffer is allocated in SRAM.

Its size corresponds to the character bitmap size.

If the user character is stored in FLASH, this buffer is freed after transfer to FLASH.

If the user character is stored in SRAM, this buffer is freed when processing (1B 40) or (1B 3F) commands.

13.1.6. Page mode

The page mode print data rendering is done in a buffer stored in SRAM.

Its size is: total page width x total page height

The buffer is allocated when entering page mode. Its size may be readjusted if necessary if the total height or width is increased by command "Set print area in page mode".

The buffer is freed when leaving page mode

13.1.7. Landscape Mode (Side Writing mode)

The Landscape mode print data rendering is done in a buffer stored in SRAM.

Its size is: total page width x total page height

The buffer is allocated when entering page mode. Its size may be readjusted if necessary if the total height or width is increased by command "Number of character Landscape Mode".

The buffer is freed when leaving Landscape mode.

13.1.8.Barcode printing

The barcode rendering is done in a buffer stored in SRAM. The buffer is freed once the barcode is printed. The buffer size corresponds to the barcode bitmap size, including HRI

13.1.9.Macro Definition

The macro is stored in a 2048 bytes buffer. It is allocated when starting macro definition. It is freed if a macro definition is empty, or if an “execute macro command” is sent while recording the macro.

13.1.10.Easyfont download

Single byte fonts

A 3584 bytes buffer is allocated to store information structures. This buffer is freed when processing command (1D 40 33) to erase Easyfont storage area.

In addition, a temporary buffer is allocated when processing (1C 4C) command. It is freed at the end of the processing of this command
Its size is: 2 x character width in bytes x character height

Double byte font

3 buffers of 400 bytes each are allocated for temporary storage when processing command (1C 44) band download command.
Those 3 buffers are freed when processing command (1C 45) download complete command.

In addition, a temporary buffer is allocated when processing (1C 44) command. It is freed at the end of the processing of this command
Its size is: number of characters in band x character width in bytes x character height

Summary

Function Name	Persistent storage	Temporary storage
Right side spacing	2560	
Character scaling	7680	
Upside down printing		typically 3840, up to 31040
Flash Logo download	4096	2 x LogoWidthInWords x LogoHeight
SRam Logo download	4096 + 2 x LogoWidthInWords x LogoHeight	
Flash User char download	1024 + 3584 per font	2 x NbChars x CharWidthInWords x CharHeight
SRam User char download	1024 + 3584 per font + 2 x NbChars x CharWidthInWords x CharHeight	
Page mode	2 x PageWidthInWords x PageHeight	
Landscape mode	2 x PageWidthInWords x PageHeight	
Barcode printing		2 x CodeWidthInWords x CodeHeight
Macro definition	2048	
Easyfont single	3584 per font	2 x CharWidthInWords x CharHeight
Easyfont double		3 x 400 + NbChars x CharWidthInBytes x CharHeight

(All sizes in bytes)

14. TROUBLESHOOTING

AXIOHM printers are simple and generally trouble-free, but from time to time minor problems may occur. Follow these procedures to determine the cause and resolution of any problems the printer may be having. If the procedures in this section do not correct the problem, contact a service representative.

14.1.Light indicator

When light is on continuously, the printer is ready to operate.
When light is flashing, an error occurs.

14.2.Problems & Solutions

14.2.1. Printer Problems

Problem	What to Do
Printer does not function when turned on.	Check that printer cables are properly connected on both ends. Check that the host or power supply is getting power.
Printer LED is off.	Check if the On/Off button is in On position. Check the power-supply and cable connections. See chapter 14.2.4.1
Printer LED is continuously on but printer does not operate.	Check if the interface cable is properly connected. "Print a self-test" see below chapter 14.2.4.2 : - Self test Ok. Check protocol value for RS232 (9600, n, 8, 1 or other). Else test with another interface cable. - Self test not Ok. See below "check the labels" chapter 14.2.4.3
Printer LED is flashing.	See LED diagnostic below.

14.2.2. Printer LED Diagnostic

Problem	Possible Causes	What to Do
LED, slow continuous flashing (1 flash / sec or more).	Out of paper.	Put in a new paper roll.
	Print head is too hot.	Waiting until the print head has returned to its operating temperature range.
	Voltages are out of range.	(1) Waiting until voltage returned to its operating voltage range. (Few seconds) (2) Turn the printer off (<i>unplug</i>). Change power supply if possible or Contact your authorized service representative.
Flashing LED in various combinations.	Hardware problems	(1) Reset the printer. (2) Turn the printer off (<i>unplug</i>). These indicate serious problems. Contact your authorized service representative.
Fast continuous flashing of LED:	You are enter to Boot program	Reset the printer
	Main Program CRC Test Failure.	Download Boot and Main Program.

14.2.3. Printing Problems

Problem	Possible Causes	What to Do
Print quality is deteriorating.	Print head may be getting dirty.	See next chapter 15 "Cleaning your printer"
Colored stripe on the receipt.	Paper is low.	Change the paper.
Receipt does not come out all the way.	Paper is jammed.	If the LED is still flashing, See LED diagnostic chapter 14.2.2. Else: see below chapter 14.2.4.3 "Check the labels"
Printer starts to print, but stops while the receipt is being printed.	Paper is jammed.	
Print is light or spotty.	Paper roll is loaded incorrectly.	Check that the paper is loaded properly.
	Thermal print head is dirty.	Use recommended thermal receipt paper. See next chapter 15 "Cleaning your printer".
	Variations in paper.	Increase print density in "Set Mechanism Options" of printer Configuration Menu as needed.
Vertical column of print is missing.	This indicates a serious problem with the printer electronics.	Contact your authorized service representative.
One side of receipt is missing.	This indicates a serious problem with the printer electronics.	Contact your authorized service representative.

14.2.4. Test Operation

14.2.4.1. Check the power to the printer

Ensure that the printer is turned on. The on/off light glows green when the printer is turned on. Check the power connection at the wall and at the printer if pressing the on/off button does not turn the printer on. If the printer still will not turn on, plug another machine into the outlet to be certain the outlet is functional.

If another machine proves that the outlet is good, you probably have a defective power transformer. Contact your dealer for a replacement. If the printer is on but will not print, perform a printer self-test.

14.2.4.2. Print a self-test

To be certain that your printer is working (printing and feeding) properly, you can run a self-test: See Chapter 8 "Self Test Ticket Description"

14.2.4.3. Check the labels

If the printer fails the self test, check to see if the paper or labels are loaded improperly or if the printer cable is plugged in (it should not be during the self test). Reload and retry the self test.

If the on/off button is flashing and labels or paper are loaded, inspect the printer to look for jammed, damaged or crimped paper. Reload the according to the instructions.

The on/off light will also flash when the printer comes to the end of a roll. Unload a new roll of paper or labels and the light should stop flashing.

If the print quality is poor, the print head might be temporarily misaligned. Unload and reload the paper and try printing again.

15. CLEANING YOUR PRINTER

Depending on the environment in which the printer is used, it can accumulate dust. Therefore it is necessary to clean it periodically to maintain a good print quality. The cleaning period depends on the environment and the usage of the printer, but the print head should be cleaned at least once a year or up to one month in heavy duty applications.

Cleaning Instructions:

- Unplug the printer. **Never clean the head immediately after printing, the head may be hot.**
- Open the cover, clean the heating dots line of the head with a cotton stick containing a solvent alcohol (ethanol, methanol, or IPA) but **do not touch the print head with your fingers!**
- Allow the solvent to dry and close the cover.
- N.B **AXIOHM can provide cleaning kits Ref : (*)**
(*) Consult your Axiohm technical support specialist.