# NCR

**NCR 7198 Thermal Receipt Printer**
**Release 1.0**
# Owner's Manual

**Important Information to the User**

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

**Power Supply**

Power supply should be certified according to UL/EN/IEC60950, Class 2 power supply with SELV (Secondary Extra Low Voltage), non-energy hazard output, limited power source, input rated 100-240 Vac, 1.5/0.8 A, 50/60 Hz, output rated 24 Vdc, 3.15A

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

**Interface Cable**

A shielded (360 degree) interface cable must be used with this product. The shield must be connected to the frame or earth ground connection or earth ground reference at EACH end of the cable.

Use of a cable other than described here will require that you test this cable with the NCR printer and your system for FCC and CE mark certification.

**Power Cord**

A UL listed, detachable power cord must be used for this product. For applications where the power supply module may be mounted on the floor, a power cord with Type SJT marking must be used. For applications outside the US, power cords which 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 which are in force in the country of use.

The socket-outlet shall be installed near the equipment and shall be easily accessible.

**Wichtige Benutzerinformationen:**

Um die Produktsicherheit und die FCC und CE-Markierungsanforderungen bei der Benutzung des Druckers sicherzustellen, müssen entweder das mitgesante Netzgerät, Netzanschlußkabel und Verbindungskabel verwendet werden oder folgende Anforderungen müssen erfüllt sein:

**Netzgerät:**

Das Netzgerät muß ein UL verzeichnetes (QQGQ) Netzgerät der Klasse 2  mit SELV (Sekundärextraniederspannung), Nichtenergie Gefahrenausgang, begrenzter Energiequelle, einer Aufnahmeleistung von 100-240 VAC, 1.5/0.8 A und  50/60 Hz, und einer Leistungsabgabe von 24 VDC, 3.15 A.c sein.

Die Benutzung des Produktes mit einem Netzgerät, daß nicht von NCR mitgeliefert wurde erfordert das Testen des Netzgerätes mit dem NCR Drucker auf FCC und CE-Markierungs Befolgung.

**Verbindungskabel:**

Bei der Benutzung dieses Produkts muß ein abgeschirmtes (360 Grad) Verbindungskabel benutzt werden. Die Abschirmleitung muß entweder mit dem Rahmens des Gerätes oder der Erde verbunden sein oder alternativ müssen alle Enden des Kabels geerdet werden.

Falls das Verbindungskabel nicht in der hier beschrieben Art benutzt wird, muessen das Kabel und der NCR Drucker auf die FCC und CE-Markierungs Befolgung überprüft werden.

**Netzanschlußkabel**:

Für dieses Produkt muß ein in UL aufgelistete, abnehmbares Netzanschlußkabel benutzt werden. Falls das Netzgerät fest auf dem Boden montiert ist, muß ein Netzanschlußkabel mit der SJT Markierung benutzt werden. Für Anwendungen außerhalb der USA, sollte ein Netzanschlußkabel benutzt werden, daß der Zertifizierung und Bestimmung des jeweiligen Landes entspricht.

Das Abweichen der hier beschriebenen Benutzungsanleitung des Netzanschlußkabels kann gegen die gesetzlichen Sicherheitsbestimmungen des jeweiligen Landes verstoßen.

**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.

**Communication Cables**

Shielded communication cables must be used with this unit to ensure compliance with the Class A FCC limits.

**Information to 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 NCR immediately.

The NCR company 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 NCR. The correction of interferences caused by such unauthorized modification, substitution or attachment will be the responsibility of the user.

**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.*

**Bundeskommunikationen Kommission (FCC)**

**Hochfrequenz-Störungs Richtlinie.**

**Warnung:** Änderungen oder Änderungen an der Maßeinheit, die nicht ausdrücklich von der Seite, die für die Befolgung verantwortlich ist, genehmigt ist, können zum Entzug der Benutzungsberechtigung dieses Gerätes führen.

**Anmerkung:** Dieses Gerät wurde getested und entspricht der zulässigem Richtlinien eines digitalen Gerätes der Klasse A, gemäß Abschitt 15 in den FCC Richtlinien. Diese Richtlinien sind dazu da, einen angemessenen Schutz gegen schädliche Störung bei der komerziellen Nutzung dieses Gerätes zu gewährleisten. Dieses Gerät erzeugt und benutzt Hochfrequenzenergie und kann Hochfrequenzenergie ausstrahlen. Wenn die Installierung und Benutzung dieses Gerätes nicht wie im Benutzer Handbuch beschrieben ist, durchgeführt wird, kann eine schädliche Störung von Funkverbindungen verursacht werden. Der Betrieb dieses Gerät in einem Wohngebiet kann schädliche Störung verursachen die auf Kosten des Benutzers behoben werden müssen.

**Kommunikationskabel:**

Dieses Gerät muß in Uebereinstimmung mit Kategorie A FCC Richtlinien mit einem abgeshirmten Kabel betrieben werden.

**Benutzerinformationen:**

Dieses Gerät muß wie in der Hersteller Anweisungen beschrieben installiert und benutzt werden. Jedoch gibt es keine Garantie dafür, daß Funkstörung nicht in bestimmten kommerziellen Installation auftritt. Für den Fall, daß das Gerät Funkstörungen verursacht, was durch das An und Abschalten des Gerätes festgestellt werden kann, wird der Benutzer aufgefordert sofort mit NCR Kontakt aufzunehmen.

NCR ist nicht für Radio- oder Fernsehenstörung verantwortlich, die durch unautorisierte Änderung der Ausrüstung oder den Ersatzes der anschließenden Kabel oder durch Anschluß von Geräten hervorgerufen wird, die nicht ausdrücklich von NCR genehmigt wurden sind. Die Korrektur von Störungen, die durch solche unautorisierte Änderung, Ersatz oder Zubehör verursacht werden, liegt in der Verantwortlichkeit des Benutzers.

**Industrie-Kanada (IS)**

**Hochfrequenz-Störungs Richtlinie:**

Dieses digitale Gerät der Klasse A entspricht allen Anforderungen der kanadischen Störung-Verursachende Geräte Richtlinie.

# Quick Reference

This Quick Reference will direct you to key areas of the Owner's Manual. For a complete listing of topics, consult the Table of Contents or the Index.

## How to Use this Book

Use this book as a general and technical reference manual and as a guide when replacing parts on the printer. The service guide is intended as a guide for service representatives, field engineers, and those who will be installing and learning about the 7198 printer. It can also be used as a reference for service courses.

See the Quick Reference page, the Contents, or the Index for detailed listings of what is contained in this book.

## Who Should Use this Book?

You must be a trained service representative to service the 7198 Thermal Receipt printer.

## How to Obtain More Information

For more information see the following documents:

- 7198 Receipt Printer: Service Manual (B005-0000-1737)
- 7198 Receipt Printer: Parts Identification Manual (B005-0000-1738)

For this and additional copies of the Owner's Manual, contact your sales representative.

## Revision Record

| Issue | Date | Remarks |
|-------|------|---------|
| A | August 06 | Initial Issue |
| B | November 06 | Revised formatting of document |
| | | |
| | | |

# Contents

# Chapter 1: About the 7198 Printer

Receipt Cover                                    Receipt

Paper Feed
Button

LED

Top Cover

The 7198 printer is a fast, quiet, relatively small and very reliable multiple-function printer thata provides the ability to print on the front and back of the receipt. It prints receipts and two color printing in single side mode.

The industry-standard RS-232C communication interface as well as USB which allows the 7198 to be connected to any host computer that uses RS-232C or USB communication interface.

# Features and Options

The 7198 printer comes with several features and options.

## Receipt Station

- Thermal printing with front and back printing
- Standard pitch (host selectable): 15.2 characters per inch, 44 columns
- Compressed pitch (host selectable): 19.0 characters per inch, 56 columns
- Resident bar codes
- Code 39
- Code 93
- Code 128
- UPC-A
- UPC-E
- JAN8 (EAN)
- JAN13 (EAN)
- Interleaved 2 of 5
- Codabar
- PDF417
- Drop-in paper loading requiring no spindle or threading paper
- Paper low indicator
- Paper exhaust indicator
- Variety of print modes: double high, double wide, upside down, and rotated
- 14 resident character language Code Pages:
- PC Code Page 437 (US English)
- PC Code Page 850 (Multilingual)
- PC Code Page 852 (Slavic)
- PC Code Page 858 (with Euo symbol)
- PC Code Page 860 (Portuguese)
- PC Code Page 862 (Hebrew)
- PC Code Page 863 (French Canadian)
- PC Code Page 864 (Arabic)
- PC Code Page 865 (Nordic)
- PC Code Page 866 (Cyrillic)
- PC Code Page 1252 (Windows Latin #1)
- PC Code Page Katakana
- PC Code Page 874 (Thai)
- Space Page
- 16K RAM for downloaded character sets or bit-mapped graphics (such as logos)
- Two Color Printing

## General Features

- Knife
- Cover open sensors
- One cash drawer connector (supports 2 cash drawers)
- Industry standard RS-232C and USB communication interface
- History EEROM for custom settings
- Audible tone (controlled by application)

**Note:** The 7198 does not have a paper journal. The journal is kept electronically by the host computer.

## Options

- Remote power supply
- Communication cables
- Wall Mount

# Thermal Print Head

The 7198 Receipt Station uses a thermal print head for printing on the front and back of receipts, and is extremely fast and quiet. Since it uses heat to print directly on paper, there is no cassette or ribbon to change, eliminating soiled fingers and paper dust.

There is no regularly scheduled maintenance for the print head and it does not need to be regularly cleaned. However, if it does appear dirty, wipe it with cotton swabs and rubbing alcohol. If spotty or light printing problems persist after the thermal print head has been cleaned, see "Chapter 3: Solving Problems" for more information.

**Note:** The thermal print head does not normally require cleaning if the recommended paper is used. If non-recommended paper has been used for an extended period of time, cleaning the print head with cotton swabs and rubbing alcohol will not be of much benefit. See "Ordering Receipt Paper" on the next page for the recommended paper.

The print head is designed for a very long life, but it may be replaced if needed. Only a trained service representative may replace the print head. See "Chapter 3: Solving Problems" to determine if the print head needs to be replaced.

# Ordering Paper and Supplies

Thermal receipt paper, ribbon cassettes, and forms can be ordered. Documentation is also available.

## Ordering Thermal Receipt Paper

The 7198 requires NCR qualified thermal paper to be used on the thermal receipt print station to insure proper operation of the printer. In addition the paper rolls must be have the following dimension.

| Diameter | Length | Width |
|---|---|---|
| 80 mm max. (3.15 in.) | 83 meters (273 ft.) | 80 mm ± .5 mm (3.15 ± .008 in.) |
| 80 mm max. (3.15 in.) | 83 meters (273 ft.) | 58 mm ± .5 mm (2.28 ± .008 in.) |

The paper must not be attached at the core. Use paper with a colored stripe at the end to indicate that the paper is running low.

### 80 mm Paper Stock (Single Side)

| Product ID | Paper Stock | Paper Grade Description |
|---|---|---|
| 9078-0022 | 856911 | Simplicity (for text printing) |
| 9078-0029 | 856966 | Enhanced Image (for text and simple graphics) |
| 9078-0033 | 878559 | High Resolution (for text, bar codes & detailed graphics) |
| **Two Color** | | |
| 9078-0052 | 856458 | 80 MM 2-color blue/black |
| 9078-0053 | 856461 | 80 MM 2 color red/black |

### 80mm Paper Stock (Two Side)

| Product ID | Paper Grade Description |
|---|---|
| 9079-0001 | 80 MM 2-color black/black Simplicity (for text printing) |
| 9079-0002 | 80 MM 2-color black/blue Simplicity (for text printing) |
| 9079-0003 | 80 MM 2 color black/red Simplicity (for text and simple graphics) |
| 9079-0004 | 80 MM 2-color black/black High Resolution (for text, bar codes & detailed graphics) |
| 9079-0005 | 80 MM 2-color black/blue High Resolution (for text, bar codes & detailed graphics) |
| 9079-0006 | 80 MM 2 color black/red High Resolution (for text, bar codes & detailed graphics) |

The paper must not be attached at the core. Otherwise the receipt station will be damaged when the paper is exhausted.

To order thermal receipt paper, contact your sales representative or order from NCR at the following address or toll free number:

**NCR**
Media Products Division
9995 Washington Church Road
Miamisburg, OH  45342
Voice: 1(800)543-8130 (toll free), or local listing of  The NCR Systemedia
Products sales office

It is critical that only certified thermal paper be used with this printer, otherwise damage may result causing poor print quality or cause damage to the printer.

## Ordering Other Supplies

Contact your sales representative to order the supplies listed in the table.

| Item | Type | Number |
|---|---|---|
| Power supply with attached cable to printer and U.S. power supply cord | 75 Watt Power Supply | 7167-K311-V001 |
| Power supply ( w/o power cord) | 75 Watt Power Supply | 7167-K310-V003 |
| Power supply cord (to outlet) | United States<br>International (no plug)<br>United Kingdom<br>S.E.V.<br>Australia<br>International (with plug) | 1406-C325-0030<br>1416-C319-0030<br>1416-C321-0030<br>1416-C320-0030<br>1416-C322-0030<br>1416-C323-0030 |
| RS-232C Communication Cables<br>    9-pin to 9-pin (Black)<br>    9-pin to 9-pin (Black) | <br>1.1 meters<br>4.0 meters (13.2 feet) | <br>1416-C879-0010<br>1416-C879-0040 |
| USB Communication Cables<br>  USB Type A to Type B Connector (Black)<br>  USB Type A to Type B Connector (Black) | <br>1.0  Meters<br>4.0  Meters | <br>1432-C083-0010<br>1432-C083-0040 |
| USB Plus Power Cables<br> USB/Plus Power to Type B Connector (Black)<br> USB/Plus Power to Type B Connector (Black) | <br>1.0  Meters<br>4.0  Meters | <br>1432-C092-0010<br>1432-C092-0040 |
| Extended Slip Table (Standard) | | 7167-K352-V001 |
| Cash Drawer | 2189 | 2189-K002-V001<br> (Switchable for Drawer 1 or Drawer 2) |
| Cash Drawer Cable | Y Cable | 1416-C372-0006 |

## Ordering Documentation

Contact your sales representative to obtain the following documentation:

- 7198 Receipt Printer: Parts Identification Manual (B005-0000-1738)
- 7198 Receipt Printer: Service Manual (B005-0000-1737)
    (includes Troubleshooting Guide)
- 7198 Receipt Printer: Owners Manual (B005-0000-1736)

# Cleaning the Printer

## Cleaning the Cabinet

The external cabinet materials and finish are durable and resistant to these items:

- Cleaning solutions
- Lubricants
- Fuels
- Cooking oils
- Ultraviolet light

There is no scheduled maintenance required for the 7198.

Clean the cabinet as needed to remove dust and finger marks. Use any household cleaner designed for plastics, but test it first on a small unseen area. If the receipt bucket is dirty, wipe it with a clean, damp cloth.

## Cleaning the Thermal Print Head

**Caution:**  Do not spray or try to clean the thermal print head or the inside of the printer with any kind of cleaner as this may damage the thermal print head and electronics.

If the thermal print head appears dirty, wipe it with cotton swabs and isoprophl alcohol.

If spotty or light printing problems persist after the thermal print head has been cleaned, see "Chapter 3: Solving Problems" for more information.

**Note:**  The thermal print head does not normally require cleaning if the recommended paper grades are used. If non-recommended paper has been used for an extended period of time, cleaning the print head with cotton swabs and rubbing alcohol will not be of much benefit. See "Ordering Paper and Supplies" earlier in this manual for recommended paper.

# Chapter 2: Setting Up and Using the Printer

## What Is in the Box?

The following items are packed in the shipping box:

- Printer enclosed in a plastic bag and foam pack

- Thermal receipt paper roll

These items may be ordered as options from NCR and will be shipped separately:

- Communication cable (from host computer to printer)

- DC Power Cable

- Remote Power Supply

- Cash drawer with cables (may be ordered from other equipment suppliers: see "Ordering Other Supplies" in chapter 1)

## Removing the Packing Material
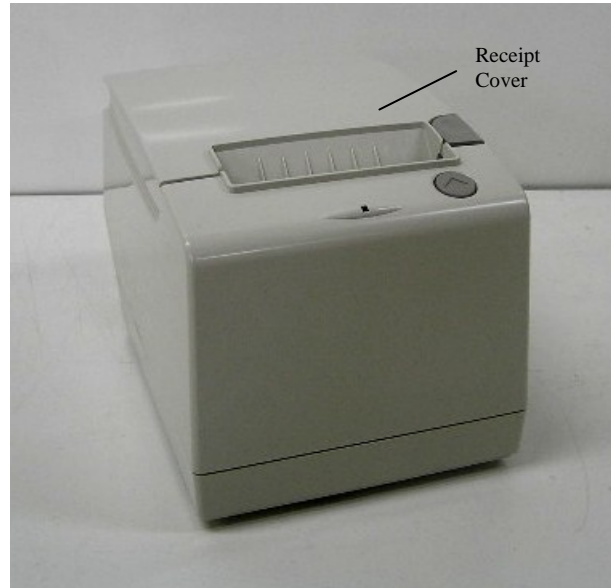




1. Remove the printer from the foam pack and plastic bag.

2. Remove the receipt paper roll and cables from the foam packing material.

3. Save all packing materials for future storing, moving, or shipping the printer.

**Note: If the printer is wall mounted, the paper low switch must be disable.**

## Repacking the Printer

Review the illustrations on the previous two pages to pack the printer.

1.  Place receipt paper between the receipt cover and the print head for protection.

2.  Place the printer in the plastic bag and foam pack, place the packed printer in the box, and secure the box with packing tape.

3.  If you are sending the printer to NCR for repair, call your NCR-authorized service representative for instructions on where to send the printer.

    Be prepared to answer questions concerning shipping and billing.

# Choosing a Location

The 7198 printer takes up relatively little counter space and may be set on or near the host computer. Make sure there is enough room to open the receipt cover to change the paper. The illustration shows the actual dimensions of the printer, but leaves several inches around the printer for connecting and accessing the cables.



139.00 mm
(5.5 in.)

220.00 mm
(8.7 in.)

145.00 mm
(5.7 in.)
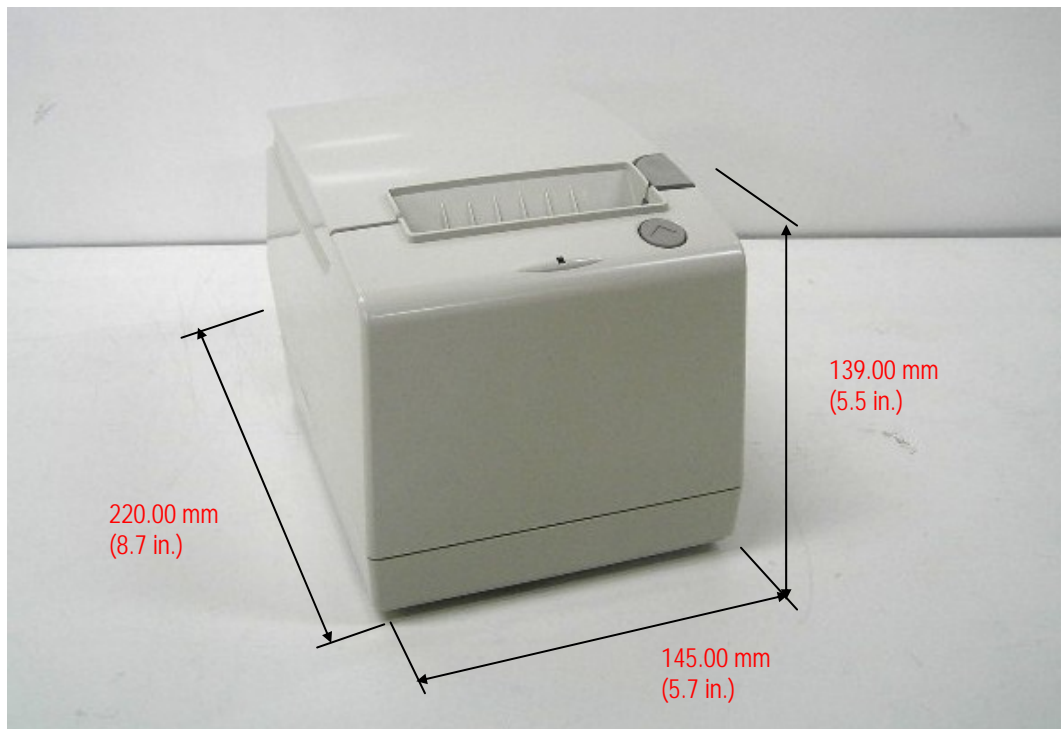
# Wall mounted

The 7198 printer may be mounted on a vertical wall by using the keyhole slot at the bottom of the printer base. Make sure there is enough room to open the receipt cover to change the paper. Mount the screws on the wall using the following recommended mount dimensions.  Use a M5x20 screw which is to be securely fastened to a wall stud or using a "Molly" fastener (not provided).
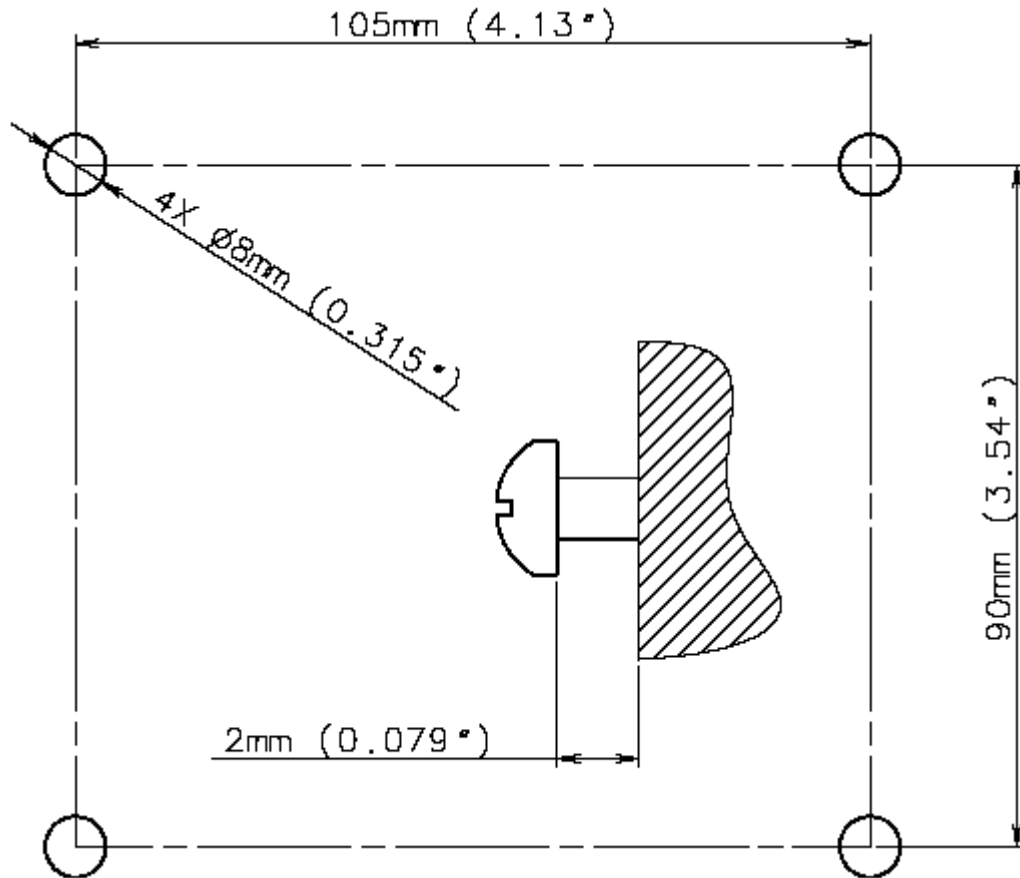


Note:  Paper low must be disabled when printer is wall mounted

# Wall mounted Power Supply (Option)

The 75 watt power supply may be mounted on a vertical wall by using the holes on the cover. Mount the screws on the wall using the following recommended mount dimensions.  Use a #8 wood screw which is to be securely fastened to a wall stud or using "Molly" fasteners.

75mm
(2.95 in)

10mm (.39 in)

175mm (6.89 in)
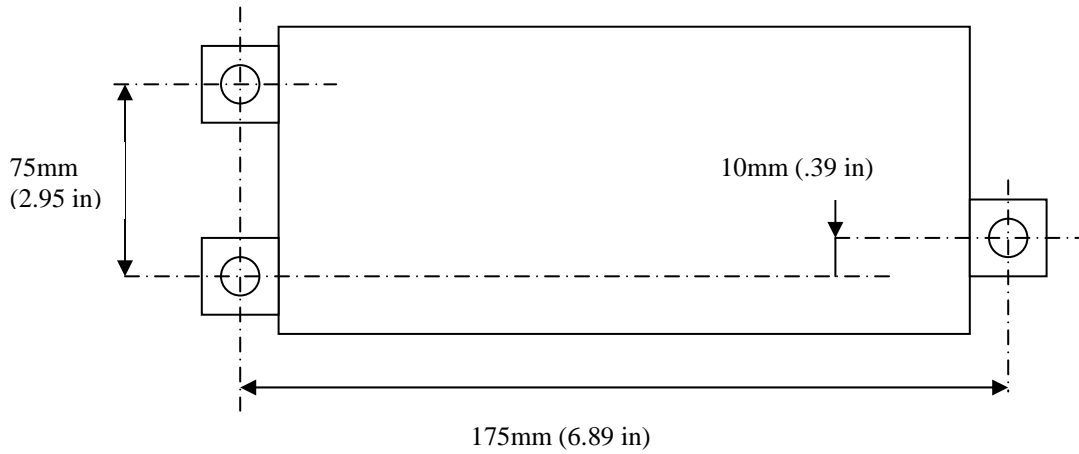
# Setting Switches

The DIP switches, located at the back of the printer, are used for two purposes:

- To set variables for several printer functions (see the sections for the various printer functions in "Level 1 Diagnostics" in "Chapter 4: Diagnostics" for Setting Up the Printer)

- To perform diagnostic tests (see the sections for the various diagnostic tests in "Level 1 Diagnostics" in "Chapter 4: Diagnostics" for Setting Up the Printer)

**Caution:** The DIP switches are set at the factory to predetermined settings and should not be changed unless to change parameters or to reflash the firmware.



Bottom Cover

Bottom of Printer
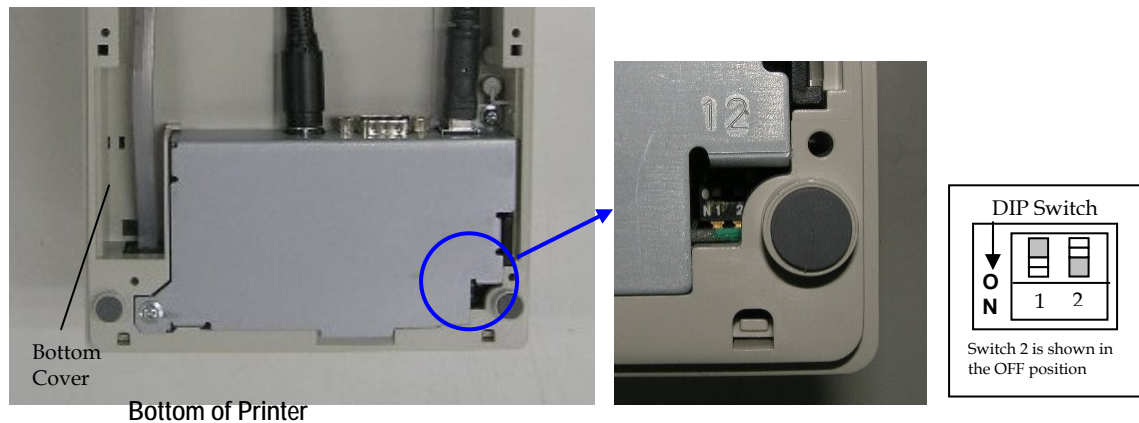
**Note:** Switch 1 is shown in the Off position for reference.

Use a paper clip or other pointed object to set the switches.

1. Set the switches to the desired settings shown in the table.

2. Reset the printer by disconnecting and reconnecting the power to the printer.

## Resetting the Printer

The printer is reset by disconnecting/reconnecting the DC power.

# Connecting the Cables

There are three different types of cables that connect to the printer:

- Power supply cable supplying power from the power supply

- Communication cable (RS-232 or USB) connecting the printer to the host computer

- Cash drawer cable connecting the printer to one or two cash drawers

**Caution:** Disconnect the power before connecting the cables. Always connect the communication cable and cash drawer cables before connecting power to the power supply. Always disconnect power to the power supply before disconnecting the communication and cash drawer cables.

Follow these steps to connect the cables. See the illustration on the next page.

1. Unplug the power supply from its power source.

2. Connect the power and communication cables to their respective connectors under the printer as shown in the illustration.

   For the RS232 Cable, be sure to screw the communication cable to the communication connector.

3. Route the cables through the cable strain relief on the bottom of the printer, then through the two slots in the cable access cover as shown in the illustration.

4. Connect the communication cable to the appropriate host computer connector.

5. Connect the cash drawer cable to the printer and cash drawer.

   The connector is a standard phone jack located at the rear of the printer.

6. Plug the power cord into the power supply for remote power supply installation, then plug the power supply into an outlet.

At this point, the printer receives power. If the On Line LED (green) is on, the printer is on-line. Otherwise, the printer is off-line.

7. For Host powered installation plug the DC cable into the POS terminal.

RS-232 Cable Connection

DIP Switch

Power
Connector

Communication
Connector

Cash Drawer
Connector

Cash Drawer
Cable

Power
Cable

Communication
Cable

**Bottom of the Printer**

USB Cable Connection

DIP Switch

Power
Connector

USB
Connector

Cash Drawer
Connector

Cash Drawer
Cable

USB
Cable

Power
Cable

**Bottom of the Printer**

**USB Plus Power Connections**

DIP Switch

Power
Connector

USB
Connector

USB Cable

Cash Drawer
Connector

Power Cable
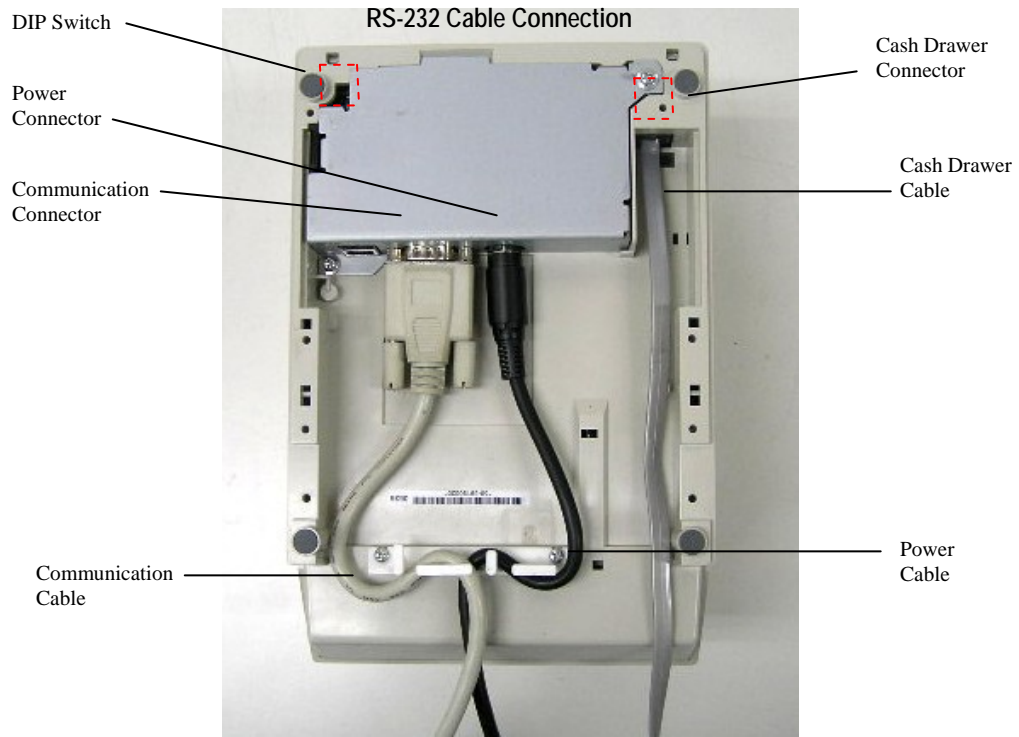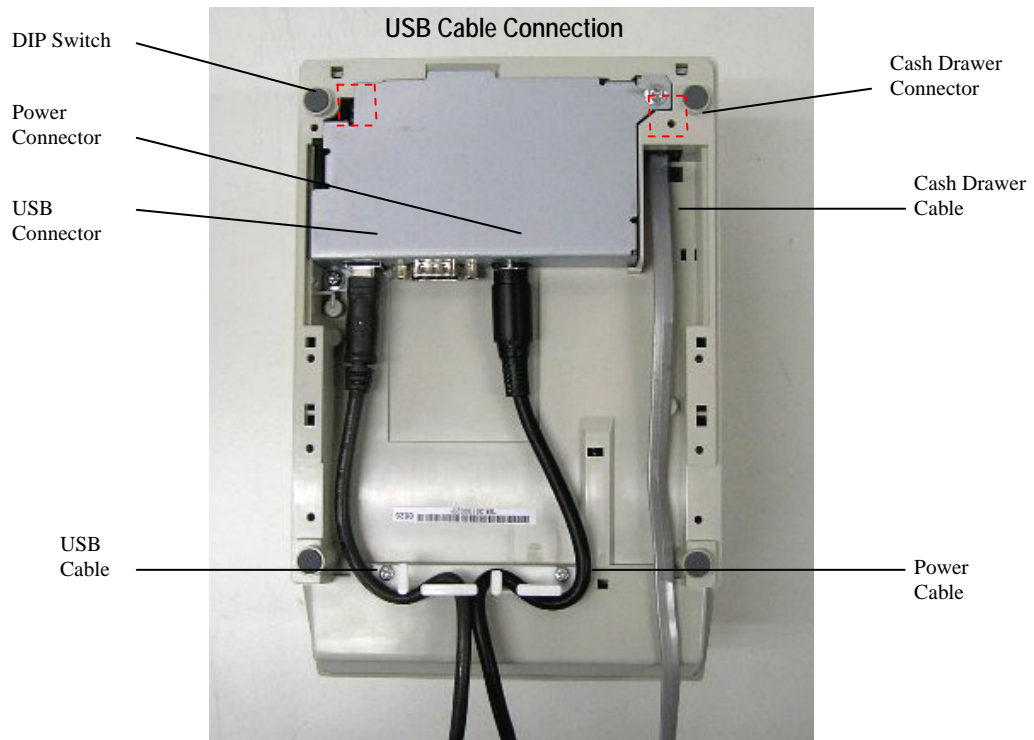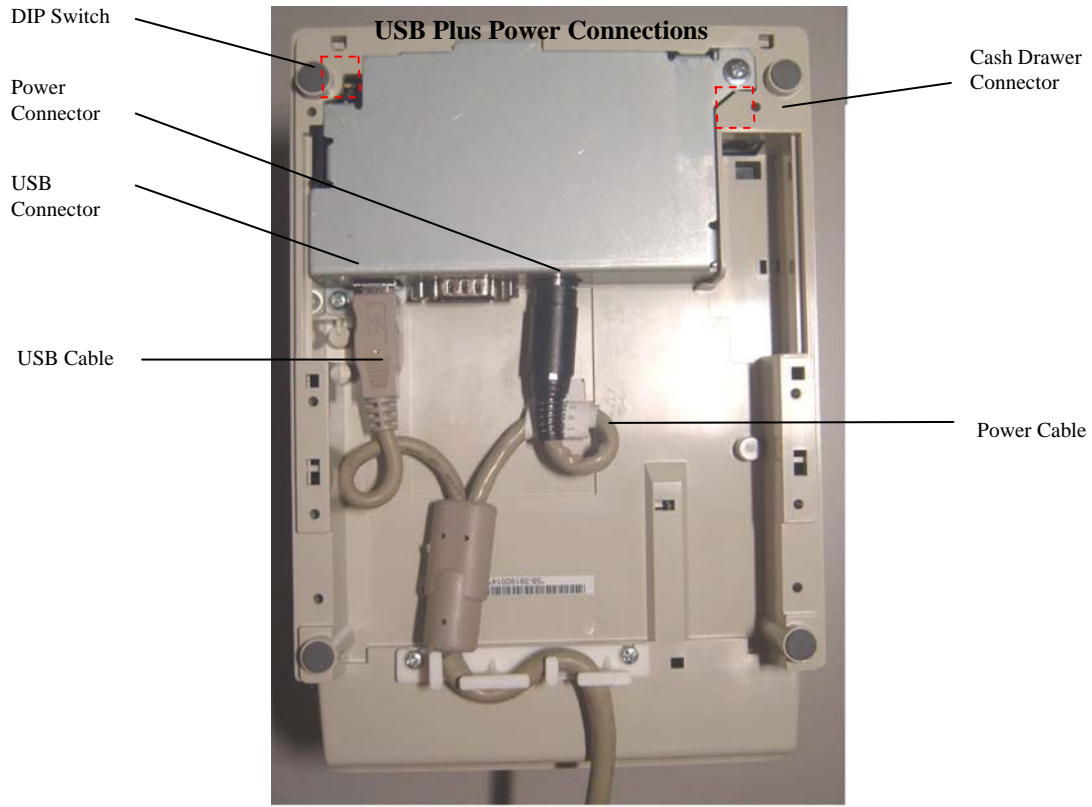
**Bottom of the Printer**

# About the Universal Serial Bus

The Universal Serial Bus (USB) is a peripheral bus for personal computers that was first released in January 1996. Since that time, virtually all Intel Architecture personal computers have the hardware to support USB, and a large number of computers exist that have both the hardware and software support required to interface with USB peripherals.

## Advantages of USB connections

USB has a number of advantages over legacy connection schemes (e.g., serial RS-232). These advantages include:

- High Speed: up to 12 MB/second for high-speed devices.

- Plug and Play: Devices are automatically recognized and configured at installation.

- Hot plug: Bus supports installation and removal of devices with the power applied.

- Up to 127 devices: One host can support up to 127 devices with the use of hubs.

- "Free ports": Most PC architecture machines contain two USB ports in the base hardware.

These advantages have become attractive to the POS industry for a couple of reasons.

**Additional POS devices.** Some POS systems are required to host more peripherals than can be supported by two RS-232 ports typical in a platform. With the addition of one (or two) USB connectors, the platform can now support the additional devices that had previously required a serial port expander card.

**Higher bandwidths.** New devices coming into use have bandwidth requirements that are higher than the bandwidth that can be supported on legacy interfaces. These devices include image scanners and printers. As the speed and capability of POS printers increases, the performance of the printer in an application can become limited by the speed of the communications interface. USB provides ample bandwidth to support current and future POS printer requirements.

## Advantages of the NCR USB Solution

NCR has eliminated any cost associated with porting applications to USB by implementing a USB solution that simulates standard serial communications in Windows 98 (SR2), Windows 98 USB Hot Patch, ID: Q236934, and NT 4.0 (Service Pack 3 or higher) and Windows 2000. Application developers need only redirect their software to the virtual serial ports created by the NCR USB solution to use the printer.

# Checking for USB Support on the Host Computer

If USB interface communications is required, the host computer must be equipped and setup properly.  If it is not, you need to install a USB interface card.  With the required hardware in place, Windows 98 (SR2), Windows 98 USB Hot Patch, ID: Q236934, NT 4.0 (Service Pack 4.0 or higher) and Windows 2000 (Service Pack 2.0 or higher) natively support plug-and-play USB with a built-in driver; Windows NT does not, and the NCR windows NT USB driver needs to be installed.

**IMPORTANT:   You need to have internet access to download the USB drivers from the NCR Web site://www.NCR.com.**

## Host Configuration

Verify that the proper hardware has been installed in the host PC.

**Windows 98:**

1. Open the Control Panel.
2. Click on System (Windows 98).
3. Click the Device Manager tab.
4. In the Device Manager window, scroll down the list of installed hardware devices until you find an entry for "Universal serial bus controller."

If this entry exists, your host computer is set up for USB operation. If this entry does not appear:

- Consult your computer documentation to see if USB must be enabled in the BIOS setup.

### Windows NT:

To see if your POS terminal is USB-compliant, look at the back.

- If it has a USB connector port, your hardware is all set.

**Note:**      Even though the host may have a USB port, Windows NT does not natively support plug-and-play USB because it does not have a built-in driver. You will need to load the NCR Windows NT USB driver (see "Installing the USB Printer Drivers").

- If the connector port is missing, you need to install a third-party USB card, according to the manufacturer's instructions.

**Note:**  For Windows NT units requiring the installation of a card, a Windows 98 USB card can be used with the NCR Windows NT driver.

**Windows 2000:**

1. Open the Control Panel.
2. Click on System.

*3.* Click the Device Manager tab.

4. In the Device Manager window, scroll down the list of installed hardware devices until you find an entry for "Universal serial bus controller."

If this entry exists, your host computer is set up for USB operation. If this entry does not appear:

• Consult your computer documentation to see if USB must be enabled in the BIOS setup.

# Configuring the Printer

USB is a plug-and-play environment. As such, neither the printer nor the host requires user configuration to work. However, since the NCR solution simulates a serial communication interface, you must configure "handshaking" on the printer for proper operation. The printer can be configured to use hardware flow control (using DTR/DSR) or software flow control (using XON/XOFF). All other serial communication parameters (i.e., baud rate, parity, stop bits, and data bits) are ignored.

### To define software or hardware handshaking:

1. Open the Receipt Cover and check whether there is paper in the printer. If there isn't, insert the paper roll, as described in the *Owner's Manual*.

2. Turn over the printer so the bottom side is facing you.

3. Set DIP switch 1 to the On position (up).

Bottom
Cover                    **Bottom of Printer**

DIP Switch

Switch 2 is shown in
the OFF position
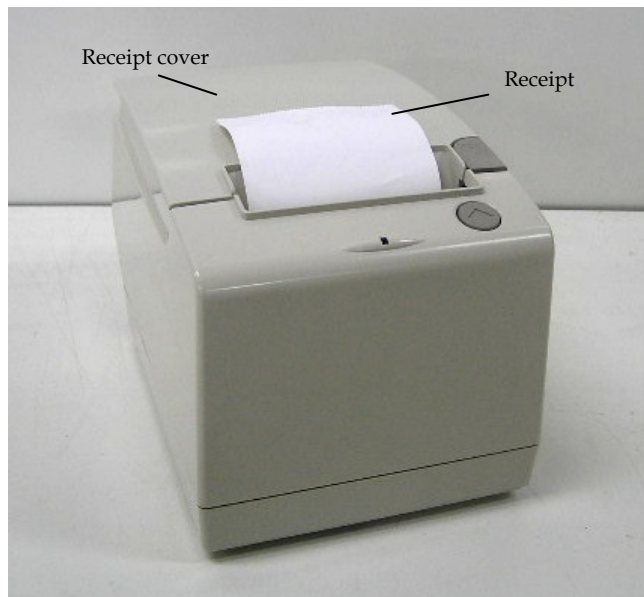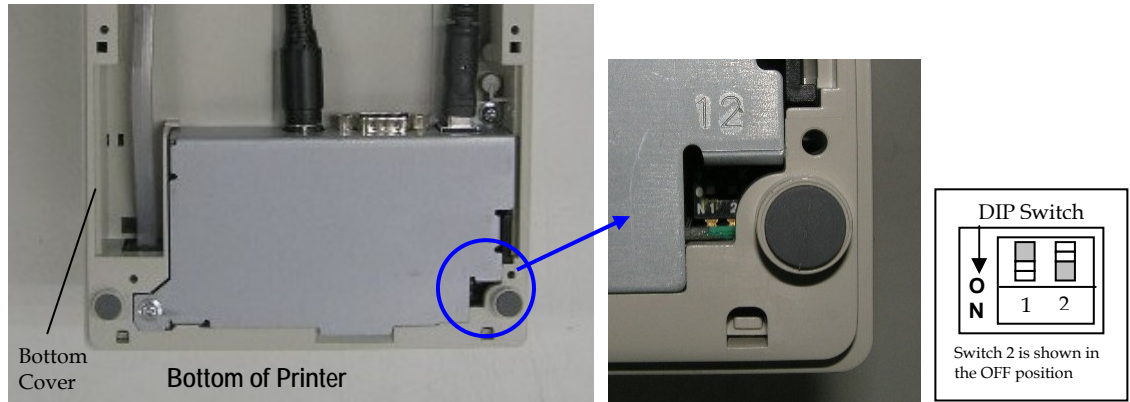
4.  Reset the printer.  See below for information on resetting the printer.

The printer beeps, prints the current configuration, then waits for you to make a selection from the Main Menu on the printout.

## DIP Switch Settings Information

| Switch 1 Settings | Switch 2 Settings | Printer State |
|---|---|---|
| OFF (0) | OFF (0) | On-line Mode (default) |
| ON (1) | OFF (0) | Diagnostic Mode |
| OFF (0) | ON (1) | Flash Download Mode |
| ON (1) | ON (1) | Vendor Adjustment Mode |

**\*\*\* Diagnostics Form \*\*\***

| | |
|---|---|
| Model number | : 7198-1002-9001 |
| Serial number | : 1234567890 |

Boot Firmware
| | |
|---|---|
| Revision | : V11.00 |
| CRC | : D3CE |
| P/N | : 497-0446068 |

Flash Firmware
| | |
|---|---|
| Revision | : V35.00 |
| CRC | : AC12 |
| P/N | : 497-0446069 |

Hardware
| | |
|---|---|
| Flash Memory Size | : 3 Mbytes |
| Flash Logo Size | : 256 Kbytes |
| Flash Fonts Size | : 64 Kbytes |
| Flash User Storage | : 64 Kbytes |

Communication Interface
| | |
|---|---|
| Interface Type | : RS232/USB |
| Parameters | |
| Baud Rate | : 19200 |
| Data Bits | : 8 |
| Stop Bits | : 1 |
| Parity | : None |
| Flow Control | : DTR/DSR |
| Reception Errors | : Print '?' |
| Receive Buffer | : 4K Bytes |
| DSR Signal | : Enabled |

Diagnostics Mode : OFF, Normal Mode

Emulation/Software
| | |
|---|---|
| Printer Emulation | : 7194 Mode |
| Printer ID Mode | : 7194 Native ID |
| Default LPI | : 7.52 |
| Carriage Return | : Use Print Cmd |
| Asian Mode | : On |
| Receipt Sync. | : Enabled |
| PDF417 Max Columns | : 14 Columns |

Hardware
| | |
|---|---|
| Print Density | : 100 % |
| Max Power | : 75W |
| Paper Low Sensor | : Enabled |
| Paper Width | : 80 mm |
| Knife | : Enabled |
| Color Paper | : Monochrome |
| Power LED Control | : Disabled |
| Paper Detection Sensor | : Enabled |

Code Pages
| | |
|---|---|
| Default Code Page | : 437 |
| Resident code Pages | : 437, 850, 852, 858 |
| | 860, 863, 862, 864 |
| | 865, 866, 874 |
| | 1252, Katakana |
| | + 932 |

Double Side Mode
| | |
|---|---|
| Thermal Print Mode | : Single Side |
| Upside Down | |
| Front Side | : Normal |
| Back Side | : Up Down |
| Swap Side | : Disable |
| Top/Bottom Msg | |
| Btm of Front | : Disable |
| Top of Back | : Enable |
| Reprint Msg | : Disable |
| Min Rcpt Length | : Disable |
| Reprint Error Page | : Off |

| | |
|---|---|
| Top/Btm Msg Defined | : No |
| Reprint  Msg defined | : No |
| PreDfn Back Defined | : No |
| Logo(s) defined | : No |
| User Char(s) defined | : No |

| | |
|---|---|
| Sensor Level(On, Off, TH) | |
| Paper Detect Sensor | : 2.9V, 0.2V, 1.5V |

User Tallies
| | |
|---|---|
| Receipt Lines Front | : 389482 |
| Receipt Lines Back | : 188470 |
| Knife Cuts | :   12768 |
| Hours ON | :     959 |
| Flash cycles | :       5 |
| Knife Jams | :       2 |
| Cover Openings | :      71 |
| Max Temp Reached | :     363 |

Permanent Tallies
| | |
|---|---|
| Receipt Lines Front | : 389482 |
| Receipt Lines Back | : 188470 |
| Knife Cuts | :   12768 |
| Hours ON | :     959 |
| Flash cycles | :       5 |
| Knife Jams | :       2 |
| Cover Openings | :      71 |
| Max Temp Reached | :     363 |

To enter Diagnostics Mode:
1) Flip DIP switch #1 on.
2) Reset the printer by pressing and holding Receipt Feed switch down while disconnecting and reconnecting the power.

**Important**: Ensure that the configuration settings match your host computer, if not, enter the Configuration Menu to make changes.

**Configuration Menu** and **Print Test** samples (show approximately 60% of size).

Follow the instructions on the scrolling menu, pressing the Paper Feed button to make selections. Indicate Yes with a long click, and No with a short click.

- Press and hold the Paper Feed button for at least one second for a long click.

- Press the Paper Feed button quickly for a short click.

5. Select Set Communication Interface from the Main Menu.

   The printer scrolls to the first question.

6. Select RS232/USB.

7. Skip through the parameters with short clicks until Set Flow Control Method is displayed.

8. Follow the instructions to select either XON/OFF or DTR/DSR, then skip the remaining communications parameters.

9. When you have finished, set DIP switch 1 to Off (down).

10. Reset the printer.

The printer resets with the new selection. You can verify the new setting by pressing the Paper Feed button to print out a diagnostics form or by holding the Paper Feed button while closing the Top Cover.

# Installing the USB Printer Drivers

Windows NT users need to run Service Pak 3 or higher for a successful installation and should exit all Windows programs before starting.

1. Verify that the printer is plugged in and the power is on.

2. The installation varies depending on the operating system.

   **Windows 98**

   Follow the on-screen instructions.  The printer beeps when the USB device is recognized.  Go to the location where you downloaded the drivers and double click the file.

**Add New Hardware Wizard**

This wizard searches for new drivers for:

7198 EPiC

A device driver is a software program that makes a hardware device work.

< Back     Next >     Cancel

**Add New Hardware Wizard**

Windows will search for new drivers in its driver database on your hard drive, and in any of the following selected locations. Click Next to start the search.

☐ Floppy disk drives

☑ CD-ROM drive

☐ Microsoft Windows Update

☐ Specify a location:

[                    ▼]

[Browse...]

[< Back]  [Next >]  [Cancel]

**Add New Hardware Wizard**

Windows driver file search for the device:

NCR 7197 Receipt Printer

Windows is now ready to install the best driver for this device. Click Back to select a different driver, or click Next to continue.

Location of driver:

C:\WINDOWS\DESKTOP\WIN98\IONETWF

[< Back]  [Next >]  [Cancel]

Note:  Location of the IONetworks files on the CD-ROM may very depending on the version of the CD that is being used.

**Windows NT**

The printer beeps when it is plugged in to show the USB device is recognized.  Click on the file you downloaded and follow the on-screen instructions.

Inside Out Networks' Edgeport Drivers Setup ☒

**Inside Out Networks' Software License**

Press the PAGE DOWN key to see the rest of the agreement.

Inside Out Networks Edgeport for NT 4.0
License Agreement

IMPORTANT - READ CAREFULLY:  This Inside Out Networks Edgeport License
Agreement ("Agreement") is a legal agreement between you (either an
individual or a single entity) and Inside Out Networks Incorporated
("IONETWORKS") for IONETWORKS' computer software and associated media
(collectively, the "Licensed Software").  By continuing to use the Licensed
Software, you agree to be bound by the terms of this Agreement.

Do you accept all the terms of the preceding License Agreement?  If you choose No, the
setup will close.  To install Inside Out Networks' Edgeport Drivers, you must accept this
agreement.

InstallShield

&lt; Back          Yes          No

Inside Out Networks' Edgeport Drivers Setup ☒

**Inside Out Networks' Release Notes**

Edgeport Drivers for Windows NT 4.0

================================================

The setup utility installs the following files:

usbd.sys
     USB host controller driver for UHCI and OHCI.

usbhub.sys
     Hub class driver for USB-compliant hubs.

InstallShield

&lt; Back          Next &gt;          Cancel

**Windows 2000**

Follow the on-screen instructions.  The printer beeps when the USB device is recognized.  Go to the location where you downloaded the drivers and double click the file.

**Found New Hardware Wizard**

**Install Hardware Device Drivers**
A device driver is a software program that enables a hardware device to work with an operating system.

This wizard will complete the installation for this device:

7198 EPiC

A device driver is a software program that makes a hardware device work. Windows needs driver files for your new device. To locate driver files and complete the installation click Next.

What do you want the wizard to do?

⊙ Search for a suitable driver for my device (recommended)

○ Display a list of the known drivers for this device so that I can choose a specific driver

[ < Back ]  [ Next > ]  [ Cancel ]

**Found New Hardware Wizard**

**Locate Driver Files**
Where do you want Windows to search for driver files?

Search for driver files for the following hardware device:

7198 EPiC

The wizard searches for suitable drivers in its driver database on your computer and in any of the following optional search locations that you specify.

To start the search, click Next. If you are searching on a floppy disk or CD-ROM drive, insert the floppy disk or CD before clicking Next.

Optional search locations:
☐ Floppy disk drives
☑ CD-ROM drives
☐ Specify a location
☐ Microsoft Windows Update

[ < Back ]  [ Next > ]  [ Cancel ]

**Found New Hardware Wizard**

**Driver Files Search Results**
The wizard has finished searching for driver files for your hardware device.

The wizard found a driver for the following device:

NCR 7197 Receipt Printer

Windows found a driver for this device. To install the driver Windows found, click Next.

d:\ionetworks\win2k\ionncr.inf

| < Back | Next > | Cancel |

Note:  Location of the IONetworks files on the CD-ROM may very depending on the version of the CD that is being used.

**Found New Hardware Wizard**

**Completing the Found New Hardware Wizard**

NCR 7197 Receipt Printer

Windows has finished installing the software for this device.

To close this wizard, click Finish.

| < Back | Finish | Cancel |

**Found New Hardware Wizard**

**Install Hardware Device Drivers**
A device driver is a software program that enables a hardware device to work with an operating system.

This wizard will complete the installation for this device:

Edgeport Serial Port_1 [Port-12]

A device driver is a software program that makes a hardware device work. Windows needs driver files for your new device. To locate driver files and complete the installation click Next.

What do you want the wizard to do?

⊙ Search for a suitable driver for my device (recommended)

○ Display a list of the known drivers for this device so that I can choose a specific driver

< Back      Next >      Cancel

**Found New Hardware Wizard**

**Locate Driver Files**
Where do you want Windows to search for driver files?

Search for driver files for the following hardware device:

Edgeport Serial Port_1 [Port-123]

The wizard searches for suitable drivers in its driver database on your computer and in any of the following optional search locations that you specify.

To start the search, click Next. If you are searching on a floppy disk or CD-ROM drive, insert the floppy disk or CD before clicking Next.

Optional search locations:

☐ Floppy disk drives
☑ CD-ROM drives
☐ Specify a location
☐ Microsoft Windows Update

< Back      Next >      Cancel

# Checking the Installation

You need to verify that the device drivers were installed correctly:

**Windows 98:**

1.  Open the Device Manager window, as you did in "Checking for USB Support."

2.  Scroll down to "Universal serial bus controllers."

The following devices should be displayed:

*   **NCR** 7198 Printer

*   **NCR** 7198 Serial Ports [Port#] (where the # is the location of the printer)
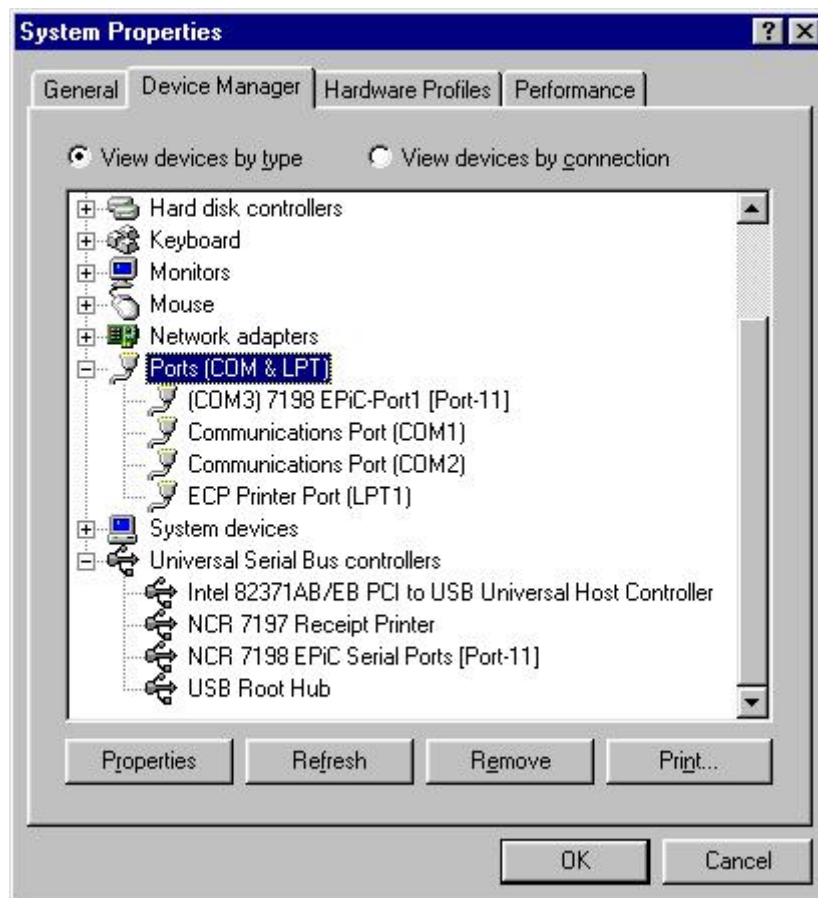


3.  Scroll back up to "Ports."

You should see a COM number and port description for the **NCR** printer.

If the devices are missing or are not listed correctly, the installation wasn't successful. You will need to reinstall the drivers.

**Windows NT:**

Go the Windows Start button and select Programs **>** InsideOut Networks Utilities **>** Edgeport Configuration Utility. A window opens that contains the name of the printer, and the port assignment.

If this information is not listed, then the installation was not successful. You will need to reinstall the drivers.
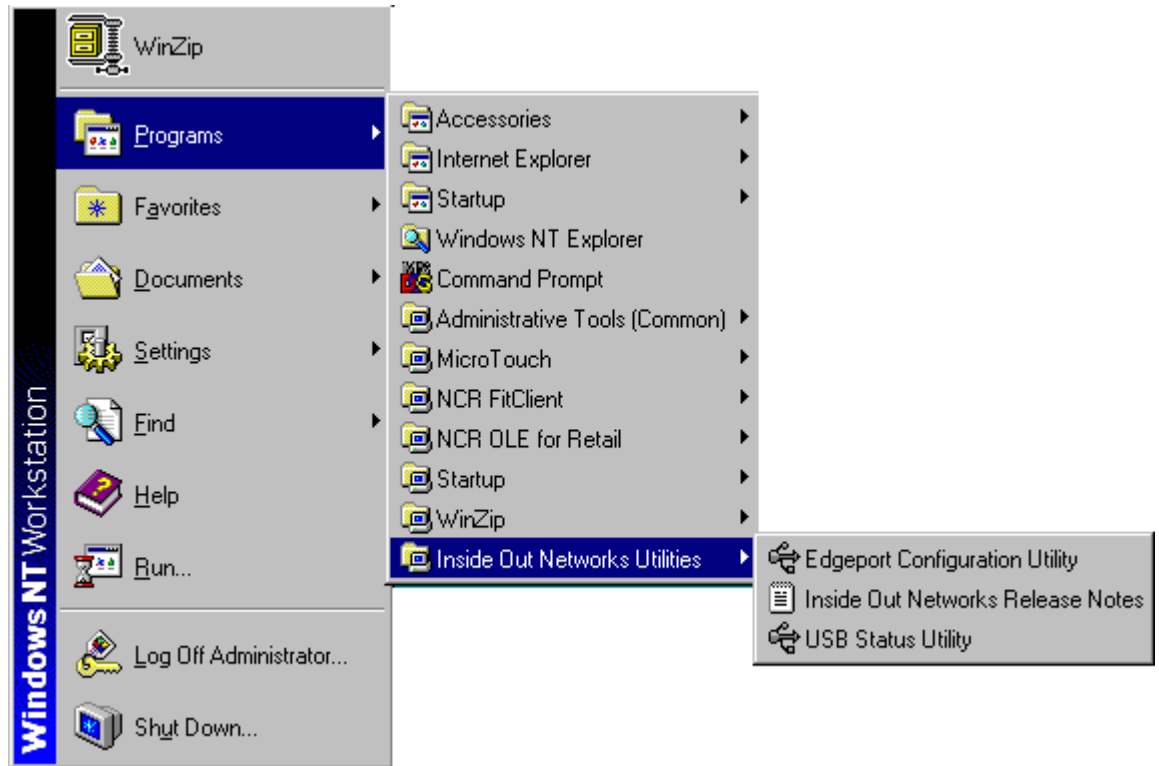


**Windows 2000:**

1.  Open the Device Manager window, as you did in "Checking for USB Support."
2.  Scroll down to "Universal serial bus controllers."
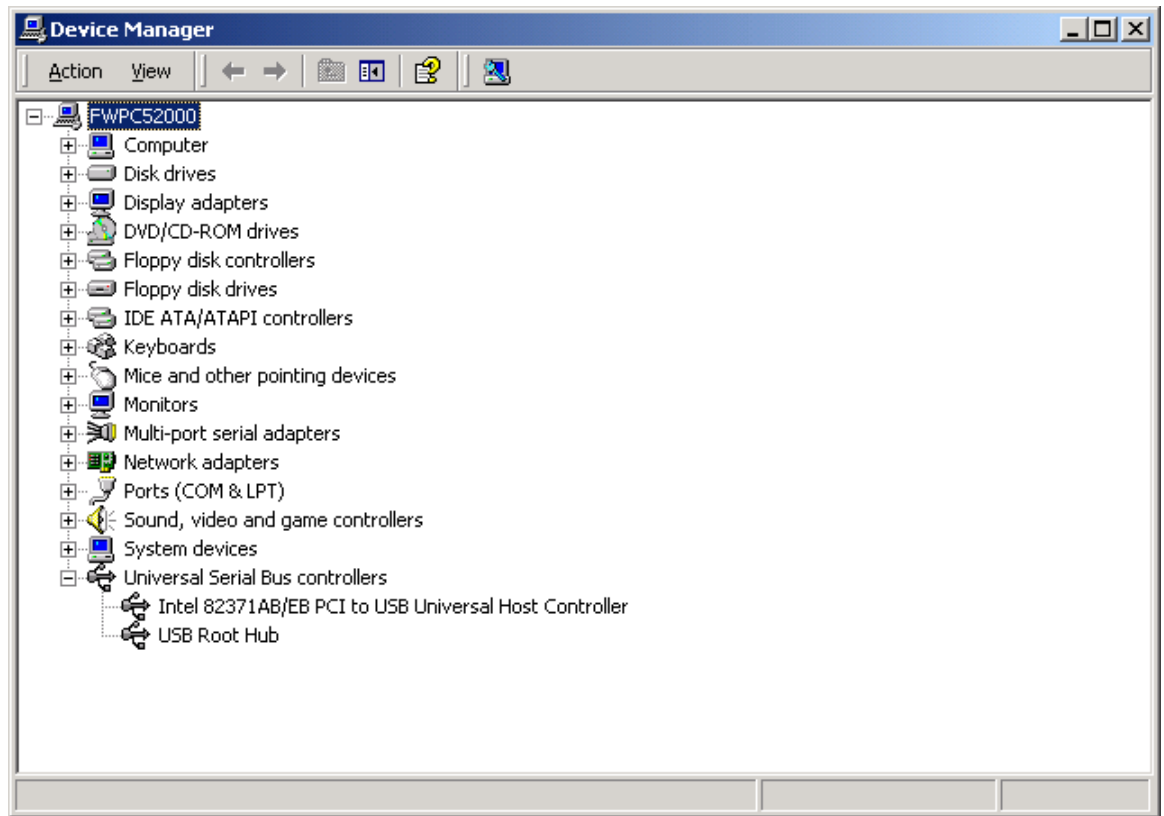
3.  Scroll back up to "Ports."

If the devices are missing or are not listed correctly, the installation wasn't successful. You will need to reinstall the drivers.

If this information is not listed, then the installation was not successful. You will need to reinstall the drivers.
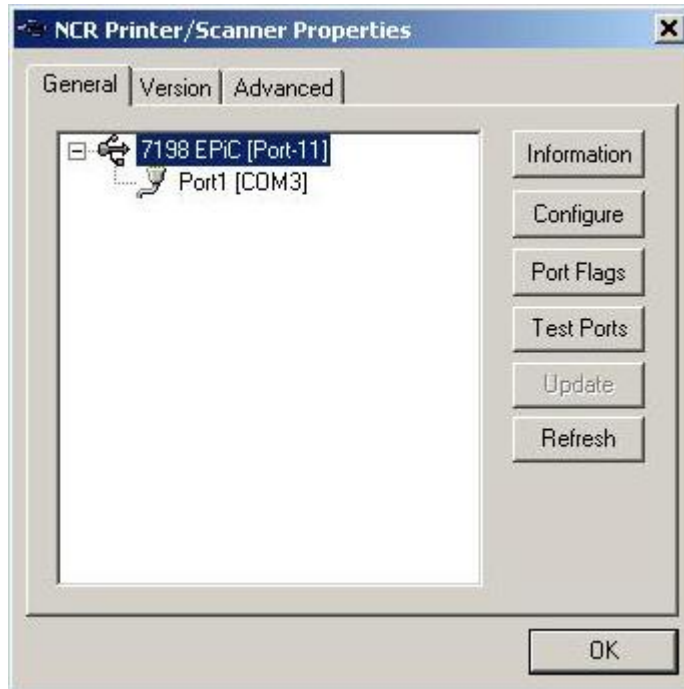
# Configuring Serial Port Number Assignments

This section described how the **NCR** USB solution assigns serial port numbers (e.g., COM*x*) to the printer. The information that determines the assigned port number is stored in the host computer and not in the printer. This assignment is made in one of three ways.  The first method is the default method that automatically assigns a serial port number to the printer.  The other two methods require the user to specify a port number. These methods are described more fully in "Serial Port Configuration Methods" on the following page.

## Running the Edgeport Utility

You'll need to run the Edgeport utility to check which serial port has been assigned to the printer. This utility queries and configures the operating system and driver for the information regarding the virtual serial port.

**Windows 98**

1. Open the Device Manager and make sure "View Devices by Type" is selected.

2. Scroll down to Universal serial bus controller, and expand the list by pressing the "+" symbol. You'll see two entries for your **NCR** printer.

3. Select the printer name and click Properties.

4. Select the Details tab, then press the Details button to start the Edgeport utility.

**Windows NT 4.0**

From the Windows Start menu, select Programs **>** Inside Out Networks Utilities **>** Edgeport Configuration Utility.

## Serial Port Configuration Methods

**Automatic (Default)**. When the printer is plugged into the USB port of the host and the drivers are loaded, the printer will default to the next available serial port number. In many cases this is exactly what is desired. You can check the assigned serial port by clicking the General tab in the Edgeport utility. You'll see an entry for the NCR printer. Expand the list to see which serial port has been assigned to the printer.

**Assigning a serial port to the printer.** If the default assignment does not meet the requirements of the installation, you can assign a different serial port to the printer. From the General tab of the Edgeport utility, select the printer and press Configure. Follow the directions on the resulting form to assign a new port to the printer.

**Associating a serial port with a specific USB port.** (Windows 98 and NT) In certain installations it is desirable to associate a serial port number with a specific USB port. This is particularly important if multiple identical printers are installed on one host. Select the Advanced tab in the Edgeport utility, and follow the instructions for configuring the serial port number based on the physical USB port.

## Uninstalling the Drivers
**Windows 98:**

1.  Open the Device Manager and make sure "View Devices by Type" is selected.

2.  Scroll down to Universal serial bus controller, and expand the list by pressing the "+" symbol. You'll see two entries for your NCR printer.

3.  Select the printer name and click Properties.

4.  Select the Details tab, then press the Details button to start the Edgeport utility.

5.  Click the Advanced tab.

6.  Click the Uninstall button and follow the on-screen instructions.
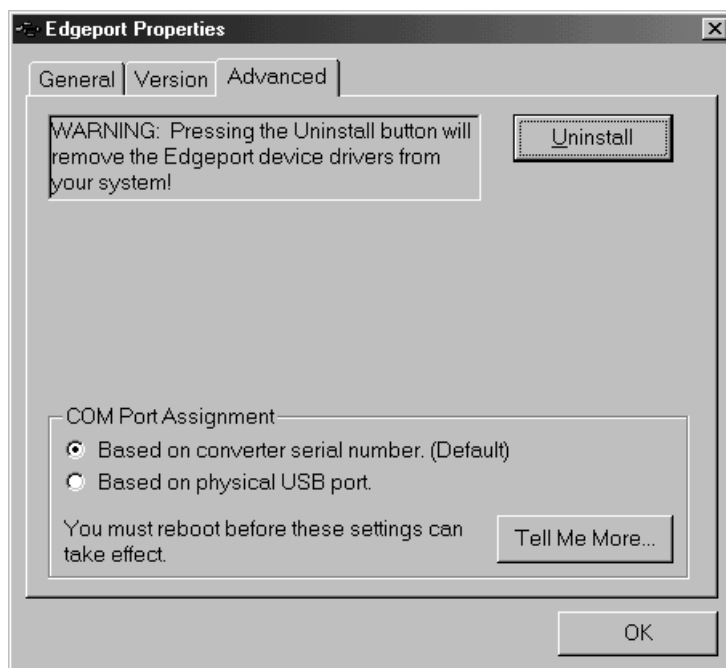
**Windows NT:**

Windows NT users will need to run the Edgeport Configuration Utility to uninstall the drivers.

1. Press Windows Start Menu button.

2. Choose Programs, then Inside Out Networks Utilities.

3. Choose Edgeport Configuration Utility.

4. Click the Advanced tab.

5. Click the Uninstall button and follow the on-screen instructions.

**Windows 2000:**

1. Open the Device Manager and make sure "View Devices by Type" is selected.

2. Scroll down to Universal serial bus controller, and expand the list by pressing the "+" symbol. You'll see two entries for your NCR printer.

3. Select the printer name and click Properties.

4. Select the Details tab, then press the Details button to start the Edgeport utility.

5. Click the Advanced tab.

6. Click the Uninstall button and follow the on-screen instructions.

# Using the Printer
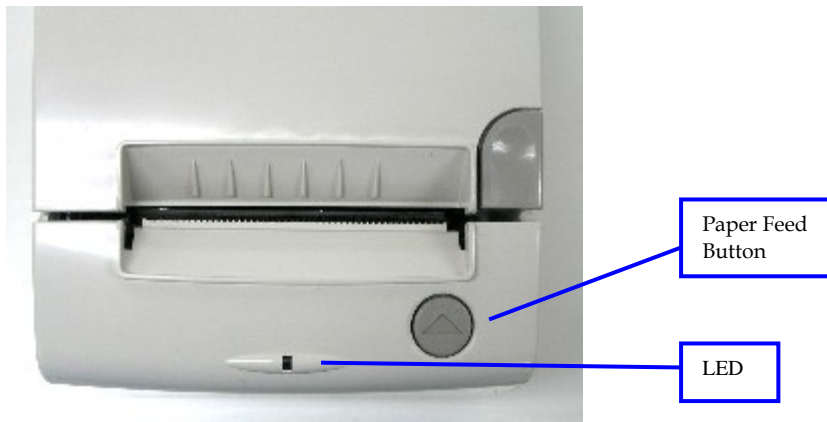


**Note:** See "Setting Switches" earlier in this book for instructions on setting the DIP switches.

1.  Connect the power supply to the printer and turn on the power source.

    The printer goes through a self-test routine to ensure everything is working properly then "beeps." After the printer has completed its "startup" cycle, it is ready to receive data.

    If the LED blinks, or the host computer indicates that there is a problem, see "Chapter 3: Solving Problems" for more information.

2.  To perform a Configuration check (optional), reset the printer while holding the Paper Feed Button, or open the receipt door and while pressing the paper feed button close the receipt door, let go of the Paper Feed Button once the printing begins.

**Note:** The printer receives power when the power supply is on even if the printer is off-line. To completely remove power, unplug the power supply from the outlet, or turn the POS terminal off.

# Loading and Changing the Receipt Paper

Although the illustrations show a used roll being removed, the instructions apply to loading paper for the first time.

Change the paper when either of the following two conditions occurs:

- LED blinks (slow): the paper is low

  There are approximately 1 ½ to 7 ½ meters (5-25 feet) of paper remaining on the roll. Change the paper as soon as possible to avoid running out part way through a transaction.

  Depending on the application program, the host computer may alert you when the paper is low.

- LED blinks (fast): the paper is out

  Change the paper immediately or data may be lost.

**Caution:**  Do not operate the printer or host computer if the printer 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.

## Removing the Paper Roll

1. Open the receipt cover by pressing receipt cover button

2. Remove the used roll.
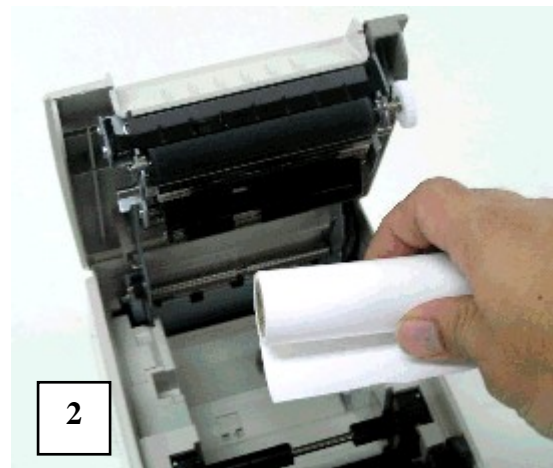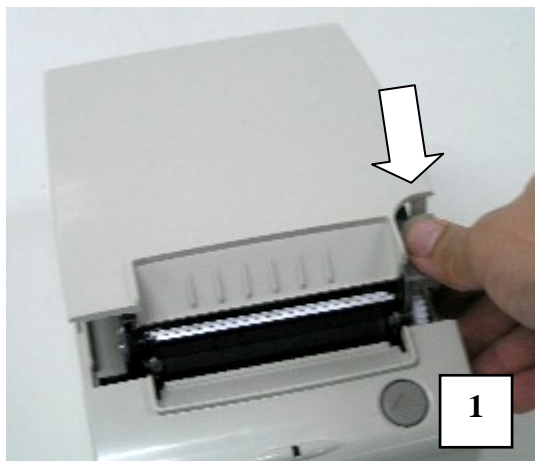
## Loading the Paper Roll

**Note:** Tear off the end of the new roll so that the edge is loose.

1. Place the new roll in the bin with a little extra paper extending over the front of the printer.

   Be sure the paper unrolls from the bottom of the roll. Otherwise the paper will not be printed on the correct side of the paper roll.

   Be sure the paper is routed above the paper damper.

Correct

Incorrect
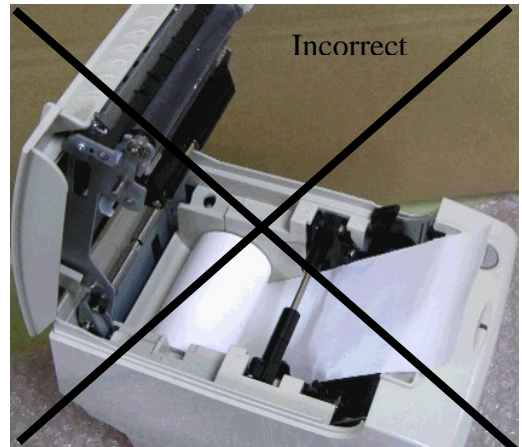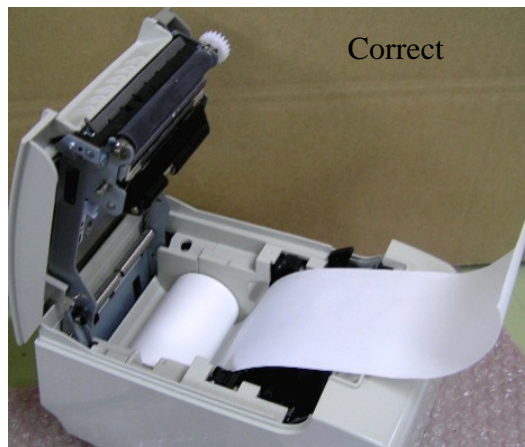
2.  Align the paper in the center of the receipt printer.



3.  Close the receipt cover.



4.  Remove the excess paper by tearing it against Top Cover tear-off bar.

Note: Refer to the illustrations imprinted on the back of the receipt cover.

## Advancing Paper

1.  Press the Paper Feed button on the operator panel to advance the paper.

    The cover must be closed. To ensure print quality and the proper alignment of the paper, advance about 30 cm (12 inches) of paper.

2.  Tear off the excess paper against Top Cover tear-off bar.

# Chapter 3: Solving Problems

The 7198 printer is a simple, generally trouble-free printer, but from time to time minor problems may occur. For example, the power supply may be interrupted or the thermal print head may overheat.

A green LED on the operator panel signals that something may be wrong.

For some problems, the printer communicates the information to the host computer and relies on the application to indicate what the problem is.

The information on the following pages describes some problems that you may encounter: problems that you can easily fix, and others that you will need to contact a service representative for.

You may be able to correct many of the conditions or problems without calling for service. However, if a problem persists, contact a service representative. See "Contacting a Service Representative" at the end of this chapter.

# Green LED Does Not Come On/Printer Will Not Print

| Problem | What to Do | Where to Go |
| --- | --- | --- |
| Cables may not be connected properly | Check all cable connections. Check that the host computer and power supply are both on (the power supply is turned on by plugging it into an outlet). | See "Connecting the Cables" in chapter 2. |
| Power supply may be defective | If the power supply is plugged in, but does not come on, you will need to order a new power supply. | See "Ordering Other Supplies" in chapter 1. |

# Green LED Blinking (Slow)

| Problem | What to Do | Where to Go |
| --- | --- | --- |
| Receipt paper is low* | There are about 4 ½  meters, ± 3 meters, (15 feet, ± 10 feet) of paper left. Change the paper soon to avoid running out of paper part way through a transaction. | See "Loading and Changing the Receipt Paper" in chapter 2. |

# Green LED Blinking (Fast)

| Problem | What to Do | Where to Go |
| --- | --- | --- |
| Receipt paper is out | Change the paper now. Do not run a transaction without paper as the data may be lost. | See "Loading and Changing the Receipt Paper" in chapter 2. |
| Receipt cover is open | Close the cover. The printer will not operate with the cover open. | |
| Knife failure | Open the receipt cover and check the knife. Clear any jammed paper you can see. Tear off any excess paper against the tear-off blade. | |
| | Contact a service representative if this does not resolve the problem. | See "Contacting a Service Representative" later in this chapter. |
| AC supply voltage is out of range | If paper is not low and no conditions indicate that the thermal print head is too hot, then it is likely that the power supply voltage is out of range. | |
| | Contact a service representative if this does not resolve the problem. | See "Contacting a Service Representative" later in this chapter. |

| Thermal print head temperature is out of range | The print head may overheat when printing in a room where the temperature is above the recommended operating temperature or when printing high-density graphics continuously, regardless of the room temperature. In either case, the printer will shut off. | See "Environmental Conditions" in Appendix A for the recommended temperature range for operating the printer. |
|---|---|---|
| | If the temperature of the print head is too hot, adjust the room temperature or move the printer to a cooler location. | |
| | If the print head is overheating because of printing high density graphics continuously, reduce the demand on the printer. | |
| | If the printer continues to overheat, contact a service representative. | See "Contacting a Service Representative" later in this chapter. |
| Power supply voltage is out of range | If paper is not low and no conditions indicate that the print head is too hot, the power supply voltage is out of range. Contact a service representative. | See "Contacting a Service Representative" later in this chapter. |

# Receipt Printing is Light or Spotty

| Problem | What to Do | Where to Go |
|---|---|---|
| Thermal print head may be dirty | Open the receipt cover and clean the thermal print head with cotton swabs and isopropyl alcohol. | See "Cleaning the Printer" in chapter 2. |
| | **Caution:** Do not use the alcohol to clean other parts of the printer. Damage will occur. | See "Contacting a Service Representative" later in this chapter. |
| | Contact a service representative if this does not resolve the problem. | |
| | **Note:**  The thermal print head does not normally require cleaning if the recommended paper grades are used. If non-recommended paper has been used for an extended period of time, cleaning the print head with the alcohol and cotton swabs will not be of much benefit. See "Ordering Thermal Paper" in chapter 1 for recommended paper. | |

# Other Serious Problems

The following problems all need to be corrected by a qualified service representative. See the next section, "Contacting a Service Representative."

- Printer will not cycle or stop when required
- Illegible characters
- Paper will not feed
- Knife will not cycle or cut
- Printer will not communicate with Host

# Contacting a Service Representative

For serious problems, such as the printer not printing, not communicating with the host computer, or not turning on, contact your NCR-authorized service organization to arrange for a service call. In addition to the service guide listed below, other service-related materials may be available. Contact your NCR-authorized service representative to obtain the service guide.

- 7198 Thermal Receipt Printer: Service Manual (B005-0000-1737) (includes the Troubleshooting Guide and the Preventative Maintenance Guide)
- 7198 Thermal Receipt Printer: Parts Identification Manual (B005-0000-1738)
- 7198 Thermal Receipt Printer: Owners Manual (B005-0000-1736)

# Chapter 4: Diagnostics

The following diagnostic tests are available for the 7198:

- Level 0 Diagnostics (Startup)
  Performed during the startup cycle.

- Level 1 Diagnostics (Printer Configuration)
  Allows configuration of the printer using a Configuration Menu that is printed on a receipt.

- Level 2 Diagnostics (Runtime)
  The printer checks the status of these conditions during normal operation.

- Level 3 Diagnostics (Remote)
  The printer keeps track of counters during normal operation.

- Vendor Adjustment
  Performed in off-line mode. Allows to change settings for mechanical and perform printer test. Modifications of these settings are to be made by service personnel only.

## Level 0 Diagnostics

The printer automatically performs level 0 diagnostics when it is put on-line. Level 0 diagnostics comprise the following actions:

- Motors are turned off.

- Microprocessor timing is checked, CRC check of the firmware ROM is performed, external RAM is read.

- The green LED flashes once if this action succeeds.

- Level 0 diagnostics stop if this action fails. Failure is indicated by the printer going dead: knife and print head do not home, LEDs are not lit, the printer is unable to communicate with the host computer.

- Knife is homed. A fault condition is caused if this action fails.

- The status of all sensors is checked, and the status bytes are updated.

If the printer has not been turned on before the default values for the printer functions will be loaded into the non volatile memory during level 0 diagnostics. These values can be changed in level 1 diagnostics. See "Level 1 Diagnostics" for the functions and their settings.

When the last step is complete, the Paper Feed button is enabled and the printer is ready for normal operation. Information about the tests is available to the communication interface through the commands.

# Level 1 Diagnostics

Level 1 diagnostics (setup mode) allow you to change the settings for various printer functions and run certain tests.

Keep the following information in mind when changing the settings:

- The settings can only be changed when the printer is in level 1 diagnostics (setup mode): Switch 1 must be set to On and Switch 2 must be set to Off.
- The default options are set at the factory and are stored in the history non volatile memory.
- Once the settings have been changed and stored in the non volatile memory, the diagnostic setup is exited which saves the settings.

**Caution:** If you are changing the printer settings, be sure they are the correct settings for that particular function or test to avoid accidentally changing the settings for another function or test. If the settings are accidentally changed you must reenter the setup mode and reenter the correct settings. If you need assistance, contact a service representative. See "Contacting a Service Representative" in chapter 3.

## Printer Configuration

Printers are generally shipped with all appropriate configuration settings pre-set at the factory. The only time the user should need to change the printer configuration is if a new option is installed, communication baud rate or the firmware is changed. It is also possible the user may need to run certain tests using the Configuration Menu.

The user configures the printer using a convenient Configuration Menu that is printed on receipt paper. The Configuration Menu prints instructions and setting options interactively as the user goes through the configuration process. The following functions and parameters can be changed with the scrolling Configuration Menu:

- Configuring the Printer
- Communication Interface
- Interface Type
- Baud Rate
- Number of Data Bits
- Number of Stop Bits
- Parity
- Flow Control
- Reception Errors
- Receive Buffer
- USB Interface type
- Setting Diagnostic Modes
- Off, Normal Mode
- Datascope Mode
- Receipt Test Mode
- Setting Emulation/Software Options
- Emulation
- Printer ID
- Default Lines Per Inch

- Carriage Return Usage
- Asian Mode
- Receipt Synchronization
- PDF417 Max Print Column
- Setting Hardware Options
- Print Density
- Maximum Power Option
- Paper Low Sensor
- Paper Width
- Set Knife Option
- Color Paper Option
- Power LED Control
- Setting Default Code Page
- Setting Double Side Printing
- Thermal Print Mode
- Upside Down
- Swap Front & Back Side
- Top/Bottom Message
- Reprint Message
- Minimum Receipt Length
- Reprint Error Page
- Setting EEPROM to default settings

## Configuring the Printer

Use the Configuration Menu to select functions or change various settings as indicated in the preceding sections. The Configuration Menu prints instructions and setting options interactively as the user goes through the configuration process.

**Caution:**  Be extremely careful in changing any of the printer settings to avoid changing settings that might affect the performance of the printer.



Bottom
Cover

DIP Switch

O
N

1   2

Switch 2 is shown in
the OFF position
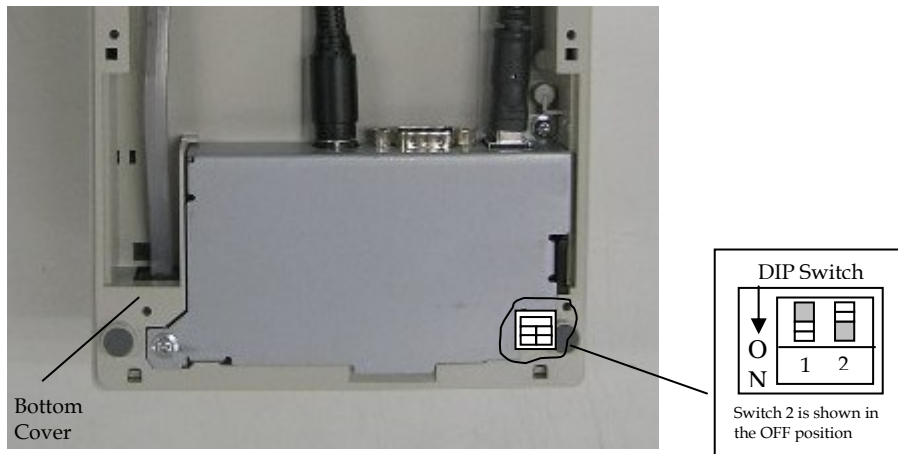
1.  Set DIP Switch 1 to On, Switch 2 to Off.

2.  Reset the printer while holding the Paper Feed Button, the printer will print the current configuration, then cuts the paper to print the Configuration Menu.

3.  Press the Paper Feed Button to make the selections.

    The instructions indicate whether to select something with a short click, a long click, or a series of short clicks. Indicate Yes with a long click, No with a short click.

    Press and hold the Paper Feed Button for at least one second for a long click. Press the Paper Feed Button quickly for a short click.

4.  When finished, set DIP Switch 1 to Off and reset printer.


Press the paper feed for the configuration you want.

Defaults are marked with asterisk (*).


**\*\*\*\*\*\*\*\* Main Menu \*\*\*\*\*\*\*\***
**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

Select a sub-menu:
```
 EXIT                                  > 1 Click
 Print Current Configuration          > 2 Clicks
 Set Communication Interface          > 3 Clicks
 Set Diagnostics Modes                > 4 Clicks
 Set Emulation/Software               > 5 Clicks
 Set Hardware Options                 > 6 Clicks
 Set Default Code page                > 7 Clicks
 Set Double Side Modes                > 8 Clicks
 Set EEPROM To Default Settings       > 9 Clicks
```

Enter code, then hold Button DOWN
At least 1 second to validate

**\*\*\* Diagnostics Form \*\*\***

| | |
|---|---|
| Model number | : 7198-1002-9001 |
| Serial number | : 1234567890 |

Boot Firmware
| | |
|---|---|
| Revision | : V11.00 |
| CRC | : D3CE |
| P/N | : 497-0446068 |

Flash Firmware
| | |
|---|---|
| Revision | : V35.00 |
| CRC | : AC12 |
| P/N | : 497-0446069 |

Hardware
| | |
|---|---|
| Flash Memory Size | : 3 Mbytes |
| Flash Logo Size | : 256 Kbytes |
| Flash Fonts Size | : 64 Kbytes |
| Flash User Storage | : 64 Kbytes |

Communication Interface
| | |
|---|---|
| Interface Type | : RS232/USB |
| Parameters | |
| Baud Rate | : 19200 |
| Data Bits | : 8 |
| Stop Bits | : 1 |
| Parity | : None |
| Flow Control | : DTR/DSR |
| Reception Errors | : Print '?' |
| Receive Buffer | : 4K Bytes |
| DSR Signal | : Enabled |

Diagnostics Mode : OFF, Normal Mode

Emulation/Software
| | |
|---|---|
| Printer Emulation | : 7194 Mode |
| Printer ID Mode | : 7194 Native ID |
| Default LPI | : 7.52 |
| Carriage Return | : Use Print Cmd |
| Asian Mode | : On |
| Receipt Sync. | : Enabled |
| PDF417 Max Columns | : 14 Columns |

Hardware
| | |
|---|---|
| Print Density | : 100 % |
| Max Power | : 75W |
| Paper Low Sensor | : Enabled |
| Paper Width | : 80 mm |
| Knife | : Enabled |
| Color Paper | : Monochrome |
| Power LED Control | : Disabled |
| Paper Detection Sensor | : Enabled |

Code Pages
| | |
|---|---|
| Default Code Page | : 437 |
| Resident code Pages | : 437, 850, 852, 858 |
| | 860, 863, 862, 864 |
| | 865, 866, 874 |
| | 1252, Katakana |
| | + 932 |

Double Side Mode
| | |
|---|---|
| Thermal Print Mode | : Single Side |
| Upside Down | |
| Front Side | : Normal |
| Back Side | : Up Down |
| Swap Side | : Disable |
| Top/Bottom Msg | |
| Btm of Front | : Disable |
| Top of Back | : Enable |
| Reprint Msg | : Disable |
| Min Rcpt Length | : Disable |
| Reprint Error Page | : Off |

| | |
|---|---|
| Top/Btm Msg Defined | : No |
| Reprint  Msg defined | : No |
| PreDfn Back Defined | : No |
| Logo(s) defined | : No |
| User Char(s) defined | : No |

Sensor Level (On, Off, TH)
| | |
|---|---|
| Paper Detect Sensor | : 2.9V, 0.2V, 1.5V |

User Tallies
| | |
|---|---|
| Receipt Lines Front | : 389482 |
| Receipt Lines Back | : 188470 |
| Knife Cuts | :  12768 |
| Hours ON | :     959 |
| Flash cycles | :       5 |
| Knife Jams | :       2 |
| Cover Openings | :      71 |
| Max Temp Reached | :     363 |

Permanent Tallies
| | |
|---|---|
| Receipt Lines Front | : 389482 |
| Receipt Lines Back | : 188470 |
| Knife Cuts | :  12768 |
| Hours ON | :     959 |
| Flash cycles | :       5 |
| Knife Jams | :       2 |
| Cover Openings | :      71 |
| Max Temp Reached | :     363 |

To enter Diagnostics Mode:
1) Flip DIP switch #1 on.
2) Reset the printer by pressing
   and holding Receipt Feed switch
   down while disconnecting and
   reconnecting the power.

> **Important**: Ensure that the
> configuration settings match
> your host computer, if not,
> enter the Configuration Menu
> to make changes.

**Configuration Menu** and **Print Test** samples (show approximately 60% of size).

# Communication Interface Modes

The Configuration Menu gives the user the option of setting the printer to use an RS-232C serial port. (See "Configuring the Printer" for instructions on how to enter the Configuration Menu.)

## Interface Settings

If the user sets the printer to use an RS-232C serial interface, the Configuration Menu can be used to set the following RS-232C specific settings:

- Set a baud rate 115200, 57600, 38400, 19200, 9600 baud
- Set the number of data bits to seven or eight
- Set the number of stop bits to one or two
- Enable or disable parity
- Set flow control to software (XON/XOFF) or Hardware (DTR/DSR)
- Set the printer to ignore data errors or print a "?" upon encountering an error
- Set receive buffer size to 4K byte or one line
- Set USB Interface type to NHPI or PRTR

The settings used will depend on the software the operator is using and the capabilities of the host computer.

Press the paper feed buton for the communications settings you want.

Defaults are marked with asterisks (*).

**\*\* SET INTERFACE TYPE ?**
    YES            > Long Click
    NO            > Short Click

    RS232/USB*    > 1 Click
    RS232            > 2 Clicks
    USB            > 3 Clicks
    Enter code, then hold Button Down
    At least 1 second to validate

**\*\* SET BAUD RATE ?**
    YES            > Long Click
    NO            > Short Click

    115200 Baud        > 1 Click
     57600 Baud        > 2 Clicks
     38400 Baud        > 3 Clicks
     19200 Baud        > 4 Clicks
      9600 Baud*        > 5 Clicks
    Enter code, then hold Button DOWN
    At least 1 second to validate

**\*\* SET NUMBER OF DATA BITS ?**
   YES       > Long Click
   NO        > Short Click

   8 Data Bits\*   > Long Click
   7 Data Bits    > Short Click

**\*\* SET NUMBER OF STOP BITS ?**
   YES       > Long Click
   NO        > Short Click

   1 Stop Bits\*    > Long Click
   2 Stop Bits     > Short Click

**\*\* SET PARITY ?**
   YES       > Long Click
   NO        > Short Click

   No Parity\*    > 1 Click
   Even Parity   > 2 Clicks
   Odd Parity    > 3 Clicks
   Enter code, then hold Button DOWN
   At least 1 second to validate

**\*\* SET FLOW CONTROL METHOD ?**
   YES       > Long Click
   NO        > Short Click

   Software (XON/XOFF)   > Long Click
   Hardware (DTR/DSR)\*   > Short Click

**\*\* SET DATA RECEPTION ERRORS OPTION ?**
   YES       > Long Click
   NO        > Short Click

   Ignore Errors   > Long Click
   Print '?'\*      > Short Click

   **Note:** Press the Paper Feed Button for at least one second to validate the selection.

## Receive Buffer Size Option

This function allows the user to set the buffer size to a single line  or a 4 K buffer.
Press the Paper Feed Button for the option you want.

**\*\* SET RECEIVE BUFFER SIZE ?**
   YES       > Long Click
   NO        > Short Click

   4K Buffer\*   > Long Click
   One Line    > Short Click

   **Note:** Press the Paper Feed Button for at least one second to validate the selection.

**\*\* SET DSR IGNORE FUNCTION ?**
  YES        > Long Click
  NO         > Short Click

  Enabled*          > Long Click
  Disabled          > Short Click

  **Note:** Press the Paper Feed Button for at least one second to validate the selection.

**\*\* SET USB INTERFACE TYPE ?**
  YES        > Long Click
  NO         > Short Click

  NHPI*          > 1 Click
  PRTR           > 2 Click

  **Note:** Press the Paper Feed Button for at least one second to validate the selection.

  USB Interface Type is shown on Non ION USB version only.
  ION USB version doesn't show this setting.
  If Non ION USB version firmware is downloaded to ION USB version printer,m
  EEPROM value doesn't  match the version. In this case, firmware should change the
  value as follows.

| Previous EEPROM Value | New EEPROM value for ION USB version | New EEPROM value for Non ION USB version |
|---|---|---|
| 00 (EPiC) | 00 (EPiC) | 01 (NHPI) |
| 01 (NHPI) | 00 (EPiC) | 01 (NHPI) |
| 02 (PRTR) | 00 (EPiC) | 02 (PRTR) |

  The default value of EEPROM is
          ION USB version : 0x00 (EPiC)
          Non ION USB version : 0x01 (NHPI)

## Save Parameters

This function allows to save the selected communication settings or return to the
communication settings to select additional options.

Press the Paper Feed Button for the option you want.

**Save new parameters ?**

YES                 > Long Click

NO, MODIFY    > Short Click

## Diagnostic Modes

This function allows the user to put the printer into the following diagnostic modes:

- OFF, Normal Mode: this is the normal operating mode of the printer.
- Datascope Mode: the receipt printer prints incoming commands and data in hexadecimal format.
- Receipt Test Mode: the receipt printer prints two code pages.

The diagnostic modes are enabled or disabled by using the Configuration Menu. See "Configuration the Printer," for instructions on how to enter the Configuration Menu.

Press the Paper Feed Button for the diagnostic mode you want.

**\*\* SET DIAGNOSTICS MODE ?**
    YES        > Long Click
    NO         > Short Click

  OFF, Normal Mode*    > 1 Click
  Data Scope Mode       > 2 Clicks
  Receipt Test Mode     > 3 Clicks

  Enter code, then hold Button DOWN
  At least 1 second to validate

  Enter code, then hold Button DOWN
  At least 1 second to validate

## Datascope Mode

Datascope Mode allows the user to test the printer's communications. When in Datascope Mode the printer receives all communications, but instead of executing the commands it prints them out on receipt paper as hexadecimal numbers in the order received. For example, the ASCII character "A" is printed as the hexadecimal number 41 an so on.

To run the Datascope Mode:

1. After you have enabled the Datascope Mode through the Configuration Menu, exit the Configuration Menu.

2. Run a transaction from the host computer.

    All commands and data sent from the host computer will be printed as hexadecimal numbers as shown in the illustration.

```
30 31 32 33 34 35 36 37 38 39 40 41        :     0 1 2 3 4 5 6 7 8 9 @ A
41 42 43 44 45 46 47 48 49 50 51 52        :     A B C D E F G H I J K L
```

To exit the Datascope Mode:

1. Enter the Configuration Menu again

2. Disable the Datascope Mode

3. Exit the Configuration Menu

The printer is in Normal Mode and can communicate with the host computer.

## Receipt Test Mode

To run the Receipt Test Mode:

1. Enable the Receipt Test Mode through the Configuration Menu. See "Configuring the Printer," for instructions on how to enter the Configuration Menu.

2. Push Paper Feed Button and the receipt station will print all code pages.

3. The test ends with a cut.

4. Go to step 2 again to repeat this test.

To exit the Receipt Test Mode:

1. Enter the Configuration Menu again.

2. Disable the Receipt Test Mode

3. Exit the Configuration Menu

The printer is in Normal Mode and can communicate with the host computer.
Save Parameters

This function allows to save the selected diagnostics modes or return to the diagnostics mode to select additional options.

Press the Paper Feed Button for the option you want.

## Save Parameters

This function allows to save the selected communication settings or return to the communication settings to select additional options.
Press the Paper Feed Button for the option you want.

**Save new parameters ?**
YES                    > Long Click

NO, MODIFY     > Short Click

# Emulation/Software Options

## Printer Emulations

Printer emulations determine the commands that are available to the printer. They are set by using the Configuration Menu. (See "Configuring the Printer," for instructions on how to enter the Configuration Menu.). The available options are:

- 7194 Mode

- 7193 Mode
- 7197 Native Mode

Press the Paper Feed Button for the emulation you want.

**\*\* SET EMULATION ?**
YES      > Long Click
NO       > Short Click

7194 Mode\*              > 1 Click
7193 Mode               > 2 Click
7197 Native Mode      > 3 Click
Enter code, then hold Button DOWN
At least 1 second to validate

**Note**: Press the Paper Feed Button for at least one second to validate the selection.

## Printer ID Selections

Printer ID Selections determines the print ID that is returned from the printer. This is set by using the Configuration Menu. (See "Configuring the Printer," for instructions on how to enter the Configuration Menu.). The available options are:

- 7197 Native ID
- Emulated Print ID
- 7197 Native ID

Press the Paper Feed Button for the emulation you want.

**\*\* SET PRINTER ID MODE ?**
YES      > Long Click
NO       > Short Click

7194 Native ID\*           > 1 Click
Emulated Printer ID      > 2 Clicks
7197 Native ID             > 3 Clicks
Enter code, then hold Button DOWN
At least 1 second to validate

**Note**: Press the Paper Feed Button for at least one second to validate the selection

## Default Lines per Inch

This function allows the user to set the default lines per inch printed by the thermal printer to 6, 7.52 or 8.13. (See "Configuring the Printer" for instructions on how to enter the Configuration Menu to change this setting.)

Press the Paper Feed Button for the lines per inch you want.

**\*\* SET DEFAULT LINES PER INCH ?**
    YES      > Long Click
    NO       > Short Click

    8.13 Lines per Inch    > 1 Click
    7.52 Lines per Inch\*   > 2 Clicks
    6 Lines per Inch     > 3 Clicks
  Enter code, then hold Button DOWN
  At least 1 second to validate

**Note:** Press the Paper Feed Button for at least one second to validate the selection.

## Carriage Return Usage

This function allows the printer to ignore or use the Carriage Return (hexadecimal 0D) command depending on the application. Some applicatons expect the command to be ignored while others use the command as a print command. (See "Configuring the Printer" for instructions on how to enter the Configuration Menu to change this setting.)

Press the Paper Feed Button for the carriage return usage you want.

**\*\* SET CARRIAGE RETURN USAGE ?**
    YES      > Long Click
    NO       > Short Click

    Ignore CR              > Long Click
    Use CR as Print Cmd\*   > Short Click

Note: Press the Paper Feed Button for at least one second to validate the selection.

## Asian Mode

This function makes it possible for the user to select an Asian character for the printer. (See "Configuring the Printer" for instructions on how to enter the Configuration Menu to change this setting.)

**Note:** For Asian code pages, only one (either 932, 936, 949 or 950) will exist in the firmware.

Press the Paper Feed Button for the Asian mode you want.

**\*\* SET ASIAN MODE ?**
    YES      > Long Click

NO          > Short Click

Asian Mode On       > Long Click
Asian Mode Off*      > Short Click

Note: Press the Paper Feed Button for at least one second to validate the selection.

## Receipt Synchronization Mode

The standard mode for synchronization allows for verification of each line printed to the host.  When the receipt synchronization is disabled the printer will allow for maximum print speed and ignore the verificaiton of each line printed.

Press the Paper Feed Button for the receipt synchronization mode option you want.

**\*\* SET RECEIPT SYNCHRONIZATON  MODE ?**
YES         > Long Click
NO          > Short Click

Enable  Receipt Sync.*     > Long Click
Disable Receipt Sync.      >Short Click
Note: Press the Paper Feed Button for at least one second to validate the selection.

## SET PDF417 MAX PRINT COLUMN

This function makes it possible for the user to select the print columns for the PDF417 bar code printing. The selections are 9 or 14 columns.  The end result is the height of the bar code printing.  The default setting is 9 columns.  (See Configuring the Printer for instructions on how to enter the Configuration Menu to change this setting.)

 \*\* SET PDF417 COLUMN PRINT ?
YES        > Long Click
NO         > Short Click

9 Columns*       > 1 Click
14 Columns      > 2 Clicks

Enter code, then hold Button DOWN at least 1 second to validate.

## Save Parameters

This function allows to save the selected emulations/software settings or return to the emulations/software settings to select additional options.

Press the Paper Feed Button for the option you want.

**Save new parameters ?**
YES                 > Long Click

NO, MODIFY     > Short Click

# Hardware Options

## Print Density

This function makes it possible to adjust the energy level of the print headto darken the printout. An adjustment should only be made when necessary. The factory setting is 100%.

**Warning**:  Choose an energy level no higher than necessary to achieve a dark printout.

Failure to observe this rule may result in a printer service call or voiding of the printer warranty. Consult your NCR technical support specialist if you have any questions.

Press the Paper Feed Button for the print density you want.

**\*\* SET PRINT DENSITY ?**
    YES       > Long Click
    NO        > Short Click

    100 %\*        > 1 Click
    110 %         > 2 Clicks
    120 %         > 3 Clicks
Enter code, then hold Button DOWN
At least 1 second to validate

**Note:** Press the Paper Feed Button for at least one second to validate the selection.

## Maximum Power Option

This function allows the user to set the maximum power for the printer to 75W or 55W.

Press the Paper Feed Button for the option you want.

**\*\* SET MAX POWER OPTION ?**
    YES       > Long Click
    NO        > Short Click

    55W Power Supply*       > Long Click
    75W Power Supply        > Short Click

**Note:** Press the Paper Feed Button for at least one second to validate the selection.

## Paper Low Sensor

Paper Low Sensor makes it possible to enable or disable the paper low sensor for particular printer configurations.

Press the Paper Feed Button for the option you want.

**\*\* SET PAPER LOW SENSOR OPTION ?**

YES      > Long Click
NO       > Short Click

Enable Paper Low Sensor*    > Long Click
Disable Paper Low Sensor    > Short Clicks

**Note:** Press the Paper Feed Button for at least one second to validate the selection.

## Paper Width

This function allows the user to set the default paper width for the receipt thermal printer to 58mm or 80mm wide.

Press the Paper Feed Button for the paper width option you want.

**\*\* SET PAPER WIDTH ?**

YES      > Long Click
NO       > Short Click

Paper Width = 80 mm*     > 1 Click
Paper Width = 58 mm      > 2 Clicks
Enter code, then hold Button DOWN
At least 1 second to validate

**Note:** Press the Paper Feed Button for at least one second to validate the selection.

## Set Knife Option

Set the Knife option using the configuration menu. Answer No to the questions printed on the receipt until you come to the instructions for knife option.

**Caution:** Be extremely careful changing any of the printer settings to avoid inadvertently changing other settings that might affect the performance of the printer.

Press the Paper Feed Button for the option you want.

**\*\* SET KNIFE OPTION ?**

YES      > Long Click
NO       > Short Click

Enable Knife*        > Long
Disable Knife        > Short

## Color Paper Option

This function allows the user to set the color paper option to Monochrome or Color Paper.

Press the Paper Feed Button for the option you want.

**\*\* SET COLOR PAPER OPTION ?**
YES         > Long Click
NO          > Short Click

Monochrome*        > Long Click
Color Paper          > Short Click

**Note:** Press the Paper Feed Button for at least one second to validate the selection.

## Set Power LED Control

This function allows the user to set the power LED control.

- When Enable is selected, printer checks DSR line for LED control. If DSR is BUSY, printer turns off LED even if printer is in error condition.

- When Disable is selected, printer doesn't check DSR line for LED control.

Press the Paper Feed Button for the option you want.

 \*\* SET POWER LED CONTROL OPTION ?
YES         > Long Click
NO          > Short Click

Disable Control*     > Long Click
Enable Control       > Short Click
Note: Press the Paper Feed Button for at least one second to validate the selection

## Save Parameters

This function allows to save the selected hardware settings or return to the hardware options to select additional options.

Press the Paper Feed Button for the option you want.

**Save new parameters ?**
YES                      > Long Click

NO, MODIFY       > Short Click

# Default Code Page

This function makes it possible to select the default code page.

These are the code pages available for printing:

- Code page 437 (US English)
- Code page 850 (Multilingual)
- Code page 852 (Slavic)
- Code page 858 (with Euo symbol)
- Code page 860 (Portuguese)
- Code page 862 (Hebrew)
- Code page 863 (French Canadian)
- Code page 864 (Arabic)
- Code page 865 (Nordic)
- Code page 866 (Cyrillic)
- Code page 874 (Thai)
- Code page 1252 (Windows Latin #1)
- Code page Katakana
- Code page 932 (MS Japan)
- Space page

Note: For Asian code pages, code page 936, 949, or 950 replaces code page 932. Only one Asian code page (either 932, 936, 949, 950) will exist in firmware.

Press the Paper Feed Button for the Default Code Page you want.

**\*\* SET CODE PAGE ?**
    YES     > Long Click
    NO      > Short Click


    Code Page 437*       > 1 Click
    Code Page 850        > 2 Clicks
    Code Page 852        > 3 Clicks
    Code Page 858        > 4 Clicks
    More Options         > 5 Clicks
Enter code, then hold Button DOWN
At least 1 second to validate


    Code Page 860        > 1 Click
    Code Page 862        > 2 Clicks
    Code Page 863        > 3 Clicks
    Code Page 864        > 4 Clicks
    More Options         > 5 Clicks
Enter code, then hold Button DOWN
At least 1 second to validate


    Code Page 865        > 1 Click

Code Page 866      > 2 Clicks
Code Page 874      > 3 Clicks
Code Page 1252      > 4 Clicks
More Options      > 5 Clicks

Enter code, then hold Button DOWN
At least 1 second to validate

Code Page Katakana      > 1 Click
Code Page 932      > 2 Clicks

Enter code, then hold Button DOWN
At least 1 second to validate

**Note:** Press the Paper Feed Button for at least one second to validate the selection. For Asian code pages, code page 936, 949 or 950 replaces code page 932 in the above shown menu. Only one Asian code page (Either 932, 936, 949 or 950) will exist in firmware.

## Save Parameters

This function allows to save the selected default code page selecton or return to the default code page selecton to select additional options.
Press the Paper Feed Button for the option you want.

**Save new parameters ?**

YES      > Long Click

NO, MODIFY      > Short Click

# Double Side Printing Settings

Set the double side printing settings using the Configuration Menu.

**Caution:** Be extremely careful changing any of the printer settings to avoid inadvertently changing other settings that might affect the performance of the printer.

Press the Paper Feed Button for the double side printing settings you want.

Defaults are marked with an asterisk (*).

## Set Thermal Print Mode

This setting allows the user to select double side printing mode.

Press the Paper Feed Button for the option you want.

 **\*\* SET THERMAL PRINT MODE ?**
    YES      > Long Click
    NO       > Short Click

    Single Side*                    > 1 Click
    Double Side w/Single Cmd        > 2 Clicks
    Double Side w/Double Cmd        > 3 Clicks
    Double Side w/ Predfn Back      > 4 Clicks
 Enter code, then hold Button Down at least 1 second to validate.

## Set Upside Down

This setting allows the user to select upside-down character printing for each side in double side printing.

Press the Paper Feed Button for the option you want.

 **\*\* SET UPSIDE DOWN ?**
    YES      > Long Click
    NO       > Short Click

    F:Normal, B:Normal*      > 1 Click
    F:Up Down, B:Normal      > 2 Clicks
    F:Normal, B:Up Down      > 3 Clicks
    F:Up Down, B:Up Down     > 4 Clicks
 Enter code, then hold Button DOWN at least 1 second to validate.

## Set Swap Front & Back Side

This setting allows the user to exchange front side data and back side data.

Press the Paper Feed Button for the option you want.

```
** SET SWAP FRONT&BACK SIDE ?
    YES     > Long Click
    NO      > Short Click

    Disable*        > 1 Click
    Enable          > 2 Clicks
Enter code, then hold Button DOWN at least 1 second to validate.
```

## Set Top/Bottom Message

This setting allows the user select whether Top/Bottom messages are disabled or enabled.

Press the Paper Feed Button for the option you want.

```
** SET TOP/BOTTOM MSG ?
    YES     > Long Click
    NO      > Short Click

    Top:Disable,Btm:Disable*    > 1 Click
    Top:Disable,Btm:Enable      > 2 Clicks
    Top:Enable, Btm:Disable     > 3 Clicks
    Top:Enable, Btm:Enable      > 4 Clicks
Enter code, then hold Button DOWN at least 1 second to validate.
```

## Set Reprint Message

This setting allows the user to select whether Reprint message is disabled or enabled. The printer allows for predefining of a message on the front side of the receipt. The printing of the lines are enabled as shown in the chart below.

Press the Paper Feed Button for the option you want.

```
** SET REPRINT MSG?
    YES     > Long Click
    NO      > Short Click

    Disable*      > 1 Click
    Enable        > 2 Clicks
Enter code, then hold Button DOWN
At least 1 second to validate
```

## Set Minimum Receipt Length

This setting allows the user to select minimum receipt length.

Press the Paper Feed Button for the option you want.

```
** SET MIN RECEIPT LENGTH ?
    YES     > Long Click
    NO      > Short Click

    Disable*      > 1 Click
    5 inch        > 2 Clicks
    10 inch       > 3 Clicks
    15 inch       > 4 Clicks
Enter code, then hold Button DOWN at least 1 second to validate.
```

## Set Reprint Error Page

This setting allows the user to execute reprint error page data.

Press the Paper Feed Button for the option you want.

```
** SET REPRINT ERROR PAGE ?
    YES     > Long Click
    NO      > Short Click

    Resume Print from Error     > 1 Click
    Reprint Error Page          > 2 Clicks
Enter code, then hold Button DOWN at least 1 second to validate.
```

**Save Parameters**

This function allows to save the selected communication settings or return to the communication settings to select additional options.

Press the Paper Feed Button for the option you want.

**Save new parameters ?**
    YES    > Long Click
    NO    > Short Click

# EEPROM to Default Settings

This selection resets the configuration to the Default Settings.

**Caution:** Be extremely careful changing any of the printer settings to avoid inadvertently changing other settings that might affect the performance of the printer.

**\*\* RESET EEPROM TO DEFAULT VALUES ?**
    YES    > Long Click
    NO    > Short Click

**Note:** Press the Paper Feed Button for at least one second to validate the selection.

## Save Parameters

This function allows to save the selected default code page selecton or return to the default code page selecton to select additional options.

Press the Paper Feed Button for the option you want.

**Save new parameters ?**
YES    > Long Click

NO, MODIFY    > Short Click

# Mfg. Adjustment

This selection provides Receipt Printing Test only since adjustments are not necessary.To perform the printer test, use the Mfg Adjustment menu feature. This feature prints instructions on the receipt for selecting any type of print pattern needed.

## Mfg Adjustment:

**Caution:**
Be extremely careful when changing any of the printer settings to avoid changing other settings that might affect the performance of the printer.

1. Set DIP switch 1 to ON, DIP switch 2 to ON.

2. Power on the printer while holding the Paper Feed Button. The printer will print the Current Setting Form, then cuts the paper to print the Mfg Adjustment Menu.

3. If you do not hold the Paper Feed Button while power up the printer, it will go to Online Mode.

This menu allows you to print different test patterns

Selections are made using the Paper Feed Button.


===== Mfg Adjustment Menu =====

Select a sub-menu:
| | |
|---|---|
| EXIT | > 1 Click |
| Rolling ASCII Print Test | > 2 Clicks |
| H Print Test | > 3 Clicks |
| Duty Check Print Test | > 4 Clicks |
| Print Current Setting | > 5 Clicks |
| Sensor Callibration (Rcpt) | > 6 Clicks |
| Reset all EEPROM to Default | > 7 Clicks |

Enter code then hold Button DOWN
At least 1 second to validate.

## Rolling ASCII print test (Receipt)

This option let you run rolling ASCII printing test. The printer prints the resident character set in standard pitch continuously. When Rolling ASCII Print (Rcpt) is selected, printer prints the following menu. After selection of the printing side, test print will start.

**\*\* SELECT PRINTING SIDE?**

| | |
|---|---|
| Front Side Only | > 1 Click |
| Back Side Only | > 2 Click |
| Double Side | > 3 Click |

Enter code, then hold Button DOWN at least 1 second to validate

Press the Paper Feed Button to stop the test.

Rolling ASCII
    Stop and exit test    > Long Click

Page number

```
00000008

 !"#$%&              G
!"#$%&'
H
"#$%&'(
I
```
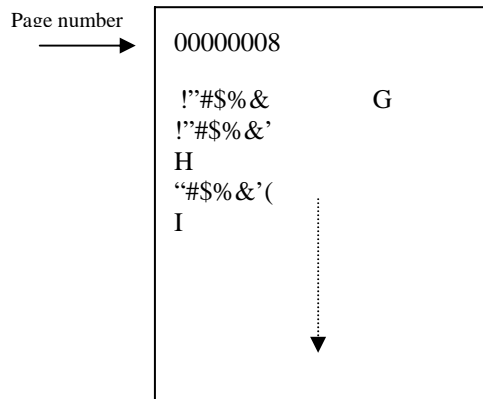
## H print test (Receipt)

This option let you run H printing test. The printer prints the 'H' character in standard pitch continuously. When H Print Test (Rcpt) is selected, printer prints the following menu. After selection of the printing side, test print will start.

Press the Paper Feed Button to start or stop the test.

```
** SELECT PRINTING SIDE?
Front Side Only      > 1 Click
Back Side Only       > 2 Click
Double Side          > 3 Click
Enter code, then hold Button DOWN at least 1 second to validate.
```

```
Press the Paper Feed Button to stop the test.
```

```
H Print test
Stop and exit test           -> Long Click
```

Page number

```
00000008

HHHHH·······································
H                  ·······················
HHHHH·······································
H
HHHHH
H
```
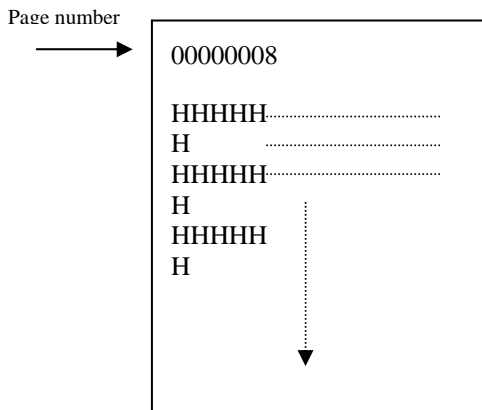
## Duty check print test (Receipt)

This option let you run duty check printing test. The printer prints the 12.5%, 25%, 50% and 100% duty original pattern. When Duty Check Print (Rcpt) is selected, printer prints the following menu. After selection of the printing side, test print will start.

Press the Paper Feed Button to start or stop the test.

```
** SELECT PRINTING SIDE?
Front Side Only      > 1 Click
Back Side Only       > 2 Click
Double Side          > 3 Click
Enter code, then hold Button DOWN at least 1 second to validate.
```

```
Press the Paper Feed Button to continue or stop the test.
```

Duty Check Print
Stop and exit test      > Short Click
Continue test           > Long Click

```
┌─────────────────────────────┐
│                             │
│   00000008                  │
│   ┌───────────────────┐     │
│   │░░░░░░░░░░░░░░░░░░░│     │
│   │░░░░░░░░░░░░░░░░░░░│     │
│   └───────────────────┘     │
│   ┌───────────────────┐     │
│   │▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒│     │
│   │▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒│     │
│   └───────────────────┘     │
│   ┌───────────────────┐     │
│   │▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓│     │
│   │▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓│     │
│   └───────────────────┘     │
│   ┌───────────────────┐     │
│   │███████████████████│     │
│   │███████████████████│     │
│   └───────────────────┘     │
│                             │
└─────────────────────────────┘
```
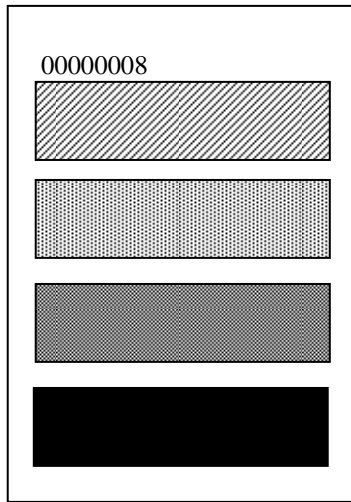
## Print current setting

This option let you print current setting on receipt.

Press the Paper Feed Button to start the test.

**\*\* START CURRENT SETTING PRINTING?**
Return Main Menu      > Short Click
Start Printing        > Long Click

**Note:** Press the Paper Feed Button for at least one second to validate the selection.

```
┌──────────────────────────────────────┐
│                                      │
│   *** Current Setting Form ***       │
│                                      │
│   Model number        : 7198-1012-9001 │
│   Serial number       : 1234567890   │
│                                      │
│   Boot Firmware                      │
│    Revision           : V11.00       │
│    CRC                : D3CE         │
│    Flash Firmware                    │
│    Revision           : V35.00       │
│    CRC                : AC12         │
│                                      │
└──────────────────────────────────────┘
```
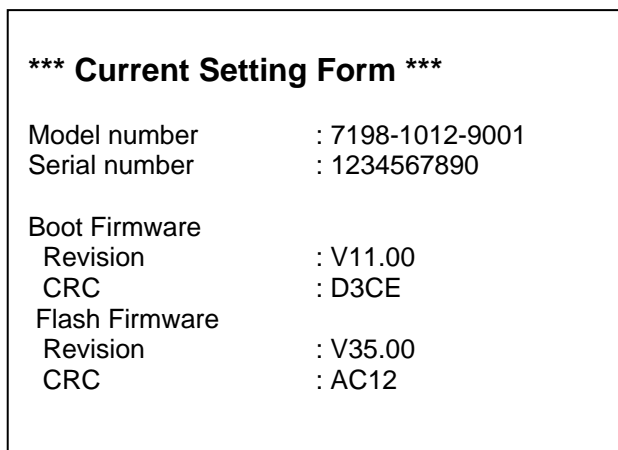
## Sensor Calibration (Rcpt)

This option calibrates Double side paper detection sensor.

**\*\* START SENSOR CALIBRATION?**
    Return Main Menu     > Short Click
    Start Printing          > Long Click
If error occurs during sensor calibration, the value in the Printer Configuration will become 0000.

## EEPROM to Default Setting

This selection resets the configuration & clears all input data to the Default Settings.

Caution: Don't perform this selection unless you want to clear all details in EEPROM to default value. Be extremely careful changing any of the printer settings to avoid inadvertently changing other settings that might affect the performance of the printer.

**\*\* RESET EEPROM TO DEFAULT VALUES ?**
    YES       > Long Click
    NO        > Short Click

Procedure:

1.  Enable the EEPROM to Default Setting option through the Configuration Menu; enter a short click to return to the Mfg Adjustment Menu.

2.  Enter a Long Click to reset the EEPROM to the Default Values.

3.  Enter a Short Click to return to the Mfg Adjustment Menu without resetting to the default values.

**Note:** Press the Paper Feed Button for at least one second to validate the selection.

# Where to save the setting of Double Side Mode

| Parameter | Size | Where | Remark |
|---|---|---|---|
| Thermal Printing Mode | 2 bits | EEPROM | |
| Upside Down Mode | 2 bits | EEPROM | |
| Swap Front & Back | 1 bit | EEPROM | |
| Bottom and Top Message | 2 bits | EEPROM | |
| Reprint when Error Occur | 1 bit | EEPROM | |
| Minimum Receipt Length | 1 byes | EEPROM | |
| Pre-defined Top and Bottom message | 1024 bytes | Flash ROM | |
| Pre-defined Back Side printing | 4096 bytes | Flash ROM | |
| Macro | 50 Kbytes | Flash ROM | 50 Kbytes is shared by 25 Macros |
| **Serial Number** | **10 bytes** | **Flash ROM** | **Change from EEPROM to Flash** |
| **Model Name** | **15 bytes** | **Flash ROM** | **Change from EEPROM to Flash** |

# Level 2 Diagnostics

Level 2 diagnostics run during normal printer operation. When the following conditions occur, the printer automatically turns off the appropriate motor, disables printing to prevent damage, and turns on the green LED (flashes the green LED if the receipt print head is too hot or the voltages are out of range):

- Paper out
- Cover open
- Knife unable to go back to home position
- Print head too hot
- Power supply voltage out of range

See "Chapter 3: Solving Problems" for more information about other conditions that may occur and how to correct them.

| Status | LED Behavior |
| --- | --- |
| Power Off | Off |
| Firmware Download | Very Fast Blink |
| Level 0 Diagnostics | No Blink |
| Receipt Paper Low | Slow Blink |
| Temperature Error | No Blink |
| Voltage Error | No Blink |
| Cover Open | Fast Blink |
| Receipt Paper Out | Fast Blink |
| Knife Jam | Fast Blink, then Slow Blink |
| All other states | On |

# Level 3 Diagnostics

Level 3 diagnostics keeps track of the following tallies and prints them on the receipt during the receipt test.

- Serial number
- Model number
- CRC number
- Number of receipt lines printed
- Number of knife cuts
- Number of hours printer is on
- Number of flash cycles
- Maximum temperature reached
- Number of cutter jams
- Number of times the door is open

# Chapter 5: Communication

## Communication Overview

In order for a receipt to be printed, a program must be in place that translates the data from the host computer into a language that the printer can understand. This program must tell the printer exactly how to print each character. This chapter describes how to create such a program or modify an existing one.

## Interface

In order for the printer to communicate with the host, a communication link must be set up. The 7198 supports the industry standard RS-232C communication interface. This interface has a protocol associated with it that the host computer must understand and adhere.  The priner also supports USB communications.

Only when the interface parameters are matched and the proper protocol is used will the host and the printer be able to communicate. See the section, "RS-232C Interface" on the next page for a description of the protocol associated with the RS-232C interface.

## Sending Commands

Once the communication link is established, commands can be sent to the printer. This section describes how to send commands to the printer using DOS and BASIC. This section does not take into account the necessary protocol, but is meant as a general introduction to how the printer functions.

### Using DOS to Send Commands

One way of getting commands to the printer is to send them directly from DOS. For example, the command

```
COPY CON: COM1:
```

This sets the computer up such that the Hex code corresponding to any key that was pressed would be sent to the RS-232C communication port COM1 when the COPY mode is exited. If the printer is connected to COM1, then the data will go to the printer.

Exit the COPY mode by typing

```
CTRL Z
```

and then pressing the ENTER key. This directs the data from any print command to the proper port, commands can be sent from any software program.

### Using BASIC to Send Commands

In BASIC, printer commands are sent as a string of characters preceded by the LPRINT command. For example,

```
LPRINT CHR$(&H0A)
```

sends the hexadecimal number 0A to the printer, which causes the printer to print the contents of its print buffer. Previously sent commands tell the printer exactly how this data should appear on the paper. For example,

```
LPRINT CHR$(&H12); "ABC"; CHR$(&H0A)
```

sends the Hex numbers 12 41 42 43 0A to the printer. This causes the printer to set itself to double wide mode (12), load the print buffer with "ABC" (41 42 43), and finally, print (0A). Again, the communication link that the BASIC program outputs to must be matched to that of the printer.

# RS-232C Interface

The RS-232C interface uses either XON/XOFF or DTR/DSR protocol. For XON/XOFF, a particular character is sent back and forth between the host and the printer to regulate the communication. For DTR/DSR, changes in the DTR/DSR signal coordinate the data flow.

The RS-232C version of the 7198 offers the standard options which are selectable in the Diagnostic mode. See "Diagnostics: Communications Interface Settings" later in this book.

## Print Speed and Timing

The fast speed of the printer requires the application to send data to the printer at least as fast as it is printed. This application must also allow receipt lines to be buffered ahead at the printer, so the printer can print each line immediately after the preceding line, without stopping to wait for more data. Ideally, the application will send all the data for an entire receipt without pausing between characters or lines transmitted.

If the application sends data at 9600 baud and pauses between lines for as little as 50 milliseconds, the printer will never be able to print at full speed. But, if the application sends data at 19.2 K baud and does not pause between lines, the printer will be able to print at its full speed of 1020 lines/minute.

The table shows that with a pause of 50 milliseconds after each line, the transmit time equals or exceeds the print time, slowing down the printer, regardless of the baud rate.

| Char. /Line | Lines/Receipt | Transmit Time: (9600 Baud) | Print Time (9600 Baud) | Transmit Time: (19.2 K Baud) | Print Time (19200 Baud) |
|---|---|---|---|---|---|
| 20 | 20 | 0.84 Seconds | 1.76 Seconds | 0.70 Seconds | 1.51 Seconds |
| 20 | 40 | 1.69 Seconds | 3.51 Seconds | 1.34 Seconds | 3.01 Seconds |
| 44 | 20 | 1.86 Seconds | 1.76 Seconds | 1.53 Seconds | 1.51 Seconds |
| 44 | 40 | 3.71 Seconds | 3.51 Seconds | 3.07 Seconds | 3.01 Seconds |

The next table shows that with no delay between lines, the transmit time is much less than the print time, allowing the printer to print at full speed.

| Char. /Line | Lines/Receipt | Transmit Time: (9600 Baud) | Print Time (9600 Baud) | Transmit Time: (19.2 K Baud) | Print Time (19200 Baud) |
|---|---|---|---|---|---|
| 20 | 20 | 0.43 Seconds | 0.98 Seconds | 0.21 Seconds | 0.72 Seconds |
| 20 | 40 | 0.86 Seconds | 1.95 Seconds | 0.43 Seconds | 1.43 Seconds |
| 44 | 20 | 0.95 Seconds | 0.98 Seconds | 0.47 Seconds | 0.72 Seconds |
| 44 | 40 | 1.89 Seconds | 1.95 Seconds | 0.93 Seconds | 1.43 Seconds |

## XON/XOFF Protocol

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

If XON/XOFF has been selected, the printer also toggles the DTR signal, as described in the next section, but it does not look at the DSR signal to transmit data.

XON character = Hex 11.

XOFF character = Hex 13.

## DTR/DSR Protocol

The DTR signal is used to control data transmission to the printer. It is driven low when the printer is ready to recieve data and driven high when it cannot accept any more data. Data is transmitted from the printer after it confirms that the DSR signal is low.

# RS-232C Technical Specifications

This section describes the pin settings for the connectors and the RS-232C interface parameters. The RS-232C parameters are selectable in the Diagnostic mode. See "Diagnostics: Communications Interface Settings" in chapter 4 for the position of the DIP switches. The RS-232C parameters must match those of the host.

## RS 232 Connector

The illustration shows the RS-232C communication connector and pin assignments. The connector is a 9-pin male D-shell connector and is located in the hollow cavity under the printer at the rear.

## DC Power Connector

The illustration shows the power cable connector and pin assignments. The power cable connector is a 3-pin DIN plug and is located in the hollow cavity under the printer at the rear.

## Cash Drawer Connector

The following illustration shows the pin out designation for the cash drawer connectors. The following table provides the pinout assignments for cash drawers one and two. The cash drawer connectors are located at the rear of the printer.

| Pin Number | Cash Drawer 1 Connector |
|---|---|
| 1 | Frame Ground |
| 2 | Drawer 1 Solenoid |
| 3 | Drawer 1 Status Switch |
| 4 | +24 Volts (to Solenoid +) |
| 5 | Drawer 2 Solenoid |
| 6 | Ground (Status Switch Return) |

## USB Connector

The following illustration is for the USB Type B communication connector and pin assignment.
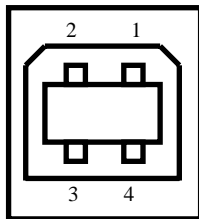


| Pin No | Signal |
|---|---|
| 1 | +5 V – USB |
| 2 | Data - |
| 3 | Data + |

4          Ground

## Switch Settings

The DIP switches are located on the PC board at the bottom of the printer as shown in the illustration in "Level 1 Diagnostics" in chapter 4.

The switches are used to put the printer into various modes for printer configuration set up.

Printer Bottom View
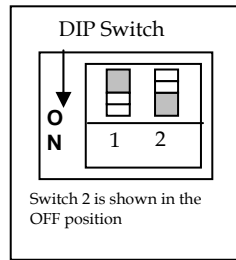


Use a paper clip or other pointed object to set the switches.

1.  Set the switches to the desired settings shown in the table.

**Caution:** Do not set switch 1 to On. Setting switch 1 to On puts the printer in level 1 diagnostics (setup mode) where other functions and tests can be changed.

DIP Switch Settings

| Switch 1 Setting | Switch 2 Setting | Printer State |
| --- | --- | --- |
| OFF (0) | OFF (0) | On-line Mode (default) |
| ON (1) | OFF (0) | Diagnostic Mode |
| OFF (0) | ON (1)* | Flash Download Mode |
| ON (1) | ON (1) | Vendor Adjustment Mode |

* It is optional to set this switch to ON when reflashing the IPL firmware.

## Setting Extra RS-232C Options

The following extra options are available for the RS-232C Interface:

- Data errors
- Print "?" for data errors (default)
- Ignore data errors

# Chapter 6: Commands

## Command Conventions

### Introduction

The different features and functions provided by the printer are controlled by sending commands from the host computer to the printer. This section describes the commands that are supported by the printer. The printer commands are made up of one or more bytes of data starting with a command control code followed by its supporting parameters.

Commands control all operations and functions of the printer. This includes selecting the size and placement of characters and graphics on the receipt or the slip and feeding and cutting the paper. Unless otherwise noted, any of the commands may be used in any combination to communicate with the printer from a program in a host computer.

In order to allow the graceful handling of commands that may be available in other printers but are not available in this printer, some commands will be listed and described but identified as "not implemented." If the printer receives one of these "not implemented" commands, the command and its supporting operands will be discarded. Any other data bytes, including unrecognized commands, are sent to the print buffer as data, and the printer will attempt to print the data when it is instructed to print the buffer.

### List of Commands and Location

This section presents groups of lists of the hexadecimal command codes, parameters, and the command names. A page reference is provided for the page on which the command is more fully described. If this document is being viewed online, the page reference will be linked to the actual page and may click to go to that page.

The first section lists all of the commands. The following lists are separated into functional category groupings.

All commands **listed in bold** are new or have additional functionality when compared to the NCR 7193.

## By Command Code

| Code (Hexadecimal) | Command | Page |
|---|---|---|
| 09 (HT) | Horizontal Tab | 114 |
| 0A (LF) | Print and Feed Paper One Line | 108 |
| 0C (FF) | Print and Return to Standard Mode | 179 |
| 0D (CR) | Print and Carriage Return | 108 |
| 10 | Clear Printer | 102 |
| 10 04 n | Real Time Status Transmission (DLE Sequence) | 163 |
| 10 05 n | Real Time Request to Printer (GS Sequence) | 166 |
| 11 *n1... nk* | Print Raster Graphics | 140 |
| 12 | Select Double-Wide Characters | 121 |
| 13 | Select Single-Wide Characters | 121 |
| 14 *n* | Feed *n* Print Lines | 109 |
| 15 *n* | Feed *n* Dot Rows | 109 |
| 16 *n* | Add *n* Extra Dot Rows | 110 |
| 17 | Print | 111 |
| 18 | Cancel Print Data in Page Mode | 179 |
| 19 | Perform Full Knife Cut | 103 |
| 1A | Perform Partial Knife Cut | 103 |
| 1B (+ *.bmp) | Download BMP Logo | 140 |
| 1B 07 | Generate Tone | 104 |
| 1B 0C | Print Data in Page Mode | 180 |
| 1B 12 | Select 90 Degree Counter-Clockwise Rotated Print | 121 |
| 1B 14 *n* | Set Column | 114 |
| 1B 16 *n* | Select Pitch (Column Width) | 123 |
| 1B 20 *n* | Set Character Right-Side Spacing | 124 |
| 1B 21 *n* | Select Print Modes | 125 |
| 1B 24 *n1 n2* | Set Absolute Starting Position | 115 |
| 1B 25 *n* | Select or Cancel User-Defined Character Set | 127 |
| 1B 26 3 *c1 c2…dn* | Define User-Defined Characters | 127 |
| 1B 27 *m a0 a1 a2 d1 … dm* | Write to User Data Storage | 188 |
| 1B 2A *m n1 n2 d1 … dn* | Select Bit Image Mode | 140 |

| Code (Hexadecimal) | Command | Page |
|---|---|---|
| 1B 2D *n* | Select or Cancel Underline Mode | 128 |
| 1B 2E *m n rl rh d1…dn* | Print Advanced Raster Graphics | 143 |
| 1B 32 | Set Line Spacing to 1/6 Inch | 111 |
| 1B 33 *n* | Set Line Spacing | 111 |
| 1B 34 m a0 a1 a2 | Read from User Data Storage | 188 |
| 1B 3A 30 30 30 | Copy Character Set from ROM to RAM | 129 |
| 1B 3F n | Cancel User-defined Characters | 129 |
| 1B 40 | Initialize Printer | 104 |
| 1B 44 [*n*] *k 00* | Set Horizontal Tabs | 116 |
| 1B 45 *n* | Select or Cancel Emphasized Mode | 130 |
| 1B 47 | Select Double Strike (7193 Emulation) | 130 |
| <span style="color:red">1B 48</span> | <span style="color:red">Cancel Double Strike</span> | <span style="color:red">131</span> |
| 1B 49 n | Set or Cancel Italic Print | 131 |
| 1B 4A *n* | Print and Feed Paper | 112 |
| <span style="color:red">1B 4B</span> | <span style="color:red">Select Single-Density Graphics</span> | <span style="color:red">144</span> |
| 1B 4C | Select Page Mode | 180 |
| <span style="color:red">1B 4C</span> | <span style="color:red">Select Double Density Graphics (7193 Emulation Mode)</span> | <span style="color:red">145</span> |
| 1B 52 *n* | Select International Character Set | 133 |
| 1B 53 | Select Standard Mode | 181 |
| 1B 54 *n* | Select Print Direction in Page Mode | 182 |
| 1B 56 *n* | Select or Cancel 90 Degrees Clockwise Rotated | 134 |
| 1B 57 *n1, n2,…n8* | Set Printing Area in Page Mode | 183 |
| 1B 59 n1 n2 d1…dn | Select Double Density Graphics | 144 |
| 1B 5B 7D | Switch to Flash Download Mode | 198 |
| 1B 5C *n1 n2* | Set Relative Print Position | 117 |
| 1B 61 *n* | Select Justification | 118 |
| 1B 63 34 *n* | Select Sensors to Stop Printing | 105 |
| 1B 63 35 *n* | Enable or Disable Panel Buttons | 105 |
| 1B 64 *n* | Print and Feed *n* Lines | 113 |
| 1B 69 | Perform Full Knife Cut | 103 |
| 1B 6A *k* | Read from Non-Volatile Memory | 188 |
| 1B 6D | Perform Partial Cut | 103 |
| 1B 70 *n p1 p2* | Generate Pulse to Open Cash Drawer | 106 |
| 1B 72 *n* | Select Print Color | 134 |
| 1B 73 *n1 n2 k* | Write to Non-Volatile Memory (NVRAM) | 189 |
| 1B 74 n | Select International Character Set | 133 |
| 1B 75 0 | Transmit Peripheral Device Status | 151 |
| 1B 76 | Transmit Paper Sensor Status | 151 |

| Code (Hexadecimal) | Command | Page |
|---|---|---|
| 1B 7B n | Select or Cancel Upside Down Printing Mode | 135 |
| 1C 21 *n* | Select print modes for Kanji characters | 195 |
| 1C 2D *n* | Turn underline mode ON/OFF for Kanji | 196 |
| 1C 32 *c1 c2 d1…dn* | Define user-defined Kanji characters | 196 |
| 1C 53 *n1 n2* | Set Kanji character spacing | 197 |
| 1c 57 *n* | Set quadruple mode ON/OFF for Kanji | 197 |
| 1D 00 | Request Printer ID | 198 |
| 1D 01 | Return Segment Number Status of Flash Memory | 199 |
| 1D 02 *n* | Select Flash Memory Sector to Download | 199 |
| 1D 03 *n* | Real Time Request to Printer (DLE Sequence) | 166 |
| 1D 04 *n* | Real Time Status Transmission (GS Sequence) | 163 |
| 1D 05 | Real Time Printer Status Transmission | 167 |
| 1D 06 | Get Firmware CRC | 199 |
| 1D 07 | Return Microprocessor CRC | 200 |
| 1D 0E | Erase the Flash Memory | 200 |
| 1D 0F | Return Main Program Flash CRC | 200 |
| 1D 10 *n* | Erase Selected Flash Sector | 201 |
| 1D 11 *al ah cl ch d1…dn* | Download to Active Flash Sector | 201 |
| <span style="color:red">1D 1E</span> | <span style="color:red">Baseline Status Request</span> | <span style="color:red">169</span> |
| <span style="color:red">1D 1F</span> | <span style="color:red">Enable/Disable Unsolicited Status Update</span> | <span style="color:red">168</span> |
| 1D 21 *n* | Select Character Size | 135 |
| 1D 22 *n* | Select Memory Type (SRAM/Flash) Where to Save Logos or User-Defined Fonts | 189 |
| 1D 22 55 *n1 n2* | Flash Allocation | 190 |
| 1D 23 n | Select the Current Logo (Downloaded Bit Image) | 145 |
| 1D 24 *nL nH* | Set Absolute Vertical Print Position in Page Mode | 184 |
| 1D 2A *n1 n2 d1…d*n] | Define Downloaded Bit Image | 146 |
| 1D 2F *m* | Print Downloaded Bit Image | 148 |
| 1D 3A | Start or End Macro Definition | 186 |
| 1D 40 *n* | Erase User Flash Sector | 191 |
| 1D 42 *n* | Select or Cancel White/Black Reverse Print Mode | 137 |
| 1D 48 *n* | Select Printing Position for HRI Characters | 173 |
| 1D 49 *n* | Transmit Printer ID | 153 |
| 1D 49 40 *n* | Transmit Printer ID, Remote Diagnostics Extension | 154 |
| 1D 4C *nL nH* | Set Left Margin | 118 |
| 1D 50 *x y* | Set Horizontal and Vertical Minimum Motion | 113 |

| Code (Hexadecimal) | Command | Page |
|---|---|---|
| | Units | |
| 1D 56 *m* | Select Cut Mode and Cut Paper | 107 |
| 1D 56 *m n* | Select Cut Mode and Cut Paper | 107 |
| 1D 57 *nL nH* | Set Printing Area Width | 119 |
| 1D 5C *nL nH* | Set Relative Vertical Print Position in Page Mode | 185 |
| 1D 5E *r t m* | Execute Macro | 187 |
| 1D 61 *n* | Select or Cancel Unsolicited Status Update | 168 |
| 1D 66 *n* | Select Pitch for HRI Characters | 174 |
| 1D 68 *n* | Select Bar Code Height | 174 |
| 1D 6B *m d1…* | Print Bar Code | 175 |
| 1D 6B *m n d1…dn* | Print Bar Code | 175 |
| 1D 72 *n* | Transmit Status | 157 |
| 1D 77 *n* | Select Bar Code Width | 178 |
| 1D FF | Reboot the Printer | 202 |
| 1F 04 *n* | Convert 6 Dots/mm Bitmap to 8 Dots/mm Bitmap | 149 |
| 1F 05 n | Select Superscript or Subscript Modes | 138 |
| IF 11 *[m n],[m n]…[m n] 0FFH* | Printer Setting Change | 192 |
| 1F 56 | Send Printer Software Version | 159 |
| 1F 60 *n* | Select Thermal Printing Modes | 203 |
| 1F 61 *n* | Select Thermal Printing Side | 205 |
| 1F 62 | Start Double Sided Printing | 206 |
| 1F 63 *n* | Select or Cancel Upside Down Printing for Double Sided Printing | 206 |
| 1F 64 *n* | Swap Front Side and Back Side | 207 |
| 1F 65 *n* $k_1$ $d_1$ $d_2$ … $d_i$ 0 | Download 1-Line Top/Bottom Message | 208 |
| 1F 66 *n* | Enable Pre-Defined Top/Bottom Message | 211 |
| 1F 67 *n* | Select nth Macro | 212 |
| 1F 68 | Start/End Pre-Defined Back Side Printing | 213 |
| 1F 69 *n1 n2* | Define Minimum Receipt Length | 213 |
| 1F 6A **n [m, o]** | Print Variable | 215 |
| 1F 6B *n* $d_1$ $d_2$…$d_i$ 0 | Define Variable | 215 |
| 1F 6C *n* | Return Thermal Printing Mode (Batch mode command) | 217 |
| 1F 6D *n* | Return Thermal Printing Mode (Real time command) | 218 |
| 1F 74 | Print Test Form | 108 |

## By Function

## Printer Function Commands

| Code (Hexadecimal) | Command | Page |
|---|---|---|
| 10 | Clear Printer | 102 |
| 19 or 1B 69 | Perform Full Knife Cut | 103 |
| 1A or 1B 6D | Perform Partial Knife Cut | 103 |
| 1B 07 | Generate Tone | 104 |
| 1B 40 | Initialize Printer | 104 |
| 1B 63 34 n | Select Sensors to Stop Printing | 105 |
| 1B 63 35 n | Enable or Disable Panel Buttons | 105 |
| 1B 70 n p1 p2 | Generate Pulse to Open Cash Drawer | 106 |
| 1D 56 m | Select Cut Mode and Cut Paper | 107 |
| 1D 56 m n | Select Cut Mode and Cut Paper | 107 |
| 1F 74 | Print Test Form | 108 |

## Vertical Positioning and Print

| Code (Hexadecimal) | Command | Page |
|---|---|---|
| 0A | Print and Feed Paper One Line | 108 |
| 0D | Print and Carriage Return | 108 |
| 14 n | Feed *n* Print Lines | 109 |
| 15 n | Feed *n* Dot Rows | 109 |
| 16 n | Add *n* Extra Dot Rows | 110 |
| 17 | Print | 111 |
| 1B 32 | Set Line Spacing to 1/6 Inch | 111 |
| 1B 33 n | Set Line Spacing | 111 |
| 1B 4A n | Print and Feed Paper | 112 |
| 1B 64 n | Print and Feed *n* Lines | 113 |
| 1D 50 x y | Set Horizontal and Vertical Minimum Motion Units | 113 |

## Horizontal Positioning Commands

| Code (Hexadecimal) | Command | Page |
|---|---|---|
| 09 | Horizontal Tab | 114 |
| 1B 14 n | Set Column | 114 |
| 1B 24 n1 n2 | Set Absolute Starting Position | 115 |
| 1B 44 [n] k 00 | Set Horizontal Tabs | 116 |
| 1B 5C n1 n2 | Set Relative Print Position | 117 |
| 1B 61 n | Select Justification | 118 |
| 1D 4C nL nH | Set Left Margin | 118 |
| 1D 57 nL nH | Set Printing Area Width | 119 |

## Print Characteristic Commands

| Code (Hexadecimal) | Command | Page |
|---|---|---|
| 12 | Select Double-Wide Characters | 121 |
| 13 | Select Single-Wide Characters | 121 |
| 1B 12 | Select 90 Degree Counter-Clockwise Rotated Print | 121 |
| 1B 16 n | Select Pitch (Column Width) | 123 |
| 1B 20 n | Set Character Right-Side Spacing | 124 |
| 1B 21 n | Select Print Modes | 125 |
| 1B 25 n | Select or Cancel User-Defined Character Set | 127 |
| 1B 26 s c1 c2 d1…dn | Define User-Defined Characters | 127 |
| 1B 2D n | Select or Cancel Underline Mode | 128 |
| 1B 3A 30 30 30 | Copy Character Set from ROM to RAM | 129 |
| 1B 3F n | Cancel User-Defined Characters | 129 |
| 1B 45 n | Select or Cancel Emphasized Mode | 130 |
| 1B 47 n | Select Double Strike | 130 |
| 1B 48 | Cancel Double Strike | 131 |
| 1B 49 n | Select or Cancel Italic Print | 131 |
| 1B 52 n | Select International Character Set | 133 |
| 1B 56 n | Select or Cancel 90 Degrees Clockwise Rotated Print | 134 |
| 1B 72 n | Select Print Color | 134 |
| 1B 74 n | Select International Character Set | 133 |

| Code (Hexadecimal) | Command | Page |
|---|---|---|
| 1B 7B n | Select or Cancel Upside Down Printing Mode | 135 |
| 1D 21 n | Select Character Size | 135 |
| 1D 42 n | Select or Cancel White/Black Reverse Print Mode | 137 |
| 1F 05 n | Select Superscript or Subscript Modes | 138 |

## Graphics Commands

| Code (Hexadecimal) | Command | Page |
|---|---|---|
| 11 n1 ... nk | Print Raster Graphics | 140 |
| 1B (+*.bmp) | Download BMP Logo | 140 |
| 1B 2A m n1 n2 d1…dn | Select Bit Image Mode | 141 |
| 1B 2E m n rl rh d1…dn | Advanced Raster Graphics | 143 |
| 1B 4B n1 n2 d1…dn | Select Single-Density Graphics | 144 |
| <span style="color:red">1B 4C</span> | <span style="color:red">Select Double Density Graphics (7193 Emulation Mode)</span> | <span style="color:red">145</span> |
| 1B 59 n1 n2 d1…dn | Select Double-Density Graphics | 144 |
| 1D 23 n | Select Current Logo (Downloaded Bit Image) | 145 |
| 1D 2A n1 n2 d1…dn] | Define Downloaded Bit Image | 146 |
| 1D 2F m | Print Downloaded Bit Image | 148 |
| 1F 04 n | Convert 6 Dots/mm Bitmap to 8 Dots/mm Bitmap | 149 |

## Status Commands

**Batch Mode**

| Code (Hexadecimal) | Command | Page |
|---|---|---|
| 1B 75 0 | Transmit Peripheral Device Status | 151 |
| 1B 76 | Transmit Paper Sensor Status | 151 |
| 1D 49 n | Transmit Printer ID | 153 |
| 1D 49 40 n | Transmit Printer ID, Remote Diagnostics Extension | 154 |
| 1D 72 n | Transmit Status | 157 |
| 1F 56 n | Send Printer Software Version | 159 |

## Real Time Commands

| Code (Hexadecimal) | Command | Page |
|---|---|---|

| 10 04 n | Real Time Status Transmission (DLE Sequence) | 163 |
| 10 05 n | Real Time Request to Printer (GS Sequence) | 166 |
| 1D 03 n | Real Time Request to Printer (DLE Sequence) | 166 |
| 1D 04 n | Real Time Status Transmission (GS Sequence) | 163 |
| 1D 05 | Real Time Printer Status Transmission | 167 |

## Unsolicited Status Update

| Code (Hexadecimal) | Command | Page |
| --- | --- | --- |
| 1D 61 n | Select or Cancel Unsolicited Status Update | 168 |
| 1D 1F | Enable/Disable Unsolicited Status Update | 168 |
| 1D 1E | Baseline State Request | 169 |

## Barcode Commands

| Code (Hexadecimal) | Command | Page |
| --- | --- | --- |
| 1D 48 n | Select Printing Position for HRI Characters | 173 |
| 1D 66 n | Select Pitch for HRI Characters | 174 |
| 1D 68 n | Select Bar Code Height | 174 |
| 1D 6B m d1…dk 00 or 1D 6B m n d1…dn | Print Bar Code | 175 |
| 1D 77 n | Select Bar Code Width | 178 |

## Page Mode Commands

| Code (Hexadecimal) | Command | Page |
| --- | --- | --- |
| 0C | Print and Return to Standard Mode | 179 |
| 18 | Cancel Print Data in Page Mode | 179 |
| 1B 0C | Print Data in Page Mode | 180 |
| 1B 4C | Select Page Mode | 180 |
| 1B 53 | Select Standard Mode | 181 |
| 1B 54 n | Select Print Direction in Page Mode | 182 |
| 1B 57 n1, n2…n8] | Set printing Area in Page Mode | 183 |
| 1D 24 nL nH | Set Absolute Vertical Print Position in Page Mode | 184 |
| 1D 5C nL nH | Set Relative Vertical Print Position in Page Mode | 185 |

## Macro Commands

| Code (Hexadecimal) | Command | Page |
|---|---|---|
| 1D 3A | Start or End Macro Definition | 186 |
| 1D 5E r t m | Execute Macro | 187 |

## User Data Storage Commands

| Code (Hexadecimal) | Command | Page |
|---|---|---|
| 1B 27 m addr d1…dm | Write to User Data Storage | 188 |
| 1B 34 m addr | Read from User Data Storage | 188 |
| 1B 6A k | Read from Non-Volatile Memory | 188 |
| 1B 73 n1 n2 k | Write to Non-Volatile Memory (NVRAM) | 189 |
| 1D 22 n | Select Memory Type (SRAM/Flash) Where to Save Logos or User-Defined Fonts | 189 |
| 1D 22 55 n1 n2 | Flash Allocation | 190 |
| 1D 40 n | Erase User Flash Sector | 191 |
| IF 11 [m n],[m n]…[m n] 0FFH | Printer Setting Change | 192 |

## Asian Character Commands

| Code (Hexadecimal) | Command | Page |
|---|---|---|
| 1C 21 n | Select print modes for Kanji characters | 195 |
| 1C 2D n | Turn underline mode ON/OFF for Kanji | 196 |
| 1C 32 c1 c2 d1…dn | Define user-defined Kanji characters | 196 |
| 1C 53 n1 n2 | Set Kanji character spacing | 197 |
| 1c 57 n | Set quadruple mode ON/OFF for Kanji | 197 |

## Flash Download Commands

| Code (Hexadecimal) | Command | Page |
|---|---|---|
| 1B 5B 7D | Switch to Flash Download Mode | 198 |
| 1D 00 | Request Printer ID | 198 |
| 1D 01 | Return Segment Number Status of Flash Memory | 199 |
| 1D 02 n | Select Flash Memory Sector to Download | 199 |
| 1D 06 | Get Firmware CRC | 199 |
| 1D 07 | Return Microprocessor CRC | 200 |
| 1D 0E | Erase the Flash Memory | 200 |
| 1D 0F | Return Main Program Flash CRC | 200 |
| 1D 10 n | Erase Selected Flash Sector | 201 |

| 1D 11 aL aH cL cH d1…dn | Download to Active Flash Sector | 201 |
|---|---|---|
| 1D FF | Reboot the Printer | 202 |

## Double Side Printing Commands

| Hexadecimal Command Code and Operands | Command | Page |
|---|---|---|
| 1F 60 $n$ | Select Thermal Printing Modes | 203 |
| 1F 61 $n$ | Select Thermal Printing Side | 205 |
| 1F 62 | Start Double Sided Printing | 206 |
| 1F 63 $n$ | Select or Cancel Upside Down Printing for Double Side Mode | 206 |
| 1F 64 $n$ | Swap Front Side and Back Side | 207 |
| 1F 65 $n$ $k_1$ $d_1$ $d_2$ … $d_i$ 0 | Download 1-line Top/Bottom/Reprint Message into ROM | 208 |
| 1F 66 $n$ | Enable Top/Bottom Message | 211 |
| 1F 67 $n$ | Select nth Macro | 212 |
| 1F 68 | Start or End Pre-Defined Back Side Printing Data Definition | 213 |
| 1F 69 $n1n2$ | Define Minimum Receipt Length | 213 |
| 1F 6A **n [m, o]** | Print a Variable | 215 |
| 1F 6B$n$ $d_1$ $d_2$…$d_i$ 0 | Define a Variable | 215 |
| 1F 6C $n$ | Return Thermal Printing Mode (Batch mode command) | 217 |
| 1F 6D $n$ | Return Thermal Printing Mode (Real time command) | 218 |

## Comparison Chart

The following table details the list of commands whose behavior differs from the 7193 and the 7198 because of the physical differences of a 6 dots/mm head (7193) versus an 8 dots/mm head (7198).

| Command | Description | Difference between 7193 and 7198 configured in 7193 Emulation Mode. |
|---|---|---|
| 15 *n* | Feed *n* Dot Rows | This command will move the paper on the receipt in n/203 inch steps instead of n/152 inch steps. |
| 16 *n* | Add *n* Extra Dot Rows | The dot rows will be measured in n/203 inches versus n/152 inches. |
| 1B 20 *n* | Set Right-Side Character Spacing | This command sets the right side spacing to "n" horizontal motion units. By default, these units are in terms of 1/203 inches versus 1/152 inches. |
| 1B 24 *n1 n2* | Set Absolute Starting Position | For graphics commands, the position is scaled to best 7193. In text mode, the equivalent character position is calculated. |
| 1B 26 *s c1 c2 n1 d1...nn dn*] | Define User-Defined Character Set | Since the dots on the 7198 print head are smaller, user-defined characters that were used on the previous printer will appear smaller on the 7198 printer. |
| 1B 2A *m n1 n2 d1...dn* | Select Bit Image Mode | In 7193 Emulation Mode, graphics are scaled to best match the size of the graphic in the 7193 printer. |
| 1B 33 *n* | Set Line Spacing | This command uses *n* in terms of n/360 inches. Since the 7193 had a fundamental step of 1/152 inch and the 7198 has a fundamental step of 1/203 inch, the actual line spacing will not exactly match the requested spacing. |
| 1B 4A *n* | Print and Feed Paper | (Same as above) |
| 1B 59 *n1 n2 d1...dn* | Select Double-Density Graphics | In 7193 Emulation Mode, the printer scales the graphics to |

| Command | Description | Difference between 7193 and 7198 configured in 7193 Emulation Mode. |
|---|---|---|
| | | provide the best match. |
| 1B 5C *n1 n2* | Set Relative Print Position | The parameter to this command is in units of dots. However, the command moves and aligns to character positions. In 7193 Emulation Mode, this command calculates how many character positions to move based on the 7193 character width in dots (10) versus the 7198 (13). |
| 1B 61 *n* | Select Justification | This command does true dot resolution alignment for centering versus character-aligned centering. |
| 1D 2A *n1 n2 d1...dn*] | Define Downloaded Bit Image | In 7193 Emulation Mode, this command scales the incoming data to provide a best match to the size of the image as it printed on 7193. |
| 1D 2F *m* | Print Downloaded Bit Image | (Same as above) |

# Command Descriptions

This section provides the detailed description of the commands.  These commands are separated into groups according to their function or use.  The previous sections can be used as an index for the following sections.

The following lists and describes the headings used to present the elements of the commands in the descriptions in this section.  Each command code is presented in three formats: ASCII, hexadecimal, and decimal.  Choose the format that best suits the programming implementation.  The printer interprets the 8-bit bytes it gets through its communication interface; it does not care what format the program lists them in.

| | |
|---:|---|
| **Name:** | **Name of Command** |
| **ASCII:** | The ASCII representation of the command control code followed by its operands. |
| **Hexadecimal:** | The hexadecimal representation of the command control code followed by its operands. |
| **Decimal:** | The decimal representation of the command control code followed by its operands. |
| **Operand *n*:** | A description of the command operand.  Other command operands may be m, p1, p2, x, or y. |
| **Range of *n*:** | The upper and lower limits or list of possible values of the command operand.  The values are listed as decimal values unless specified otherwise. |
| **Default of *n*:** | The command operand default value after printer reset or startup. |
| **Description:** | A brief description of the use of the command. |
| **Formulas:** | Any formulas used for this command. |
| **Example:** | Coding example of how to send the command in Visual Basic. This code assumes we are doing output to an opened and ready device called "MSCOMM1."  The examples use the hexadecimal command code formats; the ASCII or decimal formats could also be used in VB.  In commands that use an operand, a specific value is used, and the result of using the selected value for the operand is described. |
| **Exceptions:** | Describes any exceptions to this command, e.g., incompatible |

commands.

**Related Information:** Describes related information for this command, e.g., bit information.

## Printer Function Commands

The printer function commands control the following basic printer functions and are described in order of their hexadecimal codes:

1.  Resetting the printer
2.  Cutting the paper
3.  Opening the cash drawers

### Clear Printer

| | |
|---|---|
| **ASCII:** | DLE |
| **Hexadecimal:** | 10 |
| **Decimal:** | 16 |

Clears the print line buffer without printing and sets the printer to the following condition:

1.  Double-Wide command (0x12) is cancelled
2.  Line Spacing, Pitch, and User-Defined Character Sets are maintained at current selections (RAM is not affected)
3.  Single-Wide, Single-High, Non-Rotated, and Left-Aligned characters are set
4.  Printer is restarted and error status is cleared if a fault condition existed
5.  Printing position is set to column one
6.  Knife is homed

- Exceptions:
- 
- A DLE command followed by an 04 or 05 is interpreted as a "real time command".
  (See Real Time commands)
-

## Perform Partial Knife Cut (Previously command was full knife cut)

| **ASCII**: | EM | or | ESC i |
|---|---|---|---|
| **Hexadecimal**: | 19 | or | 1B 69 |
| **Decimal:** | 25 | or | 27 105 |

Cuts the receipt, leaving .20 inch (5 mm) of paper. This command is implemented the same as Partial Knife Cut (1A, 1B 6D). There are two codes for this command. Both codes perform the same function.

A Line Feed is executed first if print buffer is not empty.

## Perform Partial Knife Cut

| **ASCII**: | SUB | or | ESC m |
|---|---|---|---|
| **Hexadecimal**: | 1A | or | 1B 6D |
| **Decimal:** | 26 | or | 27 109 |

Cuts the receipt, leaving 5 mm (.20 inch) of paper. This command is implemented the same as Full Knife Cut (19, 1B 6D) which results in a partial knife cut. There are two codes for this command and both perform the same function.

**Exceptions:**

Line Feed is executed first if the buffer is not empty.

## Generate Tone

| | |
|---|---|
| **ASCII:** | ESC  BEL |
| **Hexadecimal:** | 1B   07 |
| **Decimal:** | 27   7 |

Generates an audible tone. This allows the application to provide an audiable tone to the operator.

## Initialize Printer

| | |
|---|---|
| **ASCII:** | ESC @ |
| **Hexadecimal:** | 1B 40 |
| **Decimal:** | 27 64 |

**Default:**

| | |
|---|---|
| **Character Pitch** | 15.6 CPI |
| **Column Width** | 44 characters (80mm)<br>32 characters (58mm) |
| **Extra Dot Rows** | 2 |
| **Character Set** | Code Page 437 |
| **Printing Position** | Column One |

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

Single-Wide, Single-High, Non-Rotated, and Left-Aligned characters are set and User-defined characters or logo graphics are cleared (Flash Memory is not affected). Tabs reset to default.

## Select Sensors to Stop Printing

**ASCII**:          ESC c 4 $n$

**Hexadecimal**:    1B 63 34 $n$

**Decimal:**        27 99 52 $n$

**Value of $n$** :

| Bit | Function |
| --- | --- |
| 0, 1 | Stop Receipt on Receipt Low |
| 2 - 7 | Undefined |

**Default:**        0

Determines which sensor stops printing on the receipt station. The command does not affect the paper out sensor on the receipt station, which will automatically stop the printer when the paper is depleted.

## Enable or Disable Panel Buttons

**ASCII**:          ESC c 5 $n$

**Hexadecimal**:    1B 63 35 $n$

**Decimal:**        27 99 53 $n$

**Value of $n$ :**    0 = Enable

                    1 = Disable

**Default:**        0 (Enable)

Enables or disables the Paper Feed Button. If the last bit is 0, the Paper Feed Button is enabled. If the last bit is 1, the Paper Feed Button is disabled so pressing the paper feed button will result in no response.

**Related Information:**

Functions that require using the Paper Feed Button (except for the Execute Macro [1D 5E] command) cannot be used when it is disabled with this command.

## Generate Pulse to Open Cash Drawer

**ASCII:**          ESC p *n* *p*1 *p*2

**Hexadecimal:**    1B 70 *n* *p*1 *p*2

**Decimal:**        27 112 *n* *p*1 *p*2

**Value of *n* :**   0, 48 = Drawer 1

                    1, 49 = Drawer 2

**Value of *p1*:**   0 - 255

**Value of *p2*:**   0 - 255

Sends a pulse to open the cash drawer.

**Formulas:**

The value for either *p1* or *p2* is the hexadecimal number multiplied by 2 msec to equal the total time.

1.  On time = *p1* x 2 msec
2.  Off time = *p2* x 2 msec

**Related Information:**

The off-time is the delay before the printer performs the next operation.

Refer to cash drawer specifications for required on and off times.

## Select Cut Mode and Cut Paper

**ASCII**:              GS V *m*     or     GS V *m n*

**Hexadecimal**:     1D 56 *m*     or     1D 56 *m n*

**Decimal:**        29 86 *m*     or     29 86 *m n*

**Value of *m***:     Selects the mode as shown in the table

**Value of *n* :**     Determines cutting position only if *m* is 65 or 66.

| *m* | Feed and Cut Mode |
| --- | --- |
| 0, 48 | Full cut (no extra feed). Partial cut on the 7198. |
| 1, 49 | Partial cut (no extra feed). |
| 65 | Feeds paper to cutting position + (*n* times vertical motion unit), and cuts the paper completely. |
| 66 | Feeds paper to cutting position + (*n* times vertical motion unit), and performs a partial cut. |

**Range of *m*:**    0, 48; 1, 49

                      65, 66 (when used with *n*)

**Range of *n*:**    0 - 255

**Default of *n*:**    0

**Default of *m*:**    0

Selects a mode for cutting paper and cuts the paper. There are two formats for this command, one requiring one parameter *m*, the other requiring two parameters, *m* and *n*. The format is indicated by the parameter *m*.

**Formulas:** *n* times the vertical motion unit is used to determine the cutting position to the distance that the paper is fed.

**Exceptions:**
If *m* is out of the specified range, the command is ignored.

### Print Test Form

**ASCII:**            US t

**Hexadecimal:**    1F 74

**Decimal:**        31 116

Prints the current printer configuration settings on the receipt.

Disabled in page mode.

**Exception**:

This command is available in 7194 Mode only.

## Vertical Positioning and Print Commands

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

### Print and Feed Paper One Line

**ASCII:**            LF

**Hexadecimal:**    0A

**Decimal:**        10

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

**Related Information:**

Carriage Return + Line Feed, prints and feeds only one line.

### Print and Carriage Return

**ASCII:**            CR

**Hexadecimal:**    0D

**Decimal:**        13

Prints one line from the buffer and feeds paper one line. The printer can be set through the configuration menu to ignore or use this command. Some applications expect the command to be ignored while others use it as print command.

**Related Information:**

See Ignoring/Using the Carriage Return in *Diagnostics* for more information.

Carriage Return + Line Feed, prints and feeds only one line.

## Feed *n* Print Lines

| | |
|---|---|
| **ASCII:** | DC4 *n* |
| **Hexadecimal:** | 14 *n* |
| **Decimal:** | 20 *n* |
| **Value of *n*:** | The number of lines to feed at current line height setting. |
| **Range of *n* :** | 0 – 127  7193 Emulation Mode |
| | 0 – 255  7194 Emulation Mode |

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

Ignored if the current line is not empty.

## Feed *n* Dot Rows

| | |
|---|---|
| **ASCII:** | NAK *n* |
| **Hexadecimal:** | 15 *n* |
| **Decimal:** | 21 *n* |
| **Value of *n*:** | $n/203$ inch |
| **Range of *n* :** | 0 – 127 7193 Emulation Mode |
| | 0 – 255 7194 Emulation Mode |

Feeds paper n dot rows without printing.  Receipt moves n rows if the print buffer is empty.

## Add *n* Extra Dot Rows

**ASCII:**        SYN *n*

**Hexadecimal:**   16 *n*

**Decimal:**      22 *n*

**Value of *n*:**    $n/203$ inch

**Range of *n*:**    0 - 12

**Default:**       3

Adds *n* extra dot rows to the character height to increase space between print lines or decrease number of lines per inch.

**Formulas:**

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

Receipt Station

| Extra Rows | Lines Per Inch | Dot Rows |
|---|---|---|
| 0 | 8.47 | 24 |
| 1 | 8.13 | 25 |
| 2 | 7.81 | 26 |
| **3** | **7.52** | **27** |
| 4 | 7.25 | 28 |
| 5 | 7.00 | 29 |
| 6 | 6.77 | 30 |
| 7 | 6.55 | 31 |
| 8 | 6.35 | 32 |
| 9 | 6.16 | 33 |
| 10 | 5.98 | 34 |
| 11 | 5.81 | 35 |
| 12 | 5.64 | 36 |

## Print

**ASCII:**          ETB

**Hexadecimal:**    17

**Decimal:**        23

Prints one line from the buffer and feeds paper one line. Executes LF on receipt.

- 

## Set Line Spacing to 1/6 Inch

**ASCII:**          ESC 2

**Hexadecimal:**    1B 32

**Decimal:**        27 50

**Default:**        0.13 Inch (3.33 mm)

Sets the default line spacing to 1/6 of an inch (4.25 mm).

- 

## Set Line Spacing

**ASCII**:          ESC 3 $n$

**Hexadecimal**:    1B 33 $n$

**Decimal:**        27 51 $n$

**Value of $n$:**     $n/406$ inches in 7194 Emulation Mode

                    $n/360$ inches in 7193 Emulation Mode

**Range of $n$:**     0 – 255

**Default:**        .13 inch (3.37 mm or 7.52 lines per inch, 3 extra dot rows.).

Sets the line spacing to n/406 inches. The minimum line spacing is 8.5 lines per inch. The line spacing equals the character height when $n$ is too small.

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

Related Information:

For more information, see the description of the Set Horizontal and Vertical Minimum Motion Units command in this document.

## Print and Feed Paper

**ASCII**:           ESC J *n*

**Hexadecimal**:    1B 4A *n*

**Decimal:**      27 74 *n*

**Value of *n*:**     *n*/203 inches in 7194 Emulation Mode

                    *n*/360 inches in 7193 Emulation Mode

**Range of *n*:**     0 - 255

Prints one line from the buffer and feeds the paper.

The line height equals the character height when *n* is too small.

- 

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

- 

**Related Information:**

For more information, see the description of the Set Horizontal and Vertical Minimum Motion Units command in this document.

## Print and Feed *n* Lines

| | |
|---|---|
| **ASCII**: | ESC d *n* |
| **Hexadecimal**: | 1B 64 *n* |
| **Decimal**: | 27 100 *n* |
| **Value of *n*:** | Number of lines to be printed and fed. |
| **Range of *n*:** | 1 – 255   (0 is interpreted as 1 on the receipt station) |

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

- 
- 

## Set Horizontal and Vertical Minimum Motion Units

| | |
|---|---|
| **ASCII:** | GS P *x y* |
| **Hexadecimal:** | 1D 50 *x y* |
| **Decimal:** | 29 80 *x y* |
| **Value of *x*:** | Horizontal |
| **Value of *y*:** | Vertical |
| **Range of *x*:** | 0 - 255 |
| **Range of *y*:** | 0 - 255 |
| **Default: of *x*:** | 203 |
| **Default: of *y*:** | 203 |

Sets the horizontal and vertical motion units to $1/x$ inch and $1/y$ inch respectively.

When *x* or *y* is set to 0, the default setting for that motion unit is used.

The default horizontal motion is $x = 203$.

# Horizontal Positioning Commands

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

## Horizontal Tab

**ASCII:**        HT

**Hexadecimal:**    09

**Decimal:**       9

Moves the print position to the next tab position set by the Set Horizontal Tab Positions (1B 44 $n1$ $n2$ ... 00) command. The print position is reset to column one after each line.

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

When there are no tabs defined to the right of the current position, or if the next tab is past the right margin, line feed is executed . HT has no effect in page mode. Printer initialization sets 32 tabs at column 9, 17, 25, … (Every 8 characters)

- 

## Set Column

**ASCII**:        ESC DC4 $n$

**Hexadecimal**:    1B 14 $n$

**Decimal:**       27 20 $n$

| **Value of $n$:** | 1-44 (Standard, 80 mm) | 1-32 (Standard, 58 mm) |
| --- | --- | --- |
| | 1-56 (Compressed, 80 mm) | 1-42 (Compressed, 58 mm) |

**Default of $n$:**    1

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

**Exceptions**:

The command cannot be used with Single- or Double-Density graphics.

## Set Absolute Starting Position

**ASCII:**   ESC $ *n1 n2*

**Hexadecimal:** 1B 24 *n1 n2*

**Decimal:**   27 36 *n1 n2*

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

**Value of *n1*:**  Remainder after dividing *n* by 256.

**Value of *n2*:**  Integer after dividing *n* by 256.

The values for *n*1 and *n*2 are two bytes in low byte, high byte word orientation.

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

**Formulas:**

Determine the value of *n* by multiplying the column for the absolute starting position by 10 (standard pitch) or 8 (compressed pitch). The example shows how to calculate column 29 (10 dots per column) as the absolute starting position.

28 x 10 = 280 dots (beginning of column 29)
280/256 = 1, remainder of 24
*n*1 = 24  *n*2 = 1

**Related Information:**

This command is also used in the graphics mode. See Graphics Commands in this chapter for more information.

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

## Set Horizontal Tabs

**ASCII**:              ESC D *[n] k* NUL

**Hexadecimal**:   1B 44 *[n] k* 00

**Decimal:**        27 68 *[n] k* 0

**Value of *n*:**   Column for tab minus one.

                    *n* is always less than or equal to the current selected
                    column width.

**Value of *k*:**   0 - 32

**Default:**        Every 8 characters from column. 1 (9, 17, 25, etc.) for
                    normal print.

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

The tab positions remain unchanged if the character widths are changed after the tabs are set. This command ends with hexadecimal 00; hexadecimal 1B 44 00 clears all tabs. Tabs assumed to be in strictly ascending order. A tab out of order terminates the command string as if it were 00, and remaining tab values are taken as normal data.

**Formulas:**

Set the tab positions in ascending order and put Hex 00 at the end.

Hex 1B 44 00 (number of tabs not specified) clears all tab positions.

**Exceptions:**

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

## Set Relative Print Position

**ASCII:** ESC \ *n1 n2*

**Hexadecimal:** 1B 5C *n1 n2*

**Decimal:** 27 92 *n1 n2*

**Value of *n*:**

To Move the Relative Starting Position Right of the Current Position by *n* dots:

*n*1 = Remainder after dividing *n* by 256.

*n*2 = Integer after dividing *n* by 256.

The values for *n*1 and *n*2 are two bytes in low byte, high byte word orientation.

To Move the Relative Starting Position Left of the Current Position by *n* dots:

*n*1 = Remainder after dividing (65,536-*n*) by 256

*n*2 = Integer after dividing (65,536-*n*) by 256

The values for *n*1 and *n*2 are two bytes in low byte, high byte word orientation.

Moves the print starting position the specified number of dots either right (up to the right margin) or left (up to the left margin) of the current position. The print starting position is reset to the first column after each line.

**Formulas:**

To move to the left:

Determine the value of *n* by multiplying the number of columns to move left of the current position by 13 (standard pitch) or 10 (compressed pitch). The example shows how to set the relative position two columns in standard pitch (10 dots per column) to the left of the current position.

2 x 10 = 20 dots (two columns to be moved left of the current position)
65,536-20 = 65516

65,516/256 = 255, remainder of 236
*n1* = 236    *n2* = 255

To move to the right:

Determine the value of *n* by multiplying the number of columns to move right of the current position by 10 (standard pitch) or 8 (compressed pitch). The example shows how to set the relative position two columns in standard pitch (10 dots per column) to the right of the current position.

2 x 10 = 20 dots (two columns to be moved right of the current position)
20/256 = 0, remainder of 20
*n1* = 20     *n2* = 0

**Related Information:**

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

command (Set Relative Print Position) will be interpreted accordingly. For more information, see the description of the Set Horizontal and Vertical Minimum Motion Units command (1D 50) in this document.

**Compatibility Information (7194 receipt mode vs. 7193 receipt mode)**

There is a difference in the normal behavior of this command in 7194 Emulation Mode as compared to the original 7193. The difference exists when the command is used to move to the left. The 7193 processes the whole print string prior to putting it in the buffer for the print head. This method of processing allows the 7193 to backup in the print string and replace characters and their associated attributes when a "Set Relative Print Position" command instructs the printer to move the print position to the left.

In order to improve the speed of printing, the 7194 moves the data into a buffer for the print head when it receives it. When the "Set Relative Print Position" command contains a move to the left, this causes the new data to overstrike the previous data. This behavior can be used to an application's advantage to provide the ability to create compound characters on the receipt station.

## Select Justification

**ASCII**:  ESC a *n*

**Hexadecimal**:  1B 61 *n*

**Decimal:**  27 97 *n*

**Value of *n*:**  0, 48 = Left Aligned

1, 49 = Center Aligned

2, 50 = Right Aligned

**Range of *n*:**  0 – 2, 48-50

**Default:**  0 (Left aligned)

Specifies the alignment of the characters, graphics, logos, and bar codes on the receipt station.

**Exceptions:**

The command is valid only when input at the beginning of a line.

## Set Left Margin

**ASCII**:  GS L *nL* *nH*

**Hexadecimal**:      1D 4C *nL nH*

**Decimal:**         29 76 *nL nH*

**Range of *nL*:**    0 - 255

**Range of *nH*:**    0 - 255

**Default:**         80 mm width    576 dots (the maximum printable area)

                     58 mm width    424 dots (the maximum printable area)

Sets the left margin of the printing area. The left margin is set to $(((nH \times 256) + nL)$ times horizontal motion unit) inches. The horizontal motion units are set by the Set Horizontal and Vertical Minimum Motion Units command (1D 50), described in this manual.

The width of the printing area is set by the Set Printing Area Width command (1D 57), which follows this command. See the Set Printing Area Width command (1D 57) in this document for a description of that command.

If the setting exceeds the printable area, the maximum value of the printable area is used. The maximum printable area is 576 dots. See the illustration.

**Formulas:**

To set the left margin to one inch at the default horizontal motion unit of 1/203 inches, send the four-byte string:
```
GS  L  203  0
```

Or, to set the left margin to two inches at the default horizontal motion unit of 1/203 units per inch, send the four-byte string:
```
GS  L  150  1
```

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

←——— Printable area: 576 dots for 80 mm width, 424 dots for 58 mm width
———→

←——Left margin———→      ←———Printing area width————→
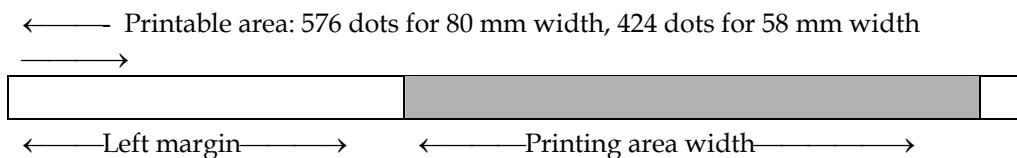
**Exceptions:**

The command is effective only at the beginning of a line.

This command is ignored if the line buffer is not empty.

## Set Printing Area Width
**ASCII**:            GS W *nL nH*

| **Hexadecimal**: | 1D 57 *nL nH* |
|---|---|
| **Decimal:** | 29 87 *nL nH* |
| **Range of *nL*:** | 0 – 255 |
| **Range of *nH*:** | 0 - 255 |
| **Default:** | 80 mm width    576 dots (the maximum printable area) |
| | 58 mm width    424 dots (the maximum printable area) |

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

The width of the printing area is set to $(((nH \times 256) + nL)$ times horizontal motion unit) inches. The horizontal motion units are set by the Set Horizontal and Vertical Minimum Motion Units command (1D 50).

The width of the printing area follows the Set Left Margin command (1D 4C). See the Set Left Margin command (1D 4C…) earlier in this document for a description.

**Formulas:**

To set the width of the printing area to one inch at the default horizontal motion unit of 1/203 inches, send the four-byte string:
```
GS  W  203  0
```

Or, to set the width of the printing area to two inches at the default horizontal motion unit of 1/203 units per inch, send the four-byte string:
```
GS  W  150  1
```

Where 2 inches = 406/203, and 406 = (1 X 256) + 150.
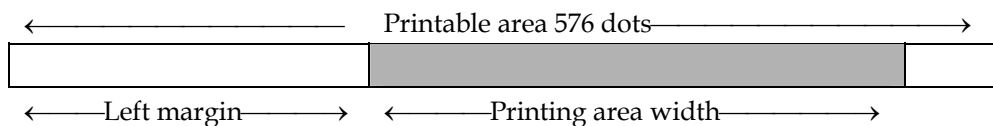
←——————————————— Printable area 576 dots———————————————→

←——Left margin———→    ←———————Printing area width—————————→

**Exceptions**:

This command is effective only at the beginning of a line.

This command is ignored if the line buffer is not empty, and only effects the Receipt interface.

If the setting exceeds the printable area, the maximum value of the printable area is used. The maximum printable area is 576 dots for 80 mm paper width and 424 dots for 58 mm paper width. See the illustration in the Set Left Margin command (1D 4C).

## Print Characteristic Commands

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

### Select Double-Wide Characters

| | |
|---|---|
| **ASCII:** | DC2 |
| **Hexadecimal:** | 12 |
| **Decimal:** | 18 |

Prints double-wide characters. The printer is reset to single-wide mode after a line has been printed or the Clear Printer (0x10) command is received. Double-wide characters may be used in the same line with single-wide characters.

### Select Single-Wide Characters

| | |
|---|---|
| **ASCII:** | DC3 |
| **Hexadecimal:** | 13 |
| **Decimal:** | 19 |

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

### Select 90 Degree Counter-Clockwise Rotated Print

| | |
|---|---|
| **ASCII**: | ESC DC2 |
| **Hexadecimal**: | 1B 12 |
| **Decimal:** | 27 18 |

Rotates characters 90 degrees counter-clockwise. The command remains in effect until the printer is reset or until a Clear Printer (0x10), Select or Cancel Upside-Down Print (1B 7B), or Select or Cancel Rotated Print (1B 56) command is received.

- Example:
- MSComm1.Output = Chr$(&H1B) & Chr$(&H12)

Exceptions:

This command is valid only at the beginning of a line.

Rotated print and non-rotated print characters cannot be used together in the same line.

Related Information:

See Summary of Rotated Printing in this chapter.

## Select Pitch (Column Width)

**ASCII**:              ESC SYN *n*

**Hexadecimal**:    1B 16 *n*

**Decimal:**         27 22 *n*

**Value of *n*:**      0 = Standard Pitch

                        1 = Compressed Pitch

**Default:**          0 (Standard pitch)

Selects the character pitch for a print line.

**Formulas:**

The following table provides the print characteristics for both pitches.

| Pitch | Columns | CPI |
|---|---|---|
| Standard | 44 for 80 mm paper | 15.6 |
|  | 32 for 58 mm paper |  |
| Compressed | 56 for 80 mm paper | 20.3 |
|  | 42 for 58 mm paper |  |

Related Information:

See "Technical Specifications" for descriptions of character pitches (print modes).

## Set Character Right-Side Spacing

| | |
|---|---|
| **ASCII**: | ESC SP *n* |
| **Hexadecimal**: | 1B 20 *n* |
| **Decimal:** | 27 32 *n* |
| **Range of *n***: | 0 - 32 |
| **Default:** | 0 |

Sets the right side character spacing to [*n* x horizontal or vertical motion units]. Values for this command are set independently in Standard and Page Mode.

The units of horizontal and vertical motion are specified by the Set Horizontal and Vertical Minimum Motion Units (1D 50…) command. Changes in the horizontal or vertical units do not affect the current right side character spacing. When the horizontal or vertical motion unit is changed by the Set Horizontal and Vertical Minimum Motion Units (1D 50…) command the value must be in even units and not less than the minimum amount of horizontal movement.

In Standard Mode the horizontal motion unit is used.

In Page Mode the horizontal or vertical motion unit differs and depends on the starting position of the printable area. When the starting printing position is the upper left or lower right of the printable area (set by Select Print Direction in Page Mode, 1B 54 n) the horizontal motion unit (*x*) is used. When the starting printing position is the upper right or lower left of the printable area (set by Select Print Direction in Page Mode, 1B 54 n) the vertical motion unit (*y*) is used.

**Exception:**

This command is ignored in 7193 Emulation Mode.

## Select Print Modes

**ASCII**: ESC ! *n*

**Hexadecimal**: 1B 21 *n*

**Decimal:** 27 33 *n*

**Value of *n*:** Pitch selection (standard, compressed, double high, or double wide.)

| Bit | Function | 0 | 1 |
|-----|----------|---|---|
| Bit 0 | Pitch | Standard Pitch[1]<br>15.6 CPI<br>44 Col/Line, (80 mm)<br>32 Col/Line, (58 mm) | Compressed Pitch<br>20.3 CPI<br>56 Col/Line, (80 mm)<br>42 Col/Line, (58 mm) |
| Bit 3 | Emphasized Mode | Canceled | Set |
| Bit 4 | Double-high[2] | Canceled | Set |
| Bit 5 | Double-wide | Canceled | Set |
| Bit 7 | Underlined Mode | Canceled | Set |

Bits 1, 2, 6 are not used.

[1]Standard and compressed pitch cannot be used together in the same line.

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

Selects the print mode: standard, compressed, double high, or double wide.

**Related Information:**

The bits in this command perform the same function as the standalone functions:

1B 16 n      Select Pitch

1B 45 n      Emphasized

12      Double-wide

13      Single-wide

1B 2D n      Underline

## Select or Cancel User-Defined Character Set

**ASCII**:                ESC % *n*

**Hexadecimal**:        1B 25 *n*

**Decimal:**              27 37 *n*

**Value of *n*:**          0= Code Page 437

                         1= User-defined (RAM character set)

                         2= Code Page 850

**Range:**                0 - 2

**Default:**              0 (Code Page 437)

Selects the character set. When an undefined RAM character is selected, the Code Page 437 character is used. See the *Printing Specification Guide* for the character sets.

## Define User-Defined Characters
### Receipt

**ASCII:**              ESC & 3 *c*1 *c*2 *n*1 *d*1 ... *n*n *d*n

**Hexadecimal:**        1B 26 3 *c*1 *c*2 *n*1 *d*1 ... *n*n *d*n

**Decimal:**            27 38 3 *c*1 *c*2 *n*1 *d*1 ... *n*n *d*n

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

Any invalid byte (*s*, *c*1, *c*2, *n*1) aborts the command.

The command clears bit image logo data from RAM. The illustration below provides a sample of a character cell.

## Defining User-Defined Characters

Defines and enters downloaded characters into RAM.
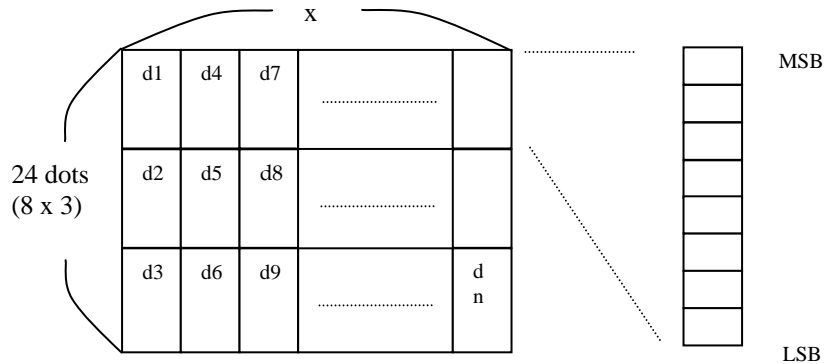


Values and Ranges:

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

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

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

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

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

$n$ = 1-10 (standard pitch), 12 and less accepted but ignored

$n$ = 1-8 (compressed pitch), 12 and less accepted but ignored

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

The number of bytes for a particular character cell is 3 x $n1$.

The bytes are printed down and across each cell.

Related Information:

See 1D 22 $n$ (Select Memory Type Where to Save User-Defined Fonts.)

## Select or Cancel Underline Mode

**ASCII**:          ESC - $n$

**Hexadecimal**:          1B 2D $n$

**Decimal:**          27 45 $n$

**Value of $n$:**          0, 48 = Cancel underline mode

1, 49 = Select underline mode

**Default of *n*:**     0 (Cancels underline mode)

Turns underline mode on or off. Underlines cannot be printed for spaces set by the Horizontal Tab, Set Absolute Start Position, or Set Relative Print Position commands.

This command and the Select Print Mode(s) command (1B 21) turn underline on and off in the same way.

**Exceptions:**

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

This command is only available in 7194 Mode.

## Copy Character Set from ROM to RAM
**ASCII**:          ESC : 0 0 0

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

**Decimal:**        27 58 48 48 48

**Default:**        Code Page 437

Copies characters in the active ROM set to RAM. Use this command to re-initialize the User-Defined Character Set. Code Page 437 is copied by default at initialization.

The command is ignored if current font is the user font.

**Related Information:**

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

## Cancel User-Defined Characters
**ASCII**:          ESC ? *n*

**Hexadecimal**:    1B 3F *n*

**Decimal:**        27 63 *n*

**Value of *n*:**   Specified character code

**Range of *n*:**   32 - 255

Cancels the pattern defined for the character code specified by *n*. After the user-defined character is canceled, the corresponding pattern from Code Page 437 is printed.

**Exceptions:**

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

## Select or Cancel Emphasized Mode

| | |
|---|---|
| **ASCII**: | ESC E *n* |
| **Hexadecimal**: | 1B 45 *n* |
| **Decimal:** | 27 69 |
| **Value of *n*:** | 0 (bit 0), not selected |
| | 1 (bit 0), selected |
| **Range of *n*:** | 0 - 255 |
| **Default:** | 0 (bit 0) |

Starts or stops emphasized printing. The printer is reset to the standard Print Mode after Clear Printer (0x10) command is received.

**Exceptions:**

Only the lowest bit of *n* is effective.

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

Related Information:

This command and the Select Print Mode(s) command (1B 21) function identically.

## Select Double Strike

| | 7193 Emulation | 7194 Emulation |
|---|---|---|
| **ASCII**: | ESC G | ESC G *n* |
| **Hexadecimal**: | 1B 47 | 1B 47 *n* |
| **Decimal:** | 27 71 | 27 71 *n* |
| **Value of *n*:** | | 0 = Off |
| | | 1 = On |

Turns double strike mode on or off. Identical to Emphasized mode command. The printer is reset to the standard print mode after a line has been printed or after a Clear Printer (0x10) command is received.

**Exceptions:**

These settings do not apply in Page Mode. However they can be set or cleared in Page Mode.

Double-strike printing cannot be used with bit-images or downloaded bit-images.

This command functions the same as the **7193** when the printer is in **7193 Emulation** Mode. In Emulation Mode, the command takes a parameter to enable and disable it.

Related Information:

Printer output is the same as in Emphasized Mode.

- 

## Cancel Double Strike

| | |
|---|---|
| **ASCII**: | ESC H |
| **Hexadecimal**: | 1B 48 |
| **Decimal:** | 27 72 |

Turns off double strike mode in **7193 Emulation** Mode.

This command is ignored in the **7194 Emulation** Mode.

## Select or Cancel Italic Print

| | |
|---|---|
| **ASCII**: | ESC I $n$ |
| **Hexadecimal**: | 1B 49 $n$ |
| **Decimal:** | 27 73 $n$ |
| **Value of $n$:** | 0 = Off |
| | 1 = On |
| | (When 0 and 1 are the Least Significant Bit, LSB) |
| **Default:** | 0 (Off) |

Turns Italic print mode on or off. This command is only available in **7194** Mode. Italic print mode is available for built-in, user-defined characters.

**Exceptions:**

Only the lowest bit of *n* is valid. This command is only valid for the receipt station in 7194 Mode.

## Select International Character Set

| **ASCII**: | ESC R *n* | or | ESC t *n* |
|---|---|---|---|

| **Hexadecimal**: | 1B 52 *n* | or | 1B 74 *n* |
|---|---|---|---|

| **Decimal:** | 27 82 *n* | or | 27 116 *n* |
|---|---|---|---|

**Value of *n*:**     7194 Emulation                                       7196 Emulation

0 = Code Page 437          US English          0 =  Code Page 437

1 = Code Page 850 Multilingual          1 = Code Page 850

2 = Code Page 852 Slavic

3 = Code Page 860 Portuguese

4 = Code Page 863 French Canadian

5 = Code Page 865 Nordic

6 = Code Page 858 Multilingual with Euro Symbol

7 = Code Page 866 Cyrillic

8 = Code Page 1252 Windows Latin I

9 = Code Page 862 Hebrew

20 = Code Page Katakana

21 = Code Page 874 Thailand

22 = Code Page 864 Arabic

128 = Code Page 932

129 = Code Page 936

130 = Code Page 949

131 = Code Page 950

**Default:**      0 (Code Page 437)


Selects the character set to be used. See *Print Specifications* for the character sets.

There are two codes for this command. Both codes perform the same function.

Related Information:

This command may also be known as Select Character Code Table.

## Select Character Code Table

See the previous command, Select International Character Set.

## Select or Cancel 90 Degrees Clockwise Rotated Print

| | |
|---|---|
| **ASCII**: | ESC V $n$ |
| **Hexadecimal**: | 1B 56 $n$ |
| **Decimal:** | 27 86 $n$ |
| **Value of $n$:** | 0 = Cancel |
| | 1 = Set |
| **Default:** | 0 (Cancel) |

Rotates characters 90 degrees clockwise. The command remains in effect until the printer is reset or the Clear Printer (0x10) command is received. See Summary of Rotated Printing in this chapter.

## Select Print Color

| | |
|---|---|
| **ASCII**: | ESC r $n$ |
| **Hexadecimal**: | 1B 72 $n$ |
| **Decimal:** | 27 114 $n$ |
| **Value of $n$:** | 0 = Monochrome |
| | 1 = 2$^{nd}$ Color |
| **Default:** | 0 (Monochrome) |

Selects color printing. Color printing is valid for character, graphics, logo and barcode.

- Example:
- MSComm1.Output = Chr$(&H1B) & Chr$(&H72) & Chr$(n)

## Select or Cancel Upside Down Printing Mode

**ASCII**: ESC { *n*

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

**Decimal:** 27 123 *n*

**Value of *n*:** 0 = Cancel

1 = Set

**Default:** 0 (Cancel)

Prints upside-down characters. The character order is inverted in the buffer so text is readable. The command remains in effect until the Rotated Print (1B 12) command is received. Only bit 0 is used. Bits 1-7 are not used. See Summary of Rotated Printing in this document for more information.

Exceptions:

The command is valid only at the beginning of a line.
The Rotated Print command (1B 12) cancels this command.

## Select Character Size

**ASCII**: GS ! *n*

**Hexadecimal**: 1D 21 *n*

**Decimal:** 29 33 *n*

**Value of *n*:** 1 - 8 = vertical number of times normal font

1 – 8 = horizontal number of times normal font

**Range of *n*:** 00 – 07, 10 – 17, … 70 – 77

**Default of *n*:** 0

Selects the character height using bits 0 to 2 and selects the character width using bits 4 to 7, as follows:

Character Width Selection

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

Character Height Selection

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

This command is effective for all characters (except for HRI characters).

In Standard Mode, the vertical direction is the paper feed direction, and the horizontal direction is perpendicular to the paper feed direction. However, when character orientation changes in 90 degree clockwise-rotation mode, the relationship between vertical and horizontal directions is reversed.

In Page Mode, vertical and horizontal directions are based on the character orientation. When characters are enlarged with different sizes on one line, all the characters on the line are aligned at the baseline.

The Select Print Mode (1B 21 n) command can also select or cancel double-width and double-height modes. However, the setting of the last received command is effective.

Exceptions:

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

This is only available in 7194 Mode.

## Select or Cancel White/Black Reverse Print Mode

**ASCII**:              GS B *n*

**Hexadecimal**:        1D 42 *n*

**Decimal:**            29 66 *n*

**Value of *n*:**        0 = Off

**Range of *n*:**        1 = On(Only the lowest bit is used.)

**Default of *n*:**      0 – 255

                        0 (Off)

Turns on White/Black reverse printing mode. This command is only available in 7194 Mode. In White/Black reverse printing mode, print dots and non-print dots are reversed, which means that white characters are formed by printing a black background. When the White/Black reverse printing mode is selected it is also applied to character spacing which is set by Right-Side Character Spacing (1B 20).

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

White/Black Reverse Print Mode does not affect bit image, downloaded bit image, bar code, HRI characters, and spacing skipped by Horizontal Tab (09), Set Absolute Starting Position (1B 24…), and Set Relative Print Position (1B 5C).

White/Black reverse mode has a higher priority than Underline Mode. When Underline Mode is on and White/Black Reverse Print Mode is selected, Underline Mode is disabled, but not canceled.

**Exceptions:**

This is only available in 7194 Mode.

## Select or Cancel Smoothing Mode

**ASCII:**              GS b  *n*

**Hexadecimal:**        1D 62 *n*

**Decimal:**            29 98 *n*

This command is ignored.

## Select Superscript or Subscript Modes

**ASCII:**            US ENQ *n*

**Hexadecimal:**      1F 05 *n*

**Decimal:**          31 05 *n*

**Value of *n*:**     0 = Normal character size

                      1 = Select subscript size

                      2 = Select superscript size

**Default:**          0 (normal size)

Turns superscript or subscript modes on or off. This attribute may be combined with other characters size settings commands ( 12, 13, 1B 21 *n*, 1D 21 *n*, …)

This command is only available on the receipt station in 7194 Native Mode and 7197 Native Mode.

Exceptions:

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

This is only available in 7194 Mode.

## Summary of Rotated Printing

The table shows the combinations of Set/Cancel Upside-Down Print, Set/Cancel Rotated Print (clockwise), and Rotated Print (counterclockwise). Rotated CCW is mutually exclusive with the other two commands. Unintended consequences may result when rotated CCW is mixed with other commands.

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

| Upside Down (1B 7B *n)* | Rotated CW (1B 56 *n)* | Rotated CCW (1B 12) | Resulting Output |
|---|---|---|---|
| Canceled | Canceled | Cleared | A B C |
| Canceled | Set | X | |
| Set | Canceled | X | |
| Set | Set | X | |
| X | X | Set | |

**Note:**    The following print modes cannot be mixed on the same line:

1. Standard and compressed pitch
2. Vertical (normal) and rotated
3. Right-side up and upside down
4. Single high (normal) and double high

# Graphics Commands

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

## Print Raster Graphics

**ASCII:**          DC1 *n1 … nk*

**Hexadecimal:**    11 *n1 … nk*

**Decimal:**       17 *n1 … n72*

**Value of *n*:**     *n1 … nk* = Data bytes

**Range of *n*:**     0 - 255

**Value of *k*:**     k = 72 : 80mm, k = 53 : 58mm

Prints one row of data. N1 … nk : bytes describing the line to print.

**Exceptions:**

Raster graphcs is not avalable in Page Mode

This is only available in 7194 Mode.

## Download BMP Logo

**ASCII:**          ESC (+*.BMP file data)

**Hexadecimal:**    1B (+*.BMP file data)

**Decimal:**       27 (+*.BMP file data)

**Value:**          Maximum width =     576

                          Maximum height =    512

Enters a BMP file data into RAM or Flash.

This command is used by sending the file data of a monochrome BMP file preceded by a 0 x 1B. The bit map is stored in the printer in the same manner as a down loaded bit image.

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

**Exceptions:**

BMP file images that are not monochrome are ignored. This command is only valid for the receipt station.

This is only available in 7194  Mode.

Related Information:

See 1D 22 n (Select Memory Type to save logos.)

## Select Bit Image Mode

**ASCII:**            ESC * *m* *n*1 *n*2 *d*1 ... *d*n

**Hexadecimal:**      1B 2A *m* *n*1 *n*2 *d*1 ... *d*n

**Decimal:**          27 42 *m* *n*1 *n*2 *d*1 ... *d*n

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

See the illustration graphic representation of the bit image.

Values:

| Value of *m* | Mode | No. of Dots (Vertical) | No. of Dots (Horizontal) | Number of Dots/Line |
|---|---|---|---|---|
| 0 | 8 Dot Single Density | 8 (68 DPI) | 0-288 (101DPI, 80mm)<br>0-212 (101DPI, 58mm) | 8x288 (80mm)<br>8x212 (58mm) |
| 1 | 8 Dot Double Density | 8 (68 DPI) | 0-576 (101DPI, 80mm)<br>0-424 (101DPI, 58mm) | 8x576 (80mm)<br>8x424 (58mm) |
| 32 | 24 Dot Single Density | 24 (203 DPI) | 0-288 (101DPI, 80mm)<br>0-212 (101DPI, 58mm) | 24x288 (80mm)<br>24x212 (58mm) |
| 33 | 24 Dot Double Density | 24 (203 DPI) | 0-576 (101DPI, 80mm)<br>0-424 (101DPI, 58mm) | 24x576 (80mm)<br>24x424 (58mm) |

Formulas:

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

8-Dot Single-Density Mode—Receipt

Receipt

Top of Bit Image

d1 d2 d3 d4

dn

MSB

dn

LSB

24-Dot Single-Density Mode—Receipt Only

Top of Bit Image

d1 d4 d7

d2 d5

d3 d6

dn

MSB

dn

LSB
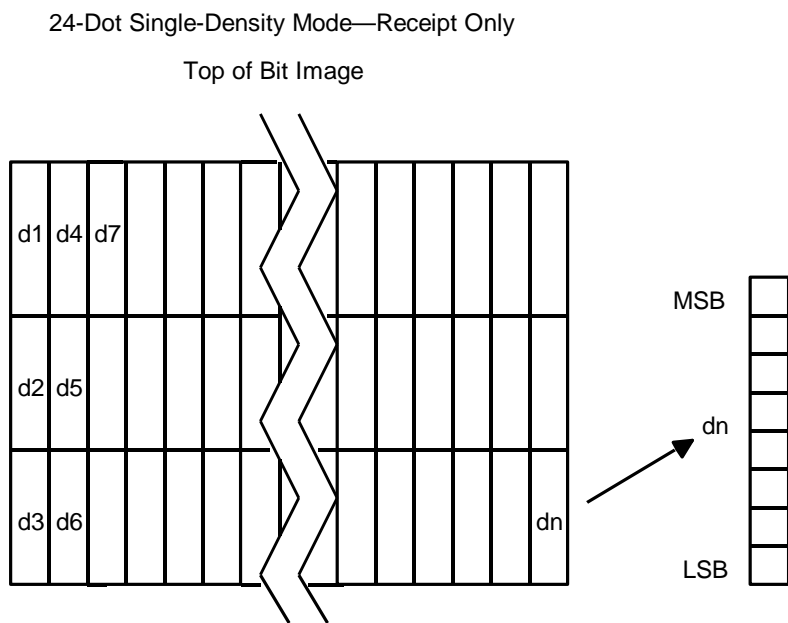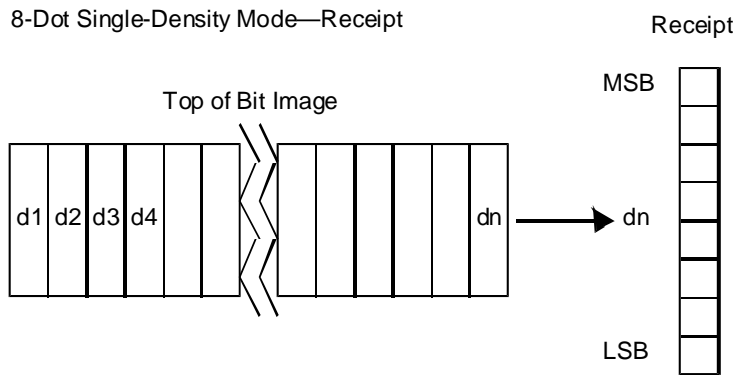
## Print Advanced Raster Graphics

| | |
|---|---|
| **ASCII:** | ESC . *m n rl rh d1 … dn* |
| **Hexadecimal:** | 1B 2E *m n rl rh d1 … dn* |
| **Decimal:** | 27 46 *m n rl rh d1 … dn* |
| **Value of *m*:** | Horizontal offset from left margin = 8 x n dots |
| **Value of *n*:** | Number of data bytes that compose the raster |
| **Value of *r*:** | Number of times the raster has to be printed = 256 x *rh* + *rl* |
| **Value of *d*:** | *d1 … dn* = Data bytes |
| **Range:** | $0 \leq m, n \leq 72$ (80mm), $0 \leq m, n \leq 53$ (58mm) |
| | $0 \leq r \leq 65536$ |
| | $0 \leq d1 … dn \leq 255$ |

Prints a horizontal raster of graphics data one or multiple times.

Horizontal offset and number of data bytes are variable and specified by parameters.

**Exceptions:**

Advanced Raster graphics is not available in Page Mode.

## Select Single-Density Graphics

**ASCII:**                           ESC K *n*1 *n*2 *d*1 … *d*n

**Hexadecimal:**            1B 4B *n*1 *n*2 *d*1 ... *d*n

**Decimal:**                    27 75 *n*1 *n*2 *d*1 ... *d*n

**Value of *n*:**

| Value of *n* (8-Dot Single Density Mode) | Value of *n* (24-Dot Single Density Mode) | Value of *d* |
| --- | --- | --- |
| *n*1 + (256 x *n*2) | 3 x [*n*1 + (256 x *n*2)] | Number of Bytes of Data (Printed Down, Then Across) |

Enters one line of 8-dot single-density graphics into the print buffer. Any print command is required to print the line, after which the printer returns to normal processing mode. The number of bytes sent is represented by the formulas in the table.

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

- Example:
- MSComm1.Output = Chr$(&H1B) & Chr$(&H4B) & Chr$(10) & Chr$(100) Chr$(&HFF). . .  & Chr$(&HFF)

## Select Double-Density Graphics

**ASCII:**            ESC Y *n*1 *n*2 *d*1 … *d*n

**Hexadecimal:**    1B 59 *n*1 *n*2 *d*1 ... *d*n

**Decimal:**        27 89 *n*1 *n*2 *d*1 ... *d*n

**Value of *n*:**

| Value of *n* (8-Dot Single Density Mode) | Value of *n* (24-Dot Single Density Mode) | Value of *d* |
| --- | --- | --- |
| *n*1 + (256 x *n*2) | 3 x [*n*1 + (256 x *n*2)] | Number of Bytes of Data (Printed Down, Then Across) |

Enters one line of 8-dot double-density graphics into the print buffer. Any print command is required to print the line, after which the printer returns to normal processing mode. The number of bytes sent is represented by the formulas in the table.

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

**Exception:**

1B 4C *n1 n2 d1 … dn* is only valid in 7193 Emulation Mode.

## Select the Current Logo (Downloaded Bit Image)

**ASCII:**          GS # *n*

**Hexadecimal:**    1D 23 *n*

**Decimal:**        29 35 *n*

**Range of *n*:**    0 – 255

Selects a logo to be defined or printed. The active logo *n* remains in use until this command is sent again with a different logo *n*.

When this command precedes a logo definition, that definition is stored in Flash Memory as logo *n*. If there is already a different definition in Flash Memory for logo *n*, the first is inactivated and the new definition is used. The inactive definition is not erased from Flash and continues to take up space in Flash Memory.

When this command precedes a logo print command and *n* is different from the previously active logo selected, the printer retrieves the logo definition for *n* from Flash Memory and prints it. If there is no definition for logo *n*, then no logo is printed.

In the case of a previously existing application that expects only one possible logo, the printer will not receive the Select Current Logo (1D 23 *n*) command. In this case, the printer assigns 0 as the active logo identifier. It automatically stores any new logo definition in Flash Memory as logo 0, inactivating any previous logo 0 definition. If the Flash Memory space available for logos fills up with inactive logo 0 definitions, the firmware erases the old definitions at the next power cycle. This is the only case in which the printer erases Flash Memory without an application command.

In the case of a new application using multiple logos, the Select Current Logo (1D 23 *n*) command is used. After that, the printer no longer automatically erases the logo definition Flash Memory page when it fills with multiple definitions. A new application using multiple logos, writing a user-defined character set into Flash Memory, or both, is responsible for erasing the logo and user-defined character set Flash Memory page when the logo area is full or before a new character set is defined.

By default, 7193 Emulation loads downloaded bit image to SRAM, while 7194 Native Mode and 7197 Native Mode loads them to Flash.

### Define Downloaded Bit Image

**ASCII:**          GS * *n*1 *n*2 *d*1 ... *d*n]

**Hexadecimal:**    1D 2A *n*1 *n*2 *d*1 ... *d*n]

**Decimal:**        29 42 *n*1 *n*2 *d*1 ... *d*n

**Value of *n1*:**  See the following table.

**Value of *n2*:**  See the following table.

**Value of *d*:**   See the following table.

| Value of *n*1 | Value of *n*2 | Value of *d* |
|---|---|---|
| 1-72 (8 x *n*1 = Number of Horizontal Dot Columns) | 1-64 (Number of Vertical Bytes)* | Bytes of Data (Printed Down Then Across) |

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

$n = 8 \times n1 \times n2$ ($n1 \times n2$ must be less than or equal to 4608).

Enters a downloaded bit image (such as a logo) into RAM or Flash with the number of dots specified by *n*1 and *n*2 in 7193 Emulation, unless loaded into Flash. The downloaded bit image is available until power is turned off, another bit image is defined, or either Initialize Printer (1B 40), or Define User-Defined Character Set (1B 26), command is received.

By default, 7193 Emulation loads downloaded bit image to SRAM, while 7194 Mode loads them to Flash.

See the illustration on the following page for a graphic representation of the downloaded bit image.

Exceptions:

See the illustration for the Print Downloaded Bit Image command (1D 2F) for a representation of the bit image.

Related Information:

See 1D 22 n (Select Memory Type to store logos) and 1D 23 n (Select the Current Logo.)

## Print Downloaded Bit Image

| **ASCII**: | GS / *m* |
|---|---|
| **Hexadecimal**: | 1D 2F *m* |
| **Decimal:** | 29 47 *m* |
| **Value and Range of *m*:** | |

| Value of *m* | Print Mode | Vertical DPI[1] | Horizontal DPI* |
|---|---|---|---|
| 0 | Normal | 203 | 203 |
| 1 | Double Wide | 203 | 101 |
| 2 | Double High | 101 | 203 |
| 3 | Quadruple | 101 | 101 |

[1]Dot density measured in dots per inch

Prints a downloaded bit image in RAM or Flash on the receipt station at a density specified by *m*. It is ignored if any data is in the print buffer, if the downloaded bit image is undefined, or if the data defined exceeds one line.

See the illustration for a representation of the bit image.
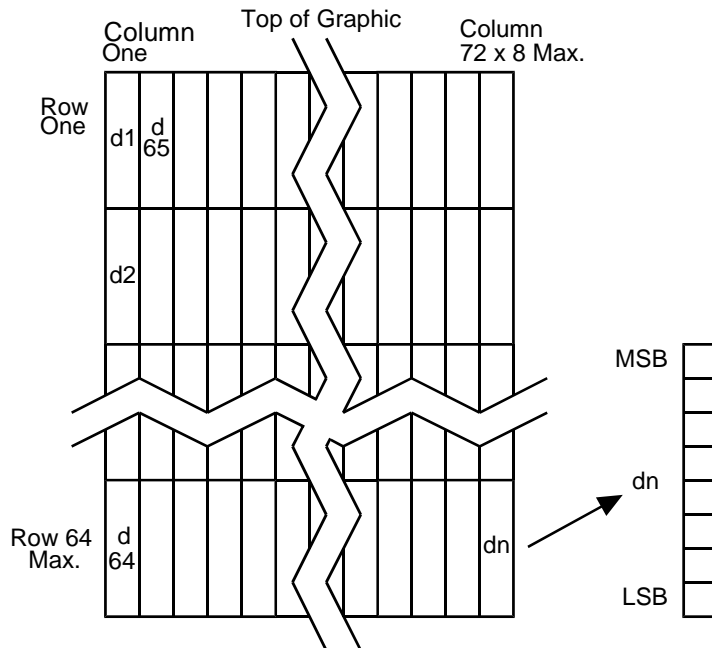


**Related Information:**

See 1D 22 n (Select Memory Type to store logos) and 1D 23 n (Select the Current Logo.)

### Convert 6 Dots/mm Bitmap to 8 Dots/mm Bitmap

| | |
|---|---|
| **ASCII:** | US EOT $n$ |
| **Hexadecimal:** | 1F 04 $n$ |
| **Decimal:** | 31 04 $n$ |
| **Value:** | 0 = Off |
| | 1 = On |
| **Default:** | 0 (Off) |

Selects or cancels 6 dot/mm in 7193 Emulation Mode.

When the 6 dot/mm emulation is selected, logos and graphics are expanded horizontally and vertically to emulate their size on a 6 dot/mm printer. The horizontal positioning commands also emulate positioning on a 6 dot/mm printer.

**Exception:**

This command is available in 7194 Mode only.

# Status Commands

## Status Command Introduction

The 7198 has three methods of providing status to the application. These methods are through Batch Status Commands, Real Time Status Commands, and Unsolicited Status Update messages. An application may use one or more of these methods to understand the current status of the printer. A brief description of each of these methods follows.

**Batch Status Commands** – These commands are sent to the printer and stored in the printer's buffer. Once the printer has processed all the previous commands these commands are processed and the proper status is returned to the application. In the event a condition causes the printer to go BUSY, it stops processing commands from the printer buffer. If a Batch Status Command remained in the buffer during this busy condition, it would not be processed. In fact, no Batch Commands are processed while the printer is in this state.

**Real-Time Commands** – These commands are sent to the printer and are NOT stored in the printer's buffer. Instead, they are acted on immediately (regardless of the printer's BUSY status) and their response (if any) is returned to the application. This gives the application the ability to query the printer when it is in a busy state in order to correct whatever fault has occurred.

Unsolicited Status Update messages

The host can determine if any unsolicited 3-byte sequence from the printer is a USU message by checking the upper 4 bits of the three bytes received. If the upper 4 bits match those of the USU message, then the remaining lower 4 bits are to be interpreted as the information bits of a USU message.

## Batch Mode

For RS-232C printers, these commands enable the printer to communicate with the host computer following the selected handshaking protocol, either DTR/DSR or XON/XOFF. They are stored in the printer's data buffer as they are received, and are handled by the firmware in the order in which they are received.

When a fault occurs, the printer will go busy at the RS-232C interface and not respond to any of the Batch Mode Printer Status commands. If the fault causing the busy condition can be cleared, such as by loading paper, or letting the thermal print head cool down, the printer will resume processing the data in its receive buffer.

## Transmit Peripheral Device Status

**ASCII**:            ESC u 0

**Hexadecimal**:    1B 75 0

**Decimal:**        27 117 0

|  | Bit 0 | Bit 1 |
|---|---|---|
| **Return Value:** | 1 = Drawer 1 closed | 1 = Drawer 2 closed |
|  | 0 = Drawer 1 open | 0 = Drawer 2 open |
|  | (Bits 2-7 are not used) |  |

Transmits current status of the cash drawers. One byte is sent to the host computer. In DTR/DSR protocol the printer waits for DSR = SPACE. If a drawer is not connected, the status will indicate it is closed.

## Transmit Printer Status

**ASCII:**            ESC v

**Hexadecimal:**    1B 76

**Decimal:**        27 118

Sends status data to the host computer. The printer sends one byte to the host computer when it is not busy or in a fault condition. In DTR/DSR protocol, the printer waits for DSR = SPACE.

Status Byte (RS-232C)

| Bit | Function | 0 Signifies | 1 Signifies |
| --- | --- | --- | --- |
| 0 | Receipt Paper | Ok | Low |
| 1 | Receipt Cover or Front Cover | Closed | Open |
| 2 | Receipt Paper | Ok | Out |
| 3 | Knife Position | Ok | Jam |
| 4 | Not Used | Fixed to Zero | Fixed to Zero |
| 5 | Temperature | In valid range | Too hot or too cold |
| 6 | Voltage | In valid range | Too high or too low |
| 7 | Not Used | Fixed to Zero | Fixed to Zero |

- Example:
- MSComm1.Output = Chr$(&H1B) & Chr$(&H76)

Related Information:

See Real Time Commands, in this document for details about fault condition reporting.

## Transmit Printer ID

**ASCII**        GS I *n*

**Hexadecimal**    1D 49 *n*

**Decimal**      29 73 *n*

**Value of *n***      1, 49 = Printer model ID

2, 50 = Type ID

3, 51 = ROM version ID

4, 52 = Logo definition

Transmits the printer ID specified by n. This command is a batch mode command; that is, the response is transmitted after all prior data in the receive buffer has been processed. There may be a time lag between the printer receiving this command and transmitting the response.

**Transmits the printer ID specified by *n* as follows:**

| N | Printer ID | Specification | ID (hexadecimal) |
|---|---|---|---|
| 1, 49 | Printer model ID | NCR 7194 | 0x24  (7194 Emulation |
| 1, 49 | Printer model ID | NCR 7193 | 0x03 (7193 Emulation) |
| 1, 49 | Printer model ID | NCR 7197 | 0xA2 (7197 Emulation) |
| 2, 50 | Type ID | Installed options | Refer to the table below |
| 3, 51 | ROM version ID | ROM version | 0x00 |
| 4, 52 | Logo Definition | Logo Definition | Refer to table below |

**Type ID (n=2)**

| Bit | Off/On | Hex | Decimal | Function |
|---|---|---|---|---|
| 0 | Off | 00 | 0 | No two-byte character code installed. |
|  | On | 01 | 1 | Two-byte character code installed. |
| 1 | Off | 00 | 0 | No knife installed. |
|  | On | 02 | 2 | Knife installed. |
| 2 | - | - | - | Undefined |
| 3 | - | - | - | Undefined |
| 4 | Off | 00 | 0 | Not used. Fixed to Off. |
| 5 | - | - | - | Undefined |
| 6 | - | - | - | Undefined |
| 7 | Off | 00 | 0 | Not used. Fixed to Off. |

**Type ID (n=4)**

| Bit | Off/On | Hex | Decimal | Function |
|-----|--------|-----|---------|----------|
| 0   | Off    | 00  | 0       | No logo definition loaded by application. |
|     | On     | 01  | 1       | Logo loaded by application. |
| 1   | -      | -   | -       | Undefined |
| 2   | -      | -   | -       | Undefined |
| 3   | -      | -   | -       | Undefined |
| 4   | Off    | 00  | 0       | Not used. Fixed to Off. |
| 5   | -      | -   | -       | Undefined |
| 6   | -      | -   | -       | Undefined |
| 7   | Off    | 00  | 0       | Not used. Fixed to Off. |

## Transmit Printer ID, Remote Diagnostics Extension

**ASCII**:             GS I @ $n$

**Hexadecimal**:       1D 49 40 $n$

**Decimal:**           29 73 64 $n$

**Values of $n$:**     Refer to table

**Range of $n$:**      32 – 255

                       (not all defined but reserved)

Performs the remote diagnostic function specified by $n$.

Eighteen remote diagnostic items are defined: eight printer ID items and ten printer tally items. A group of four remote diagnostic functions is assigned to each diagnostic item. Most of the diagnostic items are maintained in non-volatile memory (NVRAM), but some are maintained in read-only memory (ROM).

The table that follows describes the variables.

The first item group in the table includes an example of data to send and to receive. Data sent from the host to write to NVRAM must contain all digits required by the remote diagnostic item. All data must be ASCII. The printer returns all ASCII data. It is preceded by the parameter $n$ to identify the diagnostic item and is followed by a Carriage Return (0D) to signify the end of the data.

The command performs the remote diagnostic function specified by *n* as described in the following table.

| n (hex) | Remote diagnostic item | Function |
|---------|------------------------|----------|
| 20 | Serial number, 10 digit ASCII | Write to flash Rom |
| 21 | Serial number, 10 digit ASCII | Write to flash ROM and print on receipt to verify |
| 22 | Serial number | Not available |
| 23 | Serial number | Return serial number, a total of 12 bytes |

| n (hex) | Remote diagnostic item | Function |
|---------|------------------------|----------|
| 24 | Class/model number 15 digit ASCII | Write to NVRAM |
| 25 | Class/model number | Write to NVRAM and print on receipt to verify |
| 27 | Class/model number | Return Class/model number, a total of 17 bytes |

| n (hex) | Remote diagnostic item | Function |
|---------|------------------------|----------|
| 2B | Boot firmware part number 12 digit ASCII | Return boot firmware part number, a total of 14 bytes. |

| n (hex) | Remote diagnostic item | Function |
|---------|------------------------|----------|
| 2F | Boot firmware CRC 4 digit ASCII | Return boot firmware CRC, a total of 6 bytes. |

| n (hex) | Remote diagnostic item | Function |
|---------|------------------------|----------|
| 33 | Flash firmware part number 12 digit ASCII | Return flash firmware part number, a total of 14 bytes. |

| n (hex) | Remote diagnostic item | Function |
|---------|------------------------|----------|
| 37 | Flash firmware CRC 4 digit ASCII | Return flash firmware CRC, a total of 6 bytes. |

| n (hex) | Remote diagnostic item | Function |
|---------|------------------------|----------|
| 80 | Receipt lines tally (Front side), 8 digit ASCII numeric | Write to NVRAM max 99,999,999 |
| 81 | Receipt lines tally (Front side) | Write to NVRAM and print on receipt to verify |
| 82 | Receipt lines tally (Front side) | Clear receipt lines tally to 0. |
| 83 | Receipt lines tally (Front side) | Return receipt lines tally, preceded by n (83H) to identify |

| n (hex) | Remote diagnostic item | Function |
|---------|------------------------|----------|
| 84 | Knife cut tally, 8 digit ASCII numeric | Write to NVRAM max 99,999,999 |
| 85 | Knife cut tally | Write to NVRAM and print on receipt to verify |
| 86 | Knife cut tally | Clear Knife cut tally to 0. |
| 87 | Knife cut tally | Return Knife cut tally, returns 10 bytes |

| n (hex) | Remote diagnostic item | Function |
|---------|------------------------|----------|
| 88 | Slip character tally, 8 digit ASCII numeric | Write to NVRAM |
| 89 | Slip character tally | Write to NVRAM and print on receipt to verify |
| 8A | Slip character tally | Clear Slip character tally to 0. |
| 8B | Slip character tally | Return Slip character tally, returns 10 bytes |

| n (hex) | Remote diagnostic item | Function |
|---------|------------------------|----------|
| 8C | MICR read tally, 8 digit ASCII numeric | Write to NVRAM max 99,999,999 |
| 8D | MICR read tally | Write to NVRAM and print on receipt to verify |
| 8E | MICR read tally | Clear MICR read tally to 0. |
| 8F | MICR read tally | Return MICR read tally, returns 10 bytes |

| n (hex) | Remote diagnostic item | Function |
|---------|------------------------|----------|
| 90 | Hours on tally, 8 digit ASCII numeric | Write to NVRAM max 99,999,999 |
| 91 | Hours on tally | Write to NVRAM and print on receipt to verify |
| 92 | Hours on tally | Clear Hours on tally to 0. |
| 93 | Hours on tally | Return Hours on tally, returns 10 bytes |

| n (hex) | Remote diagnostic item | Function |
|---------|------------------------|----------|
| 94 | Boot firmware version | Not available |
| 95 | Boot firmware version | Not available |
| 96 | Boot firmware version | Not available |
| 97 | Boot firmware version | Return boot firmware version, returns 6 bytes |

| n (hex) | Remote diagnostic item | Function |
|---------|------------------------|----------|
| A0 | Flash firmware version | Not available |
| A1 | Flash firmware version | Not available |
| A2 | Flash firmware version | Not available |
| A3 | Flash firmware version | Return flash firmware version, returns 6 bytes |

| n (hex) | Remote diagnostic item | Function |
|---------|------------------------|----------|
| A4 | Flash cycles tally, 8 digit ASCII numeric | Write to NVRAM max 99,999,999 |
| A5 | Flash cycles tally | Write to NVRAM and print on receipt to verify |
| A6 | Flash cycles tally | Clear Flash cycles tally to 0. |
| A7 | Flash cycles tally | Return Flash cycles tally, returns 10 bytes |

| n (hex) | Remote diagnostic item | Function |
|---------|------------------------|----------|
| A8 | Knife jams tally, 8 digit ASCII numeric | Write to NVRAM max 99,999,999 |
| A9 | Knife jams tally | Write to NVRAM and print on receipt to verify |
| AA | Knife jams tally | Clear Knife jams tally to 0. |
| AB | Knife jams tally | Return Knife jams tally, returns 10 bytes |

| n (hex) | Remote diagnostic item | Function |
|---------|------------------------|----------|
| AC | Cover openings tally, 8 digit ASCII numeric | Write to NVRAM max 99,999,999 |
| AD | Cover openings tally | Write to NVRAM and print on receipt to verify |
| AE | Cover openings tally | Clear Cover opening tally to 0. |
| AF | Cover openings tally | Return Cover opening tally, returns 10 bytes |

| n (hex) | Remote diagnostic item | Function |
|---------|------------------------|----------|
| B0 | Max temperature tally, 8 digit ASCII numeric | Not available |
| B1 | Max temperature tally | Not available |
| B2 | Max temperature tally | Clear Max temperature tally |
| B3 | Max temperature tally | Return Max temperature tally, returns 10 bytes |

| n (hex) | Remote diagnostic item | Function |
|---------|------------------------|----------|
| B4 | Slip lines tally, 8 digit ASCII numeric | Write to NVRAM max 99,999,999 |
| B5 | Slip lines tally | Write to NVRAM and print on receipt to verify |
| B6 | Slip lines tally | Clear Slip lines tally to 0. |
| B7 | Slip lines tally | Return Slip lines tally, returns 10 bytes |

| n (hex) | Remote diagnostic item | Function |
|---------|------------------------|----------|
| BC | Receipt lines tally (Back side), 8 digit ASCII numeric | Write to NVRAM max 99,999,999 |
| BD | Receipt lines tally (Back side) | Write to NVRAM and print on receipt to verify |
| BE | Receipt lines tally (Back side) | Clear receipt lines tally to 0. |
| BF | Receipt lines tally (Back side) | Return receipt lines tally, preceded by n (BFH) to identify |

## Transmit Status

**ASCII**:          GS r *n*

**Hexadecimal**:    1D 72 *n*

**Decimal:**        29 114 *n*

**Value of *n*:**     1, 49 = printer status

2, 50 = cash drawer status

4, 52 = Flash Memory status

Transmits the status specified by *n*. This is a batch mode command which transmits the response after all prior data in the receive buffer has been processed. There may be a time lag between the printer receiving this command and transmitting the response, depending on the receive buffer status.

When DTR/DSR RS232C communications handshaking control is selected, the printer transmits the one byte response only when the host signal DSR indicates it is ready to receive data.

When XON/XOFF RS232C communications handshaking control is selected, the printer transmits the one byte response regardless of the host signal DSR.

The status bytes to be transmitted are described in the following four tables.

Printer Status (*n* = 1 or *n* = 49)

| Bit | Off/On | Hex | Decimal | Status for Transmit Status |
|-----|--------|-----|---------|----------------------------|
| 0   | Off    | 00  | 0       | Paper present              |
|     | On     | 01  | 1       | Paper exhausted.           |
| 1   | Off    | 00  | 0       | Cover closed               |
|     | On     | 02  | 2       | Cover open                 |
| 2   | Off    | 00  | 0       | Paper present              |
|     | On     | 04  | 4       | Paper exhausted.           |
| 3   | -      | -   | -       | Undefined                  |
| 4   | Off    | 00  | 0       | Not used. Fixed to off.    |
| 5   | -      | -   | -       | Undefined                  |
| 6   | -      | -   | -       | Undefined                  |
| 7   | Off    | 00  | 0       | Not used. Fixed to off.    |

Cash Drawer Status (*n* = 2 or *n* = 50)

| Bit | Off/On | Hex | Decimal | Status for Transmit Status     |
|-----|--------|-----|---------|--------------------------------|
| 0   | Off    | 00  | 0       | One or both cash drawers open. |
|     | On     | 01  | 1       | Both cash drawers closed.      |
| 1   | Off    | 00  | 0       | One or both cash drawers open. |
|     | On     | 02  | 2       | Both cash drawers closed.      |
| 2   | -      | -   | -       | Undefined                      |
| 3   | -      | -   | -       | Undefined                      |
| 4   | Off    | 00  | 0       | Not used. Fixed to off.        |
| 5   | -      | -   | -       | Undefined                      |
| 6   | -      | -   | -       | Undefined                      |
| 7   | Off    | 00  | 0       | Not used. Fixed to off.        |

Flash Memory Status (*n* = 4 or *n* = 52)

| Bit | Off/On | Hex | Decimal | Status for Transmit Status |
|-----|--------|-----|---------|----------------------------|
| 0 | Off | 00 | 0 | Undefined. Fixed to off. |
| 1 | Off | 00 | 0 | Undefined. Fixed to off. |
| 2 | Off | 00 | 0 | Not used. Fixed to off. |
| 3 | Off | 00 | 0 | Flash logo area adequate. Definition stored. |
|   | On | 08 | 8 | Flash logo area not adequate for recent definition. |
| 4 | Off | 00 | 0 | Not used. Fixed to off. |
| 5 | Off | 00 | 0 | No thermal user-defined characters written to Flash |
|   | On | 20 | 32 | |
|   |   |   |   | Thermal user-defined characters written to Flash. |
| 6 | Off | 00 | 0 | Not used. Fixed to off. |
| 7 | Off | 00 | 0 | Not used. Fixed to off. |

**Range of *n*:**            1 – 4
                             49 - 52

**Exceptions:**

When *n* is out of the specified range, the command is ignored.

## Send Printer Firmware Version
**ASCII**:            US V

**Hexadecimal**:    1F 56

**Decimal:**         31 86

The printer returns 16 bytes containing the boot and Flash Firmware version. The first 8 bytes returned are an ASCII string for the boot version. The second 8 bytes are an ASCII string for the main firmware version.

Current firmware supports  the first 5 byte data of 8 byte data of each version data. (The last 3 byte data is always ".00".)

- Example: When response is 12.34.0056.78.00(16 bytes), the boot version is 12.34.00 and the main firmware version is 56.78.00.

## Recognizing Data from the Printer

An application sending various Real Time and non-Real Time commands to which the printer responds can determine which command a response belongs to by the table below.

Responses to Transmit Peripheral Device Status (1B 75) and Transmit Paper Sensor Status (1B 76) are non-Real Time responses and will arrive in the order in which they were solicited.

| Batch Mode Response | | Response Recognized By: | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ASCII | HEX | | | | | | | | | |
| ESC u 0 | 1B 75 0 | 0 | 0 | 0 | 0 | 0 | 0 | x | x | Binary |
| ESC v | 1B 76 | 0 | 0 | 0 | 0 | 0 | x | x | x | Binary |
| GS I *n* | 1D 49 n | 0 | x | x | 0 | x | x | x | x | Binary |
| GS r *n* | 1D 72 n | 0 | x | x | 0 | x | x | x | x | Binary |

| Real-Time Response | | Response Recognized By: | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ASCII | HEX | | | | | | | | | |
| GS EOT *n* | 1D 04 n | 0 | x | x | 1 | x | x | 1 | 0 | Binary |
| DLE EOT *n* | 10 04 n | 0 | x | x | 1 | x | x | 1 | 0 | Binary |
| GS ENQ | 1D 05 | 1 | x | x | x | x | x | x | x | Binary |
| XON | | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | Binary |
| XOFF | | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | Binary |

# Real Time Commands

These commands provide an application interface to the printer even when the printer is not handling other commands (RS-232C communication interface only):

1.  Real Time Status Transmission (GS Sequence and DLE Sequence)

2.  Real Time Request to Printer (GS Sequence and DLE Sequence)

3.  Real Time Printer Status Transmission

The Batch Mode Printer Status commands are placed in the printer's data buffer as they are received and handled by the firmware in the order in which they are received. If the paper exhausts while printing data that was in the buffer ahead of the status command, the printer goes busy at the RS-232C interface and suspends processing the data in the buffer until paper is reloaded. This is true for all error conditions: knife home error, thermal print head overheat, etc.

The Real Time commands are implemented in two ways to correct these problems. Both implementations offer the same functionality; which one you choose depends on the current usage of your application.

## Preferred Implementation

For a new application the GS (1D) sequences are recommended to avoid possible misinterpretation of a DLE (0x10) sequence as a Clear Printer (0x10 0, ASCII DLE NUL) command.

An application using these GS (1D) sequences, does not need to distinguish for the printer between the new real time commands and the Clear Printer command. This implementation is ideal for an existing 7193 application that already uses the Clear Printer command or for a new application being developed.

## Alternate Implementation

The alternate implementation uses the DLE (0x10) sequences as implemented on other printers. An application using these DLE (0x10) sequences and the original 7193 Clear Printer command (0x10) must distinguish for the printer between the new real time commands and the Clear Printer command by adding a NUL (0x00) to the Clear Printer command.

An application using these DLE (0x10) sequences must also send the second byte of the sequence within 100 milliseconds of the first, to prevent the first byte being mistaken for a Clear Printer command.

## Rules for Using Real Time Commands

Three situations must be understood when using real time commands.

First, the printer executes the Real Time command upon receiving it and will transmit status regardless of the condition of the DSR signal.

Second, the printer transmits status whenever it recognizes a Real Time Status Transmission command sequence, even if that sequence happens to occur naturally within the data of another command, such as graphics data.

In this case the sequence will also be handled correctly as the graphics data it is intended to be when the graphics command is executed from the buffer.

Third, care must be taken not to insert a Real Time command into the data sequence of another command that consists of two or more bytes.

In this case the printer will use the real time command sequence bytes instead of the other command's parameter bytes when finally executing that other command from the buffer; the other command will NOT be executed correctly.

These three situations generally preclude use of standard DOS drivers for the serial communication ports when using real time commands.

## Moving Data Through the Buffer

Another consideration is that an application should take care not to let the buffer fill up with real time commands when the printer is busy at the RS-232C interface. A busy condition at the RS-232C interface can be determined by bit 3 of the response to 1D 05 or 1D 04 1 or 10 04 1. The reason for a particular busy condition can be determined by other responses to 1D 04  n or 10 04 n.

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

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

When the DLE sequences are being used, the last byte stored when the buffer fills up could be the DLE code, with no room for the subsequent EOT or ENQ. When this lone DLE byte is finally processed out of the buffer it will be interpreted as a Clear Printer command.

Similarly, when the GS sequences are being used, the last byte stored when the buffer fills up could be the GS code, with no room for the subsequent EOT or ETX or ENQ. When this lone GS byte is finally processed out of the buffer it will use the next byte, whatever it is, as the second byte in its GS sequence.

To guard against this situation, an application should determine the cause of a busy condition and take appropriate action or pace further real time commands to avoid filling the buffer. There are a minimum of 256 bytes available in the printer's buffer when it goes busy.

### Real Time Status Transmission

|  | GS Sequence | DLE Sequence |
|---|---|---|
| **ASCII**: | GS EOT $n$ | DLE EOT $n$ |
| **Hexadecimal**: | 1D 04 $n$ | 10 04 $n$ |
| **Decimal:** | 29 4 $n$ | 16 4 $n$ |
| **Value of $n$:** | GS/DLE Sequence | |

1 = Transmit printer status

2 = Transmit RS-232C busy status

3 = Transmit error status

4 = Transmit receipt paper status

Transmits the selected one byte printer status specified by $n$ in Real Time according to the following parameters. This command includes two sequences: GS and DLE and using either or will produce the same result.

Exceptions:

The command is ignored if $n$ is out of range.

An application using the DLE sequence must send EOT within 100 milliseconds of DLE or the printer will misinterpret the DLE and execute a Clear Printer command. Avoid this possibility by using the 1D 04 $n$ sequence, which is handled exactly the same as 10 04 $n$.

Related Information:
1 = Transmit Printer Status

| Bit | Status | Hex | Decimal | Function |
|---|---|---|---|---|
| 0 | Off | 00 | 0 | Fixed to Off |
| 1 | On | 02 | 2 | Fixed to On |
| 2 | Off | 00 | 0 | One or both cash drawers open |
|  | On | 04 | 4 | Both cash drawers closed |
| 3 | Off | 00 | 0 | Not busy at the RS-232C interface |
|  | On | 08 | 8 | Printer is Busy at the RS-232C interface |
| 4 | On | 10 | 16 | Fixed to On |
| 5 | - | - | - | Undefined |
| 6 | - | - | - | Undefined |

7        Off        00        0              Fixed to Off

2 = Transmit RS-232C Busy Status

| Bit | Status | Hex | Decimal | Function |
|---|---|---|---|---|
| 0 | Off | 00 | 0 | Fixed to Off |
| 1 | On | 02 | 2 | Fixed to On |
| 2 | Off | 00 | 0 | Cover closed |
|   | On | 04 | 4 | Cover open |
| 3 | Off | 00 | 0 | Paper Feed Button is not pressed |
|   | On | 08 | 8 | Paper Feed Button is pressed |
| 4 | On | 10 | 16 | Fixed to On |
| 5 | Off | 00 | 0 | Printing not stopped due to paper condition |
|   | On | 20 | 32 | Printing stopped due to paper condition |
| 6 | Off | 00 | 0 | No error condition |
|   | On | 40 | 64 | Error condition exists in the printer |
| 7 | Off | 00 | 0 | Fixed to Off |

3 = Transmit Error Status

| Bit | Status | Hex | Decimal | Function |
|---|---|---|---|---|
| 0 | Off | 00 | 0 | Undefined. Fixed to Off |
| 1 | On | 02 | 2 | Undefined. Fixed to On |
| 2 | Off | 00 | 0 | Undefined. Fixed to Off |
| 3 | Off | 00 | 0 | No knife error |
|   | On | 08 | 8 | Knife error occurred |
| 4 | On | 10 | 16 | Fixed to On |
| 5 | Off | 00 | 0 | No unrecoverable error |
|   | On | 20 | 32 | Unrecoverable error occurred |
| 6 | Off | 00 | 0 | Thermal print head temp./power supply voltage are in range |
|   | On | 40 | 64 | Thermal print head temp./power supply voltage are out of range |
| 7 | Off | 00 | 0 | Fixed to Off |

4 = Transmit Receipt Paper Status

| Bit | Status | Hex | Decimal | Function |
|---|---|---|---|---|
| 0 | Off | 00 | 0 | Fixed to Off |
| 1 | On | 02 | 2 | Fixed to On |
| 2 | Off | 00 | 0 | Receipt paper adequate |
|   | On | 04 | 4 | Receipt paper low |
| 3 | Off | 00 | 0 | Receipt paper adequate |
|   | On | 08 | 8 | Receipt paper low |

| 4 | On | 10 | 16 | Fixed to On |
|---|-----|-----|-----|-----|
| 5 | Off | 00 | 0 | Receipt paper present |
|   | On | 20 | 32 | Receipt paper exhausted |
| 6 | Off | 00 | 0 | Receipt paper present |
|   | On | 40 | 64 | Receipt paper exhausted |
| 7 | Off | 00 | 0 | Fixed to Off |

## Real Time Request to Printer

**ION USB or RS232**

|  | GS Sequence | | DLE Sequence |
|---|---|---|---|
| **ASCII**: | GS ETX *n* | or | DLE ENQ *n* |
| **Hexadecimal**: | 1D 03 *n* | or | 10 05 *n* |
| **Decimal:** | 29 3 *n* | or | 16 5 *n* |
| **Value of *n*:** | 1 = Recover and restart | | |
|  | 2 = Recover and clear buffers | | |

**Standard USB**

**ASCII**: Since this command is used by Control transfer, the command strings are not defined.

**Hexadecimal**: 15 02 *n* (bRequest = 0x15, wValue = 0x02 n)

**Decimal:** 21 02 *n*

**Values of *n*:** 1 = Recover and restart
2 = Recover and clear buffers

The printer responds to a request from the host specified by *n*. This command includes two sequences: GS and DLE. The operations performed depend on the value of *n*, according to the following parameters.

*n* **= 1:**

Restarts printing from the beginning of the line or page (decided by printing mode and diagnostics setting) where an error occurred, after recovering from the error. If reprint message is defined by Download 1-line Top/Bottom/Reprint Message into ROM (US e command) and 'Reprint the Error Page' is selected by diagnostics, printer prints the reprint message before reprinting of error page.

Print settings that are normally preserved from line to line, such as character height and width, are still preserved with this command. This sequence is ignored except when the printer is busy due to an error condition.

If the receipt is selected, this command will attempt recovery from a knife error. Other errors associated with the receipt, such as paper out or print head overheating, can be recovered from only by clearing the specific condition, such as loading paper or letting the print head cool down.

Recovery printing

The recovery printing is selected as follows.

| (Single side mode) | Line Recovery |
|---|---|
| (Double side mode) | Line Recovery ( Reprint Error Page setting = Resume from Error) |
| | Page Recovery ( Reprint Error Page setting = Reprint Error Page) |

*n* = 2:

Recovers from an error after clearing the receive and print buffers. Print settings that are normally preserved from line to line, such as character height and width, are still preserved with this command. This sequence is ignored except when the printer is busy due to an error condition.

**Exceptions**:

The command is ignored if *n* is out of range

An application using the DLE sequence must send ENQ within 100 milliseconds of DLE or the printer will misinterpret the DLE and execute a Clear Printer command. Avoid this possibility by using the 1D 03 n sequence that is handled exactly the same as 10 05 n.

## Real Time Printer Status Transmission

**ASCII:**          GS ENQ

**Hexadecimal:**     1D 05

**Decimal:**         29 5

Transmits one byte status of the printer in real time.

Value of Byte:

| Bit | Status | Hex | Decimal | Function |
|---|---|---|---|---|
| 0 | Off | 00 | 0 | Receipt paper adequate |
| | On | 01 | 1 | Receipt paper low |
| 1 | Off | 00 | 0 | Receipt paper adequate |
| | On | 02 | 2 | Receipt paper low |
| 2 | Off | 00 | 0 | Cover closed |
| | On | 04 | 4 | Cover open |
| 3 | Off | 00 | 0 | Not busy at the RS-232C interface |
| | On | 08 | 8 | Printer is busy at the RS-232C interface |
| 4 | Off | 00 | 0 | One or both cash drawers open |
| | On | 1 | 16 | Both cash drawers closed |

| 5 | Off | 00 | 0 | Undefined. Fixed to off |
| 6 | Off | 00 | 0 | No error condition |
|   | On | 40 | 64 | Error condition exists in the printer |
| 7 | On | 00 | 0 | Fixed to on |

## Unsolicited Status Update Validation

.

Non ION USB PRTR mode doesn't support USU function. USB device cannot communicate with the host unless the host specifically requests communication.  Because PRTR mode uses Printer Class, it doesn't have any specially requests from host as trigger to reply USU status.

The Host uses this command to determined if the device supports USU

| **ASCII:** | GS *a x* |
| **Hexadecimal:** | 1D 61 *x* |
| **Decimal:** | 29 97 *x* |
| **Value o f *x*** | 0 - FF |

Response To Host (Hex): 1A, 9F, 1F

If the printer responds to the Unsolicited Status Update Validation message with this 3-byte response message, then the printer firmware supports the Unsolicited Status Update messages. If there is no response, or the printer responds with some other sequence of bytes, then the printer does not support the Unsolicited Status Updates messages.

### Enable / Disable Unsolicited Status Update

Tells the printer to start or stop reporting Unsolicited Status Updates.

| **ASCII:** | GS US *n* |
| **Hexadecimal:** | 1D 1F *n* |
| **Decimal:** | 29  31 *n* |
| **Value of *n*** | 0 or 1 |

Where *n* defines the action to be taken by the firmware.

n = 0 – Tell the printer to stop sending Unsolicited Status Updates to the host.
n = 1 – Tells the printer to start sending Unsolicited Status Updates to the host upon change of a sensor or state.
This command is ignored in Non ION USB PRTR mode.

## Baseline State Request

This request tells the printer to send an Unsolicited Status Update message for all Sensors and States supported by the firmware.  This allows the Application, Driver, or Control to establish an initial picture of the state of the printer.

| | |
|---|---|
| **ASCII:** | GS RS US |
| **Hexadecimal:** | 1D 1E 1F |
| **Decimal:** | 29 30 31 |

The printer send and Unsolicited Status Update message for all Sensors and States supported by the firmware. This allows the Application, Driver or Control to establish an initial picture of the state of the printer.

This command is ignored in Non ION USB PRTR mode.

The following is the general message structure for the Unsolicited Status Update messages:

The Unsolicited Message will always consist of at least three bytes.  The top 4 bits (7, 6, 5, 4) of each byte will be an identifier that when compared to the bytes before and after it will identify the byte as part of the three byte Unsolicited Status Update (USU) message.  The remaining 4 bits (3, 2, 1, 0) will contain the information that is being passed to the host from the printer.

The lower 4 bits of the first two bytes when examined as continuous bits of a single number identify the sensor or state for which USU message is reporting a change. The lower 4 bits of the last byte will identify the state that is being reported to the host.

<div align="center">

BIT

| | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Byte ( 1 ) | 1 | 0 | 0 | 1 | x | x | x | x |
| Byte ( 2 ) | 1 | 0 | 1 | 0 | y | y | y | y |
| Byte ( 3 ) | 1 | 0 | 1 | 1 | z | z | z | z |

</div>

The host can determine if any unsolicited 3-byte sequence from the printer is a USU message by checking the upper 4 bits of the three bytes received.  If the upper 4 bits match those of the USU message, then the remaining lower 4 bits are to be interpreted as the information bits of a USU message.

The information bits of a USU message are to be interpreted as follows:

The lower 4 bits of Byte (1) and Byte (2) should be combined in the following manner to constitute an identifier value in the range of 0-255.  This **identifier** then determines how the host should interpret the **state value** of the lower 4 bits of Byte (3).

Combined Bits from Byte (1) and Byte (2) in high bit to low bit order:

| Identifier Value by Bit Definition | | | | | | | |
|---|---|---|---|---|---|---|---|
| 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| x | x | x | x | y | y | y | y |

**Status Update Messages Defined**

The following table defines the sensor or state information specified by each identifier value, and the meaning of the information in the lower 4 bits of the $3^{rd}$ byte for that identifier value. In cases where there are two different messages that refer to the same RTC response bit, separate USU messages should be sent if the printer firmware can distinguish between the events.  If the firmware does not have separate sensors, then a USU message should be chosen to send when either event is encountered:

| Identifier Value (Hex) | Description of sensor or state RTC Sensor Bit if Applicable for 7168 / 7198 ( Note: RTC might be different for other printers ) | State Value | Meaning |
|---|---|---|---|
| 1 | Receipt Paper Exhaust Sensor | 1 | No paper available for printing |
|   | RTC Response ( 10 04 04 ) – Bit 6 | 0 | Paper available for printing |
| 2 | Receipt Paper Low Sensor | 1 | Paper has reach low threshold limit |
|   | RTC Response ( 10 04 04 ) – Bit 3 | 0 | Paper has been replenished |
| 3 | Journal Paper Exhaust Sensor | 1 | No paper available for printing |
|   | ( Reserved Not Used 7197 / 7198 RTC Response 10 04 04 – Bit 5 ) | 0 | Paper available for printing |
| 4 | Journal Paper Low Sensor | 1 | Paper has reach low threshold limit |
|   | ( Reserved Not Used 7197 / 7198 RTC Response 10 04 04 – Bit 2 ) | 0 | Paper has been replenished |
| 5 | Slip leading edge sensor  (Not Used 7198) | 1 | Paper Present |
|   | RTC Response ( 10 04 05 ) – Bit 5 | 0 | No Paper |
| 6 | Slip trailing edge sensor (Not Used 7198) | 1 | Paper Present |
|   | RTC Response ( 10 04 05 ) – Bit 6 | 0 | No Paper |
| 7 | Paper Station Selected (Not Used 7198) | 1 | Slip Paper Selected |
|   | RTC Response ( 10 04 05 ) – Bit 2 | 2 | Receipt Paper Selected |
|   |   | 3 | Journal Paper Selected |
| 8 | Slip Paper Waiting State (Not Used 7198) | 1 | Waiting for Slip Paper |
|   | RTC Response ( 10 04 05 ) – Bit 3 | 0 | Not waiting for Slip Paper |
| 9 | Cash Drawer 1 ( Both if printer cannot determine ) | 1 | Drawer Open |
|   | RTC Response ( 10 04 01 ) – Bit 2 | 0 | Drawer Closed |
| A | Cash Drawer 2 ( if printer can determined drawer 2 ) | 1 | Drawer Open |
|   | Reserved Not Used 7197/7198 | 0 | Drawer Closed |
| B | RS-232 Interface Status | 1 | Busy due to Error or Flow Control |
|   | RTC  Response ( 10 04 01 ) – Bit 3 | 0 | Printer in Normal state |
| C | Receipt Paper Door on Print Mechanism | 1 | Door Open |
|   | RTC Response ( 10 04 02 ) – Bit 2 | 0 | Door Closed |
| D | Slip Cassette Door (Not Used 7198) | 1 | Door Open |
|   | RTC Response ( 10 04 02 ) – Bit 2 | 0 | Door Closed |
| E | Paper Feed Button | 1 | Pressed |
|   | RTC Response ( 10 04 02 ) – Bit 3 | 0 | Not Pressed |

| | | | |
|---|---|---|---|
| F | Print Stopped due to Error Condition | 1 | Stopped |
| | RTC Response ( 10 04 02 ) – Bit 5 | 0 | Returned to Normal |
| 10 | Error Condition | 1 | Error Detected |
| | RTC Response ( 10 04 02 ) – Bit 6 | 0 | No Error |
| 11 | Slip Flip Jam (Not Used 7198) | 1 | Jam Error on Slip Flip |
| | RTC Response ( 10 04 03 ) – Bit 2 | 0 | Normal State |

| Identifier Value (Hex) | Description of sensor or state<br>  RTC Sensor Bit if Applicable for 7168 / 7198<br>  ( Note: RTC might be different for other printers ) | State Value | Meaning |
|---|---|---|---|
| 12 | Slip Motor Jam (Not Used 7198) | 1 | Motor in Jam state |
| | RTC Response ( 10 04 03 ) – Bit 2 | 0 | Normal State |
| 13 | Knife Condition | 1 | Knife in Error Condition |
| | RTC Response ( 10 04 03 ) – Bit 3 | 0 | Normal State |
| 14 | Unrecoverable Error | 1 | Unrecoverable Error Encountered |
| | RTC Response ( 10 04 03 ) – Bit 5 | 0 | Printer has been Reset |
| 15 | Thermal Print Head Temperature | 1 | Out of operating range |
| | RTC Response ( 10 04 03 ) – Bit 6 | 0 | Normal operating range |
| 16 | Power Supply Voltage | 1 | Out of operating range |
| | RTC Response ( 10 04 03 ) – Bit 6 | 0 | Normal operating range |
| 17 | Printer Paper Sensor | 1 | Paper Present |
| | RTC Response ( 10 19 01 ) – Bit 0 | 0 | No Paper |
| 18 | Printer Reset | 1 | Printer Physical Reset Took Place |
| | RTC Response ( 10 19 01 ) – Bit 6 | | |
| 19 | Presenter Mechanism State | 1 | Presenter in Error |
| | RTC Response ( 10 19 02 ) – Bit 0 | 0 | Presenter in Normal State |
| 1A | Paper jam status | 1 | Printer is in Jam State |
| | RTC Response ( 10 19 02 ) – Bit 1 | 0 | Printer in Normal State |
| 1B | Kiosk Door State | 1 | Door Open |
| | RTC Response ( 10 19 02 ) – Bit 3 | 0 | Door Closed |
| 1C | Black Mark Detection Status | 1 | Detection Failure |
| | RTC Response ( 10 19 02 ) – Bit 5 | 0 | Normal Status |
| 1D | Double side buffer exceed | 1 | Received data exceed double side buffer |
| | No RTC Equivalent | 0 | Double side buffer adequate |
| | | | |
| 1E | Flip Mechanism Door State (Not Used 7198) | 1 | Door Open |
| | No RTC equivalent | 0 | Door Closed |
| FA | Reserved for future use which might include defining additional bytes to extend the message structure beyond the existing 3 bytes. | | |
| FB | Reserved for future use which might include defining additional bytes to extend the message structure beyond the existing 3 bytes. | | |
| FC | Reserved for future use which might include defining additional bytes to extend the message structure beyond the existing 3 bytes. | | |
| FD | Reserved for future use which might include defining additional bytes to extend the message structure beyond the existing 3 bytes. | | |
| FE | Reserved for future use which might include defining additional bytes to extend the message structure beyond the existing 3 bytes. | | |
| FF | Reserved for future use which might include defining additional bytes to extend the message structure beyond the existing 3 bytes. | | |

## Printer Firmware Implementation Considerations

The printer firmware will constantly monitor the states listed above.  Once the **Enable USU** command has been received, from that time forward until the **Disable USU** command is received, the printer firmware should transmit a USU message anytime there is a change to a state.  When multiple messages need to be transmitted, there should be a delay of at least 100ms between messages.

The current state of the USU mechanism Enabled or Disabled should be maintained in the non-volatile memory.  If the printer is reset or power-cycled, and the USU mechanism is in the Enabled state based on the value in non-volatile memory, the printer should transmit the current status of all Sensor and State information in the same manner it does in response to a **Baseline State Request**.  This transmission should be performed once the power-up initialization of the printer has been completed, and the communications channel has been established.

The purpose of the transmission after power-up is to handle the case of the printer entering an error state that requires a reset, or power-cycle of the printer to correct it.  Unless the current status of Sensor and State information is transmitted to the host, the controlling software on the host might be unaware of any changes in status resulting from the reset or power-cycle.  The host software would remain in an error state unless it polled the printer for status information.

## Bar Code Commands

These following describes the commands for the printing of bar codes and described in the order of their hexadecimal codes.

**Note:**  7193 firmware can be set for module widths in bar codes ranging from 2 dots to 4 dots per module (DPM) for the narrow modules. The default is 3 DPM.

7194 firmware ranges from 1 dot per module to 5 dots per module (DPM) printed on the receipt. The default is 2 DPM.

### Select Printing Position for HRI Characters

| | |
|---|---|
| **ASCII**: | GS H *n* |
| **Hexadecimal**: | 1D 48 *n* |
| **Decimal:** | 29 72 *n* |
| **Value of *n*:** | Printing position |
| | 0 = Not printed |
| | 1 = Above the bar code |
| | 2 = Below the bar code |
| | 3 = Both above and below the bar code |
| **Default:** | 0 (Not printed) |

Prints HRI (Human Readable Interface) characters above or below the bar code.

## Select Pitch for HRI Characters

**ASCII**:            GS f *n*

**Hexadecimal**:      1D 66 *n*

**Decimal:**          29 102 *n*

**Value of *n*:**     Pitch

                      0 = Standard Pitch at 15.2 CPI on receipt

                      1 = Compressed Pitch at 19 CPI on receipt

**Default:**          0 (Standard Pitch at 15.2 CPI)

Selects standard or compressed font for printing Bar Code characters.

## Select Bar Code Height

**ASCII**:            GS h *n*

**Hexadecimal**:      1D 68 *n*

**Decimal:**          29 104 *n*

**Value of *n*:**     Number of dots

**Range of *n*:**     1 - 255

**Default:**          162

Sets the bar code height to *n* dots or $n/8$ mm ($n/203$ inch) for receipt.

## Print Bar Code

|  | First Variation |  | Second Variation |
|---|---|---|---|
| **ASCII**: | GS k *m d1…dk* NUL | or | GS k *m n d1…dn* |
| **Hexadecimal**: | 1D 6B *m d1…dk* 00 | or | 1D 6B *m n d1…dn* |
| **Decimal:** | 29 107 *m d1…dk* 0 | or | 29 107 *m n d1…dn* |

0 = End of command.

**Values:**

First Variation:     String terminated with NUL Character

$m$ = 0 – 6, 10

$d$ = 32 - 126 (see the table)

$n$ = 1 - 255 (see the table)

Selects the bar code type and prints a bar code for the ASCII characters entered. If the width of the bar code exceeds one line, the barcode is not printed.

There are two variations to this command. The first variation uses a NUL character to terminate the string; the second uses a length byte at the beginning of the string to compensate for the Code 128 bar code, which can accept a NUL character as part of the data. With the second variation the length of byte is specified at the beginning of the string.

Fixed-length codes can be aligned left, center, or right using the Align Positions command (1B 61). Variable-length codes are always center aligned in 7193 Emulation.

The check digit is calculated for UPC and JAN (EAN) codes if it is not sent from the host computer. Six-character zero-suppressed UPC-E tags are generated from full 11 or 12 characters sent from the host computer according to standard UPC-E rules. Start/Stop characters are added for Code 39 if they are not included.

| m | Bar Code | D | n, Length |
|---|----------|---|-----------|
| 0 | UPC-A | 48- 57 (ASCII numerals) | Fixed Length: 11, 12 |
| 1 | UPC-E | 48- 57 | Fixed Length: 11, 12 |
| 2 | JAN13 (EAN13) | 48- 57 | Fixed Length: 12, 13 |
| 3 | JAN8 (EAN8) | 48- 57 | Fixed Length: 7, 8 |
| 4 | Code 39 | 48- 57,<br>65- 90 (ASCII alphabet),<br>32, 36, 37, 43, 45, 46, 47<br>(ASCII special characters)<br>$d1 = dk = 42$ (start/stop<br>code is supplied by<br>printer if necessary) | Variable Length |
| 5 | Interleaved 2 of 5 (ITF) | 48- 57 | Variable Length (Even Number) |
| 6 | CODABAR (NW-7) | 65- 68, start code<br>48- 57, 36, 43, 45, 46, 47, 58 | Variable Length |
| 10 | PDF 417 (7194 Native Mode and 7197 Native Mode) | 1-255 | Variable Length 7194 Native Mode and 7197 Native Mode |

Second Variation: Length of Byte Specified at Beginning of String
*m* =      65 -  73, 75 (see the table)

*d* =      0 -  127 (see the table)

*n* =      1  -  255 (see the table)

The value of *m* selects the bar code system as described in the table. When data is present in the print buffer, the printer processes the data following *m* as normal data.

The variable *d* indicates the character code to be encoded into the specified bar code system. See the table. If character code *d* cannot be encoded, the printer prints the bar code data processed so far, and the following data is treated as normal data.

| M | Bar Code | D | n, Length |
|---|----------|---|-----------|
| 65 | UPC-A | 48- 57 (ASCII numerals) | Fixed Length: 11, 12 |
| 66 | UPC-E | 48- 57 | Fixed Length: 11, 12 |
| 67 | JAN13 (EAN13) | 48- 57 | Fixed Length: 12, 13 |
| 68 | JAN8 (EAN8) | 48- 57 | Fixed Length: 7, 8 |
| 69 | CODE 39 | 48- 57, 65- 90 (ASCII alphabet), 32, 36, 37, 43, 45, 46, 47 (ASCII special characters) $d1 = dn = 42$ (start/stop code is supplied by printer if necessary) | Variable |
| 70 | Interleaved 2 of 5 (ITF) | 48- 57 | Variable (Even Number) |
| 71 | CODABAR (NW-7) | 65- 68, start code 48- 57, 36, 43, 45, 46, 47, 58 | Variable |
| 72 | Code 93 | 0 - 127 | Variable (A748 Native Mode only) |
| 73 | Code 128 | 0-105 $d1$ = 103-105 (must be a Start code) $d2$ = 0-102 (data bytes) (Stop code is provided by the printer) | Variable |
| 75 | PDF417 | 0 – 255 | Variable Length (A748 Native Mode only) |

MSComm1.Output = Chr$(&H1D) & Chr$(&H6B) & Chr$(m) & "123456789012" & Chr$(0)

The above command will print the number above or below the bar code, depending on which parameter for m that specify.

**Exceptions:**

Illegal data cancels this command.

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

PDF417 and Code 93 are only available in 7194  Mode.

When the bar code printing area exceed 72mm

  If bar width "1" => ignore this command (Barcode is not printed.)

  If bar width "2-6" => print barcode using selected bar width -1

  Note) The readability of scanner may be affected when bar width is changed to "1".

## Select Bar Code Width

**ASCII**:          GS w *n*

**Hexadecimal**:    1D 77 *n*

**Decimal:**        29 119 *n*

**Value of *n*:**   1, 2, 3, 4, 5, 6 (except 7193 mode)

                    1,2,3,4 (7193 mode)

**Default:**        3 for receipt

Sets the bar code width to *n* dots.

**Formulas:**

*n* + *1/8* mm (*n* + *1/203* inch) for receipt.

# Page Mode Commands

Page Mode is one of two modes, which the 7194 printer uses to operate. Standard Mode is typical of how most printers operate by printing data as it is received and feeding paper as the various paper feed commands are received. Page Mode is different in that it processes or prepares the data as a "page" in memory before it prints it. Think of this as a virtual page. The page can be any area within certain parameters that you define. Once the printer receives the (0x0C) command, it prints the page and returns the printer to Standard Mode.

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

**Limitations**

Page mode is only implemented on the receipt station in 7194 Mode only.

## Print and Return to Standard Mode

**ASCII:**          FF

**Hexadecimal:**    0C

**Decimal:**        12

The processed data is printed and the printer returns to Standard Mode. The developed data is deleted after being printed.

**Exceptions:**

This command is enabled only in Page Mode.

## Cancel Print Data in Page Mode

**ASCII:**          CAN

**Hexadecimal:**    18

**Decimal:**        24

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

This command has the same code as the Open Form command, which is performed when the printer is not in Page Mode.

- 

**Exceptions:**

This command is only used in Page Mode.

## Print Data in Page Mode

**ASCII:** ESC FF

**Hexadecimal:** 1B 0C

**Decimal:** 27 12

Collectively prints all buffered data in the printing area.

After printing, the printer does not clear the buffered data and sets values for Select Print Direction in Page Mode (1B 54 n) and Set Print Area in Page Mode (1B 57…), and sets the position for buffering character data.

For Double Side Mode, this command is ignored.

**Exceptions:**

This command enabled only in Page Mode.

## Select Page Mode

**ASCII:** ESC L

**Hexadecimal:** 1B 4C

**Decimal:** 27 76

Switches from Standard Mode to Page Mode. After printing has been completed either by the Print and Return to Standard Mode (FF) command or Select Standard Mode (1B 53) the printer returns to Standard Mode. The developed data is deleted after being printed.

This command sets the position where data is buffered to the position specified by Select Print Direction in Page Mode (1B 54) within the printing area defined by Set Print Area in Page Mode (1B 57).

This command switches the settings for the following commands (which values can be set independently in Standard Mode and Page Mode) to those for Page Mode.

1. Set Right-Side Character Spacing (1B 20)

2. Select 1/6-Inch Line Spacing (1B 32)

3. Set Line Spacing (1B 33)

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

4. Select or Cancel 90 Degree Clockwise Rotation (1B 56)

5. Select Justification (1B 61)

6. Select or Cancel Upside Down Printing (1B 7B).

7. Set Left Margin (1D 4C)

8. Set Print Area Width (1D 57)

**Exceptions:**

The command is enabled only when input at the beginning of a line.
 The command has no effect if Page Mode has previously been selected.
 In <u>7193 Emulation</u> Mode, (1B 4C…) is used for double density graphics.

## Select Standard Mode
**ASCII:**          ESC S

**Hexadecimal:**    1B 53

**Decimal:**        27 83

Switches from Page Mode to Standard Mode. In switching from Page Mode to Standard Mode, data buffered in Page Mode is cleared, the printing area set by Set Print Area in Page Mode (1B 57) is initialized and the print position is set to the beginning of the line.

This command switches the settings for the following commands (the values for these commands can be set independently in Standard Mode and Page Mode) to those for Standard Mode:

1. Set Right-Side Character Spacing (1B 20)

2. Select 1/6 Inch Line Spacing (1B 32)

3. Set Line Spacing (1B 33)

Standard Mode is automatically selected when power is turned on, the printer is reset, or the Initialize Printer command (1B 40) is used.

**Exceptions:**

This command is effective only in Page Mode.

## Select Print Direction in Page Mode
**ASCII**:                    ESC T *n*

**Hexadecimal**:       1B 54 *n*

**Decimal:**             27 84 *n*

**Value of *n*:**          Start position

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

        1     Lower left corner proceeding up the page (B)

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

        3     Upper right corner proceeding down page (D)

A, B, C and D note the direction of print.  See illustration.

Selects the printing direction and start position in Page Mode. See the illustration.

The command can be sent multiple times so that several different print areas, aligned in different print directions, can be developed in the printer's page buffer before being printed by the Print and Return to Standard mode command (0C).
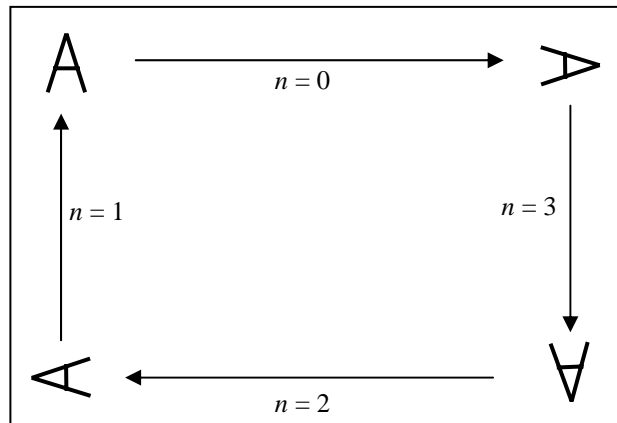


**Default:**             0 (Upper left corner proceeding across page to the right)

**Exceptions:**

This command is valid only in Page Mode.

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

## Set Printing Area in Page Mode

**ASCII:**          ESC W *n1, n2 ...n8*.]

**Hexadecimal:**     1B 57 *n1, n2 ...n8]*

**Decimal:**         27 87 *n1,n2 ...n8]*

**Range:**            0 - 255

**Default:**         *n1-4 =* 0

                    *n5 =* 64

                    *n6 =* 2

                    *n7 =* 64

                    *n8 =* 2

Sets the position and size of the printing area in Page Mode.

The command can be sent multiple times so that several different print areas, aligned in different print directions, can be developed in the printer's page buffer before being printed by the Print and Return to Standard mode command (0C).

Defaults equal an origin of 0,0 and a size of 576x576. This command is allowed in any mode.

**Formulas:**

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

See the illustration for a graphic representation of the printing area. For more information about the fundamental calculation pitch, see the Set Fundamental Calculation Pitch command (1D 50).

1.   x0 = [(*n1* + *n2* x 256) x (horizontal direction of the fundamental calculation pitch)]

2.   y0 = [(*n3* + *n4* x 256) x (vertical direction of the fundamental calculation pitch)]

3.   dx = [(*n5* + *n6* x 256) x (horizontal direction of the fundamental calculation pitch)]

4.   dy = [(*n7* + *n8* x 256) x (vertical direction of the fundamental calculation pitch)]

Keep the following notes in mind for this command.

5.   The fundamental calculation pitch depends on the vertical or horizontal direction.

6.   The maximum printable area in the x direction is 576/203 inches.

7.   The maximum printable area in the y direction is 2000/203 inches.

First the printer must be set to page mode, then the following command should be sent.

**Exception:**

This command is effective only in Page Mode.

## Set Absolute Vertical Print Position in Page Mode

**ASCII**: GS $ *nL nH*

**Hexadecimal**: 1D 24 *nL nH*

**Decimal:** 29 36 *nL nH*

**Formulas:**

[(*nL* + *nH* X 256) x (vertical or horizontal motion unit)] inches.

Sets the absolute vertical print starting position for buffer character data in Page Mode.

The vertical or horizontal motion unit for the paper roll is used and the horizontal starting buffer position does not move.

The reference starting position is set by Select Print Direction in Page Mode (1B 54). This sets the absolute position in the vertical direction when the starting position is set to the upper left or lower right; and sets the absolute position in the horizontal direction when the starting position is set to the upper right or lower left. The horizontal and vertical motion unit are specified by the Set Horizontal and Vertical Minimum Motion Units (1D 50) command.

The Set Horizontal and Vertical Minimum Motion Units (1D 50) command can be used to change the horizontal and vertical motion unit. However, the value cannot be less than the minimum horizontal movement amount, and it must be in even units of the minimum horizontal movement amount.

**Exceptions:**

This command is effective only in Page Mode.

If the [(*nL* + *nH* x 256) x (vertical or horizontal motion unit)] exceeds the specified printing area, this command is ignored.

## Set Relative Vertical Print Position in Page Mode

**ASCII**:              GS \ *nL nH*

**Hexadecimal**:     1D 5C *nL nH*

**Decimal:**          29 92 *nL nH*

Sets the relative vertical print starting position from the current position. This command can also change the horizontal and vertical motion unit. The unit of horizontal and vertical motion is specified by this command.

This command functions as follows, depending on the print starting position set by Select Print Direction in Page Mode (1B 54):

- When the starting position is set to the upper left or lower left of the printing area, the vertical motion unit ($y$) is used.

- When the starting position is set to the upper right or lower left of the printing area, the horizontal motion unit ($x$) is used.

Value:

The value for the horizontal and vertical movement cannot be less than the minimum horizontal movement amount, and must be in even units of the minimum horizontal movement amount.

Formulas:

The distance from the current position is set to [($nL$ + $nH$ x 256) x vertical or horizontal motion unit] inches. The amount of movement is calculated only for the receipt.

When pitch $n$ is specified to the movement downward:
*nL + nH* x 256 = *n*

When pitch $n$ is specified to the movement upward (the negative direction), use the complement of 65536.

When pitch $n$ is specified to the movement upward:
*nL + nH* x 256 − 65536 − *N*

Exceptions:

This command is used only in Page Mode, otherwise it is ignored.

Any setting that exceeds the specified printing area is ignored.

# Macro Commands

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

## Start or End Macro Definition

**ASCII:**            GS :

**Hexadecimal:**      1D 3A

**Decimal:**          29 58

Starts or ends macro definition. Macro definition begins when this command is received during normal operation and ends when this command is received during macro definition. The macro definition is cleared, during definition of the macro, when the Execute Macro (1D 5E) command is received.

The defined contents of the macro are not cleared by the Initialize Printer     (1B 40), thus, the Initialize Printer (1B 40) command may be used as part of the macro definition.

If the printer receives a second Select or Cancel Macro Definition (1D 3A) command immediately after previously receiving a Select or Cancel Macro Definition (1D 3A) the printer remains in the macro undefined state.

**Formulas:**

**Exceptions:**

If the macro definition exceeds 50 Kbytes, excess data is not stored.

This command is available in 7194  Mode only.

## Execute Macro

**ASCII**:        GS ^ *r t m*

**Hexadecimal**:   1D 5E *r t m*

**Decimal:**       29 94 *r t m*

**Value of *r*:**   The number of times to execute the macro.

**Value of *t*:**   The waiting time for executing the macro.

**Value of *m*:**   Macro executing mode

| | |
|---|---|
| 0 (Bit0): | The Macro executes *r* times continuously with waiting time specified by *t*. |
| 1 (Bit0): | The printer waits for feed button to be pressed after waiting for the period specified by *t*. If the button is pressed, the printer executes the macro once. The printer repeats the operation *r* times. |

Executes a macro. After waiting for a specified period the LED indicators blink and the printer waits for the Paper Feed Button to be pressed. After the button is pressed, the printer executes the macro once. The printer repeats this operation the number of specified times.

When the macro is executed by pressing the Paper Feed Button (*m* = 1), paper cannot be fed by using the Paper Feed Button.

**Formulas:**

The waiting time is *t* x 100 msec for every macro execution.

*m* specifies macro executing mode when the LSB (Least significant bit) *m* = 0

The macro executes *r* times continuously at the interval specified by *t* when the LSB (Least significant bit) of *m* = 1.

**Exceptions:**

When a macro is being defined, if this command is without change Macro ID, printer will clear this Macro at Macro execution.

If the macro is not defined or if *r* is 0, nothing is executed.

This command is available in 7194 Mode only.

# User Data Storage Commands

### Write to User Data Storage
**ASCII:**            ESC ' m a0 a1 a2 d1 ... dm

**Hexadecimal:**     1B 27 m a0 a1 a2 d1 ... dm

**Decimal:**         27 39 m a0 a1 a2 d1 ... dm

**Value of m:**      0 – 255

Writes m bytes of data to the User Data Storage Flash Page at the address specified. The printer waits for m bytes of data following the 3-byte address, addr.

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

The above command writes the word 'Hello' to the User Data Storage Flash Page.

### Read from User Data Storage
**ASCII:**            ESC 4 *m a0 a1 a2*

**Hexadecimal:**     1B 34 *m a0 a1 a2*

**Decimal:**         27 52 *m a0 a1 a2*

**Value of *m*:**    0 – 255

Reads *m* bytes of data from the User Data Storage Flash Page at the address specified.

### Read from Non-Volatile Memory
**ASCII**:           ESC j *k*

**Hexadecimal
:**                  1B 6A *k*

**Decimal:**         27 106 *k*

**Range of *k*:**    20 – 63 (decimal)

Reads a two-byte word from location *k* in the history EEROM. The printer returns the word at the next available opportunity.

## Write to Non-Volatile Memory (NVRAM)

**ASCII**: ESC s *n1* *n2* *k*

**Hexadecimal**: 1B 73 *n1* *n2* *k*

**Decimal:** 27 115 *n1* *n2* *k*

**Value of *n1* :** 1st Byte

**Value of *n2* :** 2nd Byte

**Range of *k* :** 20 - 63 (decimal)

Writes the two-byte word, *n1* *n2*, to location *k* in history EEROM.

## Select Memory Type (SRAM/Flash) Where to Save Logos or User-Defined Fonts

**ASCII**: GS " *n*

**Hexadecimal**: 1D 22 *n*

**Decimal:** 29 34 *n*

**Value of *n*:** 48 - 53

Specifies whether to load the logos or user-defined characters to Flash Memory or to RAM (volatile memory). The selection remains in effect until it is changed via this command or until the power cycles.

*n* = 48 (ASCII *n* = 0)

Loads active logo to RAM only. This is used to print a special logo but not have it take up Flash Memory. A logo defined following this command is not preserved over a power cycle.

*n* = 49 (ASCII *n* = 1)

Loads active logo to Flash Memory. This is the default condition for logo Flash storage. A logo defined following this command is stored in Flash Memory.

*n* = 50 (ASCII *n* = 2)

Loads user-defined characters to RAM only. This is the default condition for user-defined character storage. Any user-defined characters defined following this command are not preserved over a power cycle.

*n* = 51 (ASCII *n* = 3)Loads user-defined characters to Flash Memory. An application must use this command to store user-defined characters in Flash Memory. Any user-defined characters defined following this command are stored in Flash Memory. A

user-defined character cannot be redefined in Flash Memory. The Flash Memory page must be erased by an application before redefining user-defined characters. For more information, see the Erase User Flash Sector (1D 40 *n*) command.

*n* = 52 (ASCII *n* = 4)

Loads Macro to RAM only.  This is the default condition for Macro.  Any Macro defined following this command is not preserved over a power cycle.

*n* = 53 (ASCII *n* = 5)

Loads Macro to Flash Memory.  A Macro defined following this command is stored in Flash Memory.

- 

## Flash Allocation

| | |
|---|---|
| **ASCII**: | GS " U *n1 n2* |
| **Hexadecimal**: | 1D 22 55 *n1 n2* |
| **Decimal:** | 29 34 85 *n1 n2* |
| **Default Value of *n1*:** | 1 (see below) |
| **Default Value of *n2*:** | 1 (see below) |

n1 is the number of 64k sectors used for logos and user-defined characters.
n2 is the number of 64k sectors used for user data storage.

This command sets the allocation of Flash sectors between user data storage and logos/user-defined characters. This allocation is saved in the EEPROM of the printer and is therefore saved across power cycles. Printer always keeps 64 Kbytes for User-defined characters.

n1 + n2 <= 5 (3M)

 The 7198 has been configured at the factory with 512K, 1M or 2M of Flash memory. If n1 + n2 is greater than the maximum number of sectors available,  the command is ignored. Reissuing this command with different parameters will erase all sectors.

**Exception:**

This is command is available only in 7194 Mode

## Erase User Flash Sector

**ASCII**: GS @ *n*

**Hexadecimal**: 1D 40 *n*

**Decimal:** 29 64 *n*

**Value of *n*:** 49 - 50

Erases a page of Flash Memory and sends a carriage return when the operation is complete.

*n* = 49 (ASCII *n* = 1)

This command erases all sectors available for user-defined characters and multiple logos. The page should be erased in two situations: when the logo definition area is full and an application is attempting to define new logos, and when an application wants to replace one user-defined character set with another. In both cases, all logos and character set definitions are erased and must be redefined.

*n* = 50 (ASCII *n* = 2)

This command erases all sectors available for user data storage.

**Important:** While erasing Flash Memory, the printer disables all interrupts, including communications. To provide feedback to the application, the printer responds to the application when the erase is complete. After sending the Erase User Flash Sector (1D 40 *n*) command, an application should wait for the response from the printer before sending data. Otherwise, data will be lost. If an application is unable to receive data, it should wait a minimum of five seconds after sending the Erase User Flash Sector (1D 40 *n*) command before sending data.

## Printer Setting Change

**ASCII**:       US DC1 [*m n*], [*m n*], … [*m n*] 0FFH

**Hexadecimal**:   1F 11 [*m n*], [*m n*], … [*m n*] 0FFH

**Decimal:**     31 17 [*m n*], [*m n*], … [*m n*] 0FFH

**Value of *m, n*:**

| *m* (Hex) | Function | *n* (Hex) | Function |
|---|---|---|---|
| 10 | Interface type | 00 | USB/RS232C |
|  |  | 01 | RS232C |
|  |  | 02 | USB |
| 11 | Baud rate | 00 | 115200 bps |
|  |  | 01 | 57600 bps |
|  |  | 02 | 38400 bps |
|  |  | 03 | 19200 bps |
|  |  | 04 | 9600 bps |
| 12 | Number of data bit | 00 | 8 data bits |
|  |  | 01 | 7data bits |
| 13 | Number of stop bit | 00 | 1 stop bits |
|  |  | 01 | 2 stop bits |
| 14 | Parity | 00 | No parity |
|  |  | 01 | Even parity |
|  |  |  | Odd parity |
| 15 | Flow control | 00 | Software (XON/XOFF) |
|  |  | 01 | Hardware (DTR/DSR) |
| 16 | Data reception errors option | 00 | Ignore errors |
|  |  | 01 | Print "?" |
| 17 | One Line Buffer | 00 | Normal size receive buffer(4K) |
|  |  | 01 | One Line Buffer  (128 Bytes) |
| 18 | DSR signal option | 00 | Enable DSR signal |
|  |  | 01 | Disable DSR signal |
| 19 | Printer ID Mode | 00 | 7194 Native ID |
|  |  | 01 | Emulated Printer ID |
|  |  | 02 | 7197 Native ID |
| 20 | Emulation | 00 | 7194 Mode |
|  |  | 01 | 7193 mode |
|  |  | 02 | 7197 Native Mode |

| *M* (Hex) | Function | *N* (Hex) | Function |
|---|---|---|---|
| 21 | Default lines per inch | 00 | 8.13 lines per inch |
| | | 01 | 7.52 lines per inch |
| | | 02 | 6 lines per inch |
| 22 | Carriage return usage | 00 | Ignore CR |
| | | 01 | Use CR as Print cmd. |
| 23 | Asian mode | 00 | Asian mode on |
| | | 01 | Asian mode off |
| 24 | Power LED control | 00 | Power LED control disabled |
| | | 01 | Power LED control enabled |
| 25 | Receipt synchronization | 00 | Synchronization Enabled |
| | | 01 | Synchronization Disabled |
| 27 | PDF417 Print Column | 00 | 9 Columns |
| | | 01 | 14 Columns |
| 30 | Print Density | 00 | 100% |
| | | 01 | 110% |
| | | 02 | 120% |
| 31 | Paper Low sensor option | 00 | Paper low sensor enable |
| | | 01 | Paper low sensor disable |
| 32 | Paper width | 00 | 80 mm |
| | | 01 | 58 mm |
| 33 | Knife option | 00 | Enable knife |
| | | 01 | Disable knife |
| 36 | Max Power | 00 | 55 W |
| | | 01 | 75 W |
| 37 | Color Paper Option | 00 | One color paper |
| | | 01 | Two color paper |
| 40 | Default Code page | 00 | 437 |
| | | 01 | 850 |
| | | 02 | 852 |
| | | 03 | 858 |
| | | 04 | 860 |
| | | 05 | 862 |
| | | 06 | 863 |
| | | 07 | 864 |
| | | 08 | 865 |
| | | 09 | 866 |
| | | 0A | 874 |
| | | 0B | 1252 |
| | | 0C | Katakana |
| | | 0D | 932 (or 936, 949, 950) |

| 41 | Reserved | | |
|---|---|---|---|
| 42 | Reserved | | |
| 43 | Reserved | | |
| 45 | Set paper detection | 0 | Enable |
| | | 1 | Disable |
| 50 | EEPROM default setting | 00 | EEPROM default setting |

| $M$ (Hex) | Function | $N$ (Hex) | Function |
|---|---|---|---|
| 60 | Thermal Printing Mode | 00 | Single Sided Mode |
| | | 01 | Double Sided Mode with Single Side command |
| | | 02 | Double Sided Mode with Double Side Command |
| | | 03 | Double Sided Mode with Pre-Defined data |
| 61 | Upside Down Printing for Double Side | 00 | Front: Normal, Back: Normal |
| | | 01 | Front: Upside down, Back Normal |
| | | 02 | Front: Normal, Back: Upside Down |
| | | 03 | Front: Upside Down, Back Upside Down |
| 62 | Swap Front Side and Back Side | 00 | Not Swap |
| | | 01 | Swap Front side and Back side |
| 63 | Pre-Defined Bottom/Top Message | 00 | No Message |
| | | 01 | Bottom Message on Front |
| | | 02 | Top Message on Back |
| | | 03 | Both Bottom Message on Front and Top Message on Back |
| 64 | Minimum Receipt Length (Remainder after dividing Min. Receipt Length by 256 ) | 00-FF | Length in dot rows for Minimum receipt length |
| 65 | Minimum Receipt Length (Integer after dividing Min. Receipt Length by 256) | 00-FF (max value to be defined) | Length in dot rows for Minimum receipt length |
| 66 | Reprint when Error Occurs | 00 | Resume printing from last error line |
| | | 01 | Reprint the error page |
| 67 | Reprint Message | 00 | No Message |
| | | 01 | Reprint Message |
| 68 (Refer Notes) | USB Interface Type | 00 | Not use (Reserve for Epic) |
| | | 01 | NHPI |
| | | 02 | PRTR |

Set the printer configuration specified by m and n. If m or n is out of range, this command is ignored. But the printer waits the data until terminator code "0FFH".

Notes

This command changes configuration setting in EEPROM. If same value that is set in EEPROM is set, this command doesn't write to EEPROM.

USB Interface Type is set as follows. It depend on firmware version.

| command Value | ION USB version | Non ION USB version |
|---|---|---|
| 00 (Epic) (If used) | Ignore | 01 (NHPI) |
| 01 (NHPI) | Ignore | 01 (NHPI) |
| 02 (PRTR) | Ignore | 02 (PRTR) |

The default value of EEPROM is

ION USB version : 0x00 (EPiC)

Non ION USB version : 0x01 (NHPI)

# Asian Character Commands

## Select print modes for Kanji characters

**ASCII**:         FS ! *n*

**Hexadecimal**:    1C 21 *n*

**Decimal:**       28 33 *n*

**Value of *n*:**    The character attribute for Asian character

| Bit | Off/On | Hex | Decimal | Function |
|---|---|---|---|---|
| 0 | - | - | - | Select font |
| 1 | Off | 00 | 0 | Undefined |
| 2 | Off | 00 | 0 | Double width mode is not selected |
|   | On | 01 | 1 | Double width mode is selected |
| 3 | Off | 00 | 0 | Double height mode is not selected |
|   | On | 01 | 1 | Double height mode is selected |
| 4 | - | - | - | Undefined |
| 5 | - | - | - | Undefined |
| 6 | - | - | - | Undefined |
| 7 | Off | 00 | 0 | Underline mode is not selected |
|   | On | 01 | 1 | Underline mode is selected |

**Default of *n*:**    0

Selects character attribute for Asian character.

The underline mode can be turned on or off by using FS – or ESC – also.

The thickness of underline is defined by FS – or ESC -, it does not relate to character size.

## FS – Turn underline mode ON/OFF for Kanji

**ASCII**:        FS - *n*

**Hexadecimal**:    1C 2D *n*

**Decimal:**      28 45 *n*

**Value of *n*:**     0 = Cancel

                   1 = 1 dot height underline

                   2 = 2 dot height underline

**Default *n*:**     0 (Cancel)

Turn underline mode on or off for Asian character.

All characters could be underlined, including character right side spacing.

Underline can be selected by FS ! and ESC – also, the last received command is effective.

## Define user-defined Kanji characters

**ASCII**:        FS 2 *c1 c2 d1 … dn*

**Hexadecimal**:    1C 32 *c1 c2 d1 … dn*

**Decimal:**      28 50 *c1 c2 d1 … dn*

**Value of *c1*:**    Specified the beginning Asian character code

**Value of *c2*:**    Specified the end Asian character code

**Value of *d*:**     Image data

| **Range of *c1,c2*:** | | |
|---|---|---|
| | Japanese (CP932) | $F0 \leq c1 \leq F9$, $40 \leq c2 \leq 7E$ and $80 \leq c2 \leq FC$ |
| | Simplified Chinese (CP936) | $A1 \leq c1 \leq A7$, $40 \leq c2 \leq 7E$ and $80 \leq c2 \leq A0$, $AA \leq c1 \leq AF$, $A1 \leq c2 \leq FE$,        $F8 \leq c1 \leq FE$, $A1 \leq c2 \leq FE$ |
| | Korean (CP949) | $c1 = C9$ and $c1 = FE$, $A1 \leq c2 \leq FE$ |
| | Traditional Chinese | $81 \leq c1 \leq A0$ and $FA \leq c1 \leq FE$, $40 \leq c2 \leq 7E$ and $80 \leq c2 \leq FE$ |

(CP950)        C7 ≤ c1 ≤ C8, A1 ≤ c2 ≤ FE

Defines and enters downloaded characters into RAM. The user-defined character will be cleared by ESC @ or power off of printer. Each character requires 72 bytes for character definition.

The maximum number of user-defined character is 100.

## Set Kanji character spacing

**ASCII**:        FS S $n1$ $n2$

**Hexadecimal**:    1C 53 $n1$ $n2$

**Decimal:**      28 83 $n1$ $n2$

**Value of $n1$:**   Ignored (0)

**Value of $n2$:**   Character right side spacing dots (1/203 inch)

**Default of $n2$:**  1 for 1 byte character, 2 for 2 bytes character

Sets the character right side spacing for characters in Asian character.

The underline is valid on the space set by this command. ESC SP command is not valid for Asian character code pages. Therefore, this command is used to set the character right side spacing for characters in Asian code page.

## FS W (Set quadruple mode ON/OFF for Kanji)

**ASCII**:        FS W $n$

**Hexadecimal**:    1C 57 $n$

**Decimal:**      28 87 $n$

**Value of $n$:**    The quadruple mode for Asian characters.

            0 (Bit 0) = Quadruple mode off

            1 (Bit 0) = Quadruple mode on

**Default of $n$:**   0 (Quadruple mode off)

Selects or cancels the quadruple mode for Asian characters.

FS ! and GS ! also have control over character size. This, latest received command is effective.

# Flash Download Commands

These commands are used to load firmware into the printer.

The commands are listed in numerical order according to their hexadecimal codes. Each command is described and the hexadecimal, decimal, and ASCII codes are listed.

There are three ways to enter the Download Mode.

1.  Powering the printer up with DIP Switch 2 up.

2.  While the printer is running normally, use the command Switch to Flash Download Mode, to leave normal operation and enter the Download Mode.

3.  If the Flash if found corrupted during Level 0 diagnostics the Download Mode is automatically entered after the printer has reset.

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

## Switch to Flash Download Mode
**ASCII:**          ESC [ }

**Hexadecimal:**    1B 5B 7D

**Decimal:**        27 91 125

Puts the printer in Flash Download Mode in preparation to receive commands controlling the downloading of objects into Flash Memory. When this command is received, the printer leaves normal operation and can no longer print transactions until the Reboot the Printer command (1D FF) is received or the printer is rebooted.

This command does not affect the current communication parameters. Once the printer is in Flash Download Mode, this command is no longer available.

## Request Printer ID
**ASCII:**          GS NUL

**Hexadecimal:**    1D 00

**Decimal:**        29 0

Returns ACK (06 hex) + 12 bytes ASCII string describing the Flash Memory Boot Sector Firmware part number. Ex : 189-1234567A

### Return Segment Number Status of Flash Memory

**ASCII:**     GS SOH

**Hexadecimal:**   1D 01

**Decimal:**    29 1

Returns the size of the Flash used. There may be 8, 16, or 32 sectors (64K each) in Flash Memory. This command assures that the firmware to be downloaded is the appropriate size for Flash Memory. The value returned is the maximum sector number that can be accepted by the Select Sector to Download (1D 02 $n$) command.

**Exceptions:**

Available only in Download Mode.

### Select Flash Memory Sector to Download

**ASCII**:     GS STX $n$

**Hexadecimal**:   1D 02 $n$

**Decimal:**    29 2 $n$

**Value of $n$:**   The Flash sector to which the next download
        operation applies

**Range of $n$**:   0 – 7 (512K)

        0 – 15 (1 mB)

        0 – 31 (2 mB)

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

**Exceptions:**

Available only in Download Mode.

### Get Firmware CRC

**ASCII:**     GS ACK

**Hexadecimal:**   1D 06

**Decimal:**    29 6

Causes the printer to calculate the CRC for the currently selected sector and transmits the result. This is performed normally after downloading a sector to verify that the downloaded firmware is correct. The printer also calculates the CRC for each sector during power up and halts the program if any sector is erroneous.

The printer transmits ACK if the calculated CRC is correct for the selected sector; NAK if the CRC is incorrect or if no sector is selected.

### Return Microprocessor CRC

**ASCII:**　　　　　GS BEL

**Hexadecimal:**　　1D 07

**Decimal:**　　　　29 7

Returns the CRC calculated over the boot sector code space.

**Formulas:** ACK <low byte> <high byte>

### Erase the Flash Memory

**ASCII:**　　　　　GS SO

**Hexadecimal:**　　1D 0E

**Decimal:**　　　　29 14

Causes the entire Flash Memory (except the boot) to be erased.
The printer returns ACK if the command is successful; NAK if it is unsuccessful.

Exceptions:

Available only in Download Mode.

### Return Main Program Flash CRC

**ASCII:**　　　　　GS SI

**Hexadecimal:**　　1D 0F

**Decimal:**　　　　29 15

Returns the CRC calculated over the Flash firmware code space. The format of the response is ACK <low byte> <high byte>.

## Erase Selected Flash Sector

| | |
|---|---|
| **ASCII**: | GS DLE *n* |
| **Hexadecimal**: | 1D 10 *n* |
| **Decimal:** | 29 16 *n* |
| **Value and Range of *n*:** | 0 – 7 =  512K bytes Flash |
| | 0 – 15 = 1M bytes Flash |
| | 0 – 31 = 2M bytes Flash |

Erases the previously selected sector. The printer transmits ACK when the sector has been erased printer transmits NAK.

Exceptions:

Available only in Download Mode.

## Download to Active Flash Sector

| | |
|---|---|
| **ASCII**: | GS DC1 *al ah cl ch d1…dn* |
| **Hexadecimal**: | 1D 11 *al ah cl ch d1…dn* |
| **Decimal:** | 29 17 *al ah cl ch d1…dn* |
| **Value of *al:*** | low byte of the address |
| **Value of *ah:*** | high byte of the address |
| **Value of *cl:*** | low byte of the count |
| **Value of *ch:*** | high byte of the count |
| **Value of *d:*** | data bytes, from 1 to n |

Contains a start address (ah * 256 + al) and count (ch * 256 + cl) of binary bytes to load into the selected sector, followed by that many bytes. The start address is relative to the start of the sector. Addresses run from 0 to 64K.

The printer may return one of several responses. ACK means that the data was written correctly and the host should transmit the next block. NAK means that, for some reason, the data was not written correctly. This could mean that communications failed or that the write to Flash failed. The alternatives seem to be to retry the block or halt loading and assume a hardware failure.

| Value of *n* (for number of data bytes) | Range of Address (*al* *ah*) | Range of Count (*cl* *ch*) |
| --- | --- | --- |
| $((ch * 256) + cl)$ | 2000-FFFF (hexadecimal) | 0001-0400 (hexadecimal) |

**Range:**  Addresses run from 0 to 64K.

**Related Information:**

Available only in Download Mode.

## Reboot the Printer

**ASCII**:  GS (SPACE)

**Hexadecimal**:  1D FF

**Decimal:**  29 255

Ends the load process and reboots the printer. Before executing this command, the printer should have firmware loaded and external switches set to the runtime settings. Application software for downloading should prompt the user to set the external switches and confirm before sending this command. If the downloading was started from a diagnostic, the reboot will cause the printer to reenter download state unless the external switches are changed.

# Double Side Printing Commands

There are four types of modes for the printingon the two side thermal paper.

1. Single sided mode which is the same as the 7167 printer.,

**2.** Double sided mode with single side command.
   In this mode the printer receives single sided data until a paper cut command is received.  The print data is then automatically divided into two parts where the first part is printed on the front side and the second part prints on the back of the receipt when the knife cut command is sent to the printer. **(Refer Appendix 3 How to make printing pattern from single side to double side.)**

3. Double sided mode with Double side command.
   In this mode the application controls the location of the printing.  The front or back side of the receipt is selected and the data is sent to the printer.  The data is then printed when the knife cut command is sent to the printer.

4. Double side mode with pre-defined data

   This setting will allow for the automatic printing of predefined data on the back of the receipt.  An example would be terms and conditions.  The pre-defined data is preloaded into the printer and when a receipt is printed the predefined data is automatically printed on the back of each receipt.

This thermal receipt printing mode can be selected either printer diagnostics or command (Printer Setting Change: 1F 11 and Select Thermal Printing Mode: 1F 60).

Two Side Printing Capacity

When in double side mode with single side command and double side mode with double side command the paper length is 120 inches.  Therefore when the printer is in single side mode it will print an idenfitent length of paper.  When the printer is in double side mode with single side mode or double side mode with double side command the receipt length would be 60 inches with printing on the front and back side of the receipt for a total length of 120 inches.

## Select Thermal Printing Modes

**ASCII**:  US ' *n*

**Hexadecimal**:  1F 60 *n*

**Decimal:**  31 96 *n*

**Value of *n*:**  0 = Single Sided Mode

1 = Double Sided Mode with Single Side Command

2 = Double Sided Mode with Double Side Command

3 = Double Sided Mode with Pre-defined Data

**Default:**    The selected setting in diagnostic mode

Selects the thermal printing mode: single side or double side mode. If single side mode is selected, thermal printing can only be executed on the front side of the receipt paper. If Double side mode is selected, printing can be executed on the front side and/or backside of the receipt paper.

With selection n=0, printing format is the same as the 7167 printer..

With selection n=1 (Single Side Command), print buffer is first divided into two parts. The first half of the print buffer will be printed on the front side of the receipt and the second half of the print buffer will be printed on the back side of the receipt paper.

(Exception: The command Select Thermal Printing Side and Start Double Sided Printing will be ignored)

With selection n=2 (Double Side Command), the information to printed can be selectively printed on the front or back side of the receipt paper.

When the two side print mode is switched from one mode to Double Side Mode w/Double Side Command, printer's default side is front side.

Sending a 1Fh 62h will print the receipt.

With selection n=3 (Pre-defined data), the pre-defined data is printed on the back side and print data will be printed on the front side.

Back side data will only be printed once for each single receipt.  Receipt length is determined by the longer side.

This command is valid only on receipt station.

The Printer Setting Change command (1FH 11H) is used to store setting.

Note

When double side paper auto detection is enabled in diagnostics, this command is ignored depend on combination of paper and print mode. The detail condition is below table.

For 1F 11 60 command sequence, "Ignore" means the setting does not take effect immediately but will be saved to EEPROM

| Print mode | Paper | Paper matching status (Bit 5 & 4 of 1F 6C, 1F 6D) | Actual print mode | Warning message print | 1F 60 and 1F 11 60 command | Reset of Print mode in ESC @ |
|---|---|---|---|---|---|---|
| Single side mode | Single side | 01 | Single side | No print | Ignore | Ignore |
|  | Double side | 01 | Single side | No print | Valid | Valid |
| Double side with single side command | Single side | 10 | Single side | Print | Ignore | Ignore |
|  | Double side | 01 | Double side with single side command | No print | Valid | Valid |

| Double side with double side command | Single side | 10 | Double side with double side command[note1] | Print | Valid | Valid |
|---|---|---|---|---|---|---|
| | Double side | 01 | Double side with double side command | No print | Valid | Valid |
| Double side with predefined data | Single side | 10 | Double side with predefined data[note]<br><br>Predefined data is printed on Front side. | Print | Valid | Valid |
| | Double side | 01 | Double side with predefined data | No print | Valid | Valid |

## Select Thermal Printing Side

**ASCII**:    US a *n*

**Hexadecimal**:    1F 61 *n*

**Decimal:**    31 97 *n*

**Value of *n*:**    0 = Front Side

     1 = Back Side and

**Default:**    0 (Front Side)

Selects the thermal printing side: front side or back side in Double Side Mode w/Double Side Command.(1Fh 60h 02h)

This command is valid for subsequent lines.

**Exceptions:**

The command is enabled only when input is at the beginning of a print line, printer is in Double Side Mode w/ Double Side Command, and receipt station is selected.

If either side is larger than buffer, printer prints out automatically and print buffer is cleared. Thermal printing mode and selected print size are not changed.

If current side is in page mode when this command is received, printer will return to standard mode and clear defined page area before changing sides.

**Limitations**

Character attributes are not changed when print side is changed

## Start Double Sided Printing

| | |
|---|---|
| **ASCII**: | US b |
| **Hexadecimal**: | 1F 62 |
| **Decimal:** | 31 98 |

Start double sided printing.

This command executes if the Thermal Printing Modes, Double Side Mode with Double Side Command is selected (n=2), and receipt station is selected, otherwise, this command is ignored.

Receipt length is determined by the longer side.

If page mode has been selected the printer will return to non page mode command after the data has been printed.   If printer is in page mode when this command is received, page mode data will be printed and defined page area will be cleared.

## Select or Cancel Upside Down Printing for Double Side Mode

| | |
|---|---|
| **ASCII**: | US c *n* |
| **Hexadecimal**: | 1F 63 *n* |
| **Decimal:** | 31 99 *n* |
| **Value of *n*:** | Bit 0 = 0: Cancel Front Side upside down printing |
| | 1: Enable Front Side upside down printing |
| | Bit 1 = 0: Cancel Back Side upside down printing |
| | 1: Enable Back Side upside down printing |
| | Printing side (Front/Back side) is physical side of printing |
| **Default:** | 0 (Cancel upside printing for both side) |

This command will print the data upside down on the side as defined by n.

Execution of this command doesn't change EEPROM settings.

The Printer Setting Change command (1FH 11H) is used to store setting.

## Swap Front Side and Back Side

| | |
|---:|:---|
| **ASCII**: | US d $n$ |
| **Hexadecimal**: | 1F 64 $n$ |
| **Decimal:** | 31 100 $n$ |
| **Value of $n$:** | 0: Cancel swap. |
| | 1: Swap Front Side and Back Side. Original Front Side data is printed on the back side and the Back Side data is printed on the front side. |
| **Default:** | 0 (Cancel swap) |

This command will swap the front side data and backside data when in Double Side Mode.

Before swapping Front Side and Back Side, the Front Side data is printed by the Front Side thermal head. After swapping, the Front Side data is printed by the Backside thermal head.

Before starting double side printing, only the last received swap front side and backside command is effective.

This command is valid only when Double Side Mode (all 3 double side modes (1Fh 60h 01h, 02h or 03h)) and receipt station are selected.

Execution of this command doesn't change EEPROM settings.

The Printer Setting Change command (1FH 11H) is used to store setting.

**Limitation:**

For Double Side Mode w/Single Side Command, if Logo is printed immediately before paper cut, after swap, the printing pattern on Front Side (Backside before swap) will have a 41mm blank area.

Before Swapping of Sides

Front Side      Back Side

| Front Side | Back Side | |
|---|---|---|
| Logo<br>Line 1<br>…<br><br><br><br><br>Line 50 | <br><br>Line 51<br><br><br><br>Line 90 | Top Margin<br>41mm |

After Swapping of Sides

Front Side      Back Side

| Front Side | Back Side | |
|---|---|---|
| Line 41<br>…<br><br><br><br><br>Line 90 | Logo<br><br>Line 1<br><br><br><br>Line 40 | Blank gap will<br>be 23.5 mm |
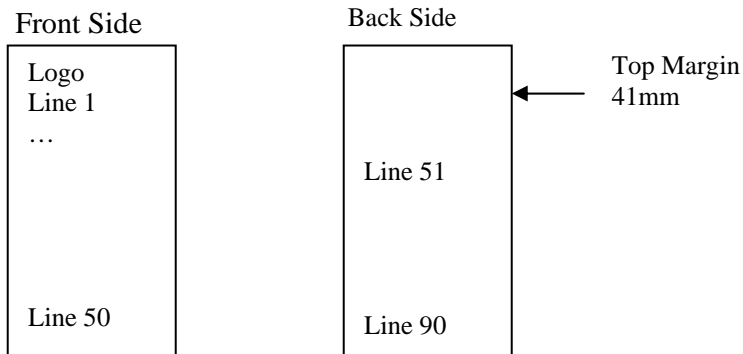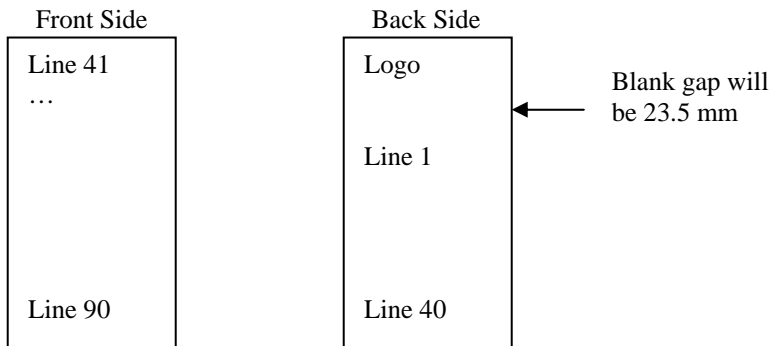
## Download 1-line Top/Bottom/Reprint Message into ROM

|  |  |
|---:|---|
| **ASCII:** | US e $n$ $k_1$ $d_1$ $d_2$ … $d_i$ NUL |
| **Hexadecimal:** | 1F 65 $n$ $k_1$ $d_1$ $d_2$ … $d_i$ 0 |
| **Decimal:** | 31 101 $n$ $k_1$ $d_1$ $d_2$ … $d_i$ 0 |
| **Value of $n$:** | $n$: The line number. $n$ = 0,1,2,3,4,5 |
| | $k_1$: The character attribute |
| | $d_1$, $d_2$, … , $d_i$: Strings of 1-line Text Message. Strings terminated with NUL |

This command will download one line of text into flash memory.

The message is used in all Double Side Modes. User can select to automatically add a 1-line/2-line text message at the bottom of the Front Side or/and at top of the Back Side or at the top of the page reprint data after error recovery.

Front Side uses line 0 and line1, and Back Side uses line 2 and line 3.

Printing side (Front/Back side) is logical side of printing.

Logical Front Side is the side that contains the first information to be printed.

Logical Back Side is the side that contains the last information to be printed.

Physical Front side is the side printed by the front thermal head.

Physical Back side is the side printed by the back thermal head.

Lines 4 and 5 are defined as the reprint messages. These lines are printed if they are defined, the reprint message is enabled and an error occurs during the printing of a receipt.

The line number n

| n | Message | printing side |
|---|---|---|
| 0 | Bottom Message line 1 | Logical Front Side |
| 1 | Bottom Message line 2 | |
| 2 | Top Message line 1 | Logical Back Side |
| 3 | Top Message line 2 | |
| 4 | Reprint Message line 1 | Physical Front Side |
| 5 | Reprint Message line 2 | |

Setting of Character Attribute

| $k_1$ | | |
|---|---|---|
| Bit 7 | 0: Italic Mode off | 1: Italic Mode on |
| Bit 6 | 0: Inverse video mode off | 1: Inverse video mode on |
| Bit 5 | 0: Black | 1: Color |
| Bit 4 | 0: Emphasize mode off | 1: Emphasize mode on |
| Bit 3 | 0: Double width off | 1: Double width on |
| Bit 2 | 0: Double height off | 1: Double height on |
| Bit 1&0 | Bit1 | Bit0 | |
| | 0 | 0 | Underline mode off |
| | 0 | 1 | 1 dot underline |
| | 1 | 0 | 2 dot underline |

Data exceeding one line will be ignored.

If command sequence is US e n k NUL, printer will clear the nth line message in flash memory.

If only one line is defined, printer will only print the defined line.

When print data is only one side data, Top/Bottom message will not be printed.

**Limitation:**

1. The following attributes will not be supported: Script mode, Double strike mode, 90° Left/Right Rotation, Print Start Position, Character size

2. Attributes cannot be changed within print line.

3. The printable width for Top/Bottom message is 576 dots (80mm paper), or 424 dots (58mm paper). If 58 mm print width is selected, printer automatically uses compress pitch font to print Top/Bottom/Reprint message.

4.  Top/Bottom/Reprint message is printed based on diagnostic setting. If user changes printer setting during printer operation, the current top/bottom/reprint message is not affected unless the message is redefined or printer is restarted

## Enable Top/Bottom/Reprint Message

|  |  |
|---|---|
| **ASCII:** | US f n |
| **Hexadecimal:** | 1F 66 n |
| **Decimal:** | 31 102 n |
| **Value of n:** | Bit 0 =  0: Disable pre-defined bottom message on front side |
|  | 1: Enable pre-defined bottom message on front side |
|  | Bit 1 =  0: Disable pre-defined top message on back side |
|  | 1: Enable pre-defined top message on back side |
|  | Bit 2 =  0: Disable printing of error message |
|  | 1: Enable printing of error message |
| **Default:** | 0 (Disable predefined bottom and top message) |

When this function is enabled, printer will automatically add a 1-line or 2-line text message at the bottom/top of front side/backside of receipt.

This command is only valid when Double Side Modes (1Fh 60h 01h , 02h or 03h) (All w/Single Side Command and w/Double Side Command and w/Pre-defined data) and receipt station is selected.

Execution of this command doesn't change EEPROM settings.

The Printer Setting Change command (1FH 11H) is used to store setting.

## Select nth Macro

| | |
|---:|:---|
| **ASCII**: | US g *n* |
| **Hexadecimal**: | 1F 67 *n* |
| **Decimal:** | 31 103 *n* |
| **Value of *n*:** | 1 to 25 |
| **Default:** | *n* = 1 |

Select nth macro for definition or execution.

The existing commands to define macro and execute macro are used in conjunction with the US g command which are listed below.

Start or End Macro Definition (GS :)

Execute Macro 1Dh 5Eh(GS ^)

The Macro buffer size is up to 25*2048 bytes. A macro can exceed 2048 bytes, but the total macros size cannot exceed 50 Kbytes.

Printer will not check Macro data validity during Macro definition.

A macro can be nested, but can only be nested 1 Macro deep.

**Exception**

If GS ^ (Execute Macro) is in Macro data without changing the Macro ID, this Macro will be cleared during first time execution.

Printer will not check whether Macro is nested more than 1 Macro deep during Macro definition.  If printer executes a Macro nested with 2 (or more) Macro deep, printer will abort execution before the 2nd deep Macro's execution.

For example, command sequence is

1F 67 03(Select 3rd Macro), 1D 3A(Start/End Macro definition) data… 1F 67 01(Select 1st Macro) … 1D 5E(Execute selected Macro) data… 1D 3A(End Macro definition)

In this example, Macro #3 is defined, and it will execute Macro #1.  However, if the definiton of Macro #1 is changed and it is nested with another Macro, printer will abort Macro #3's execution.

## Start or End Pre-Defined Back Side Printing Data Definition

| | |
|---:|:---|
| **ASCII**: | US h |
| **Hexadecimal**: | 1F 68 |
| **Decimal:** | 31 104 |

Starts or ends Pre-Defined Back Side Printing and stored into the flash memory. Pre-defined back side printing definition begins when this command is received during normal operation. A second US h command is required to finalize the definition of the pre-defined data. For example the US h command is issued and then the pre-defined data is sent to the printer and then a second US h command is sent to end the definition of the pre-defined data.

If the printer receives a second "Start or End Pre-Defined Back Side Printing" immediately after previously receiving a "Start or End Pre-Defined Back Side Printing" the printer will clear Pre-Defined Back Side Printing data.

Exceptions:

During definition of pre-defined backside printing data, printer will not check data validity.

If pre-defined backside data definition contains GS : (Start or End Macro Definition), the definition will be cleared during the first execution (when Double Side Mode w/Predefined Backside is selected).

Below commands are ignored in predefined backside data.

1F 60 03 (Select Double Side Mode w/Predefined Backside Data)

1F 65 (Download 1 line Text Message into ROM)

## Define Minimum Receipt Length

| | |
|---:|:---|
| **ASCII**: | US i *n1 n2* |
| **Hexadecimal**: | 1F 69 *n1n2* |
| **Decimal:** | 31 105 *n1 n2* |
| **Value of *n*:** | Number of dots to be moved from the beginning of the line |
| **Value of *n1*:** | Remainder after dividing *n* by 256. (0 – 255) |
| **Value of *n2*:** | Integer after dividing *n* by 256. (0 – 255) |

**Default:**   *n1* = 0

      *n2* = 0

This command defines the minimum receipt length before the printer will print in double side mode. This setting is only enabled for "Double Sided Mode with Single Side Command". (1F 60 01)

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

Printer will not split receipt into two sides if defined length is less than 23.5mm.

**Formulas:**

To set minimum receipt length to two inches at the default vertical motion unit of 1/203 inches, send the four-byte string:

**US i 150 1**

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

**Notes:**

Receipt length in this command refers to the length from top of the receipt to the last valid print line. (excluding Top Marigin area and line feeds before knife cut)
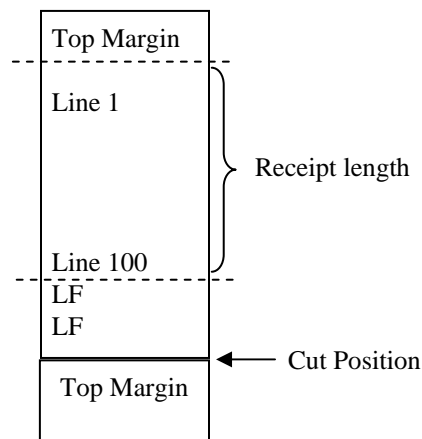
Figure: Single side receipt sample

## Print a Variable

| | |
|---:|:---|
| **ASCII**: | US j **n** [**m**, **o**] |
| **Hexadecimal**: | 1F 6A **n** [**m**, **o**] |
| **Decimal:** | 31 106 **n** [**m**, **o**] |
| **Value of *n*:** | 1 to 50 ( Variable ID ), 0 -- Use [**m**, **o**] |
| **Value of m, o**: | These parameters only exist if **n** = 0 |
| | **m** - 1 to 50 ( Variable ID ) |
| | **o** - Fixed length to print 1 to 57 |

This command will print a selected variable.

If the variable is not defined, this command is ignored.

If number of characters in variable ID is > **o** then it is truncated and only prints **o** characters

If number of characters in variable ID is < **o** then blank space fill printing until length of **o** is reached

## Define a Variable

| | |
|---:|:---|
| **ASCII**: | US k *n* $d_1$ $d_2$ … $d_i$ NUL |
| **Hexadecimal**: | 1F 6B*n* $d_1$ $d_2$ … $d_i$ 0 |
| **Decimal:** | 31 107 *n* $d_1$ $d_2$ … $d_i$ 0 |
| **Value of *n*:** | The variable ID.  *n* = 1 to 50 |
| | $d_1$, $d_2$, … , $d_i$: Strings of character data.  Strings terminated with NUL |
| **Default:** | *n* = 1 |

Defines the content of the *n*th Variable.

The maximum data length is 57 bytes.

Variables can be included in the macro and pre-defined backside data.

The defined variables are only saved in RAM. They need to be redefined after a power cycle.

**Exceptions:**

Variable data can only be characters. If any control code is included, these commands will be ignored.

**Notes:**

This command doesn't support printing position. In standard mode, printer cannot print data that is higher than current print position. If in page mode, user can use positioning command (1D 24 or 1D 5C) for page mode.

.

## Return Thermal Printing Mode (Batch mode command)

**ASCII**:    US l *n*

**Hexadecimal**:    1F 6C *n*

**Decimal:**    31 108 *n*

**Value of *n*:**    1 = Thermal printing mode status

Transmits the status specified by n. This is a batch mode command which transmits the response after all prior data in the receive buffer has been processed.

**Thermal printing mode status**

| Bit | Off/On | Bin | Decimal | Function |
|---|---|---|---|---|
| 1, 0 | - | 00 | 0 | Single Side Mode |
| | - | 01 | 1 | Double Side Mode w/Single Command |
| | - | 10 | 2 | Double Side Mode w/Double Command |
| | - | 11 | 3 | Double Side Mode w/Predefined Backside |
| 2 | - | 0 | 0 | Not defined.  Fixed at 0. |
| 3 | Off | 00 | 0 | Front Side selected (valid only in Double Side Mode w/Double Command) |
| | On | 01 | 8 | Back Side selected(valid only in Double Side Mode w/Double Command) |
| 4,5 | - | 00 | 0 | Paper detection not finished yet |
| | - | 01 | 16 | Paper and thermal printing mode match |
| | - | 10 | 32 | Paper and thermal printing mode does not match |
| | - | 11 | 48 | Not defined |
| 6 | - | 0 | 0 | Not defined.  Fixed at 0. |
| 7 | - | 0 | 0 | Not defined.  Fixed at 0. |

| Printing mode | Paper | Bit 5 & 4 status |
|---|---|---|
| Single side mode | Single Side | 01 |
| | Double Side | 01 |
| Double Side Mode w/Single Command | Single Side | 10 |
| | Double Side | 01 |
| Double Side Mode w/Double Command | Single Side | 10 |
| | Double Side | 01 |
| Double Side Mode w/Predefined Backside | Single Side | 10 |
| | Double Side | 01 |

## Return Thermal Printing Mode (Real time command)

**ASCII**:    US m *n*

**Hexadecimal**:    1F 6D *n*

**Decimal:**    31 109 *n*

**Value of *n*:**    1 = Thermal printing mode status

Transmits the status specified by n when in real time mode

**Thermal printing mode status**

| Bit | Off/On | Bin | Decimal | Function |
|-----|--------|-----|---------|----------|
| 1, 0 | - | 00 | 0 | Single Side Mode |
|  | - | 01 | 1 | Double Side Mode w/Single Command |
|  | - | 10 | 2 | Double Side Mode w/Double Command |
|  | - | 11 | 3 | Double Side Mode w/Predefined Backside |
| 2 | - | 0 | 0 | Not defined.  Fixed at 0. |
| 3 | Off | 00 | 0 | Front Side selected (valid only in Double Side Mode w/Double Command) |
|  | On | 01 | 8 | Back Side selected(valid only in Double Side Mode w/Double Command) |
| 4,5 | - | 00 | 0 | Paper detection not finished yet |
|  | - | 01 | 16 | Paper  and thermal printing mode match |
|  | - | 10 | 32 | Paper and thermal printing mode does not match |
|  | - | 11 | 48 | Not defined |
| 6 | - | 0 | 0 | Not defined.  Fixed at 0. |
| 7 | - | 0 | 0 | Not defined.  Fixed at 0. |

| Printing mode | Paper | Bit 5 & 4 status |
|---------------|-------|------------------|
| Single side mode | Single Side | 01 |
|  | Double Side | 01 |
| Double Side Mode w/Single Command | Single Side | 10 |
|  | Double Side | 01 |
| Double Side Mode w/Double Command | Single Side | 10 |
|  | Double Side | 01 |
| Double Side Mode w/Predefined Backside | Single Side | 10 |
|  | Double Side | 01 |

# Chapter 7: Re-flashing the Printer Firmware

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## Flash Utility Information

The following instructions provide information on how to use the Flash Utilities provided for the 7167, 7168, 7197, 7198, 7401-K590 and 7342-F306 printers.  These instructions cover the utilities provided for Windows 9x/NT/2000 GUI, Windows Command Line, and DOS.

The following are the files which comprise the utilities:

**TseFlash.exe** – Windows GUI version of the Flash Utility
**TseFlash.com** – Windows Command Line Flash Utility
**Aflash.exe** – DOS Command Line Flash Utility
**help.bat** – Batch file that causes TseFlash.com to display command line options.
**msvcrt.dll** – Windows system DLL used by TseFlash utility and distributed with it.
**mfc42.dll** – Microsoft Foundation  Class Library DLL used by TseFlash utility and distributed with it.

## File Configurations

There are several different kinds of firmware loads that can be sent to the printer:

1. Boot Firmware
2. Main Firmware
3. Single Byte Font
4. Two Byte Receipt Font
5. Two Byte Slip Font

The **Single Byte Font** file has a file extension of **.sfn**.  It is the font used for OEM Codepages such as 437, 850, 858, etc. which require only a single byte of data to define the character to be printed.
The **Two Byte Font** files ( Separately Defined for Slip & Receipt ) have a file extension .dfn.
These are used to define Code Pages 932 – Japanese, 936 – Simplified Chinese, 949 – Korean, 950 – Traditional Chinese.

If is very rare for the Single Byte Font to have to be updated.  Since there is only enough memory in the printer for one of the Two Byte Fonts to be loaded at any time, the Two Byte Font will typically need to be loaded prior to installation in the appropriate country.

The Font files both Single and Two byte should be loaded into the printer after the Boot and Main firmware have been loaded.

## Printer Languages Cross Reference

| FONT TYPE | FILENAME | PRINTER | PRINT STATION | DOWNLOAD TYPE |
|---|---|---|---|---|
| Non Asian | A0106.sfn * | 7167 | Receipt & Slip | ANK FONT |
| | EA0111.sfn * | 7168 | Receipt & Slip | ANK FONT |
| | EA0111.sfn * | 7198 | Receipt | ANK FONT |
| | A0106.sfn * | 7197 | Receipt | ANK FONT |
| | ANK.sfn * | K590 | Receipt | ANK FONT |
| | A0106.sfn * | 7342-F306 | Receipt | ANK FONT |
| Japanese CP932 | A0106.sfn * | 7167 | Receipt & Slip | ANK FONT |
| | J0104.dfn * | 7167 | Receipt | RECEIPT ASIAN FONT |
| | J0106_s.dfn * | 7167 | Slip | SLIP ASIAN FONT |
| | EA0111.sfn * | 7168 | Receipt & Slip | ANK FONT |
| | EA0111.sfn * | 7198 | Receipt | ANK FONT |
| | EJ104.dfn * | 7168/7198 | Receipt | RECEIPT ASIAN FONT |
| | EJ106_s.dfn * | 7168 | Slip | SLIP ASIAN FONT |
| | SamJ0100.dfn * | 7197 | Receipt | RECEIPT ASIAN FONT |
| | ANK.sfn * | K590 | Receipt | ANK FONT |
| | J0103.dfn * | K590 | Receipt | RECEIPT ASIAN FONT |
| | PARKJV20.dfn * | 7342-F306 | Receipt | RECEIPT ASIAN FONT |
| Korean CP949 | A0106.sfn * | 7167 | Receipt & Slip | ANK FONT |
| | K0103.dfn | 7167 | Receipt | RECEIPT ASIAN FONT |
| | K0101_s.dfn | 7167 | Slip | SLIP ASIAN FONT |
| | EA0111.sfn * | 7168 | Receipt & Slip | ANK FONT |
| | EA0111.sfn * | 7198 | Receipt | ANK FONT |
| | EK103.dfn * | 7168/7198 | Receipt | RECEIPT ASIAN FONT |
| | EK0101_s.dfn * | 7168 | Slip | SLIP ASIAN FONT |
| | A0106.sfn * | 7197 | Receipt | ANK FONT |
| | K0103.dfn | 7197 | Receipt | RECEIPT ASIAN FONT |
| | ANK.sfn *- | K590 | Receipt | ANK FONT |
| | K0103.dfn | K590 | Receipt | RECEIPT ASIAN FONT |
| | A0106.sfn * | 7342-F306 | Receipt | ANK FONT |
| | K0103.dfn | 7342-F306 | Receipt | RECEIPT ASIAN FONT |
| Simple Chinese  CP936 | A0106.sfn * | 7167 | Receipt & Slip | ANK FONT |
| | S0102.dfn | 7167 | Receipt | RECEIPT ASIAN FONT |
| | S0102_s.dfn | 7167 | Slip | SLIP ASIAN FONT |
| | EA0111.sfn * | 7168 | Receipt & Slip | ANK FONT |
| | EA0111.sfn * | 7198 | Receipt | ANK FONT |
| | ES0102.dfn * | 7168/7198 | Receipt | RECEIPT ASIAN FONT |
| | ES0102_s.dfn * | 7168 | Slip | SLIP ASIAN FONT |
| | A0106.sfn * | 7197 | Receipt | ANK FONT |
| | S0102.dfn | 7197 | Receipt | RECEIPT ASIAN FONT |
| | ANK.sfn * | K590 | Receipt | ANK Font |
| | S0102.dfn | K590 | Receipt | RECEIPT ASIAN FONT |
| | A0106.sfn * | 7342-F306 | Receipt | ANK FONT |
| | S0102.dfn | 7342-F306 | Receipt | RECEIPT ASIAN FONT |

| FONT TYPE | FILENAME | PRINTER | PRINT STATION | DOWNLOAD TYPE |
|---|---|---|---|---|
| Traditional Chinese | A0106.sfn * | 7167 | Receipt & Slip | ANK FONT |
| CP950 | T0102.dfn | 7167 | Receipt | RECEIPT ASIAN FONT |
| | TC0101_s.dfn | 7167 | Slip | SLIP ASIAN FONT |
| | EA0111.sfn * | 7168 | Receipt & Slip | ANK FONT |
| | EA0111.sfn * | 7198 | Receipt | ANK FONT |
| | ET0102.dfn * | 7168/7198 | Receipt | RECEIPT ASIAN FONT |
| | ET0101_s.dfn * | 7168 | Slip | SLIP ASIAN FONT |
| | A0106.sfn * | 7197 | Receipt | ANK FONT |
| | T0102.dfn | 7197 | Receipt | RECEIPT ASIAN FONT |
| | ANK.sfn * | K590 | Receipt | ANK FONT |
| | T0102.dfn | K590 | Receipt | RECEIPT ASIAN FONT |
| | A0106.sfn * | 7342-F306 | Receipt | ANK FONT |
| | T0102.dfn | 7342-F306 | Receipt | RECEIPT ASIAN FONT |

Note:

1. The noted font files are include on LPIN A370-0050-0000 or are available from the NCR web site under Retail Solution Specific Printer Firmware.
2. EA0111.sfn contains receipt and slip ANK fonts.
3. The * denotes that the printer is preloaded with these fonts from the factory.  The exception is that the 7342-F306 with version 0.32 and later version is not preloaded with CP932 Japanese font. Please take note that the 7342-F306 with version 0.33 and later version does not support CP932 Japanese compressed font.
4. When Asian fonts are to be used select the appropriate Asian Code Page in the diagnostic set and also enable the Asian Mode.

## DOS Flash Utility

The DOS flash utility is intended for use from a DOS Boot only.  It is mainly provided for remote flash capabilities by providing a way to create a DOS Boot Image that will automatically load and flash update the printer firmware without user intervention.

If you type AFLASH.EXE without any parameters you will get the following screen that describes the parameter usage:

```
Flash Memory Writer V2.11
Usage: AFLASH.EXE  <model> <type> <port> <baud rate> <filename>
 Options:
   <model>     : K590, 7167, 7197, 7167-X035, 7167-X115, 7168,
                  7168-X122, 7198, 7342-F306, 7346-F306 , 734X-F307
   <type>
     -m        : Download main firmware program
     -i        : Download ipl firmware program
     -a        : Download ANK single byte font
     -s        : Download ASIAN two byte font
     -rs       : Download receipt ASIAN two byte
                    font
     -ss       : Download slip ASIAN two byte font
     -sb       : Download SBCS CG Font
     -db       : Download DBCS CG Font
   <port>      : COM1, COM2
   <baud rate>: 1200, 2400, 4800, 9600, 19200, 38400, 57600,
                  115200
   <filename> : *.mfw | *.ipl | *.sfn | *.dfn
```

An example of a command line for updating the Main Firmware on a 7168 printer is as follows:

**AFLASH.EXE  7198  –m  COM1  115200  DSV3502.MFW**

NOTE: The DOS version of the Flash Utility can only be used for printers that are connected on COM1 or COM2.  The current version of the utility does not function for COM ports higher than 2.

If an error is encountered, the Usage information will be dumped to the screen followed by a status line that displays information along such as:

 **Error : Unable to open data file!**

 **Error : Invalid parameter <com>!**

## Windows Command Line Firmware Update Utility

The Windows Command Line version of the Flash Utility is provided to allow batch mode of operation in a Windows 95/98/NT4/2000 environment. If you issue a call to **TseFlash.com** with the **/?** parameter you will get the following out put that explains the parameters.

**NOTE**: This utility requires the **TseFlash.exe** to be in the same directory. **TseFlash.com** is just a shell that sends the command line options to **TseFlash.exe** to process.

```
----------------------------
*** TseFlash.com Ver 2.02 ***
Thank you for using TseFlash Flash Memory Writer command line interface utility!

Error: Usage: No Parameters attempt to be sent to TSEFLASH.EXE!

TseFlash [model] [file type] [COM] [baud] [parity] [stop] [file] [check model] [print(opt)]
[ErrorTimeOut(opt) 420 - 1800s]

Selections for the model:
   /[K590] [7402-K592] [7167] [7197] [7167-X035] [7342-F306] [7346-F306] [7167-X115]
[7168] [7168-X122][7198][734X-F307]
Selections for the download type:
  /m          Download firmware main program.
  /i          Download firmware IPL program.
  /a           Download ANK font or combined ANK & CP932 font
               for 7197/7342-F306/7346-F306/7168/7168-X122/7198.
  /s           Download ASIAN font for K590/7402-K592/7197/7342-F306/7346-F306
               except 7197/7342-F306 combined ANK & CP932 font, 7167-X115
  /rs          Download receipt ASIAN font for 7167,7168,7168-X122,7198, except 7167-
X035 & 7167-X115
  /ss          Download slip ASIAN font for 7167,7168,7168-X122,except 7167-X035 &
7167-X115
  /sb          Download SBCS font for 734X-F307
  /db          Download DBCS font for 734X-F307
Selections for the COM port or CPMI:
  /COMX        Where X is any valid integer within 1-20.
Selections for the baud rate (for RS232 Only):
  /[115200] | [57600] | [38400] | [19200] | [9600] | [4800] | [2400] | [1200]
Selections for the parity bit (for RS232 Only): /[none] | [even] | [odd]
Selections for the stop bit (for RS232 Only): /[1] | [2]
Selections for the filename :
  Any valid binary file with extension *.mfw | *.sfn | *.dfn | *.ipl.
Selections for the check model:
  /skip        Bypass checking printer model number.
  /noskip      Check printer model number & exit when there's a mismatch.
Selections for the print: (Optional Parameter)
  /print               (default) Print printer configuration form.
  /noprint     Bypass printing printer configuration form.
Failsafe: Max Time Allowed for Called Exe: (Optional Parameter)
   (ONLY USED BY TseFlash.COM
        /ErrorTimeOut=xxx      (minimum=420) xxx is number of Seconds - limit 1800.
```

If you fail to use the correct parameters an error message will be displayed similar to the one below.

**Error : Too few / many command line parameters!**

The following is an example of a command line:

**TseFlash.com /7198 /m /COM1 /115200 /none /1 DSV3502.MFW**

This invokes the GUI interface shown in the next section, and displays a progress bar indicator as you would see if you had run the program through the GUI.Windows GUI Printer Firmware Update Utility

The printer firmware can be updated from the host terminal, a laptop, or a PC by executing the TSEFlash.exe utility. There are two file formats for the flash firmware, IPL which is for the Initial Program Load (Boot) and the MFW, Main FirmWare.

Examples of the firmware are:

> **DSV1101.ipl**    7198 boot firmware
> **DSV3502.mfw**   7198 firmware

As noted this is an example and firmware version will vary as updates are provided.

These instruction show how to reflash a 7198 printer. However the same instructions can be used for reflashing other printers as well by selection the appropriate printer in the Change Mode button.

Unzip the flash utility (Flash311) and the flash files that you will be using into a directory on your hard disk.

## Using TseFlash.exe Utility

On the host terminal or PC running Windows, execute the utility TSEFlash.exe to start the program. A window similar to the example below will appear on the screen.
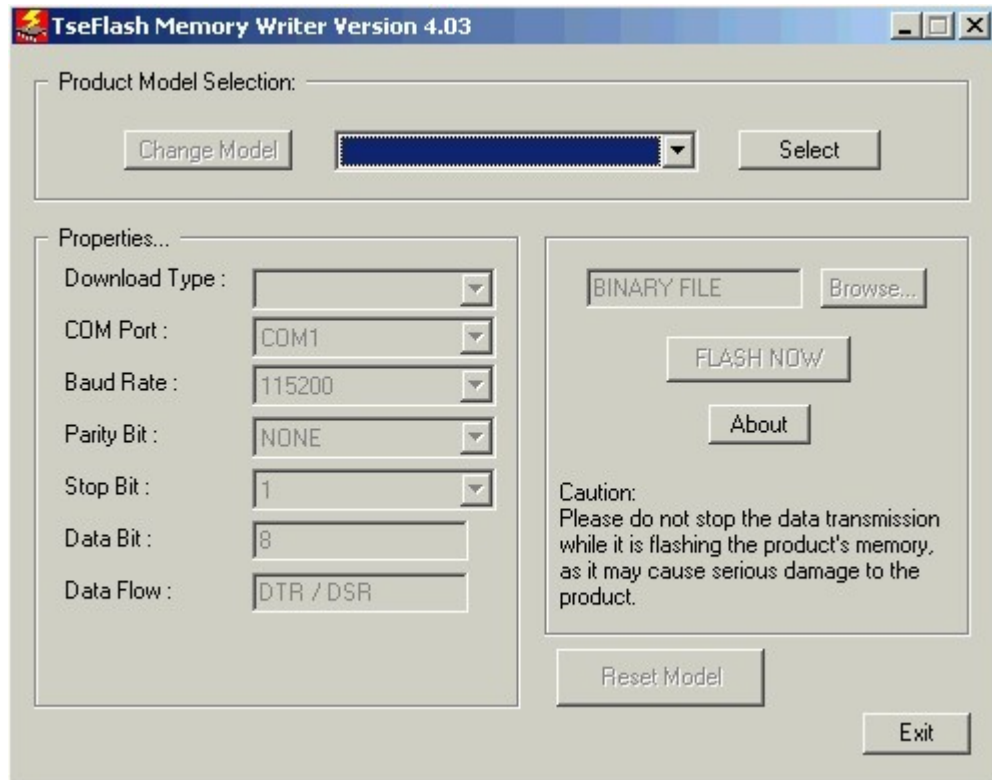
Click on the button indicated by the red arrow to display the dropdown box.  From the list, click on the printer type to be flashed. Select **7198** from the list for this printer.
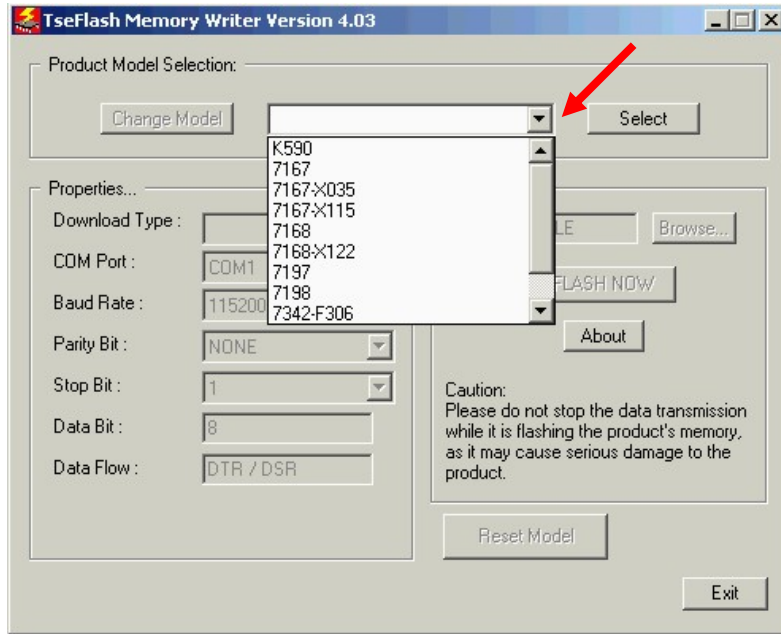


Next, click on the "Select" button indicated by the red arrow.  This will permit you to continue by making the remaining options available.
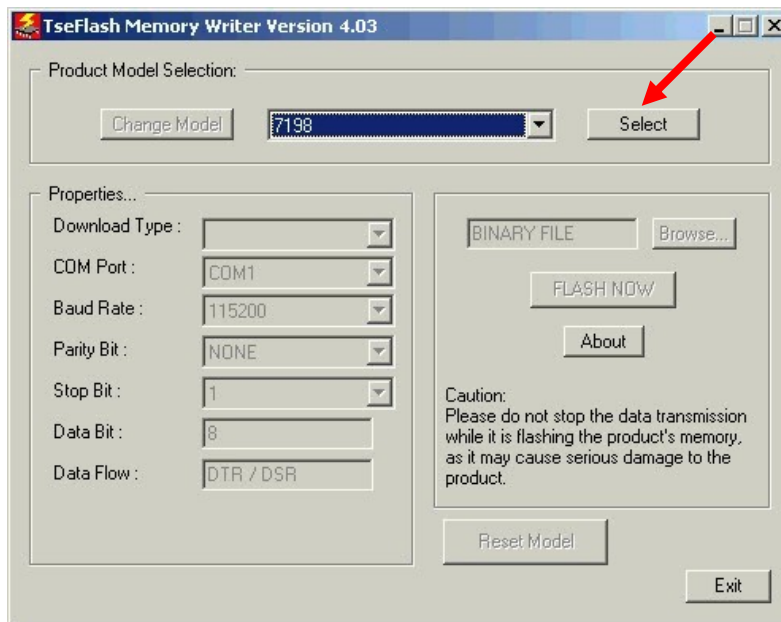
At this point, any of the properties in the red box can be changed. Clicking on the button to the right of the property (red arrow) will display the drop-down box with options available for the associated property.
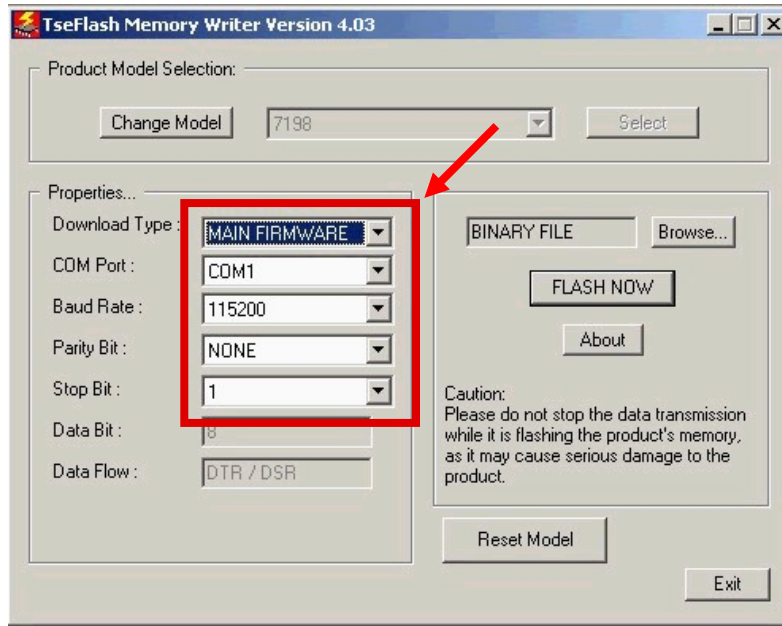


There are only two options in the "Download Type" property drop-down box to be concerned with. *Main FIRMWARE* is used to flash the main firmware file and *IPL FIRMWARE* is used to flash the boot firmware. The utility also provides the ability to download various font files that use the noted file extensions.
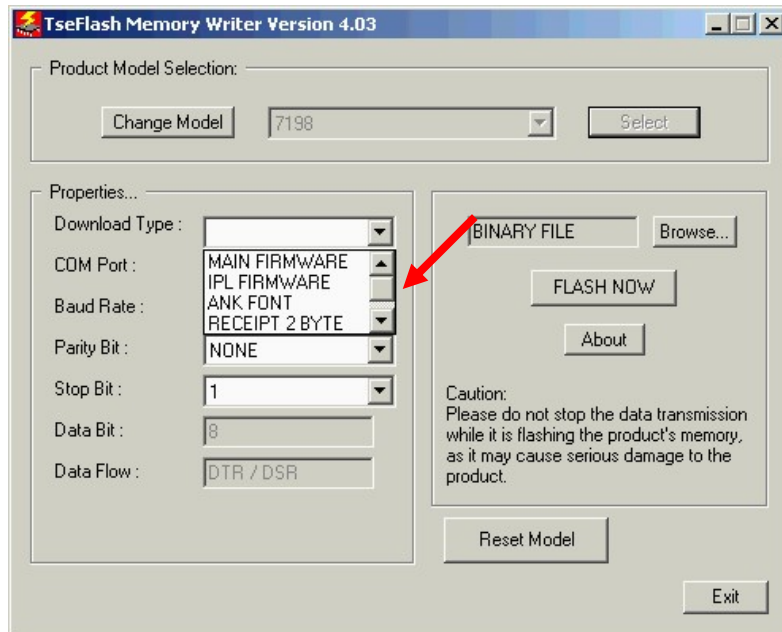
Select the COM port being used on the PC or host device to flash the printer.  The flash utility will be running on this PC.
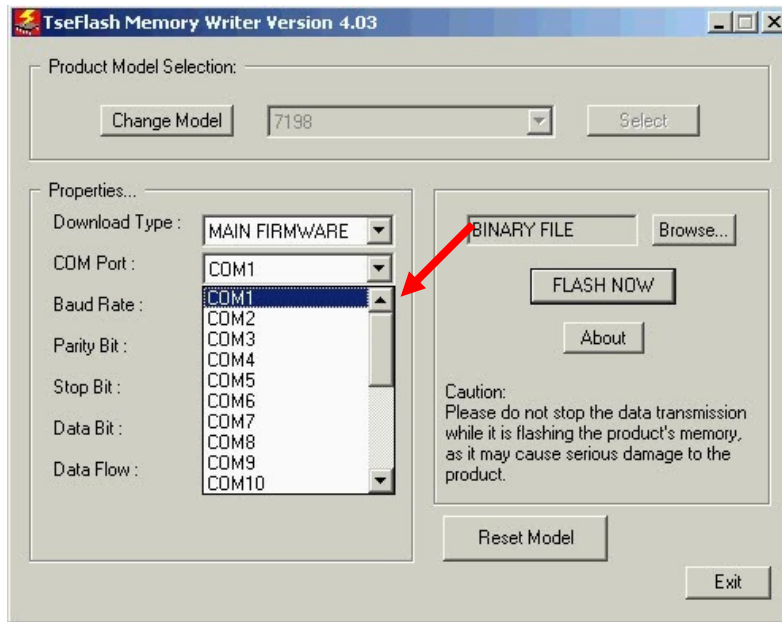


Select the printer baud rate setting.  Make certain that that the COM port selected on the host device will support 115,200 baud.  The utility will reset the printer baud rate to 115,200 baud flash the printer and then reset the baud rate back to the baud rate that was originally selected.
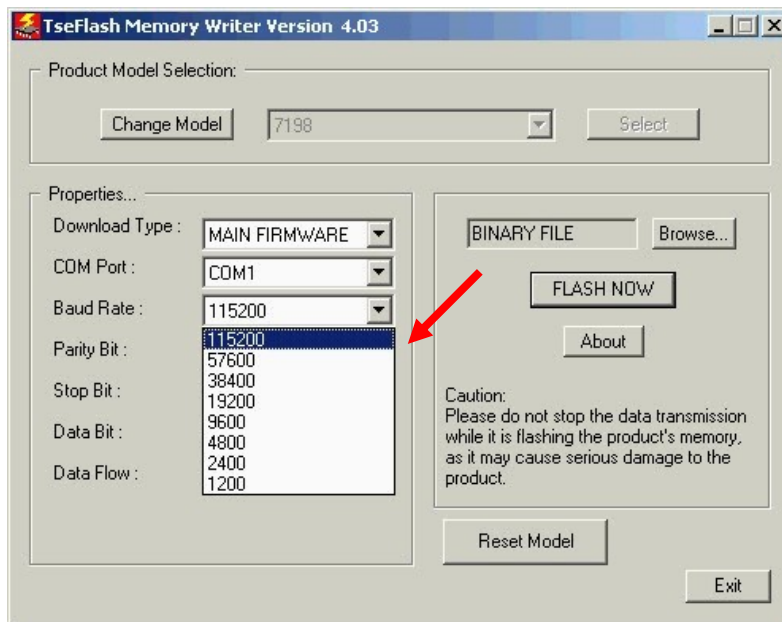
From the Parity type, select None, Odd, or Even to match this setting on the printer.
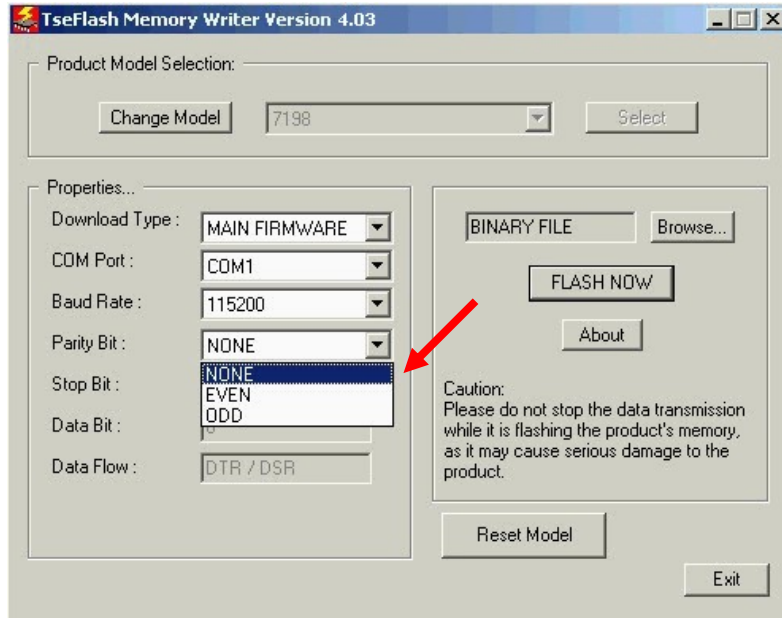


Again, match this property to this setting in the printer.
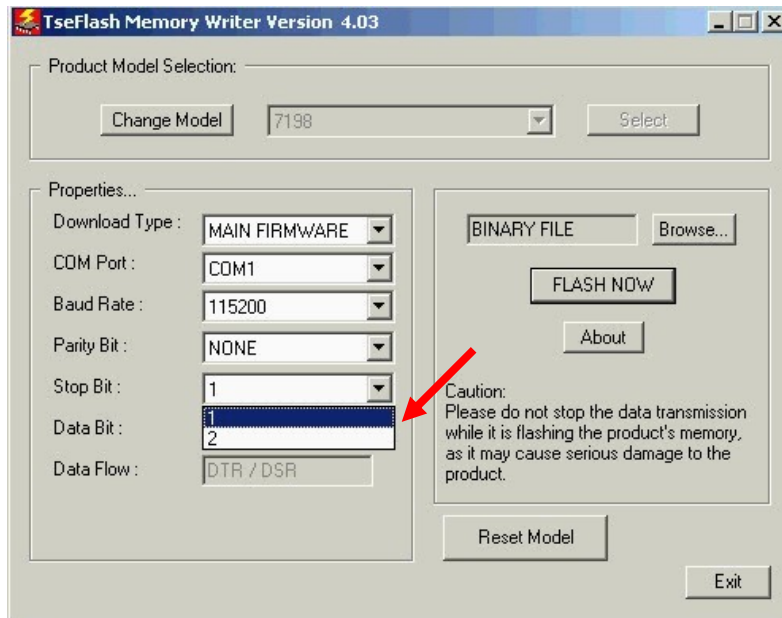


Once all the Properties are configured to match the printer settings, it is time to select the binary file to load into the printer firmware.  Click on the "Browse" button to make this selection.
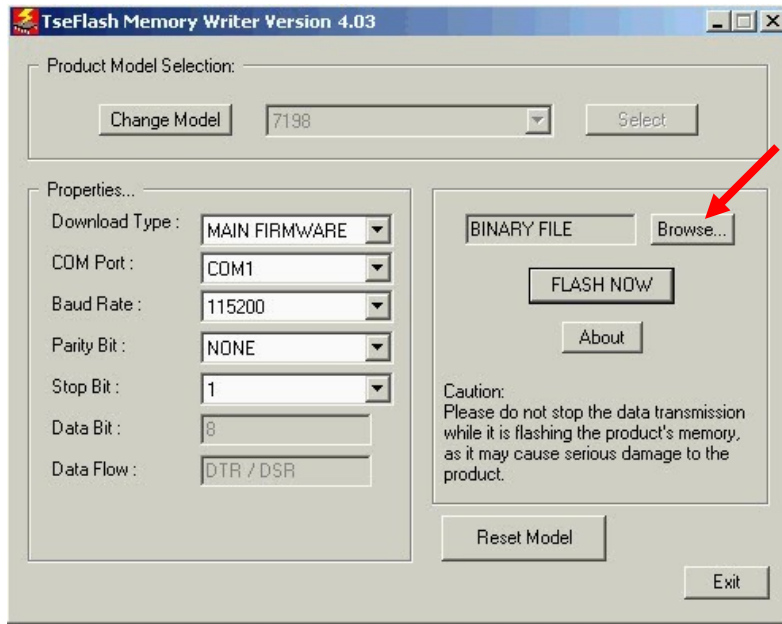
If "MAIN FIRMWARE" was selected as the Download Type, the search window will default to Main Firmware Files with a .mfw extension.
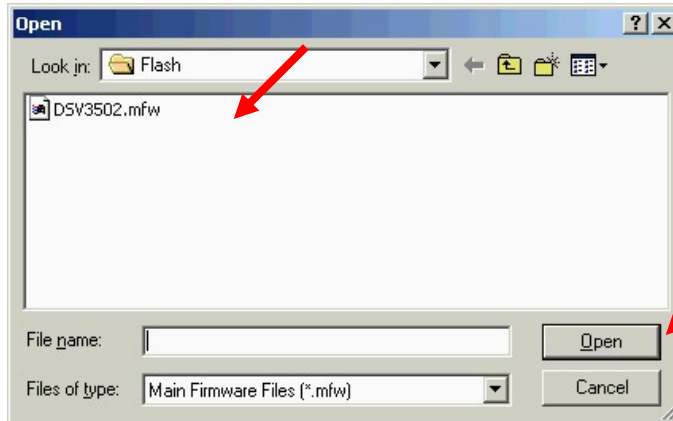
If "IPL FIRMWARE" was selected as the Download Type, the search window will default to IPL Program Files with a .ipl extension.
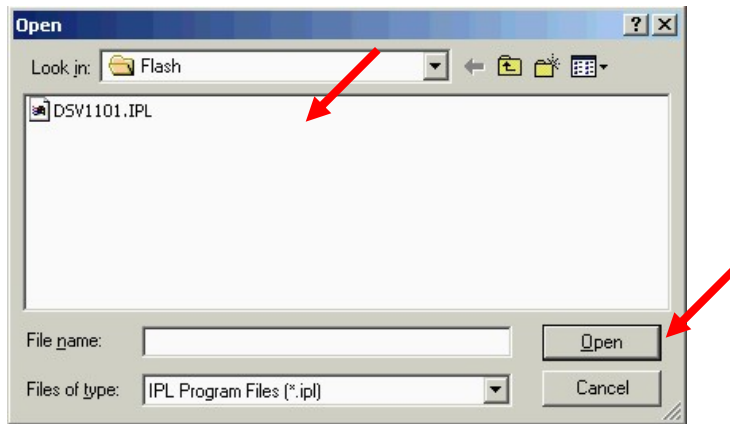


With the desired file selected and all properties set to the correct values, click on the "FLASH NOW" button to start the download process.
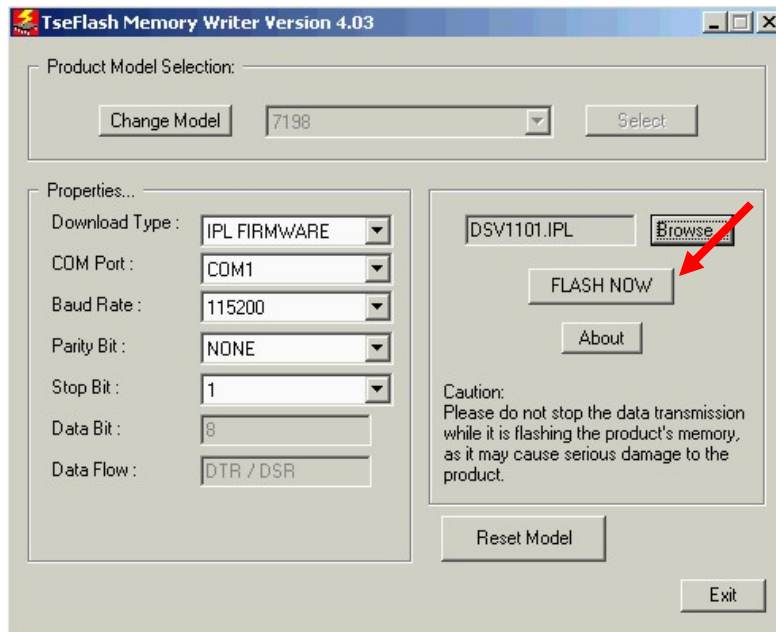
Once you start the flash process, a series of windows similar to the example shown here will appear.
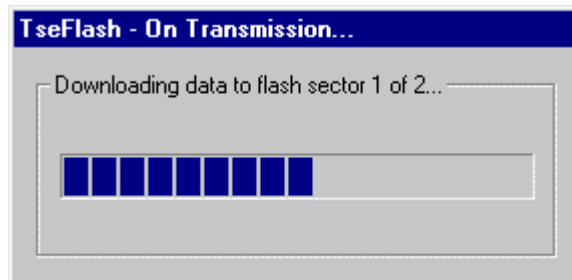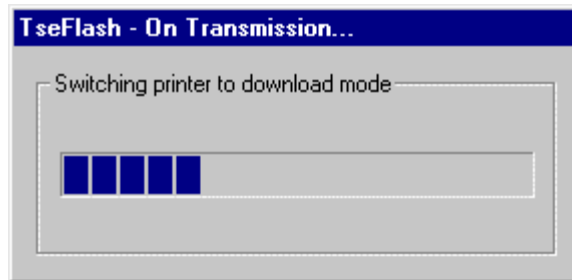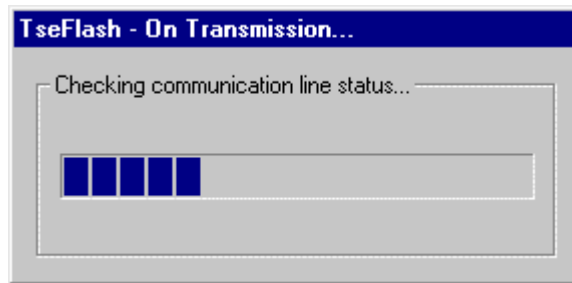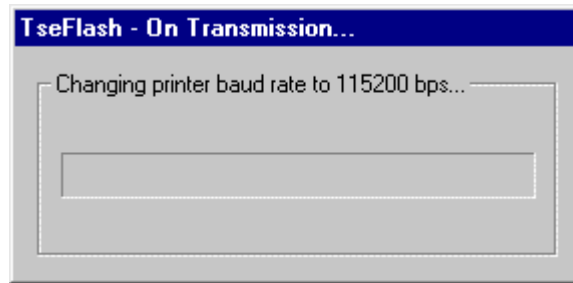








The flash sectors on this screen may vary depending on the quantity of sectors to be flashed.

**TseFlash - On Transmission...**

Reseting printer, please wait...

**TseFlash - On Transmission...**

Acknowledge

**TseFlash - On Transmission...**

Download completed!

**TseFlash - On Transmission...**

Restoring the product's previous baud rate...

**TSEFLASH**

Download successfully completed!

OK
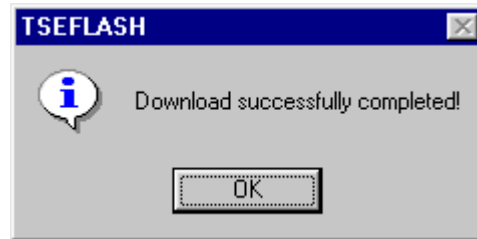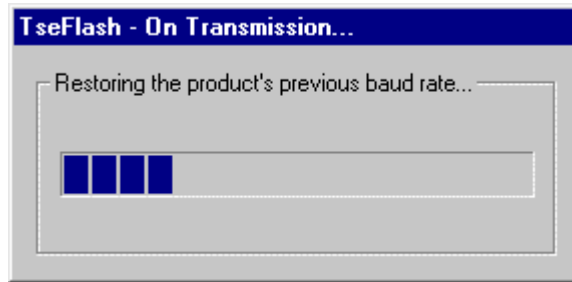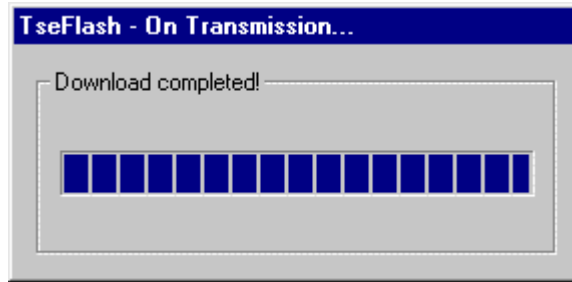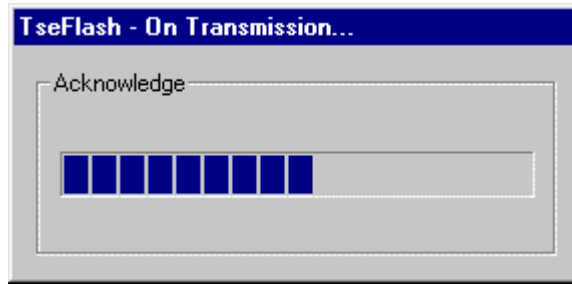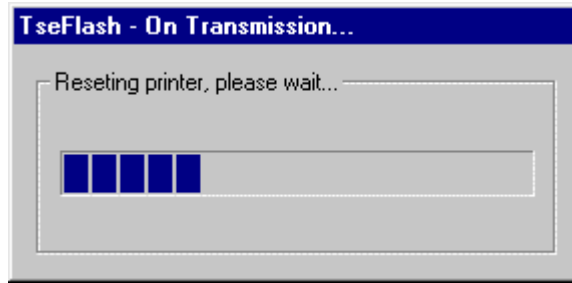
# Appendix A: Specifications

## Printing Specifications

|  | Thermal Receipt Station |
|---|---|
| Print head | Fixed<br>576 Print Elements<br>Direct Thermal<br>Fixed Heads<br>Line of Dots |
| Character Cell | Standard: 13 x 24 Dots<br>Compressed: 10 x 24 Dots |
| Character Size | .0525" Wide by .092" High |
| Character Spacing | 15.25 Characters per Inch (horizontal) |
| Character Pitch | 15.6 Characters/Inch (Standard)<br>20.3 Characters/Inch (Compressed) |
| Columns (maximum) | For 80 mm paper:<br>44 Columns (Standard)<br>56 Columns (Compressed)<br>For 58 mm paper:<br>32 Columns (Standard)<br>42 Columns (Compressed) |
| Print Mode | Standard, Compressed, Double High, Double Wide, Upside Down, Rotated, Underline, Scalable, Bold, Superscript, Italic, Subscript |
| Resident Fonts | Code Page 437, 850, 852, 860, 863, 865, 858, 866, 1252, Katakana, 874, 862, 864, and Space page |
| Speed | 3019 Lines / Minute (44 columns) maximum, Depend on Line Spacing |
| Print Order | Descending |
| Line Spacing | 7.52 Lines per Inch ( default )<br>8.47, 8.13, 7.81, 7.25, 7.00, 5.98 Lines /<br>Inch and variable lines per inch. |
| Slew Speed | 6.7  Inches per Second |
| Print Zone | 2.83  Inches Maximum |

| Thermal Receipt Station | |
| --- | --- |
| Noise | 57 dBA Sound Pressure (ISO 7779) |
| Graphics (Optional) | User-Defined Graphics, Logo |
| Other | No Reverse Paper Feed |

| Thermal Receipt Station | |
| --- | --- |
| Paper Diameter | 80 mm Max. |
| Paper Length | 83 Meters (273 feet) |
| Paper Width | 80 mm ± 1mm (3.15 Inches ± .02 Inches) |
| Paper Thickness | Not Applicable |
| Printable Area | 2.83 Inches (Max.) |

# Power Requirements

The 7198 printer receives power from a separate power supply. Here are the voltage requirements for the power supply.

| | | Maximum Current | |
| --- | --- | --- | --- |
| Voltage | Station | Short Term | Long Term |
| 24.0 V ± 10% | Receipt | 6.5 Amps | 3.15 Amps |

# Environmental Conditions

| Operating Temperature | 5°C to 45°C (40°F to 112°F), models with knife |
| --- | --- |
| | 5°C to 50°C (40°F to 120°F), models with no knife |
| Operating Humidity | 5% to 90% |

Condensation may occur when equipment is transferred from cold to warm areas after shipment. The printer's design permits operation after drying out and stabilizing at room temperature.

# Reliability

The numbers in the table refer to the Mean Cycle Between Failure (MCBF) for the items indicated.

| | |
|---|---|
| Thermal Receipt Printer | 52 Million Lines |
| Electronics | 460,000 On time Hours |
| Communications Card | 1,300,000 On Time Hours |
| Control Panel | 33,000,000 On Time Hours |
| Knife | 1 Million Cuts |
| Power Supply | 200,000 On-time Hours |

*Reliability statistics based on averages exhibited under lab conditions and do not constitute a warranty.

# Dimensions and Weight

| | |
|---|---|
| Height | 139.00 mm (5.5 Inches) |
| Height with Cover Open | 256.00 mm (10.1 Inches) |
| Width | 145.40 mm (5.7 Inches) |
| Depth | 220.00 mm (8.7 Inches) |
| Weight | 2.20 Kg (4.85 Pounds) |

# Density of Receipt Print Lines

When the receipt station prints high density print lines (graphics), it automatically slows down to a rate slower than 902 lines per minute. High density print lines are defined as lines with over 50% of the dots printing on the line (there are 576 total dot columns on the print station).

# Duty Cycle Restrictions (Printing Solid Blocks)

There are restrictions on the duty cycle because of the heat generated by the receipt thermal print head when printing solid blocks (regardless of the length of the block in relation to the print line). The restrictions are ambient temperature, the percentage of time (measured against one minute) of continuous solid printing, and the amount of coverage.

**Caution:** When the duty cycle approches the limits shown in the table, the receipt print head will heat up and shut down. This may damage the print head.

To avoid this problem, do one or a combination of the following:

1. Reduce the amount of coverage.

2. Reduce the time of continuous solid printing.

3. Reduce the ambient temperature.

| | Ambient Temperature | | |
|---|---|---|---|
| Amount of Solid Coverage | 25° C | 35° C | 50° C |
| 20% | 100% of 1 min. continuous printing | 50% of 1 min. continuous printing | 20% of 1 min. continuous printing |
| 40% | 50% of 1 min. continuous printing | 25% of 1 min. continuous printing | 10% of 1 min. continuous printing |
| 100% | 20% of 1 min. continuous printing | 10% of 1 min. continuous printing | 3% of 1 min. continuous printing |

Above data is for Single side printing mode only.

# Appendix B: Print Characteristics

## Character Size

This section shows the dot pattern for characters printed on the receipt station.

### Receipt Station

The following two illustrations show the dot patterns of sample characters for standard pitch (15.6 CPI) and compressed pitch (20.3 CPI). Note that compressed pitch uses fewer dots horizontally than standard pitch.

### Standard Pitch



**203 DPI, 15.6 CPI Pitch (Standard)**

## Compressed Pitch
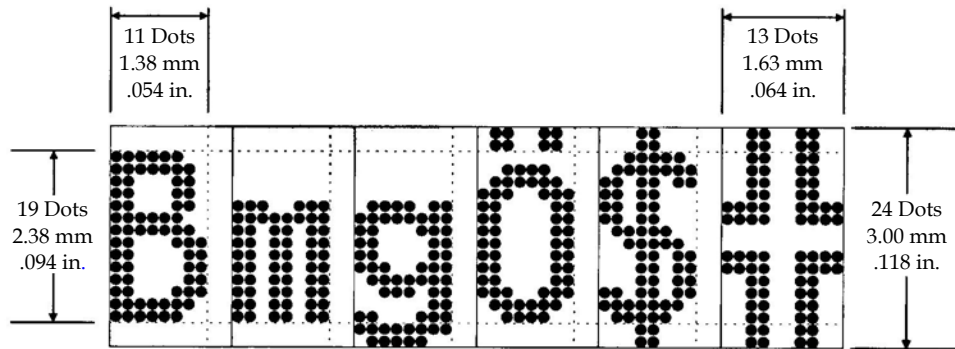


B - Upper Case
m - Lower Case
g - With Descender

Ö - With Ascender
$ - Both Ascender and Decsender
# - Graphic Symbol

**203 DPI, 19 CPI Pitch (Compressed)**
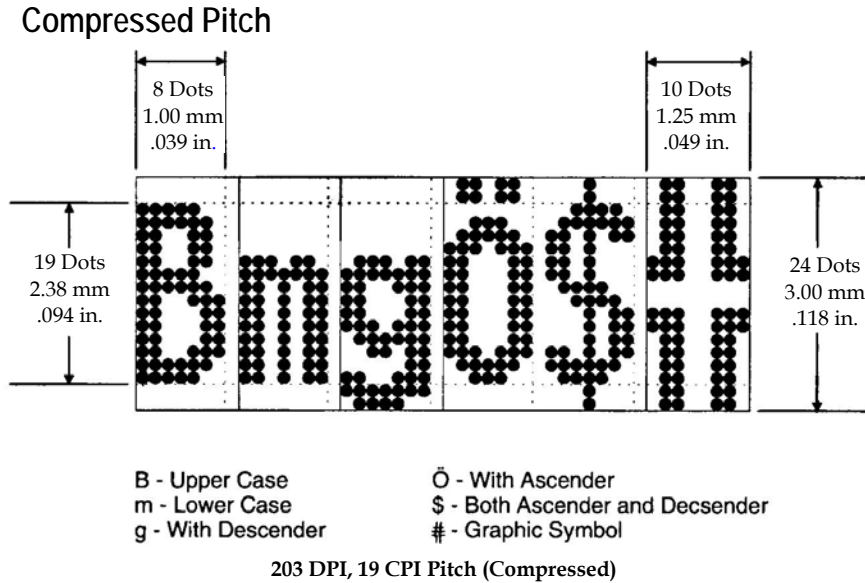
# Print Zones

This section shows the printable area for the receipt station.

## Receipt Station

### For 80 mm Paper

The receipt station centers characters (standard pitch and compressed pitch) and graphics on an 80 mm wide (3.15 inches) receipt.

- Standard pitch: 13 x 24 dots in character cell, 44 characters (columns) per line
- Compressed pitch: 10 x 24 dots in character cell, 56 characters (columns) per line
- Double byte character: 24 x 24 dots in character cell, 24 characters (columns) per line
- Graphics: 576 addressable bits

The minimum print line height is 24 dots for characters and 24 dots for graphics. The standard print line height is 27 dots (3.38 mm, .133 inches) for characters (with three extra dot rows). See the following illustration (not to scale).

A = 5 mm (0.197 in.)
B = 3 mm (0.118 in.)
C = 17.5mm (0.689 in.)
D = 41 mm (1.614 in.)
E = 72mm (2.835 in.)
F = Depend on print
    data condition
    (recommendation
    2mm (0.078 in.))
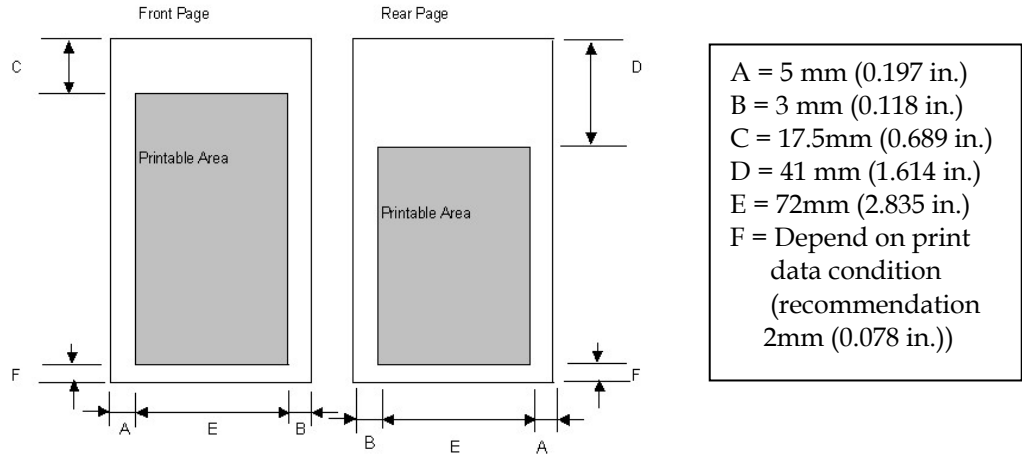
When Print information in previous transaction, printable are as follows
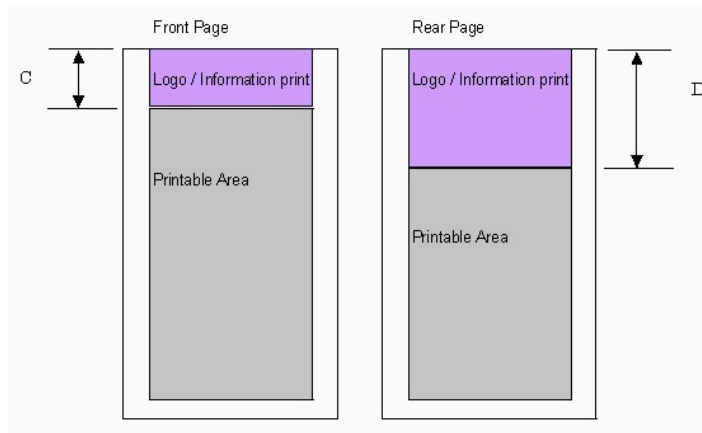


## For 58 mm Paper

The receipt station centers characters (standard pitch and compressed pitch) and graphics on an 58 mm wide (2.28 inches) receipt.

- Standard pitch: 13 x 24 dots in character cell, 32 characters (columns) per line
- Compressed pitch: 10 x 24 dots in character cell, 42 characters (columns) per line
- Double byte character: 24 x 24 dots in character cell, 17 characters (columns) per line
- Graphics: 424 addressable bits

The minimum print line height is 24 dots for characters and 24 dots for graphics. The standard print line height is 27 dots (3.38 mm, .133 inches) for characters (with three extra dot rows). See the following illustration (not to scale).

Front Page          Rear Page

A = 2 mm  (0.078 in.)
B = 3 mm (0.118 in.)
C = 17.5mm (0.689 in.)
D = 41 mm (1.614 in.)
E = (2.835 in.)
F = Depend on print
     data condition
     (recommendation
     2mm (0.078 in.))
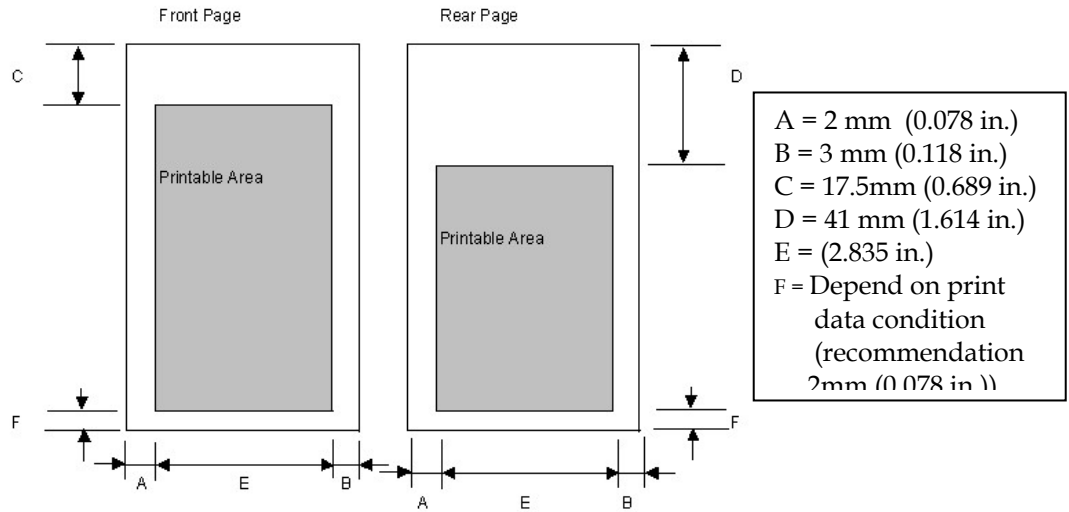
When Print information in previous transaction, printable are as follows
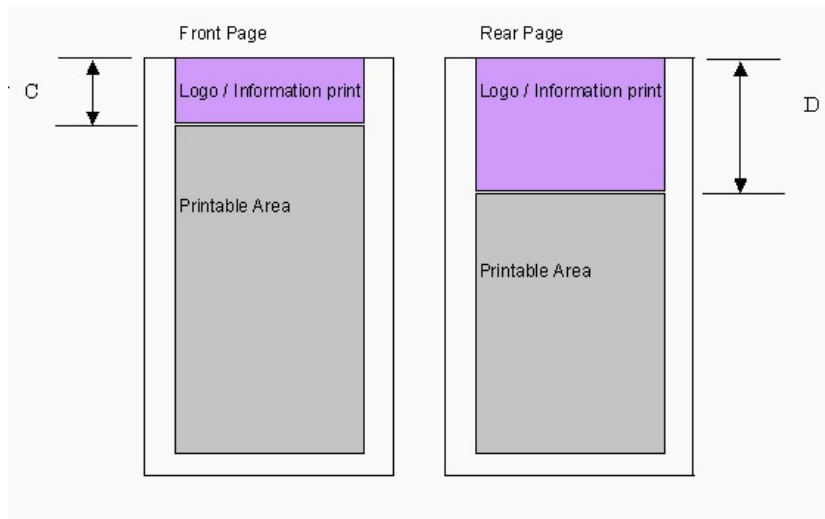
# Character Sets

The following pages show the character sets.

- PC Code Page 437 (US)

- PC Code Page 850 (Multilingual)

- PC Code Page 852 (Slavic)

- PC Code Page 860 (Portuguese)

- PC Code Page 862 (Hebrew)

- PC Code Page 863 (French-Canadian)

- PC Code Page 864 (Arabic)

- PC Code Page 865 (Nordic)

- PC Code Page 866 (Cyrillic)

- PC Code Page 1252 (Windows Latin #1)

- PC Code Page Katakana
- PC Code Page 874 (Thai)
- Space Page
- Code Page 932
- Code Page 936
- Code Page 949
- Code Page 950

## Code Page 950 Code Page 437, 850, 852 and 858

Code Page 437.

```
     2 3 4 5 6 7 8 9 A B C D E F

00     0 @ P ` p Ç É á ░ └ ╨ α ≡
01   ! 1 A Q a q ü æ í ▒ ┴ ╤ ß ±
02   " 2 B R b r é Æ ó ▓ ┬ ╥ Γ ≥
03   # 3 C S c s â ô ú │ ├ ╙ π ≤
04   $ 4 D T d t ä ö ñ ┤ ─ ╘ Σ ⌠
05   % 5 E U e u à ò Ñ ╡ ┼ ╒ σ ⌡
06   & 6 F V f v å û ª ╢ ╞ ╓ μ ÷
07   ' 7 G W g w ç ù º ╖ ╟ ╫ τ ≈
08   ( 8 H X h x ê ÿ ¿ ╕ ╚ ╪ Φ °
09   ) 9 I Y i y ë Ö ⌐ ╣ ╔ ┘ θ ∙
0A   * : J Z j z è Ü ¬ ║ ╩ ┌ Ω ·
0B   + ; K [ k { ï ¢ ½ ╗ ╦ █ δ √
0C   , < L \ l | î £ ¼ ╝ ╠ ▄ ∞ ⁿ
0D   - = M ] m } ì ¥ ¡ ╜ ═ █ φ ²
0E   . > N ^ n ˜ Ä ₧ « ╛ ╬ █ ε ■
0F   / ? O   o ⌂ Å ƒ » ┐ ┴ █ ∩
```

Code Page 850.

```
     2 3 4 5 6 7 8 9 A B C D E F

00     0 @ P ` p Ç É á ░ └ ð Ó -
01   ! 1 A Q a q ü æ í ▒ ┴ Ð ß ±
02   " 2 B R b r é Æ ó ▓ ┬ Ê Ô ‗
03   # 3 C S c s â ô ú │ ├ Ë Ò ¾
04   $ 4 D T d t ä ö ñ ┤ ─ È õ ¶
05   % 5 E U e u à ò Ñ Á ┼ ı Õ §
06   & 6 F V f v å û ª Â ã Í µ ÷
07   ' 7 G W g w ç ù º À Ã Î þ ¸
08   ( 8 H X h x ê ÿ ¿ © ╚ Ï Þ °
09   ) 9 I Y i y ë Ö ® ╣ ╔ ┘ Ú ¨
0A   * : J Z j z è Ü ¬ ║ ╩ ┌ Û ·
0B   + ; K [ k { ï ø ½ ╗ ╦ █ Ù ¹
0C   , < L \ l | î £ ¼ ╝ ╠ ▄ ý ³
0D   - = M ] m } ì Ø ¡ ¢ ═ ¦ Ý ²
0E   . > N ^ n ˜ Ä × « ¥ ╬ Ì ‾
0F   / ? O   o ⌂ Å ƒ » ┐ ¤ █ ´
```

Code Page 852.

```
     2 3 4 5 6 7 8 9 A B C D E F

00     0 @ P ` p Ç É á ░ └ đ Ó -
01   ! 1 A Q a q ü Ĺ í ▒ ┴ Ð ß ˝
02   " 2 B R b r é ĺ ó ▓ ┬ Ď Ô ˇ
03   # 3 C S c s â ô ú │ ├ Ë Ň ˘
04   $ 4 D T d t ä ö Ą ┤ ─ ď ň ¨
05   % 5 E U e u ů Ľ ą Á ┼ Ň ń §
06   & 6 F V f v ć ľ Ž Â Ă Í š ÷
07   ' 7 G W g w ç Ś ž Ě ă ĺ š ¸
08   ( 8 H X h x ł Ś Ş ╚ è Ř °
09   ) 9 I Y i y ë Ö ę ╣ ╔ ┘ Ú ¨
0A   * : J Z j z Ő Ü ¬ ║ ╩ ┌ ŕ ·
0B   + ; K [ k { ő Ť ź ╗ ╦ █ Ű ű
0C   , < L \ l | î ť č ╝ ╠ ▄ ý Ř
0D   - = M ] m } Ź Ł ş Ż ═ Ţ Ý ř
0E   . > N ^ n ˜ Ä × « ž ╬ Ů ţ ■
0F   / ? O   o ⌂ ć č » ┐ ¤ █ ´
```

Code Page 858.

```
     2 3 4 5 6 7 8 9 A B C D E F

00     0 @ P ` p Ç É á ░ └ ð Ó -
01   ! 1 A Q a q ü æ í ▒ ┴ Ð ß ±
02   " 2 B R b r é Æ ó ▓ ┬ Ê Ô ‗
03   # 3 C S c s â ô ú │ ├ Ë Ò ¾
04   $ 4 D T d t ä ö ñ ┤ ─ È õ ¶
05   % 5 E U e u à ò Ñ Á ┼ € Õ §
06   & 6 F V f v å û ª Â ã Í µ ÷
07   ' 7 G W g w ç ù º À Ã Î þ ¸
08   ( 8 H X h x ê ÿ ¿ © ╚ Ï Þ °
09   ) 9 I Y i y ë Ö ® ╣ ╔ ┘ Ú ¨
0A   * : J Z j z è Ü ¬ ║ ╩ ┌ Û ·
0B   + ; K [ k { ï ø ½ ╗ ╦ █ Ù ¹
0C   , < L \ l | î £ ¼ ╝ ╠ ▄ ý ³
0D   - = M ] m } ì Ø ¡ ¢ ═ ¦ Ý ²
0E   . > N ^ n ˜ Ä × « ¥ ╬ Ì ‾
0F   / ? O   o ⌂ Å ƒ » ┐ ¤ █ ´
```

## Code Page 860, 862, 863 and 864

Code Page 860.

Code Page 862

Code Page 863.

Code Page 864

## Code Page 865, 866, 874 and 1252

### Code Page 865.

|    | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 00 |   | 0 | @ | P | ` | p | Ç | É | á | ░ | └ | ╨ | α | ≡ |
| 01 | ! | 1 | A | Q | a | q | ü | æ | í | ▒ | ┴ | ╤ | ß | ± |
| 02 | " | 2 | B | R | b | r | é | Æ | ó | ▓ | ┬ | ╥ | Γ | ≥ |
| 03 | # | 3 | C | S | c | s | â | ô | ú | │ | ├ | ╙ | π | ≤ |
| 04 | $ | 4 | D | T | d | t | ä | ö | ñ | ┤ | ─ | ╘ | Σ | ⌠ |
| 05 | % | 5 | E | U | e | u | à | ò | Ñ | ╡ | ┼ | ╒ | σ | ⌡ |
| 06 | & | 6 | F | V | f | v | å | û | ª | ╢ | ╞ | ╓ | µ | ÷ |
| 07 | ' | 7 | G | W | g | w | ç | ù | º | ╖ | ╟ | ╫ | τ | ≈ |
| 08 | ( | 8 | H | X | h | x | ê | ÿ | ¿ | ╕ | ╚ | ╪ | Φ | ° |
| 09 | ) | 9 | I | Y | i | y | ë | Ö | ⌐ | ╣ | ╔ | ┘ | Θ | • |
| 0A | * | : | J | Z | j | z | è | Ü | ¬ | ║ | ╩ | ┌ | Ω | · |
| 0B | + | ; | K | [ | k | { | ï | ø | ½ | ╗ | ╦ | █ | δ | √ |
| 0C | , | < | L | \ | l | \| | î | £ | ¼ | ╝ | ╠ | ▄ | ∞ | ⁿ |
| 0D | - | = | M | ] | m | } | ì | Ø | ¡ | ╜ | = | ▌ | φ | ² |
| 0E | . | > | N | ^ | n | ~ | Ä | ₧ | « | ╛ | ╧ | ▐ | ε | ■ |
| 0F | / | ? | O | _ | o | ⌂ | Å | ƒ | ¤ | ┐ | ╬ | ▀ | ∩ |   |

### Code Page 866.

|    | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 00 |   | 0 | @ | P | ` | p | А | Р | а | ░ | └ | ╨ | р | Ё |
| 01 | ! | 1 | A | Q | a | q | Б | С | б | ▒ | ┴ | ╤ | с | ё |
| 02 | " | 2 | B | R | b | r | В | Т | в | ▓ | ┬ | ╥ | т | Є |
| 03 | # | 3 | C | S | c | s | Г | У | г | │ | ├ | ╙ | у | є |
| 04 | $ | 4 | D | T | d | t | Д | Ф | д | ┤ | ─ | ╘ | ф | Ї |
| 05 | % | 5 | E | U | e | u | Е | Х | е | ╡ | ┼ | ╒ | х | ї |
| 06 | & | 6 | F | V | f | v | Ж | Ц | ж | ╢ | ╞ | ╓ | ц | Ў |
| 07 | ' | 7 | G | W | g | w | З | Ч | з | ╖ | ╟ | ╫ | ч | ў |
| 08 | ( | 8 | H | X | h | x | И | Ш | и | ╕ | ╚ | ╪ | ш | ° |
| 09 | ) | 9 | I | Y | i | y | Й | Щ | й | ╣ | ╔ | ┘ | щ | • |
| 0A | * | : | J | Z | j | z | К | Ъ | к | ║ | ╩ | ┌ | ъ | · |
| 0B | + | ; | K | [ | k | { | Л | Ы | л | ╗ | ╦ | █ | ы | √ |
| 0C | , | < | L | \ | l | \| | М | Ь | м | ╝ | ╠ | ▄ | ь | № |
| 0D | - | = | M | ] | m | } | Н | Э | н | ╜ | = | ▌ | э | ¤ |
| 0E | . | > | N | ^ | n | ~ | О | Ю | о | ╛ | ╧ | ▐ | ю | ■ |
| 0F | / | ? | O | _ | o | ⌂ | П | Я | п | ┐ | ╬ | ▀ | я |   |

### Code Page 874.

|    | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 00 |   | 0 | @ | P | ` | p |   |   | ง | ฐ | ั | เ | ใ | ๐ |
| 01 | ! | 1 | A | Q | a | q |   |   | ก | ฑ | า | แ | ฿ | ๑ |
| 02 | " | 2 | B | R | b | r |   |   | ข | ฒ | ำ | โ | ๚ | ๒ |
| 03 | # | 3 | C | S | c | s |   |   | ค | ณ | ิ | ใ | ๛ | ๓ |
| 04 | $ | 4 | D | T | d | t |   |   | ฅ | ด | ี | ไ | ๅ | ๔ |
| 05 | % | 5 | E | U | e | u |   |   | ฆ | ต | ึ | ๅ | ๆ | ๕ |
| 06 | & | 6 | F | V | f | v |   |   | ง | ถ | ื | ๆ | ฯ | ๖ |
| 07 | ' | 7 | G | W | g | w |   |   | จ | ท | ุ | ็ |   | ๗ |
| 08 | ( | 8 | H | X | h | x |   |   | ฉ | ธ | ู | ่ |   | ๘ |
| 09 | ) | 9 | I | Y | i | y |   |   | ช | น | ฺ | ้ |   | ๙ |
| 0A | * | : | J | Z | j | z |   |   | ซ | บ | ฎ | ๊ |   | ๚ |
| 0B | + | ; | K | [ | k | { |   |   | ฌ | ป | ฏ | ๋ |   | ๛ |
| 0C | , | < | L | \ | l | \| |   |   | ญ | ผ | ฐ | ์ |   | ¢ |
| 0D | - | = | M | ] | m | } |   |   | ฎ | ฝ | ฑ |   |   | ¬ |
| 0E | . | > | N | ^ | n | ~ |   |   | ฏ | พ | ฒ |   |   |   |
| 0F | / | ? | O | _ | o | ⌂ |   |   | ฐ | ฟ | ฿ |   |   |   |

### Code Page 1252.

|    | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 00 |   | 0 | @ | P | ` | p | € |   |   | ° | À | Ð | à | ð |
| 01 | ! | 1 | A | Q | a | q |   | ' | ¡ | ± | Á | Ñ | á | ñ |
| 02 | " | 2 | B | R | b | r | ‚ | ' | ¢ | ² | Â | Ò | â | ò |
| 03 | # | 3 | C | S | c | s | ƒ | " | £ | ³ | Ã | Ó | ã | ó |
| 04 | $ | 4 | D | T | d | t | „ | " | ¤ | ´ | Ä | Ô | ä | ô |
| 05 | % | 5 | E | U | e | u | … | • | ¥ | µ | Å | Õ | å | õ |
| 06 | & | 6 | F | V | f | v | † | – | ¦ | ¶ | Æ | Ö | æ | ö |
| 07 | ' | 7 | G | W | g | w | ‡ | — | § | · | Ç | × | ç | ÷ |
| 08 | ( | 8 | H | X | h | x | ˆ | ˜ | ¨ | ¸ | È | Ø | è | ø |
| 09 | ) | 9 | I | Y | i | y | ‰ | ™ | © | ¹ | É | Ù | é | ù |
| 0A | * | : | J | Z | j | z | Š | š | ª | º | Ê | Ú | ê | ú |
| 0B | + | ; | K | [ | k | { | ‹ | › | « | » | Ë | Û | ë | û |
| 0C | , | < | L | \ | l | \| | Œ | œ | ¬ | ¼ | Ì | Ü | ì | ü |
| 0D | - | = | M | ] | m | } |   |   | | ½ | Í | Ý | í | ý |
| 0E | . | > | N | ^ | n | ~ | Ž | ž | ® | ¾ | Î | Þ | î | þ |
| 0F | / | ? | O | _ | o | ⌂ |   | Ÿ | ¯ | ¿ | Ï | ß | ï | ÿ |

## Code Page Katakana

```
Code Page KATAKANA.

        2 3 4 5 6 7 8 9 A B C D E F

00        0 @ P ` p   _  ⊥   - タ ミ ニ X
01     ! 1 A Q a q   _ T  ｡ ア チ ム ㄷ 円
02     " 2 B R b r   ∎ ┤ ｢ イ ツ × ㄫ 年
03     # 3 C S c s   ∎ ├ ｣ ウ テ モ ㄱ 月
04     $ 4 D T d t ∎   ‾ 、 エ ト ヤ ◢ 日
05     % 5 E U e u ∎   - ･ オ ナ ユ ◣ 時
06     & 6 F V f v ∎   | ヲ カ ニ ヨ ◥ 分
07     ' 7 G W g w ∎   | ア キ ヌ ラ ◤ 秒
08     ( 8 H X h x |   ┌ イ ク ネ リ ● 〒
09     ) 9 I Y i y |   ┐ ウ ケ ノ ル ♥ 市
0A     * : J Z j z |   └ エ コ ハ レ ◆ 区
0B     + ; K [ k {   ∎ ┘ オ サ ヒ ロ ♣ 町
0C     , < L \ l |   ∎ ┌ ヤ シ フ ワ ● 村
0D     - = M ] m }   ∎ ╲ ユ ス ヘ ン 0 人
0E     . > N ^ n ~   ∎ ╲ ヨ セ ホ ﾞ / ▨
0F     / ? O _ o △ ┼  ノ ツ ソ マ ﾟ \
```

## Code Page 932

Code page 932

```
20      ! " # $ % & ' ( ) * + ,  - . /
30    0 1 2 3 4 5 6 7 8 9 : ; < = > ?
40    @ A B C D E F G H I J K L M N O
50    P Q R S T U V W X Y Z [ ¥ ] ^ _
60    ` a b c d e f g h i j k l m n o
70    p q r s t u v w x y z { | }  ̄
80
90
A0      。「 」、 ・ ヲ ァ ィ ゥ ェ ォ ャ ュ ョ ッ
B0    ー ア イ ウ エ オ カ キ ク ケ コ サ シ ス セ ソ
C0    タ チ ツ テ ト ナ ニ ヌ ネ ノ ハ ヒ フ ヘ ホ マ
D0    ミ ム メ モ ヤ ユ ヨ ラ リ ル レ ロ ワ ン ゛ ゜
E0
F0
```

Code page 932-81

```
40    ＿ 、 。 ， ．   ・ ： ； ？ ！ ゛ ゜ ´ ` ¨ ^
50    ￣ ＿ ヽ ヾ ゝ ゞ 〃 仝 々 〆 〇 ― ‐ ／ ＼ ～
60    ∥ │ … ‥ ' ' " " （ ） 〔 〕 ［ ］ ｛
70    ｝ 〈 〉 《 》 「 」 『 』 【 】 ＋ － ± ×
80    ÷ ＝ ≠ ＜ ＞ ≦ ≧ ∞ ∴ ♂ ♀ ° ′ ″ ℃ ￥
90    ＄ ¢ £ ％ ＃ ＆ ＊ ＠ § ☆ ★ ○ ● ◎ ◇ ◆
A0    □ ■ △ ▲ ▽ ▼ ※ 〒 → ← ↑ ↓ 〓
B0                                  ∈ ∋ ⊆ ⊇ ⊂ ⊃ ∪ ∩
C0                              ∧ ∨ ￢ ⇒ ⇔ ∀ ∃
D0                                ∠ ⊥ ⌒ ∂ ∇ ≡
E0    ≒ ≪ ≫ √ ∽ ∝ ∵ ∫ ∬
F0    Å ‰ ♯ ♭ ♪ † ‡ ¶            ○
```

Code page 932-82

```
40                                                    0
50      1 2 3 4 5 6 7 8 9
60    A B C D E F G H I J K L M N O P
70    Q R S T U V W X Y Z
80      a b c d e f g h i j k l m n o
90    p q r s t u v w x y z        あ
A0    あ ぃ い ぅ う ぇ え ぉ お か が き ぎ く ぐ け
B0    げ こ ご さ ざ し じ す ず せ ぜ そ ぞ た だ ち
C0    ぢ っ つ づ て で と ど な に ぬ ね の は ば ぱ
D0    ひ び ぴ ふ ぶ ぷ へ べ ぺ ほ ぼ ぽ ま み む め
E0    も ゃ や ゅ ゆ ょ よ ら り る れ ろ ゎ わ ゐ ゑ
F0    を ん
```

Code page 932-83

```
40    ァ ア ィ イ ゥ ウ ェ エ ォ オ カ ガ キ ギ ク グ
50    ケ ゲ コ ゴ サ ザ シ ジ ス ズ セ ゼ ソ ゾ タ ダ
60    チ ヂ ッ ツ ヅ テ デ ト ド ナ ニ ヌ ネ ノ ハ バ
70    パ ヒ ビ ピ フ ブ プ ヘ ベ ペ ホ ボ ポ マ ミ
80    ム メ モ ャ ヤ ュ ユ ョ ヨ ラ リ ル レ ロ ヮ ワ
90    ヰ ヱ ヲ ン ヴ ヵ ヶ                              A
A0    Β Γ Δ Ε Ζ Η Θ Ι Κ Λ Μ Ν Ξ Ο Π Ρ
B0    Σ Τ Υ Φ Χ Ψ Ω                                a
C0    β γ δ ε ζ η θ ι κ λ μ ν ξ ο π ρ
D0    σ τ υ φ χ ψ ω
E0
F0
```

## Code Page 932 (Cont)

### Code page 932-84

| | |
|---|---|
| 40 | А Б В Г Д Е Ё Ж З И Й К Л М Н О |
| 50 | П Р С Т У Ф Х Ц Ч Ш Щ Ъ Ы Ь Э Ю |
| 60 | Я |
| 70 | а б в г д е ё ж з и й к л м н |
| 80 | о п р с т у ф х ц ч ш щ ъ ы ь э |
| 90 | ю я  ─ |
| A0 | |
| B0 | |
| C0 | |
| D0 | |
| E0 | |
| F0 | |

### Code page 932-87

| | |
|---|---|
| 40 | ①②③④⑤⑥⑦⑧⑨⑩⑪⑫⑬⑭⑮⑯ |
| 50 | ⑰⑱⑲⑳ I II III IV V V VI VII VIII IX X  ゙ ゚ |
| 60 | ㌔ ㌢ ㌘ ㌍ ㌧ ㌃ ㌶ ㌣ ㌦ ㌫ ㌻ ㎜ |
| 70 | cm km mm g kg cc m²  平成 |
| 80 | 〟 〟 K.K.Tel ㊤ ㊥ ㊦ ㊧ ㊨ ㈱ ㈲ ㈹ 明治 大正 昭和 |
| 90 | ≒ ≡ ∫ ∮ Σ √ ⊥ ∠ ∟ ⊿ ∵ ∩ ∪ |
| A0 | |
| B0 | |
| C0 | |
| D0 | |
| E0 | |
| F0 | |

### Code page 932-88

| | |
|---|---|
| 40 | |
| 50 | |
| 60 | |
| 70 | |
| 80 | |
| 90 | 亜 |
| A0 | 唖娃阿哀愛挨姶逢葵茜穐悪握渥旭葦 |
| B0 | 芦鯵梓圧斡扱宛姐虻飴絢綾鮎或粟袷 |
| C0 | 安庵按暗案闇鞍杏以伊位依偉囲夷委 |
| D0 | 威尉惟意慰易椅為畏異移維緯胃萎衣 |
| E0 | 謂違遺医井亥域育郁磯一壱溢逸稲茨 |
| F0 | 芋鰯允印咽員因姻引飲淫胤蔭 |

### Code page 932-89

| | |
|---|---|
| 40 | 院陰隠韻吋右宇烏羽迂雨卯鵜窺丑碓 |
| 50 | 臼渦嘘唄欝蔚鰻姥厩浦瓜閏噂云運雲 |
| 60 | 荏餌叡営嬰影映曳栄永泳洩瑛盈穎頴 |
| 70 | 英衛詠鋭液疫益駅悦謁越閲榎厭円 |
| 80 | 園堰奄宴延怨掩援沿演炎焔煙燕猿縁 |
| 90 | 艶苑薗遠鉛鴛塩於汚甥凹央奥往応押 |
| A0 | 旺横欧殴王翁襖鴬鴎黄岡沖荻億屋憶 |
| B0 | 臆桶牡乙俺卸恩温穏音下化仮何伽価 |
| C0 | 佳加可嘉夏嫁家寡科暇果架歌河火珂 |
| D0 | 禍禾稼箇花苛茄荷華菓蝦課嘩貨迦過 |
| E0 | 霞蚊俄峨我牙画臥芽蛾賀雅餓駕介会 |
| F0 | 解回塊壊廻快怪悔恢懐戒拐改 |

Code Page 932 (Cont)

Code page 932-8A

```
40    魁晦械海灰界皆絵芥蟹開階貝凱劾外
50    咳害崖慨概涯碍蓋街該鎧骸浬馨蛙垣
60    柿蛎鈎劃嚇各廓拡撹格核殻獲確穫覚
70    角赫較郭閣隔革学岳楽額顎掛笠樫
80    橿梶鰍潟割喝恰括活渇滑葛褐轄且鰹
90    叶椛樺鞄株兜竃蒲釜鎌噛鴨栢茅萱粥
A0    刈苅瓦乾侃冠寒刊勘勧巻喚堪姦完官
B0    寛干幹患感慣憾換敢柑桓棺款歓汗漢
C0    澗潅環甘監看竿管簡緩缶翰肝艦莞観
D0    諌貫還鑑間閑関陥韓館舘丸含岸巌玩
E0    癌眼岩翫贋雁頑顔願企伎危喜器基奇
F0    嬉寄岐希幾忌揮机旗既期棋棄
```

Code page 932-8B

```
40    機帰毅気汽畿祈季稀紀徽規記貴起軌
50    輝飢騎鬼亀偽儀妓宜戯技擬欺犠疑祇
60    義蟻誼議掬菊鞠吉吃喫桔橘詰砧杵黍
70    却客脚虐逆丘久仇休及吸宮弓急救
80    朽求汲泣灸球究窮笈級糾給旧牛去居
90    巨拒拠挙渠虚許距鋸漁禦魚亨享京供
A0    侠僑兇競共凶協匡卿叫喬境峡強彊怯
B0    恐恭挟教橋況狂狭矯胸脅興蕎郷鏡響
C0    饗驚仰凝尭暁業局曲極玉桐粁僅勤均
D0    巾錦斤欣欽琴禁禽筋緊芹菌衿襟謹近
E0    金吟銀九倶句区狗玖矩苦躯駆駈駒具
F0    愚虞喰空偶寓遇隅串櫛釧屑屈
```

Code page 932-8C

```
40    掘窟沓靴轡窪熊隈粂栗繰桑鍬勲君薫
50    訓群軍郡卦袈祁係傾刑兄啓圭珪型契
60    形径恵慶慧憩掲携敬景桂渓畦稽系経
70    継繋罫茎荊蛍計詣警軽頚鶏芸迎鯨
80    劇戟撃激隙桁傑欠決潔穴結血訣月件
90    倹倦健兼券剣喧圏堅嫌建憲懸拳捲検
A0    権牽犬献研硯絹県肩見謙賢軒遣鍵険
B0    顕験鹸元原厳幻弦減源玄現絃舷言諺
C0    限乎個古呼固姑孤己庫弧戸故枯湖狐
D0    糊袴股胡菰虎誇跨鈷雇顧鼓五互伍午
E0    呉吾娯後御悟梧檎瑚碁語誤護醐乞鯉
F0    交佼侯候倖光公功効勾厚口向
```

Code page 932-8D

```
40    后喉坑垢好孔孝宏工巧巷幸広庚康弘
50    恒慌抗拘控攻昂晃更杭校梗構江洪浩
60    港溝甲皇硬稿糠紅紘絞綱耕考肯肱腔
70    膏航荒行衡講貢購郊酵鉱砿鋼閤降
80    項香高鴻剛劫号合壕拷濠豪轟麹克刻
90    告国穀酷鵠黒獄漉腰甑忽惚骨狛込此
A0    頃今困坤墾婚恨懇昏昆根梱混痕紺艮
B0    魂些佐叉唆嵯左差査沙瑳砂詐鎖裟坐
C0    座挫債催再最哉塞妻宰彩才採栽歳済
D0    災采犀砕砦祭斎細菜裁載際剤在材罪
E0    財冴坂阪堺榊肴咲崎埼碕鷺作削咋搾
F0    昨朔柵窄策索錯桜鮭笹匙冊刷
```

Code page 932-8E

```
40    察拶撮擦札殺薩雑皐鯖捌錆鮫皿晒三
50    傘参山惨撒散桟燦珊産算纂蚕讃賛酸
60    餐斬暫残仕仔伺使刺司史嗣四士始姉
70    姿子屍市師志思指支孜斯施旨枝止
80    死氏獅祉私糸紙紫肢脂至視詞詩試誌
90    諮資賜雌飼歯事似侍児字寺慈持時次
A0    滋治爾璽痔磁示而耳自蒔辞汐鹿式識
B0    鴫竺軸宍雫七叱執失嫉室悉湿漆疾質
C0    実蔀篠偲柴芝屡蕊縞舎写射捨赦斜煮
D0    社紗者謝車遮蛇邪借勺尺杓灼爵酌釈
E0    錫若寂弱惹主取守手朱殊狩珠種腫趣
F0    酒首儒受呪寿授樹綬需囚収周
```

Code page 932-8F

```
40    宗就州修愁拾洲秀秋終繍習臭舟蒐衆
50    襲讐蹴輯週酋酬集醜什住充十従戎柔
60    汁渋獣縦重銃叔夙宿淑祝縮粛塾熟出
70    術述俊峻春瞬竣舜駿准循旬楯殉淳
80    準潤盾純巡遵醇順処初所曙渚庶緒
90    署書薯藷諸助叙女序徐恕鋤除傷償勝
A0    匠升召哨商唱嘗奨妾娼宵将小少尚庄
B0    床廠彰承抄招掌捷昇昌昭晶松梢樟樵
C0    沼消渉湘焼焦照症省硝礁祥称章笑粧
D0    紹肖菖蒋蕉衝裳訟証詔詳象賞醤鉦鍾
E0    鐘障鞘上丈丞乗冗剰城場壌嬢常情擾
F0    条杖浄状畳穣蒸譲醸錠嘱埴飾
```

Code Page 932 (Cont)

Code page 932-90

```
40    拭植殖燭繊職色触食飼辱尻伸信侵唇
50    娠寝審心慎振新晋森棟浸深申疹真神
60    秦紳臣芯薪親診身辛進針震人仁刃塵
70    壬尋甚尽腎訊迅陣靭笥諏須酢図厨
80    逗吹垂帥推水炊睡粋翠衰遂酔錐錘随
90    瑞髄崇嵩数枢趨雛据杉椙菅頗雀裾澄
A0    摺寸世瀬畝是凄制勢姓征性成政整星
B0    晴棲栖正清牲生盛精聖声製西誠誓請
C0    逝醒青静斉税脆隻席惜戚斥昔析石積
D0    籍績脊責赤跡蹟碩切拙接摂折設窃節
E0    説雪絶舌蝉仙先千占宣専尖川戦扇撰
F0    栓栴泉浅洗染潜煎煽旋穿箭線
```

Code page 932-91

```
40    繊羨腺舛船薦詮賎践選遷銭銑閃鮮前
50    善漸然全禅繕膳糎噌塑岨措曾曽楚狙
60    疏疎礎祖租粗素組蘇訴阻遡鼠僧創双
70    叢倉喪壮奏爽宋層匝惣想捜掃挿掻
80    操早曹巣槍槽漕燥争痩相窓糟総綜聡
90    草荘葬蒼藻装走送遭鎗霜騒像増憎臓
A0    蔵贈造促側則即息捉束測足速俗属賊
B0    族続卒袖其揃存孫尊損村遜他多太汰
C0    詑唾堕妥惰打柁舵楕陀駄騨体堆対耐
D0    岱帯待怠態戴替泰滞胎腿苔袋貸退逮
E0    隊黛鯛代台大第醍題鷹滝瀧卓啄宅托
F0    択拓沢濯琢託鐸濁諾茸凧蛸只
```

Code page 932-92

```
40    叩但達辰奪脱巽竪辿棚谷狸鱈樽誰丹
50    単嘆坦担探旦歎淡湛炭短端箪綻耽胆
60    蛋誕鍛団壇弾断暖檀段男談値知地弛
70    恥智池痴稚置致蜘遅馳築畜竹筑蓄
80    逐秩窒茶嫡着中仲宙忠抽昼柱注虫衷
90    註酎鋳駐樗瀦猪苧著貯丁兆凋喋寵帖
A0    帳庁弔張彫徴懲挑暢朝潮牒町眺聴脹
B0    腸蝶調諜超跳銚長頂鳥勅捗直朕沈珍
C0    賃鎮陳津墜椎槌追鎚痛通塚栂掴槻佃
D0    漬柘辻蔦綴鍔椿潰坪壷嬬紬爪吊釣鶴
E0    亭低停偵剃貞呈堤定帝底庭廷弟悌抵
F0    挺提梯汀碇禎程締艇訂諦蹄逓
```

Code page 932-93

```
40    邸鄭釘鼎泥摘擢敵滴的笛適鏑溺哲徹
50    撤轍迭鉄典填天展店添纏甜貼転顛点
60    伝殿澱田電兎吐堵塗妬屠徒斗杜渡登
70    菟賭途都鍍砥砺努度土奴怒倒党冬
80    凍刀唐塔塘套宕島嶋悼投搭東桃梼棟
90    盗淘湯涛灯燈当痘祷等答筒糖統到董
A0    蕩藤討謄豆踏逃透鐙陶頭騰闘働動同
B0    堂導憧撞洞瞳童胴萄道銅峠鴇匿得徳
C0    涜特督禿篤毒独読栃橡凸突椴届鳶苫
D0    寅酉瀞噸屯惇敦沌豚遁頓呑曇鈍奈那
E0    内乍凪薙謎灘捺鍋楢馴縄畷南楠軟難
F0    汝二尼弐迩匂賑肉虹廿日乳入
```

Code page 932-94

```
40    如尿韮任妊忍認濡禰祢寧葱猫熱年念
50    捻撚燃粘乃廼之埜嚢悩濃納能脳膿農
60    覗蚤巴把播覇杷波派琶破婆罵芭馬俳
70    廃拝排敗杯盃牌背肺輩配倍培媒梅
80    楳煤狽買売賠陪這蝿秤矧萩伯剥博拍
90    柏泊白箔粕舶薄迫曝漠爆縛莫駁麦函
A0    箱硲箸肇筈櫨幡肌畑畠八鉢溌発醗髪
B0    伐罰抜筏閥鳩噺塙蛤隼伴判半反叛帆
C0    搬斑板氾汎版犯班畔繁般藩販範釆煩
D0    頒飯挽晩番盤磐蕃蛮匪卑否妃庇彼悲
E0    扉批披斐比泌疲皮碑秘緋罷肥被誹費
F0    避非飛樋簸備尾微枇毘琵眉美
```

Code page 932-95

```
40    鼻柊稗匹疋髭彦膝菱肘弼必畢筆逼桧
50    姫媛紐百謬俵彪標氷漂瓢票表評豹廟
60    描病秒苗錨鋲蒜蛭鰭品彬斌浜瀕貧賓
70    頻敏瓶不付埠夫婦富冨布府怖扶敷
80    斧普浮父符腐膚芙譜負賦赴阜附侮撫
90    武舞葡蕪部封楓風葺蕗伏副復幅服福
A0    腹複覆淵弗払沸仏物鮒分吻噴墳憤扮
B0    焚奮粉糞紛雰文聞丙併兵塀幣平弊柄
C0    並蔽閉陛米頁僻壁癖碧別瞥蔑箆偏変
D0    片篇編辺返遍便勉娩弁鞭保舗鋪圃捕
E0    歩甫補輔穂募墓慕戊暮母簿菩倣俸包
F0    呆報奉宝峰峯崩庖抱捧放方朋
```

Code Page 932 (Cont)

Code page 932-96

| | |
|---|---|
| 40 | 法泡烹砲縫胞芳萌蓬蟬袋訪豐邦鋒飽 |
| 50 | 鳳鵬乏亡傍剖坊妨帽忘忙房暴望某棒 |
| 60 | 冒紡肪膨謀貌貿鉾防吠頬北僕卜墨撲 |
| 70 | 朴牧睦穆釦勃没殆堀幌奔本翻凡盆 |
| 80 | 摩磨魔麻埋妹昧枚毎哩槙幕膜枕鮪柾 |
| 90 | 鱒桝亦俣又抹末沫迄侭繭麿万慢満漫 |
| A0 | 蔓味未魅巳箕岬密蜜湊蓑稔脈妙粍民 |
| B0 | 眠務夢無牟矛霧鵡椋婿娘冥名命明盟 |
| C0 | 迷銘鳴姪牝滅免棉綿緬面麺摸模茂妄 |
| D0 | 孟毛猛盲網耗蒙儲木黙目杢勿餅尤戻 |
| E0 | 籾貰問悶紋門匁也冶夜爺耶野弥矢厄 |
| F0 | 役約薬訳躍靖柳薮鑓愉愈油癒 |

Code page 932-97

| | |
|---|---|
| 40 | 諭輸唯佑優勇友宥幽悠憂揖有柚湧涌 |
| 50 | 猶猷由祐裕誘遊邑郵雄融夕予余与誉 |
| 60 | 輿預傭幼妖容庸揚揺擁曜楊様洋溶熔 |
| 70 | 用窯羊耀葉蓉要謡踊遥陽養慾抑欲 |
| 80 | 沃浴翌翼淀羅螺裸来莱頼雷洛絡落酪 |
| 90 | 乱卵嵐欄濫藍蘭覧利吏履李梨理璃痢 |
| A0 | 裏裡里離陸律率立葎掠略劉流溜琉留 |
| B0 | 硫粒隆竜龍侶慮旅虜了亮僚両凌寮料 |
| C0 | 梁涼猟療瞭稜糧良諒遼量陵領力緑倫 |
| D0 | 厘林淋燐琳臨輪隣鱗麟瑠塁涙累類令 |
| E0 | 伶例冷励嶺怜玲礼苓鈴隷零霊麗齢暦 |
| F0 | 歴列劣烈裂廉恋憐漣煉簾練聯 |

Code page 932-98

| | |
|---|---|
| 40 | 蓮連錬呂魯櫓炉賂路露労婁廊弄朗楼 |
| 50 | 榔浪漏牢狼篭老聾蝋郎六麓禄肋録論 |
| 60 | 倭和話歪賄脇惑枠鷲亙亘鰐詫藁蕨椀 |
| 70 | 湾碗腕 |
| 80 | |
| 90 |                                         式 |
| A0 | 丐丕个丱丶丼丿乂乖乘亂亅豫亊舒弍 |
| B0 | 于亞亟亠亢亰亳亶从仍仄仆仂仗仞仭 |
| C0 | 仟价伉佚估佛佝佗佇佶侈侏侘佻佩佰 |
| D0 | 侑佯來侖儘俔俟俎俘俛俑俚俐俤俄倚 |
| E0 | 倨倔倪倖倖倅伜俶倡倩倬俾俯們倆偃 |
| F0 | 假會偕偐偈做偖偬偸傀傚傅傴傲 |

Code page 932-99

| | |
|---|---|
| 40 | 僉僊傳僂僖僞僥僭僣僮價僵儉儁儂儖 |
| 50 | 儕儔儚儡儺儷儼儻儿兀兒兌兔兢竸兩 |
| 60 | 兪兮冀冂囘册冉冏冑冓冕冖冤冦冢冩 |
| 70 | 冪冫决冱冲冰况冽凅凉凛几處凩凭 |
| 80 | 凰凵凾刄刋刔刎刧刪刮刳刹剏剄剋剌 |
| 90 | 剞剔剪剴剩剳剿剽劍劔劒剱劈劑辨辧 |
| A0 | 劬劭劼劵勁勍勗勞勣勦飭勠勳勵勸勹 |
| B0 | 匆匈甸匍匐匏匕匚匣匳匸匹區卆卅丗 |
| C0 | 卉卍凖卞卩卮夘卻卷厂厖厠厦厥厮厰 |
| D0 | 厶參簒雙叟曼燮叮叨叭叺吁吽呀听 |
| E0 | 吭吼吮吶吩吝呎咏呵咎呟呱呷呰咒呻 |
| F0 | 咀呶咄咐咆哇咢咸咥咬哄哈咨 |

Code page 932-9A

| | |
|---|---|
| 40 | 咫哂咤咾咼哘哥哦唏唔哽哮哭哺哢唹 |
| 50 | 啀啣啌售啜啅啖啗唸唳啝喙喀咯喊喟 |
| 60 | 啻啾喘喞單啼喃喩喇喨嗚嗅嗟嗄嗜嗤 |
| 70 | 嗔嘔嗷嘖嗾嗽嘛嗹噎噐營嘴嘶嘲嘸 |
| 80 | 噫噤嘯噬噪嚆嚀嚊嚠嚔嚏嚥嚮嚶嚴囂 |
| 90 | 嚼囁囃囀囈囎囑囓囗囮囹圀囿圄圉圈 |
| A0 | 國圍圓團圖嗇圜圦圷圸坎圻址坏坩埀 |
| B0 | 垈坡坿垉垓垠垳垤垪垰埃埆埔埒埓堊 |
| C0 | 埖埣堋堙堝塲堡塢塋塰毀塒堽塹墅墹 |
| D0 | 墟墫墺壞墻墸墮壅壓壑壗壙壘壥壜壤 |
| E0 | 壟壯壺壹壻壼壽夂夊夐夛梦夥夬夭夲 |
| F0 | 夸夾竒奕奐奎奚奘奢奠奧奬奩 |

Code page 932-9B

| | |
|---|---|
| 40 | 奸妁妝佞侫妣妲姆姨姜妍姙姚娥娟娑 |
| 50 | 娜娉娚婀婬婉娵娶婢婪媚媼媾嫋嫂媽 |
| 60 | 嫣嫗嫦嫩嫖嫺嫻嬌嬋嬖嬲嫐嬪嬶嬾孃 |
| 70 | 孅孀孑孕孚孛孥孩孰孳孵學斈孺宀 |
| 80 | 它宦宸寃寇寉寔寐寤實寢寞寥寫寰寶 |
| 90 | 寶尅將專對尓尠尢尨尸尹屁屆屎屓屐 |
| A0 | 屏孱屬屮乢屶屹岌岏岑岔妛岫岻岶岼岷 |
| B0 | 峅岾峇峙峩峽峺峭嶌峪崋崕崗嵜崟崛 |
| C0 | 崑崔崢崚崙崘嵌嵒嵎嵋嵬嵳嵶嶇嶄嶂 |
| D0 | 嶢嶝嶬嶮嶽嶐嶷嶼巉巍巓巒巖巛巫已 |
| E0 | 巵帋帚帙帑帛帶帷幄幃幀幎幗幔幟幢 |
| F0 | 幣幇幵并幺麼广庠廁廂廈廐廏 |

Code Page 932 (Cont)

Code page 932-9C

```
40  廖廣廝廚廛廢廡廨廩廬廱廰廳廴廸廾
50  弃弉彝彜弋弑弖弩弭弸弾彁彁彈彌彎彑彐
60  彖彗彗彡彭彳彷彿徃徊很徑徇從徙
70  徘徠徨徭徼忖忻忤忸忱忝悳忿怡怤
80  怙怐怩怎怱怛怕怫怦快忰忿恠恰恂悁
90  恊恆恍恣恃恤恂恬恫惡悁悍惧悃悚悄
A0  恷悮悛悒悧悋惡悸悵惘忰忰懷悽惆悋
B0  愠愕慍愡愀愃愃愡惚惻惱愍愎愊愾愰
C0  愍愼懍愃惷愡愷愡慊愴愽慘慙慚慫
D0  慴慯慥慱慟愨愾懃愬愴慂慄惲慵愶惷
E0  愷憮憀懊應懷懈憁愻憍愪憒懔懍懊憖
F0  憇懱憊懥懤愢戀戈戉戍戌戔戛
```

Code page 932-9D

```
40  戞戡截戮戰戲戳扁扎扤扣扛扠扨扤扛
50  扠找抒抓抖拔扑抔拗拑抻拏拆攞扂
60  拜拌拊拂拇抛拉挌拮拱捄挂挈拯拵捐
70  挾捍搜捏袴掎掀捐揹掣掏掉掟掄捫
80  捩捲掵揀揆揣揲插捰揄搖搴摶搓摤搶
90  攝搗揱搏摧摯搏擊攬撕撓撥撩撈撼據
A0  擒擅撉撻擘擂搁擧擧擠擡抬攝攪攪摘
B0  擴擶擽擧擦擴攜攅攊攣攫撰支攴攷收攸
C0  攽效敖敕敍敘敝敞敲敕斂斃變斛斟斫
D0  斷旃旆旁旄旌旅旛旙无旡旱杲昊昃昮
E0  查昵昶昴昜曼昹暜昪晈晉晤晧晨晟晢
F0  晰罪曇暎暉暄暘暝曁暹曉暾曄
```

Code page 932-9E

```
40  曄暸曖曚曠眧曦蠡曰曳曷朏朓朞朦朧
50  霸朮束朶朾朷朸杆杞杠杙杣杤枉杰枩
60  杼杪粉枋枦枡枅枷柯枴棗枳枢枸柤柞
70  柝柢柎枹柎柆柧椻栞框栩桀桍桄桛桎
80  梳栫桙档梟桿梟桍梭桸條梛桯橘桅桴
90  梵梧梻梍槓梈梣棊棘椢棉梠桐椏棍棤
A0  椄棕楼椒棲棗棟柫椁棠椢桾楂椚椪桷
B0  楮楹楷棣楸楫楔椳楮椹楴楙楡楞
C0  楝楷楪楺榱槐橙槁槹楷榱棄梁楄榏槃
D0  榁榾榤榠榕榴榁椰樂榑槿榎榁樟桴槊
E0  椶榱楗椻樽樟樊樒楗槏檀橄槉榁槝榍
F0  橢橢橙檀橈樸橋檍槳橄檢橢
```

Code page 932-9F

```
40  橾欅檻櫃榴檸檳檬檍榴樤樣欄櫺櫻欅
50  薕櫺欒欖欟欟欷歘盜欹欽歇歃歉歐歎
60  歙歛歇歡歸歹歿殀殄殃殍殍殘殕殞殤殫
70  殯殯殲殱殳殷殺殿毋毓毟毳氈氊毯
80  氛氤氓气氛氳氣汞汕汢汪汊汥汢沁沛
90  汾汨汳沒沐泄決泓沽泗泅泝沮沱沾泏
A0  泛泯泙泪洟衍洶洫洽洸洙洵泇洒洌洴
B0  涓浤浚浹淅涎涕濤涅淹渕渊涵淇淦潤
C0  灣淬淞淌淨凛淅淺涼淤淕淪淮涸渾渮
D0  渙湲湟渾渣湫湁湶湍湻湃渺渝渤滿渝
E0  游溂溪溘滉溷滓溽溯溎溲滔滕溏溥滂
F0  溟潁溉灌滬滸溌漿滲漱滯漲滌
```

Code page 932-E0

```
40  漾漓滷澆溿滷澁溥潛潛潭澂澀潘澎
50  潭潦潦澳澣澡澤滶潽潯漟滷澗潯濱
60  濮濛濿潘潑潑灣濬灝瀁濩澀濾澀瀟澗
70  瀾瀲瀾瀾炙炒炯烱炬炸炳炮烟烋烝
80  烙焉烽焜焙煥煕熈煦烟煌煖煬熏燵熄
90  熕熨熟爛燼熾燒燉燔燎燠燧熺燵燼熼
A0  燼爍爐爛爨爭爬爰爲爻爼爿牀牆牋牘
B0  牴牾犂犁犇犒犖犢犧犲犱犿狃狹狒
C0  狢狠狡狹猂猗猊猜猖猝猴猯猩猥猾
D0  獎獏默獗獪獨獰獸獵獻獺珈玳珎玻珀
E0  珥珉珞璢琅瑯琥珸珀珵琺瑕琿瑟瑙瑁瑜
F0  瑩瑰瑣瑪瑶瑾璋璞璧瓊瓏瓔珱
```

Code page 932-E1

```
40  瓠瓣瓧瓩瓮瓲瓰瓱瓷甄甃甅甌甎甍甕
50  甓甕甞甦甬甼畄畍畉畛畆畚畩畤畧畫
60  畭畸當疆疇畴疊疉疂疔疚疝疥疣痂疳
70  痃疵疽疸疼疱痍痊痒痙痣痞痾痿痿痿
80  痼瘁瘍瘉瘟瘧瘠瘡瘢瘤瘡瘰瘻瘤瘇癆
90  癈瘻癇痾癜癘癡癨癮癩癪之癸發皀皃皈皋
A0  癸癸發皀皃皈皋皎皖皓皙皚皰皴皸皹皺
B0  皺盂盍盖盒盞盡盥盧盪蘯盻眈眇眄眩
C0  眤眞眥眦眛眷眸睇睚睨睫睛睥睿睾睹
D0  瞎瞋瞑瞠瞞瞰瞶瞹瞿瞼瞽瞻矇矍矔矚
E0  矜矣矮矼砌砒礦砠礪硅碎硴碆硼碚碌
F0  碣碚碾碼碯磑磆磋磔碾礦磅礴礐
```

Code Page 932 (Cont)

Code page 932-E2

```
40  磧磚礒磴磽磻礦礱礰礫礫祀祠祇祟祚祕
50  祓祺祿禊禝禧齋禪禮禳禹禺秉秕秧秬
60  秡秣稈稍稘稙稟稜稱稻稾稷稑穗稗
70  稻穢穗稈穰窀穽窈窗窕窖窩窨鼃
80  竈竅竄竇竊竍竏竕站竚竝竡竢竣埈
90  竦竭竰筑笂笏笊笆笳笘笙笞笵笨笑筐筺
A0  笄笊笋筌笑筴筥筧筰筱筬筬箔箝簍
B0  簍箜箚箋箒箏箙篋篁篌篏篒箴篝篩篩
C0  簑簔篦篥籠篩簇篭箋簀簇簀簀簀簀簀
D0  簞簣簰簳簣籔籏籐籐籟籤籖籖籥籲
E0  粃粐粤粭粢粫粡粨粳粲粱粮粹粽粭
F0  糀糅糂精糜糢糯糯糲糴糶糺紆
```

Code page 932-E3

```
40  紂紜紕紊絅紮絋絲絎紿絆絳絖絎絲絨
50  絮絛絣經綉絛綏絽綛綺緊綣綵繻綽繾
60  總綢綯縣綸緩縃緝縑綵緞緻紗縉纖綌
70  縣緯縡縱縛縉總縢繆繦縻縵縲繃續
80  縲縫繿綱縱繞繙繚縲繪繩繼縺繽綌繽
90  辮繼纈纊續纏纓纓纓纖綧纛纉缸缺罅
A0  罌罍罎罐网罕罔罘罟罛罠罦罭罨罷
B0  罳羂羆羃羌羔羞羝羚羣羯羲羹羮羶羹
C0  翅翠翊鑫翔翡翦翩翳翹翻翟耄耋耒耘
D0  耙耜耡耨耿耻聊聆聒聘聚聟聢聯聳聲
E0  聰聶聹聽肄肆肄肅肛肓肚肐肭胃肬胛胥
F0  胙胝胄胚胖脉胯脛胱脛脩脣脯腋
```

Code page 932-E4

```
40  隋腆脾腓腑胼腱腮腥腦腴膃膈膊膀膂
50  膠膕膤膣膓腟腡膵膾膸膽臀臂膺臉
60  臍臑臙臛臚臟臠臢臧臺臻臾舁舂舅與
70  舊舍舐舗舫舩舸舳艀舮艙艘艟艝艚艨
80  艪艫艭艟艢艤艤艸艾芍芒芫芟芬芥苣
90  苜苟苒苴苳苺莓范苻苹苞茆茵茲苙茵
A0  茴茖茲茱苞茄莠茶茯茫茗荔茫筵莪莟
B0  莢莖莫莎莇莊荼菟莅蒸莠莉萇萏萱菫
C0  菎菽萃菘菻萋萇菠菲萍萢萠荓萇菜溇
D0  菻葭莉蕁葭葩葷葆葯葩葹蒂葩葡萬葯葹
E0  萵蒂蓋蒹蒿蒟蓙蓍蒿蓚蓐蓁蓆蓴蒡菜
F0  蒨蒪蔗蓼蔬蔟蔕葡蓼蕀蕣蕘蕈
```

Code page 932-E5

```
40  蕁蕣蕋蕕薀薤薨薹蕷薤薛藪薇薜
50  蕷蕾薐薭薤藏藾藐藕藝藥藜藹藺蘓蘋
60  蘏藾蘆蘢蘿蘺蘵虍虔號虧虯蚓蚣虷
70  蚪蚋蚌蚶蚯蛄蛆蚰蛉蠣蚫蚫蛔蛞蚤蜨
80  蛟蛛蛯蜒蜆蜈蜀蠻蜑蜻蜉蜍蜋蜊蜴蝐
90  蜷蜻蜥蜩鼇蝠蝟蝸蝌蝎蝴蝗蝨蝠蝙蝓
A0  蝣蝪蠅螢蜈蠑螯蟋蟀螽蟒蟆螻蟯螳蟇
B0  蟆螻蛻蟲蟠蠏蠍蟾蟶蟷蠎蟒蠑蠖蠕蠢
C0  蠡蠢蠹蠧蠻衄蚵衒衒衙衞衢衫袁衾袞
D0  袒袗袮袙袢衫袒衲袍袤袰袿袱袴袱袗袵
E0  衽袵袰裙裝裹袿裼裝裨裲裼褄褌褊褓褌
F0  褪褙褊褫襁裏褻褶褸禅襌襠襞襦
```

Code page 932-E6

```
40  襦襤襭襪襯襴襷襾覃覆覈覊覓覘覡覩覦
50  覦覯覲覷覿觴觸觴觸觧觚觜觝觧觥觫觫
60  觴訛訝訥訶詁詛詒詆豺豼詭詬詢誅誂
70  誄誨誠誡誣誦誚誣諄諍諂諚誄誑諤諧
80  謔謌謇謚謖謐謗諛謌謇諡諚諡誼謗謠
90  謳鞫謦謫謾謨譁謾譏譎證譖譛譚譟譫
A0  譬譯譴譽讀讌讎讖讒讓讕讙讚谺谷豁
B0  谿豈豌豕豬豢豸豺貂貉貅貊貍貎貔豼
C0  貘戝貭貪貽貲貳貮貶賈賁賎賈賣賚賽賺
D0  賻贄贅贊贇贏贍贐齎贓賍贔贖赧赭
E0  赳趁趙跂趾趺跏跚跖跌跛跋跪跫跟跣
F0  跼踈踉跿踝踞踐踟蹂踵踰踴蹊
```

Code page 932-E7

```
40  蹇蹉踌踊蹊蹤蹠踪蹣蹕蹶蹲蹼躁躇躅
50  躄躋蹲躓躑躔躙躪躑蹴躬躰軆躱躾軀
60  軂軃軄軆軅軂軆軽軺輊輅輕輒輓輐輗輙
70  輌輛輦輳輻輹輾轅轂輾轌轉轆轌轜轜
80  轢轣轤辜辟辣辭辯辷迚迥迢迪迯迯迴
90  逅迹迺逑逕逡逍逞逖逋逧逶逵逹逾迸邁
A0  逭邊逳逴逎逭遘遞遨遯遶遶隨遲邂遽
B0  邁邀邊邉邏邨邯邱邵郢郤扈郛鄂鄒鄒鄙
C0  鄲鄰酊酖酘酣酥酩酳醉醂醢醯醴醯醴醯
D0  醪醵醴醺釀釁釉釋釐釖釟釡釛釖釛釵釼
E0  釣釟釤釥釩釪釬釱鉅鈝鈞鉈鋂鈿鉋鈷
F0  銜銖銓銛鉚鋏銹銷鉾錏鋺鋓鋼
```

Code Page 932 (Cont)

Code page 932-E8



Code page 932-E9



Code page 932-EA



Code page 932-ED



Code page 932-EE



Code page 932-FA

## Code Page 932 (Cont)

Code page 932-FB

| | |
|---|---|
| 40 | 洎浡淏清滮淼濁湜渧渼湴澈漸濵濙濵 |
| 50 | 瀬炅炫惢焉煜熈煇熈熚熹犾狄獏猪獷 |
| 60 | 珣珉玝珦肆琇珵琦琪瑁琮瑢璉環瓶畯 |
| 70 | 皀皜皥皼暰益晥矼砡硎砒砥礜礼神 |
| 80 | 祥禔福禎竝竲靖竫篭糒粕粨絆絳絲緒繪 |
| 90 | 罇羨羽茾苾菇萋菓萠蔪蕙薑薀薫藷 |
| A0 | 蚌蜩蚮訒訷訾誧誾諟諸諶譿譤睳頼賢 |
| B0 | 赶赳軏返逸達郎都郷鄧釙釗釞釭釷釤 |
| C0 | 釼鈆鈴鈚鈺鉀鉎鉈鉯鉑鈸鉧銑鉷鉸鋧 |
| D0 | 鍋鋙鋐鋡鋕鋠鋓鏑錡鑒鋅錞鋿錝錂錂 |
| E0 | 錦鋭錱鏽錞鋭鍱鍋閗隆隝陦隒隌璺霳 |
| F0 | 颿飇靑齚顝顠飯飼餕館辞驦高 |

Code page 932-FC

| | |
|---|---|
| 40 | 髙髯魵魲魤鮏鮱鮻鮻鵬鳥鵐寉鶴鶏黒 |
| 50 | |
| 60 | |
| 70 | |
| 80 | |
| 90 | |
| A0 | |
| B0 | |
| C0 | |
| D0 | |
| E0 | |
| F0 | |

## Code Page 936 Simple Chinese

A440 - A4FF

```
40
50
60
70
80
90
A0    ああいいううええおおかがきぎく
B0    ぐけげこごきぎしじすずせぜそぞた
C0    だちぢっつづてでとどなにぬねのは
D0    ばぱひびぴふぶぷへべぺほぼぽまみ
E0    むめもゃやゅゆょよらりるれろゎわ
F0    ゐゑをん
```

A140 - A1FF

```
40
50
60
70
80
90
A0        、。 ・ ‾ ˇ ¨ 〃 々 — ～ ‖ … ''
B0    ""〔〕〈〉《》「」『』【】〖〗
C0    ±×÷∶∧∨∑∏∪∩∈∷√⊥∥∠
D0    ⌒⊙∫∮≡≌≈∽∝≠≮≯≤≥∞∵
E0    ∴♂♀°′″℃＄¤￠￡‰§№☆★
F0    ○●◎◇◆□■△▲※→←↑↓〓
```

A240 - A2FF

```
40
50
60
70
80
90
A0        ⅰ ⅱ ⅲ ⅳ ⅴ ⅵ ⅶ ⅷ ⅸ ⅹ
B0        1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15.
C0    16. 17. 18. 19. 20. (1)(2)(3)(4)(5)(6)(7)(8)(9)(10)(11)
D0    (12)(13)(14)(15)(16)(17)(18)(19)(20)①②③④⑤⑥⑦
E0    ⑧⑨⑩        ㈠㈡㈢㈣㈤㈥㈦㈧㈨㈩
F0        Ⅰ Ⅱ Ⅲ Ⅳ Ⅴ Ⅵ Ⅶ Ⅷ Ⅸ Ⅹ Ⅺ Ⅻ
```

A540 - A5FF

```
40
50
60
70
80
90
A0    ァアィイゥウェエォオカガキギク
B0    グケゲコゴサザシジスズセゼソゾタ
C0    ダチヂッツヅテデトドナニヌネノハ
D0    バパヒビピフブプヘベペホボポマミ
E0    ムメモャヤュユョヨラリルレロヮワ
F0    ヰヱヲンヴヵヶ
```

A640 - A6FF

```
40
50
60
70
80
90
A0        ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟ
B0    ΠΡΣΤΥΦΧΨΩ
C0        αβγδεζηθικλμνξο
D0    πρστυφχψω
E0    ﹋﹍﹉﹊﹟﹍﹊    ﹉﹊    ﹌﹍
F0    ﹎﹏│ │﹛
```

A340 - A3FF

```
40
50
60
70
80
90
A0        ！＂＃￥％＆＇（）＊＋，－．／
B0    ０１２３４５６７８９：；＜＝＞？
C0    ＠ＡＢＣＤＥＦＧＨＩＪＫＬＭＮＯ
D0    ＰＱＲＳＴＵＶＷＸＹＺ［＼］＾＿
E0    ｀ａｂｃｄｅｆｇｈｉｊｋｌｍｎｏ
F0    ｐｑｒｓｔｕｖｗｘｙｚ｛｜｝￣
```

A740 - A7FF

```
40
50
60
70
80
90
A0        АБВГДЕЁЖЗИЙКЛМН
B0    ОПРСТУХ ФЦЧШЩЪЫЬЭ
C0    ЮЯ
D0        абвгдеёжзийклмн
E0    опрстуфхцчшщъыьэ
F0    юя
```

Code Page 936 Simple Chines1e  (Cont.)

A840 - A8FF

```
40
50
60
70
80
90
A0      ᾱ ό ŏ ὸ ᾱ ė ė ė ǀ ǀ ǀ ǀ ō ŏ ŏ
B0    ò ū ú ŭ ù ū ú ŭ ù ė ɑ      ń ň
C0    ğ            ㄅ ㄆ ㄇ ㄈ ㄉ ㄊ ㄋ ㄌ ㄍ ㄎ ㄏ
D0    ㄐ ㄑ ㄒ ㄓ ㄔ ㄕ ㄖ ㄗ ㄘ ㄙ ㄚ ㄛ ㄜ ㄝ ㄞ ㄟ
E0    ㄠ ㄡ ㄢ ㄣ ㄤ ㄥ ㄦ ㄧ ㄨ ㄩ
F0
```

A940 - A9FF

```
40
50
60
70
80
90
A0           ─ │ │ ┄┄┄ ┊ ┊ ┈┈┈ ┘ ┘
B0    ┌ ┌ ┌ ┌┐ ┌┐ │ ┘ ┘ ┘ ┘ ┘ ┘ ┘
C0    ├ ├ ├ ├ ├ ├ ├ ┤ ┤ ┤ ┤ ┤ ┤ ├
D0    ┬ ┬ ┬ ┬ ┬ ┬ ┬ ┴ ┴ ┴ ┴ ┴ ┴ ┴
E0    ┼ ┼ ┼ ┼ ┼ ┼ ┼ ┼ ┼ ┼ ┼ ┼ ┼ ┼
F0
```

AA40 - AAFF

```
40
50
60
70
80
90
A0
B0
C0
D0
E0
F0
```

AB40 - ABFF

```
40
50
60
70
80
90
A0
B0
C0
D0
E0
F0
```

AC40 - ACFF

```
40
50
60
70
80
90
A0
B0
C0
D0
E0
F0
```

AD40 - ADFF

```
40
50
60
70
80
90
A0
B0
C0
D0
E0
F0
```

AE40 - AEFF

```
40
50
60
70
80
90
A0
B0
C0
D0
E0
F0
```

AF40 - AFFF

```
40
50
60
70
80
90
A0
B0
C0
D0
E0
F0
```

Code Page 936 Simple Chinese (Cont.)

B040 - B0FF

```
40
50
60
70
80
90
A0      啊阿埃挨哎唉哀皑癌蔼矮艾碍爱隘
B0      鞍氨安俺按暗岸胺案肮昂盎凹敖熬翱
C0      袄傲奥懊澳芭捌扒叭吧笆八疤巴拔跋
D0      靶把耙坝霸罢爸白柏百摆佰败拜稗斑
E0      班搬扳般颁板版扮拌伴瓣半办绊邦帮
F0      梆榜膀绑棒磅蚌镑傍谤苞胞包褒剥
```

B140 - B1FF

```
40
50
60
70
80
90
A0      薄雹保堡饱宝抱报暴豹鲍爆杯碑悲
B0      卑北辈背贝钡倍狈备惫焙被奔苯本笨
C0      崩绷甭泵蹦迸逼鼻比鄙笔彼碧蓖蔽毕
D0      毙毖币庇痹闭敝弊必辟壁臂避陛鞭边
E0      编贬扁便变卞辨辩辫遍标彪膘表鳖憋
F0      别瘪彬斌濒滨宾摈兵冰柄丙秉饼炳
```

B240 - B2FF

```
40
50
60
70
80
90
A0      病并玻菠播拨钵波博勃搏铂箔伯帛
B0      舶脖膊渤泊驳捕卜哺补埠不布步簿部
C0      怖擦猜裁材才财睬踩采彩菜蔡餐参蚕
D0      残惭惨灿苍舱仓沧藏操糙槽曹草厕策
E0      侧册测层蹭插叉茬茶查碴搽察岔差诧
F0      拆柴豺搀掺蝉馋谗缠铲产阐颤昌猖
```

B340 - B3FF

```
40
50
60
70
80
90
A0      场尝常长偿肠厂敞畅唱倡超抄钞朝
B0      嘲潮巢吵炒车扯撤掣彻澈郴臣辰尘晨
C0      忱沉陈趁衬撑称城橙成呈乘程惩澄诚
D0      承逞骋秤吃痴持匙池迟弛驰耻齿侈尺
E0      赤翅斥炽充冲虫崇宠抽酬畴踌稠愁筹
F0      仇绸瞅丑臭初出橱厨躇锄雏滁除楚
```

B440 - B4FF

```
40
50
60
70
80
90
A0      础储矗搐触处揣川穿椽传船喘串疮
B0      窗幢床闯创吹炊捶锤垂春椿醇唇淳纯
C0      蠢戳绰疵茨磁雌辞慈瓷词此刺赐次聪
D0      葱囱匆从丛凑粗醋簇促蹿篡窜摧崔催
E0      脆瘁粹淬翠村存寸磋撮搓措挫错搭达
F0      答瘩打大呆歹傣戴带殆代贷袋待逮
```

B540 - B5FF

```
40
50
60
70
80
90
A0      怠耽担丹单郸掸胆旦氮但惮淡诞弹
B0      蛋当挡党荡档刀捣蹈倒岛祷导到稻悼
C0      道盗德得的蹬灯登等瞪凳邓堤低滴迪
D0      敌笛狄涤翟嫡抵底地蒂第帝弟递缔颠
E0      掂滇碘点典靛垫电佃甸店惦奠淀殿碇
F0      叼雕凋刁掉吊钓调跌爹碟蝶迭谍叠
```

B640 - B6FF

```
40
50
60
70
80
90
A0      丁盯叮钉顶鼎锭定订丢东冬董懂动
B0      栋侗恫冻洞兜抖斗陡豆逗痘都督毒犊
C0      独读堵睹赌杜镀肚度渡妒端短锻段断
D0      缎堆兑队对墩吨蹲敦顿囤钝盾遁掇哆
E0      多夺垛躲朵跺舵剁惰堕蛾峨鹅俄额讹
F0      娥恶厄扼遏鄂饿恩而儿耳尔饵洱二
```

B740 - B7FF

```
40
50
60
70
80
90
A0      贰发罚筏伐乏阀法珐藩帆番翻樊矾
B0      钒繁凡烦反返范贩犯饭泛坊芳方肪房
C0      防妨仿访纺放菲非啡飞肥匪诽吠肺废
D0      沸费芬酚吩氛分纷坟焚汾粉奋份忿愤
E0      粪丰封枫蜂峰锋风疯烽逢冯缝讽奉凤
F0      佛否夫敷肤孵扶拂辐幅氟符伏俘服
```

Code Page 936 Simple Chinese (Cont.)

B840 - B8FF

| | |
|---|---|
| 40 | |
| 50 | |
| 60 | |
| 70 | |
| 80 | |
| 90 | |
| A0 | 浮涪福袱弗甫抚辅俯釜斧脯腑府腐 |
| B0 | 赴副覆赋复傅付阜父腹负富讣附妇缚 |
| C0 | 咐噶嘎该改概钙盖溉干甘杆柑竿肝赶 |
| D0 | 感秆敢赣冈刚钢缸肛纲岗港杠篙皋高 |
| E0 | 膏羔糕搞镐稿告哥歌搁戈鸽胳疙割革 |
| F0 | 葛格蛤阁隔铬个各给根跟耕更庚羹 |

B940 - B9FF

| | |
|---|---|
| 40 | |
| 50 | |
| 60 | |
| 70 | |
| 80 | |
| 90 | |
| A0 | 埂耿梗工攻功恭龚供躬公宫弓巩汞 |
| B0 | 拱贡共钩勾沟苟狗垢构购够辜菇咕箍 |
| C0 | 估沽孤姑鼓古蛊骨谷股故顾固雇刮瓜 |
| D0 | 剐寡挂褂乖拐怪棺关官冠观管馆罐惯 |
| E0 | 灌贯光广逛瑰规圭硅归龟闺轨鬼诡癸 |
| F0 | 桂柜跪贵刽辊滚棍锅郭国果裹过哈 |

BA40 - BAFF

| | |
|---|---|
| 40 | |
| 50 | |
| 60 | |
| 70 | |
| 80 | |
| 90 | |
| A0 | 骸孩海氦亥害骇酣憨邯韩含涵寒函 |
| B0 | 喊罕翰撼捍旱憾悍焊汗汉夯杭航壕嚎 |
| C0 | 豪毫郝好耗号浩呵喝荷菏核禾和何合 |
| D0 | 盒貉阂河涸赫褐鹤贺嘿黑痕很狠恨哼 |
| E0 | 亨横衡恒轰哄烘虹鸿洪宏弘红喉侯猴 |
| F0 | 吼厚候后呼乎忽瑚壶葫胡蝴狐糊湖 |

BB40 - BBFF

| | |
|---|---|
| 40 | |
| 50 | |
| 60 | |
| 70 | |
| 80 | |
| 90 | |
| A0 | 弧虎唬护互沪户花哗华猾滑画划化 |
| B0 | 话槐徊怀淮坏欢环桓还缓换患唤痪豢 |
| C0 | 焕涣宦幻荒慌黄磺蝗簧皇凰惶煌晃幌 |
| D0 | 恍谎灰挥辉徽恢蛔回毁悔慧卉惠晦贿 |
| E0 | 秽会烩汇讳诲绘荤昏婚魂浑混豁活伙 |
| F0 | 火获或惑霍货祸击圾基机畸稽积箕 |

BC40 - BCFF

| | |
|---|---|
| 40 | |
| 50 | |
| 60 | |
| 70 | |
| 80 | |
| 90 | |
| A0 | 肌饥迹激讥鸡姬绩缉吉极棘辑籍集 |
| B0 | 及急疾汲即嫉级挤几脊己蓟技冀季伎 |
| C0 | 祭剂悸济寄寂计记既忌际妓继纪嘉枷 |
| D0 | 夹佳家加荚颊贾甲钾假稼价架驾嫁歼 |
| E0 | 监坚尖笺间煎兼肩艰奸缄茧检柬碱碱 |
| F0 | 拣捡简俭剪减荐槛鉴践贱见键箭件 |

BD40 - BDFF

| | |
|---|---|
| 40 | |
| 50 | |
| 60 | |
| 70 | |
| 80 | |
| 90 | |
| A0 | 健舰剑饯渐溅涧建僵姜将浆江疆蒋 |
| B0 | 桨奖讲匠酱降蕉椒礁焦胶交郊浇骄娇 |
| C0 | 嚼搅铰矫侥脚狡角饺缴绞剿教酵轿较 |
| D0 | 叫窖揭接皆秸街阶截劫节桔杰捷睫竭 |
| E0 | 洁结解姐戒藉芥界借介疥诫届巾筋斤 |
| F0 | 金今津襟紧锦仅谨进靳晋禁近烬浸 |

BE40 - BEFF

| | |
|---|---|
| 40 | |
| 50 | |
| 60 | |
| 70 | |
| 80 | |
| 90 | |
| A0 | 尽劲荆兢茎睛晶鲸京惊精粳经井警 |
| B0 | 景颈静境敬镜径痉靖竟竞净炯窘揪究 |
| C0 | 纠玖韭久灸九酒厩救旧臼舅咎就疚鞠 |
| D0 | 拘狙疽居驹菊局咀矩举沮聚拒据巨具 |
| E0 | 距踞锯俱句惧炬剧捐鹃娟倦眷卷绢撅 |
| F0 | 攫抉掘倔爵觉决诀绝均菌钧军君峻 |

BF40 - BFFF

| | |
|---|---|
| 40 | |
| 50 | |
| 60 | |
| 70 | |
| 80 | |
| 90 | |
| A0 | 俊竣浚郡骏喀咖卡咯开揩楷凯慨刊 |
| B0 | 堪勘坎砍看康慷糠扛抗亢炕考拷烤靠 |
| C0 | 坷苛柯棵磕颗科壳咳可渴克刻客课肯 |
| D0 | 啃垦恳坑吭空恐孔控抠口扣寇枯哭窟 |
| E0 | 苦酷库裤夸垮挎跨胯块筷侩快宽款匡 |
| F0 | 筐狂框矿眶旷况亏盔岿窥葵奎魁傀 |

Code Page 936 Simple Chinese (Cont.)

C040 - C0FF

```
40
50
60
70
80
90
A0    馈愧溃坤昆捆困括扩廓阔垃拉喇蜡
B0    腊辣啦莱来赖蓝婪栏拦篮阑兰澜调揽
C0    览懒缆烂滥琅榔狼廊郎朗浪捞劳牢老
D0    佬姥酪烙涝勒乐雷镭蕾磊累儡垒擂肋
E0    类泪棱楞冷厘梨犁黎篱狸离漓理李里
F0    鲤礼莉荔吏栗丽厉励砾历利傈例俐
```

C140 - C1FF

```
40
50
60
70
80
90
A0    痢立粒沥隶力璃哩俩联莲连镰廉怜
B0    涟帘敛脸链恋炼练粮凉梁粱良两辆量
C0    晾亮谅撩聊僚疗燎寥辽潦了撩镣廖料
D0    列裂烈劣猎琳林磷霖临邻鳞淋凛赁吝
E0    拎玲菱零龄铃伶羚凌灵陵岭领另令溜
F0    琉榴硫馏留刘瘤流柳六龙聋咙笼窿
```

C240 - C2FF

```
40
50
60
70
80
90
A0    隆垄拢陇楼娄搂篓漏陋芦卢颅庐炉
B0    掳卤虏鲁麓碌露路赂鹿潞禄录陆戮驴
C0    吕铝侣旅履屡缕虑氯律率滤绿峦孪李
D0    滦卵乱掠略抡轮伦仑沦纶论萝螺罗逻
E0    锣箩骡裸落洛骆络妈麻玛码蚂马骂嘛
F0    吗埋买麦卖迈脉瞒馒蛮满蔓曼慢漫
```

C340 - C3FF

```
40
50
60
70
80
90
A0    谩芒茫盲氓忙莽猫茅锚毛矛铆卯茂
B0    冒帽貌贸么玫枚梅酶霉煤没眉媒镁每
C0    美昧寐妹媚门闷们萌蒙檬盟锰猛梦孟
D0    眯醚靡糜迷谜弥米秘觅泌蜜密幂棉眠
E0    绵冕免勉娩缅面苗描瞄藐秒渺庙妙蔑
F0    灭民抿皿敏悯闽明螟鸣铭名命谬摸
```

C440 - C4FF

```
40
50
60
70
80
90
A0    摹蘑模膜磨摩魔抹末莫墨默沫漠寞
B0    陌谋牟某拇牡亩姆母墓暮幕募慕木目
C0    睦牧穆拿哪呐钠那娜纳氖乃奶耐奈南
D0    男难囊挠脑恼闹淖呢馁内嫩能妮霓倪
E0    泥尼拟你匿腻逆溺蔫拈年碾撵捻念娘
F0    酿鸟尿捏聂孽啮镊镍涅您柠狞凝宁
```

C540 - C5FF

```
40
50
60
70
80
90
A0    拧泞牛扭钮纽脓浓农弄奴努怒女暖
B0    虐疟挪懦糯诺哦欧鸥殴藕呕偶沤啪趴
C0    爬帕怕琶拍排牌徘湃派攀潘盘磐盼畔
D0    判叛乓庞旁耪胖抛咆刨炮袍跑泡呸胚
E0    培裴赔陪配佩沛喷盆砰抨烹澎彭蓬棚
F0    硼篷膨朋鹏捧碰坯砒霹批披劈琵毗
```

C640 - C6FF

```
40
50
60
70
80
90
A0    啤脾疲皮匹痞僻屁譬篇偏片骗飘漂
B0    瓢票撇瞥拼频贫品聘乒坪苹萍平凭瓶
C0    评屏坡泼颇婆破魄迫粕剖扑铺仆葡
D0    菩蒲埔朴圃普浦谱曝瀑期欺栖戚妻七
E0    凄漆柒沏其棋奇歧畦崎脐齐旗祈祁骑
F0    起岂乞企启契砌器气迄弃汽泣讫掐
```

C740 - C7FF

```
40
50
60
70
80
90
A0    恰洽牵扦钎铅千迁签仟谦乾黔钱钳
B0    前潜遣浅谴堑嵌欠歉枪呛腔羌墙蔷强
C0    抢橇锹敲悄桥瞧乔侨巧鞘撬翘峭俏窍
D0    切茄且怯窃钦侵亲秦琴勤芹擒禽寝沁
E0    瞧轻氢倾卿清擎晴氰情顷请庆琼穷秋
F0    丘邱球求囚酋泅趋区蛆曲躯屈驱渠
```

Code Page 936 Simple Chinese (Cont.)

C840 - C8FF

```
40
50
60
70
80
90
A0    取娶龋趣去圈颧权醛泉全痊拳犬券
B0    劝缺炔瘸却鹊榷确鹊裙群然燃冉染瓤
C0    壤攘嚷让饶扰绕惹热壬仁人忍韧任认
D0    刃妊纫扔仍日戎茸蓉荣融熔溶容绒冗
E0    揉柔肉茹蠕儒孺如辱乳汝入褥软阮蕊
F0    瑞锐闰润若弱撒洒萨腮鳃塞赛三叁
```

C940 - C9FF

```
40
50
60
70
80
90
A0    伞散桑嗓丧搔骚扫嫂瑟色涩森僧莎
B0    砂杀刹沙纱傻啥煞筛晒珊苫杉山删煽
C0    衫闪陕擅膳善汕扇缮墒伤商赏晌上
D0    尚裳梢捎稍烧芍勺韶少哨邵绍奢赊蛇
E0    舌舍赦摄射慑涉社设砷申呻伸身深娠
F0    绅神沈审婶甚肾慎渗声生甥牲升绳
```

CA40 - CAFF

```
40
50
60
70
80
90
A0    省盛剩胜圣师失狮施湿诗尸虱十石
B0    拾时什食蚀实识史矢使屎驶始式示士
C0    世柿事拭誓逝势是嗜噬适仕侍释饰氏
D0    市恃室视试收手首守寿授售瘦兽蔬
E0    枢梳殊抒输叔舒淑疏书赎孰熟薯暑曙
F0    署蜀黍鼠属术述树束戍竖墅庶数漱
```

CB40 - CBFF

```
40
50
60
70
80
90
A0    恕刷耍摔衰甩帅栓拴霜双爽谁水睡
B0    税吮瞬顺舜说硕朔烁斯撕嘶思私司丝
C0    死肆寺嗣四伺似饲巳松耸怂颂送宋讼
D0    诵搜艘擞嗽苏酥俗素速粟僳塑溯宿诉
E0    肃酸蒜算虽隋随绥髓碎岁穗遂隧祟孙
F0    损笋蓑梭唆缩琐索锁所塌他她塔
```

CC40 - CCFF

```
40
50
60
70
80
90
A0    獭挞蹋踏胎苔抬台泰酞太态汰坍摊
B0    贪瘫滩坛檀痰潭谭谈坦毯袒碳探叹炭
C0    汤塘搪堂棠膛唐糖倘躺淌趟烫掏涛滔
D0    绦萄桃逃淘陶讨套特藤腾疼誊梯剔踢
E0    锑提题蹄啼体替嚏惕涕剃屉天添填田
F0    甜恬舔腆挑条迢眺跳贴铁帖厅听烃
```

CD40 - CDFF

```
40
50
60
70
80
90
A0    汀廷停亭庭挺艇通桐酮瞳同铜彤童
B0    桶捅筒统痛偷投头透凸秃突图徒途涂
C0    屠土吐兔湍团推颓腿蜕褪退吞屯臀拖
D0    托脱驼陀驮驼椭妥拓唾挖哇娃洼娃瓦
E0    袜歪外豌弯湾玩顽丸烷完碗挽晚皖惋
F0    宛婉万腕汪王亡枉网往旺望忘妄威
```

CE40 - CEFF

```
40
50
60
70
80
90
A0    巍微危韦违桅围唯惟为潍维苇萎委
B0    伟伪尾纬未蔚味畏胃喂魏位渭谓尉慰
C0    卫瘟温蚊文闻纹吻稳紊问嗡翁瓮挝蜗
D0    涡窝我斡卧握沃巫呜钨乌污诬屋无芜
E0    梧吾吴毋武五捂午舞伍侮坞戊雾晤物
F0    勿务悟误昔熙析西硒矽晰嘻吸锡牺
```

CF40 - CFFF

```
40
50
60
70
80
90
A0    稀息希悉膝夕惜熄烯溪汐犀檄袭席
B0    习媳喜铣洗系隙戏细瞎虾匣霞辖暇峡
C0    侠狭下厦夏吓掀锨先仙鲜纤咸贤衔舷
D0    闲涎弦嫌显险现献县腺馅羡宪陷限线
E0    相厢镶香箱襄湘乡翔祥详想响享项巷
F0    橡像向象萧硝霄削哮嚣销消宵淆晓
```

Code Page 936 Simple Chinese (Cont.)

D040 - D0FF

```
40
50
60
70
80
90
A0      小孝校肖啸笑效楔些歇蝎鞋协挟携
B0   邪斜胁谐写械卸蟹懈泄泻谢屑薪芯锌
C0   欣辛新忻心信衅星腥猩惺兴刑型形邢
D0   行醒幸杏性姓兄凶胸匈汹雄熊休修羞
E0   朽嗅锈秀袖绣墟戌需虚嘘须徐许蓄酗
F0   叙旭序畜恤絮婿绪续轩喧宣悬旋玄
```

D140 - D1FF

```
40
50
60
70
80
90
A0      选癣眩绚靴薛学穴雪血勋熏循旬询
B0   寻驯巡殉汛训讯逊迅压押鸦鸭呀丫芽
C0   牙蚜崖衙涯雅哑亚讶焉咽阉烟淹盐严
D0   研蜒岩延言颜阎炎沿奄掩眼衍演艳堰
E0   燕厌砚雁唁彦焰宴谚验殃央鸯秧杨扬
F0   佯疡羊洋阳氧仰痒养样漾邀腰妖瑶
```

D240 - D2FF

```
40
50
60
70
80
90
A0      摇尧遥窑谣姚咬舀药要耀椰噎耶爷
B0   野冶也页掖业叶曳腋夜液一壹医揖铱
C0   依伊衣颐夷遗仪胰疑沂宜姨彝椅蚁
D0   倚已乙矣以艺抑易邑屹亿役臆逸肄疫
E0   亦裔意毅忆义益溢诣议谊译异翼翌绎
F0   茵荫因殷音阴姻吟银淫寅饮尹引隐
```

D340 - D3FF

```
40
50
60
70
80
90
A0      印英樱婴鹰应缨莹萤营荧蝇迎赢盈
B0   影颖硬映哟拥佣臃痈庸雍踊蛹咏泳涌
C0   永恿勇用幽优悠忧尤由邮铀犹油游酉
D0   有友右佑釉诱又幼迂淤于盂榆虞愚舆
E0   余俞逾鱼愉渝渔隅予娱雨与屿禹宇语
F0   羽玉域芋郁吁遇喻峪御愈欲狱育誉
```

D440 - D4FF

```
40
50
60
70
80
90
A0      浴寓裕预豫驭鸳渊冤元垣袁原援辕
B0   园员圆猿源缘远苑愿怨院曰约越跃钥
C0   岳粤月悦阅耘云郧匀陨允运蕴酝晕韵
D0   孕匝砸杂栽哉灾宰载再在咱攒暂赞赃
E0   脏葬遭糟凿藻枣早澡蚤躁噪造皂灶燥
F0   责择则泽贼怎增憎曾赠扎嘌渣札轧
```

D540 - D5FF

```
40
50
60
70
80
90
A0      铡闸眨栅榨咋乍炸诈摘斋宅窄债寨
B0   瞻毡詹粘沾盏斩辗崭展蘸栈占战站湛
C0   绽樟章彰漳张掌涨杖丈帐账仗胀瘴障
D0   招昭找沼赵照罩兆肇召遮折哲蛰辙者
E0   锗蔗这浙珍斟真甄砧臻贞针侦枕疹诊
F0   震振镇阵蒸挣睁征狰争怔整拯正政
```

D640 - D6FF

```
40
50
60
70
80
90
A0      帧症郑证芝枝支吱蜘知肢脂汁之织
B0   职直植殖执值侄址指止趾只旨纸志挚
C0   掷至致置帜峙制智秩稚质炙痔滞治窒
D0   中盅忠钟衷终种肿重仲众舟周州洲诌
E0   粥轴肘帚咒皱宙昼骤珠株蛛朱猪诸诛
F0   逐竹烛煮拄瞩嘱主著柱助蛀贮铸筑
```

D740 - D7FF

```
40
50
60
70
80
90
A0      住注祝驻抓爪拽专砖转撰赚篆桩庄
B0   装妆撞壮状椎锥追赘坠缀谆准捉拙卓
C0   桌琢茁酌啄着灼浊兹咨资姿滋淄孜紫
D0   仔籽滓子自渍字鬃棕踪宗综总纵邹走
E0   奏揍租足卒族祖诅阻组钻纂嘴醉最罪
F0   尊遵昨左佐柞做作坐座
```

Code Page 936 Simple Chinese (Cont.)

D840 - D8FF

```
40
50
60
70
80
90
A0    宁丌兀丐廿卅丕亘丞鬲孬疋｜禺丿
B0    匕乇夭爻厎氐凶胤馗毓睾鼗亟鼐乜
C0    乩亓芈孛嚲屐库厝厣厍厧厤厮靥赝匚匜
D0    甌匦匮匾赜卦卣刂刈刎刭刳刿剀剌
E0    剞剡剜蒯剽劂劁劐劓冂罔亻仃仉仂仵仡仵
F0    仞伛仳伢佤仉仳伧伉仫伲佚伣佝
```

D940 - D9FF

```
40
50
60
70
80
90
A0    佟佗伲伽佶佴侑侉侃侏佾佻侪佼侬
B0    佯偻俦俚俦俜俣俦俦俣俦倩偌偑倬倏
C0    俸俱倡倥倮倜俢偃偕偈偎偌偬偾偻
D0    僬僦偁僮儇僖儆僭僬儋仝尒余亼俞龠
E0    汆佥籴兮巺黉誒黼肀冂甪叟臾鬼龛冂
F0    充亳裒袤亵脔裒裒裒裒⺼汇冽冼
```

DA40 - DAFF

```
40
50
60
70
80
90
A0    凇冖冢冥讠讦讧讪讴讵讷诂诃诋诏
B0    诎诒诓诔诖诘诙诜诟诠诤诨讻诮诰诳
C0    诶诹诼诿谀谂谄谇谌谏谑谒谔谕谖谗
D0    谛谝谞谟谠谡谥谧谪谫谮谯谰谲谳
E0    卩阝阢阡阱阪阽阼陂陉陔陟陧陬陲
F0    陴陻陼陾隈邗邛邝邙邬邡邴邳邶邺
```

DB40 - DBFF

```
40
50
60
70
80
90
A0    邸邰郏邽邾郃郧郈郇郁郕郜邿郤郏郚
B0    郯郾鄄鄢鄞鄣鄱鄯鄹酃刍免劢劬劭
C0    劢劭劢勖勰叟燮叕⺇凵囟缶彖夅殳
D0    坌垩塾壑罍瓿圩圬圪圳圹圮圯坜圻
E0    坂坩垅坫垆坼坻坯坭垆坳垭垤垌埏
F0    垧垴垓垠埕垤埚埙垯垩堍埸坤埝
```

DC40 - DCFF

```
40
50
60
70
80
90
A0    堋堍埽埭堀堞埴堎塥塬塄壖墁墚墀
B0    鏊鍪鼗艹艽芄芊芎芨芏苊芑芑芗苁芸
C0    苄芰苈苣苤苊茫芮苋莰苌苁芩芴芨苊芨
D0    芾兰苣苡莱苷荅芏苁菱苜苴莤茑荏苻苓
E0    茼茚茆荃茇茛荙茜蕲荛萆茈苣苘茴荼
F0    荏荞莛荏荇茎荟荀茗荠荽荛茌荜荥
```

DD40 - DDFF

```
40
50
60
70
80
90
A0    荨茛荩荙荪莜莶莔莸莽莪莓荬
B0    莅荼苤荸葜荻莩莸蒁莼萁萆菥菘
C0    菫蔡菪菝葭菥荬萑菙菔菸萃荻菹
D0    萏萏菀菜苽菡葵葑葚稍蒇葳蒺葺蒉葸
E0    萼葆葩萆葚菔薤葜蒉蒌蒽蒽蓓蓊蓠
F0    蒺蒿蓼蒹蓢蒗蒡蒨蒯蓍蓖徙蕀蔟蔺
```

DE40 - DEFF

```
40
50
60
70
80
90
A0    蕈蔻蓿蓼蕙蕈蔽蕤蕞蕺蕖蕃蕲蕲薤
B0    蔸薇蕙蕹薁薜薅薠薹蕙薰薜藁藜薹蘼蘅
C0    蘩蘪蘼卝弈夼夼夅奕奚奘奁匏尢尣尬尴
D0    扌扪抟抻拊拚拗拮拤挢挣挹捃捭捱掭
E0    撩搞掴捭掏掊搴搏搋搐搌搂搛搠搏揎
F0    摒揆搋摅摁摈摋掤捭搦揉搽摴摞摭撇
```

DF40 - DFFF

```
40
50
60
70
80
90
A0    摺撷撸搏撺掾撮擗擐攉攮弋弍
B0    弎弍卟叱叽叩叨叻吒吖吆呋吡吡呔呖
C0    呃呋呗呙吣呷哐咔呷咔呤咚咛咄呶呦
D0    咝咴咭咴哒呙咦哓哔呲咣咻呷咿哝
E0    哙哚咩咪咤哝哏咩唛咪唠咪唔唏唢
F0    唣唏唑唧啭嘖唶喵唰唪唳唰嗒唿啐唛
```

Code Page 936 Simple Chinese (Cont.)

E040 - E0FF

```
40
50
60
70
80
90
A0      嗃唉啵啶唧唳唰啜喋嗒喃喱喹啮嗝
B0  嗋啾嘎啭昝嗟喽嗒喔嗉嗦嗬嗒唢嗖嗖
C0  嗍嗔嗯嗲嗳嗈嗵嘞嗞啧嗙嗙嗙嗉嚛嘞
D0  嘌嘎嘁嘤嘣嘿嘚嘚嘬嘍嘮嚛嗥嘤嘤
E0  噜噌嘱嘴嗾嘘嘻嚜噼嗬噤嚎噻噻嗽口団団
F0  図団図囿図図図図囵帏帙帔帑帱帻帼
```

E140 - E1FF

```
40
50
60
70
80
90
A0      帷幄帼幛幞幡岌屺岍岐岖岈岘岙岑
B0  岚岜岵岢岽岬岫岱岣岷峁岿峂岭峥
C0  崂崃崧嵋崮崤崞崶崾崹嵬嵛嵯
D0  嵝嵫嵋崾嵩嵊崾嵝嶙嶝嶷嵚彳彷徂徇
E0  徉後徕徙徜徨徭徵徼衢彡犭犰犴犷犸
F0  狃狁狎狍狒狨狝狩狯狯狷狲徐狴猁
```

E240 - E2FF

```
40
50
60
70
80
90
A0      狻猗猓猡猊猞猱猲獐猢猥猴猱猹獐
B0  猸猕獍獬獗獾舛夥飧夤夂亇饧饨饩饪
C0  饫饬饴饷饽馄馅馈馊馐馑馉馈馐庀
D0  庑庋庖疒庥庹庾庳赓廒廑廙廛廨廪膺
E0  忄忉忖忏忧忾怅忡忤忾怅悦忪忭忸怙
F0  怵怦怛怏怍怫怊怿怡怅怅恻恺恂
```

E340 - E3FF

```
40
50
60
70
80
90
A0      恪恽悖悚恓悝恫悃悌恈悛悱悱惝惆
B0  惆惚悴愠愤懑愣愫惆愦懔懔懔懔懔
C0  憧懔槽忝骊门闩闫闱闳闵闶闾阃阄
D0  阃阆阅阇阈阊阋阌阍阎阏阈斗爿戕彡
E0  汔汜汉沣沅沐沔沌汩汩汴汶沆沩泐泔
F0  沭泷泸浃泗淹泠泖泺泫泮沱泓泯泾
```

E440 - E4FF

```
40
50
60
70
80
90
A0      洹洧洌浹洩洇洄洙洎洫浍洮洵洚浏
B0  浒浔洳涑浯涞涠涅涓涤浜浠浼浣渚淇
C0  淅淞浃淬淠淹涵涮淙淖淀渌涮滦湮涸
D0  渫湮湟淑溢湔渣湜渥湄滟潆涟潆济澄溥
E0  溧溻涠洄滗溴溢清滂滇溟潆潇潆漕溏
F0  潫潎潋潴漪濂潋澈澍渐潸湘潼潺潺
```

E540 - E5FF

```
40
50
60
70
80
90
A0      濉澧澹渲濂濡濮澡潆溜瀚澀瀣潇潢
B0  灏瀹广宀宄宕宓宥宸甯骞骞痈寰寰寨寰
C0  寰辶迂迁迥迤逦迩迦迳迫逅逢遄逑迸
D0  逍逖逡逵逶逭逶遄遑逋遐遒遴遛遢遛
E0  遴遽邂邈邃邋彐彗豢彝尻咫屐屙屏屣
F0  屦羼弪弩弭毖弼鬻屮灼妃奸妖妪妣
```

E640 - E6FF

```
40
50
60
70
80
90
A0      妗姊妫妞妤姒姐妯姗妾娅娆姝娈姣
B0  姘妫娌婷娲娴娑娣娓婀婧婕婊娼婵婵
C0  嬛媪媛婷娶媾嫫嫱嫒嫔嫱嫠媸嫱嫖嫦
D0  嫘嫜嬉嬗嬖嬲嬷孀尕孚孥孳孽孑孓孢
E0  驵驷驸驺驿驽驵骁骅骈骊骐骒骓骖骛
F0  骘骜骝骟骠骢骣骥骧纟纡纣纥纨纩
```

E740 - E7FF

```
40
50
60
70
80
90
A0      纩纰纾绀绁绂纻绉绌绐绔绗绛绠绡
B0  绨绫绮绯绱绲绶绺绻绾缁缂缃缇缈缢
C0  缋缌缏缑缒缗缙缛缜缟缡缢缣缤缥缦
D0  缧缬缭缯缰缱缲缳缵幺麽巛甾邕邕
E0  玎玑玮玢玟玠玢玷珏玳珀珉珈珥珙顼
F0  琊玼珧珞玺珲琏琪瑛琦珸珑琰琛琮琬
```

Code Page 936 Simple Chinese (Cont.)

E840 - E8FF

40
50
60
70
80
90
A0 　琛琚瑁瑜瑷琿瑙瑷瑭瑾璀璨璨瑩璇璆
B0 　璋璞璨璩璐璧瓛瓔瓙瓽韫韬机杓杞杈杩
C0 　枥枇杪杳枘枧杵杪枨枞枋杷杼柰栉柘
D0 　栊枢柽栌枰栲柚枳柝栀柃枸柢栎枷柽
E0 　栲栳桄桡栲桢桃栳桤栝桦桁桧桀栾
F0 　桨桉栩梵梏桴梪桫棂梣梂桀梫斩椑

E940 - E9FF

40
50
60
70
80
90
A0 　椤棰梾椁楗棣椐楼椹楠楂楝梿梾楜棝
B0 　椠楸椴楦椽楣槎椴榾楷榛榧榑榑樽橱
C0 　樟榛榍棳榕槠榍槿橘槭樗槌獗榭橄
D0 　槠槃橐檄檎榍槽椁榫榇椽榍橙檩槊檫
E0 　歃歠歾殂殇殄殍殚殛殡殪轫轭轱
F0 　轲轳轵轶轸轷辂轺轸轻轺辁辄辒辎

EA40 - EAFF

40
50
60
70
80
90
A0 　辍辌辏辒辚暂戈戗戛戟戡戥戢戤戬
B0 　臧瓯瓿瓴瓻甓觉攴旮旯昊昙杲昃昕
C0 　昀昃曷昝昴昱昶昣晟眸晁晏晖晡晗
D0 　晷晅暌暧暝暾曛曦暴昽覜觇觍觎
E0 　觊觌觎觏觐觑觖觞觚觜觥觫觯觳
F0 　犟觫牝牤牯牾牿犄犋犍犏犒犗犟掰

EB40 - EBFF

40
50
60
70
80
90
A0 　犒犟毪毳犨犍毪毵毹毽毹毵氕氘氙
B0 　氜氡氩氤氪氲攵敉敫牍牒膊爰虢刖肋
C0 　肜肓肼肽肱肫肭肴胧胨胩肷肽肿
D0 　胄胙胍胗胝肫胴胭脍脎胲胰脒胲脶
E0 　豚胴腽脬腙脲腩腼腓腴腚腱腠腩胭
F0 　腽膈腧膑腠膊膂膃膘膻臌臌臊膻膛

EC40 - ECFF

40
50
60
70
80
90
A0 　膦膙欤欷欹歃歆歙飑飒飓飕飙飚夂
B0 　毂毂毂斐�斓於斾旄旆旃旄旒旖炀炜
C0 　炖炝炻炜炷炫炱烨烊煨焐炯焯焱煳煜
D0 　煨焐煲煊煸煺熘熳熵熨熠熜熵熛熵
E0 　飨灬煮煦熹庀庑庀庋庀礻祀祆祉祛祜
F0 　祓祚祢祗祠祯祧祺禅禊禚禧禳礻忐忑

ED40 - EDFF

40
50
60
70
80
90
A0 　忝怼恝恧怸恚悫恁愆愍愍愍愍愍愍
B0 　愍芈苎荖浆淼矶矸砀耆砗砑研砭砜
C0 　砝砹砺耆砟砼碾砬砘砩硎砣硪硖硐硐
D0 　硇硌硪碛碓碚碜碡碍碥碰碲碹碥碌磉
E0 　磬碾磴磴礓礤礴鑫耒耔耖耒肝眄眄眄
F0 　眇眈耆眢眙眭眦眵眨睐睑睇睃睨睃睨

EE40 - EEFF

40
50
60
70
80
90
A0 　睢睥睿睐睑瞀瞳瞑瞟瞠瞰瞵瞀町畀
B0 　畎畋畈畚畛畹罘罡罟詈罨罴罱罱羁
C0 　罾盍盥蠲牟氕钇钋钊钇钍钏钐钔钗钕
D0 　钚钛钜钣钤钫钪钭钬钯钰钲钴钶钷铈
E0 　铍铐钼钽铀铄铈铉铊铋铌铍铎铒铕铗
F0 　铙铘铗铙铛铞铟铠铢铤铥铧铨铩铪

EF40 - EFFF

40
50
60
70
80
90
A0 　铫铫铮铯铳铴铵铷铹铼铽铿锃锂锆锇
B0 　锇锉锊锍锎锏锒锓锔锕锖锘锛锝锞锟
C0 　锢锪锫锩锬锱锲锴锶锷锸锼锾锿镀锵
D0 　镅锎镆锎镈锋锃镋镏镄镌镍镎镏铧镒
E0 　镓锸镖镙镞镘锹锴镡镢镣镤镥镦镧镩
F0 　镪镫刿烂娃雉秕秭秫秸秕秕稆稃秾稆稆

F040 - F0FF

```
40
50
60
70
80
90
A0    積樱楢黏馥穮皈皎皓晳皤睞瓠甫鸠
B0  鸢鸨鸩鸪鸫鸬鸭鸮鸷鸶鸹鸻鸾鸼鹂
C0  鹃鸽鹏鹊鹄鹅鹆鹇鹈鹌鹛鹏鸶鹍鹎
D0  鹦鹝鹞鹟鹠鸳鸹鹬鹭鹡广疒疖疠疝疟
E0  疣疳疴疸痄疱疰疬痂痍痓痨痼痤痫
F0  痧瘃痱瘤痿瘐瘀瘅瘌瘗癜瘵瘘瘢瘫
```

F140 - F1FF

```
40
50
60
70
80
90
A0    瘳瘼瘢瘠瘭瘰瘿瘵瘵癃癍瘳痫癍
B0  瘢瘫瘢瘟翊竦歹亐穸窆窈穹窕窦窬窨寉
C0  窭窳礻祀衬衽衿衩祥裆袷袼裉褪裎裣
D0  祠裱褚褐袆褙褶褙褛褴褓褶裪
E0  褐襻疋胥绂彼衿耒耔秒秸秾耦耧耧
F0  耩耱糖叠盯聃聆聍聒聩聱覃预顽顾
```

F240 - F2FF

```
40
50
60
70
80
90
A0    颉颌颍颏颔颚颙颛颞颟颡颢鼙虍虔
B0  虬虮蚕蚨蚧蚍蚋蚬蚝蚧蚣蚪蚓蛰
C0  蚶蛄蚵蛎蚰蚺蚱蛄蛉蛏蚴蛩蛱蛭蛳
D0  蚰蜓蛞蛴蛟蚌蝾蛰蛸蛹蜊蛴蛼蛱蜻
E0  蜞蜥蜮蜚蜾蜴蛔蜴蜱蜩蜷蜣蜢蜻蜾蜻
F0  蝠蝰蝌蝮蝼蝓蜥蜩蝥蝥螯蟒蟒
```

F340 - F3FF

```
40
50
60
70
80
90
A0    螟螈蟆螨螗螃螯蟥蟮螺螳螅蟪蟑
B0  蟀螽蟛蟪蟠蟥蟟蟓蟮蟛蟊蟊螺缶罄
C0  罂罅舐竺竿笈笃笋笕笊笫笏笰笪笱笙
D0  笮筢笠笳筘笤笾笸笏笪竽笕筵筌笻笸篓
E0  篁笵筲筱箐篑箧篚箸箝箨算簞箜箢箫
F0  箴箦篁篌篝筐篥箧簏篾箴篦箍篝簖篮
```

F440 - F4FF

```
40
50
60
70
80
90
A0    簟簦篓簌稹簖臾舁舂舄臬衄肛舢舣
B0  舭舯舨舫舸舻舳舴舸艄艉艋艏艚艟艨艖
C0  衾裒袈袅裘襞瓿羟羧羯羰羲籼籹杷栃
D0  枭栖枀桊郴棕椮椴榰槎榍栝槔橻杲暨
E0  羿翃翕翥翡翱翩翮羁糸絷綦絷絷纛鬏
F0  鞫赳趔趄趑趔赧赭虹敉酊酐酎酏酤
```

F540 - F5FF

```
40
50
60
70
80
90
A0    酢酡酰酩酯酽醄醒酴酹醌醅醐醍醑
B0  醢醣醪醭醮醯醵醴醺豕豖豢逗登逗躄躄
C0  趵趿跹趺跄跖趼跚跞跎跏趺跆跬跷跶
D0  跌跫跻跤跟跽踔踝脚颐踮踣踯躇踬踩踹
E0  踵踽踱蹉蹁踩蹊蹰蹶蹼蹯蹚蹯蹴蹴蹯
F0  躏躜躜蹙豸貂貉猱貘貔斛觖觞觚觯
```

F640 - F6FF

```
40
50
60
70
80
90
A0    觥觫觯訾謦觌訾雩雳雯霆霁霈霏霭霪
B0  霭霰霾龀龃龅龆龇龈龉龊龌黾鼋鼍佳
C0  隼隽雎雒瞿雠銮銮銮銮銮銮鑫鼽
D0  鲂鲅鲆鲇鲈鲊鲋鲌鲒鲔鲑鲕鲒鲛鲨鳌
E0  鲟鲠鲡鲢鲣鲥鲦鲩鲨鲛鲫鲭鲮鲰鲱鲲
F0  鲳鲴鲵鲶鲷鲺鲻鲽鲼鳄鳅鳆鳇鳊鳋
```

F740 - F7FF

```
40
50
60
70
80
90
A0    鳌鳍鳎鳏鳐鳓鳔鳕鳖鳗鳘鳙鳚鳛鳞鳝
B0  鮏鳜鳝鳟鳢特鞠鞣鞯鞾骱骰骷鹘骶骶
C0  骼髁髀髅骼髋骸骽髌髑魅魃魇魉魈魍魑缢
D0  餍饔饕餮彡髟髭髹髻髯髯髭髹鬈鬏鬓鬃
E0  鬣麽麾靡麇麋麈麒麓麝麟黛黜黝點
F0  黟黢黩黧黥黪黯鼢鼬鼯鼹鼷鼽鼾齄
```

Code Page 936 Simple Chinese (Cont.)

F840 - F8FF

40
50
60
70
80
90
A0
B0
C0
D0
E0
F0

F940 - F9FF

40
50
60
70
80
90
A0
B0
C0
D0
E0
F0

FA40 - FAFF

40
50
60
70
80
90
A0
B0
C0
D0
E0
F0

FB40 - FBFF

40
50
60
70
80
90
A0
B0
C0
D0
E0
F0

FC40 - FCFF

40
50
60
70
80
90
A0
B0
C0
D0
E0
F0

FD40 - FDFF

40
50
60
70
80
90
A0
B0
C0
D0
E0
F0

FE40 - FEFF

40
50
60
70
80
90
A0
B0
C0
D0
E0
F0

FF40 - FFFF

40
50
60
70
80
90
A0
B0
C0
D0
E0
F0

## Code Page 949 Korean

### A140 - A1FF



### A240 - A2FF



### A340 - A3FF



### A440 - A4FF



### A540 - A5FF

## Code Page 949 Korean (Cont.)

A640 - A6FF



A740 - A7FF



A840 - A8FF



A940 - A9FF



AA40 - AAFF



AB40 - ABFF

## Code Page 949 Korean (Cont.)

**AC40 - ACFF**

```
40
50
60
70
80
90
A0     А Б В Г Д Е Ё Ж З И Й К Л М Н
B0   О П Р С Т У Ф Х Ц Ч Ш Щ Ъ Ы Ь Э
C0   Ю Я
D0     а б в г д е ё ж з и й к л м н
E0   о п р с т у ф х ц ч ш щ ъ ы ь э
F0   ю я
```

**AD40 - ADFF**

```
40
50
60
70
80
90
A0
B0
C0
D0
E0
F0
```

**AE40 - AEFF**

```
40
50
60
70
80
90
A0
B0
C0
D0
E0
F0
```

**AF40 - AFFF**

```
40
50
60
70
80
90
A0
B0
C0
D0
E0
F0
```

**B040 - B0FF**

```
40
50
60
70
80
90
A0 가 각 간 갇 갈 갉 갊 감 갑 값 갓 갔 강 갖 갗
B0 갘 같 갚 갛 개 객 갠 갤 갬 갭 갯 갰 갱 갸 갹 갼
C0 갿 걀 걔 걘 걜 거 걱 건 걷 걸 걺 검 겁 것 겄 겅
D0 겆 겊 겋 게 겐 겔 겜 겝 겟 겠 겡 겨 격 겪 겫 견
E0 겯 결 겷 겸 겹 겼 겻 겼 경 계 곈 곌 곕 곗 고 곡 곤
F0 곧 골 곪 곬 곯 곰 곱 곳 공 곶 과 곽 관 괄 괆
```

**B140 - B1FF**

```
40
50
60
70
80
90
A0 괌 괍 괏 광 괘 괜 괠 괩 괫 괭 괴 괵 괸 괼 굄
B0 굅 괏 굉 교 굔 굘 굡 굣 구 국 군 굳 굴 굵 굶 굻
C0 굼 굽 굿 궁 궂 궈 궉 권 궐 궜 궝 궤 궷 귀 귁 귄
D0 궐 궜 궝 귓 규 균 귤 그 극 근 귿 글 긁 금 급 긋
E0 긍 긔 기 긱 긴 긷 길 긺 김 깁 깃 깅 깆 깊 까 깍
F0 깎 깐 깔 깖 깜 깝 깟 깠 깡 깥 깨 깩 깬 깰 깸
```

Code Page 949 Korean (Cont.)

B240 - B2FF

```
40
50
60
70
80
90
A0   깸깻깼깽꺄꺅꺆꺇꺈꺉꺊꺋꺌꺍꺎꺏
B0   깠껌께껴껜껠껨껫껸껹껺껻껼껽껾껿
C0   꺾꺿껀껁껂껃껄껅껆껇껈껉껊껋껌껍
D0   팩꺵껀꺼껌꺢껌꾀
E0   꼇꼉꽃꺼껏껐껑껒껓껔껕껖껗께껙껚
F0   껍껜껝뀨끄끅끆끇끈끉끊끋끌끍끎
```

B340 - B3FF

```
40
50
60
70
80
90
A0   끝끼끽끾끿낀낁낂낃낄낅낆낇나낙
B0   낚난낝났낞낟날낡낢낣낤낥낦낧남
C0   납낪낫났낭낮낯낰낱낲낳내낵낶낷
D0   낹낺낻낼낽낾낿냀냁냂냃냄냅냆냇
E0   냉냊냋냌냍냎냏냐냑냒냓냔냕냖냗
F0   놈놉놋농놎놏뇨뇩뇪뇫뇬뇭뇮뇯
```

B440 - B4FF

```
40
50
60
70
80
90
A0   
B0   
C0   
D0   
E0   
F0   
```

B540 - B5FF

```
40
50
60
70
80
90
A0   덧덩및덮데덱덴델뎀뎁뎃뎄뎅뎌
B0   뎔뎠데도독돈돌돎돐돔돗뎅묘뎃뎅
C0   돗돠돤돨돼됐되된될됨됩됫됬뎅뎅
D0   두둑둔둘둠둡둣둥드든들듬듭딧딨
E0   뎅뎅돝됴돗드득든듣딛딜딤딥딧딨딩딪
F0   디딕딘딜딤딥딧딨딩딪딫딬딭딮딯
```

B640 - B6FF

```
40
50
60
70
80
90
A0   담답댓댔당댖댗때땍땐땔땜땝땟땠땡
B0   더떡떤떨떰떱떳떴떵떻레렉렌렐렘렙렛렜
C0   뎀뎁뎃뎄뎅또똑똔똘똠똡똣똥되된딀딈됌됍됐됑
D0   된뫩돹돺돻돼됐되된될됨됩됫됬
E0   뎅뎅된돝됴돗딛딜딤딥딧딨딩딪
F0   뎁돗땅락란랄람랍랏랐랑랓랔랕
```

B740 - B7FF

```
40
50
60
70
80
90
A0   래랙랜랠램랩랏랐램라락란랏량러
B0   럭런럴럼럽럿렀렁럴레렉렌렐렘렙렛
C0   렝려력런럴럼럽럿렀렁려련릴립렛로
D0   론뤀룸뤔뤗룽롸롼뢌뢨뢔뢴뤀룹륏
E0   뤔료룬뢴뤀뢴룹룻룽뤄뤈룹뤗룽
F0   렜뤔뤄륀립룃룀룸룬룸룹룸륏룀
```

Code Page 949 Korean (Cont.)

B840  -  B8FF

```
40
50
60
70
80
90
A0
B0
C0
D0
E0
F0
```

B940  -  B9FF

```
40
50
60
70
80
90
A0
B0
C0
D0
E0
F0
```

BA40  -  BAFF

```
40
50
60
70
80
90
A0
B0
C0
D0
E0
F0
```

BB40  -  BBFF

```
40
50
60
70
80
90
A0
B0
C0
D0
E0
F0
```

BC40  -  BCFF

```
40
50
60
70
80
90
A0
B0
C0
D0
E0
F0
```

BD40  -  BDFF

```
40
50
60
70
80
90
A0
B0
C0
D0
E0
F0
```

## Code Page 949 Korean (Cont.)

### BE40 - BEFF

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40 | | | | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | | | | |
| 60 | | | | | | | | | | | | | | | |
| 70 | | | | | | | | | | | | | | | |
| 80 | | | | | | | | | | | | | | | |
| 90 | | | | | | | | | | | | | | | |
| A0 | 쉴 | 쉴 | 쉼 | 쑈 | 수 | 쑥 | 쑥 | 순 | 술 | 쑴 | 씨 | 쏭 | 쒀 | 쬈 | 쮀 |
| B0 | 쒼 | 쓩 | 쓰 | 쑥 | 쓴 | 쓸 | 씀 | 씁 | 씨 | 씐 | 씔 | 쎈 | 씨 | 씩 | 씩 |
| C0 | 씬 | 씰 | 씸 | 씹 | 씻 | 씽 | 아 | 악 | 안 | 앉 | 않 | 알 | 앍 | 앗 | 앙 |
| D0 | 압 | 앗 | 았 | 앙 | 앝 | 애 | 액 | 앤 | 앨 | 앰 | 앱 | 앳 | 앵 | 야 | 약 |
| E0 | 약 | 안 | 알 | 암 | 암 | 앗 | 양 | 얕 | 얘 | 얜 | 얩 | 얩 | 어 | 억 |  |
| F0 | 언 | 없 | 얼 | 엄 | 엄 | 업 | 없 | 엇 | 었 | 엉 | 엊 | 엌 | 엎 | | |

### BF40 - BFFF

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40 | | | | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | | | | |
| 60 | | | | | | | | | | | | | | | |
| 70 | | | | | | | | | | | | | | | |
| 80 | | | | | | | | | | | | | | | |
| 90 | | | | | | | | | | | | | | | |
| A0 | 에 | 엑 | 엔 | 엘 | 엠 | 엡 | 엣 | 엥 | 여 | 역 | 엮 | 연 | 열 | 엵 |  |
| B0 | 염 | 엽 | 엾 | 엿 | 였 | 영 | 옅 | 옆 | 예 | 옌 | 옛 | 옘 | 옙 | 옛 | 옜 |
| C0 | 오 | 옥 | 온 | 옴 | 옵 | 옷 | 옹 | 옻 | 와 | 왁 | 완 | 왈 | 왐 | 왑 | 왓 |
| D0 | 왔 | 왕 | 왜 | 왝 | 왠 | 왬 | 왯 | 왱 | 외 | 왹 | 왼 | 욀 | 욈 | 욉 | 욋 |
| E0 | 욍 | 요 | 욕 | 욘 | 욜 | 욤 | 욥 | 욧 | 용 | 우 | 욱 | 운 | 울 | 욹 | 욺 |
| F0 | 움 | 웁 | 웃 | 웅 | 워 | 웍 | 원 | 월 | 웜 | 웝 | 웠 | 웡 | 웨 | | |

### C040 - C0FF

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40 | | | | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | | | | |
| 60 | | | | | | | | | | | | | | | |
| 70 | | | | | | | | | | | | | | | |
| 80 | | | | | | | | | | | | | | | |
| 90 | | | | | | | | | | | | | | | |
| A0 | 웩 | 웬 | 웰 | 웸 | 웹 | 웽 | 위 | 윅 | 윈 | 윔 | 윕 | 윗 | 윙 | 유 |  |
| B0 | 육 | 윤 | 율 | 윰 | 윱 | 윳 | 융 | 윷 | 으 | 윽 | 은 | 읈 | 음 | 읍 | 읎 |
| C0 | 응 | 읒 | 읓 | 읔 | 읕 | 읖 | 읗 | 의 | 읜 | 읠 | 읨 | 읫 | 이 | 익 | 인 |
| D0 | 읹 | 읺 | 일 | 읽 | 읾 | 잃 | 임 | 입 | 잇 | 있 | 잉 | 잊 | 잌 | 잎 | 자 |
| E0 | 작 | 잔 | 잖 | 잗 | 잘 | 잚 | 잠 | 잡 | 잣 | 잤 | 장 | 잦 | 재 | 잭 | 잰 |
| F0 | 잴 | 잼 | 잽 | 잿 | 쟀 | 쟁 | 쟂 | 쟈 | 쟉 | 쟌 | 쟎 | 쟏 | 쟐 | | |

### C140 - C1FF

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40 | | | | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | | | | |
| 60 | | | | | | | | | | | | | | | |
| 70 | | | | | | | | | | | | | | | |
| 80 | | | | | | | | | | | | | | | |
| 90 | | | | | | | | | | | | | | | |
| A0 | 점 | 접 | 젓 | 점 | 젖 | 제 | 젝 | 젠 | 젤 | 젬 | 젭 | 젯 | 젱 | 저 |  |
| B0 | 젤 | 젬 | 젭 | 젔 | 졍 | 졔 | 조 | 족 | 존 | 졸 | 좀 | 좁 | 좃 | 종 | 좆 |
| C0 | 좇 | 좋 | 좌 | 좍 | 좔 | 좝 | 좟 | 좡 | 좨 | 좼 | 좽 | 죄 | 죈 | 죌 | 죔 |
| D0 | 죕 | 죗 | 죙 | 죠 | 죡 | 죤 | 죵 | 주 | 죽 | 준 | 줄 | 줅 | 줆 | 줌 | 줍 |
| E0 | 줏 | 중 | 줘 | 줬 | 줴 | 쥐 | 쥑 | 쥔 | 쥘 | 쥠 | 쥡 | 쥣 | 쥬 | 쥰 | 쥲 |
| F0 | 쥼 | 즈 | 즉 | 즌 | 즐 | 즘 | 즙 | 즛 | 증 | 지 | 직 | 진 | 짇 | | |

### C240 - C2FF

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40 | | | | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | | | | |
| 60 | | | | | | | | | | | | | | | |
| 70 | | | | | | | | | | | | | | | |
| 80 | | | | | | | | | | | | | | | |
| 90 | | | | | | | | | | | | | | | |
| A0 | 징 | 짖 | 짙 | 짚 | 짜 | 짝 | 짠 | 짢 | 짤 | 짬 | 짭 | 짜 | 짰 | 짱 |  |
| B0 | 째 | 짹 | 짼 | 쨀 | 쨈 | 쨉 | 쨋 | 쨌 | 쨍 | 쨔 | 쨘 | 쨩 | 쩌 | 쩍 | 쩐 |
| C0 | 쩔 | 쩜 | 쩟 | 쩠 | 쩡 | 쩌 | 쩨 | 쩩 | 쩐 | 쪼 | 쪽 | 쫀 | 쫄 | 쫌 | 쫏 |
| D0 | 쫑 | 쫓 | 쫘 | 쫙 | 쫠 | 쫬 | 쫴 | 쬈 | 쬐 | 쬔 | 쬘 | 쬠 | 쬡 | 쭁 | 쭈 |
| E0 | 쭉 | 쭌 | 쭐 | 쭙 | 쭝 | 쭤 | 쭳 | 쭹 | 쭸 | 쭹 | 쮸 | 쯔 | 쯤 | 쯧 | 쯩 |
| F0 | 찌 | 찍 | 찜 | 찝 | 찡 | 찢 | 찦 | 차 | 착 | 찬 | 찮 | 찰 | 참 | 찹 | 찻 |

### C340 - C3FF

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40 | | | | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | | | | |
| 60 | | | | | | | | | | | | | | | |
| 70 | | | | | | | | | | | | | | | |
| 80 | | | | | | | | | | | | | | | |
| 90 | | | | | | | | | | | | | | | |
| A0 | 찼 | 창 | 찾 | 채 | 책 | 챈 | 챌 | 챔 | 챕 | 챗 | 챙 | 챠 | 챤 | 챨 |  |
| B0 | 챰 | 챵 | 처 | 척 | 천 | 철 | 첨 | 첩 | 첫 | 첬 | 첨 | 체 | 첵 | 첸 | 첼 |
| C0 | 쳄 | 쳅 | 쳇 | 쳉 | 쳐 | 쳔 | 쳤 | 쳬 | 쳰 | 촁 | 초 | 촉 | 촌 | 촐 | 촘 |
| D0 | 촙 | 촛 | 총 | 촤 | 촨 | 촬 | 촹 | 최 | 쵀 | 쵄 | 쵕 | 쵖 | 최 | 쵸 | 쵹 |
| E0 | 쵯 | 춈 | 춉 | 추 | 축 | 춘 | 출 | 춤 | 춥 | 춧 | 충 | 춰 | 춴 | 춸 | 췄 |
| F0 | 췌 | 췐 | 취 | 췬 | 췰 | 췸 | 췹 | 췻 | 췽 | 츄 | 츈 | 츌 | 츔 | 츙 | 츠 |

Code Page 949 Korean (Cont.)

C440 - C4FF

```
40
50
60
70
80
90
A0        치 칙 친 친 침 취 침 칩 칫 칭 카 칵 칸 칼 캄
B0   캅 캇 캉 캐 캑 캔 캘 캠 캡 캣 캤 캥 캬 캭 캄 커
C0   컥 컨 컫 컬 컴 컵 컷 컸 컹 케 켁 켄 켈 켐 켑 켓
D0   켬 켜 켠 켤 켬 켭 켯 켰 켱 케 코 콕 콘 콜 콤 콤
E0   콧 콩 콰 콱 콴 콸 콤 쾅 쾌 쾡 쾨 쾰 쿄 쿠 쿡 쿤
F0   쿨 쿰 쿱 쿳 쿵 쿼 퀀 퀄 퀌 쿼 퀭 퀴 퀵 퀸 퀼
```

C540 - C5FF

```
40
50
60
70
80
90
A0        큄 큅 큇 큄 큐 큔 쿨 큠 크 쿽 큰 큻 큼 큼 큼
B0   키 킥 킨 킬 킴 킵 킷 킹 타 탁 탄 탈 탉 탐 탑 탓
C0   탔 탕 태 택 탠 탤 탬 탭 탯 탰 탱 탸 탱 터 턱 턴
D0   털 턺 텀 텁 텃 텄 텅 테 텍 텐 텔 텔 템 텝 텃 텅 터
E0   텬 텼 톄 톈 토 톡 톤 톨 톰 톱 톳 통 톺 톼 퇀 퇘
F0   퇴 튄 튓 튕 토 투 툭 툰 툴 툼 툽 툿 퉁 툭     텄
```

C640 - C6FF

```
40
50
60
70
80
90
A0        튀 튀 튁 튄 튈 튐 튑 튕 튜 튠 튤 튬 튱 트 특
B0   튼 튿 틀 틂 틈 틉 틋 틔 틘 틜 틤 틥 파 팍 팎 판
C0   팔 팖 팜 팝 팟 팠 팡 팥 패 팩 팬 팰 팹 팻 팼 팽
D0   퍄 퍅 퍼 퍽 펀 펄 펌 펍 펏 펐 펑 페 펙 펜 펠 펨
E0   펩 펫 펴 편 펼 폄 폅 폈 평 폐 폘 포 폭 폰 폴 폼
F0   폽 폿 퐁 퐈 퐝 푀 푄 표 푠 푤 푭 푯 푸 푹 푼 풀
```

C740 - C7FF

```
40
50
60
70
80
90
A0        퐈 퐝 푀 푄 표 푠 푤 풀 풂 풋 풍 푸 푹 푼 풀
B0   풂 풋 풍 풔 풩 퓌 퓐 풜 풤 풥 풉 풀 풋 퓟 퓨 퓬
C0   퓸 퓻 퓽 프 픈 플 픔 픕 픗 피 픽 핀 필 핌 핍 핏
D0   학 한 할 핥 함 합 핫 항 해 핵 핸 핼 햄 햅 햇 했
E0   행 햐 향 허 헉 헌 헐 헒 험 헙 헛 헝 헤 헥 헨 헬
F0   헴 헵 헷 헹 혀 혁 현 혈 혐 협 헛 헜 형 혜 혠 혤
```

C840 - C8FF

```
40
50
60
70
80
90
A0        혬 혯 호 혹 혼 홀 홅 홈 홉 홋 홍 홑 화 확 환
B0   활 홧 황 홰 홱 홴 횃 횅 회 획 횐 횔 횝 횟 횡 효
C0   횬 횰 횹 횻 후 훅 훈 훌 훔 훗 훙 훠 훤 훼 횐 횔
D0   횝 횟 횡 휀 훼 휑 휘 휙 휜 휠 휨 휩 휫 횡 휴 흉
E0   휵 흄 흇 흉 흐 흑 흔 흖 흗 흘 흠 흡 흣 흥 흦 흧
F0   흩 희 흰 흴 흼 흽 힁 히 힉 힌 힐 힘 힙 힛 힝 힣
```

C940 - C9FF

```
40
50
60
70
80
90
A0
B0
C0
D0
E0
F0
```

## Code Page 949 Korean (Cont.)

CA40 - CAFF

```
40
50
60
70
80
90
A0        伽佳假價加可呵哥嘉嫁家暇架枷柯
B0    歌珂痂稼苛茄街袈訶賈駕軻迦駕刻却
C0    各恪殼慤珏脚覺角閣侃刊墾奸姦干幹
D0    懇揀杆東稈澗癎看磵稈竿簡肝艮艱諫
E0    間乫喝曷渴碣竭葛褐蠍輵勘坎堪嵌感
F0    憾戡敢柑橄減甘疳監瞰紺邯鑑鑒龕
```

CB40 - CBFF

```
40
50
60
70
80
90
A0        匣岬甲胛鉀閘剛堈姜岡崗康强彊慷
B0    江畺疆糠絳綱羌腔舡薑講鋼降鱇介
C0    价個凱塏愷愾慨改槪溉疥皆墍箇芥蓋
D0    豈鎧闓喀客坑更粳羹醵倨去居巨拒据
E0    據擧渠炬祛距踞車遽鉅鋸乾件健巾建
F0    愆楗腱虔蹇鍵騫乞傑杰桀儉劍劒檢
```

CC40 - CCFF

```
40
50
60
70
80
90
A0        瞼鈐黔劫怯迲偈憩揭擊格檄激膈覡
B0    隔堅牽犬甄絹繭肩見譴遣鵑抉決潔結
C0    缺訣兼慊箝謙鉗鎌京俓倞傾儆勁勍卿
D0    坰境庚徑慶憬擎敬景暻更梗涇炅烱璟
E0    璥瓊痙硬磬竟競絅經耕耿脛莖警輕逕
F0    鏡頃頸驚鯨係啓堺契季屆悸戒桂械
```

CD40 - CDFF

```
40
50
60
70
80
90
A0        棨溪界癸磎稽系繫繼計誡谿階鷄古
B0    叩告呱固姑孤尻庫拷攷故敲暠枯槁沽
C0    痼皐睾稿羔考股膏苦苽菰蠱袴誥賈
D0    辜錮雇顧高鼓哭斛曲梏穀谷鵠困坤崑
E0    昆梱棍滾琨袞鯤汨滑骨供公共功孔工
F0    恐恭拱控攻珙空蚣貢鞏串寡戈果瓜
```

CE40 - CEFF

```
40
50
60
70
80
90
A0        科菓誇課跨過鍋顆廓槨藿郭串冠官
B0    寬慣棺款灌琯瓘管罐菅觀貫關館刮恝
C0    括适侊光匡壙廣曠洸狂珖筐胱鑛卦
D0    掛罫乖傀塊壞怪愧拐槐魁宏紘肱轟交
E0    僑咬喬嬌嶠巧攪敎校橋狡皎矯絞翹膠
F0    蕎蛟較轎郊餃驕鮫丘久九仇俱具勾
```

CF40 - CFFF

```
40
50
60
70
80
90
A0        區口句咎嘔坵垢寇嶇懼拘救枸柩
B0    構歐毆毬求溝灸狗玖球瞿矩究絿者臼
C0    舅舊苟衢謳軀逑邱鈎銶駒驅鳩鷗龜
D0    國局菊鞠鞫麴君窘群裙軍郡堀屈掘窟
E0    宮弓穹窮芎躬倦券勸卷圈拳捲權淃眷
F0    厥獗蕨蹶闕机櫃潰詭軌饋句勻歸貴
```

Code Page 949 Korean (Cont.)

D040 - D0FF

```
40
50
60
70
80
90
A0      鬼龜叫圭查揆槻珪硅窺竅糾葵規赳
B0   逵闕勻均畇筠龜鈞龜橘克剋劇戟棘極
C0   隙僅劤勤懃斤根槿瑾筋芹董覲謹近饉
D0   契今妗擒昑檎琴禁禽芩衾衿襟金錦伋
E0   及急扱汲級給亙兢矜肯企伎其冀嗜器
F0   圻基埼變奇妓寄岐崎己幾忌技旗旣
```

D140 - D1FF

```
40
50
60
70
80
90
A0      朞期杞棋棄機欺氣汽沂淇玘琦琪璂
B0   璣畸磯羈綦羇祈祁祇祺箕紀綺觀譏饑肌
C0   記譏曁起錡錤饑飢饑騎騏麒緊佶吉拮
D0   桔金喫儺喇奈娜懦懶拏拿攤羅邏蘿螺裸
E0   邏那樂洛烙珞落諾酪駱亂卵暖欄煖爛
F0   蘭欄爛捏捺南嵐枏楠湳濫男藍襤拉
```

D240 - D2FF

```
40
50
60
70
80
90
A0      納臘蠟衲囊娘廊朗浪狼郞乃來內奈
B0   柰耐冷女年撚秊念恬拈捻寧嚀努勞奴
C0   弩怒擄櫓爐瑙盧老蘆虜路露駑魯鷺碌
D0   祿綠菉錄鹿論壟弄濃籠聾膿農惱牢磊
E0   腦賂雷尿壘屢樓淚漏累耮陋嫩訥杻紐
F0   勒肋凜凌稜綾能菱陵尼泥匿溺多茶
```

D340 - D3FF

```
40
50
60
70
80
90
A0      丹亶但單團壇彖斷旦檀段湍短端簞
B0   緞蛋袒鄲鍛撻澾獺疸達啖坍憺擔曇淡
C0   湛潭澹痰聃膽蕁覃談譚錟沓畓答踏遝
D0   唐堂塘幢戇撞棠當糖螳黨代垈坮大對
E0   岱帶待戴擡玳臺袋貸隊黛宅德悳倒刀
F0   到圖堵塗導屠島嶋度徒悼挑掉搗桃
```

D440 - D4FF

```
40
50
60
70
80
90
A0      棹櫂淘渡滔濤鍍盜睹禱稻萄覩賭跳
B0   蹈逃途道都鍍陶韜毒瀆牘犢獨督禿篤
C0   纛讀墩惇敦旽暾沌焞燉豚頓乭突仝冬
D0   凍動同憧東桐棟洞潼疼瞳童胴董銅兜
E0   斗杜科荳讀豆逗頭屯臀芚遁遯鈍
F0   得嶝橙燈登等藤謄鄧騰喇懶擎瀾羅
```

D540 - D5FF

```
40
50
60
70
80
90
A0      蘿螺裸邏樂洛烙珞絡落諾酪駱丹亂
B0   卵欄欒瀾爛蘭蠻剌辣嵐燣擥欖濫藍欖
C0   藍襤蘭拉臘蠟廊朗浪琅瑯螂郞來崍
D0   徠萊冷掠略亮倆兩凉梁樑粮粱糧良諒
E0   輛量侶儷勵呂廬慮戾旅梠濾礪藜蠣閭
F0   驢驪麗黎力曆歷瀝礫轢靂鈴憐戀攣漣
```

## Code Page 949 Korean (Cont.)

D640 - D6FF

```
40
50
60
70
80
90
A0      煉璉練聯蓮輦連鍊冽列劣洌烈裂廉
B0   斂殮濂簾獵令伶囹寧岺嶺怜玲笭羚翎
C0   聆逞鈴零靈領齡例澧禮醴隸勞怒擄撈
D0   櫓潞虜爐盧老蘆虜路輅露魯鷺碌祿
E0   綠菉錄鹿麓論壟弄朧瀧瓏籠聾儡瀨牢
F0   磊賂賚頼雷了僚寮廖料燎療瞭聊蓼
```

D740 - D7FF

```
40
50
60
70
80
90
A0      遼鬧龍壘婁屢樓淚漏瘻累縷蔞褸鏤
B0   陋劉旒柳榴流溜溜琉瑠留瘤硫謬類六
C0   戮陸侖倫崙淪綸輪律慄栗率隆勒肋凜
D0   凌楞稜綾菱陵俚利厘吏喇履悧李梨浬
E0   狸狸理璃異痢籬裏贏莉裏裡里釐離鯉
F0   吝潾燐璘藺躙隣鱗麟林淋琳臨霖砬
```

D840 - D8FF

```
40
50
60
70
80
90
A0      立笠粒摩瑪痲碼磨馬魔麻寞幕漠膜
B0   莫邈万卍娩巒彎慢挽晩曼滿漫灣瞞萬
C0   蔓蠻饅鰻滿抹末沫茉襪靺亡妄忘忙
D0   望網罔芒茫莽輞邙埋妹媒寐昧枚梅每
E0   煤昧買賣邁魅脈貊陌驀麥孟氓猛盲盟
F0   萌甍甋兔冕勉棉沔眄眠綿緬面麵滅
```

D940 - D9FF

```
40
50
60
70
80
90
A0      蔑冥名命明暝溟皿瞑茗蓂螟酩銘
B0   鳴袂侮冒募姆帽慕摸摹暮某模母毛牟
C0   牡瑁眸矛耗芼茅謀謨貌木沐牧目睦穆
D0   鶩歿沒夢朦薨卯墓妙廟描昴杳渺猫秒
E0   苗錨務巫憮撫无楙武母無珷畝
F0   繆舞茂蕪誣貿霧鵡墨默們刎吻問文
```

DA40 - DAFF

```
40
50
60
70
80
90
A0      汶紊紋聞蚊門雯勿沕物味媚尾嵋彌
B0   微未梶楣渼湄眉米美薇謎迷靡黴岷悶
C0   愍憫敏旻旼民泯玟珉緡閔密蜜謐剝博
D0   拍搏撲朴樸泊珀璞箔粕縛膊舶薄迫雹
E0   駁伴半反叛拌搬攀斑槃泮潘班畔瘢盤
F0   盼磐礬絆般蟠返頒飯勃拔撥渤潑
```

DB40 - DBFF

```
40
50
60
70
80
90
A0      發跋醱鉢髮魃倣傍坊妨尨幇彷放
B0   方旁昉枋榜滂磅紡肪膀舫芳蒡蚌訪謗
C0   邦防龐倍俳北培徘拜排杯湃焙盃背胚
D0   裴裵褙賠輩配陪伯佰帛柏栢白百魄幡
E0   樊煩燔番磻繁蕃藩飜伐筏罰閥凡帆梵
F0   氾汎泛犯範范法琺僻劈壁擘檗璧癖
```

Code Page 949 Korean (Cont.)

DC40 - DCFF

```
40
50
60
70
80
90
A0      碧頻闢霹便卞弁變辨瓣邊別瞥彆覽
B0  丙併兵屛幷昞鬚柄棅炳瓶病秉竝軿餠
C0  駢保堡報寶普步洑湺潽珤菩補褓譜
D0  輔伏僕匐卜宓復服福腹茯葡複覆輹輻
E0  輹輹本悘俸奉封峯峰捧棒烽熢琫蓬
F0  蟦逢鋒鳳不付俯傅剖副否咐埠夫婦
```

DD40 - DDFF

```
40
50
60
70
80
90
A0      孚孵富府復扶敷斧浮溥父符薄缶腐
B0  腑膚艀芙莩訃負賦賻赴趺部釜阜附駙
C0  朲北分吩噴墳奔嬪忿憤扮盼汾焚盆粉
D0  糞紛芬賁雰不佛弗彿拂崩朋棚硼繃鵬
E0  不備匕匪卑妃婢庇悲憊鄙批斐枇比
F0  毖毗毘沸泌琵痺砒碑秕秘粃緋翡肥
```

DE40 - DEFF

```
40
50
60
70
80
90
A0      脾臂菲蜚裨誹鄙費鄙非飛鼻嚬嬪彬
B0  斌檳殯浜濱瀕牝玭貧賓頻憑氷聘騁乍
C0  事些仕伺似使俟僿史司唆嗣四士奢娑
D0  寫寺射巳師徙思撕斜斯柶査梭死沙泗
E0  渣瀉獅砂社祀祠私篩紗絲肆舍莎蓑蛇
F0  裟詐詞謝賜赦辭邪飼駟麝削數朔索
```

DF40 - DFFF

```
40
50
60
70
80
90
A0      傘刪山散汕珊産疝算蒜酸霰嵼撒殺
B0  煞薩三參杉森滲芟蔘衫揷澁鈒颯上傷
C0  傷償商喪嘗孀尙峠常床庠廂想桑橡湘
D0  爽牀狀相祥箱翔裳觴詳象賞霜塽孀賽
E0  薔穡穑色牲生牲省笙胥墅嶼序庶徐
F0  恕抒捿敍暑曙書栖樓犀瑞筮絮緖署
```

E040 - E0FF

```
40
50
60
70
80
90
A0      胥舒薯西誓逝鉏黍鼠夕奭席惜昔晳
B0  析汐淅潟石碩蓆釋錫仙僊先善嬋宣扇
C0  敾旋渲煽琁瑄璇璿癬禪線繕膳蟬腺膳船
D0  薛蟬蛻跣選銑鐥饍鮮卨屑楔泄洩渫舌
E0  薛媟設說舌蟾卨蟾纖遣殲纖孅贍閃陜攝涉
F0  燮葉城姓宬性惺成星晟猩城盛省筬
```

E140 - E1FF

```
40
50
60
70
80
90
A0      聖聲腥誠醒世勢歲洗稅笹細說貰召
B0  嘯塑宵小少巢所掃搔昭梳沼消溯瀟炤
C0  燒甦疏疎瘙笑篠簫蔬蘇訴逍遡
D0  邵銷韶騷俗屬束涑粟續謖贖速孫巽損
E0  蓀遜飡率宋悚松淞訟誦送頌刷殺灑碎
F0  鎖衰釗修受嗽囚垂壽嫂守岫峀帥愁
```

Code Page 949 Korean (Cont.)

E240 - E2FF

```
40
50
60
70
80
90
A0      戍手授搜收敷樹殊水洙漱燧狩獸琇
B0   璲瘦睡秀穗竪粹綏綾繡蓚倅荽荾葰敦
C0   袖誰讐輚遂邃酬銖銹隋陲隨雖鬚須首
D0   髓鬝叔塾尻執宿淑潚熟珬璹琡菽巡徇
E0   循恂旬枸楯橓殉洵淳珣盾瞬筍純脣舜
F0   荀蓴蕣詢諄醇錞順馴戌術述鉥崇崧
```

E340 - E3FF

```
40
50
60
70
80
90
A0      嵩濕膝蝨濕拾習褶襲丞乘僧勝升承
B0   昇繩蠅陞侍匙嘶始媤尸屎屍市弑恃施
C0   是時柿柴猜矢示翅蒔蓍視試詩諡豕豺
D0   埘塒式息拭植殖湜熄篒蝕諰軾食飾伸
E0   侁信呻娠宸慎新晨燼申神紳腎臣莘薪
F0   薑藎訊身辛辰迅失室實悉審尋心沁
```

E440 - E4FF

```
40
50
60
70
80
90
A0      沈深潯甚芯諶什十拾雙氏亞俄兒啞
B0   娥峨我牙芽莪蛾衙訝阿雅餓鴉鵝堊岳
C0   嶽幄惡愕握樂渥鄂鍔顎鰐齶安岸按晏
D0   案眼雁鞍顏鮟斡謁軋閼唵岩巖庵暗癌
E0   菴闇壓押狎鴨仰央怏昻殃秧鴦厓哀埃
F0   崖愛曖涯碍艾隘靄厄扼掖液縊腋額
```

E540 - E5FF

```
40
50
60
70
80
90
A0      櫻罌鶯鸚也倻冶夜惹揶椰爺耶若野
B0   弱掠略約若葯蒻藥躍亮佯兩凉壤孃恙
C0   揚攘敭暘梁楊攘洋瀁煬痒瘍禳穰糧羊
D0   良襄諒驤讓陽量攘圉御於漁瘀瘀禦語馭
E0   魚齷億憶抑檍臆偃堰彦焉言諺孼蘖俺
F0   儼嚴奄掩淹嫌業円予余勵呂女如廬
```

E640 - E6FF

```
40
50
60
70
80
90
A0      旅欺汝濾璵礖礪與茹輿轝閭餘驪
B0   麗黎亦力域役易曆歷疫繹譯轢逆驛嚥
C0   堧姸娟宴年延憐戀捐挺撚椽沇沿涎涓
D0   淵演漣烟然煙煉燃燕璉硏硯秊筵緣練
E0   縯聯衍軟蜎蓮連鉛鍊鳶列劣咽悅涅烈
F0   熱裂說閱厭廉念捻染殮炎焰琰艶苒
```

E740 - E7FF

```
40
50
60
70
80
90
A0      簾閻髥鹽曄獵燁葉令囹塋寧嶺嶸影
B0   怜映暎楹瑛永泳渶潁濚瀯煐營獰玲
C0   瑛瑩瓔盈穎纓羚聆英詠迎鈴鎣零霙靈
D0   領乂倪例刈叡曳泥濊猊睿穢芮藝蘂禮
E0   裔詣譽豫醴銳隸寬預五伍悟傲午吾吳
F0   嗚塢墺奧娛寤悟惡懊敖旿晤梧汚澳
```

## Code Page 949 Korean (Cont.)

E840 - E8FF

```
40
50
60
70
80
90
A0
B0
C0
D0
E0
F0
```

E940 - E9FF

```
40
50
60
70
80
90
A0
B0
C0
D0
E0
F0
```

EA40 - EAFF

```
40
50
60
70
80
90
A0
B0
C0
D0
E0
F0
```

EB40 - EBFF

```
40
50
60
70
80
90
A0
B0
C0
D0
E0
F0
```

EC40 - ECFF

```
40
50
60
70
80
90
A0
B0
C0
D0
E0
F0
```

ED40 - EDFF

```
40
50
60
70
80
90
A0
B0
C0
D0
E0
F0
```

Code Page 949 Korean (Cont.)

EE40 - EEFF

```
40
50
60
70
80
90
A0        障再裁在宰才材栽梓滅滓災縡裁財
B0     載齎齎爭箏諍錚佇低儲咀姐底抵杵楮
C0     樗沮瀦狙猪疽蕃紵苧菹藷藷諸貯躇邁
D0     邸雎齟勣吊嫡寂摘敵滴狄炙的積笛籍
E0     績翟荻謫賊赤跡蹟迪迹適鏑佃佺傳全
F0     典前剪塡塼奠專廛悛戰栓殿氈澱
```

EF40 - EFFF

```
40
50
60
70
80
90
A0        煎珮田佃畑癲筌籛箭篆纏詮輾轉鈿
B0     銓錢鎭電顚顫餞切截折浙癤竊節絕占
C0     岾店漸点粘霑鮎點接摺蝶丁井亭停偵
D0     呈娃定幀庭廷征情挺政整旌晶晸柾楨
E0     楎正汀淀淨渟湞瀞炡玎珽町睛碇禎程
F0     穽精綎艇訂鋌貞鄭酊釘鉦鋌錠鼎靖
```

F040 - F0FF

```
40
50
60
70
80
90
A0        靜丁頂鼎制劑啼堤帝弟悌提梯濟祭第
B0     臍薺製諸蹄醍除際霽題齊俎兆凋助嘲
C0     弔彫措操早晁曹曺朝條棗槽潮照燥
D0     爪璪眺祖祚租稠窕粗糟組繰蔦藻蚤詔
E0     調趙躁造遭釣阻雕鳥族簇足鏃存尊卒
F0     拙猝倧宗從悰慫棕淙琮種終綜縱腫
```

F140 - F1FF

```
40
50
60
70
80
90
A0        踪踵鐘鍾佐坐左座挫罪主住侏做姝
B0     冑呪周嗾奏宙州廚晝朱柱株注洲湊澍
C0     炷珠疇籌紂紬綢舟蛛註誅走躊輳週酎
D0     酒鑄駐竹粥俊儁准埈寯峻晙樽浚準濬
E0     焌畯竣蠢逡遵雋駿茁中仲衆重卽櫛楫
F0     汁葺增憎曾拯烝甑症繒蒸證贈之只
```

F240 - F2FF

```
40
50
60
70
80
90
A0        咫地址志持指摯支旨智枝枳止池沚
B0     漬知砥祉祗紙肢脂至芝芷蜘誌識贄趾
C0     遲直稙稷織職唇嗔塵振搢晉晋枃榛殄
D0     津溱珍瑨璡畛疹盡眞瞋秦縉縝臻蔯袗
E0     診賑軫辰進鎭陣陳震侄叱姪嫉帙桎瓆
F0     疾秩窒膣蛭質跌迭斟朕什執潗緝輯
```

F340 - F3FF

```
40
50
60
70
80
90
A0        鏶什徵懲澄且侘借叉嗟嵯差次此磋
B0     箚茶蹉車遮捉搾着窄錯鑿齪撰澯燦璨
C0     瓚竄簒纂粲纘讚贊鑽餐饌刹察擦札紮
D0     僭參僭慘斬站讒讖倉倡倡唱娼廠彰
E0     愴敞昌昶暢槍滄漲猖瘡窓脹艙菖蒼
F0     債埰寀彩采菜蔡采責冊柵策
```

Code Page Traditional Chinese (Cont.)

F440 - F4FF

40
50
60
70
80
90
A0 　　　　賣漢裹懷處個刺剔尺慽戚拓擲斥滌
B0 瘩瘩蹂陟隻仟千喘天川擅泉淺玔穿舛
C0 鷹賤踐邊釧訓阡翹凸哲喆徹撤澈綴輟
D0 轍鉏僉尖沾添甛瞻簽籤瞻餂堪妾帖捷
E0 牒疊牒牒貼軶廑晴淸聽菁請菁鯖切剃
F0 督涕涕締諦遝遝體初剽哨憔抄招梢

F540 - F5FF

40
50
60
70
80
90
A0 　　　　椒楚樵炒蕉硝礁礎秒稍肖艸苕草蕉
B0 貂超酢醋醮促嚼燭矗蜀觸寸忖村邨叢
C0 塚寵崇憶捷總聰蔥銃撮催爸最壁抽推
D0 椎楸楸湫皺秋絭萩諏趨追鄒酋醜錐錘
E0 鎚雛雛鰍丑畜祝竺筑築縮薯蜃蹴軸逐
F0 睿椿璩出朮觚充忠沖矗衝袁悴膵萃

F640 - F6FF

40
50
60
70
80
90
A0 　　　　贅取吹嘴娶就炊翠聚脆臭趣醉翠鷙
B0 側仄廁惻測層傸值嗤崎幟恥梔治淄熾
C0 痔痴癡稚稺緇緻置致崒輜雉馳齒則勅
D0 觔觀七柒漆傻癡枕沈浸琛砧針鍼蟄秤
E0 稱快他侘唾墮妥惰打拖朵楕舵陀馱駝
F0 偉卓啄坼度托拓擢晫柝濁濯琢琸詫

F740 - F7FF

40
50
60
70
80
90
A0 　　　　錫吞嘆坦彈憚歎灘炭綻誕奪脫探眈
B0 耽貪塔搭榻宕帑湯糖蕩兌台太怠態殆
C0 汰泰笞胎苔跆邰颱宅擇澤撑攄兎吐土
D0 討慟桶洞痛筒統通堆槌腿褪退頹儻套
E0 妬投透鬪慝特闖坡婆巴把播擺杷波派
F0 爬羆破罷芭跛頗判坂板版瓣販辦鈑

F840 - F8FF

40
50
60
70
80
90
A0 　　　　阪八叭捌佩唄悖敗沛浿牌狽稗霸貝
B0 彭澎烹膨愎便偏扁篇編翩遍鞭驫貶
C0 坪平枰萍評吠斃幣廢弊斃肺蔽閉陛佈
D0 包匍麭咆哺圃布怖拋抱捕暴泡浦疱砲
E0 胞脯苞葡蒲袍裒逋鋪飽鮑幅暴曝瀑爆
F0 輻俵剽彪慓杓標漂瓢票表豹颮飆飄

F940 - F9FF

40
50
60
70
80
90
A0 　　　　品稟楓諷豐風馮彼披疲皮被避陂匹
B0 弼必泌祕畢罼苾祕乏邊下何廈夏廈
C0 豐河瑕荷蝦賀遐霞鰕嗑學虛譃鶴寒恨
D0 悍旱汗漢澣瀚罕翰閑閒限轄割轄函含
E0 戍啣喊檻涵緘艦銜陷鹹合哈盒蛤閤闔
F0 陝亢伉姮嫦巷恒抗杭桁沆港缸肛航

## Code Page 949 Korean (Cont.)

FA40 - FAFF

```
40
50
60
70
80
90
A0        行降項亥偕咳垓奚孩害懈楷海瀣蟹
B0   解該膌邂駭骸劾核偕幸杏荇行享向嚮
C0   珦鄉響餉饗香噓墟虛許憲櫶獻軒歇險
D0   驗奕焃赫革侐峴弦懸眴泫炫玄玹現眩
E0   睍絃絢縣舷衒見賢鉉顯子穴血頁嫌俠
F0   協夾峽挾浹狹脅脇莢鋏頰亨兄刑型
```

FB40 - FBFF

```
40
50
60
70
80
90
A0        形泂滎濙瀅炯熒珩瑩荊螢衡逈邢鎣
B0   馨兮彗惠慧暳蕙蹊醯鞋乎互呼壕壺好
C0   岵弧戶扈昊晧淏浩淏湖滸滹滸澔濠瀫狐
D0   琥瑚瓠皓祜糊縞胡芦葫蒿虎號蝴護豪
E0   鎬頀顥惑或酷婚昏混渾琿魂忽惚笏哄
F0   弘汞泓洪烘紅虹訌鴻化和嬅樺火畵
```

FC40 - FCFF

```
40
50
60
70
80
90
A0        禍禾花華話譁貨靴廓擴攘確碻穫丸
B0   喚奐宦幻患換歡晥桓渙煥環紈還轘鐶
C0   活滑猾豁闊凰幌徨恍惶慌晃晄榥況
D0   滉滉潢煌璜皇篁簧荒蝗遑隍黃匯回廻
E0   徊恢悔懷晦會檜淮澮灰獪繪膾茴蛔誨
F0   賄劃獲宖橫鐄哮嗃孝效斅曉梟淆淆
```

FD40 - FDFF

```
40
50
60
70
80
90
A0        爻肴酵驍侯候厚后吼喉嗅帿後朽煦
B0   珝逅勛勳塤壎熏焄燻薰訓暈薨喧暄煊
C0   萱卉喙毁彙徽揮暉煇諱輝麾休携烋畦
D0   虧恤譎鷸兇凶匈洶胸黑昕欣炘痕吃屹
E0   紇訖欠欽歆吸恰洽翕興僖凞喜噫囍姬
F0   嬉希憙憘戲晞曦熙熹熺犧禧稀羲詰
```

## Code Page 950 Traditional Chinese

A140 - A1FF

```
40
50
60
70
80
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A0
B0
C0
D0
E0
F0
```

A240 - A2FF

```
40
50
60
70
80
90
A0
B0   1 2 3 4 5 6 7 8 9 I II III IV V VI VII
C0   VIII IX X | || ||| 乂 8
D0   B C D E F G H I J K L M N O P Q
E0   R S T U V W X Y Z a b c d e f g
F0   h i j k l m n o p q r s t u v
```

A340 - A3FF

```
40   w x y z A B Γ Δ E Z H Θ I K Λ M
50   N Ξ O Π P Σ T Υ Φ X Ψ Ω α β γ δ
60   ε ζ η θ ι κ λ μ ν ξ ο π ρ σ τ υ
70   φ χ ψ ω ㄅ ㄆ ㄇ ㄈ ㄉ ㄊ ㄋ ㄌ ㄍ ㄎ ㄏ
80
90
A0   ㄐ ㄑ ㄒ ㄓ ㄔ ㄕ ㄖ ㄗ ㄘ ㄙ ㄚ ㄛ ㄜ ㄝ ㄞ
B0   ㄟ ㄠ ㄡ ㄢ ㄣ ㄤ ㄥ ㄦ ㄧ ㄨ ㄩ ˙ ㄍ ˊ ˇ ˋ
C0
D0
E0   €
F0
```

A440 - A4FF

```
40   一乙丁七乃九了二人儿入八几刀刁力
50   匕十卜又三下丈上丫丸凡久幺也乞于
60   亡兀刃勺千叉口土士夕大女子孑孓寸
70   小尤尸山川工己已巳巾干升弋弓才
80
90
A0      丑丐不中丰丹之尹予云井互五亢仁
B0   什仃仆仇仍今介仄元允內六兮公冗凶
C0   分切刈勻勾勿化匹午升卅卞厄友及反
D0   壬天夫太夭孔少尤尺屯巴幻廿弔引心
E0   戈戶手扎支文斗斤方日曰月木欠止歹
F0   毋比毛氏水火爪父爻片牙牛犬王丙
```

A540 - A5FF

```
40   世丕且丘主乍乏乎以付仔仕他仗代令
50   仙仞充兄冉冊多凹出凸刊加功包匆北
60   匝仟半卉卡占卯叵去可古右召叮叩叨
70   叼司叵叫另只叱台句叭叻四囚外
80
90
A0      央失奴奶孕它尼且巧左市布平幼弁
B0   弘弗必戊打扔扒斥且朮本未末札正
C0   母民氏永汁汀氾犯玄玉瓜瓦甘生用甩
D0   田由甲申疋白皮皿目矛矢石示禾穴立
E0   丞丟乒乓乩亙交亦亥仿仵伙伊佚伍伐
F0   休伏仲件任仰仳份企伋光兇兆先全
```

A640 - A6FF

```
40   共再冰列刑划刎刖劣匈匡匠印危吉吏
50   同吊吐吁吋各向名合吃后吆吒因回囝
60   圳地在圭坊圯圩夙多夷夸妄奸妃好她
70   如妁字存宇守宅安寺尖屹州帆并年
80
90
A0      式馳忙忖戎成戍戌扣扛托收旨旬
B0   旭曲曳有朽朴朱朵次此死氖汝汗汙江
C0   池汐汕污汛汍汎灰牟牝百竹米糸缶羊
D0   羽老考而耒耳聿肉肋肌臣自至臼舌舛
E0   舟艮色艾虫血行衣西阡串亨位住佇佗
F0   佞伴佛何估佐佑伽伺伸佃佔似但佣
```

A740 - A7FF

```
40   作你伯低伶余佝佈佚兌克免兵冶冷別
50   判利刪刨劫助努劬匣即卵吝吭吞吾否
60   呎吧呆呃吳呈呂君吩告吹吻吸吮吵吶
70   吠吼呀吱含吟听囪困囤囫坊坑址坍
80
90
A0      均坎圾坐坏圻坊夾妝妒妨妞妣妙妖
B0   妍妤妓妊妨孝孜孚孛完宋宏尨局屁尿
C0   尾岐岑岔妛巫希序庇床廷弄弟彤形彷
D0   役忘忌志忍忱快忸忪戒我抄抗抖技扶
E0   抉扭把扼找批扳抒扯折扮投抓抑抆改
F0   攻攸旱更束李杏材村杜杖杞杉杆杠
```

Code Page 949 Traditional Chinese (Cont.)

**A840 - A8FF**

```
40    杓枤步每求汞沙沁沈沉沅沛汪決沐汰
50    沌汨沖沒汽沃汲汾汴沆汝洹泂泚沂灶
60    灼災灸牢牡牠狄狂玖甬甫男甸皂盯矣
70    私秀禿究系罕肖青肝肘肛肚育良芒
80
90
A0        芋芍見角酉谷豆豕貝赤走足身車辛
B0    辰迂迆迅迄巡邑邢邪邦那酉采里防阮
C0    阱阪阮並乖乳事些亞享京佯依侍佳使
D0    佬供例來侃佰併侈佩佻侖佾侏侑佺兔
E0    兒兕兩具其典冽函刻券刷刺到刮制刳
F0    劾劼卒協卓卑卦卷卸卹取叔受味呵
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**A940 - A9FF**

```
40    咖呸咕咀呻呷咄咒咆呼咐呱咻和咚呢
50    周咋命咎固垃坷坪坩坡坦坤坼夜奉奇
60    奈奄奔妾妻委妹妮姑姆姐姍始姓姊妯
70    妳妞姅孟孤季宗定官宜宙宛尚屈居
80
90
A0        屆岷岡岸岩岫岱岳帘帚帖帕帛帑幸
B0    庚店府底庖延弦弧弩往征彿彼忝忠忽
C0    念忿快怔怯忱怖怪怕怡性怩怫恒或戕
D0    房戾所承拉抨拄振拂抹拒招披拓拔抛
E0    拈抨抽押拐拙拇拍抵抻抱拘拖拗拆抬
F0    拎放斧於旺昔易昌昆昂明昀昏昕昊
```

**AA40 - AAFF**

```
40    昇服朋杭枋枕東果杳杷枇枝林杯杰板
50    枉松析杵枚枓杼枬枲欣武歧殁氓氖泣
60    注泳沱泌泥沽沾沼波沫法泓沸泄油
70    況沮泗泅決沿治泡泛泊沫泯泜泖泠
80
90
A0        炕炎炒炊炙爬爭爸版牧物狀狙狗
B0    狐玩玨玫玥玳玷玦疝疙疚的盂盲直知矽
C0    社祀祁秉秈空穹竺糾罔羌羊者肺肥肢
D0    肱股肫肩肴肪肯臥臾舍芳芝芙芭芽芟
E0    芹花芬芥芯芸芣芟芾芰虎虱初表軋迎
F0    返近邵邸邱邶采金長門阜陀阿阻附
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**AB40 - ABFF**

```
40    陂佳雨青非亟亭亮信侵侯便俠俑俏保
50    促侶俘俟俊俗侮俐俄係俚俎俞侻兗冒
60    冑冠剄剃剉前剌剋則勇勉勃勁匍南卻
70    厚叛咬哀咨咬哉咸咦咳哇哂咽咪品
80
90
A0        哄哈咯咫咱咻咩咿咧哐垂型垠垣垢
B0    城垮垓奕契奏奎奐姜姝姿姣姨娃姥姪
C0    姚姦威姻孩宣宦室客宥封屎屏屍屋峙
D0    峒巷帝帥峋幽庠度建奕弭彥待徊律
E0    徇後徉怒思怠急怎怨恍恰恨恢恆恃恬
F0    恫恪恤扁拜挈按拼拭持拮拽指拱拷
```

**AC40 - ACFF**

```
40    拯括拾拴挑掛政故斫施既春昭映昧是
50    星昨昱昤昝柿染柱柔某柬架枯柵柩柯
60    柄柑枴柚查枸柏柞柳枰柙柢柝柒歪殃
70    殆段毒毗氟泉洋洲洪流津洌洱洞洗
80
90
A0        活洽派洵洛泵洹洧洸洩洮洶洎洫炫
B0    為炳炬炯炭炸炮炤爰牲牯牴狩狠狡玷
C0    珊玻玲珍珀玳玷甭畏界畋畎疫疤疥疢
D0    疣癸皆皇皈盈盆盂盅省眇相眉看盾盼
E0    眇矜砂研砌砍祆祉祈祇禹禺科秒秋穿
F0    突竿笤籽紂紅紀紉紇約紆缸美羿耄
```

**AD40 - ADFF**

```
40    耐耍耑耶胖脊胚胃胄背胡胛胎胞胤胝
50    致舢苧范茅茛奇苦苦茄若茂茉耇苗英苴
60    苜苔苑苞苓苟苯茆茼虹虻虺衍衫要觔
70    計訂訃貞負赴赳趴軍軌述迦迢迪迥
80
90
A0        迭迫迺迢郊郎郁部郇酋重閂限陋陌
B0    降面革韋韭音頁風飛食首香乘亳倌倍
C0    做俯倦倥俸倩倖倆值借倚倒們俺倀倔
D0    倨俱倡個候倘俳修倭倪俾倫倉兼冤冥
E0    冢凍凌准凋凇剞剔剛剝匪卿原厝叟哨
F0    唐唁唷哼哥哲唆哺唔哩哭員唉哮哪
```

**AE40 - AEFF**

```
40    哦唎唇哽唏圃圄埂埔埋埃埔夏套奘奚
50    娑娘娜娟娛娓娉娠娣娩娥娌娉孫屐屘幸
60    宰家宴宮宵容宸射屑展屐峭峽峻峪峨
70    峰島埈峴差席師庫庭座弱徒徑徐恙
80
90
A0        恣恥恐恕恭恩息悄悟悉悚悍悔悌悅悖
B0    扇拳拏拿捎挾振捕捂捆捏捉挺捐挽挪
C0    挫挨捭捌效敉料旁旅時晉晏晃晒晌晅
D0    晁書朔朕朗校核案框桓根桂桔栩梳栗
E0    桌桑栽柴桐桀桃株桅栓桄桁殊殉殷
F0    氣氧氨氫氦泰浪涕消涇浦漫海浙涓
```

**AF40 - AFFF**

```
40    涅涉浮浚浴浩涌涊浹涅浥浮烊烘烤烙
50    烈烏烝烤狼狹狽狸猁茲班琉珮珠珪珞
60    畔畝畜畚留疾病症疲疳疳疸疼疹痂疸畢
70    皰盍盎盞眩真眠眨矩砰砧硒硅破砷
80
90
A0        砥砭砠砟砲祕祐祠祟祖神祝祗祚秤
B0    秣秧租秦秩秘笑笆笑粉紡紗紋紊
C0    素索純紐紕級絎納紙紛缺罟羔翅翁耆
D0    耘耕耙耗耽耿胱脂胰脅胭胴脆胸胳脈
E0    能脊胼腴臭臬舀舐航舫舨般舺茫荒茲
F0    荊荳荇草茵茴荏茲茹茶茗荀茱茨荃
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## Code Page 980 Traditional Chinese (Cont.)

**B040 - B0FF**

| | |
|---|---|
| 40 | 虔蚊蚪蚓蚤蚩蚌蚣蚜衾衷袁袂衽衹記 |
| 50 | 訐討訌訕訊託訓訖訏訑豹豹財貢起 |
| 60 | 躬軒軔軛尋送逆迷退迴逃追逅迸崑 |
| 70 | 郡郝郢酒配酌釘針釗釜訃閃院陣陡 |
| 80 | |
| 90 | |
| A0 | 陸陝除陘陛隻飢馬骨高鬥鬲鬼乾偾 |
| B0 | 偽傳假倭偌做偉健偶偎偕偵側偷偏候 |
| C0 | 偯偭兜冕凰剪副勒務勘乾匐匙匾區 |
| D0 | 匾參曼啇啪啦啄啞啡啃啊唱啖問啕唯 |
| E0 | 啤唸售啜唬啁啖啗啢國圈域堅埯堆 |
| F0 | 埠埤基堂埵執培夠奢娶奢婉婦娑婀 |

**B140 - B1FF**

| | |
|---|---|
| 40 | 娼婢婚婆婷孰寇寅寄寂宿密尉專將屠 |
| 50 | 屜屝崇崆崎崛崑崢崩崔崙崤崧崗巢 |
| 60 | 常帶帳帷康庸庶庵庹庾張強彗彬彩彫得 |
| 70 | 徙從徘御徠徜悉患悉悠您悾悴怙懷 |
| 80 | |
| 90 | |
| A0 | 情悻悵惜惇惆惕惘惟悸惚惇威戛戞 |
| B0 | 掠控捲掖探接捷捧掘措捱掩搗掛捫 |
| C0 | 推掄授掙採掬排掏掀捻摈捨敏敕救 |
| D0 | 教敗啟敏敘救敢科斛斬族旌旎施晚 |
| E0 | 晤晨晦晞曹曼望梁梯梢梓桿桶梱梧 |
| F0 | 梗械梃棄梭梆梅梔條梨梟梳梂欲殺 |

**B240 - B2FF**

| | |
|---|---|
| 40 | 毫毯氫涎涼淳涼液淡涧淤添淺清淇淋 |
| 50 | 涯淑淅淞淹涸混淵淅淼淇涵淚淫淘淪 |
| 60 | 深淮淨淆淄涪淬涿淦烹焉焊烽烯爽牽 |
| 70 | 犁猜猛猖猓狰率琅琊球理現珮瓠瓶 |
| 80 | |
| 90 | |
| A0 | 瓷甜產略畦畢異疏痔痕疵痊痍皎盔 |
| B0 | 盒盛眷眾眼眶眸眺硫硃硎祥票祭移窒 |
| C0 | 窕笠苯笛第符笙笞答笤粒粗粕絆絃統紮 |
| D0 | 紹絀紬細紳組絮終紲� 羚翌翎習 |
| E0 | 耜聊聆脯脖脛脫脩脬脹舂舵舷舶船莎 |
| F0 | 莞莘莠莢莖莽莒莊莓莉莪荷荻茶 |

**B340 - B3FF**

| | |
|---|---|
| 40 | 莆莧處彪蛇蚌蚶蚵蛆蛋蚱蚯蛉術袞 |
| 50 | 裂被袒袖袍袋覓規訪訝訣訥許設訟訛 |
| 60 | 訴豉豚販責貫貨貪貧貫赦趾趺軛軟逍 |
| 70 | 逍通逗連速逝逐逕逞造透逢逛逛途 |
| 80 | |
| 90 | |
| A0 | 部郭都酌野釵釦釣釧釭釩閉陪陵陳 |
| B0 | 陸陰陴陶陷陬雀雪雩章竟頂頃魚鳥鹵 |
| C0 | 鹿麥麻傢傍傳備傑傀傖傘傚最凱割割 |
| D0 | 創剩勞勝勛博厥喜喀喧啼喊喝喘喂喜 |
| E0 | 喪喂喇喋喃喳單喟唾喲喚喻喬喱啾喉 |
| F0 | 喫喙圍堯堪場堤堰報堡堝堠壹壺壺 |

**B440 - B4FF**

| | |
|---|---|
| 40 | 婷媚婿媒媛媧孳孱寒富寓寐尊尋就嵌 |
| 50 | 嵐嵗嵇嵬幅幃幀幃幾廊廁廂廄弼彭復 |
| 60 | 循徨惑惡悲悶惠惺愕惶惘情惻惰慨惱 |
| 70 | 慢惶愉愀惕載戟戡戢描揀揩揉揆揍 |
| 80 | |
| 90 | |
| A0 | 插揣提握揖揭揮捶援揪換摒揚揹敝 |
| B0 | 敦敢散斑斐斯普晰晴晶景暑智晾晷曾 |
| C0 | 替期朝棺棕棠棘棗椅棟棵森棧棹棒棲 |
| D0 | 棣棋棍植椒椎棉棚楮棻款欹欽殘殖殼 |
| E0 | 毯氮氬氫港游渝渡渲湧湊渠渥渣減湛 |
| F0 | 湘渤湖涇渭渦湯渴湍渺測湃渝潭滋 |

**B540 - B5FF**

| | |
|---|---|
| 40 | 溉渙湎湣湄渙湮湟焙焚焦焰無然煮焜 |
| 50 | 牌椅犀猶猥猴猩琺琪琳琢琲琵琶琴琯 |
| 60 | 琛琦琨甥甦畫番痢痛痣痤痘痠痰登發 |
| 70 | 皖皓皴盜睏短硝硬硯稍稈程稅稀窖 |
| 80 | |
| 90 | |
| A0 | 窗窘童竣等策筆筐筒答筍筋筏筑粟 |
| B0 | 粥絞結絨紫紮絮絲絡給絢經絳善翔鑫 |
| C0 | 羹聒聘腕腔腋腑腎腴腆腴脾腓腴舒舜 |
| D0 | 菩萃慈萍菠菅菱菁華菱萎著萊菰萌菌 |
| E0 | 菽菲菊萸萼菖萁菔菟菘菰蛟蛙蛭蚰蛛 |
| F0 | 蛤蛐蛞街裁裂袱覃視註詠評詞証詁 |

**B640 - B6FF**

| | |
|---|---|
| 40 | 詔詛詐詆訴診訶詖象貂貯貼貳貽貴費 |
| 50 | 賀貴買貶賀貸越超趁跎距跋跚跑跌跛 |
| 60 | 跆軻軸軼辜逮逶週逸進逮鄂郵鄉鄒酣 |
| 70 | 酥量鈔鈕鈣鈉鈞鈍鈴鈇鈑閔閏開閑 |
| 80 | |
| 90 | |
| A0 | 閒閎閟隊階隋陽隅隆隍陲隄雁雅雄 |
| B0 | 集雇雯雲軔項順須殞飪飯飩飲飭馮馭 |
| C0 | 黃黍黑亂傭債傲傳傴傾催傷傻傯僇剿 |
| D0 | 剽募勦勤勢勣嗤嗟嗨嗓嗦嗎嗜嗇嗑 |
| E0 | 嗣嗤嗯嗚嗑嗅嗆嗥嗦園圓塞塑塘塗塚 |
| F0 | 塔填塌塢塊塢塒塙坐奧嫁嫉嫌媸嫖媲媼 |

**B740 - B7FF**

| | |
|---|---|
| 40 | 媳嫂媾嵩嵯幌幹廉廈弒彙徬微愚意慈 |
| 50 | 感想愛惹愁愈慎慌慄愷愾慷愧愆愴惹 |
| 60 | 敫戡搓搾搞搪搭搽搬搏搜搔搶搖搗 |
| 70 | 搆敬斟新暗暉暇暈暖暄暘暍會椰業 |
| 80 | |
| 90 | |
| A0 | 楚楷楠楔極椰概楊楨楫楞楓楹楠楝 |
| B0 | 楣楛歇歲毀殿毓毽溢溯滓溶滂源溝滇 |
| C0 | 滅溥溘溼溺溫滑準溜滄滔溪溧滇煎煙 |
| D0 | 煩煤煉照煜煬煦煌煥煞煆煨煖煢豬猷 |
| E0 | 獅猿猾瑯瑚瑕瑟瑞瑙瑁瑜瑛琿瑂畸痿 |
| F0 | 痰瘁痲痱痺痿痴痳盞盟睛睫睦睞督 |

Code Page 950 Traditional Chinese (Cont.)

B840 - B8FF

| | |
|---|---|
| 40 | 睹睪睬睜睥睨睢矮碎碰碗碘碌碣硼碑 |
| 50 | 碓碑祺祿禁萬禽稜稚稠稔稟稞窟窠楳 |
| 60 | 筘筘筅筧粱粳粵經絹綑絹綏綀綏置竂罪 |
| 70 | 署義羨群聖聘肆肆肄腱腰腸腥腮腳腫 |
| 80 | |
| 90 | |
| A0 | 腹腺腦翼艇葺萱落萱葵葷胡葉葬葛 |
| B0 | 尊萵葡萱萢葭葆虞虜虢蛹蜓蜈蜒蜀蛾 |
| C0 | 蛻蜂蜃蜆蜊衙裟裔裙補裘裝裡裊裕裒 |
| D0 | 覡解詫該詳試詩詰誇詼誠話誅詭詢 |
| E0 | 詮詬詹賂賈賈貉賊賈賣賄貲賃賂 |
| F0 | 賅跡跟跨路跳踩跪跤跌躲較載軾輕 |

B940 - B9FF

| | |
|---|---|
| 40 | 辟農運遊道遂達逼違遐遇遏過遍遑逾 |
| 50 | 遁鄒鄗酬酪酩釉鈷鉗鈸鉔鉀鈾鉛鉋鉤 |
| 60 | 鉑鈴鉉鈹鉅鈸鈿鉚閘隘隔隕雍雋雉雌 |
| 70 | 雷電雹零靖靴靶預頑頓項頌頌飼飴 |
| 80 | |
| 90 | |
| A0 | 飽飾馳馱剿髡髭鳩鳧鼎鼓鼠僧僖僥僭 |
| B0 | 僧僚僕像僑僱兢僦僨劃劂匱厭嗽嘀 |
| C0 | 嘛嘗嗽嘔嘆嘉嘎嗷嘖嘍嘜嘘嘩嘴團圖 |
| D0 | 塵塾境墓墊斬墅塽壽夥夢奩奪奩嫡嫦 |
| E0 | 嫩嫗嫦嫘嫦孵寞寧寥寡寢寤寨對 |
| F0 | 廖斡嶇嶂幣幕幗幘廓寥斃彆彰徹愿 |

BA40 - BAFF

| | |
|---|---|
| 40 | 愿態慷慢慣慟慚慘嗿截撇摘摔撤摸擭 |
| 50 | 搯摑摧摔掭摻敲斡旗旖暢暨暝榜榕槓 |
| 60 | 榶榮槓構榛榷槐榭樁槍槌榭榦槃槃槅 |
| 70 | 歉歌氳漳演滾漓滴漩漾漠漬漏漂漢 |
| 80 | |
| 90 | |
| A0 | 滿滯漆漱漸漲漣漕漫漂漱漪滬漁滲 |
| B0 | 滌滷熔熙熄熄熒爾禎犖獄獐瑤瑣瑪 |
| C0 | 瑰瑭甄疑瘍瘍瀘瘋瘓盡監瞄睽睿睡磁 |
| D0 | 碟碧碳碩碣禎福禍種稱窪窩端管箕 |
| E0 | 箋筵算箝箔箏箄箄粹粽精綻綰綜綽 |
| F0 | 綾綠緊綴網綱綺綢綿綵綸維緒緇綬 |

BB40 - BBFF

| | |
|---|---|
| 40 | 罰翠翡翟聞聚萼腐膀膏膈膊腿瞥臧臺 |
| 50 | 與舔舞艋蒼菁蓆蓋蒙蒞蒿蒜蓋蒸蒸蓓 |
| 60 | 蒐蒼蓑蓊蜿蜜蜻蜥蜴蜥蜴蜘蜷蜿蝶蜴 |
| 70 | 裝裹裸製褌褚褊誦誌語誣認誠誓誤 |
| 80 | |
| 90 | |
| A0 | 說誥誨誘誑誚誚豪貍貌賓賑賒赫趙 |
| B0 | 趕趔輔輒輕輓辣遠遘遜遙遙遛遛遛 |
| C0 | 鄙鄘鄞醇酸酷酴餃銀銅銘銖鉻銓銜鉸 |
| D0 | 銬銑閩閨閣閡閤隙障際雌雜靼靽靺魂鳴 |
| E0 | 韶頗領颯颱餃餅餌餉駁駁髦髦魁魂鳴 |
| F0 | 鳶鳳麼鼻齊億儀僻僵價儂儈儉儅凜 |

BC40 - BCFF

| | |
|---|---|
| 40 | 劇劈劉劍劊剽厲嘮嘻嘹嘲嘿嘴嘩噓嘻 |
| 50 | 噗噴嘶嘯嘰嘩嘘嘖墀墩墦墺墟墀嫻 |
| 60 | 嬋嫵嬌嬈寰寬審寫層履嶔嶔嶓幡撥 |
| 70 | 廚廟廝廣廠彈影德徹慶慧慮慝慰慕憂 |
| 80 | |
| 90 | |
| A0 | 感慰慫慾憧憐憫憎憬憚憤憔憮憊憐 |
| B0 | 摯摹撣撲撈撐撥撓撕摻撤撮播撫撚 |
| C0 | 撬撐撞撤敵敷數暫暫暴暱樓樟樞樁樞 |
| D0 | 樑槽模樓樊樂樅樅樅樑樅歐歎殤毅殿漿 |
| E0 | 潼澄潑潦潔瀠潭潛潸潮澎潺潰潤潤潘 |
| F0 | 滕潛潠潟熟熬熬熨牖犛獎獗瑩璋璃 |

BD40 - BDFF

| | |
|---|---|
| 40 | 瑾璀皚瘠瘡瘟瘤瘦瘜瘀皚皺瘢瞎瞇瞌 |
| 50 | 瞑瞑磋磅確磊碾磕碼磐稿稼穀稽稷稻 |
| 60 | 窯窮箭箱箴箓篆簾箪篁簍篌糊締練緯緻 |
| 70 | 緘緬緝編緣線緞緩縋緯紗緹罵罷羯 |
| 80 | |
| 90 | |
| A0 | 翦耦腔膜膝膠膚膘蔴蔽蔚蓮蔬蔭蔓 |
| B0 | 蔑蔣蔡蔔蔥蔥蓿蝶蝴蝶蝠蝦蝸蝨蝙 |
| C0 | 蝗蝌蝓衛衝褐複褒褓褕褊褫諒談諄誕 |
| D0 | 請諸諜諏諑調誰論諍誶誹諛諂豎豬賠 |
| E0 | 賞賦賤賬賬賢賣賜質賡賭趣趟踐踝 |
| F0 | 踢踏踩踟踮踞踝踝輛輟輦輩輪輻輞 |

BE40 - BEFF

| | |
|---|---|
| 40 | 輥適遮遨遭遷鄲鄭鄧鄱醇醉醋醃鋅銻 |
| 50 | 銷鋪鋳鋤鋁銳銼鋒銅鋰鋽閫閭閱霄霆霉 |
| 60 | 霄靠鞍鞋鞏頡頫頦頤黃鵝餃餘駝駐駟 |
| 70 | 駛駑駕駒駙骷髮髫髫魅魃魷魯鴉鴉 |
| 80 | |
| 90 | |
| A0 | 魷麩麾黎墨齒儐儘儔儐儕冀冪凝劑 |
| B0 | 阜勳嘻噫嘴噤噬噢噩器噥噱噯噠噢噶 |
| C0 | 壁壅壇壅蕷奮嬝學憲導疆憲憑憩憬慎 |
| D0 | 憶憾懊憚戰擅擁擋撻撼據擄擇擂操撿 |
| E0 | 擒擔撾整噹噹噩曄疊曉樽橄樺橙橘 |
| F0 | 樹橄橢榛橋橇樵機橈歙歷氅濂澱澡 |

BF40 - BFFF

| | |
|---|---|
| 40 | 濃澤濁澧澳澈澹澶澦澠濃熾熾燉燠燒燈 |
| 50 | 燕熹燎燙燜燃燄獨璜璣璘環璞瓢甌甍 |
| 60 | 璋癌瘭盧瞠瞞瞟瞥磨磚磬磧禦積穎 |
| 70 | 穆穌穆窺篙篡篝篤篩篦糕糖縊 |
| 80 | |
| 90 | |
| A0 | 縣縈縛縣縝縉縐縝罹羲翰翱翮耨膳 |
| B0 | 膩膨臻興艘艙蕊蕙蕈蕨蕩薈蕪蕭蕪蕨 |
| C0 | 螃螟螞螢融衡褪褲褥褫褡親覦諦諺諫 |
| D0 | 諱謀諜諧諮諾謁謂諷諭諳諼諛豫貓貓 |
| E0 | 賴賭賭踴踱踹踵踽輻輾輸輳辨辦遵遴遲 |
| F0 | 遲遼遺鄴醒錠錶錮錳錯錢鋼錫錄錚 |

Code Page 949 Traditional Chinese (Cont.)

C040 - C0FF

```
40  維綿錡錕錮錙闍隧隨險雕霙霠霖霍霓
50  霏靛靜靦鞘頰頸頻頷頭頹頤餐館餞餛
60  餡餿骸骿骼骸骼髭髮興鮑鴕鴣鴦鴨鴿
70  鴛獸黔龍龜優償儡儲勵嚎嚀嚌嚅嚇
80
90
A0    嚏壕壓壑壙嬰嬪嬤孺孻屨嶼嶺嶽嵾
B0  嶬嶱嶶懕懂懇懦懋戲戴擎擊擘擠擰擦
C0  擬擱擢攄斂斃曙曖檀檔橄檜橺檣操
D0  樂檜槳歡殯氈澤濱濟濜濛濤濫濯濡
E0  潛濡濛濕濮濰燈營燮燦燥燭燬燴燠燀
F0  牆牂獷璲環璦璪療璪甍甎疃瞪瞰瞬
```

C140 - C1FF

```
40  瞧瞭矯磺磴磯礁禧禪穗窿簇簀篾篷
50  簌篠糠糜薹檨桂糝縮績繆縷縲綳縫
60  總縱縹緤縋縷紗縯繫翳翼螯螫聰
70  聯營膆腌膺臂臀膿膽臉膾臨舉艮薪
80
90
A0    薄蕎薛薑蕃薯薛薇蒐蒯蒼蟀螳螳蟀
B0  �螯蟆蟀蟋蟄褶褻褪褶覬謎謗謙講
C0  謊謠謝謄謐谿豁谿豁豁豂賽購賸膳趙蹉踢
D0  跆踞轄輾轂轉輿避邃還邁邂邀鄒醅醞
E0  醜鍍鎂錨鏈鍊鍥鍋鍾鍾鈧鍛鈸鎂鍔鍚
F0  闞闟闐闔隱隸隷雛霜霞鞠韓穎颺餿騁
```

C240 - C2FF

```
40  駿鮮鮫鮪鮭鴻鴿鼕黏點黜黝黨黼齋黌
50  嚕嚙壙壘壙壑懠懤懞懨懟擾擻攄擷斷
60  曜曚檎檴檻檸權檮檯檄歸殯氌濱濬濾
70  濱濰濼瀏爌爐燾濡爆甓璿璻癖癘
80
90
A0    癒瞽矇瞼礎禮穢穢穫竄鎰簫簧簪
B0  簞簣簿糧織繕繞繽繡繒罈翹翻翻瞰磊
C0  臍臏薔藏薩藍薖薪薰薯薑鷹蟯蟬蟲蟠
D0  覆覲觴謨謳謬謫豐豁豂蹕蹋蹤蹟蹕軀
E0  轉轍邇邃醫瞽鼇鎔鎊鎖鎬鎳鎖鎬鎰
F0  鎘鎚鎗闠闤闥闠闡離雜雙雞霤鞣鞦
```

C340 - C3FF

```
40  鞭韙額顏題顎顒顓颺颱餽餾餿騎騏騑
50  鬃魏魍魎鯊鯉鯛儵鯀鵑鵝鵠黠黧黢儳
60  嚥壞壟壚寵寵龐廬懲懷懶懵攀攏曝曠
70  櫟櫝櫚瀛瀟瀨瀚瀝瀕瀘爆爍牘犢獸
80
90
A0    獺璽瓊瓣疇癟癡癟矇礙礩禱穫穩簾簿
B0  簸簽簷糯繫繹繪繳繩纇羸臘臙藩
C0  藝藪藕藤藥藷蟻蠍蠔蠑禧禱襖襞襦
D0  譜譏證譚譎譏譖譙贈贅蹼蹺蹌蹕蹤蹰
E0  蹶躆蠟辭邊邋醮鏡鏑鏈鏃鏘鏜鏤鏖
F0  鏢鏍鏘鏗鏗鏨鬪鬩鬮難霧霽齠韻類
```

C440 - C4FF

```
40  願顛顗饅饉驚騙鬍鯨鯧鯖鯛鯊鵰鵲鵪
50  鵬鵪麗麓麴勸嚨嚷嚼嚶嚓壤孀孃孽寶
60  巉懸懽攘攔攙曦曨櫬櫚瀾瀟瀲瀟爐犧瓏瓖
70  攖礦礪礬礫竇竸籌籃籍襦糲辮繽繼
80
90
A0    籑罌耀朧艦瀛薺臍薹盧蘋蘇薀蠕蠕
B0  襤覺觸議警醫譯譟譫譫贍蹇躁躅薩醴
C0  釋鐘繞繡闥骰飄饒饑鰲鶱朧朧顥鬽魷
D0  鹹麵黧齟齣齡儺儷儺囀囂夔孼夒齎儢
E0  憌攝攛灢櫻欄櫺櫺灌爛犧瓔瓔癩曨
F0  籐續纍纈纊辮蠣蠢蠡襪襬覽譴
```

C540 - C5FF

```
40  護蠢贓躊躍齎齏辯醻礫襦纖鐶纓繾鐯
50  闢霸霹霾顥顥顥顥顥顥臠顥顥顥臠鰭
60  鰷鶿鶲鶹鶵霽黯齧齦齜儻儼儷囊囉
70  孿孿巒彎懿攤攢歡灘灑灘邏鄺疊癰癬
80
90
A0    襉籠籟聾臟襲觀觴讀贖贗鄺躓舋
B0  鄺躊鑒鑒鐺鑠轢顫顬驕驍顥鬢鬢鏈
C0  纓鰻麻鷗鷂齬齪齪壟巔戀攣攫攪攫欏
D0  瓚竊籤籥櫻纖纓臢蘸蘿蠱蠲邐邏鱗
E0  鑠鑣醫顥鱉鱉驛驗髓體鰼鱔鱗鱖驚驊
F0  黴齟壩攪灢灩灝蠡罐囇鱻鼉黷衢讓讒
```

C640 - C6FF

```
40  讖艷贛釀鑪靂靈靨轤讟驟髮鬟鬢鬢鼇
50  鱟鱣龕鼉鼈鼉欖灣籬籭蠶觀臟鬻鑲鑰
60  顥饞詭醫棠欒矖讚鑣轤鱸鑲纜讜踥釀
70  鑽鑾鑼鑼鱸顴魘鬢鸚鸛鸝驪鬱讞鑾額
80
90
A0
B0
C0
D0
E0
F0
```

C740 - C7FF

```
40
50
60
70
80
90
A0
B0
C0
D0
E0
F0
```

Code Page 980 Traditional Chinese (Cont.)

C840 - C8FF

40
50
60
70
80
90
A0
B0
C0
D0
E0
F0

C940 - C9FF

40  乂乜凵匚厂万开毛亍口兀中彳丏朩与
50  乩亓仿仉仈尢匆卬尣圠及夬夭市旡殳
60  田气旡屮丼仨仜化仡仝仝刊冊灯圣
70  夗夯宁宄尒屍屶岙虰庀庆忉戉扐气
80
90
A0  永汜汛汋犮扤壬冇肮阞伎优伜仵伉
B0  伶伩价伈伝佈伅伢伓佛伃冴刉刔刏
C0  姦图匹卍卮呼図囟圮圮圴坳夼攺奼奵奻
D0  奻奷尥孖氶炇屼屺屾屼开庄异龛礿
E0  忕忔忏扜扞扤扡扞扷扵扠�}扥戉戉杆
F0  杚朸枓机朿杁朼气氼汇汜汏汉汔汚

CA40 - CAFF

40  汌切物犴犵玎甩乩宂网艸芋芀芁芀
50  兩邟邟邦玕阠阣阤阺冹俤俥伋体佷
60  伓伓侠佟佰伎佢侢侭侲侶図波剞剭劌
70  劯剈卤卲底庅呟咉吡呔咬呋呶吥呼
80
90
A0  吽咞呴吨咭杏囮圌囩园坮坽坴坽坴
B0  夆奕娃妘妠妡妢妦妡妏奀奀尳尲尳
C0  岍岏岈圾圾岑岈岍屵屺庞庹庹屯庩
D0  庲庍庎兊彶彶㥁忐忕忙忺忱忳忡忤忣
E0  忶忷恼忻怀忴忤扥扢扢扟扤扙扢扺扺
F0  扰扡捐扷扡扲扥攻旰旴旳昊杲杅枸

CB40 - CBFF

40  杙杕机杈杝杍杍杋毐氜氜汸汫沜沄沈
50  沕沃沎汨沚沴沆汤沜泜沷汯沘灿灯灺
60  㸚犺犳狆犹狅玒玕玗玔玐町甾疒
70  疤皁祂瓦肭胃肮肜节芏芨莒芑芋
80
90
A0  芋芃芄多沁辿邶邧郊邾邨邶阰陁阯
B0  阮弗佗佼伩佽俐俱佶佰倚佳佷佪個
C0  佪俤佦佶皿俌佯伽佼佲俪佮佮采洗冾
D0  刞刐剞刜剬劺氚甸圁屇屋呦呿咁町哂
E0  咈呫咯咀唪吶呴哟哈呼哏夲祊咁哈
F0  囷囹坏坲坭坫块垌坢坪垀坻坳壵坢

Code Page 980 Traditional Chinese (Cont.)

D040 - D0FF

```
40  突竝竺笙粃粆粄籿粐粌紃紈紋罘羑窣
50  狃耇�籽羍胘胇�肭胅脈脁眅胙
60  胜胊胕胇肺胗胦胍臿紅屾苙苂苹苃苊
70  蔴苔芫苦茁苴茵攼苲芙衏衬苻茶荄莘
80
90
A0     苯萁莓荌芴虸蚛虼蚼盂衍衦衵衩衂舠
B0  迠匃赳迣迡迮迖邦邽邨郕邳邾郇郎邱
C0  釔釓陔隋陑陓陊陳倞倅俹倓倢倰倛倰
D0  倰僢倷倬俶倔倗倜倠倅倞倇倎倌党罤
E0  蕓清憂涸淨凎剡劇剬剨剝荊剁勛罨屛
F0  哆嗙哇哂咮哳嗃嗳斈唄嗚呪哗哈哗
```

D140 - D1FF

```
40  唊嘺唹嗌唂唎唃唋圊圐埌聖埕埻垼塢
50  迣塦垸埤塝埇壗坺塝埃夌売娌娙娸嬬媫
60  嬁嫭媤嫂婌孞宧害宬尊厗屁岫崝嵋猫
70  辛嵐舎帕悅摩廒庪庬彄弰彧愙恚恋
80
90
A0     恁悢恓恲悁惆悝悃悕悛悗悇悝惸戜
B0  晟耚辇挍抒捄捅掲捃抑挹拎抨抙挍抬
C0  捗挼挷揰摤抺挭揰揁抺捒捈捈抜敩抺
D0  旃施旀旺晟旹昌朓朓杯杖桉柘樇栳杙樇
E0  枒栖栱楝枂梓柿栯梉栌栒棝栒柷枀枳
F0  桕楂梢棽枀歆歁歐飲歕峕殪殫毦毿
```

D240 - D2FF

```
40  銑氊硨銶氰沖浣泫涍涺浄浧涀湀浯
50  涷涬清湞泝泿渥浠浼浰渽浗涂涑涑沐
60  浹泺浞湾漢涵涠浚澎洩涀洼洮烝烋焦
70  炷炫斌烌焇炧烒烗烚焔焰焂羮祥籽
80
90
A0     烃鞐玅猯狴狥猲涂狨猁玟珄珥玧珘
B0  珧珣珩珜瑋瑣玞珝珥珙珘玲膌膲瓴瓩
C0  甡畛畏痒疘疘疚痒痖痣瓴盃玾睢眧
D0  眫眫胅眿眲眙睂瞀昭砒砣砢砑砵硯磐
E0  硅砳砩砸碡砱祔祛祐祜祜䄄祆祙祖秣
F0  秲秭秪秕秞窔窊窞窆窳窎竘笁
```

D340 - D3FF

```
40  笄笽笈笎筏筻笂笟笭粄粑柴粡粗耗物
50  紁紅杯紎紈紉紏紒紁紑窐罜罭罞置
60  罘殺勑翃狃狖敊耺聆胺胘脗脁胁脀臋
70  臾舯舥茳荍茇荗荺荃莑筑萱茦茜列
80
90
A0     荂莟莨芜茈菡菠菩萝袾莜袄菖荇荅
B0  荌荓荅荎荓荊庱抗蚨蚍蚱蚑蚸虬
C0  蚗蚍蚋蚚蚢蚙蚙蚡蚡蛉蚶蚼蚍蚶蚔
D0  衄袄袀神袧袑衱衯裂羑枕衱訒豇豗
E0  狂馳賁赶赳昀屹肝軏帆迀迵迌迻逢
F0  迣迤邸郹鄀郜郯邼邱邵郭郏邼邬酐
```

D440 - D4FF

```
40  酎酏釘釛釩陜陟隼釘彤彮氣锲倡偡俟
50  傼僵俷偕偲偪偍俸偤偶偢傕偖僵偟偗傗
60  偣偟傮俟偟偣偝偪偃僶劉傶劊劻劻甐
70  厴唊唂唗唺哤嗻嗻嗻呐唀嗖唸唎唎哗
80
90
A0     唌唗唅唔唥唪唭唻唳咮圔圇埻埰埮
B0  埶埜埴堌塻墒堌場堋坥埏薑埼埣埲埼
C0  壎塿塮埼埩埧壌堌埗埢埰塊埦斃娩婠
D0  婕媗婷媗婌婑婑婳婹娑嫻婗嫫媫媫
E0  婠婥媫婙婍嫪嫨媅婕婞媩婃娵婦嬰婬
F0  嫀蓬柰屃嶂墘嵳峻嵘崞嵄峽崦崞嵣
```

D540 - D5FF

```
40  嵫崒婆盉宦堵崚嫿麥膺廧庲庫號弸袊徟
50  徊徳愁忩怭宗官倦惔愀惄悩惽慄悱惛
60  惇惊愫愰愴愉摩挽揰揙悴捯揈拣挶挭
70  撖掎揰掇搯据捎揆挭揰搐揰揰搒掤挩掟
80
90
A0     捿掯掁摲掁敓旇晥晡覘晙昑暴晢腆
B0  椺榫桎枚椻栢棁梈椰椩楺棹棲桯棪桴梲
C0  楷楠梒枩杪棹梐楝楹梋梆椏桯梱梻楂
D0  楙椑桸桇椞椀歊歇歃欻殇殅殍欸殹氨
E0  淀湞涴湼洫渽凌減凍淶湹湕湎渒溁湻
F0  淽滌溯湿涮涩淊湝涙淰渟湮湻濤湨湶
```

D640 - D6FF

```
40  涽淲溞沚淛潤涚渝烺焍烷焗煟焌焯煮
50  焴焙焠焾焗焝焓烸烳熒焯焹焗愱炪硑
60  焠猗犹狼猢犹獂猵猗猞猻瑇瑃瑅瑄瑝
70  斑瑮玽琷珛琔琭瑮琊玣時臠疢痹痦
80
90
A0     痀痡痻疽痄疒疀逛眵睞眿睅眹眗睃睞
B0  睯眸眵硈硒碑碘碅砮砝碏砦硅硐礽桃袾禠
C0  裱裕紫离稌稆稈程渾宷窐范竻笽筍箒
D0  簊筈笛筥笪筒劵筙笯笁笉笩箬笽粘
E0  絑絪紵絽絺紶絅絼紲絈絇紗紲絳絉袂
F0  絒罣衺衿絼黇翊狸狾猴狗絜翏翺粗
```

D740 - D7FF

```
40  菥粨耺聤勼脘腋脡脛腥脝胖脞脭脕胺
50  脖脢碻胴舳舳胙舲敺洗苤莫菉崝荳茜
60  莢莎莶萋荵菌苹萎豯莩盉垫荎莪苲蔆
70  莁莁菠萆莢莪育帄莮嗒䓫廮摩蚯蚷
80
90
A0     蚊蛏蚛蚺蚨蚨蚾蚗蚋蚚蚚蚤蚼蚴蚔
B0  蚍衒花袂袢袡祛袚袑裿袥袒袍袙袛袗
C0  表裏裹袒衻袒袂袚物酕訛訬訬訞訿訮羿
D0  犯狥肮赽赼赶跰趂跌趶趷肥軜軖軝軜毅
E0  軒軡迻遒逑逼逌逡郲鄸郖郴郔郳郪鄨
F0  郬郋酖酸酗酓酖釬釱釱釭釤釫釹釸釬
```

## Code Page 950 Traditional Chinese (Cont.)

D840 - D8FF

| 40 | 鈩鈡鈙釪趹聞閅睹錡陫陶陯惟軹丁頎鈖 |
|----|---|
| 50 | 尴傖倠儫傮傞傳傣傈傡俱儚傶倛偗儍倞俖 |
| 60 | 烑傖匐嗣蒜膴喈唲喥嗒嘟嗚喈嗖嚶喈咅 |
| 70 | 喵嗝焻嗡嘡嗏唭峇喒嗌喖嗹喝圖堷瑄 |
| 80 | |
| 90 | |
| A0 | 堙堞垻堌塌埵毽埶堟堷塪城堶堨堨 |
| B0 | 塥壋堬塦堺媗婳煤婺嫶媞婿媲婼煸媣 |
| C0 | 媦媮婭嫺嫄媄媝婌婳婼媩婻婳媓婜媺婪 |
| D0 | 寏寙寋寏寎痈尌尳嵍嵏嵍嵋嵍嵍嵍 |
| E0 | 嵽嵑嵼嵛嵼嵣嵒嵭嵔嵻尃峌嵕尣尃 |
| F0 | 尪崴幗幀幓幯徥徫湴憲惪忈忥悫偝 |

D940 - D9FF

| 40 | 憚愊愖悍傃惕㥪愊惼傁恈惏愊悁愖愄 |
|----|---|
| 50 | 愋屒擊揱揱揎搘搘柨揑揭换揂摑抴揶揬 |
| 60 | 揉揵撹揗揀搯捠搘揂拹拋揵撝揞揫揗揰 |
| 70 | 揩搧攲敓攲敠斁敫斌斝斠斳㫃㫃㫃 |
| 80 | |
| 90 | |
| A0 | 晼晬晻晠昳晹映睆曶桱楁椑於椧椿 |
| B0 | 椕棱椏椑椵楉楍椺椇棳椢椪楄柷椆椻 |
| C0 | 梴楎棆楄栄栾荃芬楽椋椊椊椊楕楄 |
| D0 | 椢椁椴棑栖楈椬栚枬椆松欿欨欵㱕㱔 |
| E0 | 殖殆毇毦毲毳氤淼湴湒湳浫洠洩湅 |
| F0 | 湢湆淼洽湆湳湸湢湋湙湇湆湆湆湇湖 |

DA40 - DAFF

| 40 | 湠湜湡洷溰溳溻溂溋溰渢溾浺浣澀 |
|----|---|
| 50 | 湼湤渥湢湼浀淢湤煒焯焯烻焱焱叝焼 |
| 60 | 焀焌焟煈焛焌煙焌焴牏牁牁狀牥奀奧 |
| 70 | 犐犌犴犵㹴狐㹴狚㹴犾㹴琮琬琰琲珤 |
| 80 | |
| 90 | |
| A0 | 琚琍琭琍珵琣琰琪琪琲瓶瓾瞍畬㽲 |
| B0 | 痝痛痕瘐瘁痖畐哦痋痤睍睄睍睅盰 |
| C0 | 睇睋睌蕎硾硪硤硡硪磄碓硪硪硪硨硨 |
| D0 | 硽硺碱碛禑禑稂稊稈稌穋稑秚竝竪笁 |
| E0 | 笂笵笭笳笰竻粂粡粕粡糿綀絣絟絓綃 |
| F0 | 綑綑綅絴絜絮綳絅絀絓経絻絣絈罫罽 |

DB40 - DBFF

| 40 | 罜羢羖羵翃羽聅聍聆載膃膃膌腊腒膠腰腄 |
|----|---|
| 50 | 脍腟胚臮臷胫臷舄舻舻舙菏菹菦 |
| 60 | 菀菣莣菬菣茭華蓸敢菈蓴蓸葄蓸菈菥 |
| 70 | 蒝菿菡菥菆脆菮莤莏萑菺菂萲 |
| 80 | |
| 90 | |
| A0 | 蔿蔄菇蓞蒻菫萱菈涪萈黃菻菇菇菎莆菏 |
| B0 | 菾蚌蚅螃螲蛞蜊蟄蜺蛯蟑婆蛅蛚蚰蛞 |
| C0 | 衈裱衚祛衪祔裞袾裸袼袷袡袋裹祅裖 |
| D0 | 覎覘覗艉舩艍袒祂訄訹訅訅訅訰訰訉 |
| E0 | 謷詑詽訐訬覞犳貤貱貥資肦賷超趌趌 |
| F0 | 跼跓跕趤踿跰跔跕跙跦跗踎軒軴軤 |

DC40 - DCFF

| 40 | 軹軦軧軥軧軨軨軨軥軥軨軨軴軵軦軣軥軧軨軧轊軤軤轊遼逯 |
|----|---|
| 50 | 鄩鄀鄊郮鄣鄎鄎鄎鄎鄀鄚鄄郮郮酡酤酤 |
| 60 | 酢酊釓釔釔釕釔釴鉫鉹鉪釩釩釥釠釠釤 |
| 70 | 鈗鈖鉙鉝鈬鈗鈗鈗鈖閊閄閆閅膱陜隉 |
| 80 | |
| 90 | |
| A0 | 陻隃隆錐錐雁雱雺軒軌�頂髟鈇鉫 |
| B0 | 澣糛壴壴偉傎僅儆儍儑儑儑儓儔傱傮傺傮傺 |
| C0 | 從傂傑儉傶倁傮剡剌劉嗃嚘嗌嗎嗝嗊 |
| D0 | 嗝毇嗙嗙喑桑嗒喉嗏嗕嘘嘘嗙嗋嘟嗙 |
| E0 | 嗌嚍塸塄塡壋牎嗠塎塎壋墒塉塎塎堆坒 |
| F0 | 湟塑蠺娛婹嫡嫩嫩婼媀媮嫩媿嬰嬰嫿 |

DD40 - DDFF

| 40 | 嫆嫍嬈媩媮媷嫈媹淭竇瓾瓾壉幊嶅嵫嵏 |
|----|---|
| 50 | 嶍嵐嵬嵂嵍嶅幎乤嗊幁幊幊帲幊幊盧庯庑 |
| 60 | 廈廇殷㑇徦惁惁憽憬愫惐愫憍憏愻愻愺愻 |
| 70 | 愭慄敥戠戕戕盀窂牚牚撘撘擖撝掤撗 |
| 80 | |
| 90 | |
| A0 | 搢搷撦搤揅搞揁搳揻摲摲攭揷揁掝搵 |
| B0 | 搯揹揯搲揫撹掣撢揲撢搽敾燔撨攲㬉 |
| C0 | 曣晦曈暼暊暗暚暠暥椬椻㭪椲椢椩椿 |
| D0 | 椢椘棊楂楗柎楏楈楉椺楈椚椓㭑㧊楸 |
| E0 | 椴椗椢椢㮆楽楁槗楂椢椢椢椢椢椢㭪 |
| F0 | 椲椣椣椲椣欷欿欿欰歀殈殸殸殸毭毭 |

DE40 - DEFF

| 40 | 毹毿毶涾滚滴滴滴滴滴滴滴滴滴滴滴滴 |
|----|---|
| 50 | 淽涤滗湨滫滰湸滵滫滭滰滫滫滴滰滰 |
| 60 | 滙滴滈湴湴湸滨滊滣滫燀沾滨湸滍 |
| 70 | 烒焗獎煲煸燴燁燀烕烶烓㶲焙焿燀㶱 |
| 80 | |
| 90 | |
| A0 | 煊㶺煅腧犍犌犌犁犁牸牄猄狐猻獲㹴 |
| B0 | 猿瓆琙琿瑒琭琭琕琄琄琄瑈珤瑅琭㼀 |
| C0 | 瓵瓾瑩魁瑄瑢瘠瘠㾗庵痾瘤瘡瘻瘦 |
| D0 | 瘰瘓湖瘆瘫瞀皼盅睅睟睟睟瞼瞼睽暗 |
| E0 | 瞼暷瞷䂖碇碴碬硧硩硧硒碅磳磳硪硐 |
| F0 | 碍硪䃟祼祽禑禍穑稑稊稐稈稑稑穆穑 |

DF40 - DFFF

| 40 | 稛稐窣窣窖竔竻寁竷筴筩筶笪筳筶筟 |
|----|---|
| 50 | 筞笚笢笥粲糓絔紲緀緈綀絔繝綅綼綅 |
| 60 | 絔綹絎綵綩絎紵絷罛罺罾綀綐綀綃綕 |
| 70 | 翜翱腊臐膜膜膊膤膧膨膒膦膘膠脮腏膞 |
| 80 | |
| 90 | |
| A0 | 腄膈蜯鮨舭艀艀蜂舩菭茖菭葜葦葹蒈蕏 |
| B0 | 葋葑菭蕓葖葽葚葚菬菣葰菭菭蓸頡菭 |
| C0 | 蒼菭葺菭蕙葼萩葄萪萔菭蕙蕓蕓蓸葡 |
| D0 | 葆蕘葒药流菭菭蓴蓸菭葼菭蕂蒈菭葖 |
| E0 | 蕸蓋蛲蛲蚨蝏蚇蚍蚍螂蛒蜎蜉螄螄蜙 |
| F0 | 蛕蚗蚌蜖蜒祝囊袈袬祸勩覝觟觟舱 |

Code Page 950 Traditional Chinese (Cont.)

### E040 - E0FF

```
40  餎鬵鷔鬵觕訕訌訏訵詗訞誄誁詥詳
50  詿詺詇誖豐詨狠豢貃犖狄羴羮狨羗赽赾
60  趡趌趗赹翅翘越跰跰陸踌踁趾踠踧踍
70  跫跲躄睚皎�軼軺軻軽鞦篁篁逌湯
80
90
A0     逜逺逜都鄈鄔鄑鄮鄏鄇鄈釄酯鉈鉒
B0  鉌鈺鉦鉌鈵鉂鉕鉐鉆鉏鉁鉊鉉鉲鈪
C0  鉿鉾銅鋃鉋鉆鉓鉄鉟銤鉮鈧鬥鬦鬧
D0  鬫鬓陻陞隗雎霽孛睿夐斬� 钊馭鞅頓頑
E0  頄颰鉍鉋駍馼駋雩弈旰旆釚暘鳰晃麈甶
F0  傲傳傯傽 课傲僑僇凛償僥僠僜僣僗
```

### E140 - E1FF

```
40  渐剞劄勛勎匱冪喠嗎喍斄覝喇喊嚖
50  鬥噔唎喫喭嚓堣墫址埣塴壤埫垐廇
60  塼墑堺墲堽埣埖垄匤涻埻娉婷嬉嫪
70  嫚嫿嫿娿嫠婓嫛娿媚嫍嫙嫙媚嫠妻
80
90
A0     宿屟嶀嶂岾嶆嶠嶁嵸嶊崔崿崷崒嵹嶍
B0  強嵿嵿幓庬廬庼幘廇廧廖廒廈幙溓弻
C0  彫徹忽惌恖愇尃堅曹愰愫愺嶚愑愩懷
D0  懍忔憖怲恢閥晢忟忟慬毃掮湚掹摶撕
E0  摳摢摐甋搘摎摮摞摫摏捨搼撹境
F0  拫捷揚撮敖斗歞氄瞪螱辣堲壥糖枺
```

### E240 - E2FF

```
40  槙樌毂楮梘楹樟榙榎槎榍榿椿椿愷槄
50  楑楿槀梘槃槗橾橑橚橾橏槙槇槈槑
60  楷椴梄歆歇歊歕歾歿毃毂毰枀滺溰淑
70  溍滸漒滽濂滾潄涛漚浘漘滲漒涀澤溇
80
90
A0     瀘澘淳洤湶沊湖湁潋潲泚滟淆滟濇
B0  潡澭滗洬淶湲涸涷潠漍潏沵溫溫燢
C0  燻熿溫熪熺熿搏焎熿燉熿瀉浘浘溠溠
D0  滇瑒瑲瑑瓀瓹甋甅瓲瓺奩甠甿寙痼痪
E0  痞皸睸睼睬臤臠臔臂痹硳硪硺硣碨
F0  碓磃磐碣磚碔碙碤袚衭祼祺褗褆祹
```

### E340 - E3FF

```
40  祖禅祿褔禨稝稷禂稬稈窬窫寁埩窞窧
50  於䇳箮箊箖箹箙箄篁剞籭箤籕籾籹粿
60  粖粿綷粹紣綣綃綵緌絉綅綖緆緆緋綾
70  綯絡綎綷緄荽繁綄綜綑繩翾翤翾翯瑴獂
80
90
A0     糝䏧膇膇膆膃脃腉脊痰洣洣岇葂苟
B0  菉菶萳萲菨菶朔薬葊尊萵菧葶蒀葳
C0  葑萘蒔萯葵缺糈荓藼葷紒苤葾徒薑
D0  莘茇荄葭奧蜳蜲蜳𧈪蜾蜱蜳蛪蜛蛶
E0  蛧蛬蜾蚌蛕蛡蛡蛶蚯蜱蛐蛐蛢蛢蛶蜳
F0  蟄蜇蛰蟖蜺褛衿衼裲裙裙裼裼衲
```

### E440 - E4FF

```
40  褐褄褊覎覎覝覞獻鰊觫訑諏誆詑誆詩
50  谻豨狶貤睰睰跰趑跟跦踆踷踧踊哨踔踒
60  踜蹅跎跰軶輅輎軺轅鄲鄯鄂鄴鄣鄧鄖鄠
70  鄧鄤酺醒酲醣釱銖鉫鉔鉊鉔銈鉐鉘鈄
80
90
A0     鈏銚鉋鉢鉒鉌鉍銢鋊銆銈鉠鉆鉙鉐
B0  銊鉈銙銬鉌鉀銤鉊鉡鉀銲鍬陸鉟艳斡
C0  鞈輍鞀韜鞅粗鞀鞍鞁勱鞑歟頪颩颸鉘鉝
D0  鉔鉐頿馼驲馺馷釼鶦𩥋鉍鉍斈斈鉋鉋鉯
E0  釣缸玬鳾鳰蚧塞宦儌禁儆儓儰僾僋儌
F0  僀僷剦劇勦勦劻吷嘩嚕堯噁嘺噭嗜嘏
```

### E540 - E5FF

```
40  嘺噗噴嘽喁嘽嘸嘽嘺圜壆垚橙壃壇
50  墾壇壏壗壏壿壿壿嫠嬰嫮嬌嫩嬒嬝嬅
60  嬏嬣嵃嵤嵤嵱嶢嶣嶾嶨嶴嶽嶿嶂嶺嵃
70  幠幮塱廮廒庥廥廀惷悽慈愀愓愐愖愜
80
90
A0     憚憊憒憭愰愔惘愰嶠慈愹愅戮褹撤
B0  撛撠擄撑搆掏揹撢摍擇揹搭歐敁敫
C0  奯斲斳嘆嗼暞暲暉暐嘆椙樀樀樏樀枹欸
D0  樀椟樀橖櫩榕橖櫲檼樓棷橤橤橅樼摯樀
E0  橈橚槏橨槳樏橕橜槤橧樏橖桎椙樀喬
F0  歠殯瀣滯殑墮氁氀氀氊頮漦潃潦漬潽
```

### E640 - E6FF

```
40  湝澂澌澎潙漤瀟潤潩滯潡潴滭潲潒漢
50  湋澓瀹漿潱潒潪潓潹潓漢潯澕潹潠潿
60  潟漆潁潩潔熝熁熿熿濂熿熿熿熿熿煬燦
70  熄燄爀摩舝槳槳猨燒漻獝獚獩獝燉
80
90
A0     獢璇璉璘璙璁璀璜璬璿璞甀甁瓼瓱
B0  痤痙瘇痎瘆痎痷痗瞕瞱矗瞍瞍瞏毃瞵
C0  磄磃磙磩礑磇磩瑰磩磩磝祼禌禩禶禡
D0  禛嶃稦窅窾窣筬箭箸筴篯篹篧箝篖樏
E0  糈榙榓緷緧緷緷緷緷緷緷緷緷緷緷緷
F0  緷緷緷緷緷猴緷緷緷緷緷緷緷緷緷緷
```

### E740 - E7FF

```
40  膊膕膡膔膖舖舘舳舩舳艎艎艑萡薙菿菿
50  貲殷菼蔴菻菿蔪蔪蔪黃菽菣菣蕤薁
60  蔕薙蓫蔾蕠薘薙蘆菡菿莢薁菓蕏薆
70  碻薇薿菿蔿蓰荽御蓼莛蓸澉薭蓎蓎虩
80
90
A0     蝟蝣蝘蝚蝸蝶蝗螃蟎蝘蝀蛣蜈蝐蝪
B0  蝪蝟蝎蝘蠓蝘蝘螞蝘蝰螯蜻蝀螢螢蛺
C0  蜳衕褅褌福褋裸褌褋褂禓褄袤褨觇覭觐
D0  覝觭舳舩覰猉醎酨豛誃諅誂諧諗閐睥睿
E0  諆誅誄諕謡謡諀諰諀醎豎貲脾脻跎趕
F0  趦趑趑踠踣蹊趸踮踲踛踖踑踑膮跰踋
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Code Page 950 Traditional Chinese (Cont.)

E840 - E8FF

| | |
|---|---|
| 40 | 踔�écis踘脽踜跤踡踰輈輊輄輆輁輒輏輗輓輐 |
| 50 | 遳遰遧遪鄈鄇鄅鄃鄆鄊鄋鄎酓酫酤醝酳酖 |
| 60 | 酶酢鉱銀鋑鉬鋙銶鋏鉽鎈鋘鉻銅綺鋌 |
| 70 | 鋯鋂鋨鉛鋈銃鋼鋅銼鍊銶鏹鋞鋧鋝銲 |
| 80 | |
| 90 | |
| A0 | 鋠鉿鎣鋬鈿閿闍閱閼閬隤陵雜霅霈霂霂 |
| B0 | 靚鞊靪鞈鞃鞏頞頖頍頠頢顂頓颮裵 |
| C0 | 髣髯餺餭鍊餕馺馯馼駋駧駋駋駽駼駥駎駚 |
| D0 | 髎髴骹髳髻髼髺髹骯魴魟魛魥魧魭魥魥 |
| E0 | 鮫鈍鮔魬魩魳鴆魬魭魥魦魥魣鹰鵬鵅鵄 |
| F0 | 麃黕黿鼑儜傿儢儌儗儌熙暨叡雝嚔嚘 |

E940 - E9FF

| | |
|---|---|
| 40 | 嘎嘆嚃嗷嚌嗋嗷圕圍塿墩壚墂墺墼墼 |
| 50 | 墊墥壏壞嬡嬈嬝嬖嬚嬝嬈嬭墝嶢嶤嶕 |
| 60 | 嶛嶞嶬嵾嶱嶡嶢嶙嶺嶢憀憳幘鄇廙 |
| 70 | 廎廜廦廍廀張憿憨憨憨憬憿暴懷憚憯 |
| 80 | |
| 90 | |
| A0 | 憿憸憐憭擗摢撰墩撝撤墼擭撲撝搎撻 |
| B0 | 斁斂黇暋暾暽曠暉飋睲暝暉暨暽瞳橄楦 |
| C0 | 橤橝橫橨橃橇欌橑橉橒橬橖榹橣橴橪橷 |
| D0 | 樊橐橕橜樐橤樏榩橖橖樑橆無歐歔 |
| E0 | 歡歒澧殫殠殳毼氈氁澭澁澣濍澞澏澺澈 |
| F0 | 潞涵濾潁澱澺澽澥澮澺澸濙澤澹澸澸 |

EA40 - EAFF

| | |
|---|---|
| 40 | 澢澭潟潝潗潡澰越燂燀燴燸燂燀燁燋燔 |
| 50 | 燊爐燒燨燜燀燊奬禃橋猨獝獩獮獓 |
| 60 | 獪獪琞瑠瑠璮璔璕瑈瓵甋瓺瓻瓬瓲廖 |
| 70 | 瓂瘵瘂瘰皾盦瞗瞗瞙矇瞍瞖聰矑瞳暝 |
| 80 | |
| 90 | |
| A0 | 瞗瞥硪碝碓硞硚暫礅硛磭磢硫祻稄 |
| B0 | 縻稯穇穌稞稝潓筹篫篗籆篗篨篨篅篋 |
| C0 | 簹篴簧笊笻篢篠橮糒糄糊糳繂繜綖綖 |
| D0 | 繟繳緜綪緮緹繧縞腟綻綛繗繲繗絷紊 |
| E0 | 蔚罿翼翪罿翲翱翿翣曉瞱腠膝膰膴 |
| F0 | 膴腣膷膹膧膃膗艆艦褭濭蓲蓳蕓黌蕘 |

EB40 - EBFF

| | |
|---|---|
| 40 | 蓱蔵蕤蕁薧蕑蕑蕡蕛蕚稦稝蕃蕠殨蕕 |
| 50 | 覆蕤瀂蕷蕰蕲蕬蚬蝪蜺蜞蜙蜒蝼蟼鞙 |
| 60 | 蝝蛃蜻蟷蝸蝶蟂蝘蜹螗蟌螁蝳蟿蝵蟣 |
| 70 | 褵褣褧衺袰裴裞衺褢褧裕褊褴褖褖鞽衋 |
| 80 | |
| 90 | |
| A0 | 諲諲誠諵諝諿譓諿誣誣誰諞諡諳讀諯 |
| B0 | 誯貑諯貐贂貨腪賭賏頮靭趬趆趉踳踴踶 |
| C0 | 蹀踳踶踼蹋踊踰踿趀蹺輒輐輄輄輌輚輎 |
| D0 | 遠遮遟遾麳郹鄁鄀醏醐醗醍酳醆醋鎔錞鍌 |
| E0 | 鍆鏽鋌鋖鋸鋶鍈鋃錒鍊鋷鍃鋊鍏鍒鋶 |
| F0 | 銚鋗鋑鋦銀鈑鍵錂鎮鈎鍋錭鎧鉈銏錯錆 |

EC40 - ECFF

| | |
|---|---|
| 40 | 鎃鉤鍣錀鋐鋘閌閍閎閎閖閞閖閥閘閜隩 |
| 50 | 雎雥黔靆鞀偆靼軡鞙醉頵頩頨頯頝頝頝 |
| 60 | 醉駋駬駴駍駓駧駣駓駍敤斵斠斦斲髻髯 |
| 70 | 髾髻髶魲魣魥魬魥魥魥魬魥魥魥魥魥魥 |
| 80 | |
| 90 | |
| A0 | 鮭鮕鳲鳦鴘鴍鵄鴚鴕鵄鴗鴗鵟鵄鴙鳥鴥 |
| B0 | 鼕麋麮麰黖黕黝粉禰魝麾儤儥儛儴儶儧勨 |
| C0 | 嚓嘮嚃嘴嘵嚌嚆嚘嗹嚈嚠嚄塴壋壃嫻燿 |
| D0 | 嬲嫸嬦嬭嬸嬥嫛墥嬈寪嬚嬝嶹懆懀徸懃 |
| E0 | 懇懋懍懥懎懞懞懞懞懞懞懞懞懤懄戲歝 |
| F0 | 鷢鷙擻穙樫樬樜橃橤橦橬橿橞橷橬樧橀 |

ED40 - EDFF

| | |
|---|---|
| 40 | 繫繴橫橦橦橬橬橬橬橬橬橬敿殰鼕龜穀 |
| 50 | 潦瀾澣澷澣澶澞鼻澣澣澣澞澞澞潓濆 |
| 60 | 潟燑熒獦獮獮壆璮墥璐瑶璔璔瑈璔璮瓶 |
| 70 | 瓵瓭毿瞵癃疢瘴瘤瞤甋瞱暉曋盳矑瞱 |
| 80 | |
| 90 | |
| A0 | 瞘瞸暵磳磃磽磶磻磶磻磽磽磱磹磼磼磼 |
| B0 | 磯稙穚機穚穚橑穚穚穚穚穚穚穚穚穚 |
| C0 | 稥篷篕簚篽簃篴簅篝篕篽篵篼篰篽篺篶 |
| D0 | 縞縋縡縳頴縳繅繉維絲緑緵縰縻縻縶縶 |
| E0 | 緾緾罿罿罿罿罿膧膤膤膴膴膴膴膴膴膴 |
| F0 | 腟膭膭薂薀蕙蕘薕濵資蕺薂薂蕺蕺蕺 |

EE40 - EEFF

| | |
|---|---|
| 40 | 禰薛薇鼑蔉遴蕗葳遹愛亂薙薅薛薅薂 |
| 50 | 薔蕱薙薴薶蓮蔆螽蟂蟃蟴蟃螛螛蟏蟲螺 |
| 60 | 蟲蟂螺蟲蟲蟂蟄螯蟄螽螺蟲蟲蟂蟃蟂 |
| 70 | 蟺褍褪褯褌褶褶褍褮裉覘覩覺辮縠諼 |
| 80 | |
| 90 | |
| A0 | 譁謑謏謱謥謼謤謞謜謷謮謷謷謎謯謤 |
| B0 | 諡謤謌獝貓貕貕猠賝賝賝踳踴踷蹒趐蹧蹧 |
| C0 | 轄輵蹎遱鄹醐醶醇醯醬醃醭醅醢鐖鎯鄀 |
| D0 | 鐥鎝鎝鎝鎝鎝錩錩鎝鎝鎝鎝鎝鎝鎝鎝 |
| E0 | 鎝鎝鎝鎝鎝鎝錩錩鎝鎝鎝鎝鎝鎝鎝閼 |
| F0 | 閗閙閠闒隄隁爾爾堯澨澩澫糞輵輇輈 |

EF40 - EFFF

| | |
|---|---|
| 40 | 鞹鞜鞟餥鵝頲頯頥頯頯頯頯頯鬙鬗鬙鬙鬙 |
| 50 | 餫餯餭餭餱餱醶醶醶醶醶醶醶醶醶醶 |
| 60 | 顋顝顊顊顊影影彭譬魑魊魋鮚鮚鮚鮚鮚 |
| 70 | 鮚鮚鮚鮚鮚鮚鮚鮚鮚鮚鴃鴃鴃鴃鴃 |
| 80 | |
| 90 | |
| A0 | 鵄鴃鴃鴃鴃鴃鴃鴃鴃鴃鴃鴃鴃鴃鴃 |
| B0 | 龡龡龡龡龡龡龡龡龡龡龡龡龡龡龡龡 |
| C0 | 嚌嚌嚌嚌嚌嚌嚌嚌嚌嚌嚌嚌嚌嚌嚌 |
| D0 | 嚌嚌嚌嚌嚌嚌嚌嚌嚌嚌嚌嚌嚌嚌嚌 |
| E0 | 橞橞橞橞橞橞橞橞橞橞橞橞橞橞橞橞 |
| F0 | 澣澣澣澣澣澣澣澣澣澣澣澣澣澣澣 |

Code Page 950 Traditional Chinese (Cont.)

F040 - F0FF

| | |
|---|---|
| 40 | 璥璢瑒璂琄瑬璙璠瓽甑甓瓾甯瓻瘂瘘瘃 |
| 50 | 瘈瘇瘄瘎瘉療礁磂磑磔瘺礐礌礗禬禬 |
| 60 | 禯禱藥薅薹薵蓉蓁鑾蕫蕫蕚綍緫緻 |
| 70 | 繪緔續繹繝繓縼縩繌縯縐縟縯翶翷翸翸 |
| 80 | |
| 90 | |
| A0 | 膔膸胧葊菢葵荍炙荄薲䓆蕛萁荎荎 |
| B0 | 蓋瞹勳對薵薵䓀蕚蕚虓蝽蟡蟣蝛蟺 |
| C0 | 蟺蟥蟭蟎蟆螺蟵螓蟸蟍蟑蟐蟞蟄蟄蟄 |
| D0 | 蟄蝩褬褬褑褌褛褣褵褆褔諮諄諂諨諀諿 |
| E0 | 諸謔諍諉諏諰謷謷諑讀諌諑諁諐謷狐 |
| F0 | 貊貘貗頎賮賕賭賭賥賧賭頤䠠躇 |

F140 - F1FF

| | |
|---|---|
| 40 | 躝躔躝跾躨蹰轑轇轇轇轚鄭鄴鄱醄醄 |
| 50 | 醯醯醪醆鍊鎁鎝鏄鎔鍚鎧鎹鎼鎦鎵 |
| 60 | 鎈銅銙鎷鎮鎵鋭鎲鎮鋻銼閘閨閡燦 |
| 70 | 鞋鞌鞥鞕臈雜實甖靀雗䡹鞧鞘霅鞏 |
| 80 | |
| 90 | |
| A0 | 鞣鞈鞈鞈鞣鞈鞣顄頎顋顋颴颭鑛鍊镈駼 |
| B0 | 駭駇馬駱駛駓駒駐駸騆䮜颿騍騔鶡鷻 |
| C0 | 鴭鴹鴹鯷鮗鮕鮒鯁鯷鮿鮞鮧鯂鯷鯂鱇 |
| D0 | 鷃鸃鷄鶿鹞鶠鴽鯖鵧鵊鵃鷑鶷鷇鷇鷇 |
| E0 | 鷁黿鼈鼥鯷鼮跑豁豿豪儛剹勳勍噟 |
| F0 | 哯䶑嘰嘘嗯嗯壚塸塸呉嫁嫩嫩嬈龍幪 |

F240 - F2FF

| | |
|---|---|
| 40 | 徸慬搗壊擽擢擝圌壚繫廬墴旮曪楄椒椟楅 |
| 50 | 楈楊楝槳桑槼楄槙槼欨殯毹氉瀧榮霍 |
| 60 | 澂澁漕溢瀬濠寏瀜燊燷璨燕燰爈爈瀑 |
| 70 | 㱕犚㹴瑼瑔璬瑝璺璻暗睄矑矍矈磆磖 |
| 80 | |
| 90 | |
| A0 | 磚磐磧磙䄾秨穚榦簹簵遍糧槳繏 |
| B0 | 繼縫綠繏繏絲縳縼嗇罄窠罴罖罖翽翾 |
| C0 | 瞻腹膔羲羜羠澫鴰薐薖蓆薻蓫蓨蓸 |
| D0 | 蓍蓭薵蕶薆薊薱恴磊薇薚薝蓮螼螬螬 |
| E0 | 嫚蟬蟭薴鳖鳖鳖蟍螱褆褼裚襈襸襐襜檜 |
| F0 | 襆襖覷覙覗覗臈諄諔諑諑諤諞謷誢誢 |

F340 - F3FF

| | |
|---|---|
| 40 | 譑譚譛譛譈譈獰獷繝獯賥賭趯趚趯趯暗 |
| 50 | 暗跤躓踳蹺踌賭赖躞蟑蟑躎鄑鄑釄醸 |
| 60 | 鐏錂鏷鎺鍼鏐鏄鏷鎻錐錴鎞鍫鐣鏷鎞 |
| 70 | 鐤鏷鏷鏷鎺鏖鐷閻閡閪雞郭霊霉蔚彤 |
| 80 | |
| 90 | |
| A0 | 䡀靁鞌鞣鞄鞁鞄顗顪顥顭顬颺颵颴颰鑛 |
| B0 | 鯼鵒鑛鱸駉駇駃駈駉駾駸騆騆駼騔騅騳 |
| C0 | 騅鮯駪騭騸醫䭫鮝鮼觬鮯鯂鯷鮔鰺鯷 |
| D0 | 鮺鯂鮾鮭鮗鮪䰾鴽鳷鴾鳹鴹鷃鷃鴳䲃䱻 |
| E0 | 鴾鶡鶹鳿鴼鴷鴻鶠鵧鶵鶟鶡鵇鵶鴷鼾 |
| F0 | 鴰鮠豁覷豥鼧鼢鼥鼠鴲齙齒齗鼱齠齝 |

F440 - F4FF

| | |
|---|---|
| 40 | 嘰譬玏蛾嶝峨塵廜僄㠥嬂孃孃攖撖摚旂 |
| 50 | 暻瞒曒梡槼梉櫨槼槼槼椱欋濚濱澄濲嫛 |
| 60 | 澾潲氄潔溦淪瀌澉瀉瀎燫焃燛甖羭玀璺 |
| 70 | 睷睤䐃敥睜睃曐嫛耀磾磯磮磶魯磻礉 |
| 80 | |
| 90 | |
| A0 | 禑稤積稨韚篔甑篔籆褗柦緟繡繐繐繶 |
| B0 | 繝毷羽耟膹膴膵膰臍龍薵蟺薽韇萻葎撘 |
| C0 | 薵薵薻薻薵蟕蟺蟷蟺蟪蟪薅軄醴醴讍讍 |
| D0 | 諨譀譣警譂譌趉基踦趼趵趯鎞鍞鐷鎻鎬 |
| E0 | 遷鄩鄭醙醢醙醇醅醅鍡鉸鍂鍉鐣鍁鐣鎸 |
| F0 | 鑛鐷鍫鐯鎺鎺鐠鐸鐵錙鑛鐵鐠鎸鎺錍 |

F540 - F5FF

| | |
|---|---|
| 40 | 鐵鏷鏷鍗鑒闅閶闊蒥鑒鄑騋譜馨颢頠 |
| 50 | 頏頪韥颻韠韡韡颶馺颿駛駚騋騆騘騀騐 |
| 60 | 鼽駼顋駫鞋韃鼮鼾鶃鶿鯷鮾鯷鮾鯂鯷鯂 |
| 70 | 鯷鮱鯷鱈鯭鮰鯷鰉鮗鯷鯁鱸鴲鵊鵘鵑鵒鵒 |
| 80 | |
| 90 | |
| A0 | 鼆鳥鮺鴹鴳鳸鳹鴶鳹鯷鳹鮐鷇鷂鷄䴑鴰 |
| B0 | 鶎鶡鶿鶢鶿鶿鯷鮾鮿鮍魜鴲㓥龠齙齙鮑鷻 |
| C0 | 雔鱀蜊觬嚹髻嘘嬁嫁嬅嶧嶏嶐廗醫撩槼橃 |
| D0 | 檖橾檖澧澒溗濚瀄墨瀐燌澍壌甖甖瓘籤穦 |
| E0 | 曗磟斖磂皱畬楄繏纇繏繵繏朵罍罍攖楘 |
| F0 | 羸襄薵薵蓆蓆葌䓇蓫蓫鰻嫛奠塍蟐蟝蟃 |

F640 - F6FF

| | |
|---|---|
| 40 | 蟐蟐壌甖鐷鎸劏嶧楄襆曪甖甖鐷諄譃諥 |
| 50 | 諨警賭晶趭踊踝踔躨躘孯鄑鄑醯鎸鑛 |
| 60 | 鑛鎞鍊鎬鎵鍽鎧鎛錍鎽鍵閤閡闟觳瀧 |
| 70 | 軄韃顲颭颩颷餶餲鯷韁駼騔聹騱騠㢪驚薙 |
| 80 | |
| 90 | |
| A0 | 膷膨覷駇愛鮗膠鼊鯂鯷鯷鮫鮃鰣鰯鯂 |
| B0 | 鯷鰡鳶鴹鮾鴻毆鶠鴹鴻鴻鴻騃鴹鶴鶡鶡 |
| C0 | 鶴鶹鴞鶿鷃鷇鷄鷲䲈鷺鷇懸黔黲髻 |
| D0 | 黉髓髽龖鯤黕鱼㘝咟嚹喫樊甖嫁婁嶐㡵 |
| E0 | 攃攃攃攓橾檔橾甇灡灡灕潧爅燂犅屦 |
| F0 | 璜璾瑃璑壌暔礃龠檖糯甖撑繏鎹甖 |

F740 - F7FF

| | |
|---|---|
| 40 | 羅嫛爐罏醾瞜壚蕛曤斄薵蕛甖蟐蟺壚 |
| 50 | 鼊鼊襆覷觀樂鄑韠讀譖諸鄑嚶踿瞔遷 |
| 60 | 膖膹踸蒦虪櫟勂餚繝纄鐷蟶錍錍鎠鏔 |
| 70 | 鐷霉軄顲顪颻颷鯷諥駉騆騟騠韡韣騺鞀 |
| 80 | |
| 90 | |
| A0 | 騢騨敓騔翳酅鼊鼮懸䭫鎙鼆鮾鱸鰄鯱 |
| B0 | 鮞鮹鮴鮲鮍鮫轜鮾鵊鴻鯷鮾鮱驚鴗鴹 |
| C0 | 鴰䳀驚鴹鯷鴻鶝鼊鴻躟鼋嬅䲧韶龠龠鮻 |
| D0 | 僽鲑畧塀鋒嫁壚蟩瓌慤懃嘊攖攃壜甖鐷 |
| E0 | 攢攣攉攟澯瀱獪獶獩曪瞠瞔鏵鐷纓纖 |
| F0 | 襆鉌襆鼊穎穎䵷墔嫛溗壚蟩䰾緘襼襼魝 |

# Appendix C:   How to make printing pattern from single side to double side (Double side mode with single side command)

The print condition is as below.
The distance between cutter and 1st platen                    17.5mm
The distance between 1st platen and 2nd platen               23.5mm

**(1) Firmware algorithm to separate the printing from single side to double side**
The following method is to separate the print buffer into two parts – one part is for front side and the other part is for back side.

a) Store printing data until paper cut

   Firmware stores print data until paper cut command.

   The print data is stored bit-pattern and information of position for each line.

b) Search last print line

   Firmware search last print line then line spacing after last pint line should be consider as space to adjust the distance between printing position and cutter.

   If there is any printing within 17.5mm (distance between 1st platen and cutter) like logo, firmware prints on front side.

c) Calculate printing separate position

   Firmware accumulate the print space from beginning to the end (searched by step b)) then calculate the separate position by following formula.

   Separate Position (SP) =

   {Total print space (TP) + 23.5mm(distance between 1st and 2nd platen) } / 2

d) Adjust the separate position not to separate the middle of print line

   Firmware adjusts separate position not to separate the printing in the middle of print line (includes character attributes such as double height), barcode, and logo.

**(2) Example of printing pattern**

a) Text printing only

The distance between cutter and 1st platen     17.5 mm
The distance between 1st platen and 2nd platen 35.0 mm

Top Margin
17.5 mm

Printing area
337.7 mm

Bottom Margin
2.8 mm

**TotalLength**
358.0 mm

Line 1
Line 2
Line 3
…
…
…
…
…
…
…
…
…
…
…
…
…
…
Line 100

Print commands
    Line 1
    Line 2
    …
    …
    …
    Line 100
    LF
    … (6 LF)
    LF
    Paper Cut

Note
Top margin is due to the line feed after last line before cut.
Line pitch is 7.52 LPI

Separate position
$(337.7 + 35)/2 /25.4 * 7.52 = 55.17$ Line
Front side
    $= 56$ line$/7.52*25.4 = 189.1$ mm
Back side
    $= 337.7 - 189 = 148.6$ mm

---
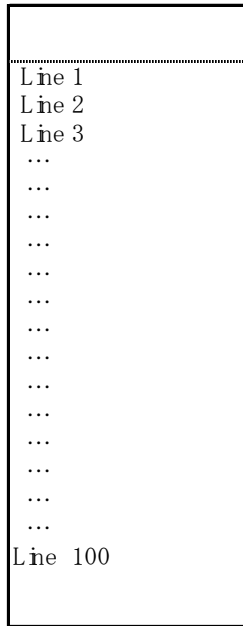
Front side

Line 1
Line 2
Line 3
…
…
…
…
…
…
…
…
…
…
Line 56
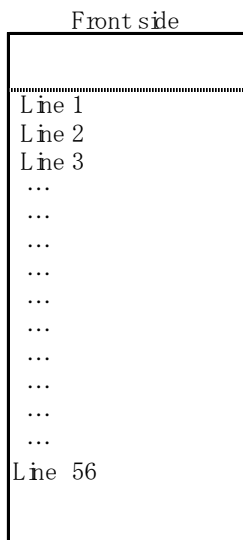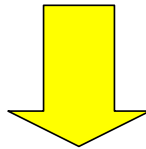
Top Margin
17.5 mm

Printing area
189.1 mm

Bottom Margin
2.8 mm

**TotalLength**
209.4 mm

Back side

Line 57
Line 58
Line 59
…
…
…
…
…
…
…
Line 100
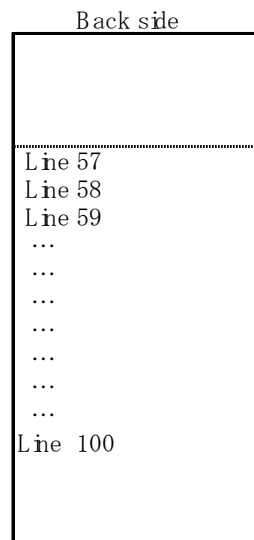
Top Margin
52.5 mm

Printing area
148.6 mm

Bottom Margin
8.4 mm

b) Text & logo printing (Logo is printed after paper cut)

The distance between cutter and 1st platen          17.5  mm
The distance between 1st platen and 2nd platen      35.0  mm

Top Margin
17.5  mm

Logo
16.0  mm

Logo

Line 1
Line 2
Line 3
…
…
…
…
…
…
…
…
…
…
…
…
…
…
Line  100

Printing Area
353.7  mm

100 lines
337.7  mm

Bottom Margin
2.8  mm

Cut position

**TotalLength**
374.0  mm

Print commands
    Logo print
    Line 1
    Line 2
    …
    …
    …
    Line 100
    LF
    …      (6 LF)
    LF
    Paper Cut

Note
Top margin is due to the line feed after last line before cut.
Line pitch is 7.52 LPI

Separate position
(353.7 + 35)/2−16) /25.4 * 7.52     52.8 Line
Front side
    =     53  line/7.52*25.4 +16=    195 mm
Back side
    = 353.7   −     195    =   158.7  mm

Front side

Top Margin
17.5  mm

logo
16.0  mm

Logo

Line 1
Line 2
Line 3
…
…
…
…
…
…
…
…
…
Line  53

Printing Area
195.0  mm

53  lines
179.0  mm

Bottom Margin
2.8  mm

**TotalLength**
215.3  mm

Back side

Top Margin
52.5  mm

Line 54
Line 55
Line 56
…
…
…
…
…
…
…
Line  100

Printing area
158.7  mm
47  lines

Bottom Margin
4.1  mm

c)  Text & logo printing (Logo is printed before paper cut.)

The distance between cutter and 1st platen  17.5  mm
The distance between 1st platen and 2nd platen 35.0  mm

Logo (prev. print)

Line 1
Line 2
Line 3
…
…
…
…
…
…
…
…
…
…
…
…
…
…
…
…
Line  100

Cut position ►

Logo

Top Margin
 17.5  mm

Printing area
 337.7  mm

Bottom Margin
 3.4  mm

**TotalLength**
 358.6  mm

Print commands
  Line 1
  Line 2
  …
  …
  …
  Line 100
  LF
  Print Logo
  Paper Cut

Note
Top margin is due to the line feed after last line before cut.
Line pitch is 7.52 LPI

Separate position
$(337.7 + 35)/2 / 25.4 * 7.52 = 55.17$ Line
Front side
 =  56  line/7.52*25.4 = 189.1 mm
Back side
 = 337.7  −  189  = 148.6 mm

Front side

Logo (prev. print)

Line 1
Line 2
Line 3
…
…
…
…
…
…
…
…
…
Line  56

Cut position ►

Logo

Top Margin
 17.5  mm

Printing area
 189.1  mm
  56  lines

Bottom Margin
 3.4  mm

**TotalLength**
 210.0  mm

Back side

Line 57
Line 58
Line 59
…
…
…
…
…
…
…
…
Line  100

Cut position ►

Top Margin
 52.5  mm

Printing area
 148.6  mm
  44  lines

Bottom Margin
 9.0  mm

Top Margin
 52.5  mm

**(3)  Limitation**

a)  Grouped lines
   If several lines are grouped as below, for Double Side Mode with Single Side Command, firmware may
   separate these lines and print them on two sides.

```
…
…
…
Oranges          3.00
  Normal    4.00
…
…
```
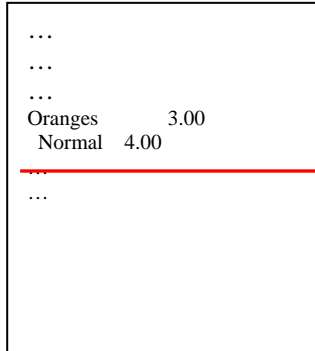
FW may separate into two pages
at here.

b)  Rotated Mode
   Firmware may separate these words and print them on two sides.

Rotated Printing.
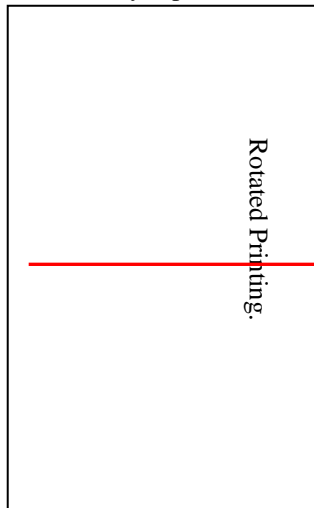
FW may separate into two pages
at here.

c)  Bitimage printing
   Firmware may separate the graphic print used by bitimage command (ESC * and ESC Y) onto two pages.

Bitimage line1

Bitimage line2

Bitimage line3

Bitimage line4

Bitimage line5

FW may separate into two pages
at here.

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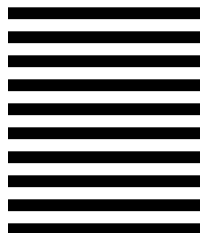Name: _____

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