CP103
Thermal Mini Printer

User Instructions

Table of Contents

1 General Information and Warnings

1.1 About this Manual

This manual is divided into chapters by the chapter number and the large text at the top of a page. Subsections are labeled as shown by the 1 and 1.1 headings shown above. The names of the chapter and the next subsection level appear at the top of alternating pages of the manual to remind you of where you are in the manual. The manual name and page numbers appear at the bottom of the pages.

1.1.1 Special Messages

Examples of special messages you will see in this manual are defined below. The signal words have specific meanings to alert you to additional information or the relative level of hazard.

NOTE: This is a Note symbol. Notes give additional and important information, hints and tips that help you to use your product.

1.2 Description

The CP103 Printer is a portable thermal printer which uses a power supply adapter. The communication interface is via RS-232 Serial. The CP103 printer can be used for a variety of instruments or handheld data printing.
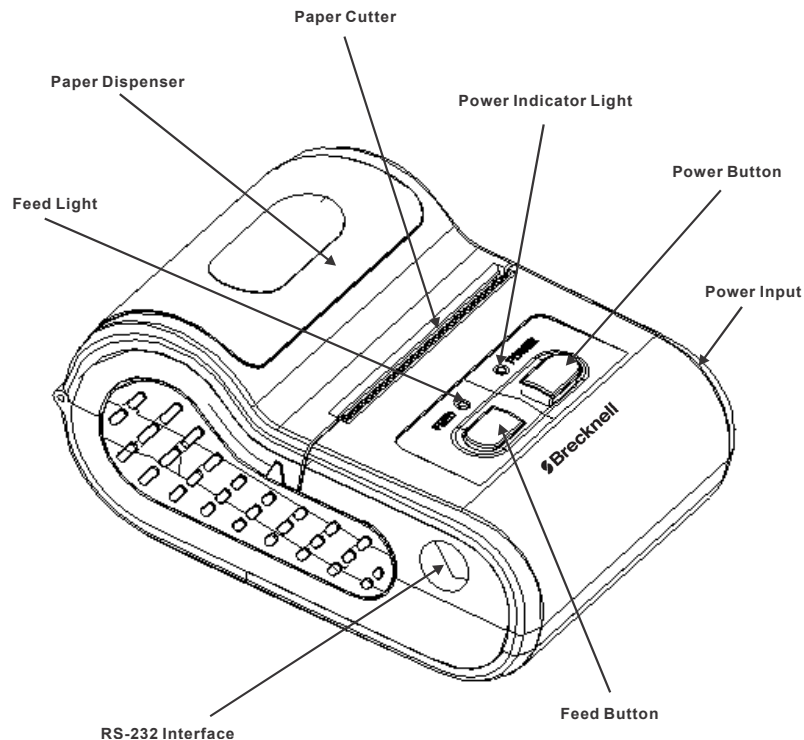
Figure 1.1 Printer Description

1.3   Package and Accessories

- Portable Thermal Printer
- RS-232 Serial Data Cable
- Thermal Paper Roll
- Driver disc (for RS-232/USB)

1.4   Warnings

- Read all operating instructions carefully before use.
- Avoid lengthy exposure to extreme heat or cold. Your printer works best when operated at normal room temperature.

1.5   Prepare the Printer for Use

1. Install a roll of thermal paper in paper dispenser by lifting the dispenser cover and placing the paper in with the thermal side facing outward. Refer to Figure 1.1 for paper dispenser location.

1a. To test which side is thermal, run a fingernail across the paper. A mark should show on the paper. If no mark appears, try the other side of the paper.

2. With about 1/2 inch of paper sticking out, close the paper dispenser cover.

3. Connect RS-232 cable by plugging the PS/2 end of the cable to the printer. Refer to Figure 1.1 for PS/2 connector location.

4. Connect AC power adapter to the printer by plugging the adapter connector into the printer power supply plug. Refer to Figure 1.1 for power input location.

5. When ready, plug the other end of the AC adapter into a wall socket.

6. Plug the RS-232 serial cable in the host device.

7. Press the **[POWER]** button to turn on the printer.

1.6 Signal Light Status

1.6.1 Power Light

Power Light	Light Color	Printer Status Specification
Steady red light	Red	In the process of recharging battery
Red light blinks one time slowly every one second	Red	Battery power is low, recharge battery
Steady green light	Green	Battery voltage is good
Blinks between red and green light	Red/Green	Battery failure
Blinks 3 times between red and green light	Red/Green	Printing is finished or printer is in power on mode
No light	None	No power is detected

1.6.2 Feed Light

Feed light	Light Color	Printer status specification
Steady red light	Red	Feed paper or receiving data
Red light blinks quickly (2 times/sec)	Red	No paper
Red light blinks 3 times and then stops	Red	Printer parameter setting is finished and ok
Steady green light	Green	Printer status is ok but not connected bluetooth
Always alternating blink between red and green light	Red/Green	Printer dead, the buffer is full or temperature of printhead is too high

1.7 Specifications

Item	Specification
Dimension (W×D×H)	104×75×48mm
Weight	145g (without battery and paper roll)
Print Width	58mm
Print Speed	90mm/s (MAX)
Memory	10K byte buffer and 8M byte flash
Interface	RS-232 baud rate 4800 - 115200bps
Resolution	8 dot/mm (203dpi)
Language Support	Figure, English characters, bit-image, bar code, curve
Character Size	ANK: 12*24(dot), 1.5*3.0 (W*L, mm); Chinese Character: 24*24 (dot), 3.0*3.0 (W*L, mm)
Print Commands	ESC/POS compatible command set
Other Features	Paper auto-detection, power detection, thermal protection, with machine charging, automatic sleeping mode
Working Conditions	Temperature: 0° - 50°, Humidity 20% - 85%
Storage Conditions	Temperature: -20° - 70°, Humidity 5% - 95%

1.8   Paper Roll Specifications

Item	Specification
Roll Width:	58mm
Roll Diameter:	≤ 43mm
Paper Thickness	0.06 - 0.08mm
Paper Type	Thermal

2   Communication

The CP103 Mini Thermal Printer uses a RS-232 serial interface connection with the host communication. If a serial port is unavailable on the host device, it is possible to use a serial / USB converter.

2.1   RS-232 Serial Interface

RS-232 is developed according to the EIA standard asynchronous transmission serial interface. The specifications are as following:

- Data transmission: serial interface
- Synchronization: asynchronous
- Signal Level: RS-232 level, logic 1:-5.4v, logic 0: +5.4v
- Hardware Flow Control: optional
- Baud rate: 4800 bps to 115200 bps
- Data word length: 8 bits
- Stop bit: 1bit
- Parity: None

The printer self-testing page will show the current baud rate. The default baud rate is 115200bps. Refer to Chapter 3 for details on the Printer Self Test.

2.2   CP103 Printer PS/2 Connector

The following drawing illustrates the PS2 socket pinout located on the CP103 printer. This connection is used for RS-232 communication with an indicator or computer and requires the PS2 to RS-232 interface cable (serial cable).
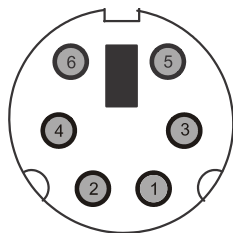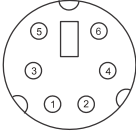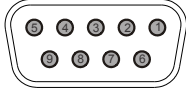
Pin	Description
1	TXD - data output
2	no connection
3	GND
4	no connection (12V DC- IN is optional)
5	RXD - data input
6	no connection (12V DC- IN is optional)

2.3 Serial Cable Definition

Wire Colors	PS2 Connector Pinout male	Pin Description	DB9 Pinout female
white	1	TXD	2
blue	2	Null	8
black	3	GND	5
yellow	4	12 V Input	7
red	5	RXD	3
green	6	12 V Input	6

3 Printer Self Test and Cleaning

With the printer off, press and hold the **[POWER]** button until the printer begins to print a self-testing page and then release the **[POWER]** button.

The page gives specific information regarding version of firmware, interface type, print speed, default baud rate, etc.

3.1 Cleaning the Print Head

When the printer displays the following symptoms the print head should be cleaned:

- The printer does not print clearly and the thermal paper is good
- The page-test printing is not crisp and clear
- Paper feed is noisy

3.1.1 Steps for Cleaning Print Head

1. Turn off the power to the printer and open the paper dispenser cover. Remove the thermal paper roll.

1a. If the printer was just printing then wait for the print head to cool down.

2. With a soft cotton cloth dipped in rubbing alcohol (make sure there is no dripping), wipe the thermal printer head gently and remove any dust or debris.

3. Wait for the rubbing alcohol to evaporate completely and then place the thermal paper roll back in the printer. Close the paper dispenser cover and print a test page.

4 Programming

It is possible to make changes to the operation of the CP103 printer such as baud rate, company name and address, time and date. A communication utility program is needed and can be downloaded to a PC.

1. Connect the printer to the computer with the provided serial cable.

2. Open the PC communication utility program.
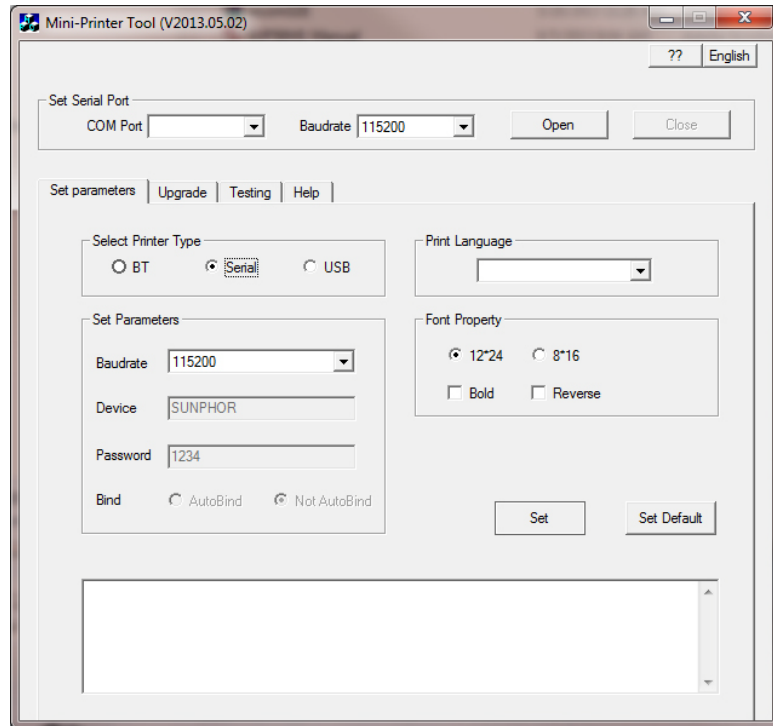
Figure 4.1 Communication Utility Program

Refer to the following sections to perform certain changes to the CP103 Thermal Printer setup.

4.1   Communicate with the Printer
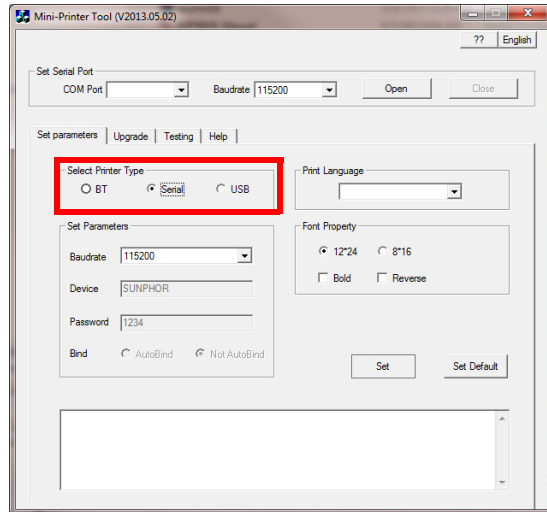
4.1.1   Select Printer Type

From the **Set parameters** tab under *Select Printer Type*, choose "Serial".

4.1.2   Select COM Port

Select the PC communication port the printer is connected to.

Under *Set Serial Port* choose the correct COM port from the drop down choices.
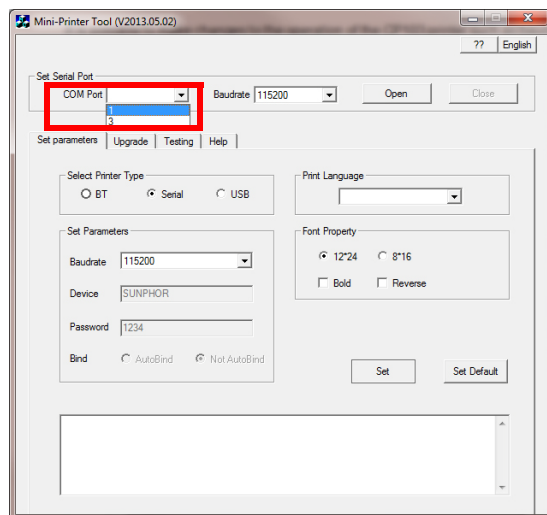
4.1.3 Check Printer Baud Rate

Before selecting the baud rate in the communication utility, verify the baud rate of the printer if it is not know. The baud rate of the printer and computer need to match.

1. Perform a printer self test by turning off the printer with the **[POWER]** button.

2. With the printer off, press and hold the **[POWER]** button until the printer begins to print a self-testing page and then release the **[POWER]** button.

3. The "default baud rate" designates the current baud rate of the printer.
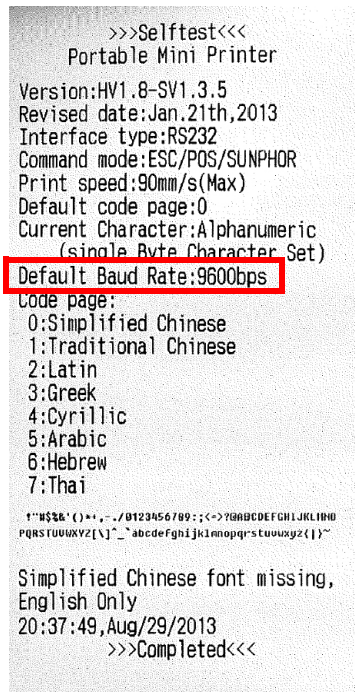
4.1.4 Select Baud Rate

Select the baud rate within the utility that matches the baud rate of the printer.

Under *Set Serial Port* choose the correct baud rate from the drop down choices.
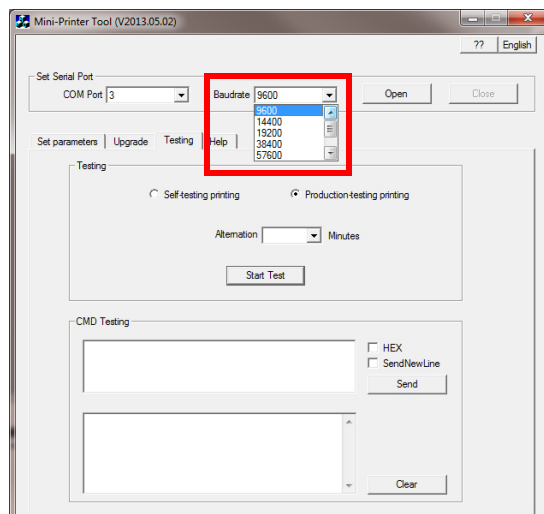
4.2   Make Changes to Printer Configuration

Strings of data can be entered to make certain changes to the printer.
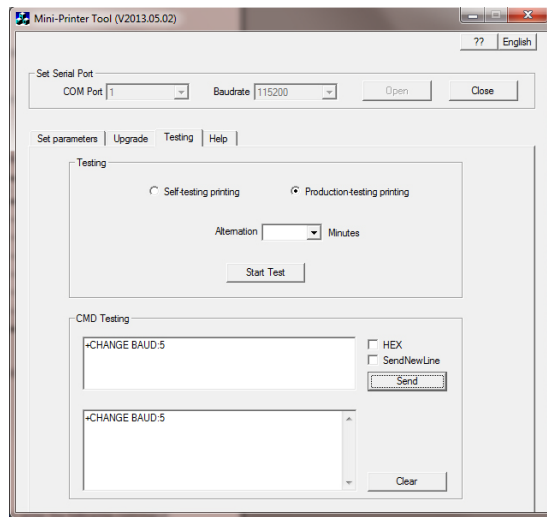
Figure 4.2 Change Baud Rate Example

4.2.1   Change Printer Baud Rate

Change the baud rate of the printer to match the host device.

1.   Go to the **Testing** tab.

2.   Under the *CMD Testing* window (the top window) enter the following command string:

        +CHANGE BAUD:n

Where **n** is the number associated with the desired baud rate.

n	Baud Rate
0	9600
1	14400
2	19200
3	38400
4	57600
5	115200
6	4800

3.   Click on the box to the left of SendNewLine.

4.   Click the **[SEND]** button. The typed in command string will be displayed in the bottom window if the command was sent.

4.2.2   Time and Date

Make changes to time and date settings

Check Current Time and Date

1.   Go to the **Testing** tab.

2.   Under the *CMD Testing* window (the top window) enter the following command string:

> **+TIME?**

3.   Click on the box to the left of SendNewLine.

4.   Click the **[SEND]** button. The typed in command string will be displayed in the bottom window if the command was sent.

Time and Date Setting

1.   Go to the **Testing** tab.

2.   Under the *CMD Testing* window (the top window) enter the following command string:

> **+TIME: year-month-day,hour-minute-second**

For example:+TIME:2013-09-22,15:20:07

3.   Click on the box to the left of SendNewLine.

4.   Click the **[SEND]** button. The typed in command string will be displayed in the bottom window if the command was sent.

Set Time and Date Position on Page

1.   Go to the **Testing** tab.

2.   Under the *CMD Testing* window (the top window) enter the following command string:

> **+PRINT TIME ADD:n**

Where **n** is the number associated with the desired time and date location.

n	Description
0	put date and time in page head
1	put date and time in page end

3.   Click on the box to the left of SendNewLine.

4.   Click the **[SEND]** button. The typed in command string will be displayed in the bottom window if the command was sent.

4.2.3   Company Information

Enter company specific information.

Open or Close Auto-print Company Information

1.   Go to the **Testing** tab.

2.   Under the *CMD Testing* window (the top window) enter the following command string:

+SELECT COMPANY:n

Where **n** is the number associated with the desired time and date location.

n	Description
0	do not print company information
1	print company information

3.   Click on the box to the left of SendNewLine.

4.   Click the **[SEND]** button. The typed in command string will be displayed in the bottom window if the command was sent.

Set Company Name

1.   Go to the **Testing** tab.

2.   Under the *CMD Testing* window (the top window) enter the following command string:

+COMPANY:NAME

NAME is company name. Maximum is 12 bits

For example input: +COMPANY: Major Technology

3.   Click on the box to the left of SendNewLine.

4.   Click the **[SEND]** button. The typed in command string will be displayed in the bottom window if the command was sent.

Set Company Address

1.   Go to the **Testing** tab.

2.   Under the *CMD Testing* window (the top window) enter the following command string:

+ADDRESS:address

address is company the address. Maximum is 12 bits

For example input: +ADDRESS: 222 Main Street

3.   Click on the box to the left of SendNewLine.

4.   Click the **[SEND]** button. The typed in command string will be displayed in the bottom window if the command was sent.

Set Company Telephone Number

1.   Go to the **Testing** tab.

2.   Under the *CMD Testing* window (the top window) enter the following command
       string:

              +TELEPHONE:NUM

NUM is telephone number. Maximum is 12 bits

For example input: +TELEPHONE:123-456-7890

3.   Click on the box to the left of SendNewLine.

4.   Click the **[SEND]** button. The typed in command string will be displayed in the
       bottom window if the command was sent.

4.2.4   Restore Default Baud Rate

Set factory default baud rate.

1.   Go to the **Testing** tab.

2.   Under the *CMD Testing* window (the top window) enter the following command
       string:

              1f 40

3.   Click on the box to the left of HEX.

4.   Click the **[SEND]** button. The typed in command string will be displayed in the
       bottom window if the command was sent.

4.2.5   Underline Printing

Enable or disable all characters printed with an underline.

1.   Go to the **Testing** tab.

2.   Under the *CMD Testing* window (the top window) enter the following command
       string:

              1f 2d n

Where **n** is the number associated with enable or disable underline printing.

n	Description
00	disable underline printing
01	enable all character in underline printing mode

3.   Click on the box to the left of HEX.

4.   Click the **[SEND]** button. The typed in command string will be displayed in the
       bottom window if the command was sent.

4.2.6 Inverse Font

Enable or disable inverse font printing.

1. Go to the **Testing** tab.

2. Under the *CMD Testing* window (the top window) enter the following command string:

    1f 49 n

Where **n** is the number associated with enable or disable inverse font printing.

n	Description
00	disable inverse font printing
01	enable inverse font printing

3. Click on the box to the left of HEX.

4. Click the **[SEND]** button. The typed in command string will be displayed in the bottom window if the command was sent.

4.2.7 Line Feed

Enable or disable line feed after printing.

1. Go to the **Testing** tab.

2. Under the *CMD Testing* window (the top window) enter the following command string:

    1f 19 n

Where **n** is the number associated with enable or disable inverse font printing.

n	Description
00	automatically feed 2 lines after printing
01	no line feed after print

3. Click on the box to the left of HEX.

4. Click the **[SEND]** button. The typed in command string will be displayed in the bottom window if the command was sent.

4.2.8 Character Dot Choice

Choose the number of columns printed.

1. Go to the **Testing** tab.

2. Under the *CMD Testing* window (the top window) enter the following command string:

    1f 44 n

Where **n** is the number associated with the dot size and number of columns..

n	Description
00	12*24 dot, 32 columns (default)
01	8*16 dot, 48 columns

3. Click on the box to the left of HEX.

4. Click the **[SEND]** button. The typed in command string will be displayed in the bottom window if the command was sent.

4.2.9 Font Choice

Choose between Arial and bold fonts.

1. Go to the **Testing** tab.

2. Under the *CMD Testing* window (the top window) enter the following command string:

    1f 46 n

Where **n** is the number associated with the type of font used for printing.

n	Description
00	Arial (default)
01	bold

3. Click on the box to the left of HEX.

4. Click the **[SEND]** button. The typed in command string will be displayed in the bottom window if the command was sent.

4.2.10 Time and Date Display Mode

Format the time and date.

1. Go to the **Testing** tab.

2. Under the *CMD Testing* window (the top window) enter the following command string:

   1f 54 n m

Where **n** is the number associated with enable or disable time and date printing.

Where **m** is the format of the time and date.

n	m	Description
00		don't print time and date after printing
01		print time and date after printing
	00	format: month/day/year
	01	format: day/month/year
	02	format: year/month/day

3. Click on the box to the left of HEX.

4. Click the **[SEND]** button. The typed in command string will be displayed in the bottom window if the command was sent.

4.2.11 Print Width

Choose between normal or double width print.

1. Go to the **Testing** tab.

2. Under the *CMD Testing* window (the top window) enter the following command string:

   1d 21 n

Where **n** is the number associated with the width of font used for printing.

n	Description
00	normal
01	double width (default)

3. Click on the box to the left of HEX.

4. Click the **[SEND]** button. The typed in command string will be displayed in the bottom window if the command was sent.

4.2.12　Upside Down Printing

Enable or disable upside down printing.

1.　Go to the **Testing** tab.

2.　Under the *CMD Testing* window (the top window) enter the following command string:

1b 7b n

Where **n** is the number associated with the orientation used for printing.

n	Description
00	upside down printing off (default)
01	upside down printing on

3.　Click on the box to the left of HEX.

4.　Click the **[SEND]** button. The typed in command string will be displayed in the bottom window if the command was sent.
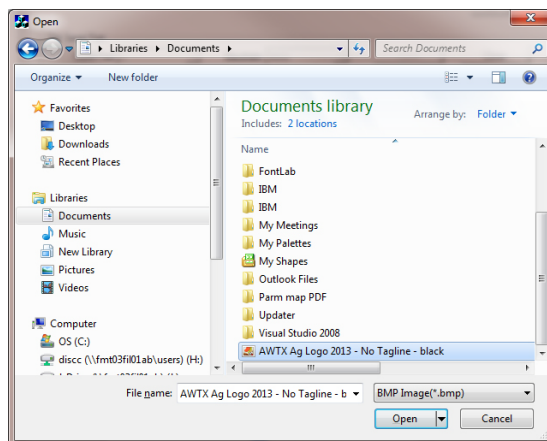
4.2.13 Logo Download

A logo can be added to the printed ticket. **Before downloading the logo, the file must be sized to 300 DPI. The logo must be saved as a .bmp file.**
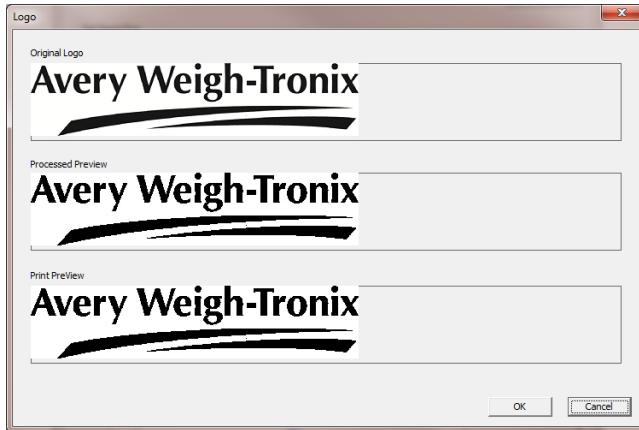
1. Go to the **Upgrade** tab.

2. Under *Download NV LOGO,* click on the **[Loading Logo file]** button.
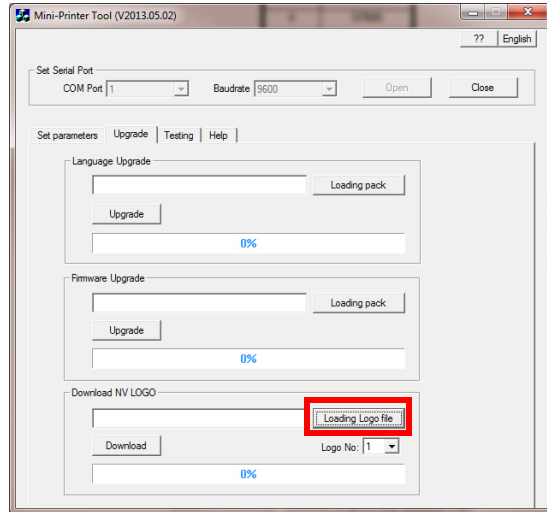
3. The Open file window will appear. Find the logo file to load and click the **[Open]** button.

4. If the logo is the correct size a window will appear with three different logo views. If the size is incorrect, an error will be displayed. Click the **[OK]** button to continue or **[Cancel]** to escape.

5. The file path should be showing in the window. Click the **[Download]** button.

Auto Print Logo

1. Go to the **Testing** tab.

2. Under the *CMD Testing* window (the top window) enter the following command string:

   +SELECT LOGO:n

Where **n** is the number associated with the desired time and date location.

n	Description
0	do not print logo
1	print the first logo
2	print the second logo

3. Click on the box to the left of SendNewLine.

4. Click the **[SEND]** button. The typed in command string will be displayed in the bottom window if the command was sent.

4.2.14   Printer Escape Command Code Definitions

Command	Print Formatted Data
<ESC> 0	HH:MM 24 hour format
<ESC> 1	HH:MM_?M 12 hour format with AM or PM
<ESC> 2	MM/DD/YY month/day/year
<ESC> 3	DD-MM-YY day-month-year/numeric month
<ESC> 4	DD-MON-YY day-month-year with 3 letter abbreviation of the month
<ESC> 5	DOW day of week abbreviation

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