# Nanoptix
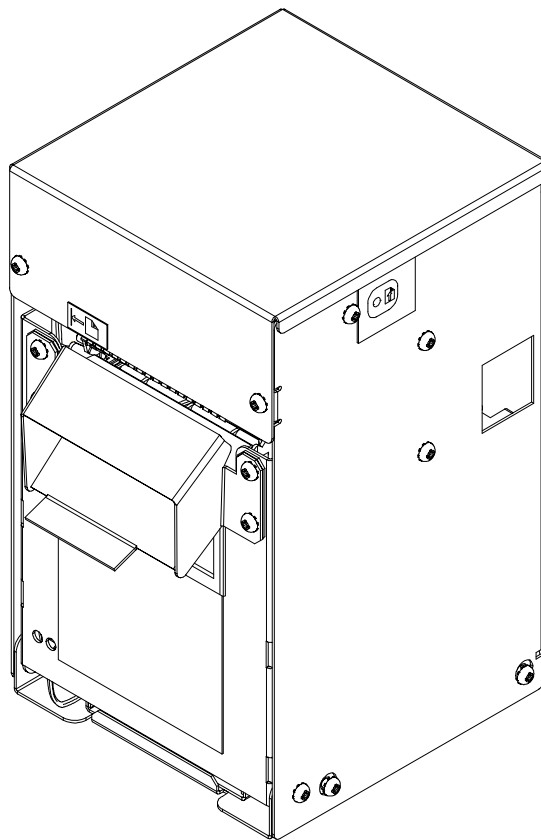
# EZ-Load Thermal Printer

# *Owner's Manual*

First Edition: August 2002
Last Revision: Sept 21, 2005

Document # 101049

# Legal Notices

**Disclaimer**
Information in this document is subject to change without notice. Consult your Nanoptix Inc. sales representative for information that is applicable and current. Nanoptix Inc. reserves the right to improve products as new technology, components, software, and firmware become available.

No part of this document may be reproduced or transmitted in any form or by any means, electronic or mechanical, for any purpose without the express written permission of Nanoptix Inc.

**Copyright**
Copyright 2003 by Nanoptix Inc.
Dieppe, New Brunswick Canada
All rights reserved
Printed in Canada
Confidential, Unpublished
Property of Nanoptix Inc.

**Trademarks**

Epson is registered trademark of Epson Corporation.

Windows is registered trademark of Microsoft Corporation.

Nanoptix is a trademark. Other trademarks and registered trademarks are the property of their respective holders.

**Federal Communications Commission (FCC)**
**Radio Frequency Interference Statement**

**Warning**
Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

**Note**
This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

**Information to the User**
This equipment must be installed and used in strict accordance with the manufacturer's instructions. However, there is no guarantee that interference to radio communications will not occur in a particular commercial installation. If this equipment does cause interference, which can be determined by turning the equipment off and on, the user is encouraged to contact Nanoptix Inc. immediately.

Nanoptix Inc. is not responsible for any radio or television interference caused by unauthorized modification of this equipment or the substitution or attachment of connecting cables and equipment other than those specified by Nanoptix Inc. The correction of interferences caused by such unauthorized modification, substitution or attachment will be the responsibility of the user.

In order to ensure compliance with the Product Safety, ICES, FCC and CE marking requirements, you must use the power supply, power cord, and interface cable which were shipped with this product or which meet the following parameters:

**Power Supply**
UL Listed power supply with standard 60Hz-50Hz, 100-240VAC input and 24VDC output equipped with AC line filtering, over-current and short-circuit protection.

Use of this product with a power supply other than the Nanoptix Inc. power supply will require you to test the power supply and Nanoptix Inc. printer for FCC and CE mark certification.

**Communication Interface Cable**
An approved Nanoptix interface cable must be used with this product.  Using a cable other than Nanoptix approved product will require that you test the cable with the Nanoptix Inc. printer and your system for FCC and CE mark certification.

**Power Cord**
A UL listed, detachable power cord must be used. A power cord with Type SVT marking must be used. For applications outside the North America, power cords that meet the particular country's certification and application requirements should be used.
Use of a power cord other than described here may result in a violation of safety certifications that is in force in the country of use.

**Industry Canada (IC)**
**Radio Frequency Interference Statement**
This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.
*Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.*

# Table of Contents

# Figures

# Tables

# 1. About the Printer

## 1.1 Description of Printer

The Nanoptix EZ-Load printer is extremely fast, quiet, and very reliable. With thermal printing technology, there is no ribbon cassette to change, and paper loading is extremely simple. The printer is small enough to fit almost anywhere and is easy to use with the ticket exiting from the front.
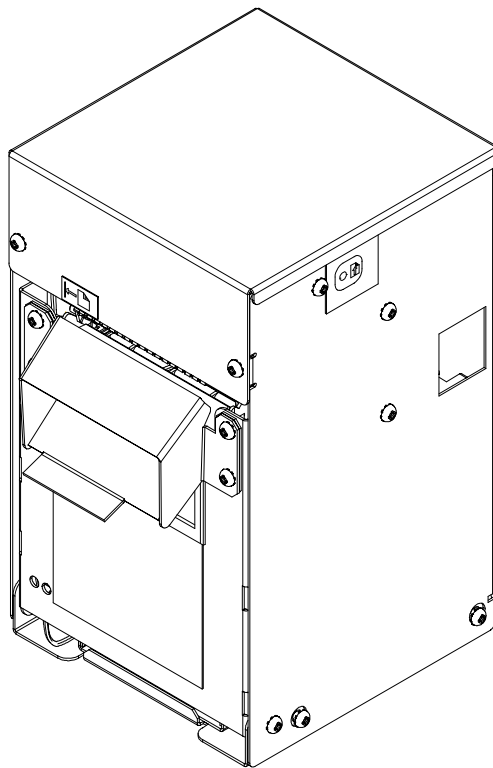
**Figure 1: Nanoptix EZ-Load Printer**

## 1.2 General specifications

| | |
|---|---|
| **Print Method** | Direct Thermal |
| **Resolution** | 8 dot/mm (203 dpi) |
| **Print Width** | 80mm |
| **Paper Width** | 80mm or 82.5 mm |
| **Max Roll Diameter** | 115mm |
| **Operating Temperature** | 0 to 50 C |
| **Storage Temperature** | -40 C to +65 C |
| **Operating Relative Humidity** | 20% to 85% RH at 50C (non-condensing) |
| **Communication Interface Options** | USB, RS-232C, RS-485, IEEE1284 |
| **Memory/Firmware** | 1 Mbit of SRAM, 4 Mbit of flash and 128kbit of EEPROM |
| **Resident Character Sets** | Arial Bold (6 sizes)<br>Note: Other Character sets can be programmed quickly |
| **Integrated Bar Codes** | UPC-A, UPC-E, interleaved 2 of 5, 3 of 9, Code 128, EAN 8, EAN 13.<br>Note: Other Bar Codes can be programmed quickly |
| **Speed** | Up to 130 mm/second |
| **Sensors** | • Paper out<br>• Door open<br>• Knife not homed<br>• Paper low<br>• Top of form (optional) |
| **Human Interface** | Drop-in paper loading, status LED, paper feed button |
| **Dimensions** | 148mm width x 255mm height x 155mm depth |
| **Weight** | 3.5 Kg |
| **Immunity** | EN-55024 |
| **Emission Standards** | United States - FCC Part 15 Subpart B<br>Canada - Industry Canada ICES-003<br>Europe – EN 55022<br>Class A. |

**Table 1: Specification**

## 1.3 Printer Controls

To reset Printer

Simply plug and unplug the printer to reset in the event of a fault condition.  Once the printer is re-plugged, it will go through a startup routine and reset itself.
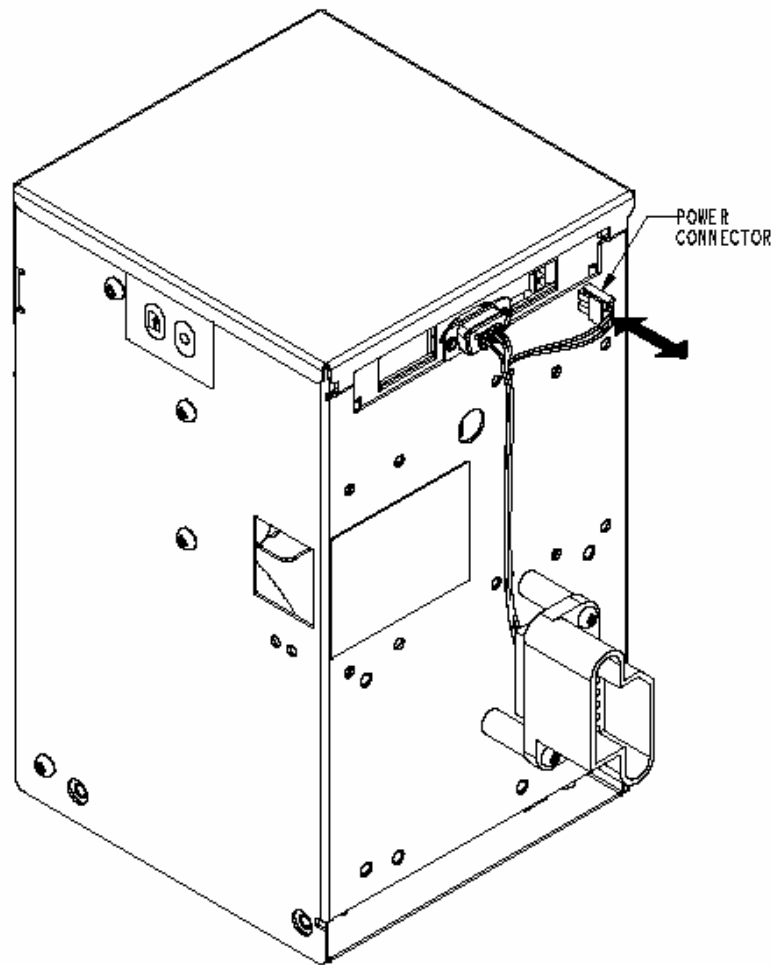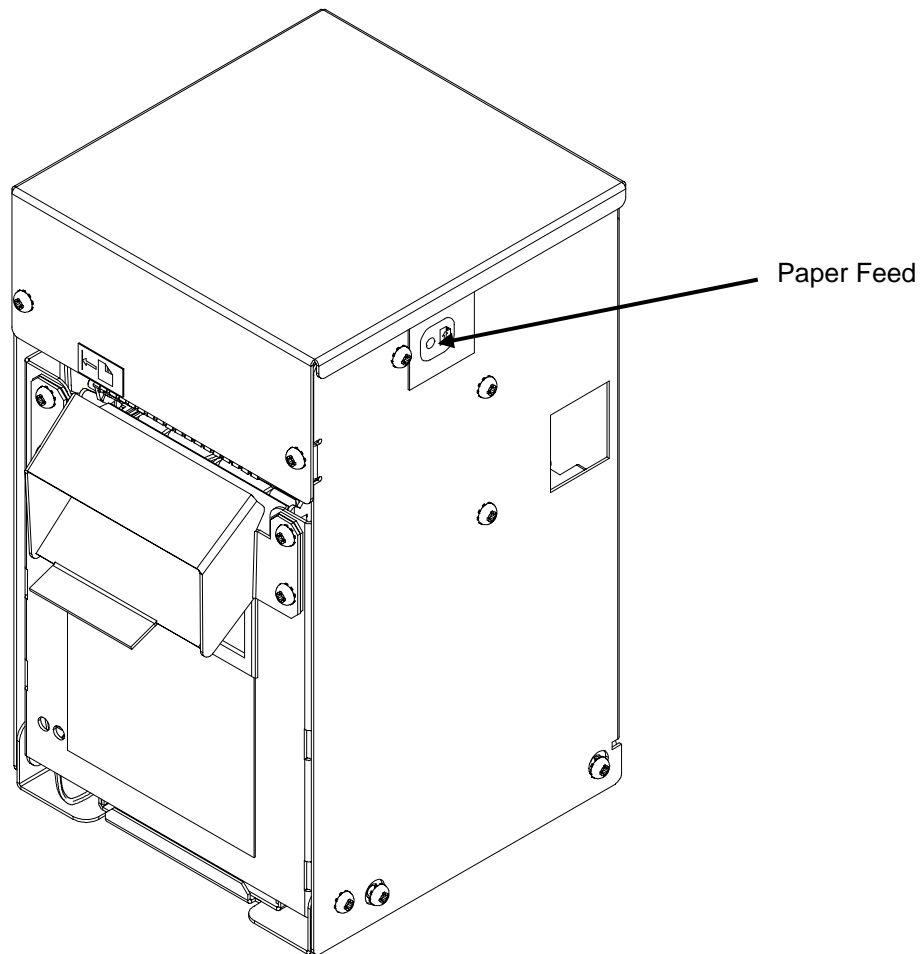
**Figure 2: Resetting Printer**

## Paper Feed Button

Use the Paper Feed Button to advance the paper.

Paper Feed

**Figure 3: Paper Feed Button**

## 1.4 Changing Paper

**Caution:** Do not operate the printer if it runs out of paper. The printer will not operate without paper, but it may continue to accept data from the host computer. Because the printer cannot print any transactions, the data may be lost.

1. Open the front door.

2. Remove the used roll.

3. Tear off the end of the new roll so that the edge is loose and place the new roll into the paper bucket with a few inches of loose paper.
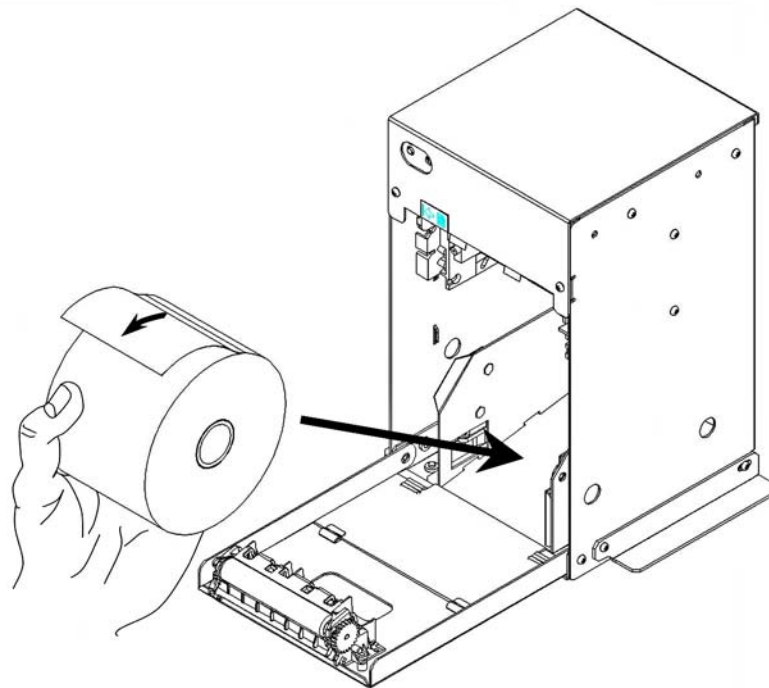


**Figure 4: Loading Paper**

**Caution**: Be sure the paper unrolls from the top. Otherwise, the printer will not print or the paper will jam.

4. Pull up on the top of the paper roll and align the left edge of the paper with the line on the front label.



Align paper edge to this line.
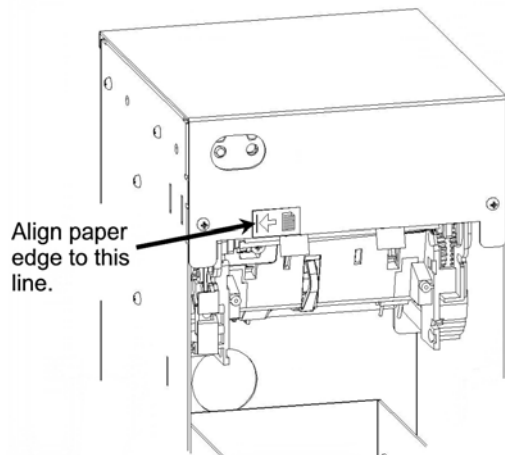
**Figure 5: Aligning Paper Edge**

5. Close the door onto the paper.
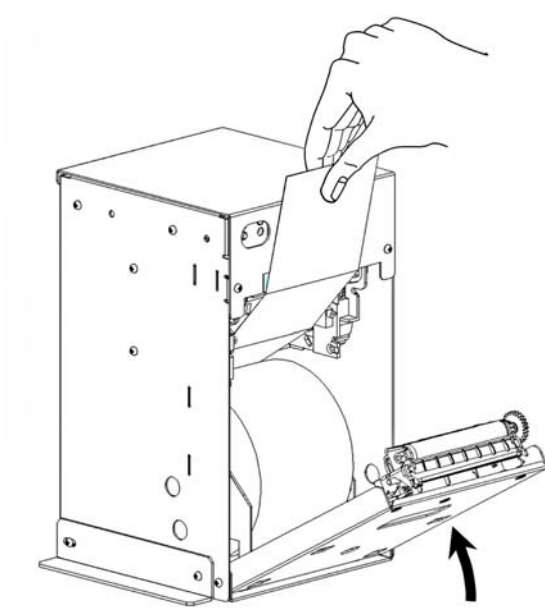


**Figure 6: Closing Door**

6. Advance the paper by pressing on the paper feed button and tear off the excess paper.

**Note:** In the event of a paper jam, remove the roll, tear a new clean edge, and replace it in the paper bucket, as described above. Be sure that the paper unrolls from the bottom of the roll.

# 1.5 Testing the Printer

Run this test to check the printer. The test prints and cuts a resident test ticket. Verify this ticket to judge the printing quality.

```
Model:                          TITANIA
Firmware:                       TIT-2.41G-61UCS

COMMUNICATION
Interface:                      IEEE1284 (0) or Serial
Baud:                           9600
Data Bits:                      8
Parity:                         NONE
Handshaking:                    NONE
Print Mode:                     NTL
Aux Port:                       Disabled

PRINT CONTROL
Darkness Control:               -1%
Voltage:                        24.2 Volts
Temperature:                    26 Celcius
Speed:                          4 IPS
Black Bar Index:                Disabled

SYSTEM RESOURCES
FLASH           -Used:          0
                -Free:          24576

LIBRARY INVENTORY
Templates:                      0,1,2

Print Regions:                  1,2,3,4,5,6,7,8,
                                h,9,A,B,C,D,E,F,G,
                                I,J,K,L,N,O,P,Q,R,
                                S,T,U,Z,X,a,b,c,d,
                                e,f,g,i,j,k,l,m,n,
                                o,p,q,

Graphics:                       None
Fonts:                          0,3,5,7,8

MANUFACTURING INFORMATION
Printer ID:                     5465789
Date Code:                      20184
PWM Setting:                    7F7F7F7FFFFFFFF
A to D:                         DE7AA400FD000000
Resets:                         9
Tickets:                        00001336
Status: TIT-2.41G-40-40-40-40-40-P
```

**Figure 7: Test Ticket**

To print the test ticket, power-on the printer while pressing and holding the Paper Feed Button for approximately 3 seconds.  A test ticket similar to above will be printed approximately 5 seconds after.  Press the paper feed button once more and the ticket will feed. Pressing the button again will result in blank tickets.

## 1.6 Troubleshooting the Printer

The printer is simple and generally trouble-free, but from time to time minor problems may occur. Follow these procedures to determine the cause and resolution of any problems the printer may be having. If the procedures in this section do not correct the problem, contact a service representative.

## Printer LED

| Condition | LED Status |
|---|---|
| Unit ready | ON |
| Unit is in Reset or Booting | OFF |
| Unit in standby (powered off) | OFF |
| Paper Out | Slow Blink |
| Door Open | Fast Blink |
| Paper Jam | Fast Blink |
| Missing Black Index Mark | Fast Blink |
| Temperature Error | Med Blink |
| Voltage Error | Med Blink |
| Print Head Error | Med Blink |

**Table 2: Troubleshooting with the status LED**

## Printing Problems

| Problem | Possible Causes | What to Do |
|---|---|---|
| Receipt does not come out all the way. | Paper is jammed. | Open the receipt cover, inspect the knife, and clear any jammed paper. |
| Printer starts to print, but stops while the receipt is being printed. | Paper is jammed. | Open the receipt cover, inspect the knife, and clear any jammed paper. |
| Receipt is not cut. | Paper is jammed. | Open the receipt cover, inspect the knife, and clear any jammed paper. |
| | The printer is not configured for a knife. | Contact your authorized service representative. |
| Print is light or spotty. | Paper roll loaded incorrectly. | Check that the paper is loaded properly. |
| | Thermal printhead is dirty. | Use recommended thermal receipt paper. |
| Vertical column of print is missing. | This indicates a serious problem with the printer electronics. | Contact your authorized service representative. |
| One side of receipt is missing. | This indicates a serious problem with the printer electronics. | Contact your authorized service representative. |

**Table 3: Troubleshooting Printing Problems**

## Printer Does Not Work

| Problem | Possible Causes | What to Do |
| --- | --- | --- |
| Printer Does Not Function When Turned On. | Printer not plugged in. | Check that printer cables are properly connected on both ends. |
| | | Check that the host or power supply is switched on.  Check Printer LED. |
| | Door not fully closed. | Close the door. |

**Table 4: Printer Does Not Work**

# 2. Media and Supplies Guide

## 2.1 Thermal Paper Specifications

The printer requires qualified thermal paper with the following dimensions:

| Width | Diameter | Outside Core Diameter |
|---|---|---|
| 80 mm ± .2 mm (3.15 in. ± .008 in.) | 115 mm max. (4.5 in.) | 45mm (1.75 inches) |
| 82.5 mm ± .2 mm (3.25 in. ± .008 in.) | 115 mm max. (4.5 in.) | 45mm (1.75 inches) |

**Table 5: Thermal Paper Dimensions**

The paper should not be attached to the core. If Top of Form Option is installed, paper with a colored stripe at the end can be used to indicate that the paper is running low.

## 2.2 Ordering Thermal Paper

We recommend the following paper grades produced by their respective manufacturers. There are a number of paper converters qualified to supply this paper, provided the thermal paper rolls are from these recommended grades.

| Manufacturer | Paper Grade | Paper Thickness |
|---|---|---|
| **Kanzaki Specialty Papers (USA)** | Lotto 480 | 83 g/m2 – 3.3mil |
| **Kanzan Spezialpapiere GMBH (Germany)** | KLS 36<br>KLS 46 | 79g/m2 – 3.1mil<br>81g/m2 – 3.2mil |
| **Appleton Papers, Inc. (USA)** | Optima T-886 B (now Heatsafe 200-3.2) | 82g/m2 – 3.2mil |
| **Blumberg GMBH** | T49-32 | 88 g/m2 – 3.5mil |
| **Mitsubishi** | TP8065 | 80g/m2 – 3.1mil |

**Table 6: Ordering Thermal Paper**

Additional grades can be qualified and made available.  Contact your sales representative for more information.

## 2.3 Ordering Miscellaneous Supplies

## Power Supply and Power Cord

Contact your sales representative to order the power supply and power cords listed in the table. The numbers are for reference only. Suppliers may use other numbers.

| Part | Part Number |
| --- | --- |
| Power Supply (24VDC, 2.5A max., 60W) | 102048 |
| Power Cord – North American | 102080 |
| Power Cord – Continental Europe | 102086 |

**Table 7: Power Supply and Power Cord Part Numbers**

## Ordering Communication Cables

Contact your sales representative to order the communication cables listed in the table. The numbers are for reference only. Suppliers may use other numbers.

| Part | Part Number |
| --- | --- |
| Standard RS232 communication cable (Host Cable) *(DB9 male plug, DB9 female receptacle)* | 102082 |
| Standard RS232 communication cable  (Host Cable) *(DB9 female receptacle, DB25 male plug)* | 102106 |
| Serial RS232 communication harness (Adapter Harness) (DB9 male plug to DB25 female receptacle) | 102042 |
| Parallel communication cable (Host Cable) *(IEEE 1284 Type A to B - Large Centronics to DB25)* | 102083 |
| USB communication cable (Host Cable) *(Type A to mini B)* | 102085 |

**Table 8: Communication Cables Part Numbers**

## Communication Cables Pin-Out

The tables below detail the connection pin-out for the RS-232 interface (Female Receptacle DB-9).

| Pin | Signal Name | Printer I/O | Host I/O | Printer Function |
|---|---|---|---|---|
| 1 | n/a | always driven low (high on RS232 side) | Input | None |
| 2 | PRT_RS232_TXD | Output | Input | Data transmit |
| 3 | PRT_RS232_RXD | Input | Output | Data receive |
| 4 | n/a | No connect | Output | None |
| 5 | Signal Ground | Signal Ground | Signal Ground | Signal Ground |
| 6 | RS232_DSR | Output | Input | Printer Ready (Connected to PRT_RS232_RTS Pin 8) |
| 7 | PRT_RS232_CTS (host RTS) | Input | Output | Handshake |
| 8 | PRT_RS232_RTS (host CTS) | Output | Input | Handshake |
| 9 | n/a | always driven high (low on RS232 side) | Input | None |
| Shell | Frame Ground | Frame Ground | Frame Ground | Shield |

**Table 9: RS-232 Interface Pin-Out**

# 3. Communicating with the Printer

Over the years, Nanoptix has developed emulations for compatibility with the most popular printers in the market.  At the time of printing this manual, the following emulations are available:

    i.   Epson LQ570+
    ii.  Epson TM-T88III
    iii. Star TUP-400
    iv.  Axiohm A722
    v.   Ithaca P70
    vi.  Ithaca P170
    vii. Citizen 3551

Please contact your sales representative if you require other emulations.  If we do not have the emulation you need, we can provide most emulations in a short timeframe.  If you are not required to emulate other printer, please ask your sales representative for the latest Nanoptix Windows Driver or the "Nanoptix Programming Guide" which will list the Nanoptix ESC/P commands.

# APPENDIX A: Mechanical Drawings
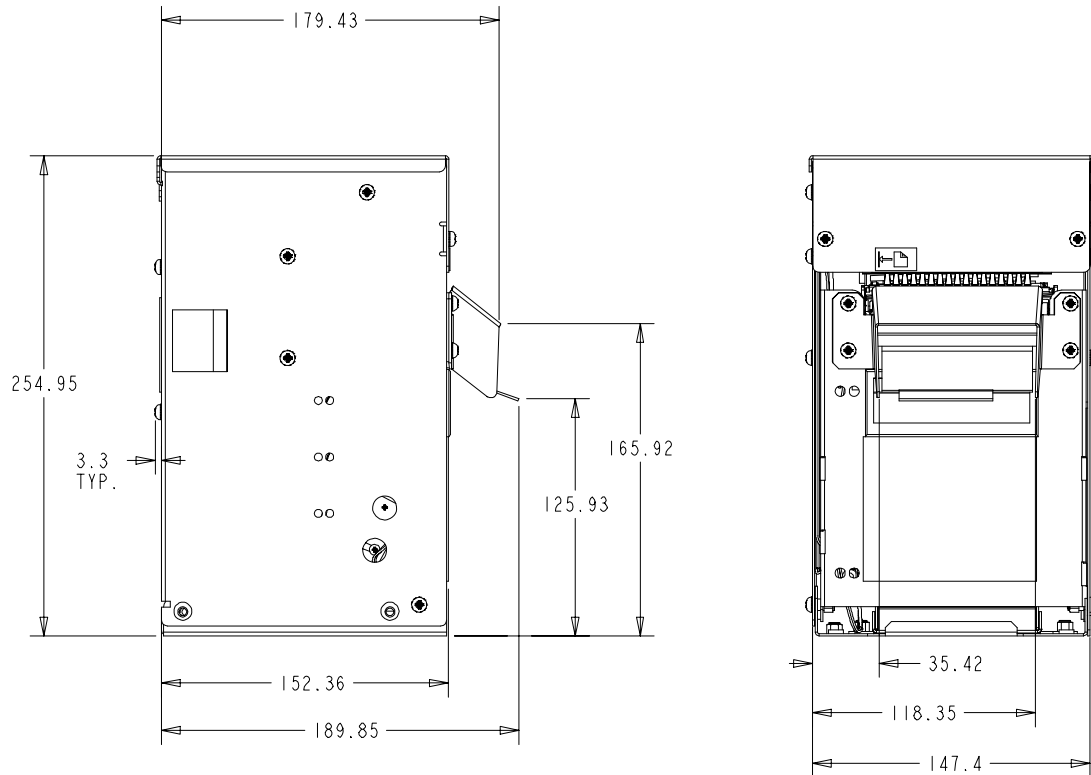


**Figure 8: Mechanical Dimensions (in mm)**