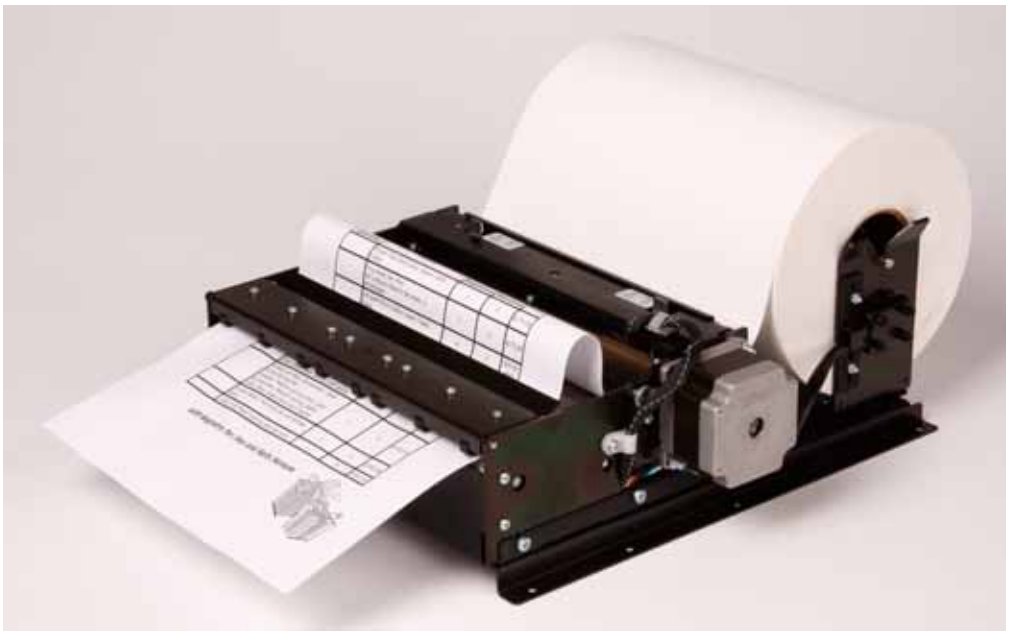

Zebra® TTP 8000

Kiosk Receipt Printer

Technical Manual

P1003638-003 Rev. A

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1 Introduction

About This Manual

This manual contains the information required to install the printer and to run it from a host computer such as a PC.

The TTP 8000 series consists of TTP 8200 with a resolution of 203 dpi, and TTP 8300 with a resolution of 300 dpi. This manual applies to both versions and notes are made where they differ.

Programming on page 31 gives the applicable control-codes and escape-sequences supported by the printer processor firmware.

Other chapters of the manual contain information about the printer status codes, communications parameters, test print functions, specifications, etc.

Updating

This manual will be updated as, from time to time, printer functions and features may be added or amended. You will always find the latest edition on our web site (http://www.zebra.com).

If you require functions not found in this manual edition please contact Technical Support for your region or the Zebra partner the printer was purchased from.

Contacts

Technical Support via the Internet is available 24 hours per day, 365 days per year.

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Customer Service Department (US) ***Internal Sales Department (UK)*** For printers, parts, media, and ribbon, please call your distributor or contact us.	T: +1 877 ASK ZEBRA (275 9327) E: clientcare@zebra.com	T: +44 (0) 1628 556032 F: +44 (0) 1628 556001 E: cseurope@zebra.com	T: +65 6858 0722 F: +65 6885 0836 E: *China:* order-csr@zebra.com *All other areas:* csasiapacific@zebra.com
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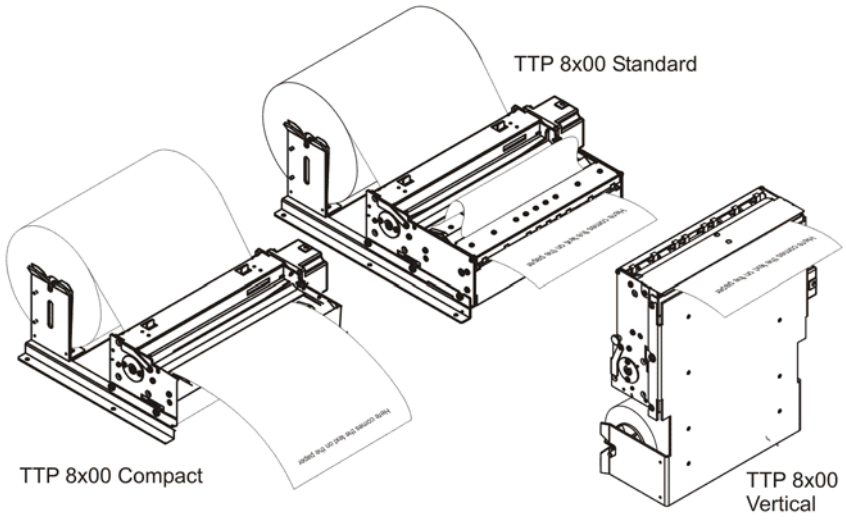
Product Presentation

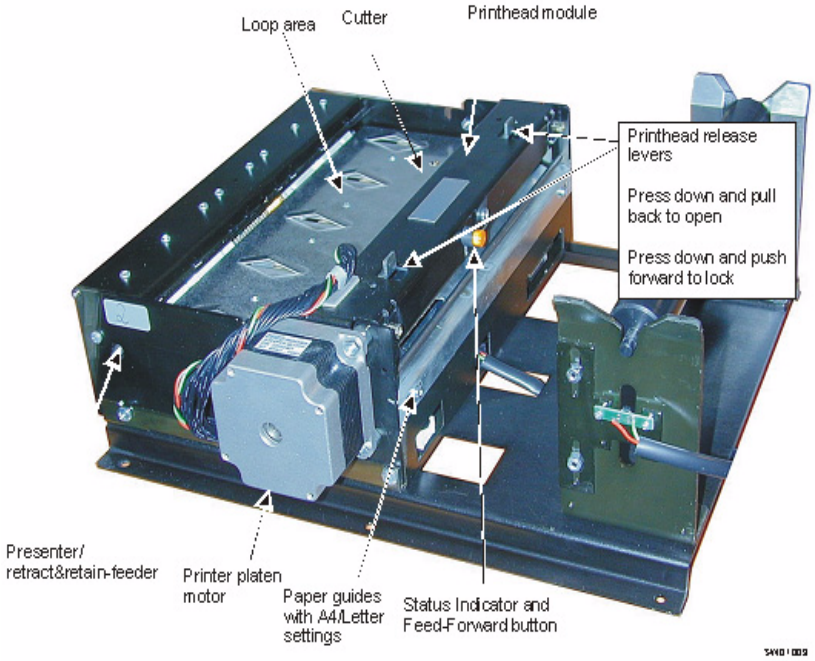
The TTP 8000 kiosk printer series consists of a family of printers that will print A4 or Letter paper width depending on the printer configuration. Different configurations and paper handling options are available.

Figure 1 • TTP 8000 Printers



Note • Roll holders shown in Figure 1 are options.

Figure 2 • Printer Exterior, Side View



The TTP 8000 series of kiosk printers use direct thermal printing. The print speed is up to 100 mm per second.

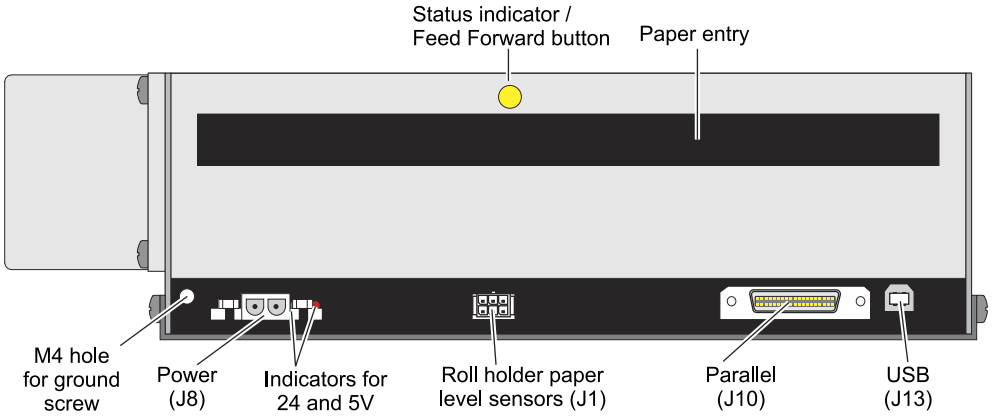
The printer has an integrated control board that communicates with the host computer through either an USB orIEEE-1284 bi-directional parallel port. Printer drivers for Microsoft Windows are available. The USB and parallel interface printers are compatible with the Plug and Play standard. It is also possible to address the printer directly from the kiosk software without using a driver.

The flip-up printhead and presenter modules give the operator complete access to the paper path for maintenance purposes.

The loop generating presenter mechanism handles documents of various lengths. It holds the printout until printed, then cuts and presents the complete printout to the customer. The “retract and retain” function can retract uncollected printouts into a wastebasket inside the kiosk.

Note • The compact version of the printer does not have presenter or retract function, and the vertical printer has limited use of retract as the retract path faces the same direction as the normal eject path.

Figure 3 • Printer Exterior, Rear View



Indicators

The status indicator flashes in various sequences to indicate specific statuses or warnings.

The status indicator (see Figure 3, *Printer Exterior, Rear View,* on page 11) has several functions:

ON constantly	The printer is operational.
Flashes rapidly	Indicates error. Hold down the feed-forward button and the number of flashes will reflect the status-code. See Table 1.
Flash, pauses, flash	Indicates warnings of non-severe error. The number of flashes reflects the warning-code. See Table 2.

Table 1 • Status Codes

Number of Flashes	Status Code Description
1	Paper jam in presenter
2	Cutter cannot return to home position
3	Out of paper
4	Printhead lifted **Note** • Only available on printers with printhead open sensor installed.
5	Paper wrapped around platen (under head)
6	Temp error, printhead is above 60°C
7	Presenter not rotating
Fast flashes	Checksum error, firmware
Steady light	Wrong firmware type
Off	No firmware is loaded, or wrong firmware checksum

Status-codes are reset:

- When the conditions causing them are removed.
- When the printer is turned off/on.
- When the printhead is lifted and then lowered. On printers without printhead lifted sensor, remove paper, install again, and press the Feed button to reset.
- When the hardware reset command is received.

Table 2 • Warning Codes

Number of Flashes	Warning Code Description
2	Paper low **Note** • This signaling is disabled by default. It can be disabled/enabled through parameter setup
3	Weekend low*

*. Warning-codes are reset automatically when the cause for them are removed.

Control Board Indicators

The control board has two power indicators behind the power connector. To see the indicators, open the printhead and look down between the platen and the printer frame.

Table 3 • Control Board Indicators

Green indicator constantly ON	24 V present
Red indicator constantly ON	5 V OK (generated on control board)

Feed Button

When you have inserted the paper under the printhead, press the Feed button and the printer will feed it forward, cut and eject a printout, then switch to on-line mode. Each press on the Feed button will feed, cut, and present one form length.

Using the Feed button:

Is there paper in the presenter section of the printer?

If…	Then…
No	Press the Feed button once to make a Form Feed. (Feed, cut, and present a complete page.) In black mark mode, the page will be synchronized with the black mark.
Yes	Press the Feed button once to clear the presenter.

When auto-loading paper, and the paper does not feed straight:

1. Press the Feed button once to stop the loading process.
2. Correct the error.
3. Press the Feed button once more to commence with the loading.

When loading paper manually:

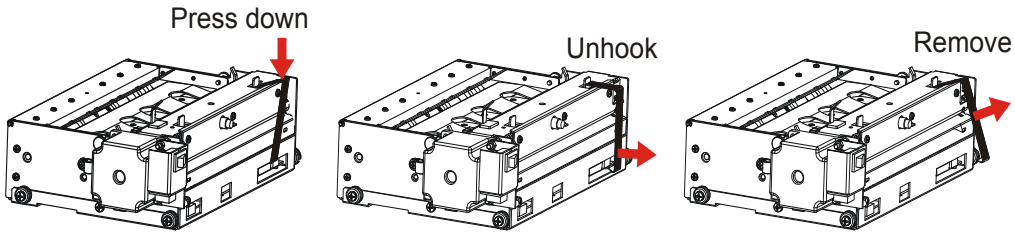
1. After closing the printhead, press the Feed button to feed-cut-eject one page.
2. Press and hold the Feed button while turning on the power to print a self-test printout. See page *Making a Test Printout* on page 21.

3 Installation

Unpacking

When a new printer is delivered the printhead is secured with a shipping strap. Remove this by pressing it downwards and disengage it from the parallel interface hole, then turn it up and remove the shipping strap.

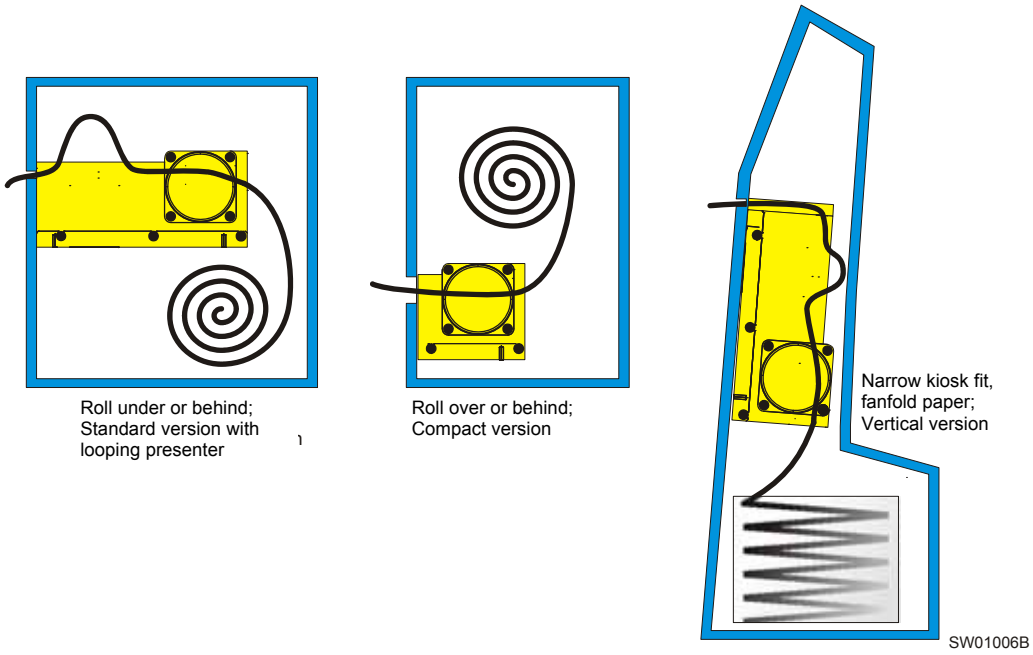
Figure 4 • Removing the Shipping Strap



Installation Considerations

There are a number of printer mounting options available to install the TTP 8000 printer in a self-service kiosk enclosure, as illustrated in Figure 5. See also *Printer Dimensions* on page 113.

Figure 5 • Installation Options



Additional space is required for paper replenishment and paper jam removal. Consider mounting the printer on a movable platform so that the printer can be maintained outside the kiosk enclosure.

Important • It is essential for the function of the printer that the paper is rolled in the correct direction for the model of printer that you have.

Table 4 • Media Mounting Configurations

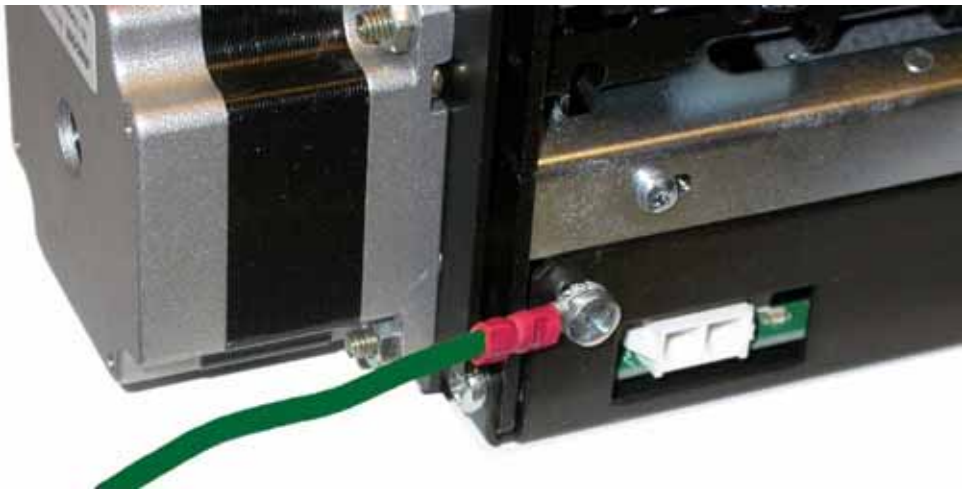
Media Type	Standard	Vertical	Compact
Roll media	X	X	X
Fanfold media	X	X	X
Roll behind printer	X	X	X
Roll under printer	X	X	X
Roll above printer			X
Thermal coating outside of roll	X	X	X
Thermal coating inside of roll			X

Electrostatic Discharges, and Earth Currents

Preventing ESD and earth currents from affecting the printer operation requires proper connection of the printer chassis to protective earth through a mounting platform or through a separate earth conductor. The signal ground is *not* connected to protective earth (chassis) inside the printer.

See Figure 6. Fasten an earth cable to the printer using an M4x6 screw. Always put a lock washer between the chassis and the connector.

Figure 6 • Attach Earth Cable



Ambient Light

There are optical sensors just inside the paper exit at the front of the printer.

To ensure proper printer operation, design the printer enclosure so that it prevents direct sunlight or light from indoor lamps from reaching the sensor through the paper exit.

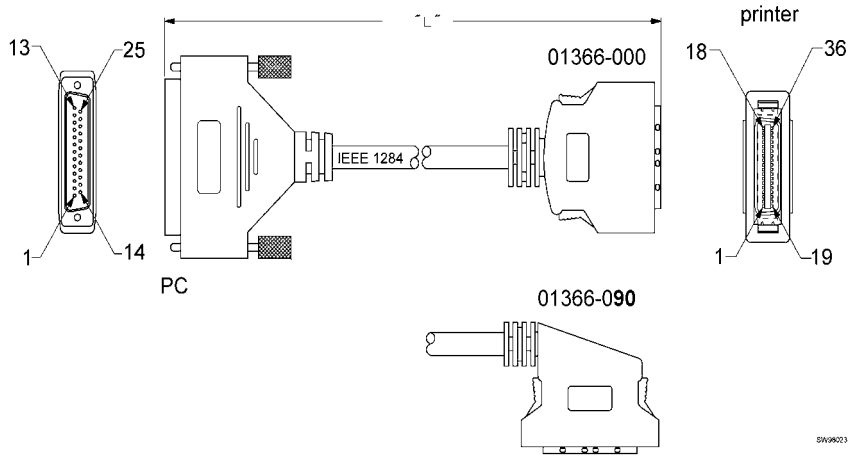
Connecting to the Computer

Caution • Using a non-approved cable with the printer may void the FCC and other EMC approvals of the printer.

Using the Parallel Interface

1. Connect the printer to the parallel port of the computer to be used.
2. Connector J10 is an IEEE-1284 type C, 36-pole mini Centronics, with clip latches. See Figure 21 on page 96 for pin assignment of J10.
3. Use only certified cables marked IEEE-1284. See *Part Number List* on page 124 for cables from Zebra Technologies.

Figure 7 • IEEE-1284 cable with Type A and Type C Connectors



Using the USB Interface

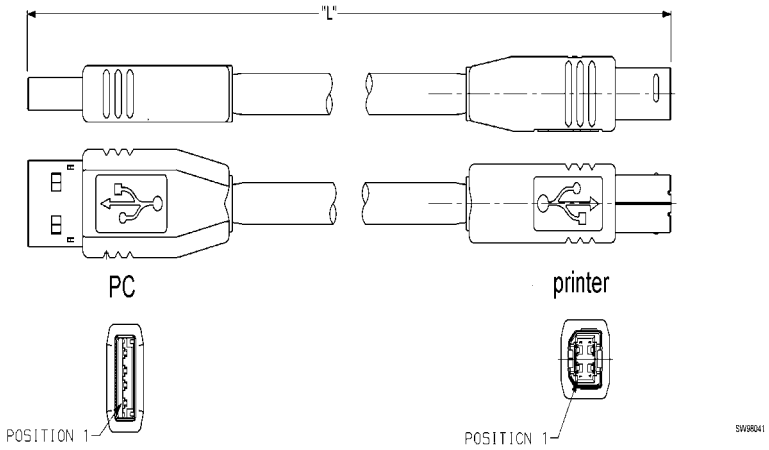
1. Connect J13 of the printer to the USB port of the computer or the USB hub to be used. USB connectors can be recognized by the following symbol: .
2. Connector J13 is a 4-pin USB type B connector. See *USB* on page 98 for pin assignment.

A suitable cable is available from Zebra, see *Part Number List* on page 124 for part number.

Note • The USB interface on printers with hardware revision A does not trigger enumeration in Windows when the printer is reset. Reset occurs after font, logotype, firmware and parameter storage. This means that the printer will disappear from the list of available printers at reset, and appear again when the PC is restarted. In normal operation this will not happen. Powering off/on the printer starts enumeration.

You can see the hardware revision on the self-test printout.

Figure 8 • USB Cable with Type A and Type B Connectors



Connecting the Power

Caution • Use only the recommended Zebra power supply (see *Part Number List* on page 124 for part number).

1. Attach a ground cable to the ground screw on the printer.
2. Connect the cable from the power supply to J8.
3. Connect the power cable to the line outlet.
4. Apply power to the printer.

If you use another type of power supply unit, connect the voltages according to the following illustration.

Important • The ground and the 24 V ground must be separated in the power supply to avoid ground loops!

At the printer end of the cable, use a Tyco Mate-N-Lok connector housing and two contact-sockets:

Figure 9 • Power Connection

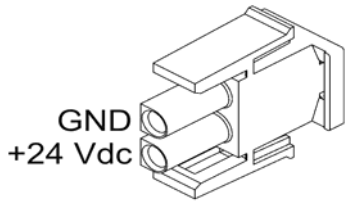
Tyco No. 350777-1	Tyco No. 350689-1
	

Table 5 • Current Consumption at Factory Default Settings

Print Density	TTP 8200	TTP 8300
None (Idle)	0.15 A	0.15 A
10% coverage	1 A	2 A
20% coverage	2 A	3 A
30% coverage	3 A	4 A
40% coverage	4 A	5 A
50% coverage	5 A	6 A
All black printing	10 A	12 A

Note • Print speed, burn time, and temperature affects these values.

Making a Test Printout

You can make a self-test printout if you want to verify that the printer operates correctly. See *Self-test Printout and Other Power ON Modes* on page 29.

Paper Path Adjustment

Paper Width

When delivered, the paper width is adjusted to 210-mm for A4, and 216-mm for Letter paper versions of the printer. To adjust the width, do as follows:

1. Loosen the two screws on each side that holds the guide wings (see Figure 2, *Printer Exterior, Side View,* on page 10).

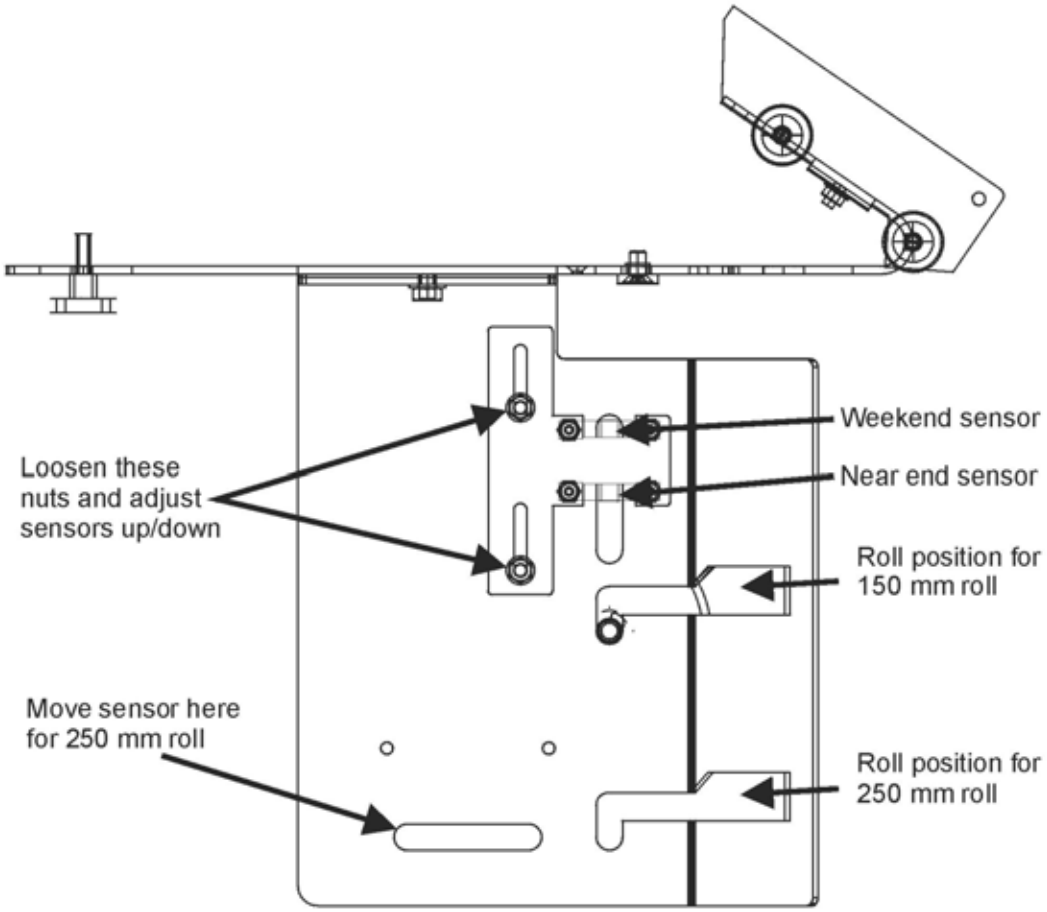
For A4-paper	Pull the wings together as much as possible, and then tighten the screws.
For Letter paper	Push the wings apart as much as possible, and then tighten the screws.

Paper Level Sensors

The printer has inputs for two paper level sensors.

Sensor status is reported to the host computer when it asks the printer for status. If you want the indicator on the printer to flash to show paper level sensor status, you must enable signaling using parameter No. 52, see *Default Parameter Settings* on page 71.

Figure 10 • Sensors on Large Roll Holder



The paper-near-end sensor alerts the system when a couple of meters of paper remain. The purpose of this sensor is to get an early alert so that you can replace the paper in time in remotely located kiosks.

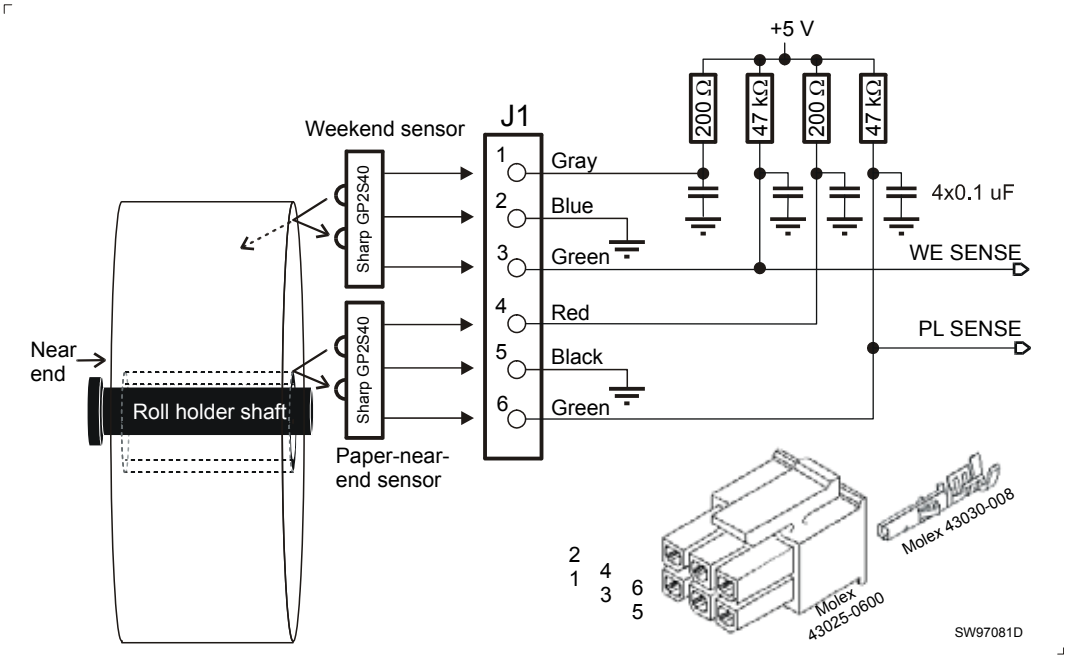
The weekend sensor should alert when the remaining paper does not last over a weekend. A reason to use this sensor is that it is more expensive to get a service technician out on a weekend or holiday, than it is to replace the paper before it is totally empty.

The Zebra 150 mm paper roll holder can be equipped with one paper-near-end sensor, while the larger paper holders have both paper-near-end and weekend sensors.

When installing the Zebra paper holder just connect the cable from the roll holder to connector J1 at the back of the printer. See *Printer Exterior, Rear View* on page 11.

If you use custom designed paper holders, connect the sensors according to Figure 11.

Figure 11 • Paper-near-end Sensor Connection



Installing a Printer Driver

A printer driver for Microsoft Windows™ is available on the Zebra web site *http://www.zebra.com*. Please follow the installation instructions that accompany the drivers and refer to the Kiosk Driver Reference Guide, Part Number P1006873-001, available on www.zebra.com for detailed driver information.

Notes • _____

4

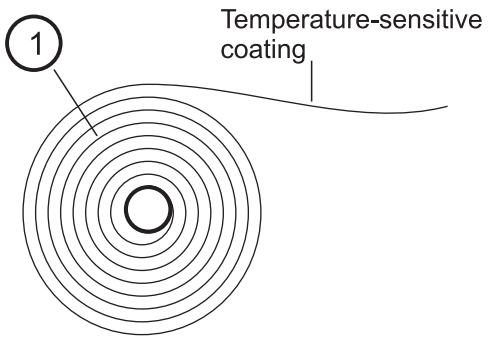
Operation

Installing a Paper Roll

Preparations

1. Turn the new paper roll as shown. The paper should be inserted into the printer with the temperature-sensitive side up.

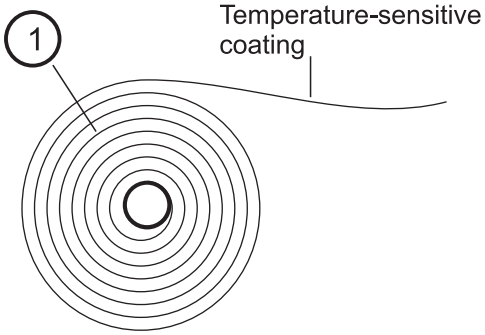
Figure 12 • Paper Roll Orientation



2. Tear off approximately 0.5 m from the new paper roll.

Caution • This is important since the outer end of the paper is usually fixed to the roll with some type of glue or self-adhesive substance that might otherwise cause paper jam or even printhead damage.

Figure 13 • Tear Off 0.5 m from the New Paper Roll



Using Auto Load

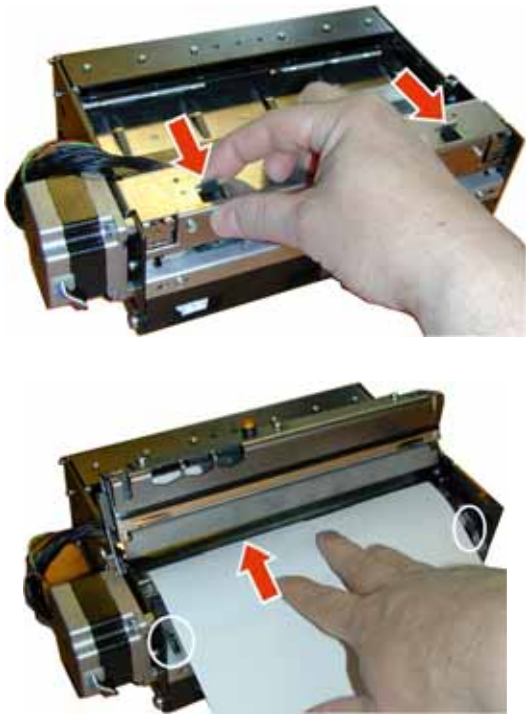
1. Make sure the printer is turned ON.
2. Make sure the front edge of the paper is straight.
3. Enter the paper between the guide wings and feed it straight into the printer.
4. The platen should grip the paper, feed one form length, cut and eject, and set the printer online.

Note • Autoloading works if the printer is on, the head is down and locked, and the Paper Out flashing sequence is showing on the status indicator. If you see that the paper does not pull straight, press the Feed button to stop the loading, then straighten the paper, and press the button again to commence.

Using Manual Load

1. Open the printhead by pulling the two release levers back and tilt up the printhead.

Figure 14 • Manual load of new paper



2. Position the paper on the shelf so that it passes the rubber platen roller.
3. Close the printhead. Remember to push the printhead release levers forward. Note that the paper must be between the guides (circled in the above picture), and under the black plate (arrow).

4. Press the Feed button and the paper will feed, cut and eject a printout, and then automatically go online.

Clearing Paper Jams

Should a paper jam occur, follow the procedure below:

1. Open the presenter top plate by loosening the two thumbscrews, and lifting up the plate.
2. Tear off the jamming paper against the fixed cutter blade, remove all jammed paper, and make sure the paper path is clear.
3. Close the presenter top, and press it down while tightening the screws.

Figure 15 • Loosen both thumbscrews and flip open the presenter top.

Figure 16 • Tear off the jamming paper against the fixed cutter blade.

Self-test Printout and Other Power ON Modes

1. Remove power from the printer.

   If your printer has a power switch, turn the power off. If it does not, remove power to the printer.

2. Hold the feed-forward button depressed while powering ON the printer. Keep the button depressed until the presenter motor buzzes.

This produces a printout showing the firmware program version and date, control board revision number and serial number, name of loaded fonts and logotypes, parameter settings, and the set printhead burn-time.

3. Each successive press of the button will produce a test printout.

4. To exit self-test mode, switch the printer OFF and ON, or send a reset command.

Note • You can also print a self-test printout by sending the command `<ESC>P<0>` to the printer.

Power ON Modes

Normally the printer is immediately ready for use when you switch it ON. You can enable several test and maintenance functions by giving simulating sensor signals while switching ON the power.

Print Mode	Feed button	Paper	Printhead
Normal	Released	Don't care	Don’t care
Self-test printout	Pressed	Loaded	Down

Important • For printers without head up sensor, modes requiring printhead-up are not supported.

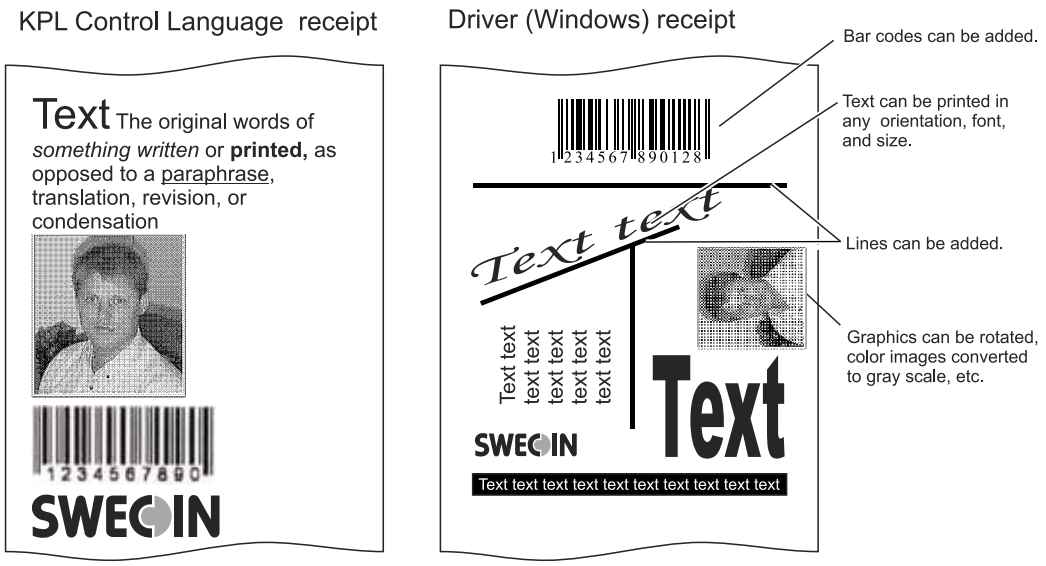
Notes •

5 Programming

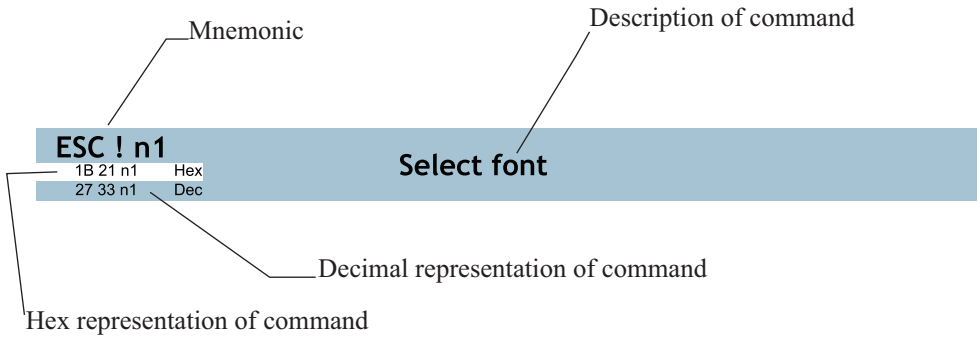
There are two different ways of setting up the printout: Text oriented and driver oriented style.

Command code	The printout can be seen as the page of a simple word processor. You send text and graphics to the printer, which prints the information in the same sequence as the data is received. Design features are limited to the font stored in the flash PROM of the printer. Text and logotypes can also be printed in landscape orientation. There are two text cursors, one for portrait, and one for landscape. The start positions of the cursors are the upper left corner for the portrait cursor, and the upper left corner for the landscape cursor, see Figure 17, *Printout Styles,* on page 32. You can switch between these cursors at any time; the cursor will retain its last position on the printout.
Driver oriented	When a Windows driver is used, you can use any Windows program to design the printout with text, graphics, bar codes or whatever you want to print and in any orientation you want. The Windows driver issues all the necessary commands. The cut, present, and black-mark commands to send are indirectly selected through the settings in the Windows dialogue boxes.

Figure 17 • Printout Styles



How the commands are described



Mnemonic

Is the popular command name that should be easy to remember

Hex

Give the command in hex representation

Decimal

Give the command in decimal representation

Values

n1, n2, etc. represents values that you set with the commands. What you should enter here depends on what you want the command to do.

Examples

Command examples are formatted in `Courier` and typed in the same way as used in the Zebra Toolbox:

```
<ESC>&P<1><19>
```

Where `<ESC>` means the escape character 27 decimal (hex 1B). Numbers between less-than and greater-than characters, for example `<15>`, means 15 decimal (hex F). When the numbers indicate a hex value, h is appended to the number.

Example • `<65>`, `<h 41>` and A are three different ways of expressing the character A.

Summary Of Control Codes & Escape Sequences

Table 6 • Control Codes and Escape Sequences in Alphabetical Order

Command	Hex	Decimal	Function	Page
BS	08	8	Backspace	page 40
CAN	18	24	Cancel	page 41
CR	0D	13	Carriage return	page 41
EM n	19 n1	25 n1	Enforced Clear Presenter	page 51
ENQ	05	5	Clear Presenter	page 51
ESC ACK n1	1B 06 n1	27 6 n1	Acknowledge Marker	page 63
ESC ! n1	1B 21 n1	27 33 n1	Select Font	page 38
ESC #	1B 23 n1	27 35 n1	Calibrate Blackmark Sensor	page 36
ESC & 0	1B 26 00	27 38 0	Load Font	page 53
ESC & 1	1B 26 01	27 38 1	Load Logotype	page 52
ESC & 4	1B 26 04	27 38 4	Store current Parameter Values	page 52
ESC & 5	1B 26 05 n1	27 38 5 n1	Set default Profile Pointer to n	page 53
ESC & C	1B 26 43	27 38 67	Erase all Fonts	page 53
ESC & D	1B 26 44	27 38 68	Erase Fonts 4 to 7	page 53
ESC & F n1	1B 26 46 n1	27 38 70 n1	Recall Parameter Profile	page 54
ESC & L	1B 26 4C	27 38 76	Erase all Logotypes	page 52
ESC & P n1...n2	1B 26 50 n1...n2	27 38 80 n1...n2	Set Parameter Value	page 54
ESC ?	1B 3F	27 63	Reset (full)	page 52
ESC @	1B 40	27 64	Reset (initialize)	page 52
ESC 3 n1	1B 33 n1	27 51 n1	Line spacing	page 42
ESC b n1...n5	1B 62 n1...n5	27 98 n1...n5	Print Bitmap at XY-position	page 43
ESC B	1B 42 n1	27 66 n1	Bold	page 38
ESC d n 1	1B 64 n1	27 100 n1	Make n Linefeeds	page 41
ESC ENQ 1	1B 05 01	27 5 1	Status Enquiry	page 56
ESC ENQ 2	1B 05 02	27 5 2	Paper-near-end Enquiry	page 57
ESC ENQ 4	1B 05 04	27 5 4	Fonts and Logotype Enquiry	page 58
ESC ENQ 6	1B 05 06	27 5 6	Status Report	page 59
ESC ENQ 7	1B 05 07	27 5 7	Firmware-version Enquiry	page 60
ESC ENQ 9	1B 05 09	27 5 9	Serial-number Enquiry	page 60
ESC ENQ 10	1B 05 0A	27 5 10	Control board revision Enquiry	page 60
ESC ENQ 11	1B 05 0B	27 5 11	Head temperature Enquiry	page 61
ESC ENQ 12	1B 05 0C	27 5 12	Bootware version Enquiry	page 61
ESC ENQ c	1B 05 63	27 5 99	Device ID Enquiry	page 61
ESC ENQ E	1B 05 45	27 5 69	Read extended status	page 62
ESC ENQ P n1	1B 05 50 n1	27 5 80 n1	Parameter-setting data Enquiry	page 63
ESC F	1B 46 n1...n16	27 70 n1...n16	Set Horizontal Tabs	page 43
ESC FF n1	1B 0C n1	27 12 n1	Eject (run presenter)	page 51
ESC g n...n5	1B 67 n1...n5	27 103 n1...n5	Print Logotype	page 47
ESC h n1	1B 68 n1	27 104 n1	Text Height	page 39

Table 6 • Control Codes and Escape Sequences in Alphabetical Order

Command	Hex	Decimal	Function	Page
ESC i n1	1B 69 n1	27 105 n1	Italics	page 38
ESC J n1	1B 4A n1	27 74 n1	Paper Advance	page 49
ESC j n1	1B 6A n1	27 106 n1	Paper Reverse	page 49
ESC l	1B 6C n1...n2	27 108 n1...n2	Send dot-line, 300 dpi	page 45
ESC N n1	1B 4E n1	27 78 n1	Align Text	page 37
ESC NUL	1B 00	27 0	Load Firmware	page 55
ESC o n1	1B 6F n1	27 111 n1	Text and Logotype Orientation	page 37
ESC p	1B 70	27 112	Print	page 48
ESC P n1	1B 50 n1	27 80 n1	Print Self-test Printout	page 48
ESC Q	1B 51 n1...n2	27 81 n1...n2	Quick Advance	page 48
ESC r n1...n9	1B 72 n1...n9	27 114 n1...n9	Print Ruler Line	page 46
ESC RS	1B 1E	27 30	Cut only, no Eject	page 50
ESC s n1	1B 73 n1	27 115 n1	Send dot-line, 203 dpi	page 44
ESC t n1...n5	1B 74 n1...n5	27 116 n1...n5	Print Text at XY	page 40
ESC T n1	1B 54 n1	27 84 n1	Reversed/Inversed Text	page 39
ESC u n1	1B 75 n1	27 117 n1	Underline	page 39
ESC w n1	1B 77 n1	27 119 n1	Text Width	page 40
ESC Z	1B 5A	27 90	Go to next Top of Form	page 36
FF	0C	12	Form Feed	page 42
HT	09	9	Horizontal Tabulation	page 42
LF	0A	10	Linefeed	page 41
RS	1E	30	Cut and Eject	page 50

Note • In all responses from the printer the most significant byte (MSB) is transmitted first.

Software Command Syntax

The commands in this section are grouped after what they do, and these groups are sorted in a theoretical usage sequence. It starts with commands for specifying the printed page — through text-and-graphics commands — to cut-and-present commands. System and status commands are presented at the end.

Black Mark (Top-Of-Form) Commands

See also *Aligning Preprint and Thermal Print* on page 89.

ESC #	Calibrate Blackmark Sensor
Hex decimal	

Refer to *TTP 2000 Technical Manual* (Zebra part number P1002902) for correct format.

Looks for a black mark, measures the contrast of the mark and sets parameter n51 to a suitable value for the detected voltage, then reverses to the start position.

To make the calibration permanent, send <ESC>&<4>, store parameter values.

Note • Be sure to first set up the length of the black mark and the distance between two black marks in the parameter setup.

ESC # is available in hardware revision B or higher.

ESC Z	Go to next Top of Form
1B 5A | Hex 27 90 | Decimal	

In black mark mode, an ESC Z starts looking for a black mark at the current position and continues for one page length. If no black mark is found, the printer stops and bit 3 in status byte 2 is set to 1 (See ESC ENQ 6 page 59).

When black mark mode is disabled, ESC Z will perform a form feed without cut (disregarding the setting of parameter *34* on page 80).

Text Commands

Text received by the printer is printed with the currently selected font and font attributes. Text exceeding the page width is wrapped with the line spacing selected.

ESC o n1 — Text and Logotype Orientation

1B 6F n1	hex
27 111 n1	decimal

Changes the orientation of text and logotypes.

n = 0	Gives portrait orientation
n = 1	Gives landscape orientation

Portrait and landscape can be mixed on the same printout. There are two cursors, one for portrait and one for landscape. The cursor always starts at the top left corner of the document. Looking at the paper when it exits the printer, the portrait cursor is at the top left corner of the printout, moving to the right as text is typed, while the landscape cursor is at the top right corner, moving downwards.

Note • Landscape orientation can only be used with fixed document mode.

ESC N n1 — Align Text

1B 4E n1	hex
27 78 n1	decimal

Changes the alignment of text and logotypes.

ESC N 0=	Left
ESC N 1=	Center
ESC N 2=	Right

ESC ! n1 — Select Font

1B 21 n1 hex
27 33 n1 decimal

This command selects one of eight fonts. The font design depends on which fonts have been loaded[1] into the printer. Make a test printout to see which fonts are available in your printer.

Table 7 • Font selection commands

ESC ! 0 selects normal font (font 0)	ESC ! 4 selects font 4
ESC ! 1 selects font 1	ESC ! 5 selects font 5
ESC ! 2 selects font 2	ESC ! 6 selects font 6
ESC ! 3 selects font 3	ESC ! 7 selects font 7

Lines, too long to be printed in the selected font, are automatically wrapped around.

Different fonts can be used on the same line.

Selecting an empty or invalid font location, will set bit 4 of byte 1 in the status enquiry response to ”1". See *Parameter-setting Data Enquiry* on page 63.

Note • If more than 256 characters are sent to the printer before an LF, the first part of the buffer contents is printed-out automatically. The text is formatted according to the already received formatting commands.

ESC B — BoldNormal Bold

Hex
decimal

n = 0	Turns OFF bold (Normal)
n = 1	Turns ON **bold**

Bold is designed for normal character width and shows less and less as the width increases.

ESC i n1 — ItalicsNormal *Italics*

1B 69 n1 Hex
27 105 n1 decimal

n = 0	Turns OFF Italics (Normal)
n = 1	Turns ON *Italics*

1. For font loading, see *Loading* on page 67.

ESC T n1 — Reversed/Inversed Text

1B 54 n1	Hex
27 84 n1	decimal

Selects normal or reversed print.

n = 0	Gives normal print, black on white
n = 1	Gives reversed print, white on black

Single words, characters, or complete text lines can be reversed.

Note • Reverse text and underline swaps the background with the foreground. This means that the order in which the commands are issued affect the printout if one text overlaps another.

ESC u n1 — Underline

1B 75 n1	hex
27 117 n1	decimal

Characters, single words, or complete text lines can be underlined.

n = 0	Turns OFF underline
n = 1	Turns ON a 1 pixel wide underline
n = 2	Turns ON a 2 pixel wide underline, etc. up to n=7.

ESC h n1 — Text Height

1B 68 n1	hex
27 104 n1	decimal

Applicable n values are 0 — 15.

n = 1	Increases the character height to 2 times the basic character height.
n = 2	Increases the character height to 3 times the basic character height etc.
n = 0	Resets the character height to the basic character height.

In combination with variable character width (<ESC>w<n1>), give highly legible characters depending on the font to which the command has been applied.

Different fonts and heights can be mixed on the same print line.

ESC w n1 — Text Width

1B 77 n1		hex
27 119 n1		decimal

Applicable n values are 0 — 7.

n = 1	Increases the character width to 2 times the basic character width.
n = 2	Increases the character width to 3 times the basic character width etc.
n = 0	Resets the character width to the basic character width.

In combination with variable character height (<ESC>h<n1>), give highly legible characters depending on the font to which the command has been applied.

Different fonts and widths can be mixed on the same print line.

ESC t n1...n5 data — Print Text at XY

1B 74 n1...n5	data	hex
27 116 n1...n5	data	decimal

Prints a text string at the specified X-Y position. The string will use the formatting set by font, reversed, width, height, bold, italics, and underline commands.

n1n2	Two byte definition of the X print position (in pixels).
n3n4	Two byte definition of the Y print position (in pixels).
n5	The number of characters in the string.
data	The text string. The length must be exactly the number of characters specified by n5, otherwise the printer will stop, waiting for more characters.

After the string has been printed, the cursor will return to the position it had before the string command was issued.

Note • The <ESC>t command clears any text preceding it on the same line. Commands will not be cleared.

Note • The Y print-position only works if fixed page length is used.

BS — Backspace

08	Hex
8	Decimal

Moves the print-position one step to the left. Backspace can be used to combine characters. For instance to print a Ø, send text commands O BS / to the printer, and the slash will overprint the O.

Only one backspace can be used at a time. Excessive backspaces will be ignored.

CAN — Cancel

18	hex
24	decimal

Cancels text and attributes sent before the <CAN> command on the same line.

Commands, are not cancelled.

CR — Carriage Return

0D	hex
13	decimal

By default, carriage return is ignored.

By changing the default settings, you can:

1. Interpret it as <CR> which returns print position to beginning of line without line feed.
2. Interpret <CR> as <CR><LF> which inserts line space as specified by the line spacing setting (see parameter *13* on page 78), and returns the print position to beginning of the line.

See *CR/LF Behavior* on page 79.

LF — Linefeed

0A	hex
10	decimal

Linefeed is interpreted as <CR><LF> by default. This inserts line spaces as specified by the line spacing setting (see parameter p13), and returns the print position to beginning of the line. LF also converts text from the input buffer to pixel lines and stores them in the line buffer, ready to be printed.

By changing the default settings, you can:

- Interpret <LF> as Linefeed. This inserts line space as specified by the line spacing setting (see parameter p13), without returning the print position to the beginning of the line.
- Ignore <LF>.

See *CR/LF Behavior* on page 79.

ESC d n 1 — Make n Linefeeds

1B 64 n1	hex
27 100 n1	decimal

Executes the number of linefeeds as defined by variable n1. The length of each line feed is determined by the default value for selected font (see parameter *13* on page 78).

The print position is returned to the beginning of the line. Any text on the line is lost. To avoid losing text, send an <LF> before sending <ESC>d.

ESC 3 n1 — Line Spacing

1B 33 n1	hex
27 51 n1	decimal

This command is used to increase the line spacing.

Note • Obsolete command, may disappear from future program releases. Use parameter *13* on page 78 instead.

FF — Form Feed

0C	hex
12	decimal

Prints data from the input buffer and feeds the paper to the top of the next page.

In fixed document length (FORM-mode) this command prints data in the input buffer and feeds the paper to the top of next page.

In variable document length mode the Feed button advances to the minimum page length. If the printout already is longer than the minimum page length, the Feed button does not feed the paper at all.

In black-mark mode, the <FF> command looks for a black mark, see <ESC>Z.

If "Auto cut" is set to 1 (see *Auto Cut after FF* on page 80), the Feed button effects form-feed, cut, and eject.

Note • Use parameters p37 and p38 to define page length.

HT — Horizontal Tabulation

09	hex
9	decimal

Shifts the current print position to the next Tab position.

Set tab positions with parameters *15 to 30* on page 79.

ESC F — Set Horizontal Tabs

1B 46 n1...n16		hex
27 70 n1...n16		decimal

This command defines the desired horizontal tab positions. Variables n1...nx represent each tab position. Up to 16 tab positions are allowed. Minimum allowed value is “1”.

Tab position 255 sets a tab stop on the last position of the line. Use this if you want underline or reversed text to extend across the full paper width. Note that the tab positions are always expressed in number of 2.5-mm steps.

n = 1	Means 2.5 mm from the left-hand edge of the print window.
N = NUL	Ends the string

Example • Sets tab stops at 12.5, 25, 37.5, 50, and 62.5 mm.

Send→ ESC F 5 10 15 20 25 0

Note • Do not use value n = 0. The values must be sorted from low to high numbers.

Graphics commands

For the TTP 8200, the line length in bytes is 1 x, see parameter *48* on page 84.
For the TTP 8300, the line length in bytes is 1.5 x, see parameter *48* on page 84.
In the TTP 8200, that is 210 bytes for the A4 printer and 216 bytes for the Letter size printer.

ESC b n1...n5 data — Print Bitmap at XY-position

1B 62 n1...n5	Data		hex
27 98 n1...n5	Data		decimal

Prints a black & white Windows bitmap (BMP-file with 1-bit color depth) at the specified X-Y position. The bit-map must be a complete uncompressed Windows bitmap where the data starts with BM. Max size is limited to the free RAM printed on the self-test printout.

n1	Always 0
n2n3	Two byte definition of the X print position (in pixels).
n4n5	Two byte definition of the Y print position (in pixels).
data	Bitmap data.

After the bitmap has been printed, the cursor will return to the X-position that it had before the bitmap command was issued.

Selecting horizontal mode (with <ESC>o<0>) prints the image in portrait orientation, while selecting the vertical mode (with <ESC>o<1>) prints the image in landscape orientation.

Note • The Y print-position and horizontal/vertical orientation only works if fixed page length is used.

ESC s n1 data — Send Dot-Line, 203 dpi

1B 73 n1	Data	Hex
27 115 n1	Data	Decimal

Sends one line of dot data. This command is used to build images, one dot line at a time by the printer driver and should not be combined with text commands.

n	Determines the number of bytes. Range: 1-255.
<data>	1 – x bytes, where x is the printhead width in bytes. The printhead width is in the spec. of the printer.

Example • 58 mm printers use 48 bytes

Example • 80 mm printers use 72 bytes

Example • 112 mm printers use 104 bytes

Example • A4 and Letter-size printers use 216 bytes

Caution • Always send the No. of bytes that you specify!
If more than the specified No. of bytes are received, the rest of the bytes will be interpreted as text or commands. This can cause any kind of problems in the printer as graphics data can contain any hex value.

If you specify less data then the actual printhead width, the printer will fill the rest of the dot line with spaces.

Data Compression

The Windows drivers use line based compression to decrease the time it takes to transfer graphics data to the printer.

`<ESC>s<0><0>` or `<ESC>l<0><0><0>`	disables compression
`<ESC>s<0><1>` or `<ESC>l<0><0><1>`	enables compression

ESC l	data		Send Dot-Line, 300 dpi
1B 6C	n1...n2	data	hex
27 108	n1...n2	data	decimal

Sends one line of dot data. This command is used to build images, one dot line at a time.

n1 n2	Determines the number of bytes: n2 is the low byte and n1 is the high byte. The value of n1+n2 must be 1 or more. For 320 bytes n1 should be 1, and n2 should be 64.
<data>	1–320 bytes of data for a 216 mm printer

Caution • Always send the No. of bytes that you specify!

If more than the specified No. of bytes are received, the rest of the bytes will be interpreted as text or commands. This can cause any kind of problems in the printer as graphics data can contain any hex value.

If you specify less data then the actual printhead width, the printer will fill the rest of the dot line with spaces.

Data compression

The Windows drivers use line based compression to decrease the time it takes to transfer graphics data to the printer.

<ESC>l<0><0><0> or <ESC>s<0><0>	disables compression
<ESC>l<0><0><1> or <ESC>s<0><1>	enables compression

ESC r n1...n9 — Print Ruler Line

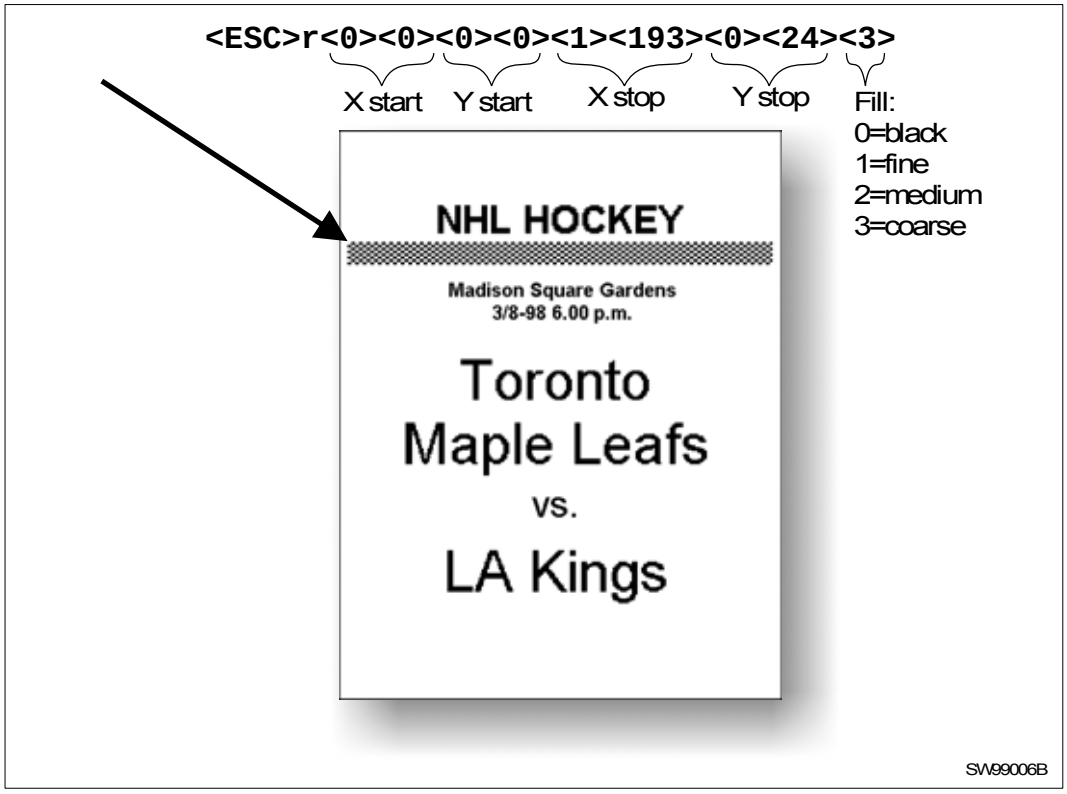
1B 72 n1...n9 hex
27 114 n1...n9 decimal

Prints a ruler line across the paper.

A ruler line is normally used to divide the printout into logical parts to make it easier to read. A ruler line is actually an area defined by a start X-Y position and a stop X-Y position. This area is filled with black or a checkered pattern.

n1n2	Two byte definition of the X start position
n3n4	Two byte definition of the Y start position
n5n6	Two byte definition of the X stop position (must be larger than n1n2)
n7n8	Two byte definition of the Y stop position (must be larger than n3n4)
n9	Fill pattern, 0=black, 3= Checkered

Figure 18 • Printout with checkered ruler line



ESC g n...n5

1B 67 n1...n5 hex
27 103 n1...n5 decimal

Print Logotype

Prints a customized logotype[2] stored in the flash PROM. See also *Logotypes* on page 67.

n1	One-byte logotype identification No. (0—15)
n2n3	Two-byte definition of desired print position in X-direction measured from left-hand edge of the page (see *Page Setup* on page 87 regarding definition of “page”). X-direction is perpendicular to the paper transport direction.

2. For logotype loading, see "ESC & 1" under *System Related Commands* on page 52.

Print commands

ESC p — Print

1B 70	Hex
27 112	Decimal

This command makes the printer print the contents of the line buffer.
Text is converted from text to pixel lines and stored in the line buffer when an <LF> is received. If the line buffer is empty when <ESC>p is received, nothing is printed.

`Text to be printed <LF><ESC>p` prints "Text to be printed" on the paper.

Printout occurs automatically at:

Cut	<RS> and <ESC><RS>
Form feed	<FF>
Clear presenter	<ENQ>
Run presenter	<ESC><FF><n1>
Print buffer full	
Press on Feed button	

ESC P n1 — Print Self-test Printout

1B 50 n1	Hex
27 80 n1	decimal

This command makes the printer generate a self-test page based on the current parameter settings and print that page. The parameter values printed are the ones currently being used. They can differ from Power-ON default values if for example a printout from Windows has been done before ESC P is sent to the printer. To make a self test printout with the Power-ON default settings, power up the printer with the Feed button pressed.

n = 0	Gives standard self-test printout.
n = 1	Gives a character set printout using the font selected by parameter p14.

ESC Q — Quick Advance

1B 51 n1...n2	hex
27 81 n1...n2	Decimal

The value n1 n2 represents high byte and low byte of the number of dot lines the paper is to be transported forwards. Minimum value is 0, and maximum value is 32767.

- For 203 dpi printers, a dot line is 0.125 mm, and 32767 equals approximately 4.1 m.
- For 300 dpi printers, a dot line is 0.0833 mm, and 32767 equals approximately 2.7 m.
- For 203 dpi printers a dot line is 0.125 mm, and 255 dot lines equal approximately 32 mm.
- For 300 dpi printers, a dot line is 0.0833 mm, and 255 dot lines equal approximately 21.25 mm.

ESC J n1

1B 4A n1 hex
27 74 n1 decimal

Paper Advance

The value n represents the number of dot lines the paper is to be transported forwards. Range: 1–255.

Note • This command is supported for compatibility with older printers. We recommend you to use <ESC>Q<n> instead.

ESC j n1

1B 6A n1 hex
27 106 n1 decimal

Paper Reverse

The value n represents the number of dot lines the paper is to be transported backwards. Range: 1–255.

Caution • Paper reverse may cause problems when used at the top of the page. Doing so may cause paper jam when feeding forward again. You may also lose grip of the paper. NEVER reverse more than 10 mm at top of page!

- For 203 dpi printers a dot line is 0.125 mm, and 255 dot lines equal approximately 32 mm.
- For 300 dpi printers, a dot line is 0.0833 mm, and 255 dot lines equal approximately 21.25 mm.

Cut and Present Commands

RS — Cut and Eject

1E	Hex
30	Decimal

Effects a paper cut-off and an eject through the presenter module. The RS command automatically gives the eject length of 50 mm in addition to the factor stored in parameter p47.

If the printout length is too short, paper-feed is added until the minimum printout length (set by parameters 37 and 38) is reached, before execution of the Cut command.

Note • The cut position is 19 mm before the print line. This makes the last 5 lines on a page end up in the beginning of the next page. To get the cut after the text, Please set parameter 49 to auto, see parameter *49* on page 85.

You can also use <RS> together with the paper advance command:

`<ESC>J<160><RS>` or `<ESC>J<230><RS>` for TTP 8300.

Gives a cut & eject after the last text line.

ESC RS — Cut only, no Eject

1B 1E	Hex
27 30	Decimal

Effects paper cut-off only.

Eject can be effected with the `<ESC><FF><n>` command (see *Eject (run presenter)* on page 51).

To avoid thin strips of paper in the printer, multiple cut commands without paper feed in-between will not be performed. If the printout length is too short, paper-feed is added until the minimum printout length is reached, before execution of the cut command.

See Also Note on cut position for the `<RS>` command above.

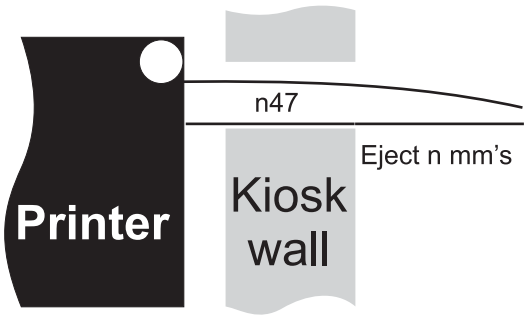
Note • Use the cut command if you want full control over the printer from your system. But remember that you also must add commands to feed to the correct cut position and eject the paper so that the customer can get hold of it.

Note • Top margin settings that move the paper count as paper feed.

ESC FF n1 — Eject (run presenter)

1B 0C n1	hex
27 12 n1	decimal

<ESC><FF><n> ejects the document through the presenter module. Variable n represents the eject-length in steps. The setting of parameter n47 is always added to the eject n in all forms of eject.



The range for n is 1 to 127 mm. The range 128-255 is reserved for future use.

Place this command after a cut command (<ESC><RS>) to partially eject the printout to the customer. Set the eject length so that the customer sees that the printout comes out of the kiosk wall. The pull-detector gives motorized eject of the rest of the printout when the customer pulls the paper.

Note • The cut and eject command <RS>, automatically give the eject length of 50 mm in addition to the factor stored in parameter n47.

Note • The resolution of the sensor is ± 3 mm so small changes in the parameter setting may not show.

Longer ejects are more accurate than shorter ones because acceleration and retardation of the rollers affects the eject less. Allow for ± 10 mm variations on short ejects.

EM n — Enforced Clear Presenter

19 n1	Hex
25 n1	Decimal

Same function as ENQ but overrides the Retract and Retain parameter (p45) with another presenter behavior. The function of n can be 0 to 255 0-99 ejects while 100-255 retracts (see the description of parameter 45). The command will clear the presenter immediately (with printing synchronization).

<EM><0>	Ejects the presented page
<EM><100>	Retracts the presented page

ENQ — Clear Presenter

05	Hex
5	Decimal

Clear the paper-path in the presenter of printouts. For example, to eject a document not removed during the previous print/cut/eject operation. Parameter No. 45 controls how the presenter is cleared, see parameter *45* on page 83.

System Related Commands

ESC ?

1B 3F	Hex
27 63	Decimal

Reset (full)

Restarts the printer with a complete reset.

This is the same as power off/on.

ESC @

1B 40	Hex
27 64	Decimal

Reset (initialize)

Terminates the processing and initializes the control board. The control board is reset to default-values (same as after power ON). Do not use this command as part of a print data command string.

ESC & 1

1B 26 01	Hex
27 38 1	decimal

Load Logotype

Stores a logotype bitmap in the flash PROM. The logotype is printed with the ESC g commands, see *ESC g n...n5* on page 47. Also see *Logotypes* on page 67.

Note • If the logo width exceeds the print width, the operation is aborted.

ESC & L

1B 26 4C	Hex
27 38 76	decimal

Erase all Logotypes

Erases all logotypes stored in the flash PROM.

Note • This command is only executed if at least one logotype has been loaded.

ESC & 4

1B 26 04	Hex
27 38 4	decimal

Store Current Parameter Values

Stores the current setting of all parameter values in the setting memory. These parameters are then used as default parameters. Storing takes approximately 4 seconds. The printer activates the presenter motor temporarily to indicate that storing is complete.

See also *ESC & 5* on page 53 (Set default profile pointer) and *ESC P n1* on page 48 (Set temporary default parameters).

ESC & 5 — Set Default Profile Pointer to n

1B 26 05 n1 hex
27 38 5 n1 decimal

Redirects any parameter storage initiated by <ESC>&<4> to another storage location.

These settings can later be recalled by <ESC>&<F><n>. A reset command or power OFF/ON will return the parameters to the default settings stored in n=10.

n = 1 – 5	Settings that can be stored by the user
n = 10	Zebra factory default setting

ESC & 0 — Load Font

1B 26 00 hex
27 38 0 decimal

This command is used to load a font to the printer flash PROM. The font is placed in the first free address position in the order of load sequence.

A Zebra font-file consists of a header containing data describing the font as well as data for each individual character in the font.

Fonts can be designed with the font editor and loaded or deleted with the software available for download from the Zebra web site. The font loading and deleting commands described here should only be used if you do not work in the Windows environment.

For complete specification of the font format, see *Fonts* on page 64.

Note • The available font memory is printed on the self-test printout. A maximum of 8 fonts can be addressed. Exceeding any of these limits will cause this command to fail.

ESC & C — Erase all Fonts

1B 26 43 Hex
27 38 67 Decimal

Erases all fonts stored in the flash PROM.

Note • This command is only executed if at least one font has been loaded.

ESC & D — Erase Fonts 4 to 7

1B 26 44 Hex
27 38 68 Decimal

Erases fonts number 4–7. Fonts 0–3 are not affected by this command.

The operation is complete when the printer resets automatically and activates the presenter motor temporarily. Takes approximately 4 seconds.

ESC & F n1 — Reset Parameter Profile

Hex	decimal
1B 26 46 n1	27 38 70 n1

This command resets the parameters of the printer to default or any previously stored setup.

n = 1 – 5	Settings that can be stored by the user
n = 10	Zebra factory default setting

Temporarily sets all parameters to predefined values that are stored in the printer. To keep the values as default, store them in the flash PROM with command <ESC>&<4>.

Unless you save the parameters, a reset command or power OFF/ON will return the parameters to the settings stored in the flash PROM.

ESC & P n1...n2 — Set Parameter Value

hex	decimal
1B 26 50 n1...n2	27 38 80 n1...n2

A number of bytes in the flash PROM hold various parameter values called *default parameters*. One or several of them can be overridden temporarily with this command.

n1	Parameter number, range 1 -255.
n2	Parameter value.

See *Default Parameter Settings* on page 71.

The permanently stored parameters will be used again after a printer-reset command or at power ON.

The temporary values can, however, be stored in the flash PROM as permanent values with command <ESC>&<4>.

Set several parameters at once

<ESC>&P<0><FromPar><ParCount><Data>

FromPar is the parameter number to start writing and ParCount is the number of bytes being sent. For every byte sent the parameter number is incremented.

Example • Sets the first 5 tabs to 5, 10, 15, 20, and 25. (FromPar 15, ParCount 5).

<ESC>&P<0><15><5><5><10><15><20><25>.

ESC NUL	Load Firmware
1B 00 Hex 27 0 Decimal	

This command should be used when you integrate firmware loading into your kiosk program.

Note • The Toobox program is available to load firmware into the printer from http://www.zebra.com .

Status reporting commands

See also *Status Reporting* on page 69.

Note • All status commands are immediate, that is they pass the print queue and are answered directly.

ESC ENQ 1

1B 05 01 hex
27 5 1 decimal

Status Enquiry

A status enquiry results in response ACK (6) if all sensors are clear, but NAK (15) + code if one or more sensors report some condition.

Table 8 • Status Codes

Status Code	Meaning
ACK	OK (printer is operable)
NAK 1	Paper left in presenter module. Attempt to clear the paper path failed.
NAK 2	Cutter jammed
NAK 3	Out of paper
NAK 4	Printhead lifted
NAK 5	Paper-feed error. No paper detected in presenter although 10 cm has been printed. Paper might be wound around the platen or, in some way, has been forced above the presenter module.
NAK 6	Temperature error. The printhead temperature has exceeded the 60 °C maximum limit.
NAK 7	Presenter not running (no feedback from code wheel)
NAK 0A	Black mark not found
NAK 0B	Black mark calibration error
NAK 0C	Index error
NAK 0D	Checksum error
NAK 0E	Wrong firmware type or target for firmware loading
NAK 0F	Firmware cannot start because no firmware is loaded or firmware checksum is wrong.
NAK 10	Waste bin timed out. If the customer doesn't take the paper and the printer clears the presenter due to a timeout, the pending error bit is set and status code NAK 16 is reported.
NAK FF	Undefined error

Note • Errors 2, 5, and FF are terminal faults that require you to reset the printer before it will be operable again. The printer automatically recovers from the other conditions as soon as the cause is corrected.

A status enquiry command can only return one status code at a time. If there are two or more simultaneous conditions, each condition should be cleared and the status enquiry repeated in order to get a complete report of all status codes.

The host computer cannot be certain that all conditions have been cleared until an ACK is received.

The possible conditions are reported in the above order.

Note • If you want to read out all status information directly, use <ESC><ENQ>E.

ESC ENQ 2 — Paper-near-end Enquiry

1B 05 02 hex
27 5 2 decimal

This command requests a paper-near-end sensor (paper low) status from the printer in a 1-byte format.

Value = 1	indicates ”No paper”
Value = 0	indicates ”Paper present” at the sensor position

Note • The status of the sensor is sampled every time the printout is cut. If three succeeding samples show "no paper", the status reply changes to 1. This is to prevent false alarm if the side of the paper roll is not clean. If you want the momentary status of the sensor, use <ESC><ENQ><6> and extract the paper-near-end bit.

ESC ENQ 4

1B 05 04 hex
27 5 4 decimal

Fonts and Logotype Enquiry

Requests multiple bytes of information regarding loaded fonts and logotypes.

Example • (↵ = CR LF)

Send→ <ESC><ENQ><4>

Read← 0:7504 TTPMono 9↵
1:14618 Arial 9↵
2: ↵
3: ↵
4: ↵
5: ↵
6: ↵
7: ↵
Free font memory:246122↵
00: ↵
01: ↵
02: ↵
03:14 110 Recycle↵
04: ↵
05:103 65 Warning↵
06: ↵
07: ↵
08: ↵
09: ↵
10: ↵
11: ↵
12: ↵
13: ↵
14: ↵
15: ↵
16: ↵
Free logotype memory:189512¿

ESC ENQ 6		**Status Report**
1B 05 06	Hex	
27 5 6	Decimal	

Results in a 2-byte response, reflecting the status of each sensor. This command is intended as a go/no go indication. When everything is OK, this status report returns 0.

Note • If no weekend sensor is installed, 64 is returned when everything is OK. If no weekend or paper-near-end sensors are installed, 64+2=66 is returned when OK.

Table 9 • Sensor Status

First byte, bit No.:								Second byte, bit No.:							
7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0
Status code available*	Print data exists**	Power has been OFF***	-	Pending external code****	-	-	-	Paper at waste sensor	Weekend sensor	Printhead lifted	Cutter not home	Paper at presenter	-	Paper-near-end*****	Out of paper
TIP! – Mask away the undefined bits in your application program to avoid having to change the application, if future firmware releases starts using them.															
Mask first reply byte with E8h								Mask second reply byte with FBh							

*	This bit indicates that a status code is available. Use <ESC><ENQ><1> or <ESC><ENQ><E> to fetch it.
**	This bit tells you that there are data in the printer that have not yet been printed. There are two possible reasons for that: 1) The last command received by the printer was not a command that triggers a printout. 2) The printer is printing.
***	When parallel cable is connected, both printer and host computer must have been off to set this bit. This is because the interface powers the RAM in the printer.
****	Read external code with <ESC><ENQ><E>.
*****	This paper-near-end bit differs from the <ESC><ENQ><2> response, see *ESC ENQ 2* on page 57.

Bits 4 and 5 in the first byte are reset when read.

ESC ENQ 7 — Firmware-version Enquiry

1B 05 07	Hex
27 5 7	Decimal

Results in a 2-byte response representing the version of the installed firmware.

The first byte represents major versions, and the second byte minor versions.

If no firmware is loaded, the printer will answer with `0`.

Example •

Send→ <ESC><ENQ><7>

Read← 02 29 (hex)

That is, a response with the value 02 29 (hex) indicates version 2.41.

ESC ENQ 9 — Control Board Serial Number Enquiry

1B 05 09	Hex
27 5 9	Decimal

Results in an 6-byte response representing the serial number of the control board.

Example •

Send→ <ESC><ENQ><9>

Read← 0 0 02 2B C6 28 (hex), or 0 0 2 43 198 40 (dec)

ESC ENQ 10 — Control Board Revision Enquiry

1B 05 0A	hex
27 5 10	decimal

Results in a 1-byte response representing the control board revision. A minus sign indicates that no revision has been made, while A indicates the first revision, and so on.

Example •

Send→ <ESC><ENQ><10>

Read← n Where n can be ‘A’ (ASCII) or 41 (hex) or 65 (dec)

ESC ENQ 11 — Head Temperature Enquiry

1B 05 0B	hex
27 5 11	decimal

Results in a 1-byte response representing the temperature of the Printhead.

Example •

Send→ <ESC><ENQ><11>

Read← n Where n is a value representing the approximate temperature in Celsius.

ESC ENQ 12 — Bootware Version Enquiry

1B 05 0C	hex
27 5 12	decimal

Results in a 2-byte response representing the version of the installed bootware.

The first byte represents major versions, and the second byte minor versions.

Example •

Send→ <ESC><ENQ><12>

Read← 01 30 (hex)

That is, a response with the value 01 30 (hex) indicates version 1.48.

ESC ENQ c — Device ID Enquiry

1B 05 63	hex
27 5 99	decimal

Results in a string containing the device ID in the Windows Plug and Play string format. The two first bytes represent the string length.

Example •

Send→ <ESC><ENQ><99>

Read←0 106 This indicates that the string is 104 characters (plus two characters indicating the string length)

ESC ENQ E

1B 05 45 hex
27 5 69 decimal

Read Extended Status

Extended status is status from the printer together with devices connected to the I^2C options-bus available in some Zebra printers. The short message protocol gives replies up to 255 bytes. Other protocols may be defined in the future. Protocols are described in separate documents.

<ESC><ENQ>E results in a variable length reply:

n1	Protocol version, 11h = Short Message Protocol
n2	Protocol length in bytes
n3-n255	Data specified by the protocol

Short message status examples:

Suppose we have a printer with a shutter attached.

Example 1 – Out of paper, presenter Jam and Shutter Open Jam.

Hex

01	Status code 1 (shutter device)
C1	Device Shutter
07	Satus code 7 (printer device)
03	Status code 3 (printer device)
80	Device local host (printer)
05	Tag message length (bytes)
01	Tag ID: Status messages
07	Protocol Length in bytes
11	Protocol SM, version 1 (short message)

Example 2 – No errors in any device.

Hex

00	Tag message length (bytes)
01	Protocol SM, version 1 (short message)
02	Protocol Length in bytes
11	Tag ID: Status messages

ESC ENQ P n1 — Parameter-setting Data Enquiry

1B 05 50 n1	Hex
27 5 80 n1	Decimal

This command requests information about the setting of parameter n1, that is, the parameter value stored in flash PROM or any parameter value temporarily set by other ESC commands.

n= 1	gives the setting of parameter 1, etc. The parameter names are listed under *Summary of Parameter Settings* on page 73.
n = 0	gives a response where the first two bytes specifies the length of data to come (high-byte, low byte), and followed by a block of data for all parameters in the temporary setup.

ESC ACK n1 — Acknowledge Marker

1B 06 n1	hex
27 6 n1	decimal

n =	One-byte marker. Range 1 to 255

The "acknowledge marker" n is placed in the command queue and when the execution of commands reaches the marker it is sent back to the host computer. This is an addition to the status commands that pass the queue and are answered immediately when received.

Example •

"Print data" <LF><ESC>p<ESC><ACK><1>

Wait for <1>

<RS><ESC><ACK><2>

Wait for <2>

The printer will send <1> when <print data> has executed and <2> when the ejecting has been performed.

Note • You must wait for the acknowledge marker to return before sending any more data to the printer.

Note • Acknowledge marker cannot be used for events that write to the flash PROM, for instance font loading. This is because the writing procedure erases the buffer, including the markers, and uses all RAM in the printer.

Fonts

Loading

The printer can store 8 fonts in its flash PROM. 256 kB is available for font storage. The font size is fixed[3], so you must load one font file for each character size you require. The fonts are given font numbers when they are loaded into the printer. The first font is assigned number 0 and the next font 1 etc. up to font 7. The font number parameter number 14 of the default parameter setting will be used when no font selection command has been received (see *Default Parameter Settings* on page 71).

You cannot erase a single font, but must erase font 4-7 with command <ESC>&D, or all eight fonts with <ESC>&C, then reload the fonts you wanted to keep.

Windows software for font generation and management is available on the Zebra web site. If you need to load fonts in a non-Windows environment, use the <ESC>&<NUL> command.

The time required for processing the font data that is loaded is typically 15–20 seconds per font, excluding transfer time. During this time, any data sent to the printer will be lost.

Note • The font processing ends with a reset. The presenter motor runs momentarily to indicate that the printer is ready to be used.

Caution • Loading to the flash PROM will erase the RAM completely since the RAM is used during the loading process. Any print data residing in RAM will thus be lost.

3. Multiple height and width commands can be used on all fonts.

File Format

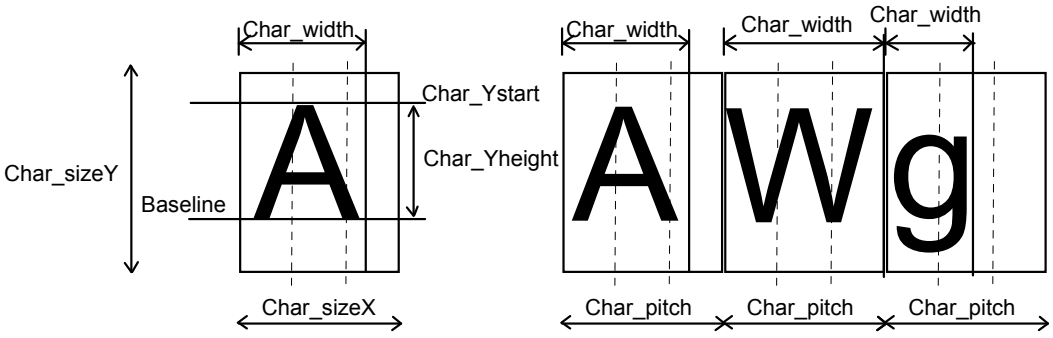
A font consists of a header describing the font, then data for every character in the font. The header has to be downloaded even if the font consists of a single character only. Below is a description of the font header.

1 byte	Reserved	Should always be 0 (zero)
1 byte	Reserved	Should always be 0 (zero)
1 byte	Char. width (X)	The number of bytes required for the width of one character, usually 2 or 3. Range 1 to 8.
1 byte	Not used	
1 byte	Char. height (Y)	The maximum height of one character matrix measured in pixels. This is also the minimum line spacing for this character set.
27 byte	Font name	String of characters used to identify the character set. This will be printed on status printouts. (E.g. Swiss 10 cpi.) Must always be 27 bytes, so fill up with NUL characters!

Char_matrix table: 256 records, each containing 3 bytes.

3 byte Char_width (pixels) + Char_Ystart(pixels) + Char_Yheight(pixels)

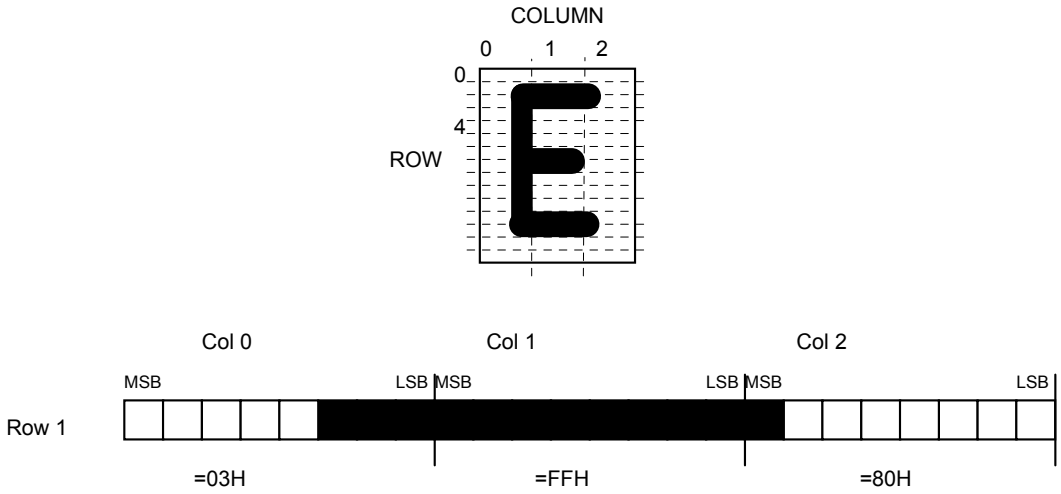
Char_bitmap data: Bitmap data for all characters that are to be defined.



Character Bitmap Data

A character is made up of a bitmap the size of which is:

Char. width (X) * Char. Height (Y) bytes.



The bitmap data consists of bitmap patterns for each character in a character set for which the parameter Char_width in the Char_matrix table is set to a value between 1 and 24. A character that has its Char_width set to zero, is not included in the bitmap data.

The bitmap for one character is then defined according to the following table:

(COL 0, ROW Ystart)	(COL 1, ROW Ystart)	(COL 2, ROW Ystart)
(COL 0, ROW Ystart+1)	(COL 1, ROW Ystart+1)	(COL 2, Ystart+1)
(COL 0, ROW Ystart+Yheight)	(COL 1, ROW Ystart+Yheight)	(COL 2, ROW Ystart+Yheight)

In this example, each row consists of 3 columns equal to 3 bytes.

In order to minimize the required storage space, only rows between Ystart and Ystart+Yheight are included in the character bitmap.

Logotypes

Up to 16 logotypes can be stored in the flash PROM of the printer. The logotypes can be positioned and printed out with a single command <ESC>g.

The exact number of logotypes and their sizes is determined by the total amount of memory used for fonts, logotypes and loaded firmware. Make a self-test printout to see how much memory is available.

Loading

Windows software that converts black and white BMP bitmap files to logotypes and load them into the printer is available on the Zebra web site. If you need to load logotypes in a non-Windows environment, use the <ESC>&1 command.

File Format

A header containing information about the logotype number, size and logotype name shall define each loaded logotype. Immediately after the header follows the actual bitmap of the logotype.

<ESC>&<1><Header><Bitmap>

Header

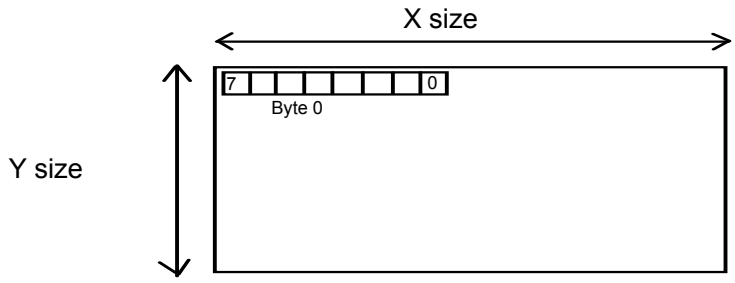
Byte 0	Logotype number used to identify the logotype when printing.
Byte 1	X size measured in bytes. *
Byte 2	Y size measured in pixels.
Byte 3—15	A logotype name that will be printed on test printouts.

*. If the size exceeds the print width, the operation is aborted.

Bitmap

The bitmap **must** have exactly (X size * Y size) number of bytes. 1=black, 0=white dot.

Bit No. 7 in byte 0 represents the top left corner of the logotype.



Printing

To print a logotype, send <ESC>g<n1><n2><n3><n4><n5> where n1 is the logotype number, n2n3 is the horizontal print position, and n4n5 is the vertical print position of the upper left corner of the logotype.

n1	One byte logotype number, (0—15)
n2n3	Two byte X position measured in pixels from the left-hand edge of the print window.
n4n5	These bytes (Y-position) must be inserted, but they are ignored as a logotype is always printed at the current Y-position.

Erasing

All logotypes are erased with the <ESC>&L command.

Caution • Loading to the flash PROM will erase the RAM completely since the RAM is used during the loading process. Any print data residing in RAM will thus be lost.

Status Reporting

The printer is equipped with a number of sensors that report the printer status and various conditions such as out-of-paper, previous printout not removed, etc.

A good practice in unattended printer applications is to check for errors and paper availability before printing.

1. Send a Status Report Query (<ESC><ENQ><6>, see *ESC ENQ 6* on page 59) and check that the answer is "No errors" .
2. If an error is indicated, read out the error message with Status Request (<ESC><ENQ><1>, see *ESC ENQ 1* on page 56), and take appropriate actions. Repeat this step until no more status code is available. If weekend sensor signals “level passed” check again after next document is printed. If the sensor still signals “level passed” after three successive print/check cycles, report the condition to the systems supervisor so that he can schedule a service visit to the printer. This three cycle check is to ensure that dirt on the side of the roll does not cause the alarm.

Note • You can also use <ESC><ENQ><E> to retrieve this error message, you must use it if it is an external error that is signaled in <ESC><ENQ><6>.

3. Send a paper-near-end query (<ESC><ENQ><2>, see *ESC ENQ 2* on page 57) to see if the sensor reports low paper level.
4. If paper-near-end is indicated, report the condition to the systems supervisor so that he can schedule a service visit to the printer.
5. Start the printout
6. Cut and eject
7. Set an Acknowledge marker
8. When the marker is returned, ask for status and look at the "Paper at presenter" bit to see if the customer has taken the printout. When the printout has been removed, start from 1 to print the next page.

Note • Status replies remain in the buffer until read or until a new query is sent.

Notes • _____

6

Default Parameter Settings

Some of the printer settings can be stored in the flash PROM so that they will be used also after power OFF.

The stored parameter settings are printed out on the self-test printout (see *Self-test Printout and Other Power ON Modes* on page 29).

The number in front of the function is the parameter number (n) used when setting the parameter with the command <ESC>&P<n><v>.

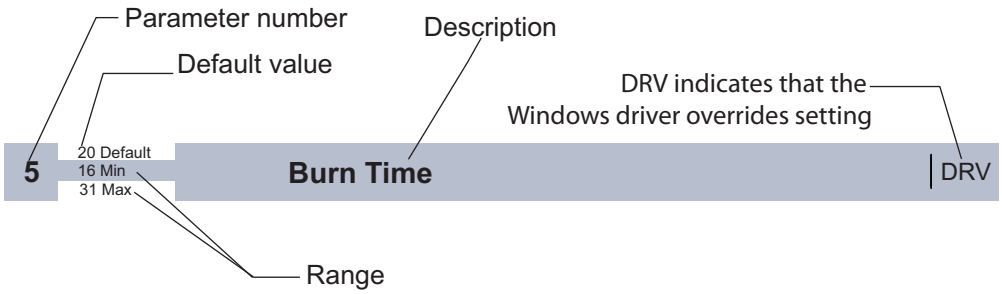
You can use the parameter settings pretty much like normal commands. Either send the parameter values with each printout, or set them up once and then send <ESC>&<4> to store all settings in the flash PROM.

You can always return to factory default settings by sending <ESC>&<F><10>, and then storing those settings with <ESC>&<4>.

Note • The parameters can be locked so that no changes are possible. Check parameter 53 on the self-test printout to find out.

Note • If you try to set a parameter to an invalid value, the parameter will be set to the nearest valid value below.

How the Parameters are Described



Default value

The default values indicated are "factory default settings" you get by sending <ESC>&<F><10>. These are not necessarily the settings that your printer was originally delivered with because many printers have customized settings when delivered.

Examples

Command examples are formatted in Courier and typed in the same way as used in the Zebra Toolbox:

<ESC>&P<1><19>

Where <ESC> means the escape character 27 decimal (hex 1B). Numbers between less-than and greater-than characters, for example <15>, means 15 decimal (hex F).

Table 10 • Summary of Parameter Settings

Parameter	Description	ESC&F <10> Default	Page
1	Baud rate	96 (9600 Baud)	page 74
2	Data bits	8	page 74
3	Parity	0 (No parity)	page 74
4	Flow control	2 (Hardware)	page 75
5	Disable parallel port signaling	0 (No)	page 76
6	Buffer mode	0 (Spool all data before printing)	page 77
7	Burn time	14	page 77
8	Print speed	13 (80mm/s for 203 dpi, 53mm/s for 300 dpi)	page 78
9	Presenter loop length	10 (32 cm)	page 78
13	Line spacing	0 (Auto)	page 78
14	Font selection	0 (TTP Mono 9)	page 78
15 to 30	Tab stop	4, 8, 12 etc.	page 79
31	Pull speed	20 (1 on the vertical version of TTP 8200)	page 79
33	CR/LF	0 (LF = CR/LF, CR=Ignored)	page 79
34	Auto cut after FF	1 (On)	page 80
36	Document mode	1 (Variable)	page 80
37 & 38	Page length, Minimum / fixed / BM	4, 0 (102.4 mm)	page 81
39	Max black mark length	50 (5 mm)	page 82
40	Min black mark length	30 (3 mm)	page 82
41 & 42	Black mark cut offset	0, 0 (0 mm)	page 82
43 & 44	Top margin	0, 0 (Disabled)	page 83
45	Wastebasket	3 (Eject and retract after 30 s)	page 83
47	Wall Compensation	0	page 84
48	Paper width	208 mm	page 84
49	Bottom margin	1 (Auto)	page 85
51	Black mark level	50 (0.97 V)	page 85
52	Warning level	0 (Off)	page 85
53	Lock parameters	0 (Unlocked)	page 86
55	PSU recovery	255	page 86

Note • When the printer is set up the way you like it to be, you send <ESC>&<4>, and all settings will be stored.

Serial Interface Set-up

1 Baud Rate

96 Default
24 Min
11 Max

Stores the communication speed on the serial interface.

<ESC>&P<1><24>	2400 bps
<ESC>&P<1><48>	4800 bps
<ESC>&P<1><96>	9600 bps
<ESC>&P<1><19>	19200 bps
<ESC>&P<1><38>	38400 bps
<ESC>&P<1><57>	57600 bps
<ESC>&P<1><11>	115200 bps

Note • If you set an invalid value, the baud rate will return to the previous value.

2 Data Bits

8 Default
7 Min
8 Max

Selects if 7-bit ASCII, or 8-bit, is used on the serial interface.

<ESC>&P<2><8>	8-bits (characters 0-255)
<ESC>&P<2><7>	7-bits (characters 0-127)

Note • In 7-bit mode you can not print graphic, read status or set parameters because no value can ever be greater than 127.

3 Parity

0 Default
0 Min
2 Max

Select what parity to use on the serial interface.

<ESC>&P<3><0>	No parity
<ESC>&P<3><1>	Odd parity
<ESC>&P<3><2>	Even parity

4 2 Default / 0 Min / 2 Max

Flow-control

Select what handshaking to use on the serial interface.

<ESC>&P<4><0>	No flow control
<ESC>&P<4><1>	Xon / Xoff *
<ESC>&P<4><2>	Hardware

*. DO NOT USE if you send any type of binary data like graphics data, status requests etc. Xon / Xoff only works when plain text is sent unidirectional *to* the printer. Graphics and status replies may well contain the Xon (11 hex) and Xoff (13 hex) characters and will obstruct the communication.

Parallel Port Setup

5	0 Default 0 Min 1 Max	Disable Parallel Port Signaling

Pins 12 and 15 on the parallel port signal paper out and error. However, in an unattended kiosk you may not want this because it causes the host computer to stop communicating, and the operating system may display a warning or error message on the kiosk screen.

By disabling the hardware signals, the kiosk software can for example use status commands to find out paper level and alert appropriate personnel when the level is low, then close the kiosk when paper is out.

<ESC>&P<5><0>	No, paper out and error signals are *not* disabled
<ESC>&P<5><1>	Yes, paper out and error signals are disabled

Note • When enabled, the hardware signal on pin 12 and 15 will block all communication until the error is corrected. This means that it will be impossible to ask for status.

Print Setup

6 Buffer Mode

0 Default
0 Min
3 Max

Controls what the printer does with buffered data:

<ESC>&P<6><0>	Spool all data before printing
<ESC>&P<6><1>	Print text at once but spool graphic data
<ESC>&P<6><2>	Print graphic data but spool text
<ESC>&P<6><3>	Print both text and graphic at once

Spooling all data makes the printer as quiet as possible. “Nothing” happens until the buffer is full or a print triggering command is received. The result is that when the printer prints it feeds the paper at a constant pace. A drawback may be that the printer seems dead for a while before starting to print.

Print at once gives the fastest printout because the printer prints as soon as it finds some white space across the paper and then stops to buffer new data. This generates an on/off sound which may be more irritating than the even buzz that you get when you buffer data.

Experiment with the setting and decide what is best for your application.

7 Burn Time DRV

14 Default
1 Min
20 Max

Note •

- The burn time setting has priority over the speed setting, so if you increase the burn time the speed will go down to an appropriate setting.
- DRV indicates that, when using Windows, the driver takes over this setting so please set appropriate value in the driver properties/document defaults.

A long burn time gives darker print. On insensitive paper types you may have to increase the burn time to get an acceptable print quality.

8 Max Print Speed DRV

13 Default
1 Min
17 Max

The main reason to decrease the print speed is to enhance print quality, and to reduce the peak current consumption. Each step represents a 5 mm/s increase in TTP 8200 and 3.33 mm/s in TTP 8300.

	n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
TTP 8200	mm/s	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
TTP 8300	mm/s	13	17	20	23	27	30	33	37	40	43	47	50	53	57	60	63	67

Note • Some settings result in printer chassis resonance causing excessive noise and deteriorated print quality.

9 Presenter Loop Length

10 Default
3 Min
255 Max

Limits the maximum loop length. When the set length is reached, the printer ejects part of the printout and continues to print. You use this when you have very limited space for the loop inside the kiosk. Each step represents a 3.2-cm increment.

Setting the parameter to 0 disables the looping and feeds the paper straight out.

<ESC>&P<9><0>	Disable the loop
<ESC>&P<9><7>	16 cm loop
<ESC>&P<9><10>	32 cm loop

13 Line Spacing

0 Default
0 Min
255 Max

The line spacing is normally set by the font height. With this parameter you can set a line spacing that is higher that the font height. Line spacing settings lower than the font height will be ignored.

<ESC>&P<13><30>	30 pixels or font height, whichever is the largest

14 Font Selection

0 Default
0 Min
7 Max

Store which font number is used if no font is specified. Font is selected using *Font Selection on page 78*. Selecting an invalid font gives a software error status message (invalid index).

15 to 30 — Tab Stop

- Default
1 Min
255 Max

Stores 16 different TAB stop positions. The position is set in increments of 2.5-mm.

Tab position 255 sets a tab stop on the last position of the line. Use this if you want underline or reversed text to extend across the full paper width.

To set all tab stops at once, use *Set Horizontal Tabs* on page 43.

To move a single tab stop, use the set parameter command <ESC>&P. for example:

Example • <ESC>&P<15><10> set the first tab stop 25 mm from the left margin.

Default positions are one TAB on each cm; that is parameter values 4, 8, 12 etc. to 64.

31 — Pull Speed

20 Default
1 Min
40 Max

Note • Vertical versions of the printer have n31 set to 2 on firmware versions up to 3.21 and to 1 for firmware versions 3.28 and above.

Sets the speed at which the paper is ejected / retracted. 1 = 45 mm/s, 40 = 1.8 m/s

33 — CR/LF Behavior

0 Default
0 Min
4 Max

Note • v=0 is suitable for Windows, v=1 for UNIX, v=2 for DOS, and v=4 for Macintosh

Carriage Return and Line Feed can be interpreted in five different ways to suit different operating systems.

<ESC>&P<33><0>	LF = CR/LF	CR = Ignored
<ESC>&P<33><1>	LF = CR/LF	CR = CR
<ESC>&P<33><2>	LF = LF	CR = CR
<ESC>&P<33><3>	LF = LF	CR = CR/LF
<ESC>&P<33><4>	LF = Ignored	CR = CR/LF

34 Auto Cut after FF

1 Default
0 Min
1 Max

Decides if the printer should cut after executing an FF command, or if it should just feed the form length.

<ESC>&P<34><0>	No cut
<ESC>&P<34><1>	Cut
<ESC>&P<34><2>	Forced cut at blackmark (cuts directly when a blackmark is detected) This works only if black mark mode is selected (n36=2).

36 Document Mode DRV

1 Default
0 Min
2 Max

Determines what should control the page length:

<ESC>&P<36><0>	Fixed Document Mode. Shorter documents will automatically be extended, while longer documents will be divided into several pages of the desired length. Page length will be the length set by parameters 37 and 38
<ESC>&P<36><1>	Variable Document Mode. The length of the page varies with the contents (printouts shorter than the value specified by parameters 37 and 38 will be extended to that length)
<ESC>&P<36><2>	Black Mark Mode. Marks on the paper set the form length. Minimum one form length is always fed. If a black mark is found before that, the printer feeds to the next black mark, then cuts and ejects. This ensures that no small paper stripes are cut of and left in the printer.

Note • Max page length in Fixed Document Mode is A5-size, which is 148.5 mm.

37 & 38	4 , 0 Default 2 , 224 Min 255 , 255 Max	Page Length	DRV

Defines three different things:

1. The minimum length of a page in variable document mode
2. The actual page length in fixed document mode
3. The distance between black marks in black mark mode

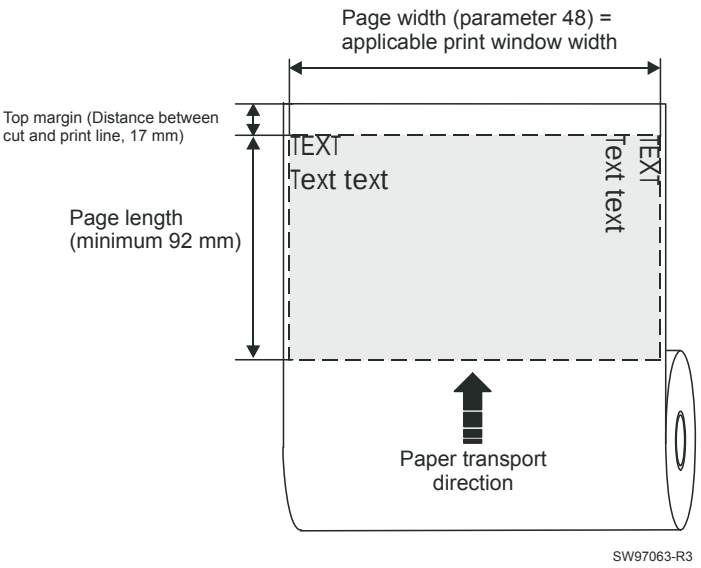
One step is 0.1 mm. Settings shorter than 92 mm, will be interpreted as 92 mm.

Note • TTP 8000 Vertical has a minimum paper length of 200 mm, so never set values below 8, 0 on vertical printers.

<ESC>&P<37><5><ESC>&P<38><205> set page length to A5 (148.5 mm)

Figure 19 • Definition of page size

Length	p37	p38
92 mm	<3>	<152>
102 mm	<4>	<0>
Statement	<5>	<117>
A5	<5>	<205>
Letter	<10>	<234>
A4	<11>	<154>
Legal	<13>	<228>



Fixed Document Mode

Max *fixed document mode* page length depends on the amount of free ram. Make a self test printout to check how much is available in your printer. (Depends on firmware version and circuit board revision).

$$Page\ length = \frac{Free\ RAM\ in\ bytes - 1024}{Paper\ width} - top\ margin - bottom\ margin$$

Paper length, top, and bottom margins are in pixel lines. Paper width is in bytes. 1 byte = 1 mm for the TTP 8200 and one byte is 2/3 of a mm in TTP 8300.

Example • If Free RAM on a TTP 8200 is 504976 bytes, page width is 208 mm = 208 bytes, top margin is 20 mm, and bottom margin 10 mm (20 x 8 =160 and and 10 x 8 = 80 pixel lines):

$$Page\ length = \frac{504976 - 1024}{208} - 160 - 80 = 2182\ pixel\ lines = 272mm$$

If a too large fixed page is specified the printout will be blank from memory full to the cut.

39 BM (Black Mark) Length

50 Default
16 Min
160 Max

Specifies the length of the black mark in 0.1-mm steps. Measure the length of the black mark on your paper and enter that value here.

Marks 5 mm longer than this value are interpreted as paper out. The default value of 50 equals 5 mm.

<ESC>&P<39><150>	Sets max black mark length to 15 mm.

40 Min BM (Black Bark) Length “Garbage Filter”

30 Default
5 Min
159 Max

Specifies the minimum length of the black mark in 0.1-mm steps. Shorter marks are ignored. The default value of 30 equals 3 mm.

<ESC>&P<40><40>	Sets min black mark length to 4 mm.

41 & 42 BM (Black Mark) Cut Offset

0 , 0 Default
0 , 0 Min
255 , 255 Max

Defines the paper feed between the black mark detection and cut. One step is 0.1 mm.

<ESC>&P<41><1><ESC>&P<42><244>	Feeds 50 mm between black mark and cut.

43 & 44 — Top Margin (mm)

0 , 0	Default
0 , 0	Min
255 , 255	Max

Defines the distance between the top of the paper and the top of the first text line in 0.1 mm steps. The top margin feed is effectuated when the presenter is cleared from the previous page.

0 =	disabled top margin. This gives the physical top margin of the printer which is 19 mm.

Avoid settings 1 – 18 mm because then the printer must reverse the paper before starting to print, which may cause paper jam, especially at small roll diameters.

<ESC>&P<43><1><ESC>&P<44><44>	Add 30-mm top margin.

45 — Waste Basket Mode DRV

3	Default
0	Min
130	Max

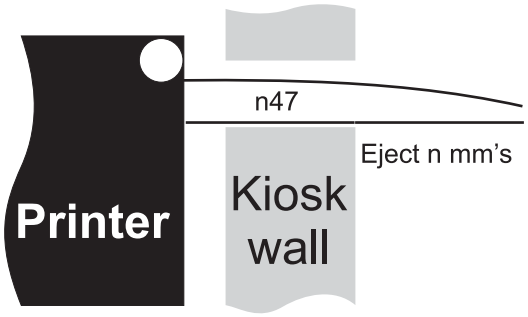
Note • Changed in firmware version 2.21

Sets the function of the "retract and retain" function.

<ESC>&P<45><0>	Eject uncollected page when new page is printed. (Waste basket disabled)
<ESC>&P<45><3>	Eject uncollected page when new page is printed. Page not collected after 30s will be retracted. (Range 1-30, 1 step = approximately 10 s)
<ESC>&P<45><100>	Retracts uncollected page when new page is printed
<ESC>&P<45><103>	Retracts uncollected page when new page is printed. Page not collected after 30s will be retracted. (Range 101-130, 1 step = approximately 10 s)

47 Wall Compensation (mm) DRV

0 Default
0 Min
127 Max



When the printout is printed and cut, the presenter ejects about 50 mm of the page so that the customer can grab it. If the kiosk wall is thick, or if you just want a longer part of the printout to be visible, this parameter adds extra eject length.

<ESC>&P<47><50>	Adds 50 mm extra eject = about 100 mm in total.

Note • The resolution of the sensor is ± 3 mm so small changes in the parameter setting may not show.

Longer ejects are more accurate than shorter ones because acceleration and retardation of the rollers affects the eject less. Allow for ± 10 mm variations on short ejects.

48 Paper Width (mm) DRV

208 Default
58 Min
216 Max

Sets the width of the paper loaded into the printer. This can also be used to get left and right margins, for instance if you load A4 paper but set the paper width to 170 mm you get a 20 mm margin on both sides of the page.

Note • The page width is not changed until the parameters are stored in the flash PROM with the command <ESC>&<4>. So you cannot change paper width within a page.

<ESC>&P<48><208><ESC>&<4>	Sets A4 width
<ESC>&P<48><214><ESC>&<4>	Sets Letter width

Note • We recommend you to set max 208 for A4 and max 214 for letter to allow the paper to wander a bit sideways without losing print.

49 Bottom Margin DRV

1 Default
0 Min
1 Max

Selects if the cut command cuts at the position where the paper is at, or if the printer should advance the paper before cutting.

<ESC>&P<49><0>	Off
<ESC>&P<49><1>	Automatic Distance Calculation
<ESC>&P<49><2>	Feed 2 mm
<ESC>&P<49><255>	Feed 255 mm "Automatic Distance Calculation" means advancing the paper with the Head-To-Cutter distance (19 mm on the TTP 8000 series).

Set to 1 if the printer is used in text mode and 0 if it is used from a driver that takes care of this in the driver.

Note • The paper is advanced before the FF command calculates the page length to see if the page length is longer than the set minimum length.

51 Black Mark Sensitivity

50 Default
0 Min
255 Max

This parameter is used by command ESC # to store the calibration of the black mark sensor. Normally there is no need to set this parameter manually.

0 is white and 255 is pitch black (out of paper).

Note • This parameter is not available on printers with hardware revision A of the control board. The revision is printed on the test printout.

52 Warning Level

0 Default
0 Min
255 Max

Turns on/off indication of Paper Near End and Weekend paper level on the status indicator (Figure 3, *Printer Exterior, Rear View,* on page 11) . This affects only the status indicator, not the status enquiries.

<ESC>&P<52><0>	No indication
<ESC>&P<52><1>	Paper Near End indication
<ESC>&P<52><2>	Weekend level indication
<ESC>&P<52><3>	Paper near end and weekend indication

53 Lock Parameters

0 Default
0 Min
1 Max

You can lock the parameters so that they cannot be changed by the ESC & P command.

<ESC>&P<53><0>	Unlocked
<ESC>&P<53><1>	Locked

55 PSU Recovery

255 Default
0 Min
255 Max

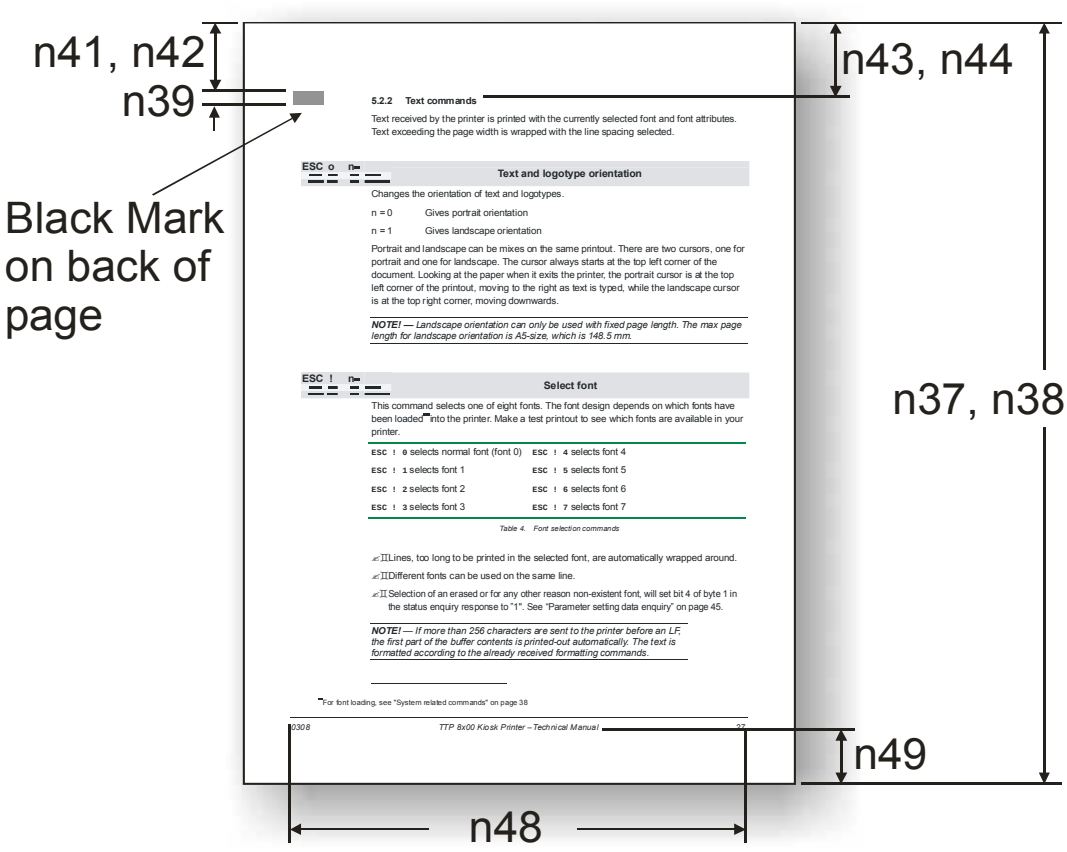
Adds a delay between the burning of blocks in the printhead. This delay helps possible for the power supply to recover from the heavy load of heating pixels. If you have a somewhat weak power supply, print quality can be enhanced by increasing this value. A high value slows the printout down slightly.

Recommended settings: 0 for 300 W (12.5 A) PSU, 255 for 150 W (6.5 A PSU)

7

Page Setup

Printable Area

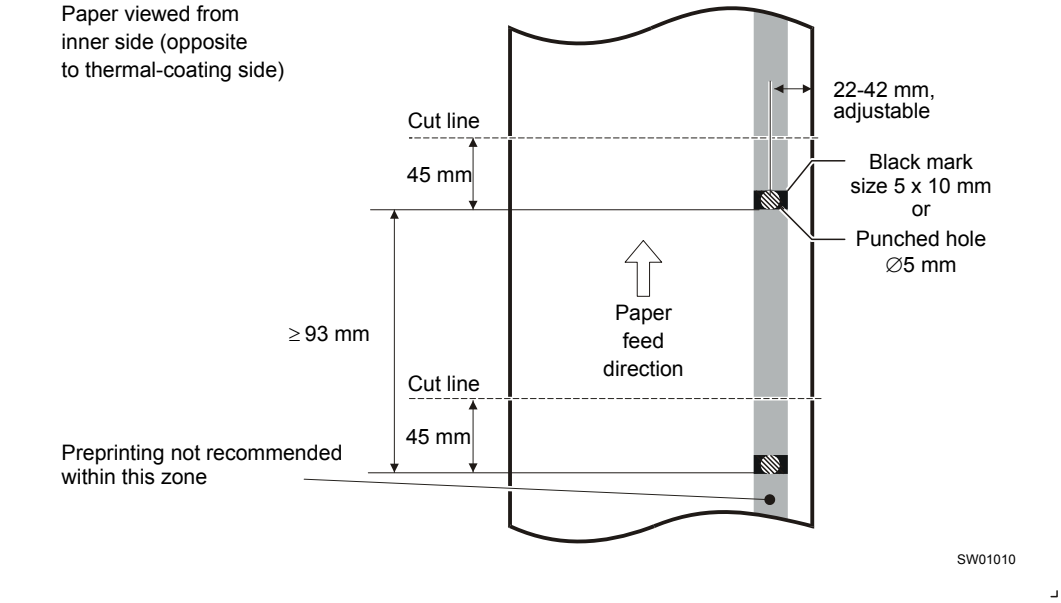


Aligning Preprint and Thermal Print

The printer can synchronize the cutting of the printout with black-marks printed on the back of the paper. You use this function when you have preprint on the media and you don't want a cut in the middle of that preprint, or text printed on top of the preprint.

The sensor used to detect the black-marks is the same sensor as used for paper end detection. The sensor sits 45 mm behind the cutter (as seen from the presenter [output] side of the printer). It is adjustable sideways and can be positioned 22-42 mm from the left edge of the paper entry. The sensor accuracy is about ±0.5 mm so avoid designing printouts with too high demands for synchronization.

Figure 20 • Recommended Black Mark Size and Position



The sensor triggers on the black-to-white transition of the black-mark, which is when the black print ends (trailing edge).

Since the same sensor is used for both paper end and black-mark detection, the printer must know the length of the black-mark to avoid signaling end-of-paper when it detects a black-mark. The default setting accepts black-marks in the range 5 –10 mm, and works perfectly with the recommended black-mark length of 5 mm. Marks shorter than 3 mm are interpreted as dirt, and marks longer than 10 mm as out-of-paper. You can change both these values with a printer command, or by changing the printer default settings in the flash PROM.

Black mark mode is selected by setting parameter 36 to 2, and storing the parameters.

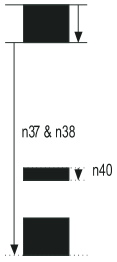
Important • It is essential that you set up the parameters in the printer for black mark synchronization even if you enable black marks in the Windows driver. This is because Windows is not used at paper loading, and feeding with the Feed button on the printer.

Parameters Used

Parameter n34 Auto Cut

When this parameter is set to 2, "forced cut at black mark" The printer always cuts when it detects a black mark, even if no cut command has been received. This prevents long documents from being printed as one continuous printout over several pages.

Parameters n37 and n38 - Page Length Minimum



Measure the distance from the trailing edge of one black mark to the trailing edge of the next. The resolution is 0.1 mm so multiply the distance by 10, then calculate the value to enter as n37 and n38.

Example • If the page length is 200mm, (200 x 10) / 256 = 7.8125.

```
n37 is the integer value, that is 7, while n38 is the
fraction
0.8125 x 256 = 208
```

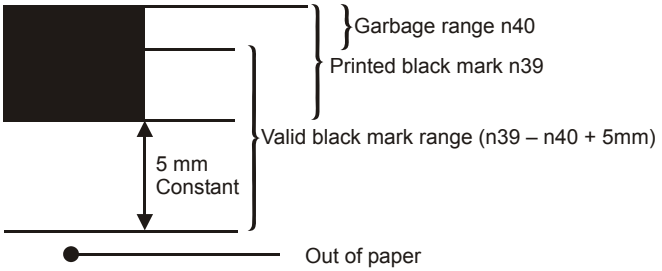
Parameter n39 – Max Black Mark Length

Measure the height of the black mark. The resolution is 0.1 mm so multiply the black mark length by 10 and enter the value as n39.

Parameter n40 – Min Black Mark Length (Garbage Filter)

This parameter is actually a filter to filter out garbage on the paper. If a spot is smaller than this value, it will not be regarded as a black mark. 1. About ? of the black mark length is usually a suitable setting.

Garbage, Black Mark and Out Of Paper Detection

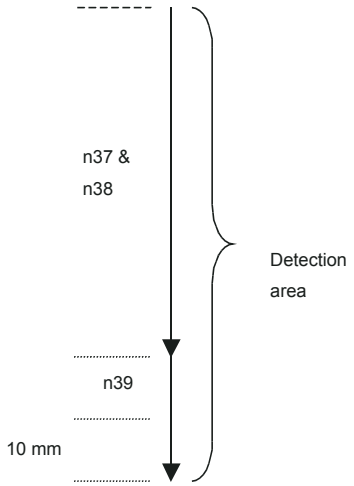


For every step the paper is feed, the black mark sensor is sampled to detect garbage, black marks or out of paper.

When the printer detects blackness is has to check if it is only garbage:

If the paper…	Then it is…
gets white again within n40 x 0.1 mm	garbage and the spot should be ignored.
is still black after n40 x 0.1 mm	probably a black mark.
gets white within an additional n39-n40 plus 5 mm	a black mark

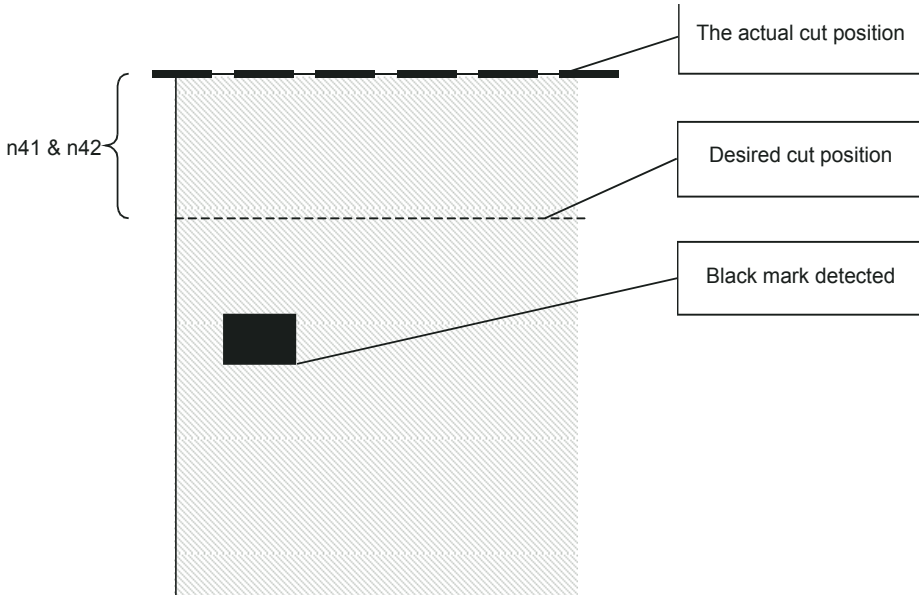
The 5-mm is a constant added to make sure that noise on the edge not will interfere with the samples. If it at this point still is still black we have detected out of paper.



Be careful about n40 and n39. If n39 – n40 is too small, then the minimum detection area will be too little. This area should not be less than 2 mm.

Parameter n41 and n42 –Black Mark Cut Offset

After the black mark is detected (black to white change) the printer feeds another distance to place the paper in cut position. This distance can not be negative so placing the black mark too close to the paper edge is better than too far away.



(ESC x n1 n2 is an obsolete command that sets n41 and n42. It is implemented for backward compatibility with old drivers. Set parameters n41 and n42 with the
ESC & P n1 n2 command instead.)

FF (Form Feed)

Use <FF> to print the buffer content, go to the next top of form (black mark), and cut the paper.

ESC Z (Go To Next Top of Form)

Use <ESC>Z to move the paper to the next top of form. This is practically a Form-Feed without printing and cut. It searches for the next black mark for maximum one page length + black mark length (256 x n37+n38 + n39)/10. An additional length of 20 mm is added to be sure to pass the edge of the next black mark If there is no black mark within the set distance plus 20 mm, an error is raised.

Simple Calibration Process

1. Enable black mark mode by setting parameters n36 to n42 as described on the previous pages.
2. Load paper with black marks into the printer
3. Send the <ESC># command and wait until the paper stops
4. If the paper has returned to it's original position, the calibration is finished
5. If not, it was not possible to distinguish the black mark. Check the n37 and n38 settings and try again).
6. Save the settings with <ESC>&<4>.

Black-mark Sensing from Within Windows

Please refer to the Kiosk Driver Reference Guide, Part Number P1006873-001, available on www.zebra.com for detailed information on Black-Mark Sensing.

Notes •

8 Interface

The printer has two interfaces as standard, parallel and USB. There are no selections to be made, but normally only one interface should be used at a time. The printer may not function properly if data is received on more than one interface at a time.

Caution • Always use Zebra-approved interface cables. Using a non-approved cable with the printer may void the FCC and other EMC approvals of the printer.

Caution • If you connect both parallel and USB cables, the voltage that the host computer outputs on the parallel port may be enough to give signals out on the USB-interface even if the power of the printer is turned OFF!

These signals can result in the operating system of the host computer detecting the printer as on and available when it's not.

Another effect of these false signals is that after turning the printer on and off to clear an error condition, the printer is dead to Windows.

Always disconnect the parallel interface cable when using USB!

Parallel

TTP 8000 series support IEEE-1284 Compatibility Mode and Reverse Nibble Mode.

Note • If you intend to use any other mode than Compatibility Mode, we recommend you to get the documents for the IEEE-1284 standards, and study them thoroughly.

Figure 21 • IEEE-1284 Cable with Type A and Type C Connectors

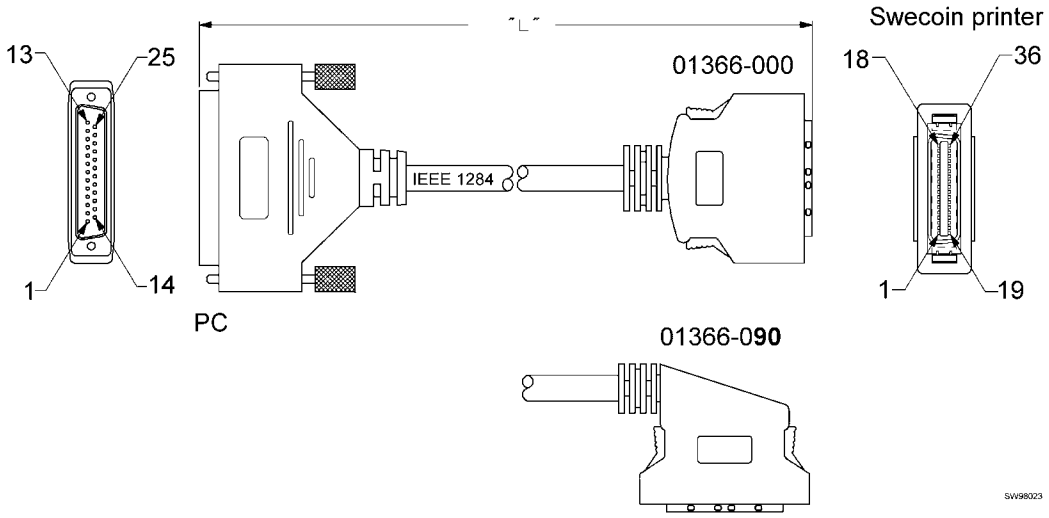


Table 11 • Signal names for the parallel port

Pin Host IEEE1284-A (D-Sub)	Direction	Pin Printer IEEE1248-C	Compatible Signal Names	Nibble and Byte Mode Signal Names
1	⇨	15	nStrobe	HostClk
2-9	⇨	6-13	Data	Data
10	⇦	3	nAck	PtrClk
11	⇦	1	Busy	PtrBusy
12	⇦	5	PError	AckDataReq
13	⇦	2	Select	Xflag
14	⇨	17	nAutoFd	HostBusy
15	⇦	4	nFault	nDataAvail
16	⇨	14	nInit	nInit
17	⇨	16	nSelectIn	IEEE 1284 Active
18-25	GND	19-35	Ground	Ground
	+⇨	18	Host Logic High	
	.⇦	36	Peripheral Logic High	

Error Signaling

All errors that are not reset when status is read will set the nFault signal, for example:

- Head lifted
- Cutter not home
- Out of paper

This error also sets the Paper Out/End (PE) together with nFault::

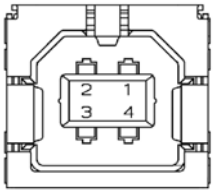
- Out of paper

Note • The signaling of nFault and PE can be switched on/off with parameter p5.

USB

The USB (Universal Serial Bus) is an interface designed to handle several peripherals through a single connector. The transfer speed is up to 12 Mbits/s, which is quite adequate for the printer. Use this interface in operating systems with USB support, for instance Windows XP. USB devices are Plug and Play compatible and hot swappable, which means that they can be connected and disconnected without turning off the power, or rebooting the computer.

Table 12 • USB Connector (J13) Pin Assignment

	Contact Number	Signal Name	Comment
	1	VCC	Cable power
	2	– Data	
	3	+ Data	
	4	Ground	Cable ground

9

Maintenance

Fault Finding

In connection with service of the printer it is good practice to remove paper dust and lint from the paper path, cutter and sensor areas. Paper dust, when accumulated, may interfere with printer functions such as optical sensors.

To avoid smudging the paper, do not apply oil on the cutter blades.

Table 13 • Fault Finding

Symptom	Suggested Actions
Nothing is printed when you press the feed-forward button in self-test mode, but the document is transported, cut and ejected.	• Check that the paper is turned the correct way with thermal sensitive layer facing up. • Check that the paper used meets the paper specification. See "*Paper Specification* on page 121 . • Check that the printhead cable is fully inserted into the connectors at each end. • Check that fonts are loaded.
Paper gets rough in one edge.	• Check that the paper feeds straight into the printer. • Adjust roll holder friction brake by bending the side plates inwards.
Printer does not work at all	• Check that the printhead is locked in its down position (printhead presses against the paper). • Check that power is supplied to the printer. • Check the function of the paper-out sensor.
Self-test prints OK, but the printer works strangely in normal operation.	• Check that both ends of the interface cable are properly connected. • Application program might be incorrect. Contact system manager.
No cutting	• Check that the connectors for the cutting motor/home-position switch are fully seated on the control board.
Bad cutting (uneven top and bottom document edges).	• Check that the printhead is locked in it's down position. • Switch OFF printer and remove any obstructing paper particles in cutter and presenter modules.
Paper is fed straight through the printer. Paper does not loop.	• Check presenter sensor. • Check setting of parameter 9.
Missing print or irregular spots.	• Paper may be too humid. Let it adapt to ambient temperature and humidity for approximately 24 hours before use. • The paper used might not meet the paper specification. See *Paper Specification* on page 121.
White longitudinal lines in the printout.	• Faulty printhead, replace.
Faint print.	• The paper used might not meet the paper specification. See *Paper Specification* on page 121. • Clean printhead with ethyl or isopropyl alcohol. • Adjust Burn time and speed, see *Parallel Port Setup* on page 76.
Faint or no print in the right 1/4 of the page (on firmware versions before 2.80)	• Burn time is set to high for the selected speed. Lower speed or burn time.
Strange characters or graphics printed, or any kind of strange printer behavior.	• Might be caused by erroneous data sent from the host. Check validity of transferred data.

Clean the Printhead

The printhead can be cleaned without removal.

1. **Caution** • Disconnect the printer from the power source before performing the following procedure.

   Remove the power from the printer.

2. **Caution** • While performing any tasks near an open printhead, remove all rings, watches, hanging necklaces, identification badges, or other metallic objects that could touch the printhead.

   Open the printhead by pulling the two release levers back and tilt up the printhead.

3. **Caution** • The printhead may be hot and could cause severe burns. Allow the printhead to cool.

   Clean the heat elements with a cotton swab immersed in ethyl or isopropyl alcohol.

Note • Zebra recommends using a clean swab dipped in a solution of isopropyl alcohol (minimum 90%) and deionized water (maximum 10%) to clean the print head.

Firmware

The firmware is stored in flash-PROM on the control board. When replacing a control board, be sure to verify the control board contains the same firmware version that you are currently using and upgrade it if necessary.

Loading

Download the firmware from the Zebra web site http://www.zebra.com. There you will also find the Zebra Toolbox program (Windows™ software) facilitating the loading of the firmware into the printer.

Are you using a windows environment to load the firmware?

If…	Then…
No	**a.** Send ESC NUL (1B 00 hex) to the printer. **b.** Wait 0.5 seconds. **c.** Send the firmware file to the printer. **d.** Wait until the printer buzzes to confirm that the loading is complete (the presenter motor runs for a second).
Yes	**a.** The loader program contains a help file with detailed instructions on how to load the firmware into the printer.

Caution • The loading and burning can take up to one minute. Do not abort before one minute by turning OFF the power to the printer. Doing so may leave the printer in a state where new firmware cannot be loaded. If this happens, please return the printer to a Zebra authorized service provider.

Firmware and Hardware Revisions

It is important that you load Firmware that suits the hardware revision of the control board in your printer. The hardware revision is printed on the self-test printout, or can be read out of the printer with the <ESC><ENQ><10> command.

Functions and features are added occasionally which affect the firmware in the printer. Please visit our website www.zebra.com for the most current firmware version.

Firmware

TTP 8000 version	Hardware version	Firmware No.	
		200dpi	300 dpi
Standard (with presenter)	A – C (8-bit)	01749-xxx	01792-xxx
	D and up (16-bit)	01778-xxx	
Vertical (with presenter)	A – C (8-bit)	01800-xxx	N/A
	D and up (16-bit)	01801-xxx	N/A
Compact (without presenter)	A – C (8-bit)	01757-xxx	N/A
	D and up (16-bit)	01786-xxx	N/A

Notes •

10

Specifications

General Information

Print Data

Printer control	Windows and Linux drivers. Direct addressing through ESC sequences.
Plug and Play	Yes
Print method	Direct thermal line printing
Resolution	8x8 dots/mm (203 dpi) for TTP 8200. 11.8x11.8 dots/mm (300 dpi) for TTP 8300.
Print speed	100 mm/s (203dpi) 67 mm/s (300dpi)
Duty cycle	60% at 25°C ambient temperature
Print width	216 mm 1728 dots for TTP 8200, 2560 dots for TTP 8300
Interfaces	Parallel IEEE-1284 and USB 1.1. Optional external RS-232 serial interface.
USB Compliance	Chapter 9 compliant according to USBCheck v3.2

Serial Interface Settings

Baud:	2 400, 4 800, 9 600, 19 200, 38 400, 57 600, 115 200 bits/s
Data bits:	7 or 8
Parity:	None, Odd or Even
Stop bits:	1 (fixed)
Flow control:	None, Xon / Xoff, or Hardware
Default settings:	9600 bits/s, 8 data bits, no parity, 1 stop bit, no flow control.

Paper Handling

Paper supply	Fan fold or roll paper
Paper width	A4 (210.2 mm) or Letter Size (8.5”) selectable by moving paper guides.
Printout length	297 mm (A4) 148.5-mm (A5) or 11” (Letter) 5.5” (Statement), or variable length 92* mm and up. There is no upper limit for printout length, but if the printout exceeds 4 m, the paper will be cut, then the printout will continue.
Cutting	Guillotine cutter.
Presenter operation**	Holds printout until printed then cuts and presents the complete printout. Extremely long printouts can be partially ejected to limit loop buildup.
Pull detector	A pull detector detects when the customer pulls the paper and then starts motorized paper eject
Eject length after cut	Default 50 mm. up to 255 mm extra feed can be added. The resolution is ±3 mm.
Printout retraction***	Pulls back uncollected printouts and throws them in a wastebasket inside the kiosk.
Paper loading	Load paper, press button to get automatic feed, cut, and eject. Automatic "on-line" after successful paper load.
Sensors	Optical sensors: Out of paper, paper near end (optional) and weekend level sensor (optional). “Paper in presenter” and eject length sensors in presenter unit. Switch sensors: Cutter in home position, and printhead lifted.

*. The 01760-xxx, that is the vertical version of TTP 8000 has a minimum printout length of 200 mm.
**. Compact version of TTP 8000 does not have any presenter / pull detector.
***. Compact versions do not have retract function.

Text Modes (Non-Windows Applications)

Orientation	Horizontal (portrait mode), and vertical (landscape mode)
Number of possible fonts:	8 (Font 0 to Font 7)
Font memory	256 kB
Font technology	Bitmap fonts, non scaleable
Standard fonts	Font 0 = TTPmono 9 Font 1 = Arial Black 24 Font 2 = Arial 12 Font 3 = Arial 10 Font 4 = Arial 8 Font 5 = Symbol 10 Font 6 = Wingdings 10 Font 7 = Code 39
Text attributes	Bold, italics, underline, reverse print, multiple-width, multiple height.

Note • Attributes can be combined on the same text line.

Character Sets

The default fonts use Windows code page 1252 Western which contains ISO 8859-1 (ANSI) characters. You can use other character sets by creating and loading appropriate font files.

Characters 0 to 31 are control codes that cannot be changed, but 32 to 255 can be custom designed.

The table below shows the characters stored in flash PROM on the printer control board.

Table 14 • Code Page 1252 Character Table

Dec	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
Hex	20	21	22	23	24	25	26	27	28	29	2a	2b	2c	2d	2e	2f
Key		!	"	#	$	%	&	'	(	)	*	+	,	-	.	/
Dec	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
Hex	30	31	32	33	34	35	36	37	38	39	3a	3b	3c	3d	3e	3f
Key	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
Dec	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
Hex	40	41	42	43	44	45	46	47	48	49	4a	4b	4c	4d	4e	4f
Key	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Dec	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
Hex	50	51	52	53	54	55	56	57	58	59	5a	5b	5c	5d	5e	5f
Key	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
Dec	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
Hex	60	61	62	63	64	65	66	67	68	69	6a	6b	6c	6d	6e	6f
Key	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
Dec	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
Hex	70	71	72	73	74	75	76	77	78	79	7a	7b	7c	7d	7e	7f
Key	p	q	r	s	t	u	v	w	x	y	z	{	|	}	~	A0127
Dec	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
Hex	80	81	82	83	84	85	86	87	88	89	8a	8b	8c	8d	8e	8f
Key	A0128	A0129	A0130	A0131	A0132	A0133	A0134	A0135	A0136	A0137	A0138	A0139	A0140	A0141	A0142	A0143
	€	□	‚	ƒ	„	…	†	‡	ˆ	‰	Š	‹	Œ	□	□	□
Dec	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
Hex	90	91	92	93	94	95	96	97	98	99	9a	9b	9c	9d	9e	9f
Key	A0144	A0145	A0146	A0147	A0148	A0149	A0150	A0151	A0152	A0153	A0154	A0155	A0156	A0157	A0158	A0159
	□	‘	’	“	”	•	–	—	˜	™	š	›	œ	□	□	Ÿ
Dec	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
Hex	a0	a1	a2	a3	a4	a5	a6	a7	a8	a9	aa	ab	ac	ad	ae	af
Key	A0160	A0161	A0162	A0163	A0164	A0165	A0166	A0167	A0168	A0169	A0170	A0171	A0172	A0173	A0174	A0175
		¡	¢	£	¤	¥	¦	§	¨	©	ª	«	¬	-	®	¯
Dec	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
Hex	b0	b1	b2	b3	b4	b5	b6	b7	b8	b9	ba	bb	bc	bd	be	bf
Key	A0176	A0177	A0178	A0179	A0180	A0181	A0182	A0183	A0184	A0185	A0186	A0187	A0188	A0189	A0190	A0191
	°	±	²	³	´	µ	¶	·	¸	¹	º	»	¼	½	¾	¿
Dec	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
Hex	c0	c1	c2	c3	c4	c5	c6	c7	c8	c9	ca	cb	cc	cd	ce	cf
Key	A0192	A0193	A0194	A0195	A0196	A0197	A0198	A0199	A0200	A0201	A0202	A0203	A0204	A0205	A0206	A0207
	À	Á	Â	Ã	Ä	Å	Æ	Ç	È	É	Ê	Ë	Ì	Í	Î	Ï
Dec	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
Hex	d0	d1	d2	d3	d4	d5	d6	d7	d8	d9	da	db	dc	dd	de	df
Key	A0208	A0209	A0210	A0211	A0212	A0213	A0214	A0215	A0216	A0217	A0218	A0219	A0220	A0221	A0222	A0223
	Ð	Ñ	Ò	Ó	Ô	Õ	Ö	×	Ø	Ù	Ú	Û	Ü	Ý	Þ	ß
Dec	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
Hex	e0	e1	e2	e3	e4	e5	e6	e7	e8	e9	ea	eb	ec	ed	ee	ef
Key	A0224	A0225	A0226	A0227	A0228	A0229	A0230	A0231	A0232	A0233	A0234	A0235	A0236	A0237	A0238	A0239
	à	á	â	ã	ä	å	æ	ç	è	é	ê	ë				
Dec	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255
Hex	f0	f1	f2	f3	f4	f5	f6	f7	f8	f9	fa	fb	fc	fd	fe	ff
Key	A0240	A0241	A0242	A0243	A0244	A0245	A0246	A0247	A0248	A0249	A0250	A0251	A0252	A0253	A0254	A0255
		ñ	ò	ó	ô	õ	ö	÷	ø	ù	ú	û	ü	ý	þ	ÿ

Table 15 • Symbol Character Table

Dec	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
Hex	20	21	22	23	24	25	26	27	28	29	2a	2b	2c	2d	2e	2f
Key		!	"	#	$	%	&	'	(	)	*	+	,	-	.	/
		!	∀	#	∃	%	&	∍	(	)	*	+	,	−	.	/
Dec	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
Hex	30	31	32	33	34	35	36	37	38	39	3a	3b	3c	3d	3e	3f
Key	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
Dec	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
Hex	40	41	42	43	44	45	46	47	48	49	4a	4b	4c	4d	4e	4f
Key	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
	≅	Α	Β	Χ	Δ	Ε	Φ	Γ	Η	Ι	ϑ	Κ	Λ	Μ	Ν	Ο
Dec	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
Hex	50	51	52	53	54	55	56	57	58	59	5a	5b	5c	5d	5e	5f
Key	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
	Π	Θ	Ρ	Σ	Τ	Υ	ς	Ω	Ξ	Ψ	Ζ	[	∴	]	⊥	_
Dec	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
Hex	60	61	62	63	64	65	66	67	68	69	6a	6b	6c	6d	6e	6f
Key	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
	_	α	β	χ	δ	ε	ϕ	γ	η	ι	φ	κ	λ	μ	ν	ο
Dec	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
Hex	70	71	72	73	74	75	76	77	78	79	7a	7b	7c	7d	7e	7f
Key	p	q	r	s	t	u	v	w	x	y	z	{	|	}	~	A0127
	π	θ	ρ	σ	τ	υ	ϖ	ω	ξ	ψ	ζ	{	|	}	~	□
Dec	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
Hex	80	81	82	83	84	85	86	87	88	89	8a	8b	8c	8d	8e	8f
Key	A0128	A0129	A0130	A0131	A0132	A0133	A0134	A0135	A0136	A0137	A0138	A0139	A0140	A0141	A0142	A0143
	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□
Dec	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
Hex	90	91	92	93	94	95	96	97	98	99	9a	9b	9c	9d	9e	9f
Key	A0144	A0145	A0146	A0147	A0148	A0149	A0150	A0151	A0152	A0153	A0154	A0155	A0156	A0157	A0158	A0159
	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□
Dec	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
Hex	a0	a1	a2	a3	a4	a5	a6	a7	a8	a9	aa	ab	ac	ad	ae	af
Key	A0160	A0161	A0162	A0163	A0164	A0165	A0166	A0167	A0168	A0169	A0170	A0171	A0172	A0173	A0174	A0175
	□	ϒ	′	≤	⁄	∞	ƒ	♣	♦	♥	♠	↔	←	↑	→	↓
Dec	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
Hex	b0	b1	b2	b3	b4	b5	b6	b7	b8	b9	ba	bb	bc	bd	be	bf
Key	A0176	A0177	A0178	A0179	A0180	A0181	A0182	A0183	A0184	A0185	A0186	A0187	A0188	A0189	A0190	A0191
	°	±	″	≥	×	∝	∂	•	÷	≠	≡	≈	…	|	—	↵
Dec	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
Hex	c0	c1	c2	c3	c4	c5	c6	c7	c8	c9	ca	cb	cc	cd	ce	cf
Key	A0192	A0193	A0194	A0195	A0196	A0197	A0198	A0199	A0200	A0201	A0202	A0203	A0204	A0205	A0206	A0207
	ℵ	ℑ	ℜ	℘	⊗	⊕	∅	∩	∪	⊃	⊇	⊄	⊂	⊆	∈	∉
Dec	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
Hex	d0	d1	d2	d3	d4	d5	d6	d7	d8	d9	da	db	dc	dd	de	df
Key	A0208	A0209	A0210	A0211	A0212	A0213	A0214	A0215	A0216	A0217	A0218	A0219	A0220	A0221	A0222	A0223
	∠	∇	®	©	™	∏	√	·	¬	∧	∨	⇔	⇐	⇑	⇒	⇓
Dec	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
Hex	e0	e1	e2	e3	e4	e5	e6	e7	e8	e9	ea	eb	ec	ed	ee	ef
Key	A0224	A0225	A0226	A0227	A0228	A0229	A0230	A0231	A0232	A0233	A0234	A0235	A0236	A0237	A0238	A0239
	◊	〈	®	©	™	∑	⎛	⎜	⎝	⎡	⎢	⎣				
Dec	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255
Hex	f0	f1	f2	f3	f4	f5	f6	f7	f8	f9	fa	fb	fc	fd	fe	ff
Key	A0240	A0241	A0242	A0243	A0244	A0245	A0246	A0247	A0248	A0249	A0250	A0251	A0252	A0253	A0254	A0255
		〉	∫	⎮	⎜	⌡	⎞	⎜	⎠	⎤	⎥	⌋	⎟	⎬	⌡	□

Table 16 • Wingdings Character Table

Dec	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
Hex	20	21	22	23	24	25	26	27	28	29	2a	2b	2c	2d	2e	2f
Key		!	"	#	$	%	&	'	(	)	*	+	,	-	.	/
Dec	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
Hex	30	31	32	33	34	35	36	37	38	39	3a	3b	3c	3d	3e	3f
Key	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
Dec	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
Hex	40	41	42	43	44	45	46	47	48	49	4a	4b	4c	4d	4e	4f
Key	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Dec	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
Hex	50	51	52	53	54	55	56	57	58	59	5a	5b	5c	5d	5e	5f
Key	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
Dec	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
Hex	60	61	62	63	64	65	66	67	68	69	6a	6b	6c	6d	6e	6f
Key	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
Dec	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
Hex	70	71	72	73	74	75	76	77	78	79	7a	7b	7c	7d	7e	7f
Key	p	q	r	s	t	u	v	w	x	y	z	{	|	}	~	A0127
Dec	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
Hex	80	81	82	83	84	85	86	87	88	89	8a	8b	8c	8d	8e	8f
Key	A0128	A0129	A0130	A0131	A0132	A0133	A0134	A0135	A0136	A0137	A0138	A0139	A0140	A0141	A0142	A0143
Dec	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
Hex	90	91	92	93	94	95	96	97	98	99	9a	9b	9c	9d	9e	9f
Key	A0144	A0145	A0146	A0147	A0148	A0149	A0150	A0151	A0152	A0153	A0154	A0155	A0156	A0157	A0158	A0159
Dec	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
Hex	a0	a1	a2	a3	a4	a5	a6	a7	a8	a9	aa	ab	ac	ad	ae	af
Key	A0160	A0161	A0162	A0163	A0164	A0165	A0166	A0167	A0168	A0169	A0170	A0171	A0172	A0173	A0174	A0175
Dec	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
Hex	b0	b1	b2	b3	b4	b5	b6	b7	b8	b9	ba	bb	bc	bd	be	bf
Key	A0176	A0177	A0178	A0179	A0180	A0181	A0182	A0183	A0184	A0185	A0186	A0187	A0188	A0189	A0190	A0191
Dec	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
Hex	c0	c1	c2	c3	c4	c5	c6	c7	c8	c9	ca	cb	cc	cd	ce	cf
Key	A0192	A0193	A0194	A0195	A0196	A0197	A0198	A0199	A0200	A0201	A0202	A0203	A0204	A0205	A0206	A0207
Dec	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
Hex	d0	d1	d2	d3	d4	d5	d6	d7	d8	d9	da	db	dc	dd	de	df
Key	A0208	A0209	A0210	A0211	A0212	A0213	A0214	A0215	A0216	A0217	A0218	A0219	A0220	A0221	A0222	A0223
Dec	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
Hex	e0	e1	e2	e3	e4	e5	e6	e7	e8	e9	ea	eb	ec	ed	ee	ef
Key	A0224	A0225	A0226	A0227	A0228	A0229	A0230	A0231	A0232	A0233	A0234	A0235	A0236	A0237	A0238	A0239
Dec	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255
Hex	f0	f1	f2	f3	f4	f5	f6	f7	f8	f9	fa	fb	fc	fd	fe	ff
Key	A0240	A0241	A0242	A0243	A0244	A0245	A0246	A0247	A0248	A0249	A0250	A0251	A0252	A0253	A0254	A0255

Table 17 • Code39 Character Table

Dec	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
Hex	20	21	22	23	24	25	26	27	28	29	2a	2b	2c	2d	2e	2f
Key		!	"	#	$	%	&	'	(	)	*	+	,	-	.	/
Dec	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
Hex	30	31	32	33	34	35	36	37	38	39	3a	3b	3c	3d	3e	3f
Key	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
Dec	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
Hex	40	41	42	43	44	45	46	47	48	49	4a	4b	4c	4d	4e	4f
Key	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Dec	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
Hex	50	51	52	53	54	55	56	57	58	59	5a	5b	5c	5d	5e	5f
Key	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_

Printer Dimensions

Important • Additional space is required for paper roll and handling.

Figure 22 • Measurements Drawing, Standard Printer 01744-xxx and 01745-xxx

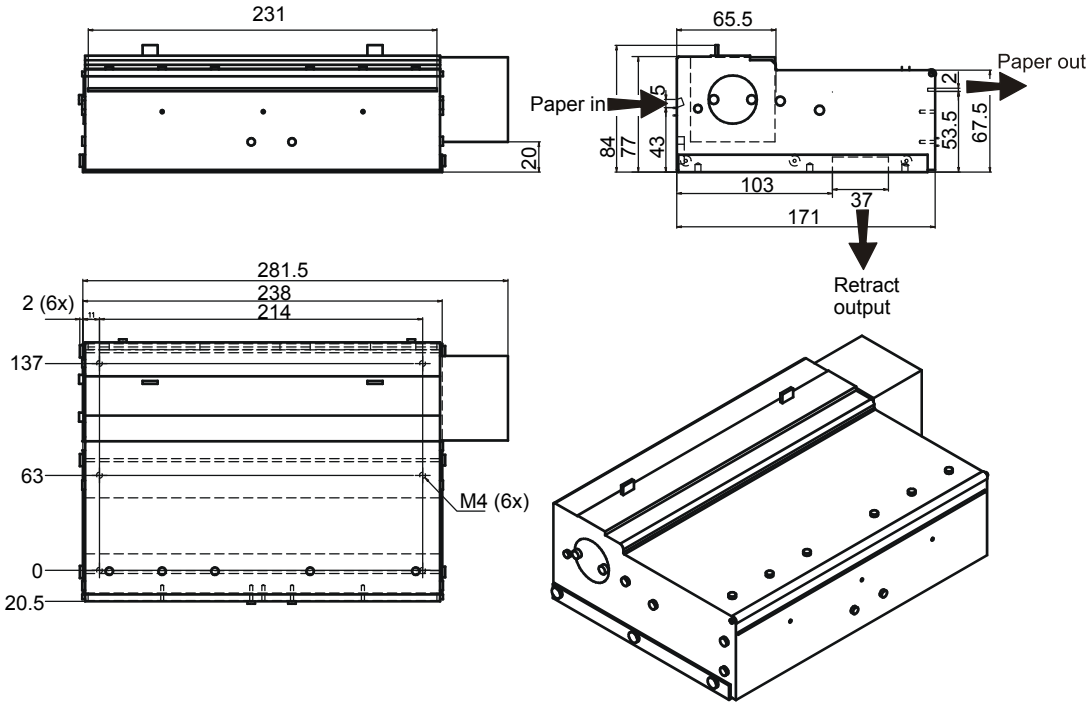


Figure 23 • Measurements Drawing, Compact Printer 01755-XXX

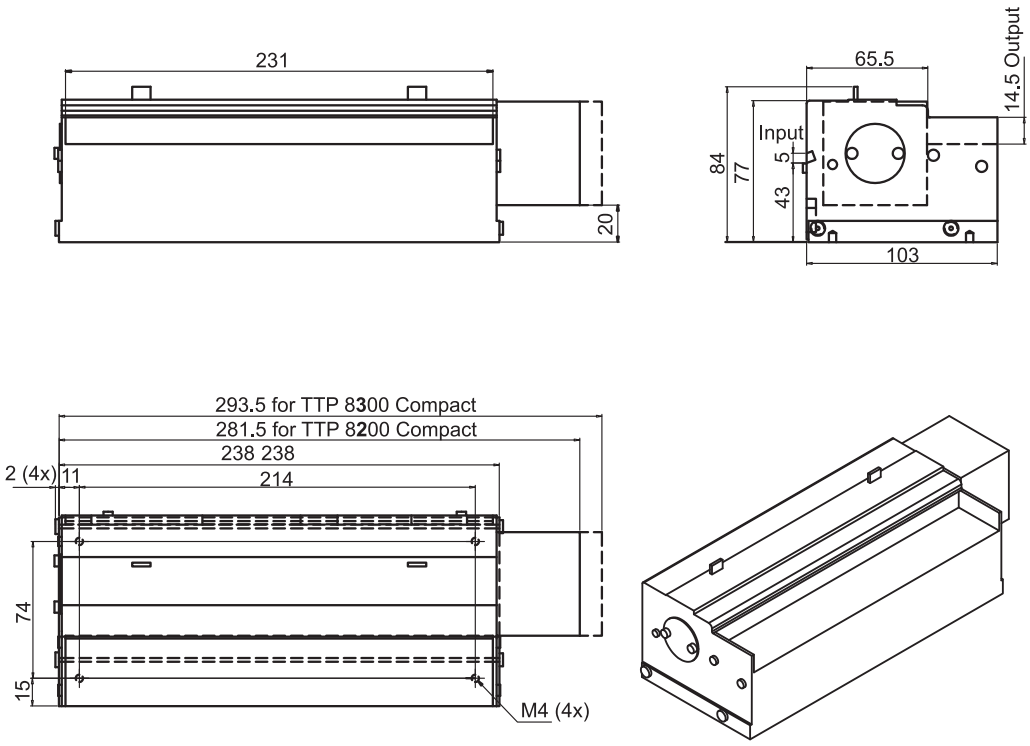


Figure 24 • Measurements Drawing, Vertical Printer 01760-xxx with Combo Roll Holder 01861-21x for 150 mm Roll Under Printer

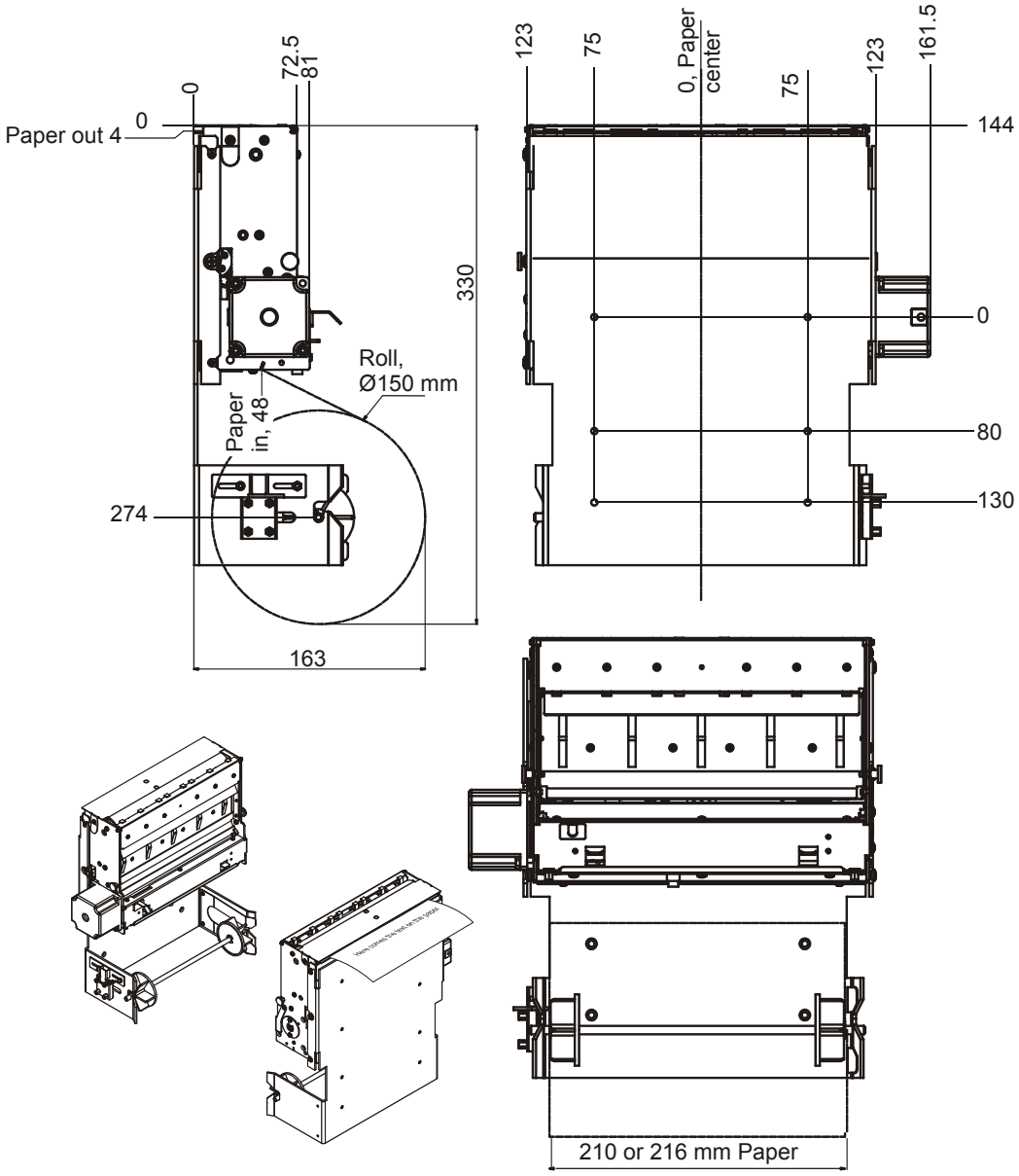
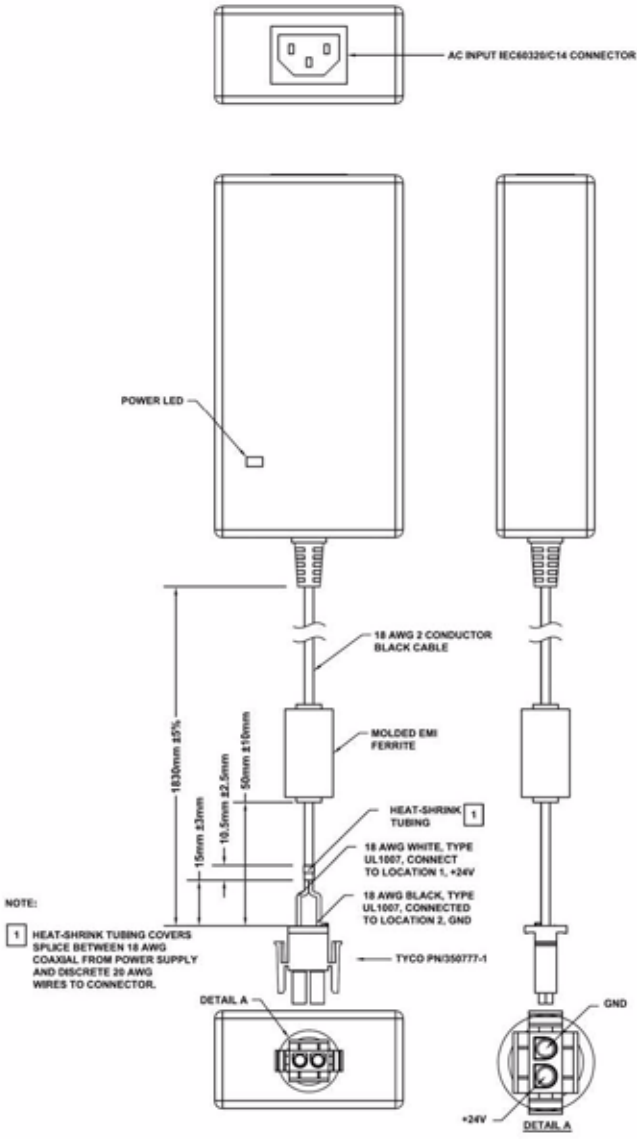


Figure 25 • 100W Power Supply



Caution • Use only the recommended Zebra power supply (see *Part Number List* on page 124 for part number).

Note • Your printer may have a different power supply. This drawing provided as reference only.

Figure 26 • Combo Roll Holder 01861-21x for Standard, Compact, and Vertical Versions of the Printer

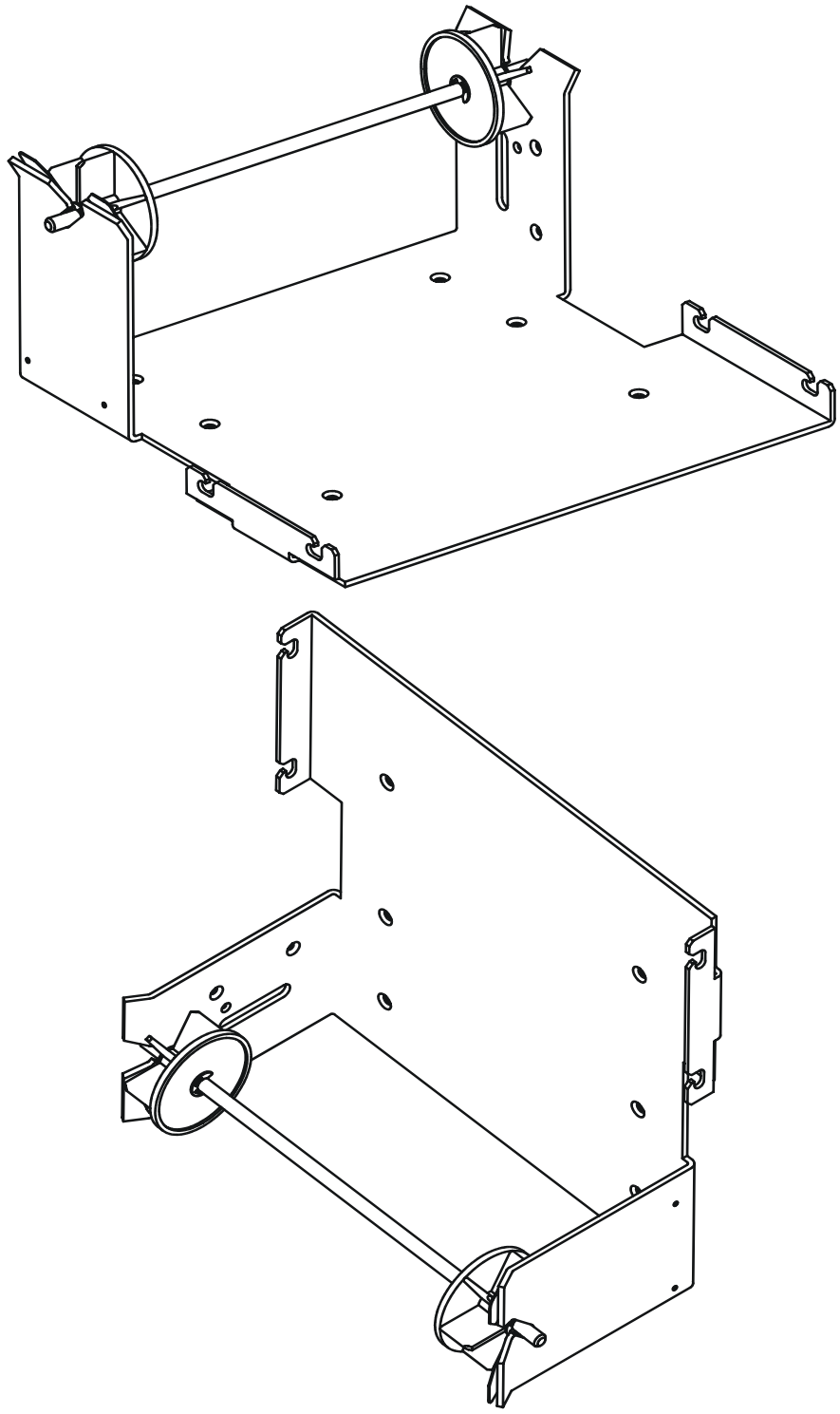


Figure 27 • Measurements Drawing, Printer 01744-xxx with Combo Roll Holder 01861-21x for up to 150mm Roll Behind

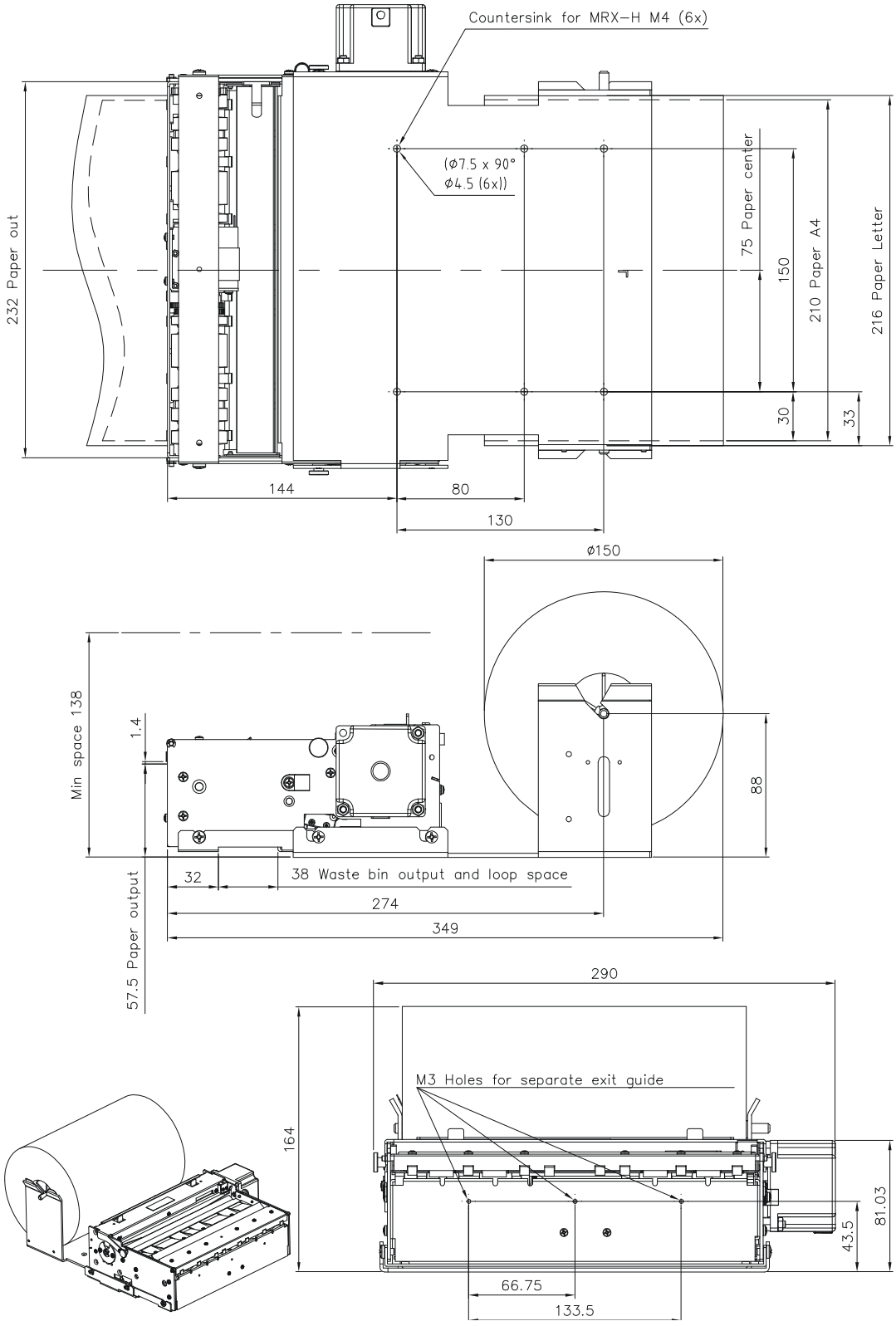
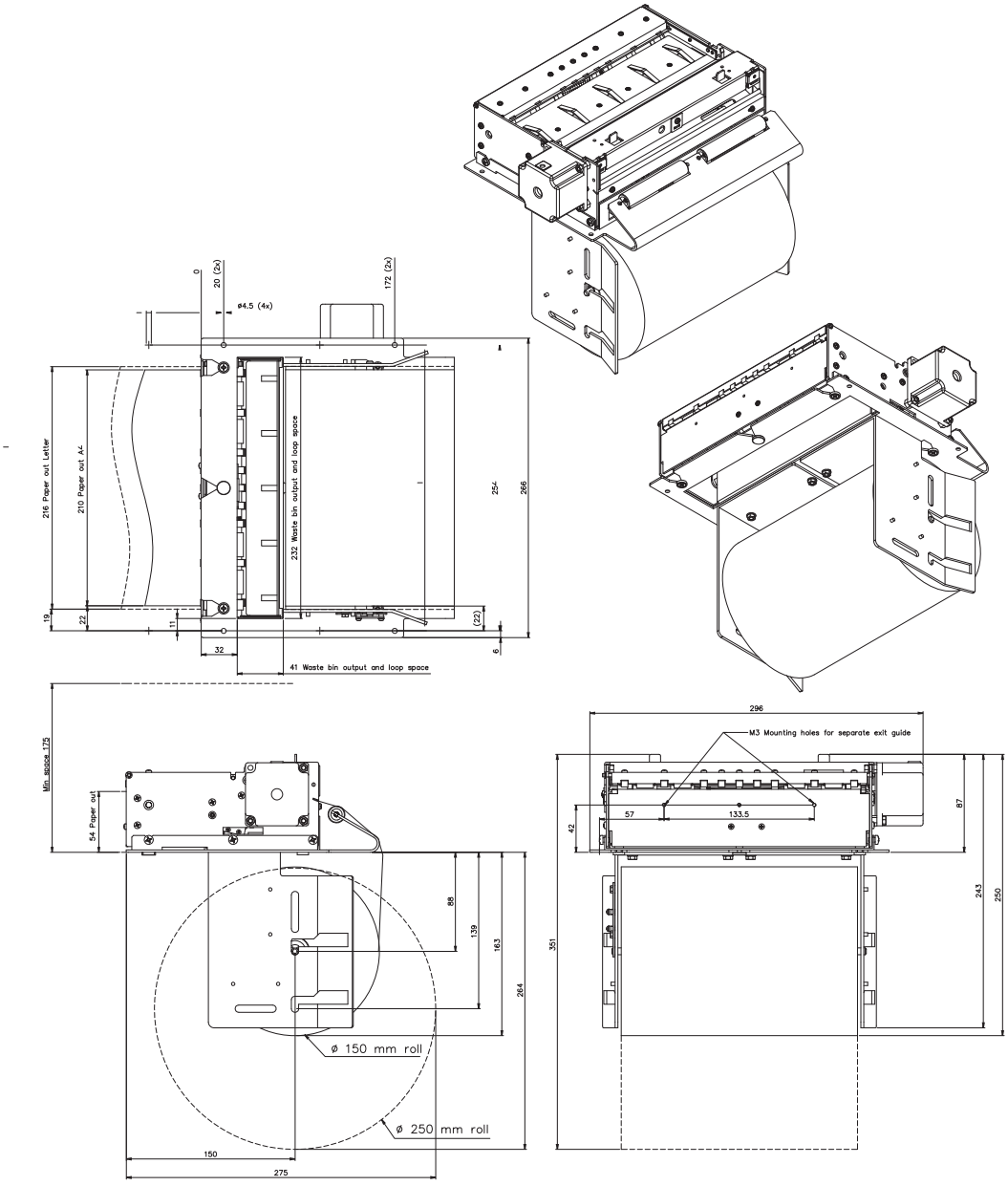


Figure 28 • Measurements Drawing, Printer 01744-xxx with Roll Holder for 150 or 250mm Roll Under Printer



Environmental Conditions

Temperature	Operating: 0 to +50 °C Storage and transportation:–20 to +60 °C
Relative humidity	Operating: 35 to 75%, non-condensing Storage and transportation:10 to 90%, non-condensing

Note • Humidity range refers to printer, not media. For high humidity environments (over 50%) use polypropylene based media or top and bottom coated papers with coating that withstand humidity.

Miscellaneous

Weight	4.8 kg
Typical throughput	5 s/printout (A4 length, print, cut, and present)
Power requirements	24Vdc ±10%, idle 150 mA, average 6A, peak 12A. PSU should have current limit with auto recover.

Caution • Use only the recommended Zebra power supply (see *Part Number List* on page 124 for part number).

Paper Specification

General

Paper supply	Roll or fanfold paper with heat sensitive coating (thermal paper)
Type of paper	Types of paper are listed on www.zebra.com.
Number of layers	One
Paper weight	55—105 g/m²
Paper thickness	0.054—0.10 mm
Surface smoothness	450-s minimum according to Bekk TAPPI T 479
Reflection	80% minimum according to SCAN P3
Max roll diameter	260 mm
Core	Paper or plastic
Core inner diameter	Minimum 50 mm
Paper end	Must not be glued to the core
Paper width	210.2 +0/–0.3 mm, or 216 +0/–0.3 mm depending on model
Paper length	Approx. 110 m (with 110-mm roll diameter and 65 g/m²) Approx. 230 m (with 150-mm roll diameter and 65 g/m²) Approx. 690 m (with 250-mm roll diameter and 65 g/m²)

Thermal Coating

Thermal coating	Outer
Sensitivity	Activated at approx. 68 °C saturated at approx. 75 °C.
Dynamic sensitivity	1.14 ±0.04 OD
Top coating	Standard, semi or UV (if applicable)

Perforation

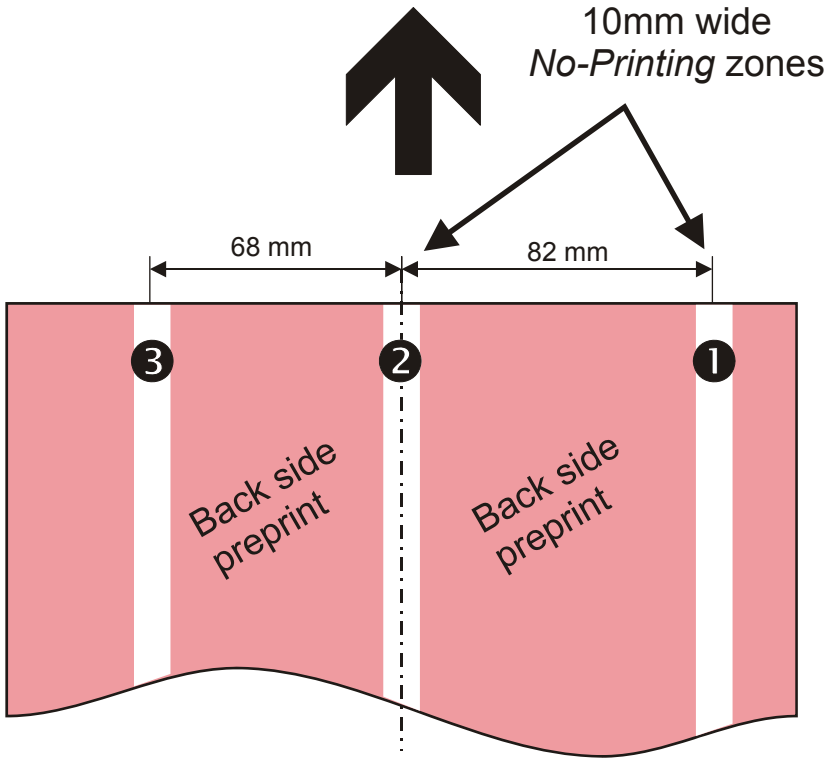
Tear-off perforation	Punching must be done from outer side (thermal coating side) with a sharp perforation tool.

Preprinting

General	To endure the heat developed during printing, the preprint must meet the requirements applicable for preprinting on paper intended for laser printing. OCR-blind ink must be used for preprint on the inner side of the roll. Ink used for preprinting on the thermal side must be non abrasive. The ink must not smear while wound up on the supply roll or during the printing process.
Print side	One side or both sides.
Print area	Printing is not allowed in the Black-Mark (1), Presenter (2), and After Cutter (3) sensor zones. Note that the black mark zone can be moved if you adjust the sensor position.

Note • Presenter sensors are fitted on printers with presenter, and after cutter sensor on Compact versions of the printer.

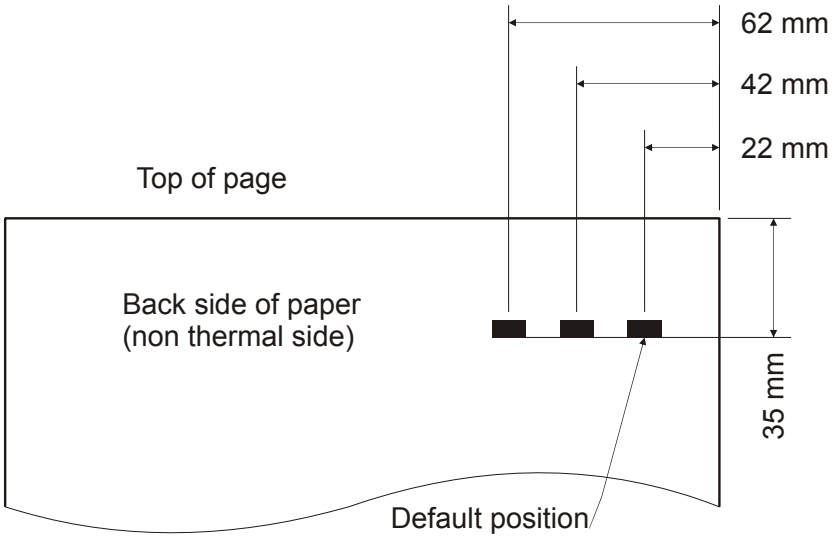
Figure 29 • Forbidden Print Zones



Black Mark Size and Position

Print side	Opposite to thermal coating side
Sensor position	45 mm before cutter,. The sensor position can be adjusted sideways to the positions 22, 42, or 62 mm from right edge of the A4-paper (25, 45, and 65 mm for letter paper) when seen from the front of the printer. When the printer is delivered, the sensor will be in the 22-mm position.
Mark length range	3 to 18 mm, default 5 mm
Mark width	Minimum 5 mm centered on the sensor position, recommended width is 10 mm
Print density	Standard wet offset mode is recommended for printing of the black-marks. The full mark area must be printed. Screen-printing is not allowed. Measurement of print density must be performed relative to the white paper background. Using a MacBeth densitometer, the print density must be greater than 1.3. Anti-gloss filter is not allowed. Using a Gretag densitometer, the print density must be greater than 1.5. The reflection from the black-mark must be less than 10%. The reflection from the paper must exceed 80%.
Preprinting	Preprinting in the zone passing over the black-mark sensor is not recommended. If required, OCR blind type of ink must be used, (outside the 700-1100 nm range).
Punched holes	Punching must be done from the thermally coated side. Distorted print can be expected within a zone of approximately 2-mm around the edges of the hole. The function must be tested.

Figure 30 • Recommended Black Mark Print on Back of Paper (Only the “22 mm Mark”)



Part Number List

Printers

Description	NA/LA/AP	EMEA
TTP 8200 standard, cutter and presenter	01744-216	01744-210
TTP 8200 vertical, cutter and presenter	01760-216	01760-210
TTP 8200 compact, cutter without presenter	01755-216	01755-210
TTP 8300 standard, 300dpi, cutter and presenter	01745-216	N/A
Evaluation kit TTP 8200, standard	N/A	01750-210

Accessories

Description	NA/LA/AP	EMEA
IEEE/1284 parallel cable, 1.8 m (6 ft.)	01366-000	01366-000
IEEE/1284 parallel cable, 90° angle, 1.8m (6ft.)	01366-090	01366-090
USB cable 1.8 m (6ft.)	105850-028	105850-028
Roll Holder Behind, 150 mm diameter max (use with standard and vertical printers)	01861-216	01861-210
Paper Low sensor (for use with 01861-210 and 01861-216)	102775	102775
Roll Holder Behind, includes Paper Low Sensor, 150 mm diameter max (use with standard printers - 01744-xxx and 01745-xxx)	101249	N/A
Roll Holder Below, includes Paper Low and Weekend Sensors, 250 mm diameter max (use with standard printers - 01744-xxx and 01745-xxx)	105154	101361
Paper Low & Weekend Sensor with Housing & Mounting Bracket	102708	N/A
Paper Low and Weekend Sensors with 400 mm cable	01579-400	01579-400
2" Media Spindle for TTP 8000 Series Printers	101373	N/A
Paper roll	10007010	01941-210Z
Power Supply 24V, 100W	808101-005	808101-005
Power supply to printer cable, 600mm	01370-000	01370-000
AC Power Cable	300020-001 (US)	46629 (EU) 46637T (UK)

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中国 RoHS 材料声明 (China RoHS Material Declaration)

部件名称	有毒 / 有害物质或元素					
	铅 (PB)	汞 (Hg)	镉 (CD)	六价格 (CR6+)	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
电子组件 (Electronics)	X	O	O	O	O	O
驾驶火车 (Drive Train)	X	O	O	O	O	O
紧固件 (Fasteners)	X	O	O	O	O	O
打印头 (Print Heads)	X	O	O	O	O	O

X 表示该部件的某一均质材料中的有毒有害物质的含量超出 SJ/Txxx-2006 标准规定的限量要求。

(Indicates that this toxic or hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement in SJ/T11363-2006.)

O 表示不含有此类物质或此类物质的含量在上述标准规定的限量要求以下。

(Indicates that this toxic or hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement in SJ/T11363-2006.)

Notes •

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