

# Zebra<sup>®</sup> TTP 2100 Kiosk Ticket Printer

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## Technical Manual



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# Introduction

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## About this Manual

This manual is updated from time to time when printer functions and features are added or amended. You can find the latest edition on our website at [www.zebra.com](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 from which you purchased the printer.



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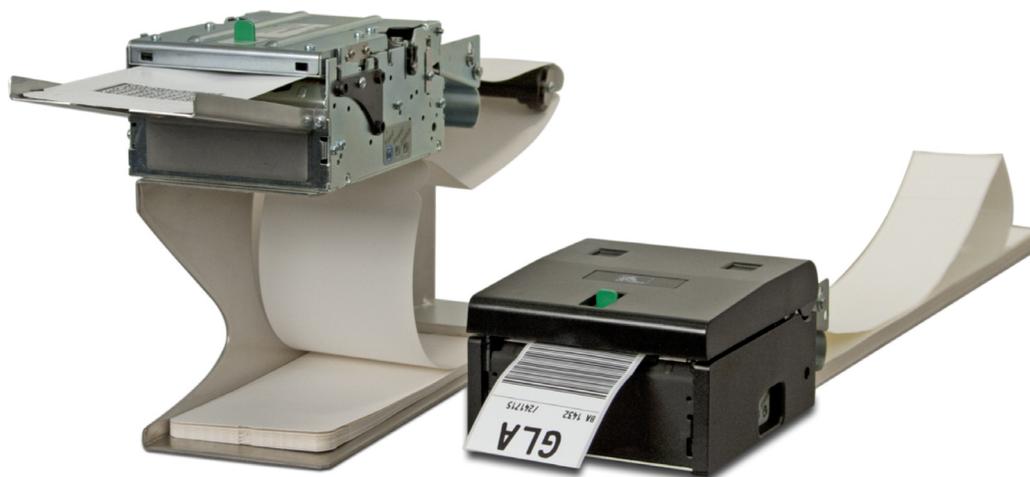
# Product Presentation

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## TTP 2100 Series

The TTP 2100 series of ticket printers are available both for Kiosk integration and Desktop use. These printers are Common Use Self-Service (CUSS) capable.



These ticket printers print on most ticket media from 50 mm to 82.5 mm wide using direct thermal printing. The ticket media can be up to 0.25 mm thick, fanfold, roll, or single cut handfed.

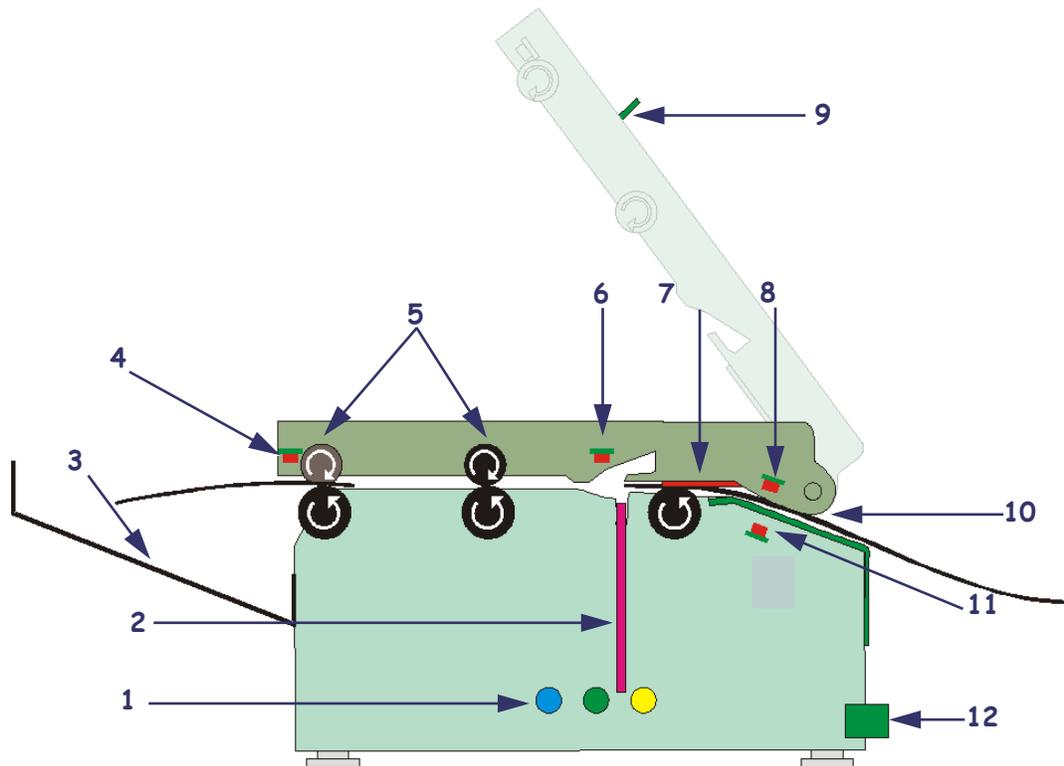
The printers have an integrated guillotine cutter, straight presenter, and control board. The print speed is up to 150 mm/s and the eject speed 300 mm/s to ensure high throughput.

The cut can be synchronized with:

- Gaps between tickets, or punched holes
- Black marks on the non thermal side of the ticket stock
- Ticket corner radius
- Label gaps (for adhesive labels on backing/liner)

You can also print fixed-length or variable-length tickets without synchronization. The presenter can be set to eject the ticket into a tray or hold it by the back edge until the customer takes it. The top can easily be opened to give the operator access to the paper path and printhead for maintenance purposes.

Figure 1 • Principle of Operation



1	Control panel on both sides
2	Cutter
3	Tickets fall (into tray)
4	Ticket sensor (taken/fallen)
5	Straight presenter
6	Ticket load sensor
7	Printhead
8	Upper media sensor (IR light source), adjustable sideways
9	Top release lever
10	Paper entry
11	Lower media sensor (IR light receiver), adjustable sideways
12	Control board

The upper media sensor is an IR light source that illuminates the media. The lower media sensor is an IR light receiver. These sensors must work together to sense media gaps or out-of-media conditions.

The printer is available with two different control boards; the TTP 2110 with serial interface and the TTP 2130 with USB interface.

A printer driver for Microsoft Windows™ is available, and the TTP 2130 interface is compatible with the Plug and Play standard.

The KPL control command language makes it easy to print directly from the ticket software without using a driver. This is especially useful for the serial interface version with its limited data transfer rate.

## Presenter

The TTP 2100 does not loop the media. The presenter carries the media through the printer for presentation to the user.

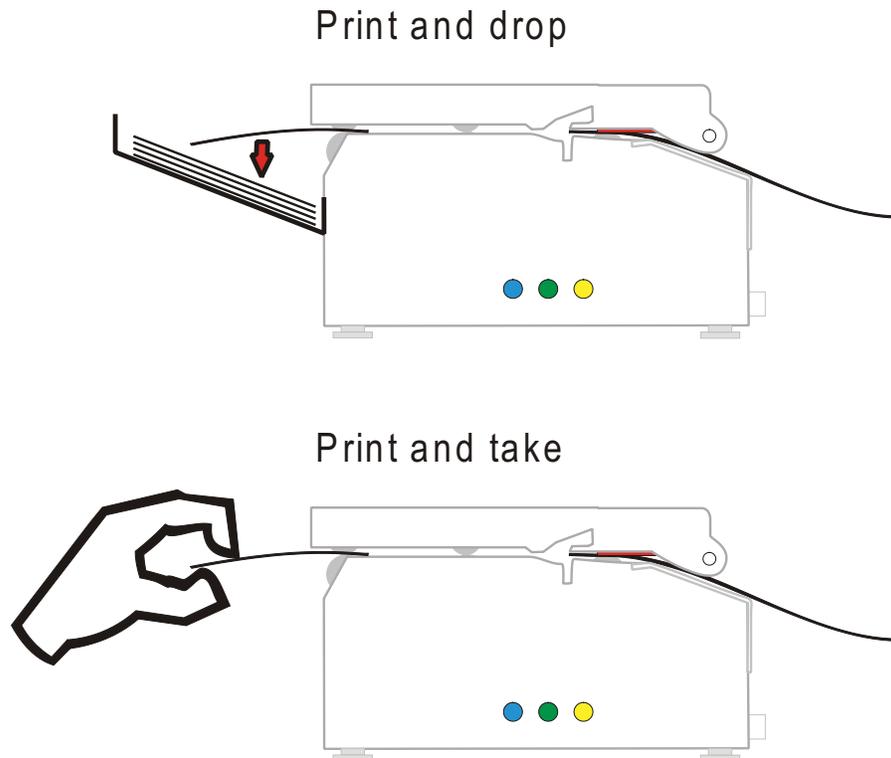
### Eject Mode

The ticket is ejected after being cut. The printer is designed so that the ticket always drops down. A sensor is located at the exit of the presenter to ensure that the printer can verify that the ticket drops down. To enable this functionality, in the **Properties** dialog, click the **Device Settings** tab, and under **Presenter Settings** set the **Clear presenter** value to **Yes**.

### Hold Mode

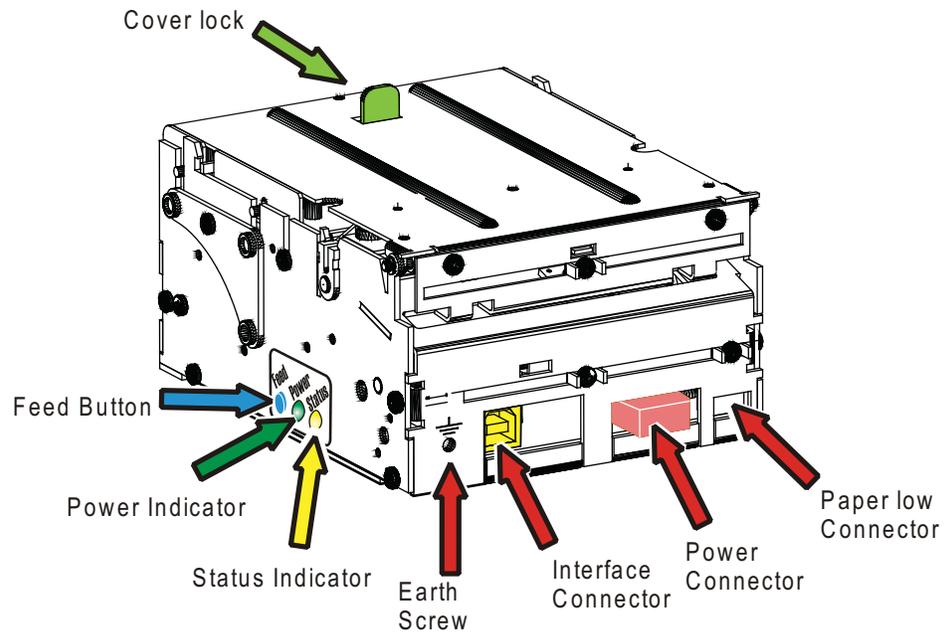
When presented, only the very end of the printout is held by the printer so the customer can easily take the printout no matter how long or short it is. If a customer is printing more than one ticket, the printer can detect when the first is taken and automatically print the next and hold that ticket until taken, continuing this process until all tickets have been printed.

Figure 2 • The Presenter



## Controls

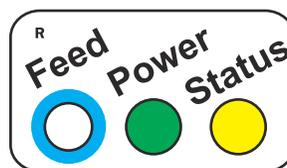
Figure 3 • Rear View



The buttons and indicators are duplicated on both sides of the printer so that they are easily accessible regardless of how the printer is installed.

### Feed Button

The **Blue** Feed button has several functions:



- Press and release will feed, cut, and present a complete page.
- Any data in the print buffer will be printed.  
If the buffer is empty the page will be blank.  
In black mark mode, the page will be synchronized with the black mark.
- Press and hold Feed for three seconds to print a self-test printout (See [Making a Self-Test Printout](#)).
- With no paper in the printer, hold the Feed button pressed while closing the printhead to enter TOF mark calibration mode (see [Print Setup](#)).



**Note** • If the printer has firmware version 3.82 or lower, press and hold the Feed button while turning on the printer to print a self-test printout.

## Power Indicator

- When the green power indicator is illuminated, a 24V supply is connected to the printer.

## Status Indicator

- The status indicator has several functions:
  - **ON constantly** — the printer is operational
  - **Flash, flash, pause, flash, flash** — is the warning-code for paper low. The warning-code is reset automatically when the condition causing it is removed. This behavior is disabled by default but can be enabled by setting parameter 52 (Warning Level) to 1.
  - **Flashes rapidly** — indicates error. Hold down the Feed button and the number of flashes will reflect the *status-code*.

**Table 1 • Status Indicator Flash Codes**

Number of Flashes	Description
1	Presenter jam, paper cannot be ejected
2	Cutter cannot return to home position
3	Out of paper
4	Printhead lifted
5	Paper did not reach presenter sensor in time
6	Temp error, printhead is above 60°C
7	Paper jam during present
10	TOF mark not found (on media load)
11	TOF mark calibration error
Fast flashes	Checksum error at firmware loading
Steady light	Wrong firmware type
Constantly off	Waiting for paper in TOF mark calibration mode

Status codes are reset:

- When the conditions causing them are removed.
- When the printer is power cycled (turned off and then on).
- For all paper jam conditions, after the jam is cleared, lifting and lowering the printhead.

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# Installation

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## Installing a Paper Guide

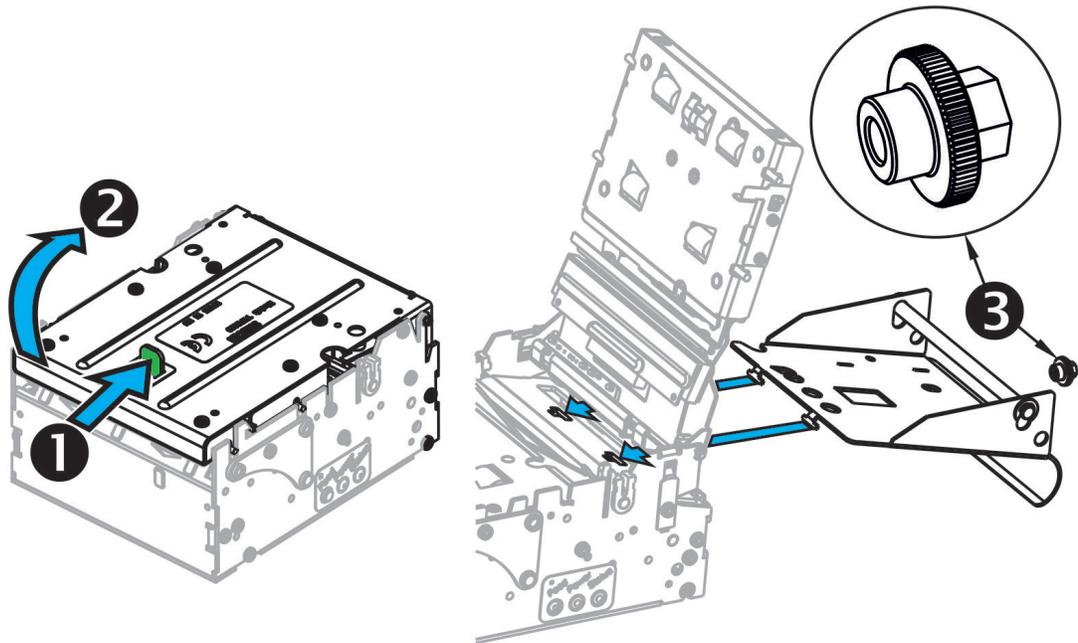


**Caution** • Before proceeding, always disconnect the printer from power to avoid the guide installation short circuiting the electronics in the printer. If the printer is installed in a Kiosk, then all Kiosk power should be turned off to prevent the screw or media guide bracket from accidentally falling into powered up Kiosk components (e.g., the screw or bracket may fall and bounce into the Kiosk components mounted adjacent to or mounted below the printer).

TTP 2100 printers are delivered without the paper guide fitted. TTP 2100 paper guides are available in widths ranging from 51 mm to 82.5 mm. A dual paper guide is available with a 54 mm and 82.5 mm paper path.

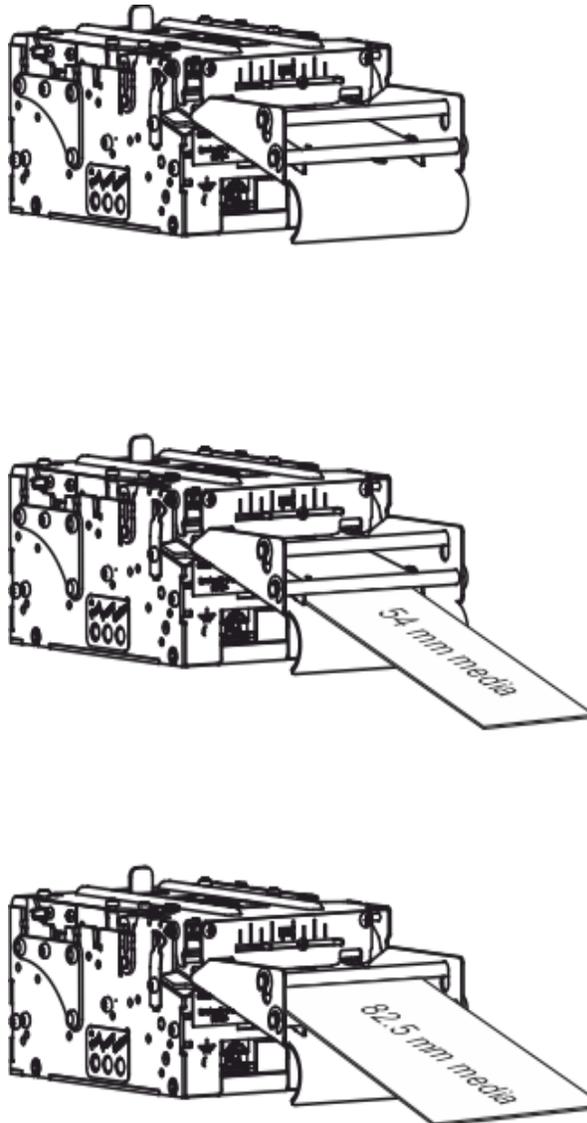
1. Push the green printhead open lever backwards.
2. Lift up the printhead. See [Clearing Paper Jams](#).
3. Insert the T-shaped tabs of the paper guide into the “T”-holes, press the rear of the guide down, and using your fingers or a 5 mm wrench tighten the knurled nut.
4. Close the printhead.

Figure 4 • Fitting the TTP 2100 Paper Guide



When a guide is fitted, make an auto calibration (see [Calibrating the TOF Sensor on page 20](#)) with the ticket media that you are going to use in the printer. Most ticket media auto calibrate perfectly, and the printer is ready to use.

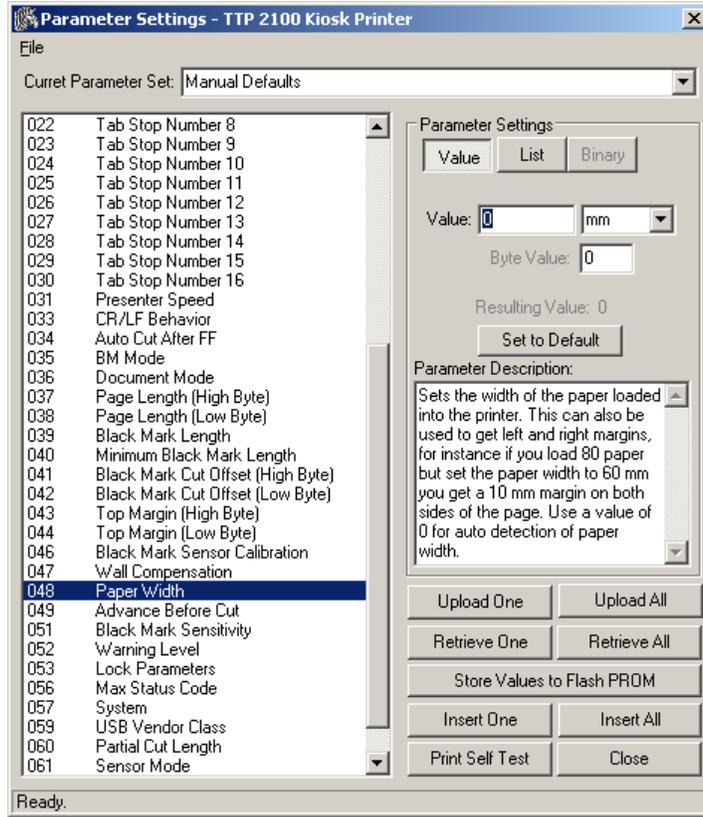
Figure 5 • TTP 2100 Dual Paper Guide



If you use the TTP 2100 Dual Paper Guide 01990-400 on your printer, you must calibrate twice (once in the wide paper path and once in the narrow paper path). The printer chooses the appropriate set of parameters based on which paper path contains ticket stock.

If auto calibration fails on your media, set up paper width parameter n48, and sensor selected parameter n63 to reflect your media. Then redo the auto calibration.

5. Start the utility program Zebra Toolbox. This application is available from [www.zebra.com](http://www.zebra.com).
6. On the **Tools** menu, click **Parameter Settings**.



7. Select **048 Paper Width**, click **Value**, and enter the value in millimeters of the desired print width.

Paper Width	Setting
82.5 mm	n48=80
80 mm	n48=72
76 mm	n48=70
60 mm	n48=54
54 mm	n48=50
51 mm	n48=46

8. Click **Upload One**.

9. Select **063 BM Sensor** and enter the desired value. Recommended values are:

Value	When Used
0	Auto selects between 1, 2, 3, and 4 based on width of media loaded
1	(edge sensor) for ATB tickets without hole in the perforation
2	(center sensor) for ISO tickets, most other ticket types, and adhesive labels
3	17.5 mm from center sensor
4	12.5 mm from center sensor (for baggage tags according to IATA 740)

10. Click **Upload One**.
11. Click **Store Values to Flash PROM**.
12. Wait for the printer to buzz as a confirmation that the new value is stored.



**Note** • It is recommended that you run the auto calibration routine when the printer is taken out of the box and whenever you change the media. Running auto calibration after a head open event is recommended but is only necessary to insure proper first ticket registration.

## Top of Form (TOF) Sensor

The TTP 2100 has a flexible top of form detection system. When delivered the printer is configured with fork (transmissive) sensor to detect holes/gaps between tickets. The holes/gaps should be in the paper center, 12.5 mm to the right of the center (Bag tags according to IATA resolution 740), 17.5 mm to the right of the center, or at the edge of 82.5 mm wide tickets (Boarding cards).

If the Top Of Form (TOF) mark is at a suitable position, an auto calibration routine configures everything for you.

You can force the printer to use a specific sensor. If you switch to reflex sensor for black mark detection by setting up the parameters in the printer to enable the use of non-standard sensor positions, you can physically move the sensor to other positions.

### Selecting Fork (Transmissive) or Reflex (Black Mark) TOF Sensor

The TTP 2100 can use a fork (transmissive) sensor that looks for holes between tickets, or a reflex (black mark) sensor that looks for black marks on the back of the ticket stock. Sensor mode is selected with parameter n61, see [Summary of Parameter Settings](#).

## Calibrating the TOF Sensor

1. Open the printhead.
2. Remove the ticket stock.
3. Press and hold the Feed button, and then close the printhead (keeping the button pressed the entire time).
4. Release the button.  
The Status LED should be off.
5. Load ticket stock (slide it into the paper guide and let the printer auto load the paper).



**Note** • To ensure good calibration conditions, lightly press the ticket stock towards the bottom of the input guide during calibration.

The printer will forward the paper until it finds two TOF marks and then stop and save all TOF-mark parameters.

6. Open the printhead and remove the ticket stock.
7. Close the printhead and feed the tickets in through the paper guide again.  
The printer is ready for use.

Repeat this procedure if the calibration fails or if the printer is used with tickets that differ from the original specification.



**Note** • If you use the Dual guide 01990-400 on your printer, you must calibrate twice (once in the wide paper path and once in the narrow). The printer will choose the appropriate set of parameters based on which paper path contains ticket stock.

## Positioning the TOF Sensor

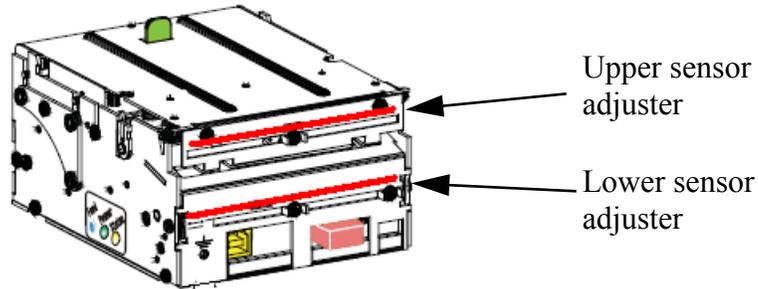


**Note** • Moving the sensor and IR source require customized paper guides with holes for the new sensor position. Please contact Zebra Development Services (CAG) if your application requires a non-standard sensor position.

The sensor board containing the lower media sensor sits on a bracket that can slide left and right in a groove (see [Figure 32, Sensor Positioning, on page 110](#)). This bracket is located below the ticket entry. The IR light source (upper media sensor) sits on a similar bracket above the ticket entry. When delivered, the bracket is positioned to the far right. In this position Sensor 1 is at the right side ready to detect the corner radius of Boarding cards, Sensor 2 is at the center of the page, and Sensor 4 is 12.5 mm to the right of the center at the position determined for baggage tags in IATA resolution 740. To configure the printer for other papers that do not fall into any of the three categories, complete the following steps:

1. Loosen the screw holding the sensor 1 ½ turns.
2. Press the screw in with the screwdriver and carefully slide it to the new position making sure the cables to the sensor do not obstruct the movement.

3. Tighten the screw.
4. Move the IR light source (upper media sensor) to the same position, directly above the sensor.



## Installation Considerations

The TTP 2100 Kiosk printer is for embedded applications and should be installed in an enclosure such as a self-service Kiosk.




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**Caution** • NEVER use screws that go into the printer more than 4 mm! Longer screws will destroy the electronics inside.

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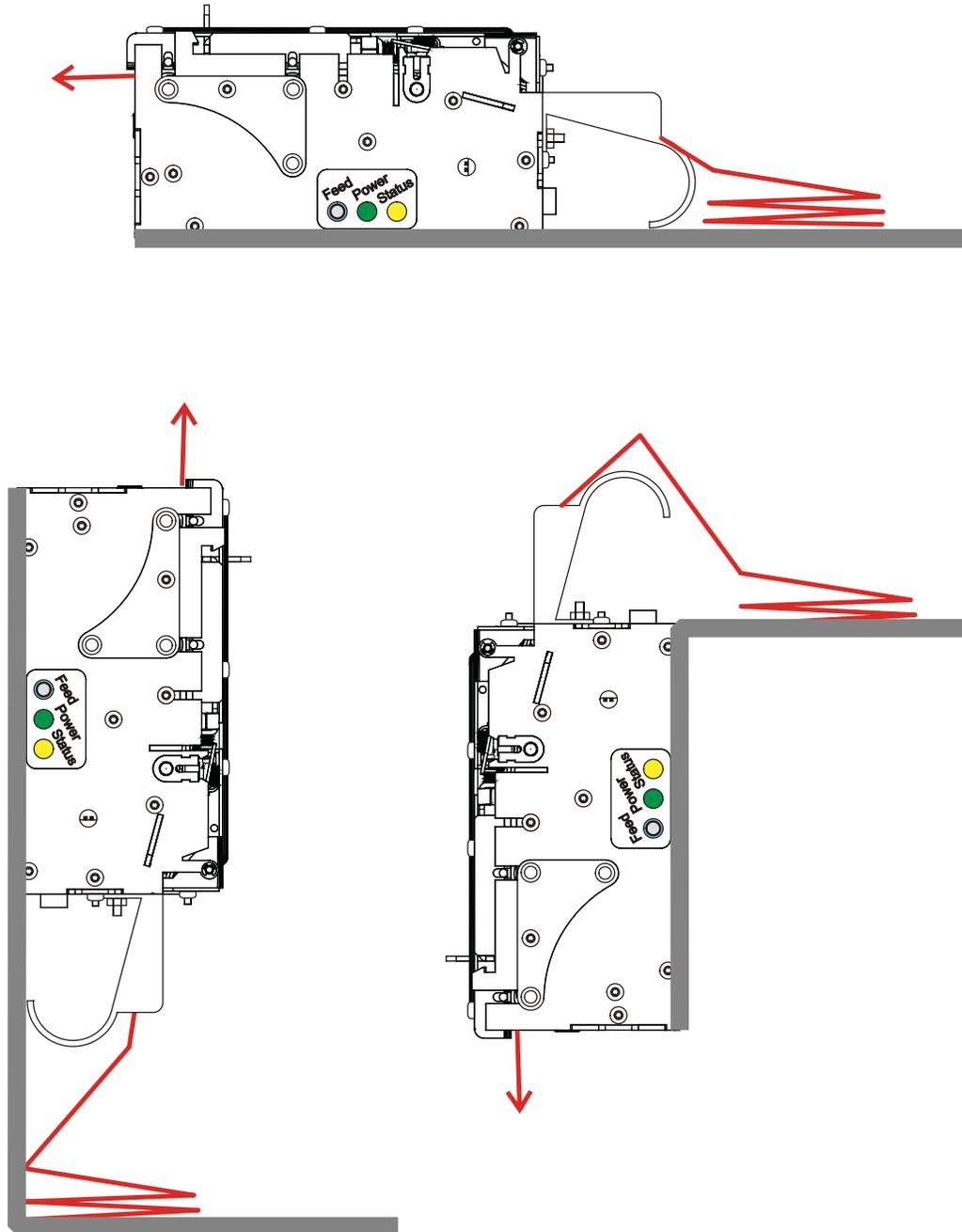
The TTP 2100 Desktop printer is a stand alone printer in a housing. The housings can be stacked so two or more printers can reside on top of each other to save space.



## Orientation

The TTP 2100 printer can be installed horizontally or vertically. Horizontal is the most common use but vertical with the ticket presenting upwards can be used if you want the ticket to come up from the desk surface. Vertical with the ticket presented downwards can be used if you want to stack many tickets before picking them up.

Figure 6 • Printer Installation Orientation Options

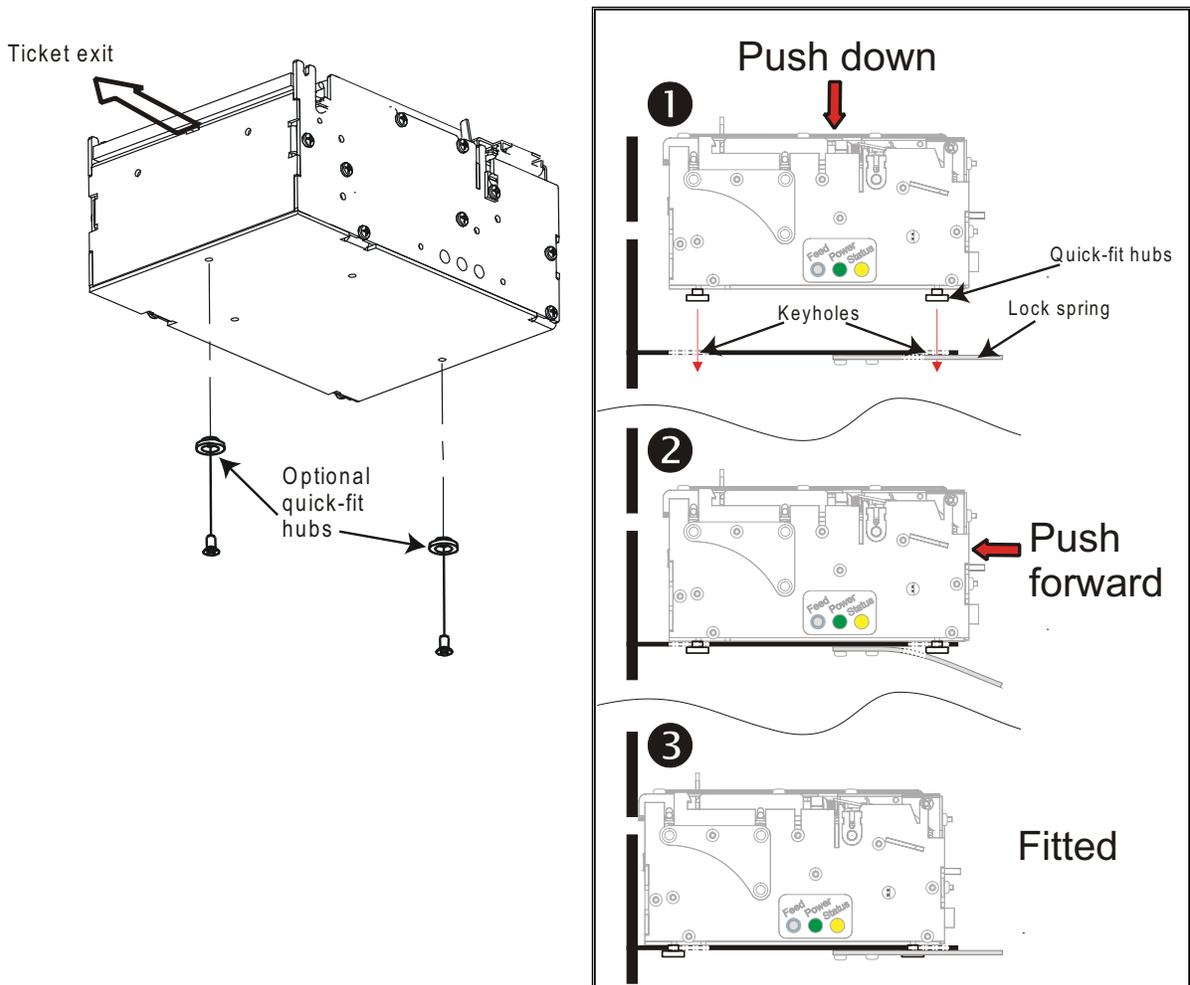


## Quick-Fit Hubs

The printers attach to the Kiosk in two ways:

- Using two screws
- Using slides with leaf spring retainers and the quick-fit hubs

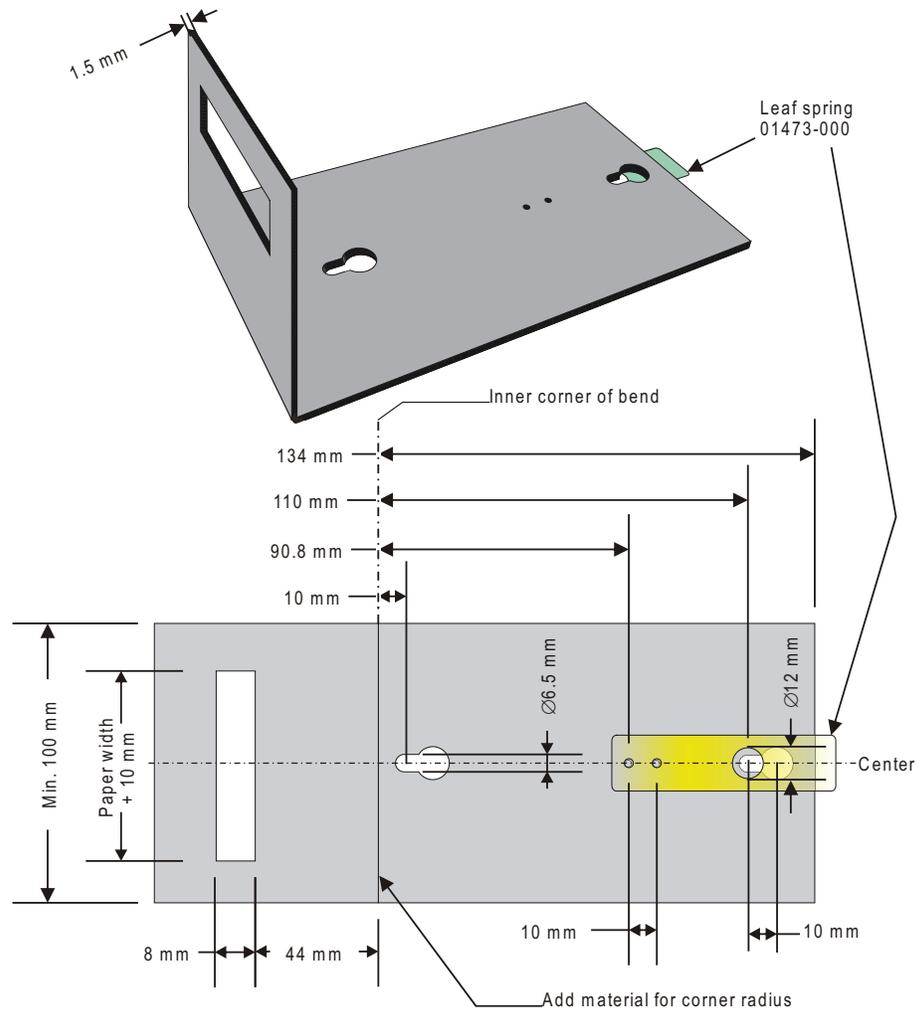
Figure 7 • Front, Bottom View



## Design Your Own Mounting

The illustration below gives an example of a printer-mounting shelf. See [Dimensions](#), and the 3D solid models and outline drawings for CAD that are available on [www.zebra.com](http://www.zebra.com).

**Figure 8 • Example of a Simple Shelf for Fastening a Standard Printer Using Quick-Fit Hubs and a Leaf Spring Retainer (Order No. 01473-000)**



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



We recommend that you make the output slot 97 mm wide. This way you will be able to use all paper widths that the TTP 2100 series of printers can handle.

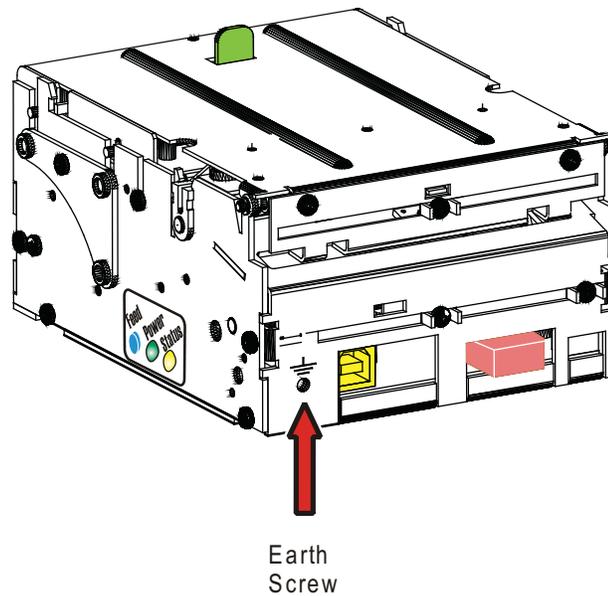


**Caution** • NEVER use screws that go into the printer more than 4 mm! This will destroy the electronics inside.

## 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. A threaded hole for an M4 earth screw is provided on the back of the printer. Use an M4 x 10 screw and two lock washers when fastening the ground cable.

**Figure 9 • Location of Earth Grounding Screw**



**Note** • An optional antistatic brush can be fitted to the front of the printer if required.

## Ambient Light

There is an optical sensor at the paper exit at the front of the printer.

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

## Installing a Paper-low Sensor (Optional)

A paper-low sensor alerts the system that the media stock level is running low. The paper-low sensor works with paper rolls and fanfold media. The purpose of this sensor is to get an early alert so that you can replace the ticket stock in time in remotely located Kiosks.

The paper-low sensor operates by reflecting a light against the side of a media roll to detect it. When the media is low, no light is reflected.

The printer automatically reads the paper-low sensor to check media status every time a printout is cut. After three successive readings show that no paper is present at the sensor, the status is set to paper low which alerts the system that the media needs to be replaced. Three successive readings are required to prevent false paper low readings if the side of the media roll is not clean. When a new roll of media is installed, the printer reads the sensor when the printout is cut and the paper-low status is changed to paper present or paper not low.

Roll holders supplied by Zebra can be equipped with paper-low sensors. Attach the sensor and connect the cable to the paper low connector at the back of the printer.

Figure 10 • Paper-low Sensor Connection

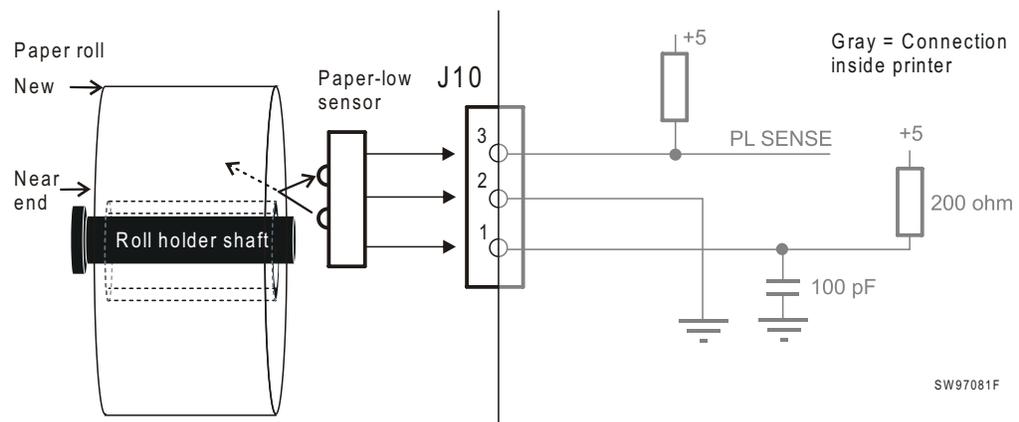
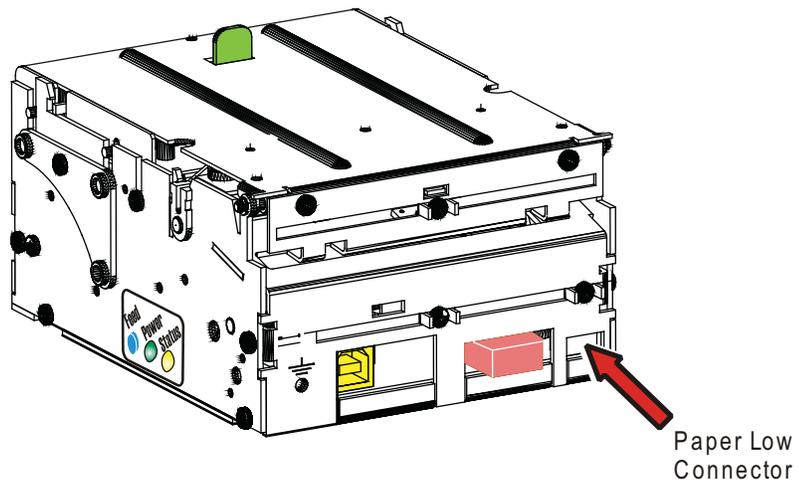
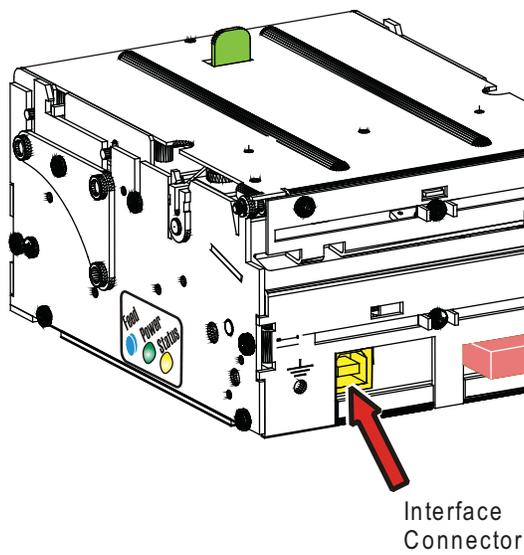


Figure 11 • Location of Paper-low Connector



## Connecting to the Computer

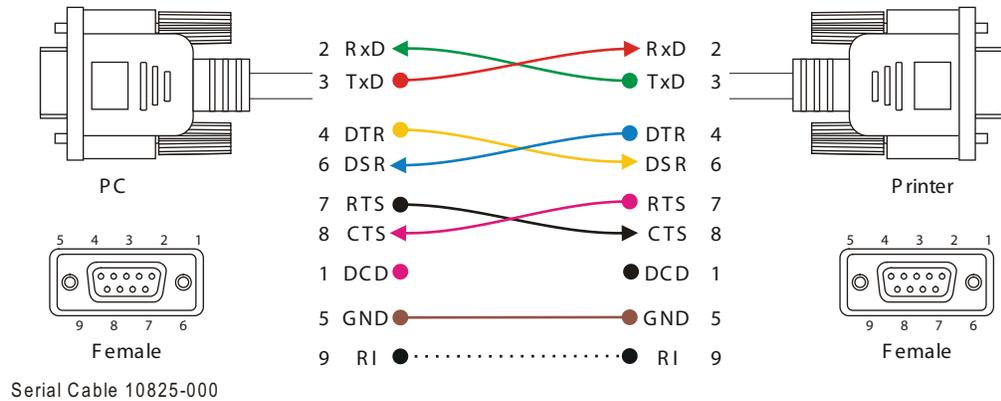
Figure 12 • Location of Interface Connector



## TTP 2110

Connect a Zebra serial cable (part No. 10825-000) between the printer and the computer to be used. We strongly recommend using the Zebra cable because many incompatible cables are available, which may cause communication problems.

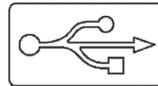
**Figure 13 • Serial Interface Cable 10825-000.**



Dotted leads are not connected in the printer. To be able to connect the cable in any direction, make symmetrical cables.

## TTP 2130

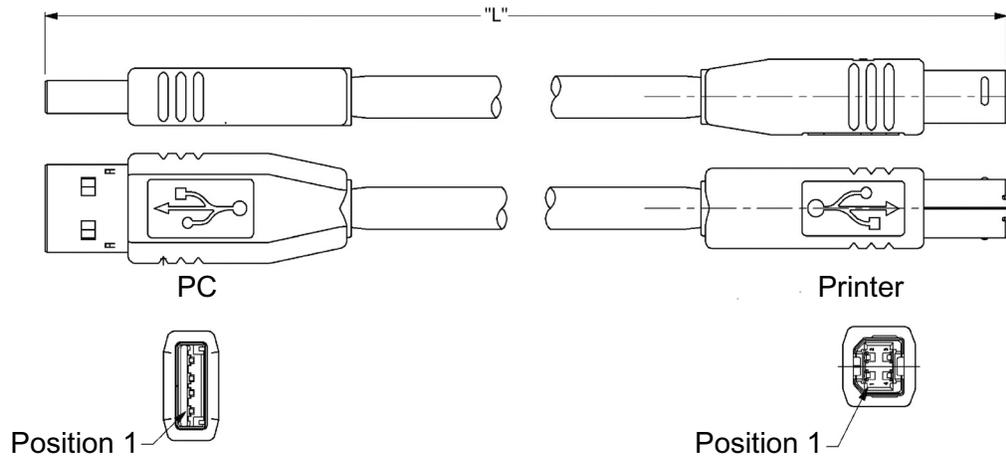
Connect the printer to the USB port of the computer or the USB hub to be used. USB connectors can be recognized by the following symbol:



The connector on the printer is a 4-pin USB type B connector. See [Table 4](#) for pin assignment.

A suitable cable is available from Zebra, part number 105850-028.

Figure 14 • USB Cable with Type A and Type B Connectors



## Connecting the Power



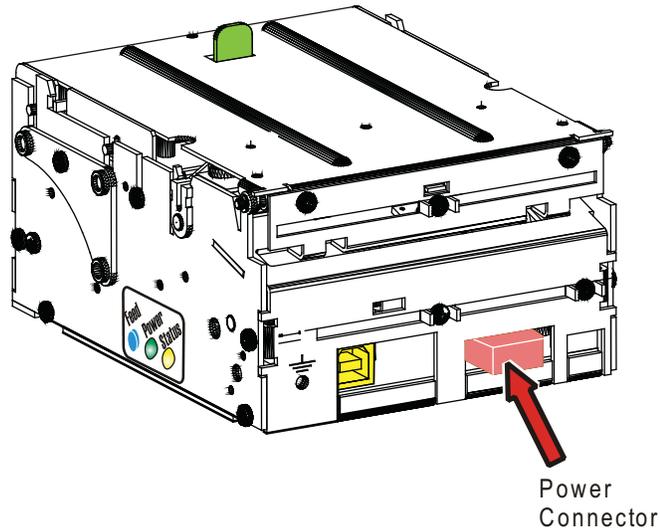
**Caution** • Using a non-Zebra power supply may cause excessive EMC interferences and void the EMC certifications of the printer.



**Caution** • To avoid electrical shock and printer damage, wiring of a non-Zebra power supply should only be done by qualified service personnel. Use ONLY a power supply which meets the following minimum requirements:

- 24 VDC  $\pm$ 5%
- 70W (2.92A)

Figure 15 • Location of Power Connector



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**Caution** • On power supplies with line voltage selector, make sure it is set to your local line voltage.

---

Using the appropriate Zebra power supply for TTP 2100 Desktop, or Embedded ([Power Supply](#)):

1. Connect the cable from the power supply to the power connector on the back of the printer.
2. Connect the power cable to the line outlet.
3. Turn ON the power.

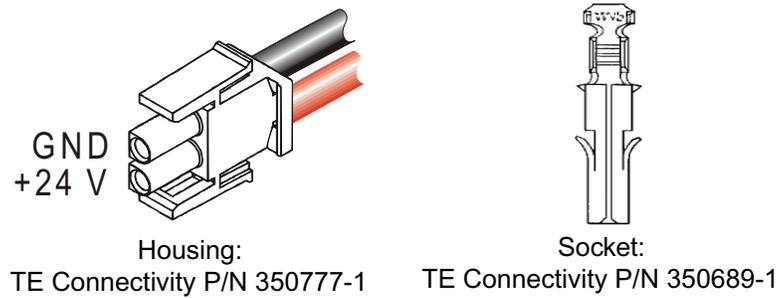
In Kiosk applications you may draw power from a common PSU in the Kiosk if the characteristics are suitable. In such a case, cables that fit the connector on the back of the TTP 2100 are available from Zebra (see [Part Number List](#) on [page 133](#)). If you make cables of your own, connect the voltages according to the following illustration.



**Note** • Protective ground and minus output should *not* be interconnected in the power supply.

A 600 mm power cable is available from Zebra. Use this if you have a common power supply for the entire Kiosk and power the printer from there. Use the connector shown below if you want to make cables of other lengths. At the printer end of the cable, use a TE Connectivity Mate-N-Lok connector housing and two contact-sockets.

**Figure 16 • Power Connection**



**Table 2 • Current Consumption**

Mode	58-60 mm paper width	80-82.5 mm paper width
Idle	150 mA	150 mA
Standard text printing	0.7 A average	1 A average
All black printing	4 A	6 A

## Making a Self-Test Printout

A Self-Test Printout provides a printout showing information specific to the printer, including:

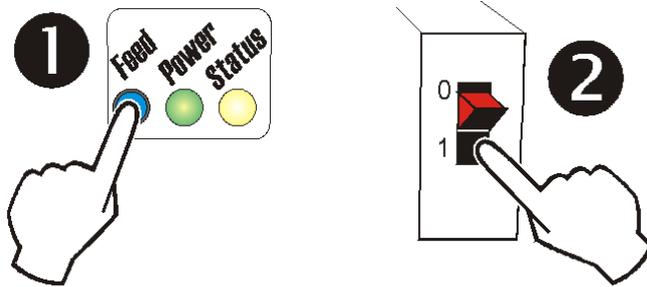
- Firmware version
- Control board (PCA) revision
- Paper width
- Serial number
- Installed fonts and logotypes
- Parameter settings
- Barcode support

**To make a Self-Test Printout:**

1. Enter Self-Test Mode using one of the following methods:

If...	Then...
The printer has firmware version 3.83 or higher	Press and hold the Feed button for 3 seconds.
The printer has firmware lower than version 3.83	<ol style="list-style-type: none"><li>a. Press and hold the Feed button just after closing the print head.</li><li>b. See <a href="#">Figure 17</a>. Press and hold the Feed button (1) while turning on the power (2) to the printer.</li><li>c. Hold down the Feed button until printing starts. Each successive time the Feed button is pressed will produce an additional Self-Test printout until Self-Test Mode is exited.</li><li>d. Exit Self-Test Mode by power cycling the printer (turning the power off then on again). If the power switch is not easily accessible, open and close the print head.</li></ol>

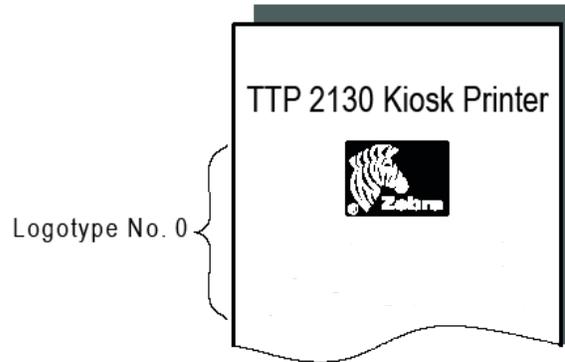
**Figure 17 • Locate the Feed Button and On/Off Switch**



## Customizing the Self-Test Printout

The self test printout starts with a text line, and then a Zebra logotype. This logotype is just a printout of logotype No. 0, so if you want to personalize the self test printouts in your installation, delete all logotypes and store your own logotype as No. 0 (see [Logotypes](#)).

**Figure 18 • Logotype No. 0 is Printed on the Self-Test Printout**



## Installing a Printer Driver

The Microsoft Windows™ printer driver for the TTP 2100 is available on the Zebra website at [www.zebra.com/drivers](http://www.zebra.com/drivers). Please follow the installation instructions in the *Zebra Kiosk Printer Driver User Guide* available at [www.zebra.com/support](http://www.zebra.com/support).



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# Operation

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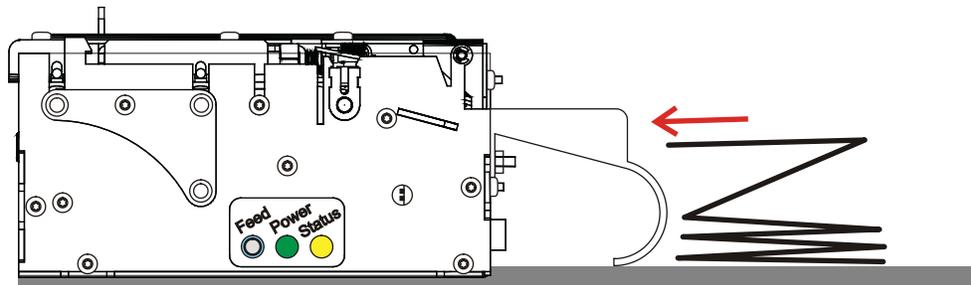
## Loading Fanfold Ticket Stock

1. Turn the tickets so that the surface to be printed (temperature sensitive side) faces upwards. Put the first ticket on the input guide and slide it up the guide into the printer.
2. The printer will feed the paper, locate the edge and reverse to printing position.
3. When ready, the yellow status led will be ON indicating that the printer is ready to be used.



**Note** • Remember that the thermal coating should be upwards and black marks (if used) should face down. The printer will automatically load the tickets when the sensors detect a ticket is loaded.

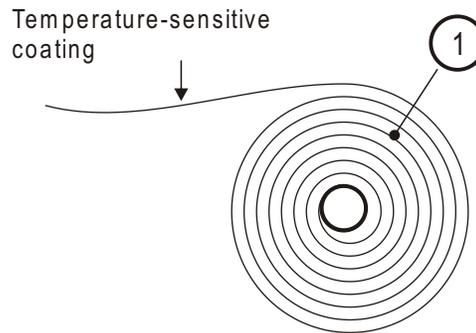
Figure 19 • Loading Ticket Stock



## Installing a Paper Roll

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

Figure 20 • Installing a Paper Roll



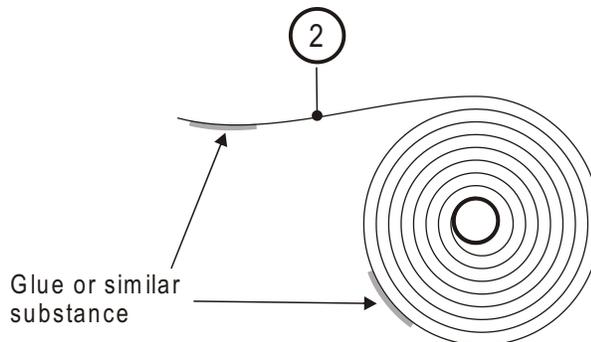
SW96074C

2. Tear off a full turn of the paper 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 21 • Remove Outer Layer of Paper Roll



SW96075C

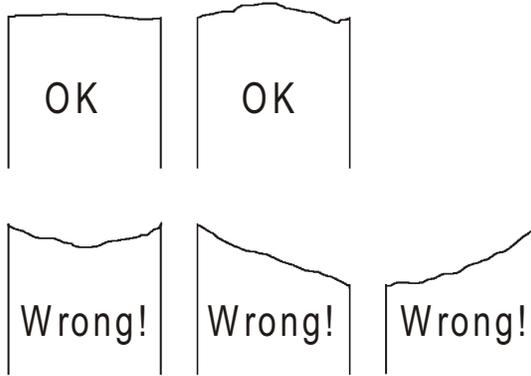
3. Make sure the printer is turned ON.
4. Insert the ticket stock through the paper entry opening at the back of the printer.



**Note** • The ticket sensor is at the center of the print width. If the ticket edge is torn off in such a way that the sensor does not see it, auto load will not be triggered. If so, reshape the edge so that the sensor sees the ticket stock.

5. Press the **Feed** button so that the printer feeds, cuts, and ejects a page. This ensures that the first ticket printed will have a straight edge.

**Figure 22 • Example of Bad Page Edges**

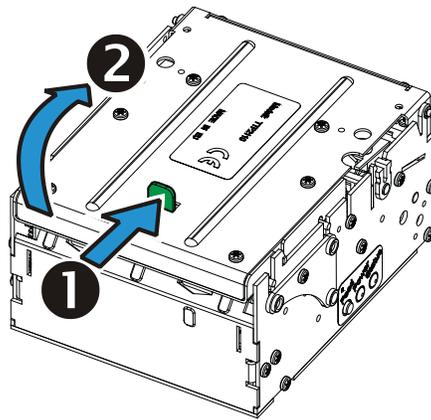


## Clearing Paper Jams

Should a paper jam occur, follow the procedure below:

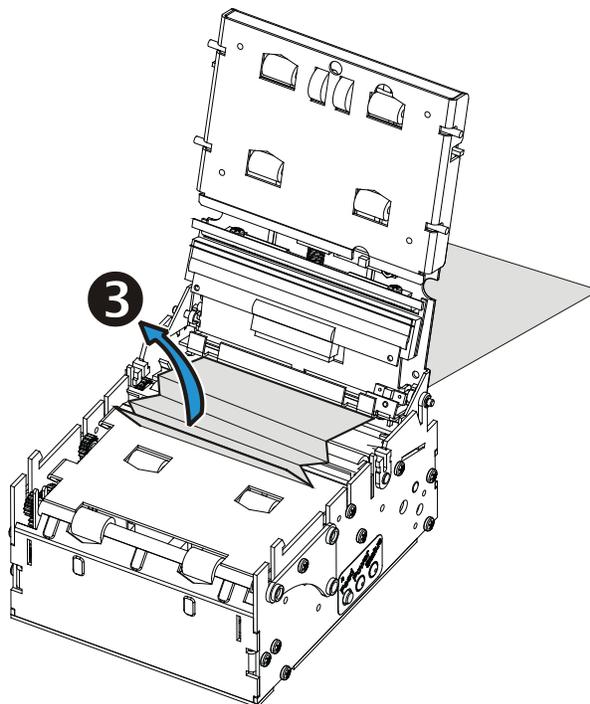
1. Open the printer lid.
  - a. Press the green release lever toward the rear of the printer.
  - b. Lift the lid.

**Figure 23 • Opening the Lid**



2. Remove all jammed paper, make sure the paper path is clear, and close the lid.

**Figure 24 • Remove Paper Trash**





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# Programming

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## Programming Overview

There are two ways of generating a printout with the TTP 2100 printer: using the KPL control language or using a printer driver.

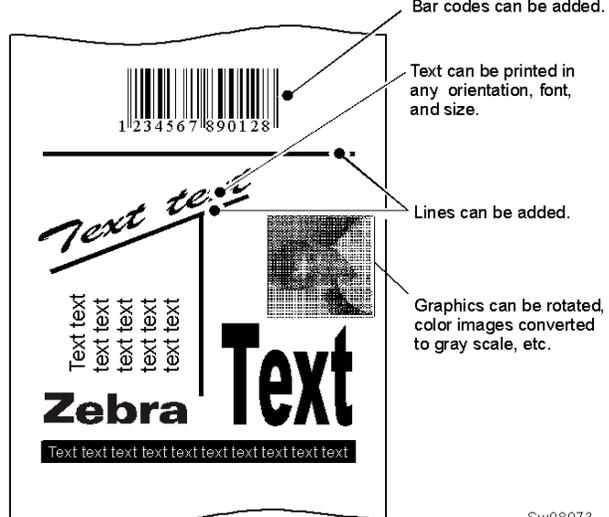
KPL Control Language	<p>When operating in this mode, you have direct control over what the printer does using KPL command sequences. The printer has two operation modes you can choose from.</p> <p>In variable page mode, the printer can act as a simple word processor, printing text that it receives. It can also print some types of barcodes and basic graphics in this mode. The selection of fonts and barcode types that are available are limited to what is stored in the flash PROM and the firmware of the printer. In this mode, information is printed in the same sequence as it is received.</p> <p>In fixed page mode, you can place rotated text, barcodes, images, and ruled lines. This mode provides more flexibility than variable page mode, but is limited by available printer memory. Printout elements can be specified in any order. You instruct the printer when your layout is complete, and it is all printed at once.</p> <p>Selection of the mode is controlled by the setting of parameter n36. (Refer to <a href="#">Document Mode</a> for more information about parameter n36)</p> <p>Use the Zebra Toolbox (available from <a href="http://www.zebra.com">www.zebra.com</a>) to easily build text oriented designs.</p>
Printer Driver	<p>TTP 2130 printers can print documents through a driver. When a Windows driver is used, you can use any Windows program to design the ticket with text, graphics, barcodes or whatever you want to print and in any orientation. When using a driver, printout is not limited by printer memory.</p> <p>The Windows driver issues all the necessary commands. By setting up printing preferences in the driver you select how the printer should cut and present the printout.</p>

Figure 25 • Printout Styles

### KPL Control Language receipt

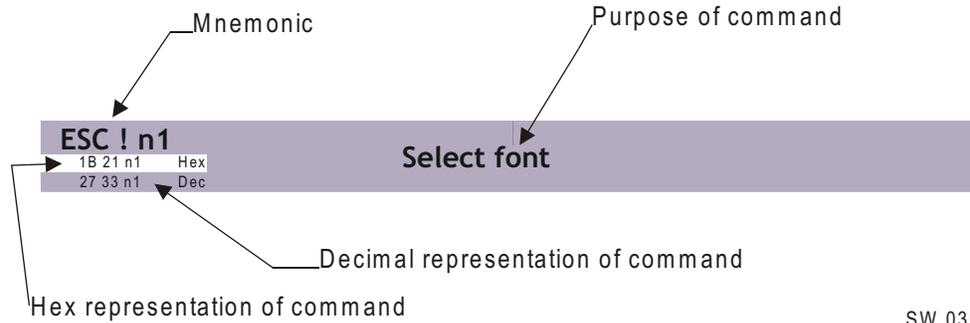


### Driver (Windows) receipt



Sw98073

## How the Commands are Described



SW 03002

### 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. represent values that you specify to control how the command behaves. These are different for each command and are explained in the text that follows each command description.

### 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 (hexadecimal 1B). Numbers between less-than and greater-than characters, for example `<1><19>`, means 1 and 19 decimal. When the numbers indicate a hex value, a leading `h` and then a space is placed before the hex value (`<h 1><h 13>`).



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

## Two-Byte Character Definitions

Some commands and parameters are used with a two-byte value definition because the internal structure of the printer's firmware limits access to values greater than 255.

To represent values greater than 255 in this two-byte format, divide the value by 256. The whole number (quotient) is the value of the leading byte and the remainder (modulo) is the value of the trailing byte.



**Example** • To represent 731 in two-byte notation, divide 731 by 256.

$$731 \div 256 = 2 \text{ with a remainder of } 219 \text{ (} 2 \times 256 + 219 = 731 \text{)}$$

Therefore, the two-byte representation of 731 is <2><219>.

## Summary of Control Codes and Escape Sequences

Command	Hex	Decimal	Function	Page
BS	08	8	Backspace	53
CAN	18	24	Cancel	53
CR	0D	13	Carriage Return	54
EM n1	19 n1	25 n1	Enforced Clear Presenter	69
ENQ	05	5	Clear Presenter	69
ESC ACK n1	1B 06 n1	27 6 n1	Acknowledge Marker	84
ESC   5	1B 7C 05...n2-nx	27 124 5...n2-nx	2-D Barcode Print	59
ESC ! n1	1B 21 n1	27 33 n1	Select Font	50
ESC #	1B 23	27 35	Calibrate TOF Sensor	48
ESC & 000	1B 26 00	27 38 0	Load Font	71
ESC & 001	1B 26 01	27 38 1	Load Logotype	70
ESC & 004	1B 26 04	27 38 4	Store Current Parameter Values	70
ESC & b n1 n2 n3	1B 26 62	27 38 98	Set bit field parameters	71
ESC & C	1B 26 43	27 38 67	Erase All Fonts	71
ESC & D	1B 26 44	27 38 68	Erase Fonts 4 to 7	72
ESC & F	1B 26 46	27 38 70	Recall Parameter Profile	72
ESC & L	1B 26 4C	27 38 76	Erase All Logotypes	70
ESC & P n1...n2	1B 26 50 n1...n2	27 38 80 n1...n2	Set Parameter Value	72
ESC & s n1	1B 26 73	27 38 115	Load SPI Slave Firmware	73
ESC & S	1B 26 53	27 38 83	Return to Saved Values	73
ESC ?	1B 3F	27 63	Reset (Full)	70
ESC @	1B 40	27 64	Reset (Initialize)	70
ESC b n1...n5	1B 62 n1...n5	27 98 n1...n5	Print Bitmap at XY-Position	62
ESC B n1	1B 42 n1	27 66 n1	Bold	51
ESC B C	1B 42 43 n1	27 66 67 n1	Barcode Clear	59
ESC B S n1...n11	1B 42 53 n1...n11	27 66 83 n1...n11	Barcode Field Specify	57
ESC BW	1B 42 57 n1	27 66 87 n1	Barcode Write	58
ESC d n1	1B 64 n1	27 100 n1	Make n Linefeeds	54
ESC ENQ 1	1B 05 01	27 5 1	Status Enquiry	74

Command	Hex	Decimal	Function	Page
ESC ENQ 2	1B 05 02	27 5 2	Paper-Near-End Enquiry	76
ESC ENQ 4	1B 05 04	27 5 4	Fonts and Logotype Enquiry	77
ESC ENQ 5	1B 05 05	27 5 5	Sensor Enquiry	78
ESC ENQ 6	1B 05 06	27 5 6	Status Report	79
ESC ENQ 7	1B 05 07	27 5 7	Firmware-Version Enquiry	80
ESC ENQ 9	1B 05 09	27 5 9	Serial-Number Enquiry	80
ESC ENQ 10	1B 05 0A	27 5 10	Control Board Revision Enquiry	80
ESC ENQ 11	1B 05 0B	27 5 11	Head Temperature Enquiry	81
ESC ENQ 12	1B 05 0C	27 5 12	Bootware Version Enquiry	81
ESC ENQ c	1B 05 63	27 5 99	Device ID Enquiry	82
ESC ENQ E	1B 05 45	27 5 69	Read Extended Status	82
ESC ENQ H	1B 05 48	27 5 72	Read Printer Info	82
ESC ENQ P n1	1B 05 50 n1	27 5 80 n1	Parameter-Setting Data Enquiry	83
ESC ENQ = ?	1B 05 3D 3F	27 5 61 63	Media Loaded into Tray Enquiry	83
ESC FF n1	1B 0C n1	27 12 n1	Eject (Run Presenter)	69
ESC g n1...n5	1B 67 n1...n5	27 103 n1...n5	Print Logotype	64
ESC h n1	1B 68 n1	27 104 n1	Text Height	52
ESC i n1	1B 69 n1	27 105 n1	Italics	51
ESC j n1	1B 6A n1	27 106 n1	Paper Reverse	66
ESC J n1	1B 4A n1	27 74 n1	Paper Advance	66
ESC L n1	1B 4C n1	27 76 n1	Print Logotype at Current Position	65
ESC N n1	1B 4E n1	27 78 n1	Align Text	50
ESC NUL	1B 00	27 0	Load Firmware	74
ESC o n1	1B 6F n1	27 111 n1	Text and Logotype Orientation	49
ESC p	1B 70	27 112	Print	65
ESC P n1	1B 50 n1	27 80 n1	Print Self-Test Printout	66
ESC Q n1 n2	1B 51 n1...n2	27 81 n1...n2	Quick Advance	67
ESC r n1...n9	1B 72 n1...n9	27 114 n1...n9	Print Ruler Line	63
ESC RS	1B 1E	27 30	Cut Only, No Eject	68
ESC s n1 data	1B 73 n1	27 115 n1	Send Dot-Line, 203 dpi	63
ESC t n1...n5	1B 74 n1...n5	27 116 n1...n5	Print Text at XY	53

Command	Hex	Decimal	Function	Page
ESC T n1	1B 54 n1	27 84 n1	Reversed/Inversed Text	51
ESC u n1	1B 75 n1	27 117 n1	Underline	52
ESC w n1	1B 77 n1	27 119 n1	Text Width	52
ESC Z	1B 5A	27 90	Go to Next Top of Form	48
FF	0C	12	Form Feed	55
HT	09	9	Horizontal Tabulation	55
LF	0A	10	Linefeed	54
RS	1E	30	Cut and Eject	67
US	1F	031	Partial Cut (Unit Separate)	68



**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 [Aligning Preprint and Thermal Print](#).

ESC #		Calibrate TOF Sensor
1B 23	Hex	
27 35	Decimal	

When the printer is not in black mark mode, the calibration measures the out of paper level (parameter 58) and the whiteness of the paper.

In Black Mark Mode, it also determines if it should trigger on black marks or holes, then measures the contrast of the mark and distance between marks, then sets parameters n37-n40, n51, n57 bit 3, and n58 to suitable values for the analyzed ticket.

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



**Note** • If black mark calibrations fails, the printer will indicate error code 11 by blinking 11 times when you press and hold the Feed button, and by answering `<NAK><11>` to the status enquiry.

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, bit 3 in status byte 1 is set to 1 and the printer will report `<NAK><10>` on the next status query.

When black mark mode is disabled, `<ESC>Z` will perform a form feed.

## 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

1B 6F n1	Hex
27 111 n1	Decimal

### Text and Logotype Orientation

Changes the orientation of text and logotypes in Fixed Page Mode (n36=0).

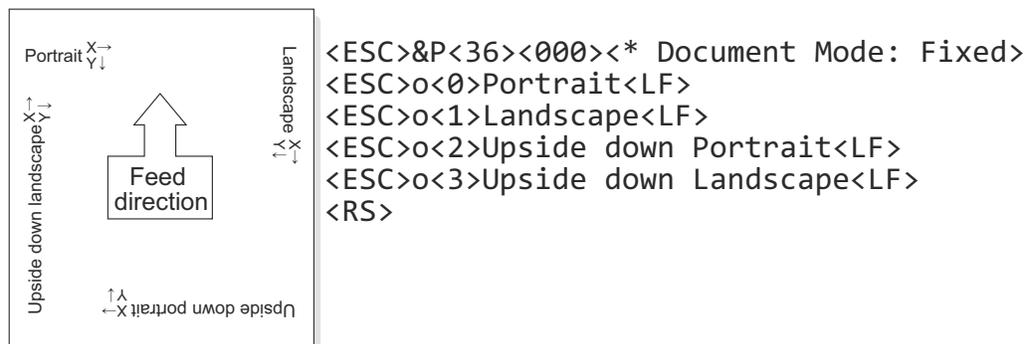
n1 = 0	Gives portrait orientation
n1 = 1	Gives landscape orientation
n1 = 2	Gives upside down portrait orientation
n1 = 3	Gives upside down landscape orientation

Portrait and landscape or upside-down portrait and upside-down landscape can be mixed on the same printout (see [Figure 26, Printing Orientations, on page 49](#)). There are four cursors, one for each orientation. The cursor always starts at the top left corner of the selected orientation. 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, etc.



**Note** • The printer is capable of printing all four orientations on a single fixed page. This is valid in firmware versions 3.90 and higher.

**Figure 26 • Printing Orientations**



**ESC N n1**

**Align Text**

1B 4E n1	Hex
27 78 n1	Decimal

Changes the alignment of text, barcodes, and logotypes printed with <ESC>L on the current line; on subsequent lines, it defaults back to Left align. The alignment can be changed multiple times per text line.

n1 = 0	Left
n1 = 1	Center
n1 = 2	Right

**ESC ! n1**

**Select Font**

1B 21 n1	Hex
27 33 n1	Decimal

This command selects one of the printer's eight installed fonts. The font design depends on which fonts have been loaded into the printer's flash PROM. Make a test printout to see which fonts are available in your printer.

n1 = 0	Normal font (font 0)
n1 = 1	Font 1
n1 = 2	Font 2
n1 = 3	Font 3
n1 = 4	Font 4
n1 = 5	Font 5
n1 = 6	Font 6
n1 = 7	Font 7



**Note** • For information on loading fonts, see [Font Loading](#).

This command performs the same function as setting parameter n14, Font Selection. Refer to [Font Selection](#) for more information.

If a line of text is too long to be printed due to the font, position, print width, or any other factor, the text line will be automatically wrapped. If wrapping occurs, any alignment command is canceled. Different fonts can be used on the same line.

Selecting an empty font location will set bit 4 of byte 1 in the <ESC><ENQ><6> response to 1. The printer will also return a <NAK><12> on the next <ESC><ENQ><1> enquiry. This <NAK><12> is a one-time error that will clear after read.



**Note** • If more than 379 characters are sent to the printer before an LF, the text buffer is printed automatically. Each font or text style change consumes two bytes in this buffer. The text is formatted based on the formatting commands as they were received.

**ESC B n1**

**Bold**

1B 42 n1	Hex
27 66 n1	Decimal

Bold command works best with normal character width. With higher widths, the effect of bold becomes less pronounced. The Bold command can be applied to single characters, words, or text lines.

Bold remains in effect until deactivated or until the printer is reset.

n1 = 0	Turns OFF bold (Normal)
n1 = 1	Turns ON <b>bold</b>

**ESC i n1**

**Italics**

1B 69 n1	Hex
27 105 n1	Decimal

The Italics command works best with normal character width and height. At other values, the output can become pixelated. The Italics command can be applied to single characters, words, or text lines.

Italics remains in effect until deactivated or until the printer is reset.

n1 = 0	Turns OFF Italics (Normal)
n1 = 1	Turns ON <i>Italics</i>

**ESC T n1**

**Reverse Text and Background**

1B 54 n1	Hex
27 84 n1	Decimal

Selects normal black text on a white background or reversed white text on a black background. Single characters, words, or complete text can be reversed.

This command remains in effect until deactivated or until the printer is reset.

n1 = 0	Gives normal print, black on white
n1 = 1	Gives reversed print, white on black



**Note** • Reverse text and underline invert the print data. This means that the order in which the commands are issued affect the printout if the text overlaps, such as in the case of italics.

**ESC u n1** **Underline**

1B 75 n1	Hex
27 117 n1	Decimal

n1 = 0	Turns OFF underline
n1 = 1...7	Turns ON a 1–7 pixel thick underline

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

**ESC h n1** **Text Height**

1B 68 n1	Hex
27 104 n1	Decimal

This command scales the height of the text printed by a factor of up to 16x. The valid range of values is 0 to 15.

n1 = 0	Resets the character height to the base character height
n1 = 1...15	Increases the character height to 2...16 times the base character height.

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

Different heights can be mixed on the same print line.

**ESC w n1** **Text Width**

1B 77 n1	Hex
27 119 n1	Decimal

This command scales the width of the text printed by a factor of up to 8x. The valid range of values is 0 to 7.

n1 = 0	Resets the character width to the base character width
n1 = 1...7	Increases the character width to 2...8 times the base character width.

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

Different widths can be mixed on the same print line.



**Important** • Use of the multiple width function when printing barcodes is not recommended as the text data may become illegible.

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 XY position. The string is formatted based on the current active formatting attributes except for alignment.

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. To avoid having to count characters you can set n5 to <0> (null) and then terminate the text string with null.
data	The text string. If text string length is specified with n5, the length must be exactly the number of characters specified, otherwise the printer will stop, waiting for more characters. Data that extends off the edge of the printable area will not be wrapped to the next line.

After the data has been printed, the cursor will return to the position it had before the print text.



**Note** • The Y coordinate will be ignored if the printer is in variable document mode (n36=1).



**Note** • <ESC>t<n1 . . . n5> clears the text buffer each time it is used, destroying any unprinted text on the same line. Commands will not be cleared.

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 command O<BS>/ to the printer, and the slash will overprint the O.

The print position can only be moved one step to the left. Multiple backspaces in succession are 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**

0D	Hex
13	Decimal

**Carriage Return**

By default, carriage return is ignored.

Parameter n33 (CR/LF Behavior) can be changed so the printer interprets <CR> as follows:

- Interpret it as <CR>, returning the print position to beginning of line without line feed.
- Interpret <CR> as <CR><LF>, inserting line space as specified by the line spacing setting (see parameter n13), and returning the print position to beginning of the line.

See [CR/LF Behavior](#).

**LF**

0A	Hex
10	Decimal

**Linefeed**

Linefeed is interpreted as <CR><LF> by default. This inserts line spacing as specified by the line spacing setting (see parameter n13), and returns the print position to beginning of the line. <LF> also converts text from the text 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 n13), without returning the print position to the beginning of the line.
- Ignore <LF>.

See [CR/LF Behavior](#).

**ESC d n1**

1B 64 n1	Hex
27 100 n1	Decimal

**Make n Linefeeds**

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 or the line spacing setting specified by n13, whichever is greater (refer to parameter [Line Spacing](#)).

If an <LF> has not yet been sent to convert the text buffer to the line buffer, the lines printed by <ESC>d<n1> are copies of that line. Following this, the print position is returned to the beginning of the line.

**FF**

0C	Hex
12	Decimal

**Form Feed**

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

In fixed document length mode (n36 = 0) this command prints data in the text buffer and feeds the paper to the top of next page.

In variable document length mode, <FF> advances to the minimum page length as specified by n37 and n38. If the printout already is longer than the minimum page length, <FF> does not feed any additional paper.

In black mark mode, the <FF> command looks for a black mark, see [ESC Z](#) .

If Auto Cut (n34) is set to 1 (see [Auto Cut After FF](#)), <FF> affects form-feed, cut, and eject.



**Note** • Use parameter p37 and p38 to define page length.

**HT**

09	Hex
9	Decimal

**Horizontal Tabulation**

Shifts the current print position to the next Tab position

Set tab positions with parameters n15 – n30. Refer to [Tab Stop](#).

## Barcode Commands

A standard TTP 2100 can print 1-D barcodes EAN 8, EAN 13, EAN128, UPC, 2-of-5 Interleaved, ISBN, Code39, and Code128, plus 2-D barcodes PDF417, and Aztec.

Older versions of the printer (serial numbers lower than 2-0913-27444) can only print the 1-D barcodes as standard, but can be upgraded with a firmware that replaces the 1-D barcodes with PDF417 only. See [Firmware](#) and [2-D Barcode Print \(PDF 417\)](#).

### Printing Barcodes Without Text

The 1-D barcodes print the encoded message under the code itself, see [Samples of Barcodes](#). If you want to print only the barcode without the text, follow the procedure below:

1. Load the font “1x1 blank” that comes with the Zebra Toolbox utility.
2. Select that font with the <ESC>!<n> command.
3. Send the commands for the barcode.
4. Return to the normal font after the barcode data.

Figure 27 • Samples of Barcodes





**Example** • This example will print an EAN barcode with height = 10 mm, 15 mm in from the left margin.

```
<ESC>BS<0><0><72><0><0><0><0><64><0><2><2>
<ESC>BW<0>733104000099<0>
<LF><RS>
```

<b>ESC B S n1...n11</b>			<b>Barcode Field Specify</b>
1B 42 53 n1...n11	Hex		
27 66 83 n1...n11	Decimal		

Barcodes can only be printed in portrait mode unless Fixed Document Mode is selected. See [Document Mode](#)

n1	Specifies the barcode field number. The valid range is 0 – 15. Barcode fields may be specified in any order.
n2n3	Specifies the X coordinate of the barcode field origin (n2 is the higher order byte and n3 the low order byte). n2 and n3 are one-byte numbers. Refer to <a href="#">Two-Byte Character Definitions</a> for more information about two-byte values. Values that place the barcode outside the printable area may cause the barcode to be partially printed and be unreadable.
n4n5	Specifies the Y coordinate of the barcode field origin (n4 is the high order byte and n5 is the low order byte). n4 and n5 are one-byte numbers. Refer to <a href="#">Two-Byte Character Definitions</a> for more information about two-byte values. Values that place the barcode outside the printable area may cause the barcode to be partially printed and be unreadable.
n6	Must be specified but is not used.
n7n8	Specifies the height of the bars in pixels (n7 is the high order byte and n8 is the low order byte).
n9	Specifies the type of barcode. The following types are supported.
n9 = 0	EAN 8 or 13 (auto detect). The printer calculates the necessary check digit.
n9 = 1	UPC
n9 = 2	2/5 Interleaved (even number of characters must be sent)
n9 = 3	ISBN
n9 = 4	Code128 (Start data string with C2h to encode EAN128)
n9 = 6	Code39
n10	Specifies the thickness of the narrow bar 0=1 pixel, 1=2 pixel, and so on.
n11	Specifies the wide-bar-to-narrow-bar ratio. Only used in Code 39 and 2-of-5 interleaved where different ratios are allowed

This command reserves an information field as a barcode field. The command also identifies the type, number of digits, and the configuration of bars to be placed in the barcode field.

### Code 128 / EAN128

The following codes select function codes in Code 128:

Name	Dec	Hex
FNC1	193	C1h
FNC2	194	C2h
FNC3	195	C3h
FNC4	196	C4h

Starting the data string with FNC1 generates an EAN128 code.



**Note** • By default, the printer will print barcodes with human readable characters. To avoid this behavior, load the font `1x1_blank.swf` to the PROM and select that font with `ESC !` before you specify the barcode. After the `ESC BW` command, you can return to the normal font. This font is available in the Toolbox application.

ESC BW		n1	nx		Barcode Write
1B	42 57	n1	nx	Hex	
027	066 087	n1	nx	Decimal	

Writes data to the barcode field reserved by the `ESC BS` command.

n1	Specifies the barcode field number. The valid range is 0 - 15. This number must be the same number used to specify the field using the <code>ESC BS</code> command. Fields can be specified in any order but other values than 0 to 15 are ignored.
n2 . . . nx	Specifies barcode data bytes. Up to 80 bytes may be specified. To create a barcode add-on, insert a space character and then the data for the add-on. Two of five characters are allowed of the add-on.
NUL	Must be placed at the end of the barcode data.

Any invalid barcode character terminates the command, and prints `<Invalid bar code>` on the printout.



**Example** • This example will print one barcode with height = 10 mm and located 15 mm to the right.

```
<ESC>BS<0><0><72><0><0><0><0><64><0><2><2>
<ESC>BW<0>733104000099<0>
<LF><RS>
```

<b>ESC B C</b>	<b>Barcode Clear</b>
1B 42 43 n1      Hex	
27 66 67 n1      Decimal	

Clears the barcode field reserved by command <ESC><BS><n1>.

n1	Specifies which barcode field to clear. The range is 0 to 15. The fields may be cleared in any order.
----	---

<b>ESC   5</b>	<b>n2-nx</b>	<b>2-D Barcode Print (PDF 417)</b>
1B    7C    05    n2-nx    Hex		
027   124   5    n2-nx    Decimal		

This command positions and prints a PDF 417 2-D barcode.



**Note** • 2-D barcodes are standard in all printers starting with serial number 93J. Older printers require special firmware to be loaded. See [Firmware](#).

n1	Specifies the type of barcode.
n1 = 5	PDF 417
n2n3	Specifies the X-coordinate of the barcode field origin. n2 is the most significant byte (MSB). n3 is the least significant byte (LSB).
n4n5	Specifies the Y-coordinate of the barcode field origin. The Y-coordinate is discarded in variable document mode. n4 is the most significant byte (MSB). n5 is the least significant byte (LSB).
n6 (PDF 417)	Rows of barcode data. The valid range is 0 for automatic row calculation or 3–90 to specify the number of rows.
n7	Columns of barcode data. The valid range is 0 for automatic column calculation or 1–30 to specify the number of columns.
n8	Specifies the error correction level for the PDF 417 barcode. The valid range is 0 for automatic calculation or 1–9 to specify an error level (ErrorLevel 0 to ErrorLevel 8, respectively).
n9	Specifies in pixels the height of each row of the barcode.
n10	Specifies the scaling factor of the barcode
n11n12	Specifies the length of the data to follow. Both n11 and n12 are specified as 0. The data field (n13...nx) is terminated by a null. If n11 and n12 are non-zero, they specify the length of the n13...nx data that follows. The valid range for this parameter is 0 (which species the null terminated behavior) and 1 to 2710. Even when using the null terminated behavior, you cannot specify more than 2710 bytes (not including the terminating null).
n13...nx	Byte data to be encoded. Data must be null-terminated if n11 and n12 are 0 or must be the length specified by n11 and n12 otherwise.



**Example** • To print Zebra as a PDF 417 barcode, send the following to the printer:

```
<ESC><124><5><0><0><0><0><0><0><0><3><3><0><0>Zebra<0>
```

This example will print a barcode that looks like this:



ESC | 7

n2-nx

Aztec-Barcode Print

1B	7C	07	n2-nx	Hex
027	124	7	n2-nx	Decimal

This command positions and prints an Aztec 2-D barcode.

<ESC> "   "	<type=5> <x_msb> <x_lsb> <y_msb> <y_lsb> <rows> <cols> <errLevel> <dotHeight> <scale> <len_msb> <len_lsb> <data>
n1	Specifies the type of barcode.
n1 = 7	Aztec
n2n3	<x_msb> <x_lsb> Sets the X-coordinate of the barcode field origin.
n4n5	<y_msb> <y_lsb> Sets the Y-coordinate of the barcode field origin. The Y-coordinate is discarded in variable document mode.
n6	Flag - Instructs the barcode engine how it should interpret <27> bytes in the data stream.  If set to <0>, Data is assumed to be straight bytes to be encoded. If set to <1>, placing <27> in Data is interpreted to be FLG markers to be encoded in the barcode.  The byte in Data after <27> represents the FLG to be encoded. To encode <27> in when Flag is 1, send <27><27>.
n7	Menu - If non-zero, the barcode is encoded as an Aztec menu barcode.
n8	Multi - The number of symbols to use in encoding the barcode. The valid range is <1> to <26>.
n9n10	Layer - The encoding scheme and error correction. n9 is always <0>.  The following values are valid for this field: <0> = Default Error Correction Level <1> to <99> = Minimum Error Correction Percentage <101> to <104> = 1 to 4-layer Compact Symbol <201> to <232> = 1 to 32-layer Full-Range Symbol
n11	Scale - The size in pixels of a single dot element.
n12n13	The length of the data to follow. The maximum number of bytes that can be encoded is 1914 (<7><122>), however the maximum readable size is dependent on many factors including print speed, burn time, media quality, scale, error correction percentage, and reader quality.  If set to <0>, <nul> indicates the end of the data block <data>.  If length is set to other values, the value indicates the number of bytes in <data>.
<data>	Data to be encoded.



**Example** • To print Zebra as an Aztec barcode, send the following to the printer:

```
<ESC><124><7><0><30><0><10><0><0><1><0><206><5><0><5>
Zebra<CR><LF><RS>
```

This example will print a barcode that looks like this:



## Graphics Commands

### ESC b n1...n5 data

1B 62	n1...n5	data	Hex
27 98	n1...n5	data	Decimal

### Print Bitmap at XY-position

Prints a black & white (1-bit color depth) Windows bitmap (BMP file) at the specified X-Y position. The bitmap must be a complete uncompressed Windows bitmap where the data starts with BM. The maximum bitmap 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 Document Mode is set. See [Document Mode](#).

**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.

n1	Determines the number of bytes. Range: 1-255.
<data>	1 – x bytes, where x is the paper width in bytes. The paper width is set by parameter n48. If n48 is set to 0 (automatic width), 58 mm and 60 mm printers will use 54 bytes, while 80 mm and 82.5 mm printers use 72 bytes. The maximum width setting is 80 bytes.  If you specify more bytes in n1 than the paper width of the printer, the additional bytes are discarded. If you specify less bytes in n1 than the paper width of the printer, the printer will fill the remaining portion of the dot line with blank pixels.



**Caution** • Always send the number of bytes that you specify with n1.

If you transmit more data than the number of bytes specified by n1, the rest of the bytes will be interpreted as text or commands. This can cause numerous problems in the printer as graphics data can contain any hex value.

**ESC r n1...n9**

**Print Ruler Line**

1B 72 n1...n9	Hex
27 114 n1...n9	Decimal

Prints a ruler line across the paper.

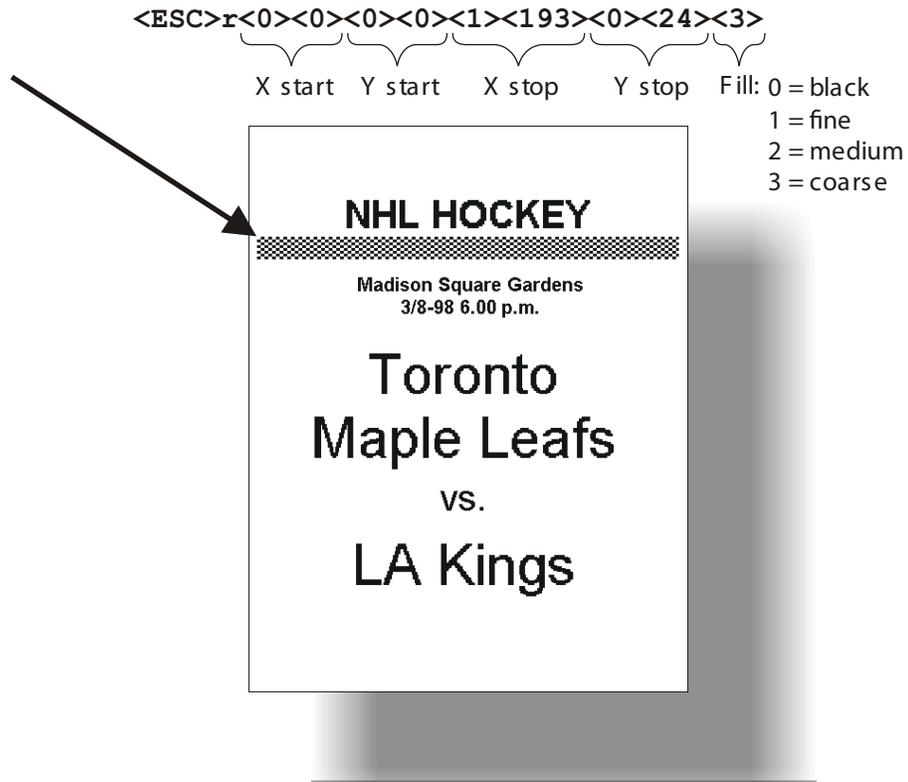
A ruler line is normally used to divide the printout into logical parts to make it easier to read. A ruler line is actually an area defined by a start X-Y position and a stop X-Y position. This area is filled with black or a checkered pattern.

n1n2	Two byte definition of the X print position to start the ruler line (in pixels)
n3n4	Two byte definition of the Y print position to start the ruler line (in pixels)
n5n6	Two byte definition of the X print position to stop the ruler line (in pixels). This value must be larger than the X start position.
n7n9	Two byte definition of the Y print position to stop the ruler line (in pixels). This value must be larger than the Y start position.
n9	Specifies the fill pattern. The valid range is 0 to 3. 0 is black and 1-3 are various checkered patterns. Values out of range are interpreted as 0.



**Note** • The Y print-position and horizontal/vertical orientation only works if Fixed Document Mode is set. See [Document Mode](#).

Figure 28 • Printout with Checkered Ruler Line



**ESC g n1...n5**

1B 67 n1...n5	Hex
27 103 n1...n5	Decimal

**Print Logotype**

Prints a customized logotype stored in the flash PROM. See also [Logotypes](#).

n1	One-byte logotype identification number. The valid range is 0 to 15.
n2n3	Two byte definition of the X print position to place the upper left corner of the logotype (in pixels). If the logotype extends outside the printable area, it will be cropped.
n4n5	Two byte definition of the Y print position to place the upper left corner of the logotype (in pixels). If the logotype extends outside the printable area, it will be cropped.



**Note** • The Y print position and horizontal/vertical orientation only works if Fixed Document Mode is set. Refer to [Document Mode](#) for more information.



**Note** • For information about logotype loading, refer to [ESC & 001](#).

**ESC L n1** **Print Logotype at Current Position**

1B 4C n1	Hex
27 76 n1	Decimal

Prints a customized logotype stored in the flash PROM at the position of the cursor. The bottom edge of the logotype is positioned at the baseline of the text on the line. If the logotype is taller than the text, the line spacing is increased as necessary.

n1	One-byte logotype identification number. The valid range is 0 to 15.
----	--



**Note** • When using <ESC>L the logotype is added to the text buffer, so a text printing command such as <LF> or <FF> must be used to generate the printout.

## 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 to image data 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><n>
Text or line buffer full	
When the Feed button is pressed	

**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 has been made by a driver before ESC P is sent to the printer.

For more information, refer to [Making a Self-Test Printout](#).

n1 = 0	Gives standard self-test printout.
n1 = 1	Gives a character set printout using the font selected by parameter n14.

**ESC J n1**

**Paper Advance**

1B 4A n1	Hex
27 74 n1	Decimal

The value n1 represents the number of dot lines the paper is to be transported forwards. The valid range is 1 to 255.

A dot line is 0.125 mm, and 255 dot lines equal approximately 32 mm.



**Important** • Using paper feeding command (<ESC>J<n>, <ESC>j<n>, and <ESC>Q<n>) when operating in fixed page mode (n36 = 0) causes the fixed page to be printed and then the feed operation occurs. To create white space without generating a printout of the fixed page, use <LF>.

**ESC j n1**

**Paper Reverse**

1B 6A n1	Hex
27 106 n1	Decimal

The value n1 represents the number of dot lines the paper is to be transported backwards. The valid range is 0 to 255.

A dot line is 0.125 mm, and 255 dot lines equal approximately 32 mm.



**Caution** • NEVER reverse more than 7 mm (n1 = 56) at top of page! The platen can lose grip on the media, which can fall out of the printer.



**Important** • Using paper feeding command (<ESC>J<n>, <ESC>j<n>, and <ESC>Q<n>) when operating in fixed page mode (n36 = 0) causes the fixed page to be printed and then the feed operation occurs. To create white space without generating a printout of the fixed page, use <LF>.

**ESC Q n1 n2**

**Quick Advance**

1B 51 n1	Hex
1B 81 n1	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 1, and maximum value is 32767.

A dot line is 0.125 mm, and 32767 dot lines equals approximately 4.1 m.



Using paper feeding command (<ESC>J<n>, <ESC>j<n>, and <ESC>Q<n> when operating in fixed page mode (n36 = 0) causes the fixed page to be printed and then the feed operation occurs. To create white space without generating a printout of the fixed page, use <LF>.

## Cut and Present Commands



**Important** • The printer will not receive data while cut and present commands are executed.

**RS**

**Cut and Present Media**

1E	Hex
30	Decimal

The paper is cut and presented through the presenter module. The <RS> command automatically gives the presentation length of 50 mm in addition to the amount specified by parameter n47.

If the printout length is less than the minimum page length (75 mm or the value specified by n37 and n38, whichever is greater), paper is fed until the minimum printout length is reached before execution of any cut command.



**Note** • The cut position is 9 mm after the print line. This makes the last 72 dot lines of the previous page end up on the beginning of the next page. To have the printer position the cut after these dot lines, set parameter n49 = 1 (Advance before cut to automatic distance calculation). The auto advance function also adds an additional 16 dot lines (2 mm) of feed due to the width of the cutter blade.

If you prefer to set n49 to 0 (off), you can use a paper advance command to perform the same task:

```
<ESC>J<88><RS>
```

This will position the cut 16 dot lines (2 mm) after the end of the print data.

**ESC RS**

1B 1E	Hex
27 30	Decimal

**Cut Only, No Present**

<ESC><RS> causes the paper to be cut but performs no present operation.

Eject can be effected with the <ESC><FF><n> command (see [Present Media](#)).

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 less than the minimum page length (75 mm or the value specified by n37 and n38, whichever is greater), paper is fed until the minimum printout length is reached before execution of any cut command.

Also, refer to the note in RS concerning the cut position with regard to the print line.

```
Text to be printed<CR><LF>  
<ESC><RS>  
<ESC><FF><30>
```

will print “Text to be printed” and cut and then eject 30 mm.



**Note** • Use the Cut Only command if you want full control over the printer from your system. When using <ESC><RS>, you must add commands to feed to the correct cut position (if n49 is not set to 1) and commands to eject the paper so that the customer can retrieve the printout.

**US**

1F	Hex
031	Decimal

**Partial Cut (Unit Separate)**

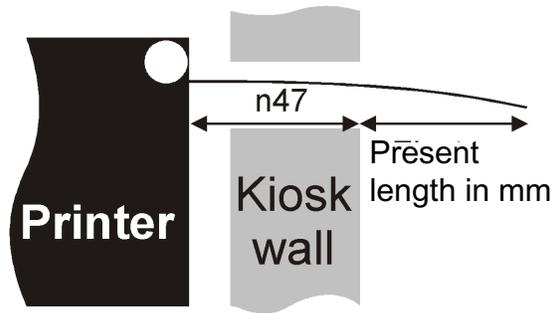
Prints a dotted line, a pair of scissors, and partially cuts the paper from both edges towards the center to make it easier to tear off the paper. This command causes all data in the image buffer to be printed and generates the printout of a fixed page when n36 = 0.

The length of the partial cut can be set with parameter n60. Refer to [Partial Cut Length](#) for more information.

**ESC FF n1** **Present Media**

1B 0C n1	Hex
27 12 n1	Decimal

<ESC><FF> presents a piece of media that has been previously cut. Variable n1 represents the present length in millimeters. The setting of parameter n47 is always added to the value of n1.



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

Place this command after a cut command (<ESC><RS>) to partially present the printout to the customer. Set the present 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 begins to pull the paper.



**Note** • The cut and present command <RS>, automatically presents 50 mm in addition to the amount stored in parameter n47.



**Note** • No matter how long a present you set, the printer will not loose grip of the printout. To eject fully, use the <ENQ> command.

**EM n1** **Enforced Clear Presenter**

19 n1	Hex
25 n1	Decimal

<EM><n1> functions the same as <ENQ>. The valid range of n1 is 0 to 255. The command will clear the presenter immediately (with printing synchronization).

**ENQ** **Clear Presenter**

05	Hex
5	Decimal

<ENQ> clears the paper path of the presenter from printouts. This command completely ejects a document that has not been removed during the print/cut/present operation.

## System Related Commands

### ESC ?

1B 3F	Hex
27 63	Decimal

#### Reset (Full)

<ESC>? restarts the printer with a complete reset. During this operation, all buffers are purged, all memory is cleared, and stored parameters are reloaded. USB printers will go off the bus during execution of this command and will reconnect when the reset is complete. After issuing this command, wait approximately 3 seconds for the printer to reset before issuing data to the printer.

### ESC @

1B 40	Hex
27 64	Decimal

#### Reset (Initialize)

<ESC>@ terminates command processing and reinitializes the control board. All parameters are set to power on values and all buffers are purged. After issuing this command, wait approximately 3 seconds for the printer to reset before issuing data to the printer.

### ESC & 001

1B 26 01	Hex
27 38 1	Decimal

#### Load Logotype

<ESC>&<1> stores a logotype bitmap in the flash PROM. The logotype is stored to flash memory and the printer is reset. The logotype can then be printed with <ESC>g<n1> and <ESC>L<n1> commands, see [ESC g n1...n5](#) and [ESC L n1](#). Also see [Logotypes](#). The printer indicates that storage is complete by operating the presenter motor for a short period of time.

### ESC & L

1B 26 4C	Hex
27 38 76	Decimal

#### Erase All Logotypes

<ESC>&L erases all logotypes stored in the flash PROM. The printer indicates that erasure is complete by operating the presenter motor for a short period of time.

### ESC & 004

1B 26 04	Hex
27 38 4	Decimal

#### Store Current Parameter Values

<ESC>&<4> stores the current setting of all parameter values in the printer's flash memory. These parameters are then used as default power on parameters. Storing the parameters to flash memory takes approximately 4 seconds, during which time the printer cannot communicate. The printer indicates that storage is complete by operating the presenter motor for a short period of time.

**ESC & 000**

**Load Font**

1B 26 00	Hex
27 38 0	Decimal

<ESC>&<0> is used to load a font to the printer flash PROM. The font is placed in the first free position. The printer indicates that storage is complete by operating the presenter motor for a short period of time. The font position is determined by the order that the fonts are loaded into the printer.

A Kiosk printer 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 FastFont application included with Toolbox and can be loaded or deleted using the Toolbox application. The fonts loaded are not used by the Windows driver, so it is not necessary to load fonts into the printer to use the Windows driver.

For complete specification of the font format, refer to [Font Loading](#).



**Note** • The available font memory is printed on the self-test printout. A maximum of 8 fonts may be loaded (numbered 0 to 7). If you attempt to load a font that is larger than available memory or attempt to load more than 8 fonts, the font loading command will not load the font.

**ESC & b n1 n2 n3**

**Set Bit Field Parameters**

1B 26 62	Hex
27 38 98	Decimal

<ESC>&b<n1><n2><n3> sets the bit field parameters using the following:

n1	Parameter number
n2	Operation (1=set to 1(on), 0=set to 0(off))
n3	Mask



**Example** • This example sets bits 0 and 3 of n64 to 0

<ESC>&b<64><0><b 00000101>

**ESC & C**

**Erase All Fonts**

1B 26 43	Hex
27 38 67	Decimal

<ESC>&C erases all fonts stored in the flash PROM. The printer indicates that erasure is complete by operating the presenter motor for a short period of time.

**ESC & D**

**Erase Fonts 4 to 7**

1B 26 44	Hex
27 38 68	Decimal

<ESC>&D erases the fonts in positions 4–7. Fonts in positions 0–3 are not affected by this command.

The font position is determined by the order that the fonts are loaded into the printer. This command can take up to 20 seconds to execute.

**ESC & F**

**Reset Parameter Profile**

1B 26 46	Hex
27 38 70	Decimal

<ESC>&F temporarily sets all parameters to predefined default values that are stored in the firmware. To make the default values permanent, store them in the EEPROM with command <ESC>&<4>.

Unless the parameters are stored, a reset command or power cycle will return the parameters to the settings stored in the EEPROM.

**ESC & P n1...n2**

**Set Parameter Value**

1B 26 50 n1...n2	Hex
27 38 80 n1...n2	Decimal

The printer stores its configuration settings in an EEPROM. When the printer is powered on, the values are loaded from the EEPROM. Using this command, a parameter value can be temporarily overridden. The value can later be made permanent with the <ESC>&<4> command. Permanently stored values are loaded after a printer reset or at power on.

n1	Parameter number, range 1-255.
n2	Parameter value. Refer to <a href="#">Default Parameter Settings</a> for information about the valid range for each parameter number.

## Set Several Parameters at Once

You can use this command to set multiple parameters at once. The format for this option is as follows:

```
<ESC>&P<n1><n2><n3><data>
```

When operating in this mode, specify a value of 0 for n1, the first parameter you want to set for n2, and the number of parameters to set for n3, followed immediately by the parameter data.

To set parameters that extend over a range in which the parameter number is not defined, specify 0 for the parameters that do not exist. For example, to set n4 to n7, you must provide all four parameters in data even though n6 does not exist.



**Example** • This example sets the first 5 tabs to 5, 10, 15, 20, and 25. (n2 = 5, n3 = 5)

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

Store parameters permanently by sending <ESC>&<4>.

### ESC & s n1

1B 26 73 0A	Hex
27 38 115 10	Decimal

### Load SPI Slave Firmware

This command is only valid for the following:

- TTP 2110, serial number higher than 2-0913-27444, or starting with 93J
- TTP 2130, serial number higher than 2-0913-27471, or starting with 93J

The TOF sensor has its own firmware that can be upgraded using this command.

n1	SPI Slave address, for the sensor board, the address is 10 dec.
<file>	the bin file with the new firmware

### ESC & S

1B 26 53	Hex
27 38 83	Decimal

### Return to Saved Values

If parameters are temporarily set in RAM, this command returns them to the values stored in the non volatile memory.

<b>ESC NUL</b>		<b>Load Firmware</b>
1B 00	Hex	
27 0	Decimal	

This command should be used when you integrate firmware loading into your Kiosk program. After transmitting this command, send the firmware binary file. If the firmware is the proper version for the printer and the firmware checksum is valid, the firmware is then programmed into the printer's flash memory. This process can take up to 60 seconds and the printer will reset when the process is complete, and reappear on the USB bus. Therefore, if your application needs to know when the upgrade is ready, monitor the USB bus for the printer return.



**Note** • The Toolbox application can be used to load new firmware.

## Status Reporting Commands



**Important** • All status commands except for the acknowledge marker are immediate. This means that these commands bypass the print queue and are answered as soon as they possibly can be.

Status codes are reset when:

- the conditions causing them are removed
- the printer is power cycled (turned off/on)
- the printhead is lifted and then lowered to clear a paper jam.

<b>ESC ENQ 1</b>		<b>Status Enquiry</b>
1B 05 01	Hex	
27 5 1	Decimal	

<ESC><ENQ><1> issues a status enquiry that results in response <ACK> (hex 06) if there are no errors, or <NAK> (hex 15) and a byte indicating an error if one or more sensors report some condition.

**Table 3 • 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.

**Table 3 • Status Codes**

Status Code	Meaning
NAK 7	Presenter not running
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.



**Note** • Errors 0B, 0C, and 10 are one-time errors that clear once they are read.



**Important** • Errors 2 and 5 are terminal faults that require you to reset the printer before it will be operable again. A reset means that any data in the buffer is lost. The printer automatically recovers from the other conditions as soon as the condition is corrected.

<ESC><ENQ><1> 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.

In the case of multiple error conditions, the one with the lowest number is reported.



**Note** • To read out all status information at once, use <ESC><ENQ>E.

**ESC ENQ 2**

1B 05 02      Hex  
27 5 2        Decimal

**Paper-near-end Enquiry**

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



The status of the sensor is sampled every time the printout is cut. If three successive samples show that there is no paper present at the sensor, the status reply changes to 1. This is to prevent false readings if the side of the paper roll is not clean. If you want instantaneous status of the sensor, use <ESC><ENQ><6> and examine the paper near end bit.



If you do not have a paper-low sensor connected, the reply to this query will be 1, “No paper at the sensor position.”



**ESC ENQ 5**

1B 05 05	Hex
27 5 5	Decimal

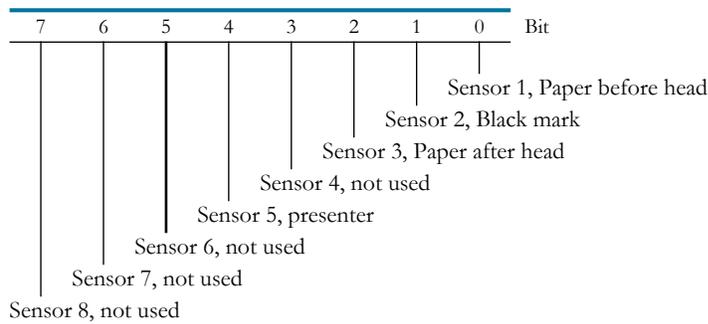
**Sensor Enquiry**

<ESC><ENQ><5> returns a 2-byte response, reflecting the status of all virtual sensors. Virtual sensors maintain their functionality in all configurations of this printer, while physical sensors reported by <ESC><ENQ><6> may signal differently depending on installation factors such as vertical or horizontal installation.

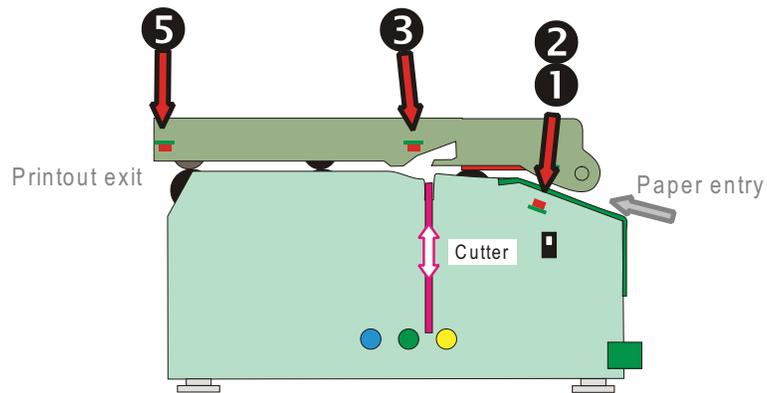
The same physical sensor can give several virtual statuses depending on when the sensor is activated in the print cycle.

The first byte of the response is reserved for future use.

Second Byte:



**Figure 29 • Physical-to-Virtual Sensor Mapping**



ESC ENQ 6

1B 05 06 Hex  
27 5 6 Decimal

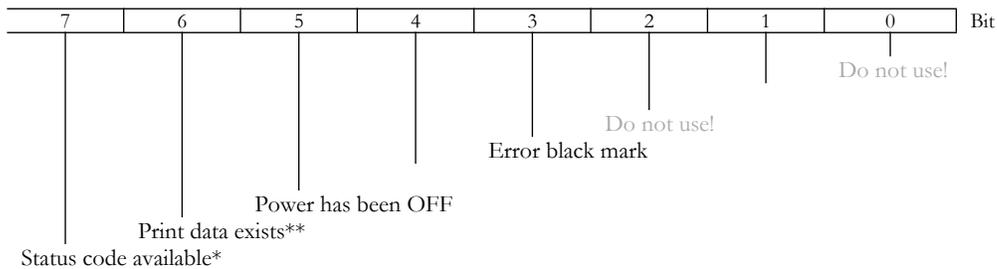
Status Report



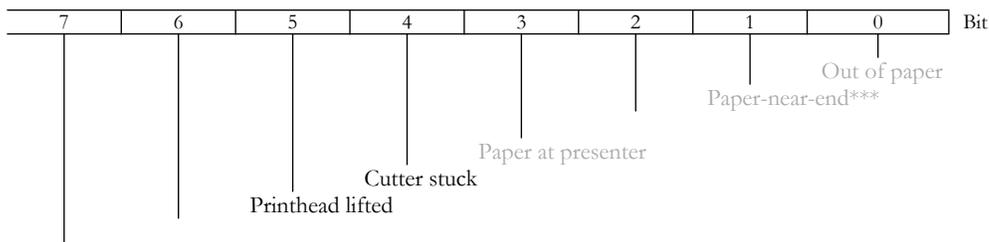
**Note** • The sensor status reported in the status report are for compatibility with older printers. Please use <ESC><ENQ><5> in new applications. Refer to ESC ENQ 5 on page 78 for more information.

Results in a 2-byte response, reflecting the status of each sensor. This command is intended as a go/no go indication.

First Byte:



Second Byte:



*	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: <ol style="list-style-type: none"> <li>1. The last command received by the printer was not a command that triggers a printout.</li> <li>2. The printer is printing.</li> </ol>
***	This paper-near-end bit differs from the <ESC><ENQ><2> response.

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



**Note** • 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 E8.
- Mask second reply byte with BB.

### ESC ENQ 7

1B 05 07	Hex
27 5 7	Decimal

### Firmware-Version Enquiry

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><0>.



#### Example •

Send→ <ESC><ENQ><7>

Read← <3><96>

That is, a response with the value <3><96> indicates version 3.96.

### ESC ENQ 9

1B 05 09	Hex
27 5 9	Decimal

### Main Logic Board Serial-Number Enquiry

Results in an 6-byte response representing the serial number of the control board, however the TTP 2100 series of printers do not have a serial No. chip on the control board so this query always gives 000000 as the reply.

In printers with serial number starting with 93J, the printer serial number is stored and can be read out with the command <ESC><ENQ>HSN<0>.

### ESC ENQ 10

1B 05 0A	Hex
27 5 10	Decimal

### Control Board Revision Enquiry

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 41h (hex) or 065 (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.

The answer is a signed byte (two's complement). If bit 7 is 1 then it is a negative value; invert all bits and add 1 to get the value.

**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← <1><30>

That is, a response with the value <1><48> indicates version 1.48.



**Note •** TTP 2100 does not store the bootware in the printer so this query will always return <0><0>.

**ESC ENQ c**

1B 05 63	Hex
27 5 99	Decimal

**Device ID Enquiry**

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>c

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<sup>2</sup>C options-bus available in some Zebra printers (the TTP 2100 series does not have any I<sup>2</sup>C bus so these parts of the command can be ignored). The short message protocol gives replies up to 255 bytes. Other protocols may be defined in the future. Protocols are described in separate documents.

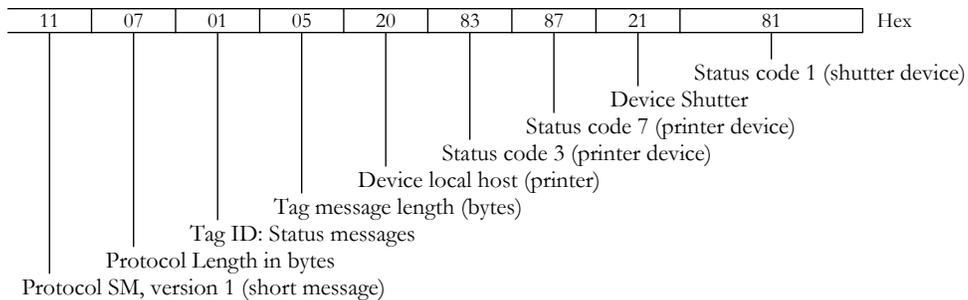
<ESC><ENQ>E results in a variable length reply:

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

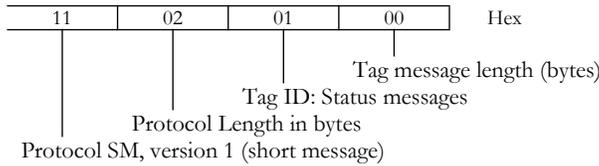
**Short Message Status Examples**



**Example 1 • Out of paper presenter Jam, and shutter open error.**



→ **Example 2 • No errors in any device.**



**ESC ENQ P n1**

1B 05 50 n1      Hex  
27 5 80 n1      Decimal

**Parameter-Setting Data Enquiry**

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

n1 = 1	Gives the setting of parameter 1, etc. The parameter names are listed under <a href="#">Summary of Parameter Settings</a> .
n1 = 0	Gives a response where the first two bytes specify the length of data to come, and then follows a block of data for all parameters in the temporary setup.

**ESC ENQ = ?**

1B 05 3D 3F      Hex  
27 5 61 63      Decimal

**Media Loaded into Tray Enquiry**

This command enquires the printer if media is loaded or not and if yes, into which input tray. The result is a 1-byte response representing tray status.

0	No media loaded
1	Media in wide tray
2	Media in narrow tray

The printer has two virtual trays that you only see when the dual media guide 01990-400 is fitted to the printer. This guide has two trays:

- one wide tray or ticket path for 82.5 mm wide tickets like boarding passes
- one narrow tray or ticket path for 54 mm wide tickets like baggage tags

This command is very useful if you need to send special set up commands to the printer once you discover which media is being loaded, and when you need to have your application format the print to fit the loaded media.

**ESC ENQ H**

1B 05 48	Hex
27 5 72	Decimal

**Read Printer INFO**

This command gives extra information about the printer.

Valid types are: SN, PN, MODEL, MOD, AST.

- <ESC><ENQ>HSN<0> (Serial Number)
- <ESC><ENQ>HPN<0> (Part Number)
- <ESC><ENQ>HMODEL<0> (Printer model)
- <ESC><ENQ>HMOD<0> (Modification level)
- <ESC><ENQ>HAST<0> (Asset tag)

Most of the fields are only populated in printers with serial number starting with 93J.

**ESC ACK n1**

1B 06 n1	Hex
27 6 n1	Decimal

**Acknowledge Marker**

n1 =	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.

## Font Loading

The printer can store 8 fonts in its flash PROM. The memory available for fonts is printed on the self-test printout. The character size is fixed, 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. Parameter p14 “Font Selection” will determine what font to use when no font selection command has been received (see [Font Selection](#)).

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.

In a Windows environment, the Zebra Toolbox utility can be used for font generation and management and is available for download from <http://www.zebra.com/support>. 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.

## File Format

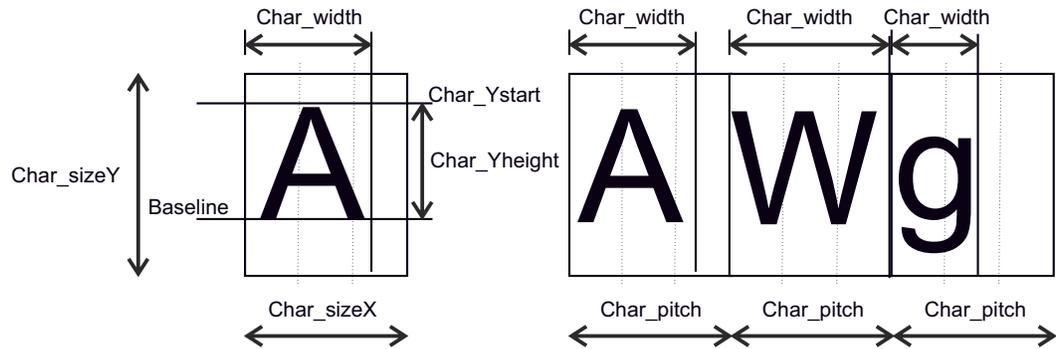
A font consists of a header describing the font, then data for every character in the font. The header has to be downloaded even if the font consists of a single character only. Below is a description of the font header.

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	Character pitch	The maximum width of one character in the set. This value is used for tab position calculation. Range 1 to 255.
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.)

Char\_matrix table: 256 records, each containing 3 bytes.

3 byte Char\_width (pixels) + Char\_Ystart (pixels) + Char\_Yheight (pixels)

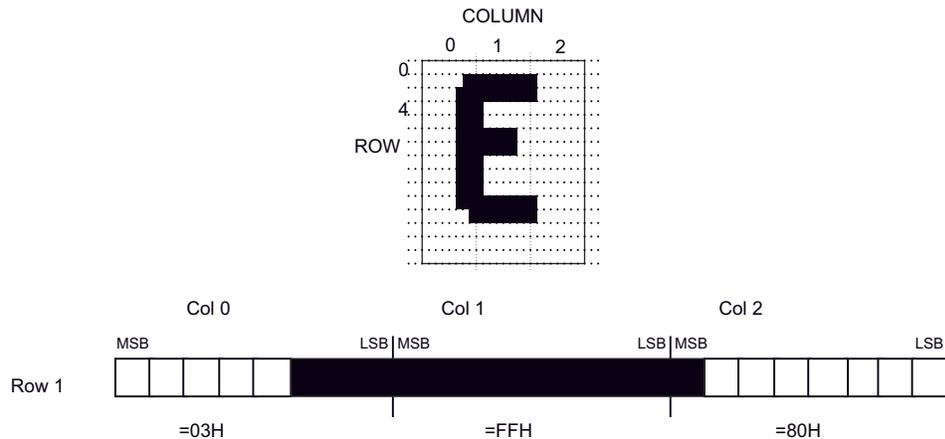
Char\_bitmap data: Bitmap data for all characters that are to be defined.



## 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:



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

(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 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 commands <ESC>g or <ESC>L.

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 test printout to see how much memory is available.



**Note** • Logotype No. 0 is printed in the top of the self test printout, so this can be used to customize the self test printout.

## Loading

Windows software that converts black and white BMP bitmap files to logotypes and loads them into the printer is available in the Zebra Toolbox utility, which is available to download from <http://www.zebra.com/support>.

If you need to load logotypes in a non-Windows environment, use the ESC & 1 command.

The time required by the printer to process logotype data, excluding transfer time from the PC, is typically 15 to 20 seconds, per logotype. During this time, any data sent to the printer will be lost.

## 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>
```

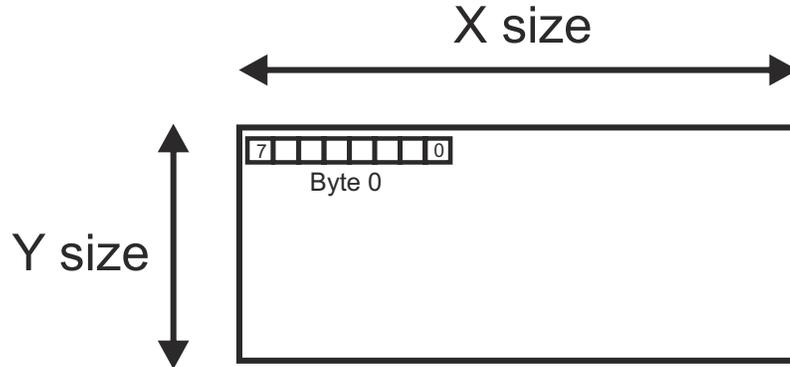
### Header

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.

## 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 you can use two commands, `<ESC>L<n1>`, prints the logotype at the current cursor position, just like any character. `<ESC>g<n1> . . . <n5>` prints the logotype at a specified X-Y position.

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	Two byte Y position in pixels from top of the page. These bytes must always be inserted but they are ignored in variable-page-length mode where logotypes are always printed at the current Y-position.

## Erasing

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

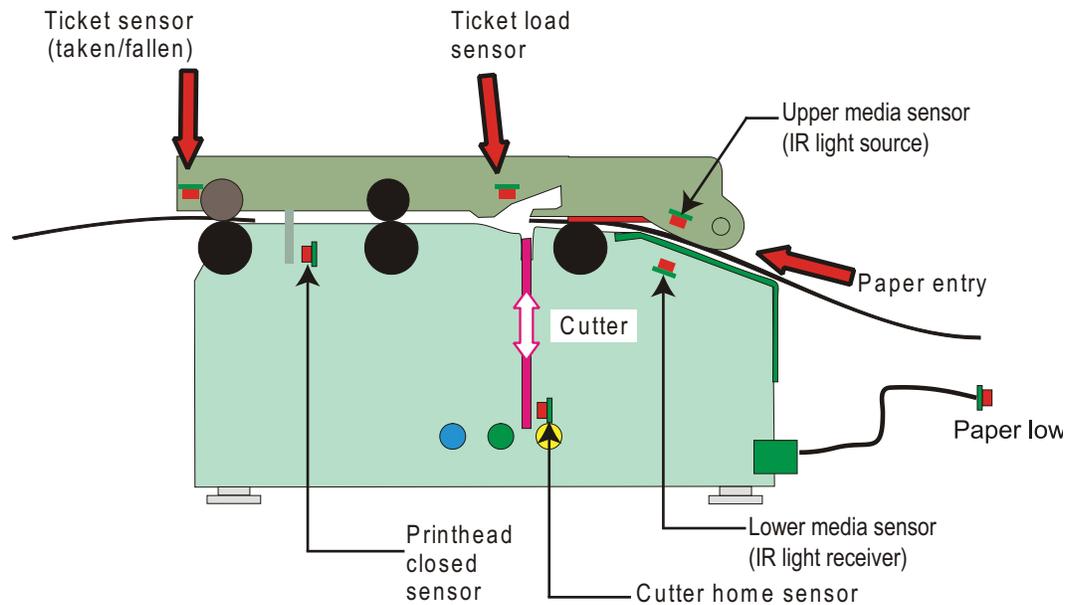


**Caution** • Loading to the flash PROM will erase the RAM completely since the RAM is used during the loading process. Any print data residing in RAM will thus be lost.

## 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.

**Figure 30 • Sensor placement in the printer**



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>) and check that the answer is "No errors"
2. If "Status codes available" is indicated, read out the status message with Status Request (<ESC><ENQ><1>), and take appropriate actions.
3. Send a paper-near-end query (<ESC><ENQ><2>) to see if the sensor reports low paper level.
4. If paper-near-end is indicated, report the condition to the systems supervisor to schedule a service visit to the printer.

5. Print the printout.



**Notes** • A status reply must be read! Sending a second status query without reading the reply of the first query may lock the printer.

When using a multitask OS, status queries and responses may not be transferred immediately from your application to the printer and vice versa. So write your program in such a way that it repeats the query if it gets a timeout or an invalid reply. Good practice is to ask once every ten seconds, five times before giving up.

You should construct your application in such a way so as not to request status while printing, as this can result in loss of data.

---

# Default Parameter Settings

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## Parameter Settings

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

The stored parameter settings are printed out on the self-test printout.

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 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 EEPROM.

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

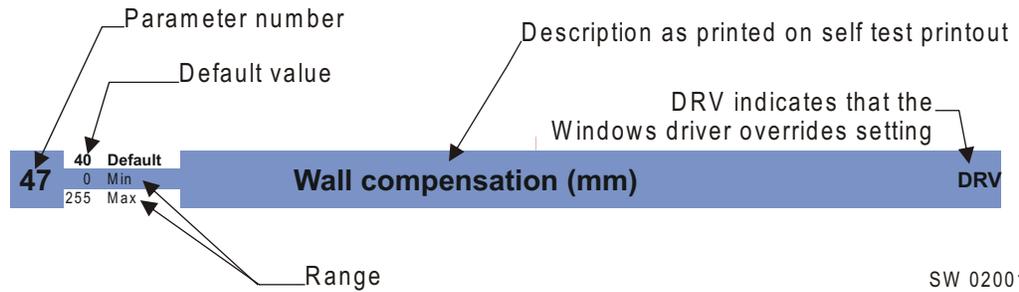


**Note** • The parameters can be locked so that no changes are possible. Check parameter 53 on the self-test printout to find out.



**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



SW 02001

### Default Value

The default values indicated are “factory default settings” you get by sending `<ESC>&F`. 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 `<1><15>`, means 1 and 15 decimal (hex 1 and F).

## Summary of Parameter Settings

Parameter	Description	ESC&F Default	Page	TTP model	
				2110	2130
1	Baud rate	96 (9600 Baud)	94	X	
2	Data bits	8	94	X	
3	Parity	0 (No parity)	94	X	
4	Flow control	2 (Hardware)	95	X	
7	Burn time	9	95	X	X
8	Print speed	17 (123 mm/s)	95	X	X
10	Pulse control	3 (2 burn pulses)	95	X	X
12	Font attributes	0 (off)	96	X	X
13	Line spacing	0 (Auto)	96	X	X

Parameter	Description	ESC&F Default	Page	TTP model	
				2110	2130
14	Font selection	0 (ATM9)	96	X	X
15 to 30	Tab stop	4, 8, 12 etc.	96	X	X
31	Presenter speed	150	97	X	X
33	CR/LF	0 (LF = CR/LF, CR=Ignored)	97	X	X
34	Auto cut after FF	1 (Off)	97	X	X
35	Black mark sync	1 (On)	98	X	X
36	Document mode	1 (Variable)	98	X	X
37 & 38	Page length, Minimum / fixed / BM	2, 88 (75 mm)	99	X	X
39	Max black mark length	80 (10 mm)	93	X	X
40	Min black mark length	24 (3 mm)	93	X	X
41 & 42	Black Mark cut offset	0, 0 (0 mm)	93	X	X
43 & 44	Black Mark top margin	0, 0 (Disabled)	101	X	X
46	Cut position calibration	0 (no adjustment)	102	X	X
47	Wall compensation	0	102	X	X
48	Print width	0 (Auto)	103	X	X
49	Advance before cut	0 (Off)	103	X	X
51	Black mark level	75	93	X	X
52	Warning level	0 (Off)	104	X	X
53	Lock parameters	0 (Unlocked)	104	X	X
56	Max status code	255 (Show all)	104	X	X
57	System	247 (Gap sensor)	105	X	X
58	Out of paper level	0	105	X	X
59	Vendor class mode	0 (Disabled)	106	X	X
60	Partial cut length	10	106	X	X
61	TOF Sensor Mode	2 (Gap sensor)	107	X	X
62	TOF Sensor Mask	11 (Masks away sensor BM 3)	107	X	X
63	BM Sensor	0 (Auto select between sensors 1, 2, 3, and 4)	107	X	X
64	Bit Operations	1 (move back to home position)	108	X	X
65	Sensor selected	Information only field	108	X	X



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

## Serial Interface Set-up

<b>1</b>	96 11 96	Default Min Max	<b>Baud Rate</b>
----------	----------------	-----------------------	------------------

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.

<b>2</b>	8 7 8	Default Min Max	<b>Data Bits</b>
----------	-------------	-----------------------	------------------

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 cannot print graphic, read status or set parameters because no value can ever be greater than 127.

<b>3</b>	0 0 2	Default Min Max	<b>Parity</b>
----------	-------------	-----------------------	---------------

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 the handshaking method to use on the serial interface.

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

## Print Setup

**7**      9 Default  
1 Min  
15 Max      **Burn Time**      DRV

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**      17 Default  
1 Min  
17 Max      **Max Print Speed**      DRV

The main reason to decrease the print speed is to enhance print quality, and to reduce average current consumption.

<b>n</b>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
<b>mm/s</b>	47	48	49	50	51	52	53	55	57	61	65	70	77	86	96	107	123	136	150



**Note** • Low speed settings may result in printer chassis resonance causing increased noise and deteriorated print quality.

**10**      3 Default  
1 Min  
7 Max      **Printhead Pulse Control**

Controls how the printhead burns the pixels. Four burn pulses give a more even blackness over the width of the paper and a lower peak current consumption. Two burn pulses give faster printouts at high burn times. At normal burn times the speed is the same for both settings.

<ESC>&P<10><3>	2 burn pulses
<ESC>&P<10><7>	4 burn pulses



**Caution** • Values 3 and 7 are the only allowed settings. Do not set anything else!

12 0 Default  
0 Min  
255 Max

### Font Attributes

Selects which font attributes are selected at power ON or after reset. Font attributes bold, height and width are stored in this parameter.

bits 0-3	Height Multiplier
bits 4-6	Width Multiplier
bit 7	Bold enable

13 0 Default  
0 Min  
30 Max

### Line Spacing

The line spacing is normally set by the font height. With this parameter you can set a line spacing that is higher than 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 0 Default  
0 Min  
7 Max

### Font Selection

Store which font number is used if no font is specified. Font is selected using the “Select Font” command <ESC>!<n>. Selecting an invalid font gives a software error status message (invalid index).

15 to 30 - Default  
1 Min  
255 Max

### Tab Stop

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, follow the procedure [Set Several Parameters at Once](#).

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



**Example** • This example sets the first tab stop 25 mm from the left margin.

```
<ESC>&P<15><10>
```

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

31 150 Default  
0 Min  
150 Max

### Presenter Speed

Sets the speed at which the paper is presented/ejected. 1 = 10 steps/s, therefore the default setting of 150 means 1500 steps/s. Do not exceed the default setting, as this may cause the motor to stall. To print in cold weather conditions, it may be necessary to reduce the speed. In addition, parameter 8 may need to be adjusted for temperature.

<ESC>&P<31><150>	Sets speed at default setting of 150 (1500 steps/s)
------------------	---

33 0 Default  
0 Min  
4 Max

### CR/LF Behavior

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



**Note** • The character currently interpreted as LF converts text from the input buffer to pixels on the paper. If no such character has been received after 379 characters, a linefeed is inserted automatically.

34 1 Default  
0 Min  
1 Max

### Auto Cut After FF

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

35 1 Default  
0 Min  
1 Max

**Black Mark Sync**

DRV

Determines what should control the page length:

<ESC>&P<35><0>	No synchronization
<ESC>&P<35><1>	Cuts will be synchronized with black marks / gaps.

This parameter also determines the function of auto sensor calibration:

- If black mark / gap sync is enabled, the auto calibration will set n37 - n40, n51, n57 bit 3, n58, n61, and n62.
- If set to zero, only the BM level n51, and out of paper level n58 will be set.



**Note** • Use parameter n61 to select if gaps or black marks should be detected. The default behavior is to detect gaps.

36 1 Default  
0 Min  
1 Max

**Document Mode**

DRV

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><3>	Single Page Mode. The printout is limited to a single page and will stop printing when a delimiter (e.g., black mark, gaps, and punched holes, etc.) is reached. It will not print or feed any more until a cut command is received.



**Note** • Max page length in Fixed Document Mode is determined by free RAM (printed on self test printout) and print width setting parameter n48. For example, if print width is 50 mm and free RAM is 180267 bytes, max page length is 180267/(50x8)=450 mm.

<b>37 &amp; 38</b>	2, 88 0, 0 255, 255	Default Min Max	<b>Page Length</b>	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

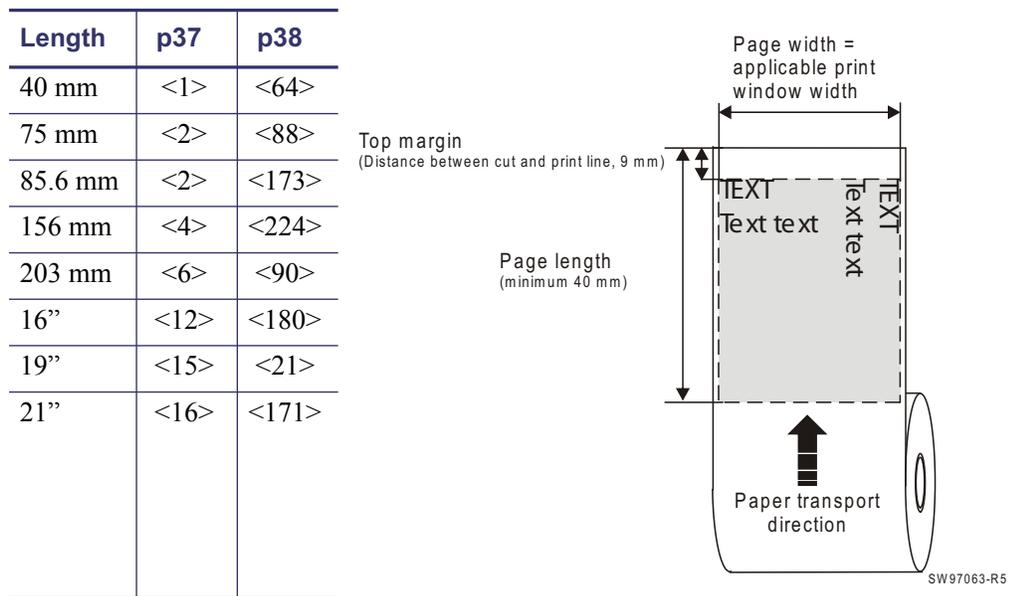


**Note** • If auto calibration has been used, it is not necessary to make any changes to this parameter.

One step is 0.125 mm. Settings shorter than 37 mm will be extended to 37 mm when printing.

<code>&lt;ESC&gt;&amp;P&lt;37&gt;&lt;2&gt;&lt;ESC&gt;&amp;P&lt;38&gt;&lt;88&gt;</code>	Set page length to 75 mm.
--	---------------------------

**Figure 31 • Definition of Page Size**



## Fixed Document Mode

In *fixed document mode*, the printable length depends on the amount of free RAM and the print width setting. Make a self-test printout to check how much is available in your printer (depends on firmware version).

$$\text{Printable length} = \frac{\text{Free RAM in bytes}}{\text{Print width setting (n48)} \times 8}$$

To get the paper length, you must add the top and bottom margins in mm to the printable length. Paper width is in bytes or mm (1 byte = 1 mm).



**Example** • Free RAM on a TTP 2100 is 114627 bytes, print width is 80 mm = 80 bytes, top margin is 20 mm, and bottom margin 10 mm.

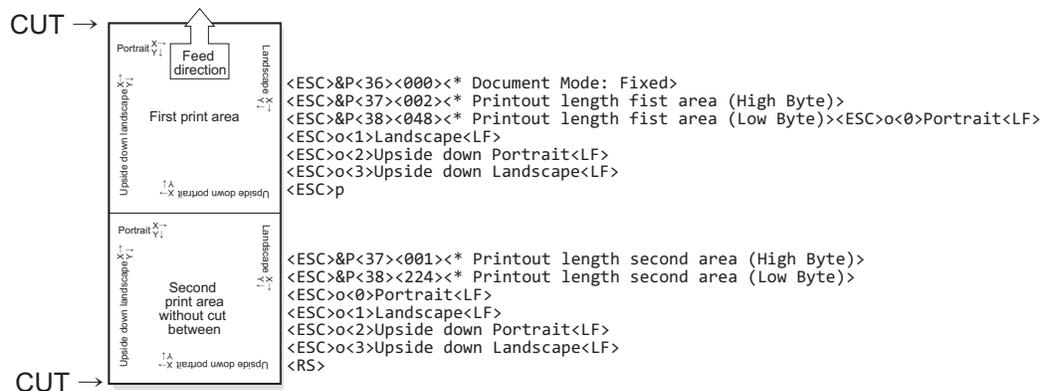
$$\text{Page length} = \frac{114627}{80 \times 8} + 20 + 10 = 209 \text{ mm}$$

↑
↑
↑  
**Printable length**      **Top margin**      **Bottom margin**

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



**Note** • If the length is too short one can stack fixed documents print lengths one after another with a print command between and make printouts of any size. Each of these stacked squares can have different lengths, and build a 21” bag tag for example, with all its individual elements in the right places.



**39**    50    Default  
          1    Min  
          160    Max

### BM (Black Mark) Length

Specifies the length of the black mark in 0.125-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 80 equals 10 mm.

<code>&lt;ESC&gt;&amp;P&lt;39&gt;&lt;40&gt;</code>	Sets max black mark length to 5 mm.
--	-------------------------------------

**40**    30    Default  
          1    Min  
          159    Max

### Min BM (Black Mark) Length “Garbage Filter”

Specifies the minimum length of the black mark in 0.125-mm steps. Shorter marks are ignored. The default value of 24 equals 3 mm.

<code>&lt;ESC&gt;&amp;P&lt;40&gt;&lt;36&gt;</code>	Sets minimum black mark length to 4 mm.
--	---

**41 & 42**    0, 0    Default  
              0, 0    Min  
              255, 255    Max

### BM (Black Mark) Cut Offset

Defines the paper feed between the black mark detection and cut. One step is 0.125 mm.

<code>&lt;ESC&gt;&amp;P&lt;41&gt;&lt;1&gt;&lt;ESC&gt;&amp;P&lt;42&gt;&lt;144&gt;</code>	Feeds 50 mm between black mark and cut.
<code>&lt;ESC&gt;&amp;P&lt;41&gt;&lt;0&gt;&lt;ESC&gt;&amp;P&lt;42&gt;&lt;0&gt;</code>	Automatically sets cut offset so the printer cut is in the middle of the black mark.

**43 & 44**    0, 0    Default  
              0, 0    Min  
              255, 255    Max

### Top Margin (mm)

Defines the distance between the cut in black mark mode and the top of the first text line in 0.125 mm steps.

0	Disabled top margin. This gives the physical top margin of the printer, which is 9 mm.
---	--

Settings that give a shorter margin than 9 mm will be extended to 9 mm so this parameter can only be used to extend the margin, not reduce it.

<code>&lt;ESC&gt;&amp;P&lt;43&gt;&lt;0&gt;&lt;ESC&gt;&amp;P&lt;44&gt;&lt;240&gt;</code>	Add 30-mm top margin.
---	-----------------------

46      0 Default  
         0 Min  
         255 Max

### Cut Position Calibration

Calibrates the cut position. The value is a signed byte.

A change of 1 moves the cut 1/8 of a mm *more* than normal.

A change of -1 moves the cut 1/8 of a mm *less* than normal. -1 is entered as 256-1=255

The positive range is 1-127. The negative range is 128-256

This parameter can be individually set for each printer and is not affected by the driver or reset commands. It is used to compensate for differences in sensor position in production. After moving or replacing the TOF-sensor, the calibration may have to be done again.



**Note** • The cut is not 100% repetitive because the paper may be closer to the sensor for one ticket than it is for the next. So do not expect a perfect synchronization between perforation and cut.

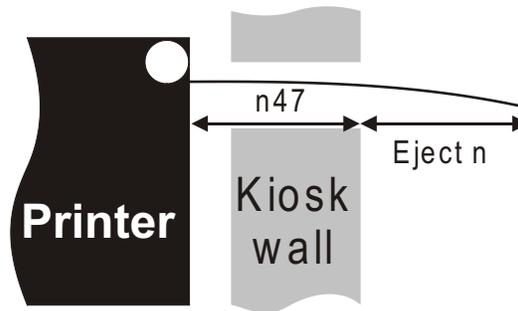
It is better to cut slightly after a perforation than before because cutting before a perforation leaves a flap that is pushed through the printer and may cause a paper jam.

47      40 Default  
         0 Min  
         255 Max

### Wall Compensation (mm)

DRV

When the printout is printed and cut, the presenter ejects 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 = 100 mm in total.

48 0 Default  
0 & 20 Min  
80 Max **Print Width (mm)** DRV

Sets the width of the print area on the paper. The range is 20 to 80 mm. This can also be used to get left and right margins, for instance if you load 80 paper but set the paper width to 60 mm you get a 10 mm margin on both sides of the page.



**Note** • You should not change paper width within a page.

<code>&lt;ESC&gt;&amp;P&lt;48&gt;&lt;0&gt;&lt;ESC&gt;&amp;&lt;4&gt;</code>	Detects if wide or narrow paper is loaded and sets print width (54 or 72 mm) depending on which is detected
<code>&lt;ESC&gt;&amp;P&lt;48&gt;&lt;60&gt;&lt;ESC&gt;&amp;&lt;4&gt;</code>	Sets 60 mm print width



**Note** • We recommend you to set a somewhat narrower print width than the loaded paper width to allow the paper to wander a bit sideways without losing print.

49 1 Default  
0 Min  
1 Max **Advance Before Cut** DRV

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

<code>&lt;ESC&gt;&amp;P&lt;49&gt;&lt;0&gt;</code>	Off
<code>&lt;ESC&gt;&amp;P&lt;49&gt;&lt;1&gt;</code>	Automatic Distance Calculation

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 50 Default  
0 Min  
255 Max

### Black Mark Sensitivity

Sets the lever at which the sensor output is interpreted as paper or as black mark.

<ESC>&P<51><0>	White
<ESC>&P<51><255>	Pitch black



**Note** • This parameter is set automatically when you run the [Calibrating the TOF Sensor](#) procedure manually or using [ESC #](#).

52 0 Default  
0 Min  
255 Max

### Warning Level

Turns on/off indication of Paper near end level on the status indicator. This affects only the status indicator, not the status enquiries

<ESC>&P<52><0>	No indication
<ESC>&P<52><1>	Paper Near End indication

53 0 Default  
0 Min  
2 Max

### Lock Parameters

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
<ESC>&P<53><2>	Lock only parameter n36 from being overwritten to prevent the driver from disabling cut enforcement mode

56 255 Default  
0 Min  
255 Max

### Max Status Code

This will control the highest status code that is reported by <ESC><ENQ><6> and <ESC><ENQ><1> (Pending-status-code bit). You use this if your Kiosk software is not written so it masks away unknown status messages.



**Example** • If you want the TTP 2100 to be compatible with software written for TTP 1020, set parameter 56 to 6h and error codes 7 and up will not be reported.

57 247 Default  
0 Min  
255 Max

## System

The System parameter will control up to eight system components in the printer.

The bits specified so far are these:

bit 0	Clear presenter at reset
bit 1	Pull detector
bit 2	-
bit 3	Standard BM
bit 4	Disable USB reconnect

Setting a bit to 1 enables the function and setting it to 0 disables it.



**Note** • Bits whose function are not yet specified must always be set to 1.



**Note** • n57 is a bit field value. From Firmware version 3.89 and higher there is a command available to set individual bits in a bit field without affecting other bits. See *ESC & b n1 n2 n3* on page 45.



### Examples •

<ESC>&P<57><254> Presenter will not be cleared at power ON and reset.

<ESC>&P<57><253> The pull detector is disabled.

<ESC>&P<57><252> The presenter will not be cleared at power ON and reset and the pull detector is disabled.

<ESC>&P<57><239> The printer will monitor USB heartbeat, and thus try to reconnect if it disappears.

<ESC>&P<57><247> The printer is reset to normal behavior (gap sensor).

58 0 Default  
0 Min  
255 Max

## Out-of-Paper Level

Sets the level at which the TOF sensor detects out of paper. The out-of-paper level may differ from the black mark level on label stock where the foil opacity indicates top of form.



**Note** • This parameter is set automatically when you run the *Calibrating the TOF Sensor* procedure manually or using *ESC #*.

59

0 Default  
0 Min  
1 Max

### Vendor Class

Switches identity of the device from Printer Class (7 hex) to Vendor Class (FF hex).

This parameter is used when you want to communicate with an USB printer in Linux without having to install a driver.

The vendor class parameter is normally 0, which sets the TTP 2130 to be a Printer Class device. If you set it to 1, the TTP 2130 will be a Vendor Class device, which means that it will not require a driver but will appear as a file in Linux. You can then communicate with the printer just by writing data to, or reading from, that file.



---

**Caution** • When not set to “Printer Class”, no programs that rely on the Windows printer driver will be able to communicate with the printer, and thus not be able to reset the parameter to Printer Class again. To reset the printer to Printer Class:

1. Power OFF the printer.
  2. Disconnect the USB cable.
  3. Open the printhead and remove the paper.
  4. Hold the Feed button down and power ON the printer with the printhead open.
  5. Connect the USB Cable.
  6. Save Parameter Settings with <ESC>&<4>.
- 

60

10 Default  
1 Min  
40 Max

### Partial Cut Length

Sets the length of the partial cuts in mm from the edges of the paper (the blade cuts from the paper edges towards the middle).

The paper width parameter n48 is used to specify the edges of the paper so the printer knows where to start to cut. If parameter n48 is set to auto width, the setting of the TOF sensor selector switch determines the print width and thus also the start position for the partial cut.



---

**Caution** • A too large partial cut may cause problems with the presenter, so stay with the default setting if possible.

---

61 2 Default  
0 Min  
2 Max

### TOF Sensor Mode

TOF Sensor Mode should be set to 1 for media where the cut should be synchronized with black marks printed on the back of the media.

It should be set to 2 for media where the cut should be synchronized on gaps, holes, or space between labels.

0	All transmitters OFF
1	Reflex sensor mode
2	Gap sensor mode

62 9 Default  
0 Min  
255 Max

### TOF Sensor Mask

The sensor mask is set automatically at calibration. It will mask away all sensors seeing the guide and is used for the virtual sensor “Paper before head” and will affect paper loading and calibration start. Any raw value will not be affected by the mask.

bit 0	Sensor BM1 in use (edge sensor for 82.5 mm paper)
bit 1	Sensor BM2 in use (center sensor)
bit 2	Sensor BM3 in use (sensor 17.5 mm from center)
bit 3	Sensor BM4 in use (sensor 12.5 mm from center)
bit 4	Reserved, shall be 0



**Note** • n62 is a bit field value. From Firmware version 3.89 and higher there is a command available to set individual bits in a bit field without affecting other bits. See *ESC & b n1 n2 n3* on page 45.

63 1 Default  
0 Min  
4 Max

### BM Sensor

Selects which sensor should be used for black mark/gap detection.

<ESC>&P<63><0>	Auto, selects sensor BM1, BM2, BM3, or BM4 depending on paper width and TOF mark availability
<ESC>&P<63><1>	Force the use of sensor BM1 (edge sensor for 82.5 mm paper)
<ESC>&P<63><2>	Force the use of sensor BM2 (center sensor)
<ESC>&P<63><3>	Force the use of sensor BM3 (sensor 17.5 mm from center)
<ESC>&P<63><4>	Force the use of sensor BM4 (sensor 12.5 mm from center)

64 255 Default  
0 Min  
255 Max

### Bit Operation

Controls the presenter clearing behavior.

The bits specified so far are these:

bit 0 = 1	Move back to home position
bit 0 = 0	Move forward to the cut position, cut and eject



**Note** • Unspecified bits are bit 1 through bit 7. Bits whose function are not yet specified must always be set to 1.



**Note** • n64 is a bit field value. From Firmware version 3.89 and higher there is a command available to set individual bits in a bit field without affecting other bits. See *ESC & b n1 n2 n3* on page 45.

65 1 Default  
1 Min  
4 Max

### Sensor Selected

Shows what sensor is in use by the system when n63 is set to 0 (Auto) sensor mode. This parameter cannot be set, only read out.

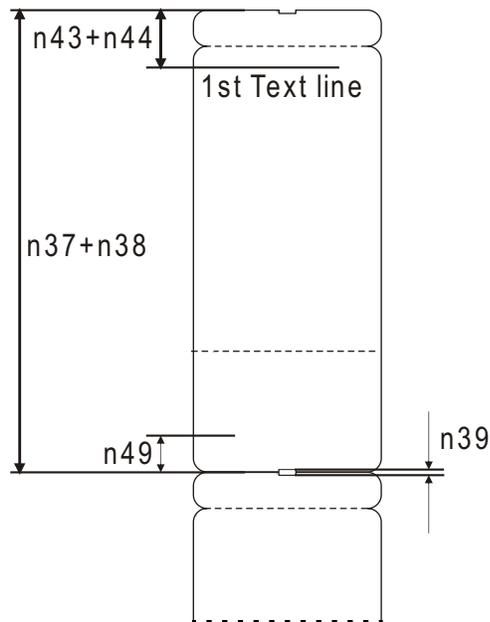
---

# Page Setup

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## Printable Area



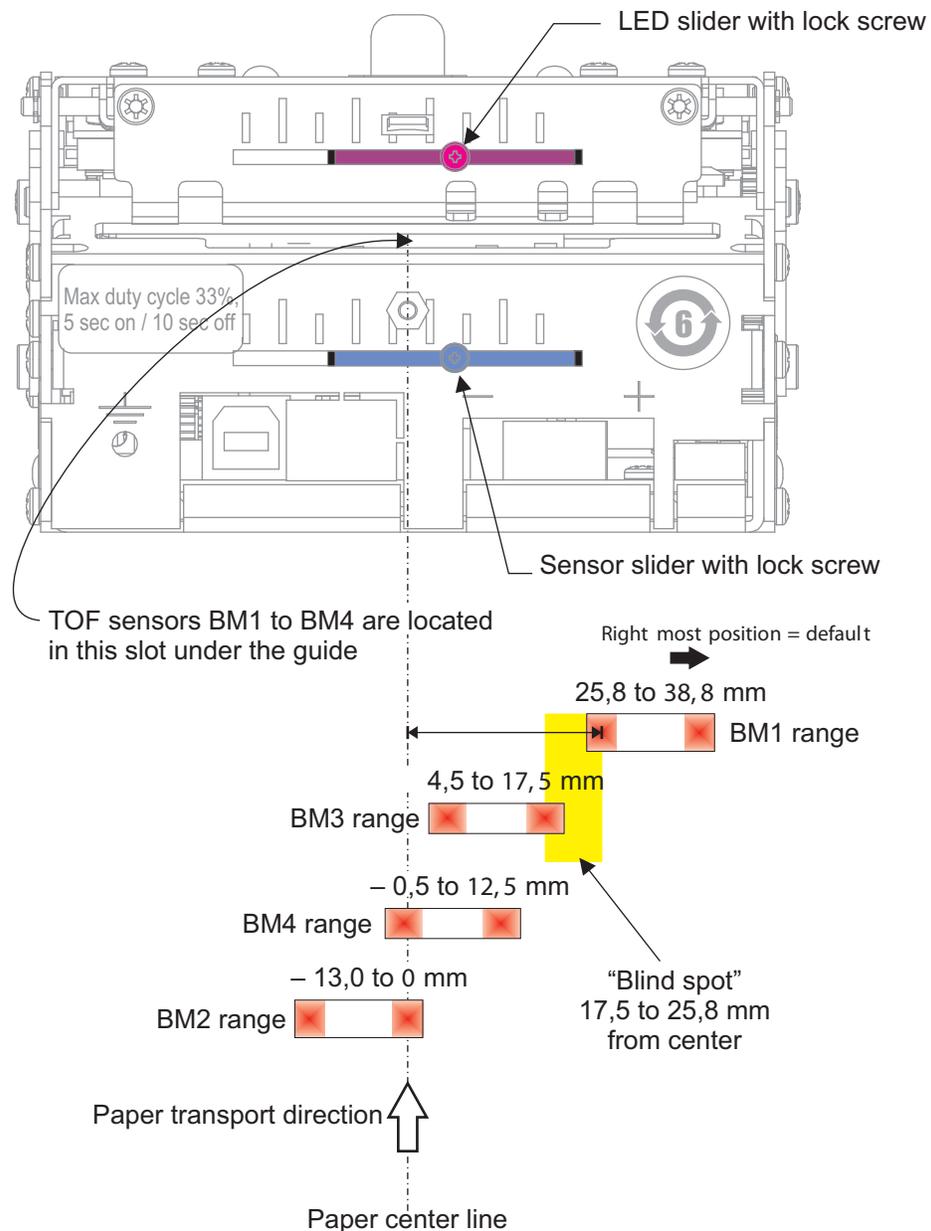
Top margin, bottom margin, page length, and synchronization with preprint are set up with parameters in the printer. In addition to the above,  $n41+n42$  are used if the hole or black mark is not on the desired cut position.

## Aligning Preprint and Thermal Print

The printer normally synchronizes the cutting with black marks printed on the back of the paper, punched holes, or gaps in-between tickets. If you use continuous paper without TOF marks, you can disable TOF mark check by setting parameter 35 to 0 and storing the parameters.

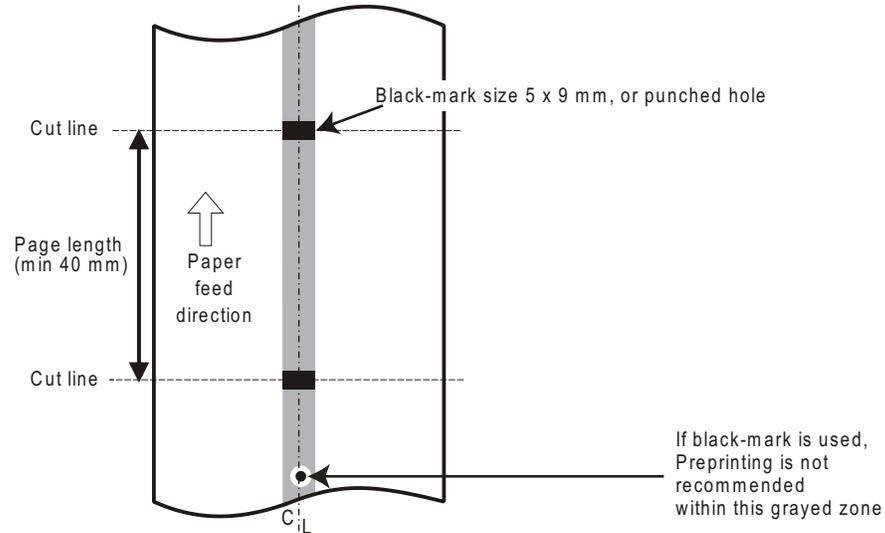
The sensor used to detect the marks is the same sensor as used for paper end detection. Several sensors are provided to take care of most ticket material. If the standard positions at center—12.5 mm, 17.5 mm, and 38.8 mm to the right of center—are not enough, the sensors can be moved up to 13 mm to the right.

Figure 32 • Sensor Positioning



For the best results when designing paper with a TOF mark, place the mark at the center, as this works for any paper width.

**Figure 33 • Recommended Black Mark Size and Position**



The sensor measures the length of the black mark (in the transport direction), and the cut is placed in the middle of the mark.

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. When you perform an auto calibration, the printer measures the TOF mark size and stores the values in the parameter memory, so you need not enter any values yourself.



**Note •** It is essential that you store 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 FF button on the printer.

## Simple Calibration Process

1. Open the printhead.
2. Remove ticket stock.
3. Press and hold the Feed button, and then close the printhead (keeping the button pressed the entire time).
4. Release the button.  
The Status LED should be off.
5. Load ticket stock (slide it into the paper guide and let the printer auto load the paper).



**Note** • To ensure good calibration conditions, lightly press the ticket stock towards the bottom of the input guide during calibration.

The printer will forward the paper until it finds two TOF marks and then stop and save all TOF-mark parameters.

6. Open the printhead and remove the ticket stock.
7. Close the printhead and feed the tickets in through the paper guide again.  
The printer is ready for use.

Repeat this procedure if the calibration fails or if the printer is used with tickets that differ from the original specification.



**Note** • If you use the dual guide 01990-400, you must calibrate once with the wide media (82.5 mm) and once with the narrow media (54 mm). The printer will store individual values for both widths and use the appropriate values for the ticket stock loaded.

The following parameters are affected: n37 - n40, n51, n57 bit 3, n58, n61 and n62.

## FF (Form Feed)

Use Form Feed (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  $(256 \times n37 + n38 + n39)/8$ . 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.

The commands are used together as shown in the following example.



**Example** • The following examples are not made for a specific programming language or editor, but can be implemented with the tools of your choice. The data sent **to the printer** are marked with “Send→”.

### When setting up the printer:

Send→ <ESC>&P<35><1>      Enables black mark sync

Cut Offset parameters n41 and n42.

Send→ <ESC>&<4>      Stores the above parameters as default parameters.

The above sets up and stores the parameters in the EEPROM of the printer, so this needs only be sent once to the printer when setting it up for TOF-mark sync.

### Document:

Send→ the text and graphics

### At the end of the document:

Send→ <ESC>Z Feeds the printout to the next black mark + the additional feed specified by the Cut Offset parameters n41 and n42 command.

Send→ <RS> Cuts and ejects the printout.

## Black Mark Sensing from within Windows

Refer to the *Kiosk Printer Driver User Guide*, available for download from [www.zebra.com/support](http://www.zebra.com/support) for detailed information on Black Mark Sensing.



---

# Interface

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## Printer Interface

The printer has one standard interface, and an optional serial interface. There are no selections to be made, but only one interface can be used at a time. The printer will not function properly if data is received on more than one interface at a time.

## Serial: TTP 2110



---

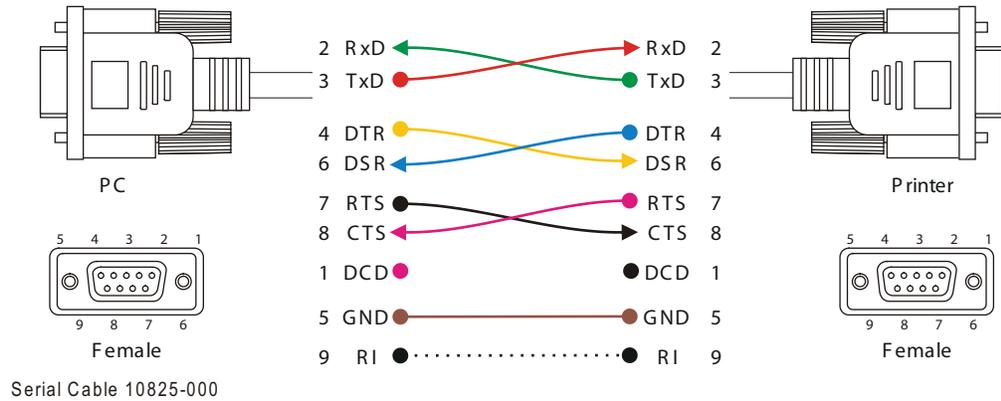
**Caution** • Using a non-approved cable with the printer may void the FCC and other EMC approvals of the printer.

---

The RS-232 interface of the TTP 2110 printer has a transfer speed that can be set to between 2400 and 115200 bits/s.

Applications where text-only printouts are to be printed are suitable for serial interface because of its easy to use bidirectional capability. The relatively low transfer speed limits the printing speed when printing graphics. Full-width graphics with 115200 bits/s result in printing speeds of about 24 mm/s for the 80-mm version of the printer.

Figure 34 • Serial connector pin assignment



## Setup Options

Parameter	Options
Baud	2400, 4800, 9600, 19200, 38400, 57600, and 115200 bits/s
Flow control	None, Xon / Xoff, or Hardware
Data bits	7/8
Stop bits	1 (fixed)
Parity	None, Odd, or Even

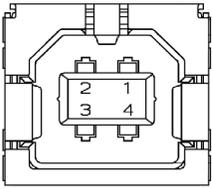
Default Settings: 9600 bit baud, Hardware flow control, 8 Data bits, 1 Stop bit, and no parity.

See also [Default Parameter Settings](#).

## USB: TTP 2130

The USB (Universal Serial Bus) is an interface designed to handle peripherals daisy chained to 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 4 • USB Connector (J13) Pin Assignment**

	<b>Contact Number</b>	<b>Signal Name</b>	<b>Comment</b>
	1	VCC	Cable power
	2	- Data	
	3	+ Data	
	4	Ground	Cable ground



---

# Maintenance

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## Fault Finding / Troubleshooting

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 cutting knife.

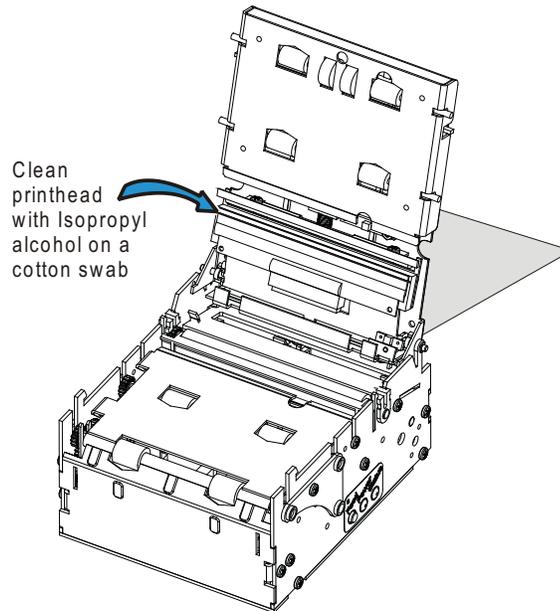
**Table 5 • Fault Finding / Troubleshooting)**

Symptom	Suggested Actions
Nothing is printed when you press the feed button in self-test mode, but the document is transported, cut and ejected.	<ul style="list-style-type: none"> <li>• Check that the paper roll is turned the correct way with thermal sensitive layer facing up.</li> <li>• Check that the paper used meets the paper specification</li> <li>• Check that the printhead cable is fully inserted into the connectors at each end.</li> </ul>
Paper jam	<ul style="list-style-type: none"> <li>• Check cutter-home sensor.</li> </ul>
Printer does not work at all	<ul style="list-style-type: none"> <li>• Check that the printhead is closed.</li> <li>• Check that power is supplied to the printer.</li> <li>• Check the function of the paper-out sensor.</li> </ul>

**Table 5 • Fault Finding / Troubleshooting) (Continued)**

Self-test prints OK, but the printer works strangely in normal operation.	<ul style="list-style-type: none"> <li>• Check that both ends of the interface cable are properly connected.</li> <li>• Application program might be incorrect. Contact system manager.</li> </ul>
No cutting	<ul style="list-style-type: none"> <li>• Check that the connector for the cutting motor is fully seated on the control board.</li> </ul>
Bad cutting (uneven top and bottom document edges).	<ul style="list-style-type: none"> <li>• Switch OFF printer and remove any obstructing paper particles in cutter and presenter modules.</li> </ul>
Inconsistent cutter operation	<ul style="list-style-type: none"> <li>• Check/clean cutter-home sensor.</li> </ul>
Missing print or irregular spots.	<ul style="list-style-type: none"> <li>• Paper may be too humid. Let it adapt to ambient temperature and humidity for approximately 24 hours before use.</li> <li>• The paper used might not meet the paper specification.</li> </ul>
White longitudinal lines in the printout.	<ul style="list-style-type: none"> <li>• Faulty printhead. Replace.</li> </ul>
Faint print.	<ul style="list-style-type: none"> <li>• The paper used might not meet the paper specification.</li> <li>• Clean printhead with ethyl or isopropyl alcohol.</li> <li>• Adjust print contrast, see <a href="#">Print Setup</a>.</li> </ul>
Strange characters or graphics printed, or any kind of strange printer behavior.	<ul style="list-style-type: none"> <li>• Might be caused by erroneous data sent from the host. Check validity of transferred data.</li> </ul>

## Cleaning the Printhead



The printhead can be cleaned without removal.

1. Open the printhead.
2. Clean the heat elements with a cotton swab immersed in ethyl or isopropyl alcohol.



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

## Cleaning the Presenter and Platen Rollers

The presenter rollers feed out the receipt to the customer. But the friction between the feed rollers and the pressure rollers is also essential for the function of the pull detector. So make it a rule to clean the presenter and platen rollers whenever media is replaced in the Kiosk. Use a cotton swab and isopropyl alcohol and wipe the rollers clean while rotating them with your finger.

## Firmware

The firmware is stored in flash-PROM on the control board. A replacement control board may not contain the same firmware version that you are currently using, so if you replace the control board, upgrade it to the firmware version that you want to use.

## Loading



**Note** • Always design your Kiosk system so that remote upgrade of firmware is possible. If you need to upgrade firmware in the future, the Kiosks can be spread over a vast area and upgrade can become very expensive.

1. Download the firmware from the Zebra website at [www.zebra.com/firmware](http://www.zebra.com/firmware). The Toolbox utility (Windows™ software) facilitates the loading of the firmware, fonts, and logos into the printer and is also available on the website.
2. Are you using a Windows environment to load the firmware?

If...	Then...
No	Send <ESC><NUL> (hex 1B 00) 1Bto the printer. <ol style="list-style-type: none"> <li>a. Wait 0.5 seconds.</li> <li>b. Send the firmware file to the printer.</li> <li>c. Wait until the printer buzzes to confirm that the loading is complete (the presenter motor runs for a second).</li> </ol>
Yes	The Zebra <b>Toolbox</b> utility (Windows software) enables you to easily upload the firmware. See <a href="#">Loading Firmware, Fonts, and Logos Using Toolbox</a> .

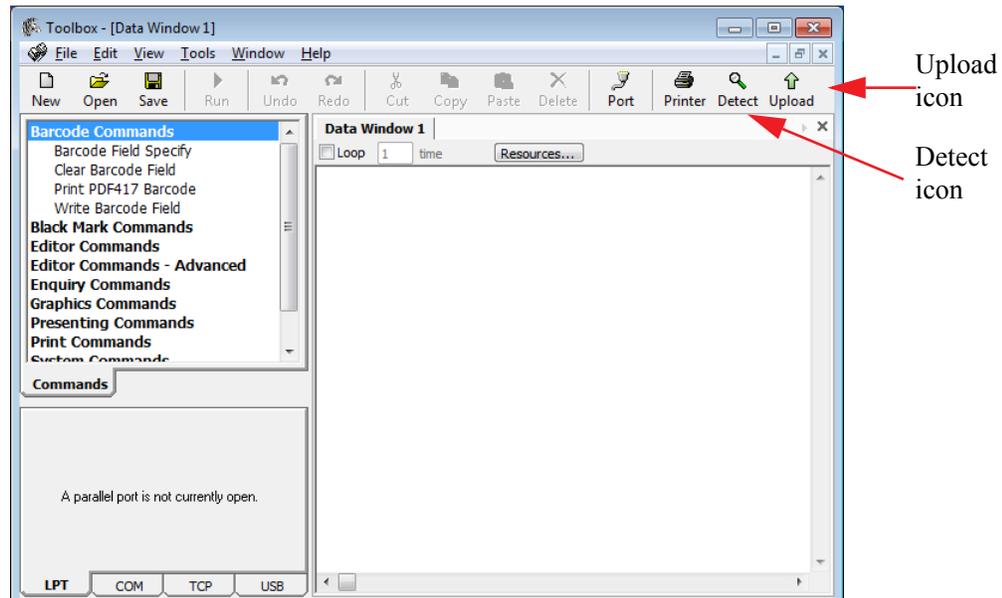


**Caution** • The loading and burning can take up to one minute. Do not abort before one minute by turning OFF the power to the printer. Doing so may leave the printer in a state where new firmware cannot be loaded. If this happens, please return the printer to a Zebra authorized service provider or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

## Loading Firmware, Fonts, and Logos Using Toolbox

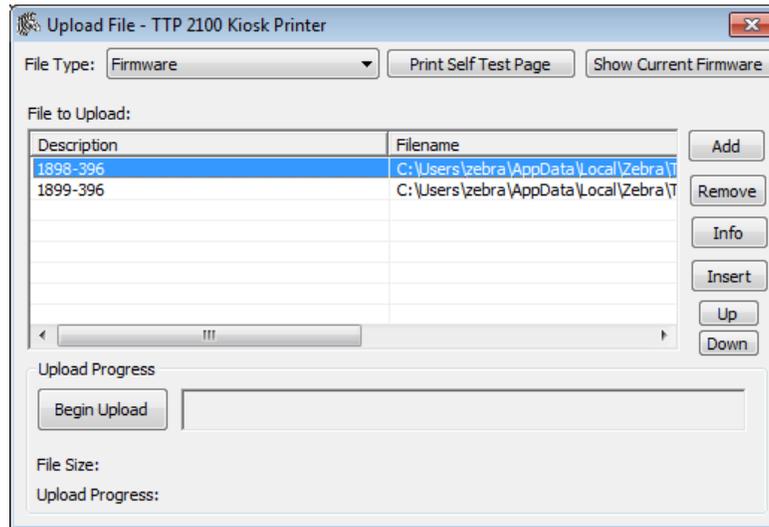
You can download the **Toolbox** utility at [www.zebra.com/support](http://www.zebra.com/support) to reload your files. After you download and install the Toolbox utility, the icon appears on the Desktop.

1. Double-click the **Toolbox** icon to start the utility.



2. Click the **Detect** icon to let Toolbox find your TTP 2100 printer.  
If you use a USB interface a dialog appears; select to communicate with the USB port directly, rather than to communicate through the driver.
3. Click the **Upload** icon to open the **Upload File** dialog.

4. In the **File Type** list, select **Firmware**.



5. In the **File to Upload** list, click the firmware that you want to upload.

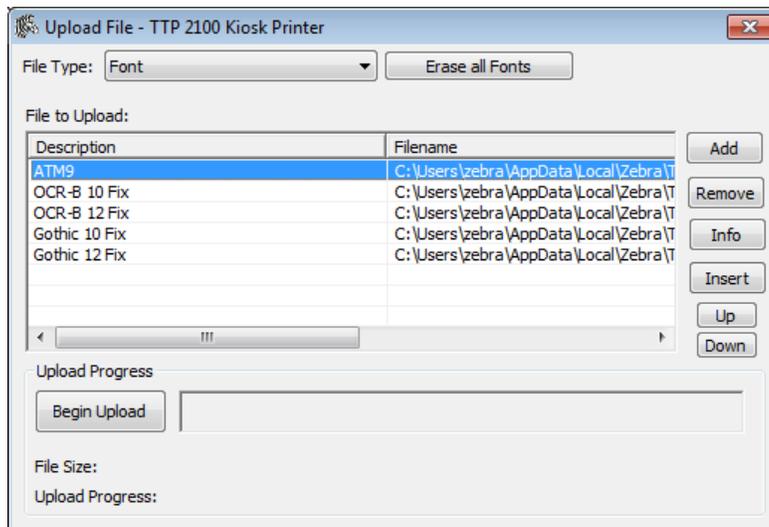
- Select **1898-xxx** if you are updating a TTP 2130 (USB)
- Select **1899-xxx** if you are updating a TTP 2110 (Serial)

6. Click **Begin Upload** to upload the firmware and wait for a confirmation.

7. In the **File Type** list, select **Font**.



**Note** • If a printer is upgraded from firmware with 1-D barcodes to firmware with both 1-D and 2-D barcodes all fonts and logotypes in the printer will be erased and need to be reloaded after the new firmware file is loaded.

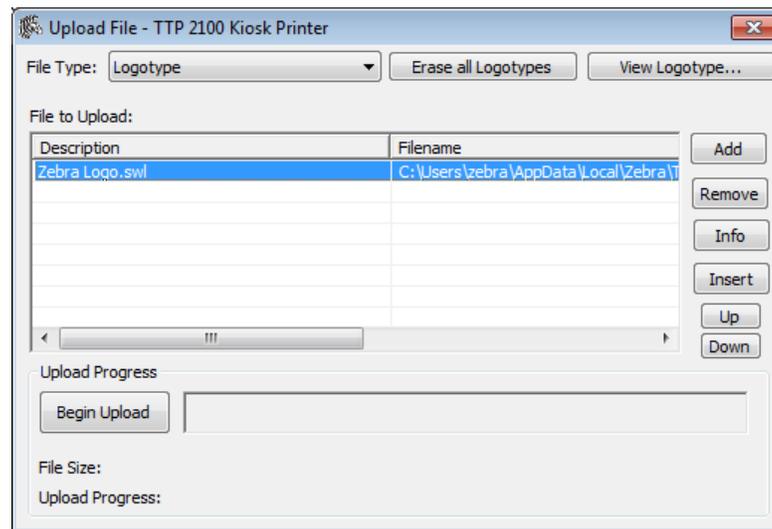


The standard fonts (ATM9, OCR-B 10, OCR-B 12, Gothic 10, and Gothic 12) must be reloaded one at a time in that order. **After** you load the standard fonts, you can load any additional fonts.



**Note** • If you manually reload your fonts, **ATM9** = 0, **OCR-B 10** = 1, **OR-B 12** = 2, **Gothic 10** = 3, and **Gothic 12** = 4.

8. In the **File to Upload** list, click **ATM9**, and then click **Begin Upload**.
9. Repeat step 7 for **OCR-B 10 Fix**, **OCR-B 12 Fix**, **Gothic 10 Fix**, and **Gothic 12 Fix**.
10. In the **File Type** list, select **Logotype**.



11. In the **File to Upload** list, click **Zebra Logo.swf**, and then click **Begin Upload**.

## Firmware Identification

Functions and features are being added from time to time affecting the firmware in the printer.

Please visit Drivers and Downloads at [www.zebra.com/support](http://www.zebra.com/support) for the current firmware versions and release notes.

Make a self-test printout to determine which firmware version you have in your printer. The firmware number is divided into two sections, the header and the version, separated by a dash.

Printer	Barcode Support	Firmware Header
TTP 2110	1-D	1824-xxx
TTP 2110	2-D, PDF 417	1826-xxx
TTP 2110	1-D + 2-D (PDF 417 & Aztec)	1899-xxx
TTP 2130	1-D	1823-xxx
TTP 2130	2-D, PDF 417	1825-xxx
TTP 2130	1-D + 2-D (PDF 417 & Aztec)	1898-xxx

A printer can only be updated with firmware that has the same header as the original number. The first four digits indicate the header. The three digits after the dash indicate the firmware version. For example, 390 means firmware version 3.90.



**Note** • Printers with serial numbers 2-0913-27444 and higher or that start with 93J (e.g., 93J101300033) can be updated from 1-D barcode only firmware to 1-D + 2-D barcode firmware if an intermediate firmware is loaded first and all fonts and logos are reloaded after completion of the firmware loading procedure.

---

# Specifications

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**Important** • Specifications subject to change without notice.

## Ticket Specifications

Ticket materials	Paper, laminate, synthetic, and label stock.					
Ticket widths	50.8 mm 2 in.	53.98 mm 2.125 in. ISO credit card	60 mm 2.333 in.	66.3 mm 2.61 in. dollar bill	80 mm 3.167 in.	82.5 mm 3.25 in. ATB airline ticket
Paper thickness	0.28 mm 11 mils			0.18 mm 7 mils		
Ticket length		85.6 mm for ISO 7811, and up to 21 in for baggage tags		156 mm		203.2 mm
Ticket length in text mode	25 cm			17 cm		
	Min. 40 mm, Max depends on free RAM and print width					
Ticket length in driver mode	Min. 40 mm, Max 534 mm (1.37 to 21 in.)					
Paper weight	80 – 240 g/m <sup>2</sup> depending on thickness, see above					
Paper supply	Roll, fan-fold paper, or hand fed single cut					
Roll diameter	Max 184.2 mm (7.25 in.)					
Spindle diameter	50 mm minimum, recommended 76.2 mm (3 in.)					
Fanfold tickets	Straight or with corner radius					
Label stock	With punched hole, or opaque space, variable length. Carrier must be at least 0.5 mm wider than the label on both sides.					

## TOF Detection

Handles the following Top of Form-indicators:

1. Gap in-between tickets, Gap length from 6 mm down to 1.59 mm.
2. Black marks on the non thermal side of the ticket stock.
3. Label gap (for labels on backing/liner) Length from 6 mm down to 3.175 mm. Optical translucency of backing shall be a minimum of 57%, while maximum optical translucency of label is 18% including backing paper, adhesive and face material.
4. Corner radius down to 3.15 mm.
5. Fixed length without TOF indicator.
6. Variable length without TOF indicator.

## Features

- Cut is placed in the middle of the TOF-mark regardless of mark length.
- It is possible to detect the TOF mark before reaching the end of the document.
- Auto loads ticket material without wasting a ticket.
- Fully prints and ejects last ticket in ticket stock.
- Conforms to IATA Resolution 740 for baggage tag TOF detection.

## Print Module

Resolution	8 dots/mm (203 dpi)
Print speed	Up to 150 mm/s
Print duty cycle	Up to 33%, (5s on, 10s off)
Max print width	Max 640 pixels = 80 mm. Selectable through parameter n48.
Life Expectancy	100 km paper (= about 1,000,000 85.6 mm tickets) 1x10 <sup>8</sup> pulse lines (typically)

## Ticket Separation

The separator is able to cut roll paper and separate fanfold paper in perforations already in the ticket stock.

Guillotine cutter	Yes
Partial cut	Yes, Parameter selects the size of the cut.
Life Expectancy	1,000,000 cuts for 54 mm wide 0.18 mm thick paper (typically)

## Presenter

Straight presenter with two modes:

Mode 1	Holds the ticket by its back end
Mode 2	Ejects ticket fully so it falls down and leaves the printer
Retract	No
Life Expectancy	1,000,000 tickets of 85.6 mm length (typically)

## Electronics

Interfaces	Serial RS 232 (TTP 2110)	115200 bps
	USB (TTP 2130)	Version 1.1 High Speed (2.0 and 3.0 compatible)
TOF sensors	Selectable between light-barrier (transmissive) and reflex (black mark) type detectors.	

## Firmware

Driver mode	Yes: Windows (2000, 2003, XP, XPe, 7, 7-embedded, and 8) and Linux CUPS
Text Mode	Yes: KPL
Emulations	No

## Text Mode

Orientation	Portrait, Landscape, Reverse Portrait, and Reverse Landscape
Standard fonts	ATM9 (40 characters/line at 72 mm width), OCR-B 10 and 12, and Gothic 10 and 12
Text attributes	Underline, Bold, Italics, reverse print, multiple width, multiple height, left aligned, center aligned, right aligned
Character set	224 printable characters out of a 255-character space. Default character sets should use Windows Code Page 1252 (Western). Possible to use other code pages if new fonts are loaded.
Barcodes	1-D: EAN-13, UPC, Interleaved 2-of-5, ISBN, Code 39, and Code 128 <b>For firmware versions 1898-390 and 1899-390 and higher:</b> 1-D: EAN-13, UPC, Interleaved 2-of-5, ISBN, Code 39, and Code 128 2-D: PDF 417, and Aztec
Graphics	Logotypes and b&w BMP-files

## Miscellaneous

Versions	Kiosk embedded and desktop versions
Environment	0°C to +50°C, 35% to 75% RH, non-condensing
Size	Mechanism: approx 107 x 71 x 127 mm (W x H x D) + 67 mm for input guide
Desktop	Approximately 117 x 85 x 137 mm (W x H x D) + 63 mm for input guide
Weight	Approximately 1.2 kg for embedded and 1.4 kg for desktop
Power requirements	24 Vdc ± 5% 70W (2.92A)

## Basic Character Set

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 6 • Code Page 1252 Character Table**

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

## Part Number List

### Printers

Printer Model/Type	NA/LA/AP	EMEA
TTP 2110 Ticket Printer, Serial, Embedded	01991-000	01991-000
TTP 2130 Ticket Printer, USB, Embedded	01993-000	01993-000
TTP 2110 Ticket Printer, Serial, Desktop	01991-100	01991-100
TTP 2130 Ticket Printer, USB, Desktop	01993-100	01993-100
Evaluation Kit, TTP 2100 Ticket Printer, Serial, Embedded	N/A	01991-800
Evaluation Kit, TTP 2130 Ticket Printer, USB, Embedded	N/A	01993-800
Evaluation Kit, TTP 2130 Ticket Printer, USB, Desktop	N/A	01993-801

### Accessories

Item	NA/LA/AP	EMEA
Paper Guide Kit 51 mm	01990-051	01990-051
Paper Guide Kit 54 mm	01990-054	01990-054
Paper Guide Kit 60 mm	01990-060	01990-060
Paper Guide Kit 66 mm	01990-066	01990-066
Paper Guide Kit 80 mm	01990-080	01990-080
Paper Guide Kit 82.5 mm	01990-082	01990-082
Paper Guide Kit 82.5 + 54 mm	01990-400	01990-400
Media holder, roll and fanfold	104877	104877
Paper-low sensor with 300 mm cable	01890-300	01890-300
Paper-low sensor with 500 mm cable	01890-500	01890-500
Quick-fit hub kit with screws	103939	103939
Leaf spring retainer for quick-fit hubs	01473-000	01473-000
Output tray	104385	104385
Credit card sized ticket, Gapped, box of 3500	N/A	01770-000
Ticket, ATB blank, box of 1000	N/A	01807-000
RS232 serial cable	10825-000	10825-000
USB cable, straight, 1.8 m (6 ft.)	105850-028	105850-028
USB cable, 90 angled, 1.8 m (6 ft.)	01542-002	01542-002
Power supply 24V, 70W (for general printing)	808099-005	808099-005
Power supply 24V, 100W (for printing text and large graphics)	808101-005	808101-005

Item	NA/LA/AP	EMEA
Power supply to printer cable, 600mm (Requires installation by a qualified engineer)	G01370-000	G01370-000
AC Power Cable	300020-001 (US)	46629 (EU) 46637 (UK)

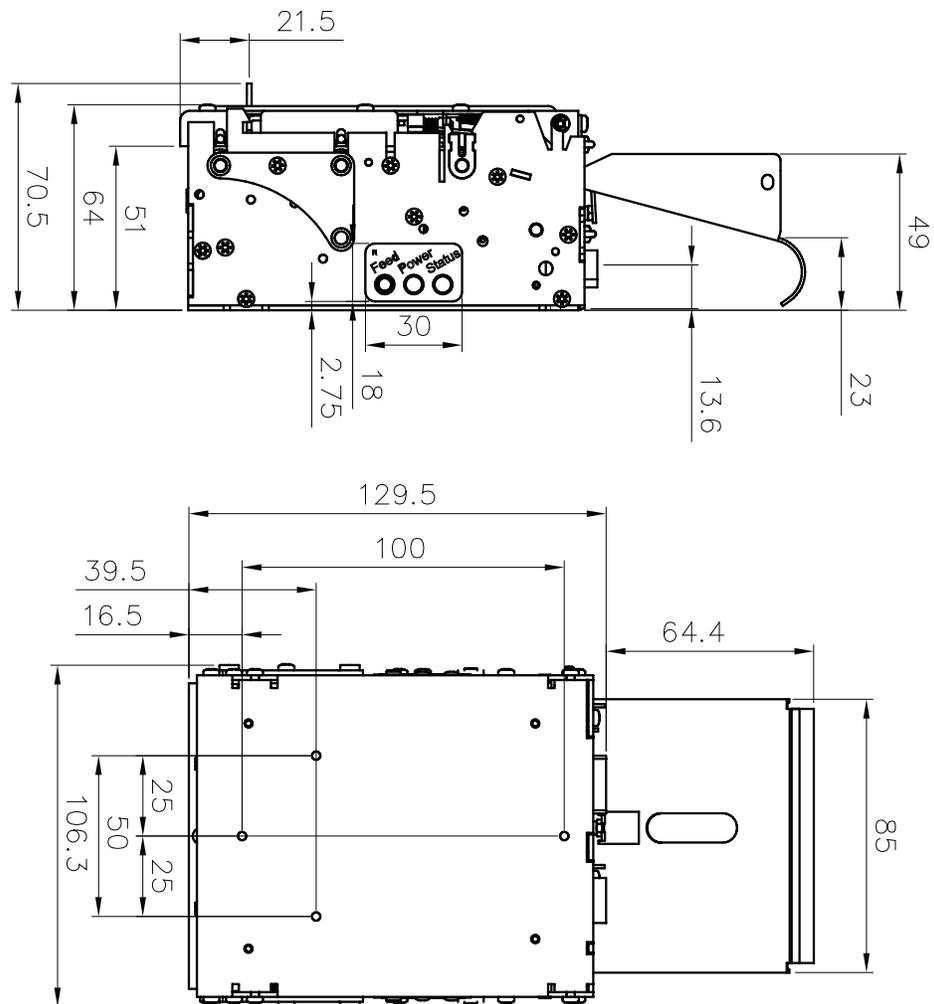
## Dimensions

### Printer



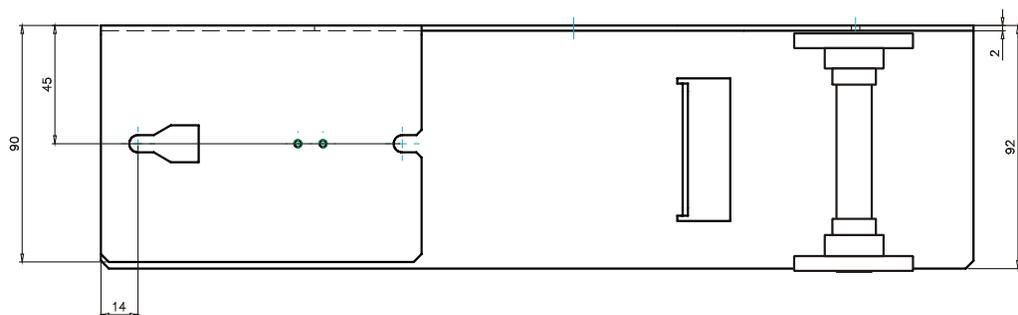
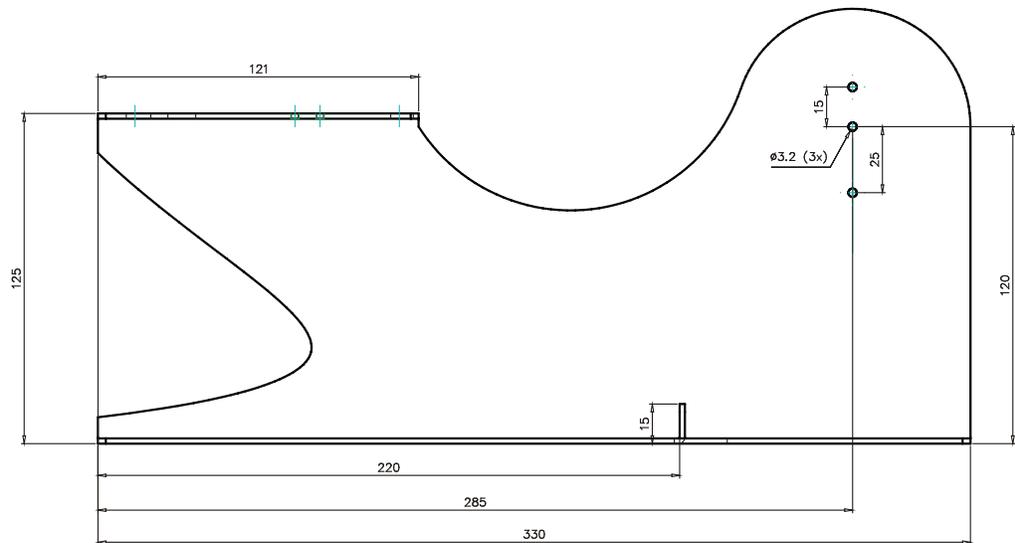
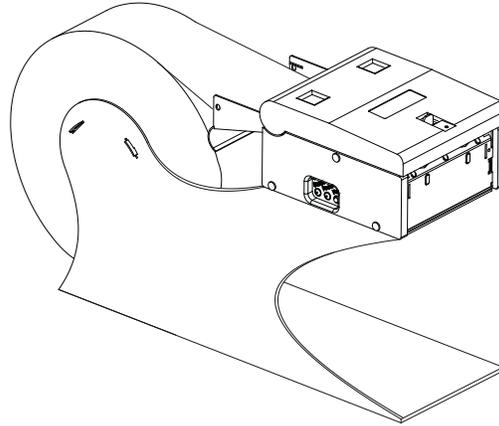
**Note** • Additional space is required for paper roll and handling.

**Figure 35 • Measurements Drawing**



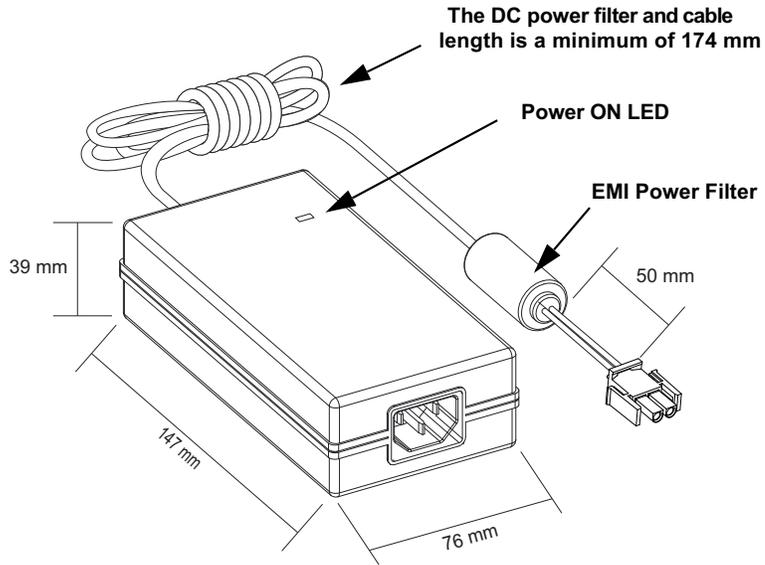
## Media Holder

The media holder can take both fanfold and roll ticket stock. The roll shaft has three levels so it supports 54 mm, 60-66 mm, and 80-82.5 mm media, and rolls up to 180 mm in diameter.



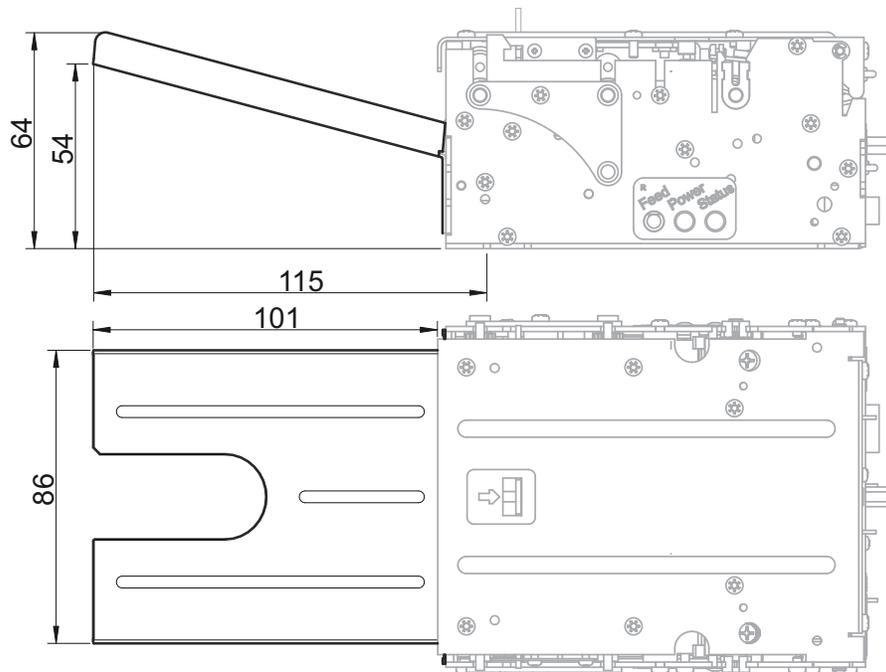
## Power Supply

Figure 36 • Measurements of 70W and 100W PSU



## Output Tray

Figure 37 • Measurements of Output Tray



# 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)	六价铬 (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 (Printheads)	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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