

IBM 4685-L0D Scanner

GA18-7746-00

Setup, Operation, and Service Guide

IBM

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GA18-7746-00

Setup, Operation, and Service Guide

Electromagnetic Compatibility Regulations

CISPR-22 Class A Warning statement

Warning

This is a Class A product. In a domestic environment this product may cause radio interference, in which case the user may be required to take adequate measures.

情報処理装置等電波障害自主規制協議会 (VCCI) 表示

電波障害自主規制 届出装置の記述

注意:

この装置は、情報処理装置等電波障害自主規制協議会 (VCCI) の基準に基づくクラス A 情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

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The Edge
PSC

PSC Scanning Inc.
PSC Scanning Inc.

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Changes are made occasionally to the information herein; any such changes will be reported in subsequent revisions or Technical Newsletters.

Safety instructions

This manual presents instructions for the correct and safe use of the IBM 4685-L0D Scanner.

Symbols

To inform you of dangers that may arise if the scanner is misused, the following safety symbols are used in this manual and on the scanner.

 Danger	Incorrect use of the product, ignoring this symbol, may result in death or serious injury.
 Caution	Incorrect use of the product, ignoring this symbol, may result in injury or damage to property.

These symbols are printed in black on yellow labels, which are affixed to the scanner.

Wherever you see these symbols, be sure to follow the instructions that accompany them.

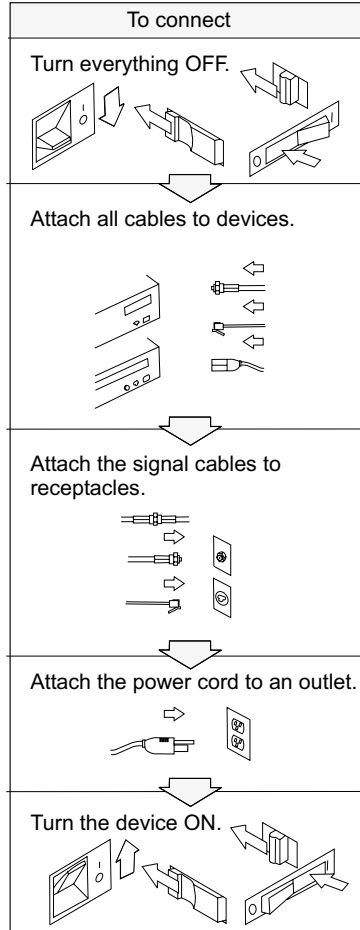


Danger

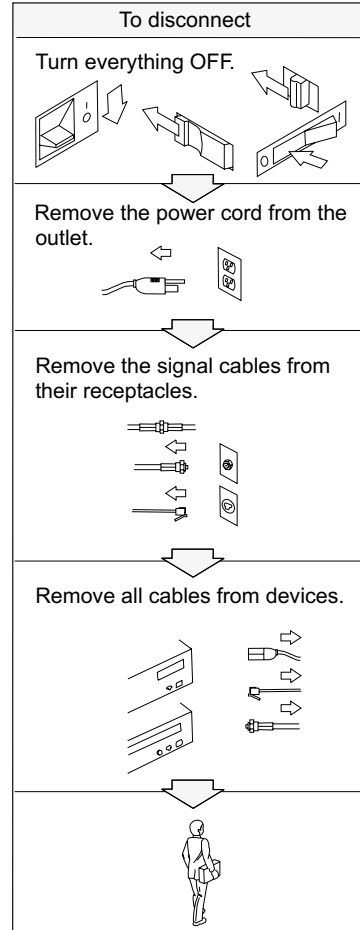
- Do not modify the unit; to do so may cause fire or electric shock.
- Do not allow water on the switches or other control parts. Moisture may cause these parts to fail or may result in danger from electric shock.
- During an electrical storm, do not operate the unit, or connect or disconnect the cables.
- Do not continue to use the unit when it is generating heat or smoke or there is an irregular smell; to do so may cause fire or electric shock. Pull the terminal power plug out of the power outlet, and contact your dealer or maintenance service company.
- If any foreign material, such as metal, water, or liquid gets into the unit, pull the terminal power plug out of the power outlet, and contact your dealer or maintenance service company.

- Connecting and disconnecting the cable

Electric current from the power cords, telephone lines, and communication cables may cause physical harm. When installing or moving the unit, opening the cover of the unit, or connecting or disconnecting the unit, follow the procedure on this page for connecting or disconnecting the cable.



During an electrical storm, do not connect the cable.



During an electrical storm, do not disconnect the cable.



Caution

This product complies with the requirements of IEC 60825-1 Class 1, CDRH Class IIa, and AS/NZS 2211.1:1997 Class 1 laser products.

Note the following when operating the unit:

- Do not look into the front window. The laser beam is emitted through the front window, and it may injure your eyes.

- Do not direct the laser beam toward anyone's eyes.



The laser beam can injure eyes.

- Do not disassemble the unit.





The laser beam is emitted even when the unit is disassembled. This unit does not require any maintenance work inside.

안전하고 올바르게 사용하기 위해서는

본 취급 설명서에는 본 제품을 안전하게 사용하기 위한 안전 표시가 게재되어 있습니다. 본 취급 설명서를 보관하여 필요에 따라 참조하여 주십시오.

경고 표시에 관하여

본 취급 설명서 및 제품에 대한 안전 표시에 대해서는 제품을 바르게 사용하여 사용자 또는 타인에 대한 위해(危害) 및 재산피해를 미연에 방지하기 위한 것으로 다음과 같은 경고 표시로 나타내고 있습니다. 그 표시와 의미는 다음과 같습니다.

	위험	본 표시를 무시하여 잘못 취급하시면 사람이 사망 또는 심한 부상을 입을 우려가 있는 위험이 내재하고 있다는 내용을 표시하고 있습니다.
	주의	본 표시를 무시하여 잘못 취급하시면 상해(傷害)를 입을 우려가 예상되는 내용 또는 물적 손해 발생이 예상되는 내용을 나타내고 있습니다.

위험/주의 라벨 표시에 관하여

본 제품의 외부 또는 내부에 황색 바탕에 검은 문자로 표시되어 있는 라벨이 있을 경우에는 안전상의 관한 위험 또는 주의 라벨입니다. 반드시 그 지시에 따라 주십시오.

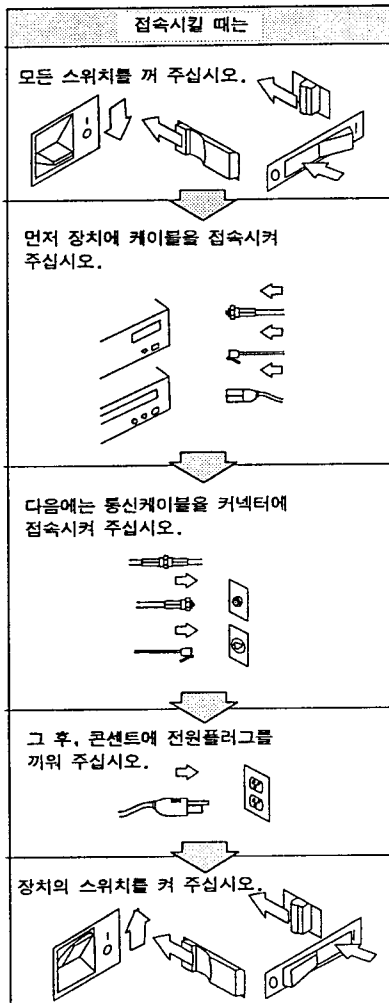
본 취급 설명서에 기술되어 있는 내용 이외의 위험 또는 주의 라벨 표시가 있을 경우에는 (이른다면 제품상에) 반드시 이러한 라벨 표시의 지시에 따라 주십시오.



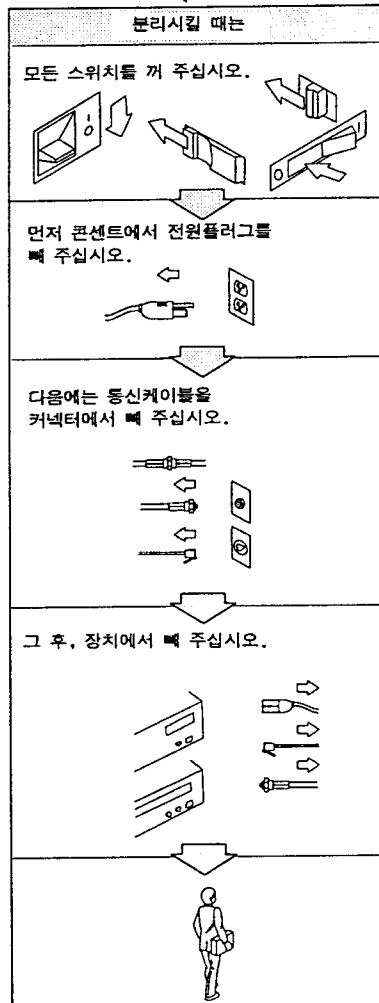
위험

- 본 기기를 개조하지 마십시오. 화재 또는 감전할 우려가 있습니다.
- 스위치 또는 기타 제어부분이 젖지 않도록 하여 주십시오. 습기가 있으면 이들 제품은 고장이 나거나 전기로 인한 위험을 초래할 우려가 있습니다.
- 부근에서 천둥이 발생할 때는 장치의 조작 또는 케이블을 빼거나 꽂지 마십시오.
- 만일 열기를 발하거나 연기 또는 이상한 냄새가 날 때, 그대로 사용을 계속하면 화재 또는 감전할 우려가 있습니다. 즉시 단말장치의 전원플러그를 콘센트에서 빼고 판매점 또는 서비스 회사로 연락하여 주십시오.
- 만일 이물질 (금속파편, 물, 액체) 이 기기의 내부에 들어갔을 때는 즉시 단말장치의 전원 플러그를 콘센트에서 빼고 판매점 또는 서비스 회사로 연락하여 주십시오.

- 케이블류의 설치와 분리 순서
전원코드, 전화케이블, 통신케이블에서의 전류는 신체에 위험할 경우가 있습니다. 설치, 이동 또는 제품의 커버를 열거나 장치를 접속시킬 때는 아래와 같이 케이블을 접속 또는 분리시켜 주십시오.



천둥이 발생할 때는 케이블을 접속시키지 마십시오.



천둥이 발생할 때는 케이블을 분리시키지 마십시오.



주의

본 제품은 IEC 60825-1 Class1, CDRH Class II a 및 AS/NZS 2211.1:1997 Class1 레이저 제품에 준거한 제품입니다.

사용하실 때는 다음과 같은 사항에 주의하여 주십시오.

- 정면의 창속을 들여다 보지 마십시오. 정면의 창속에서 레이저 광선이 방사합니다. 눈에 손상을 입을 우려가 있습니다.
- 사람의 눈을 향해 레이저 광선을 방사하지 마십시오. 눈에 손상을 입을 우려가 있습니다.



- 분해 등, 기기를 분리하지 마십시오. 분해시에도 레이저 광선이 방사합니다. 본 제품은 내부보수가 필요없도록 설계되어 있습니다.





为了安全而正确地使用本产品

为了安全而正确地使用本产品，在本说明书中叙述了带标志的各种安全注意事项，务请妥善保管本说明书，根据需要随时参考其内容。

关于图案标志

本说明书和本产品的安全注意事项，为了确保产品的正确使用，以防止其对用户和其他人员造成人身事故和财产损失，采用下列的图案标志。这些图案标志具有如下含义：

	危险	此标志表示若忽视所述安全注意而进行错误操作则可能导致死亡或受到重伤的人身事故的危險。
	注意	此标志表示若忽视所述安全注意而进行错误操作则可能导致受伤或财产损失的事实的危險。

关于危险/注意标签

本产品的外部 and 内部贴有黄色底、黑色文字的标签，则属于为确保安全而必须遵守的危险和注意标签，一定要按照其指示进行操作。

除本说明书中叙述的注意事项外另有危险或注意标签时（如在产品上），一定要按照标签的指示进行操作。

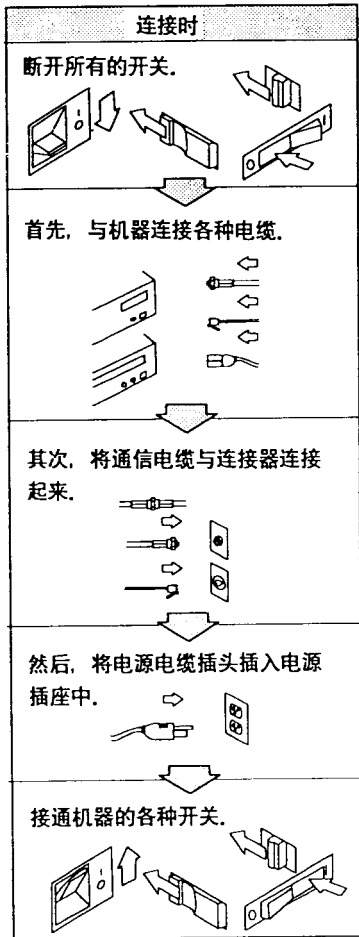


危险

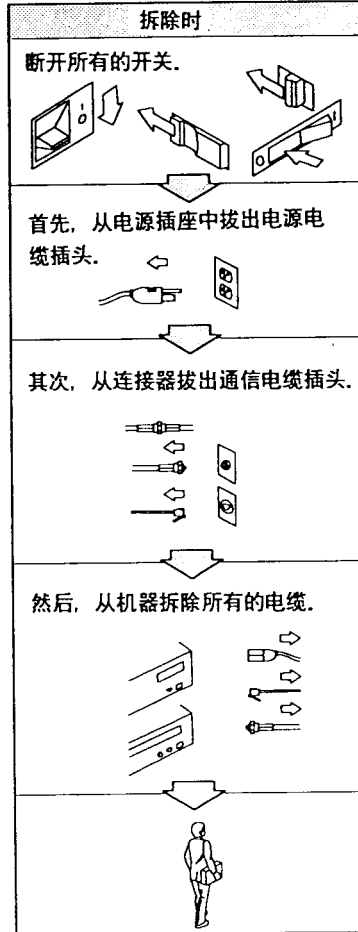
- 不得改动本机器。否则，有可能发生火灾或触电的危险。
- 不得使开关及其他控制部件潮湿。若这些控制部件受潮则有可能引起失效或漏电事故。
- 在附近打雷时，切勿操作机器，也不要连接或拆除电缆。
- 万一发生机器升温、冒烟、发出异臭等异常状态时，不得继续使用。否则，会导致火灾或触电事故。必须立刻从电源插座拔出终端机器的电源电缆插头，与经销商或维护检修公司取得联系。
- 万一异物（金属片、水、液体等）进入机器内部时，一定要立刻从电源插座拔出终端机器的电源电缆插头，与经销商或维护检修公司取得联系。

· 各种电缆的安装及拆除顺序

电源电缆、电话电缆、通信电缆中的电流有可能引起对人体的伤害。因此，对机器进行安装、移动、打开机器顶盖、连接机器等作业时，务请按照如下顺序进行各种电缆的安装和拆除。



当正在打雷时，不得进行电缆连接。



当正在打雷时，不得进行电缆拆除。



注意

本产品符合于IEC 60825-1 标准第 I 级、CDRH标准第 IIa 级以及 AS/NZS 2211.1 1997 标准第 I 级激光产品的规定。

使用本产品时，务请注意下列各点。

· 不得从正面窗孔往里望。本产品从正面窗孔射出激光束，造成伤害眼睛的危险。

· 不得朝别人的眼睛射出激光束，造成伤害眼睛的危险。



· 不得进行解体等拆卸机器的作业。拆卸机器时也会射出激光束。本产品采用了无需维护内部零部件的设计方式。





為了安全而正確地使用本製品

為了安全而正確地使用本製品，在本說明書中敘述了帶記號的各種安全注意事項。務請妥善保管本說明書，按照需要隨時參考其內容。

關於繪畫記號

本說明書和本製品的安全注意事項，為了確保製品的正確使用，以防止其對用戶及他人造成人身事故和財產損失，採用下列的繪畫記號。這些繪畫記號具有如下含義：

 危險	此記號表示若忽視所述安全注意而進行錯誤操作則可能導致死亡或受到重傷的人身事故的危險。
 注意	此記號表示若忽視所述安全注意而進行錯誤操作則可能導致受傷或財產損失的事體的危險。

關於危險/注意標籤

本製品的外部 and 內部貼有黃色底、黑色文字的標籤，則屬於為確保安全而必須遵守的危險和注意標籤，一定要根據其指示進行操作。

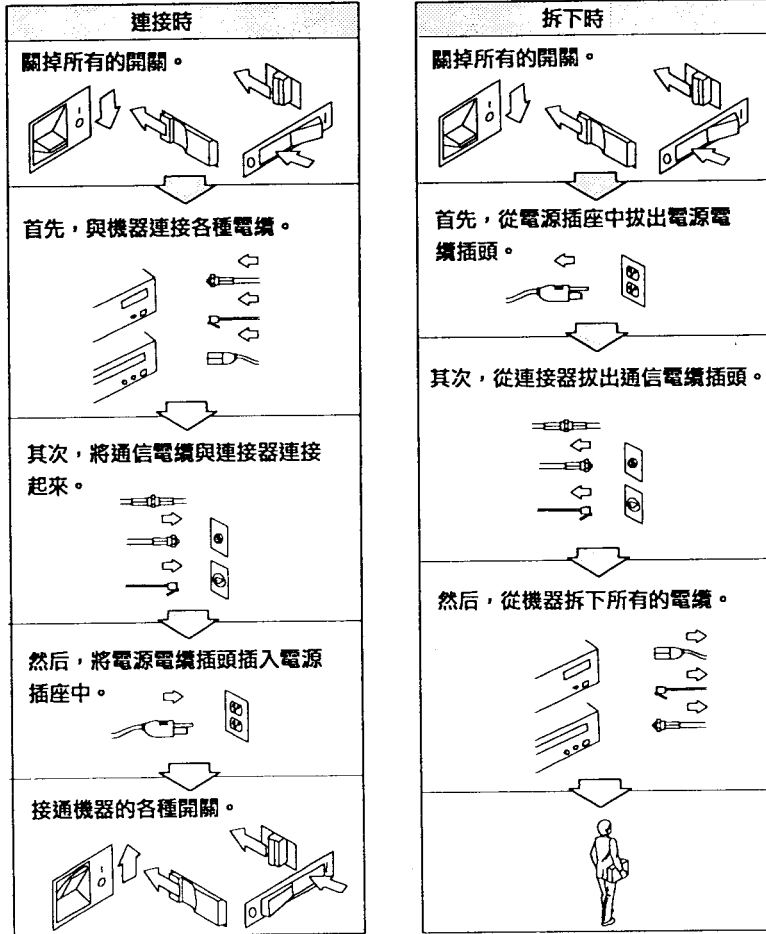
除本說明書中敘述的注意事項外另有危險或注意標籤時（如在製品上），一定要根據標籤指示進行操作。



- 不得改造本機器。否則，有可能發生火災或觸電的危險。
- 不得使開關及其他控制部件濡濕。若這些控制部件潤濕則有可能引起失效或漏電事故。
- 在附近雷鳴時，切勿操作機器，也不要連接或拆下電纜。
- 萬一發生機器昇溫、冒煙、發出異臭等異常狀態時，不得繼續使用。否則，會導致火災或觸電事故。必須立刻從電源插座拔出終端設備的電源電纜插頭，與經銷商或維護檢修公司聯繫。
- 萬一異物（金屬片、水、液體等）進入機器內部時，一定要立刻從電源插座拔出終端設備的電源電纜插頭，與經銷商或維護檢修公司聯繫。

· 各種電纜的安裝及拆下順序

電源電纜、電話電纜、通信電纜中的電流有可能引起對人體的傷害。因此，對機器進行安裝、移動、打開機器頂蓋、連接機器等作業時，務請按照如下順序進行各種電纜的安裝和拆下。



當正在雷鳴時，不得連接電纜。

當正在雷鳴時，不得拆下電纜。

注意

本製品準據於 IEC 60825-1 規格第 I 級、CDRH規格第 IIa 級以及 AS/NZS 2211.1 1997 規格第 I 級雷射製品的規定。

使用本製品時，務請注意下列各點。

· 不得從正面窗孔往裡望。本製品從正面窗孔射出雷射光，造成傷害眼睛的危險。

· 不得朝他人的眼睛射出雷射光，造成傷害眼睛的危險。



· 不得進行解體等拆卸機器的作業。拆卸機器時也會射出雷射光。本製品採用了無需維護內部零部件的設計方式。



本製品のレーザー光に対する安全基準

IBM 4685-L0D スキャナーは、米国 DHHS/CDRH21CFR 基準サブチャプター J のクラス IIa レーザー製品の要件に適合しています。また、IEC 60825:1998 の要件に適合するクラス I のレーザー製品です。

クラス IIa およびクラス I の製品は危険とみなされません。IBM 4685-L0D スキャナーには、可視レーザー・ダイオード (VLD) が内蔵されています。このレーザー・ダイオードは 650 ナノメートルの波長でレーザー光を発生します。スキャナーは、通常の操作、捜査員による保守、または規定された保守作業の間、身体に有害なレーザー光線にさらされることのないように設計されています。

Preface

This manual provides the information required for the user to install, test, and operate the IBM 4685-L0D scanner.

- Chapter 1 briefly introduces the product and presents its specifications and other general information.
- Chapter 2 presents directions for installing the scanner.
- Chapter 3 presents information about the features and other operating characteristics that the user can set, with instructions for setting them.
- Chapter 4 gives the specifications for the RS-232 scanner interface.
- Chapter 5 presents instructions for operating the scanner, and test procedures for identifying problems.
- Chapter 6 presents information on maintenance.
- The Appendix contains a safety checklist and information on grounding the scanner.

Related publications

See Web site: <http://www2.clearlake.ibm.com/store/support/html/pubs.html>

- *IBM 4690 Store System: Messages Guide*, SC30-3598
- *IBM 4690 Store System: Planning, Installation, and Configuration Guide*, GC30-3600
- *IBM 4694 Point of Sale Terminals: Installation and Operation Guide*, SA27-4005
- *IBM 4695 Point of Sale Terminals: Installation and Operation Guide*, GA27-4031
- *IBM 4674-001/DS1 POS Terminals: Installation and Operation Guide*, GA88-3239-1 (Japan only)
- *Problem Determination Guide*, SY27-0330
- *Programming Kit (PSC** Manual)*
- *IBM SurePOS 700 Series Hardware Service Manual*, GY27-0363
- *IBM SurePOS 700 Series System Reference*, SA27-4224
- *SurePOS 700 Series Point-of-Sale Terminals Installation and Operation Guide*, GA27-4223
- *IBM 4614 SureOne Point-of-Sale Terminals: Quick Reference*, GA27-4135
- *IBM 4614 SureOne Point-of-Sale Terminals: Technical Reference Information*

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Chapter 1. Description, specifications, and dimensions

This chapter presents a general description of the IBM 4685-L0D Scanner (hereafter called the 4685-L0D scanner), along with its specifications and other background information.

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- Product overview 1-2
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Description of the scanner

The 4685-L0D scanner delivers high performance, either as a small, fixed scanner or as a targeted handheld scanner. Its innovative design maximizes productivity and minimizes operator stress, strain, and fatigue.

The 4685-L0D scanner's compact size uses very little counter space. The scanner is designed for durability, long life, and low maintenance. With three scanning options—fixed, portable, and handheld—the scanner is versatile and flexible. You can bring small items to it, or take it to large bulky items.

Visible laser diode (VLD) technology, coupled with improved decoding software, contribute to a high percentage of first-pass reading and thus to operator efficiency. Many labels that were difficult to read with earlier scanners, such as those printed too heavily or too lightly, can now be read on the first pass. The Edge** software increase the ability to read truncated or torn bar codes.

The VLD technology uses little power and generates little heat, and thus contributes to the durability of the scanner. The sleep mode which turns off the scanner when it is not in use, contributes further.

Product overview

The 4685-L0D scanner is designed primarily for presentation and sweep scanning from a fixed position (Figure 1-1). It can also be removed from the stand for use as a portable multi-line scanner (Figure 1-2) or a single-line handheld scanner (Figure 1-3). Use the 4685-L0D scanner's front scan window for presentation and sweep scanning, and the rear scan window for targeted handheld scanning.

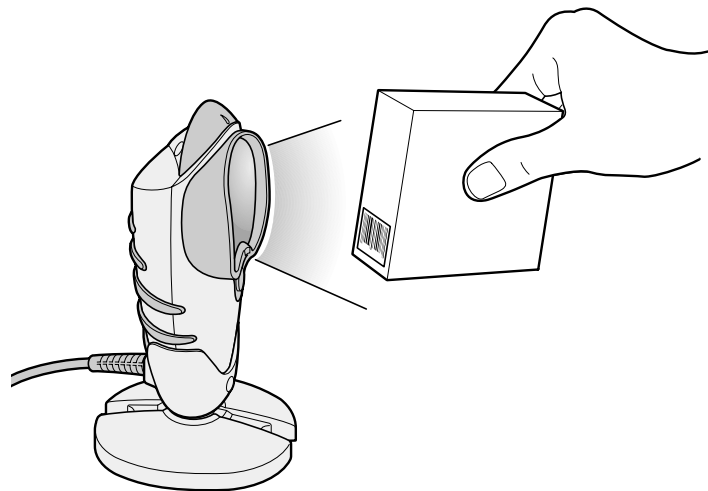


Figure 1-1. Fixed

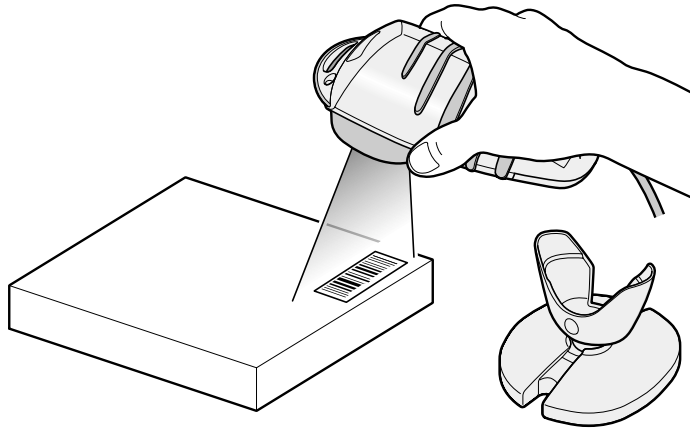


Figure 1-2. Portable scanner

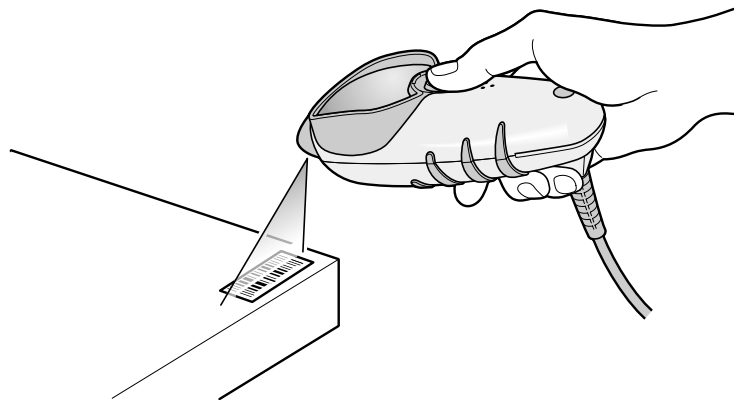


Figure 1-3. Targeted handheld scanner

The scanner should be connected to your POS terminal, with the POS interface cable supplied with the scanner. The cable should be connected to one of the following ports:

- M/T 4694 POS terminal directly: Port 9/E or 9
- M/T 4614 POS terminal: Port C or D
- SurePOS 700 Series (F/C 9540): Port USB
- M/T 4674 POS terminal: Port scanner connector

A POS terminal that has a USB or RS-485 interface recognizes the 4685-L0D scanner as a handheld scanner.

Controls and indicators

This section describes the controls, indicators, and connectors for the 4685-L0D scanner, as follows:

- Trigger switch
- LED
- Speaker
- Interface cable connector

Figure 1-4 and Figure 1-5 show the features, controls, indicators, and connectors of the 4685-L0D scanner.

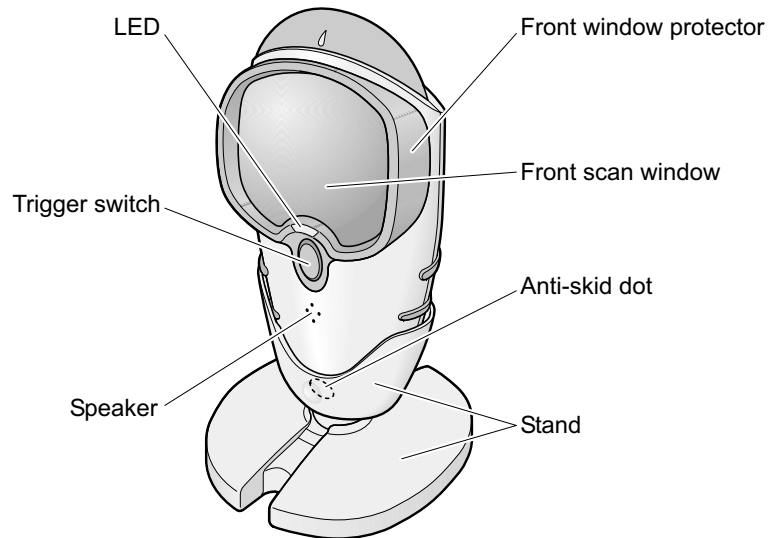


Figure 1-4. Front view

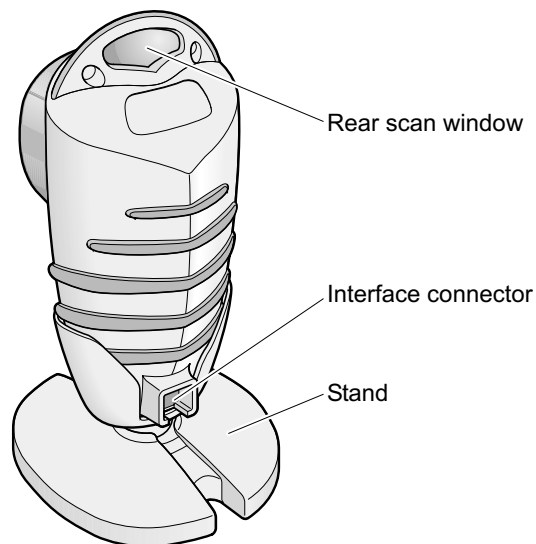


Figure 1-5. Rear view

Dimensions

Scanner

Height	178mm (203mm with stand)
Width	83mm
Depth	66mm
Weight	260g

Stand

Diameter	120mm
Height	65mm
Weight	300g

The POS interface cable that connects the 4685-L0D scanner to the POS terminal is a 2.4-meter curl cable. (The maximum length is 3.5 meters.)

Agency approval

The 4685-L0D scanner complies with the following laser requirements:

- IEC 60825-1 Class 1
- CISPR22 Class A
- United States Laser Safety, CDRH Class IIa

User maintenance

The maintenance work that the user can perform on the 4685-L0D scanner is limited to the following:

- Cleaning the scan windows, using a soft lint-free cloth with glass cleaner, at regular intervals

Scanner codes supported

The 4685-L0D scanner supports the following bar codes:

- EAN/JAN-8/13
- UPC-A
- UPC-E
- CODE 39
- Interleaved 2 of 5
- CODE 128
- UPC/EAN with 2 or 5 supplements
- CODABAR
- EAN/JAN 13 Two-labels

Scan method

Rotating polygon

Scan characteristics

- Number of scan lines: 19 lines from the front of the scanner
Number of scan lines: 1 line from the back of the scanner
- Scan rate 1500/second
- Read depth (on the level surface) 0–228 mm

Depth of field

- 1.27 mm (0.5 mil) label 25.4–63.5 mm
- 1.905 mm (7.5 mil) label 0–152.4 mm
- 2.54 mm (10 mil) label 0–177.8 mm
- 3.302 mm (13 mil) label 0–228.6 mm

Resolution (minimum)

0.13 mm (5 mil) minimum

Label orientation

- Pitch and skew Front window: $\pm 80^\circ$
Back window: $\pm 45^\circ$
- Roll Front window: 0–360°
Back window: $\pm 38^\circ$

Minimum reading constant

50% MRD and above

Operating system

To operate the 4685-L0D scanner, one of the following operating systems or drivers is required:

RS-485 model

- IBM 4690 OS, Level 9830 or later
- POSS/2 V1.61 or later
- POSS/WIN V1.41 or later

Note

When you use the 4690 OS, confirm that the store control unit is in “**1.Scanner**” usable state. If it is not, reconfigure the POS terminal and activate the component data.

USB model

- IBM 4690 OS, V2 release 3 or later
- POSS/WIN V2.1.1 or later

Electrical requirements

Operating voltage: DC 12V $\pm 10\%$

Power consumption: 3W MAX

Environment

Operating temperature and humidity

Operating temperature: 10°C to 40°C (50° to 70°F) (no dew allowed)

Operating humidity: 10% RH to 90% RH (no dew allowed)

Guidelines for ambient lighting

Sunlight and the red content of store lighting can affect the operation of the scanner. Therefore, lamps used for store lighting in the vicinity of the scanner should be chosen for low emissions of red light. This page describes some recommended lamp types, as well as some lamp types that should be avoided in the area of the scanner. The amount of sunlight in the vicinity of the scanner should be minimized. Although the level of red light is the primary concern, illumination in the area of the scan windows should not exceed 200 foot-candles (2100 luxes).

Lamp types

Low red emission (recommended)	High red emission (to be avoided)
A. Fluorescent lamps: 1. Daylight 2. Cool white	A. Fluorescent lamps: 1. Deluxe cool white 2. Deluxe warm white 3. Soft white 4. Pink 5. Red
B. High-intensity discharge 1. Clear mercury vapor 2. White mercury vapor	B. High-intensity discharge 1. Warm deluxe mercury vapor
	C. Incandescent 1. Tungsten

The following methods are recommended to reduce the incident light that reaches the scanner.

- Avoid directional-type light fixtures.
- Avoid light fixtures that do not have diffusers.
- Reduce lighting intensity.
- Reduce the number of lamps.
- Move the scanner or the lighting fixtures.
- Block or shield any incident light.
- Position the scanner so that natural light from windows does not hit the scan windows.
- Avoid ceilings less than 3 meters (10 feet) high.

Laser source

VLD (visible laser diode)

Impact resistance

Resistant to fall from a height of 1 m (with the cable)

Dip and dust resistance

Complies with IEC529 rating IP53

Chapter 2. Setting up the scanner

This chapter provides instructions for installing and testing the 4685-L0D scanner.

Installing the scanner	2-2
Installing the scanner stand	2-3
Using the stand-mounting clip	2-3

Installing the scanner

To install the 4685-L0D scanner, follow this procedure:

- 1** Take all the items out of the package, and make sure you have the following:
 - Manual (this installation manual)
 - 4685-L0D scanner
 - POS interface cable
 - Stand
 - Stand-mounting clip
- 2** Decide how you want to mount the scanner:
 - Free-standing
 - Fixed
- 3** Before connecting the 4685-L0D scanner to the POS terminal, make sure that the POS terminal is turned off.
- 4** Connect one end of the POS interface cable to the connector at the base of the scanner.

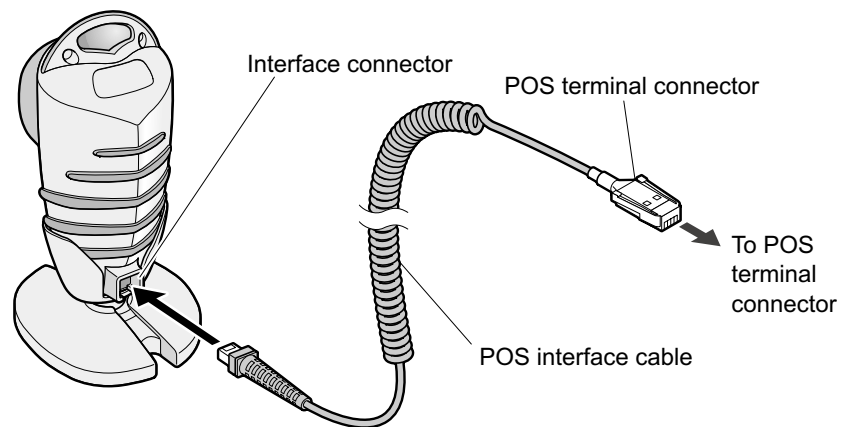


Figure 2-1. Cable connectors for the 4685-L0D scanner

- 5** Connect the other end of the POS interface cable to the correct connector on the POS terminal.

Installing the scanner stand

The scanner stand has non-skid rubber feet, and is weighted for stability. It can be placed on a countertop with no additional installation, or it can be permanently mounted on the countertop.

Free-standing: No additional installation is required.

Fixed installation: Mount the stand to the countertop, using the stand mounting clip.

Using the stand-mounting clip

To attach the scanner base to the countertop, use the mounting clip provided.

- 1** Position the stand mounting clip where you want to install the scanner.
- 2** Use the two screws to attach the mounting clip **1**. Tighten the screws until flush with the clip. Orient the stand so that the large end of its slots are aligned with the ears of the clip **2**.

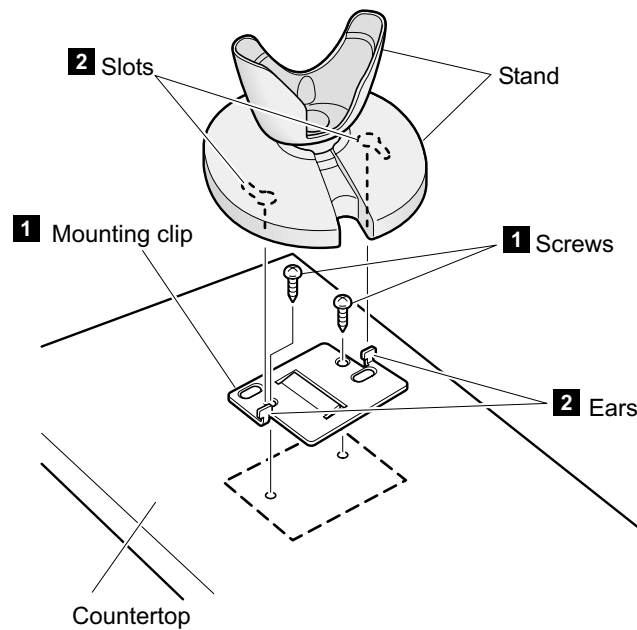


Figure 2-2. Attaching the mounting clip

- 3** Press firmly down on the base of the stand while turning it counterclockwise to seat it. Do not try to seat the stand by grasping the cradle, which is designed to swivel independently.

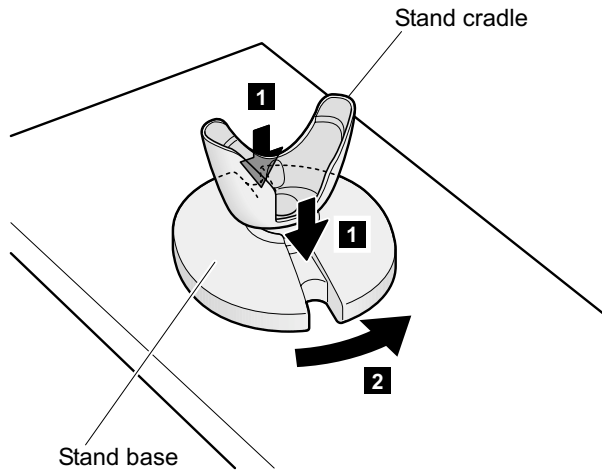


Figure 2-3. Seating the stand

- 4** To finish seating the stand, turn the base counterclockwise 15°. This completes the installation.

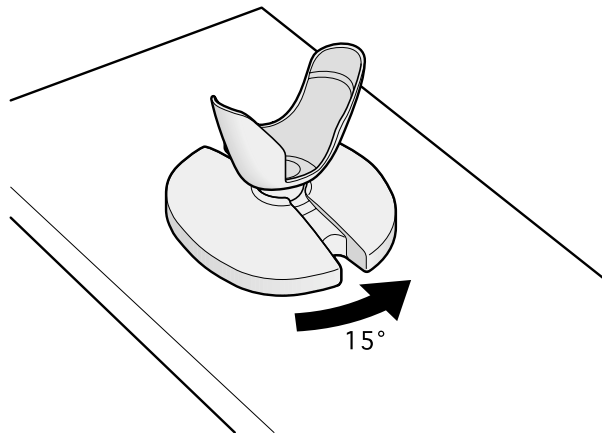


Figure 2-4. Turning the stand

Chapter 3. Configuration of the 4685-L0D Scanner

This chapter describes the features that can be configured and tells how to configure them and print configuration information for the 4685-L0D scanner.

Configurable features	3-2
Indicators for the operator	3-2
Bar code decoding	3-2
Minimum scans per read	3-2
Bar code expansion	3-3
Verifying bar codes for a price check	3-3
Reading JAN 2 labels	3-3
Sleep mode control	3-4
Printing the configurations (RS-485 model only)	3-4
Setting up the scanner program	3-5
Programmable rear scan line	3-5
Programmable speaker features	3-6
Timeouts	3-7
Laser timeout	3-7
Motor timeout	3-8

Important

Before you can verify the scanner and complete the test, the POS terminal must be correctly configured for the scanner. If it is not, configure it at this stage.

The RS-485 model and the USB model of the 4685-L0D scanner are configured by sending commands from the POS terminal. The RS-232 model is configured by reading programming bar codes. For information about the support programs, see "Operating system" on page 1-6.

Note: A POS terminal that has a USB or RS-485 interface recognizes the 4685-L0D scanner as a handheld scanner.

Configurable features

This section describes the features of the scanner and the settings available for each feature. As the scanner is shipped, each feature has a default setting, here shown underlined and in boldface type.

Indicators for the operator

- Tone (beep) heard after a correct reading of a bar code: **Enabled**, Disabled
- Tone volume: Low, Medium, **High**
- Double-read timeout: 400, 500, **600**, 800, 1000 ms

The double-read timeout is the interval between readings of the same label. The default time, 600 ms, is a good compromise between prevention of double reading and the need to scan rapidly for the sake of throughput (the number of items scanned in a minute). If you do not need high throughput, select a longer double-read time.

Bar code decoding

- Reading UPC/EAN, Code 39, Code 128, Interleaved 2 of 5: **Enabled**, Disabled
- Reading Add-on label (P2 supplemental, P5 supplemental) and EAN/JAN 2-label: Enabled, **Disabled**

Minimum scans per read

Scans per read refers to the number of laser sweeps that the scanner is to make over the bar code to achieve a correct reading. One scan is generally sufficient, and yields the highest throughput. The choices are as follows:

- UPC-A: **One**, Two, Three
- UPC-E: One, **Two**, Three

Because UPC-E codes are short, the default is set at two scans to improve the probability of correct readings.

- EAN-13: **One**, Two, Three
- EAN-8: One, **Two**, Three
- UPC In-Store Code: One, **Two**, Three
- Code 39, Code 128, and Interleaved 2 of 5: **One**, Two, Three

UPC codes beginning with 2 or 4 are In-Store code. These are often printed in the store, and if the printing is substandard, the reading rate deteriorates. The decoding algorithms for the 4685-L0D scanner can handle many of the errors commonly caused by poor printing. If you need to, you can scan each bar code two or three times.

Bar code expansion

The same numbering system is commonly used for bar codes in UPC-E, UPC-A, and EAN-13, and the scanner handles all these codes in the same way. The default value for bar code expansion is **Do not expand**.

- Expand UPC-A to EAN-13: Expand, **Do not expand**.

UPC-A is a twelve-digit subset of EAN-13. A UPC number can be handled as an EAN number if a zero is added at the beginning. The scanner can add this zero.

- Expand UPC-E to UPC-A: Expand, **Do not expand**.

UPC-E is a short form of a UPC-A number. The scanner can expand UPC-E data to the UPC-A format.

- Expand UPC-E to EAN-13: Expand, **Do not expand**.

Verifying bar codes for a price check

- Check the bar code to verify the 4-digit or 5-digit price: Verify 4 digits, Verify 5 digits, **Do not verify**.

The UPC and EAN specifications allow for a price check character to be included in the digits encoded on in-store weight items. The 4685-L0D scanner verifies the price check bar code, to compensate for the poor print quality often found on labels printed in-store.

Reading JAN 2 labels

- Read two JAN-13 labels with a single scan: Combine, **Do not combine**

Selecting Combine causes two JAN-13 labels to be combined into a pair, so that additional information can be included in the bar code. JAN-13 prefix numbers are programmable (up to six pairs). For example, when a pair is given the prefix numbers 21 and 22, the scanner reads a JAN-13 label that has the prefix number 21 only if it also reads a JAN-13 label that has the prefix number 22. If it finds both labels, it issues the “correct reading” tone and sends information from the two labels to the POS terminal.

To configure for reading two labels as a single bar code, you should make programming bar code (except the USB model). For more information, go to the following Web site:

<http://w3.apsd.yamato.ibm.com/Distribution/POSIO/indexe.htm>

Sleep mode control

To maximize the lifetime of the laser and the motor, the 4685-L0D scanner goes into sleep mode after the scanner is left inactive for a specified period of time. You can specify that time; the only requirement is that the timeout for the motor has to be longer than for the laser.

- Laser timeout: (5, 10, 15 minutes)
- Motor timeout: (5, 15, 30, 60 minutes)

Printing the configurations (RS-485 model only)

You can have the configurations of the scanner, printed by the printer of the POS terminal.

1 Turn on the POS terminal and load the initial program (IPL).

Note: For additional information, see *Problem Determination Guide* for the operating system.

2 On the keyboard of the POS terminal, press S1, enter 91, and press S2.

The message "T0010 ENTER TEST REQUEST" appears on the POS terminal display.

3 Enter 96, and press S2.

The message "PRINTING CONFIGURATION" appears on the POS terminal display, and the printer prints the scanner configuration.

4 To leave this mode, enter 99 from the keyboard of the POS terminal, and press S2.

You can print the scanner configurations by use of either the reference diskette or service diskette, depending on the type of the terminal used. To find out which diskette you should use, see the hardware service manual for the terminal, and follow the procedure for that diskette.

Setting up the scanner program

You can set up or change the configuration of the scanner by scanning the bar codes provided later in this section.

Put the scanner into programming mode by scanning the **Programming Switch** bar code. The green LED contradiction in terms, indicating that the scanner is in programming mode.

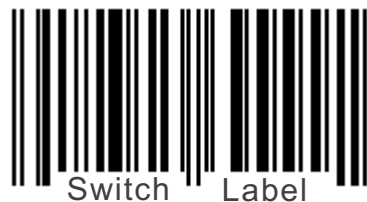
Scan the programming bar code(s) for the feature you want to change. The scanner emits three beeps to indicate that the bar code has been read and the setting has been stored in the scanner's memory. Scan the remaining programming bar codes as required.

If a bar code scanned is not valid, the scanner emits a "chirping" (rapid beeping) rejection tone.

After you have successfully scanned all the desired programming bar codes, leave programming mode by scanning the **Programming Switch** bar code again. The scanner resets; during the power-up sequence, it emits four beeps.

For more information, go to the following Web site:
<http://www.pscnet.com/pdf/R44-1740.pdf>

The green lamp shines dimly, indicating that the scanner is ready for normal operation.

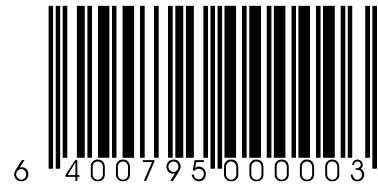


Programmable rear scan line

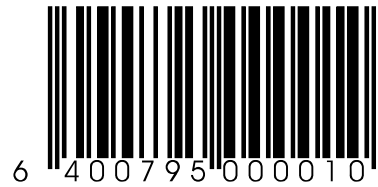
In the standard configuration of the scanner, the single rear scan line pointer is always on and ready for use. To have the pointer stay off until you push the button, scan the bar codes on page 3-6. Then, pressing the button automatically activates the scanner.

To change the settings on your scanner, use the rear scan line to scan the **Switch Label**; then scan the label for the rear laser mode you want, and scan the **Switch Label** again. The scanner resets and invokes the new mode of operation. This setting is saved.

Rear window laser always on

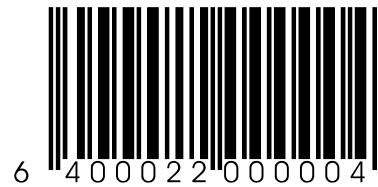


Rear window laser on when trigger is pressed

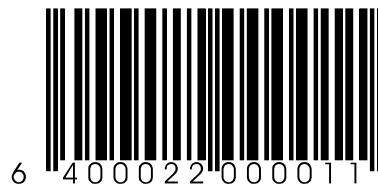


Programmable speaker features

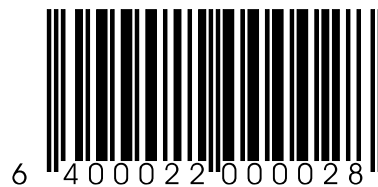
“Good read” tone length = 100 ms
Use this bar code to set the “good read” tone length to 100 milliseconds.



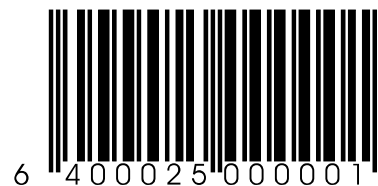
“Good read” tone length = 250 ms
Use this bar code to set the “good read” tone length to 250 milliseconds.



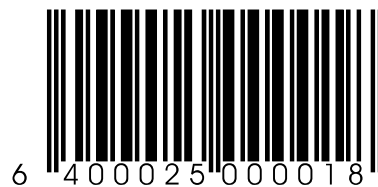
“Good read” tone length = 500 ms
Use this bar code to set the “good read” tone length to 500 milliseconds.



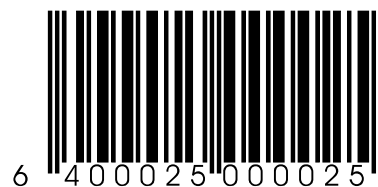
Speaker volume = low
Use this bar code to set the speaker volume to low.



Speaker volume = medium
Use this bar code to set the speaker volume to medium.

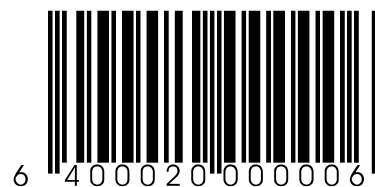


Speaker volume = high
Use this bar code to set the speaker volume to high.

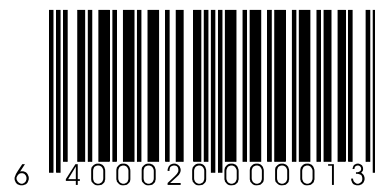


Speaker tone = low

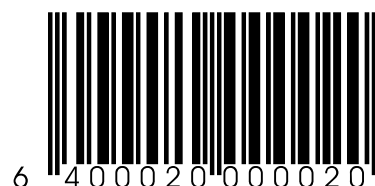
Use this bar code to set the speaker tone to low.

**Speaker tone = medium**

Use this bar code to set the speaker tone to medium.

**Speaker tone = high**

Use this bar code to set the speaker tone to high.

**Power-up tone—enable**

Use this bar code to enable the tone sounded on power-up.

**Power-up tone—disable**

Use this bar code to disable the tone sounded on power-up.



Timeouts

By using timeouts, you can have the scanner's laser and/or motor switch off if the scanner isn't used for a specified period of time. This feature is included to reduce power consumption and lengthen scanner life.

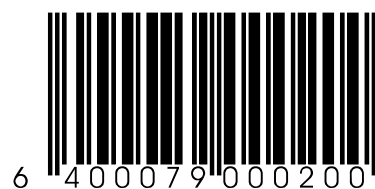
Note: Laser safety requires that the laser switch off before the motor. If you set the motor timeout shorter than the laser timeout, the laser will switch off when the motor times out.

Laser timeout

The programming bar codes for laser timeout set the time for switching the laser off if the scanner isn't used.

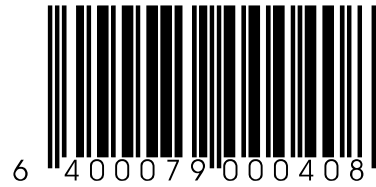
Laser timeout = 5 minutes

Use this bar code to set the laser timeout to 5 minutes.



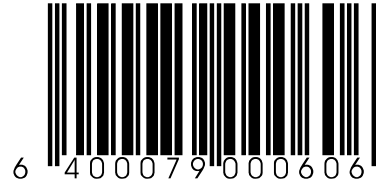
Laser timeout = 10 minutes

Use this bar code to set the laser timeout to 10 minutes.



Laser timeout = 15 minutes

Use this bar code to set the laser timeout to 15 minutes.

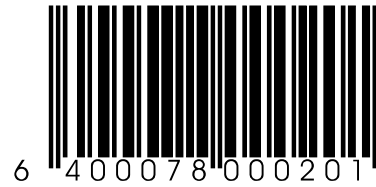


Motor timeout

The programming bar codes for motor timeout set the time for switching the motor off if the scanner isn't used. The motor will not time out before the laser times out.

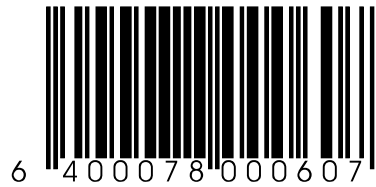
Motor timeout = 5 minutes

Use this bar code to set the motor timeout to 5 minutes.



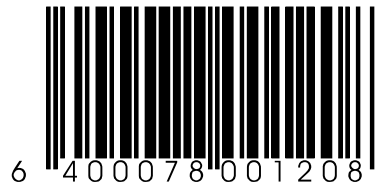
Motor timeout = 15 minutes

Use this bar code to set the motor timeout to 15 minutes.



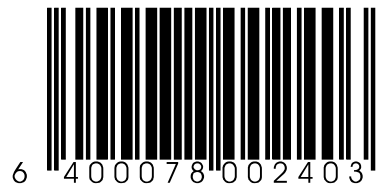
Motor timeout = 30 minutes

Use this bar code to set the motor timeout to 30 minutes.



Motor timeout = 60 minutes

Use this bar code to set the motor timeout to 60 minutes.



Chapter 4. RS-232 Scanner interface specifications

This chapter presents the specifications of the RS-232 scanner interface. This interface is used for bilateral communication between a Point-of-Sale (POS) terminal and scanner.

- Protocol 4-2
- Characteristics 4-3
 - Interface signals 4-3
 - Signaling characteristics 4-4
 - Device requirements 4-4
 - Voltage and current requirements 4-4
- Link characteristics 4-5
 - Basic operating modes 4-5
 - Free flow 4-5
- POS commands and processing requirements 4-16
 - POS commands 4-16
 - Processing requirements 4-16
 - Assignment of RS-232 cable pins 4-16

Protocol

This section describes the protocol for sending and receiving messages at the physical and data link levels.

The RS-232 scanner uses the standard full-duplex interface used on standard data terminal equipments (DTE).

The interface uses the following six signals:

- For input to a scanner:
 - Receive data (RXD)
 - Clear to send (CTS)
 - Data set ready (DSR)
- For output from a scanner:
 - Transmit data (TXD)
 - Data terminal ready (DTR)
 - Request to send (RTS)

Characteristics

This section describes the following characteristics of the RS-232 scanner interface:

- Interface signals
- Signalling characteristics
- Device requirements
- Voltage and current requirements

Interface signals

The RS-232 scanner interface handles the following interface signals:

Signal ground

A reference signal, which establishes a common reference point for all signals.

Data set ready (DSR)

A control signal, which the POS sends to the scanner to notify it that the POS terminal is connected to the communication channel and is ready for operation.

Data terminal ready (DTR)

A control signal, which the scanner sends to the POS terminal to notify it that the scanner is in the active state—that is, powered on and ready to communicate.

RXD data

A data signal, which the POS terminal generate and sends to the scanner on a dedicated circuit.

TXD data

A data signal, when the scanner generates and sends to the POS terminal on a dedicated circuit.

Request to send (RTS)

A control signal, which the scanner issues when it is sending a message or has one ready to send.

Clear to send (CTS)

A control signal, sent to the scanner to control the following:

- Transmitting data from the scanner to the POS terminal
- Operating the beeper and the lamp
- Enabling or disabling decoding of labels

Signaling characteristics

Signals can be transmitted at bit rates of 300, 1200, 2400, 4800, 9600, or 19,200 bits per second. Data is transmitted in asynchronous full-duplex serial mode. Each data element (character) is transmitted in the following order: one start bit, seven or eight data bits, one no/odd/even/mark/space parity bit, and one or two stop bits.

Start Bit	Data Bit 0	Data Bit 1	Data Bit 2	Data Bit 3	Data Bit 4	Data Bit 5	Data Bit 6	Optn Data Bit 7	Optn Parity Bit	Stop Bit
-----------	------------	------------	------------	------------	------------	------------	------------	-----------------	-----------------	----------

The start bit is logic "0," and the stop bit is logic "1."

Device requirements

Interface connection

The interface connection is specific either to the POS unit or to the scanner:

- The circuit connector at the POS terminal is specific to the POS unit.
- The pin assignments at the POS terminal are POS specific but must conform to the EIA RS-232 standards.
- The connector pin-out information is specific to each scanner.

Isolation

The interface must be isolated as follows:

- The shield (CHASSIS GROUND) and the logic ground (SIGNAL GROUND) must be separate.

The following is recommended:

- A 360-degree screen conduction

Voltage and current requirements

The voltage and current requirements must conform to the EIA RS-232 standards.

Default values

Property	Value
Bit rate	9600 bps
Data bit	8
Parity	None
Stop bit	1
Flow control	None

Link characteristics

This section describes the following link characteristics of the RS-232 scanner interface:

- Basic operating modes
- Message timing
- Error detection

Basic operating modes

The RS-232 scanner interface operates in any of the following modes:

- Free-flow operating mode
- Software-flow operating mode
- Hardware-flow operating mode
- Inter-character delay operating mode

Free flow

In the free-flow operating mode, the conditions are as follows:

- When the scanner receives the DTR signal, it establishes a connection with a POS terminal, and enters the ready state.
- The scanner decodes the labels immediately after power on.
- The scanner optionally buffers one additional label.
- The scanner sends the RTS signal, and then requests that the decoded data from the label be sent to the POS terminal.
- The scanner uses the intercharacter delay that has been configured.

Free flow with timing and flow control

In this operating mode, there is no handshake capability. The operation proceeds as follows:

- The scanner decodes a label. If you have chosen beep/lamp option 1, the scanner beeps and the lamp comes on. (For a description of the beep/lamp function, see page 4-16) The RTS signal is issued to notify the POS terminal that the scanner is ready to transmit data.
- The scanner begins transmitting data.
- As soon as the last character of the message has been transmitted, the RTS signal is resent. If you have chosen beep/lamp option 2, the scanner beeps and the lamp comes on.
- Another label is decoded, to begin a repetition of the cycle.

For the details of the free-flow operating mode, see Figure 4-1.

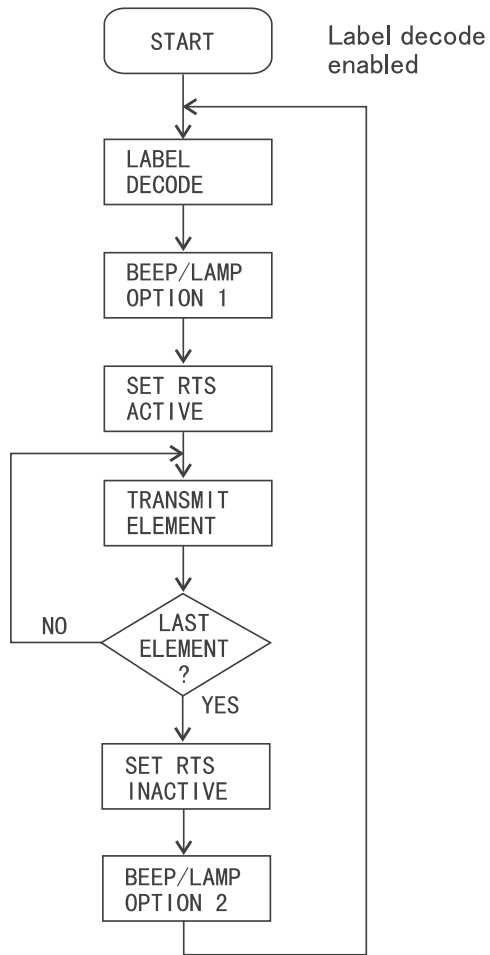


Figure 4-1. Free-flow operating mode

Software-flow operating mode

In the software-flow operating mode, the conditions are as follows:

- On receiving a DTR signal, the scanner establishes a connection with a POS terminal, and then enters the ready state.
- The scanner decodes the labels immediately after power-on.
- The scanner buffers one additional label, if desired.
- The scanner sends the RTS signal and then requests that the decoded data from the label be sent to the POS terminal.
- The POS terminal controls the transmission of the decoded data by means of the software control handshaking characters, XON/XOFF.
- The scanner uses the intercharacter delay specified in the configuration.

Software-flow operating mode with timing and flow control

The handshake timing and flow control used is XON/XOFF. The software-flow operating mode operates as follows:

- The scanner decodes a label. If you have chosen beep/lamp option 1, the scanner beeps and the lamp comes on. (For a description of the beep/lamp function, see page 4-16).
- The RTS signals to the POS terminal that data is ready for transmission.
- The scanner checks whether an XOFF flow control character has been received from the POS terminal. If one has been received, the decoded data from the label is not transmitted.
- If no XOFF has been received, the scanner begins transmitting data. If the scanner receives an XOFF character while transmitting data, the transmission is suspended; it is resumed only after the scanner receives an XON character from the POS terminal.
- After the last character of the message is transmitted, the RTS signal is resent. If you have chosen beep/lamp option 2, the scanner beeps and the lamp comes on.
- Another label is decoded, to begin a repetition of the code.

For details about the software-flow operating mode, see Figure 4-2.

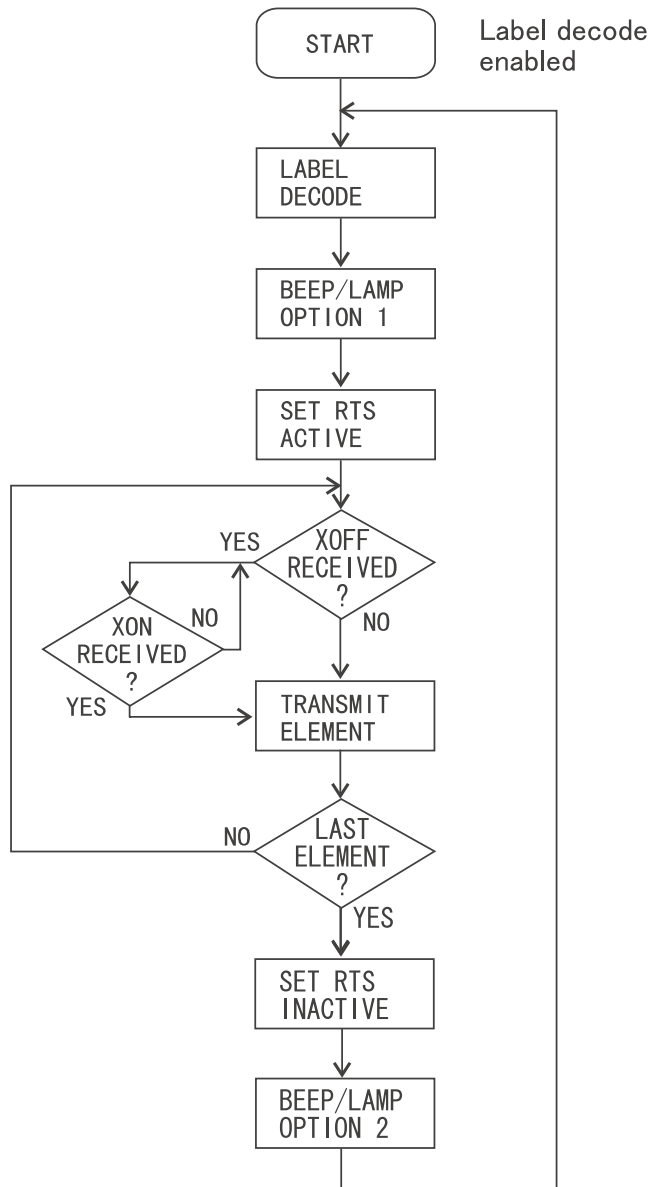


Figure 4-2. Software-flow operating mode

Hardware-flow operating mode

In the hardware-flow operating mode, the conditions are as follows:

- On receiving a DTR signal, the scanner establishes a connection with a POS terminal, and then enters the ready state.
- The scanner decodes the labels immediately after power-on.
- The scanner buffers one additional label, if desired.
- The scanner sends the RTS signal and then requests that the decoded data from the label be sent to the POS terminal.
- The POS terminal controls the transmission of the decoded data by means of the software control handshaking characters, XON/XOFF.
- The scanner applies the intercharacter delay specified in the configuration.

Hardware-flow operating mode with timing and flow control

The handshake timing and flow control used is RTS/CTS. The hardware-flow operating mode operates as follows:

- The scanner decodes a label. If you have chosen beep/lamp option 1, the scanner beeps and the lamp comes on. (For a description of that option, see page 4-16) The RTS signal is sent to the POS terminal as a notice that the decoded label data is ready for transmission.
- The scanner monitors the CTS input signal to determine whether the POS terminal is ready to receive data. If the CTS signal is active, the data decoded from the label is transmitted. If the signal is inactive no data is transmitted. If, during data transmission, the CTS signal goes from active to inactive, the data transmission is suspended. It is resumed only after the POS terminal resends the CTS input signal.
- After the last character is transmitted, the RTS signal is resent. If you have chosen beep/lamp option 2, the scanner beeps and the lamp comes on.
- Another label is decoded, to begin a repetition of the cycle.

For details of the hardware-flow operating mode, see Figure 4-3.

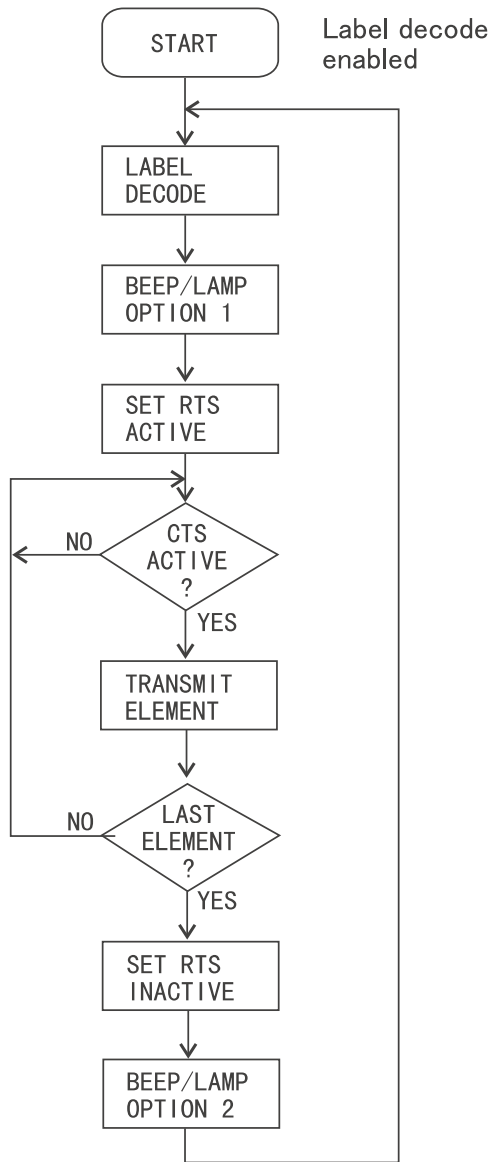


Figure 4-3. Hardware-flow operating mode

Intercharacter-delay operating mode

The intercharacter delay operating mode provides a means of communication control by delaying the transmission of label data. The scanner delays the transmission of each succeeding character by a fixed, configurable amount.

For details of the intercharacter delay operating mode, see Figure 4-4, Figure 4-5, and Figure 4-6.

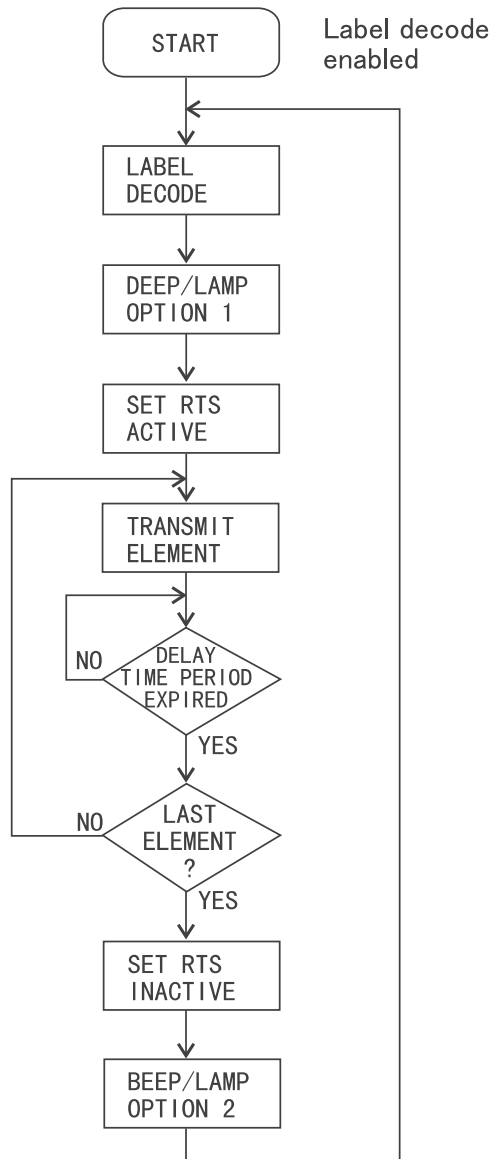


Figure 4-4. Free-flow operating mode with intercharacter delay

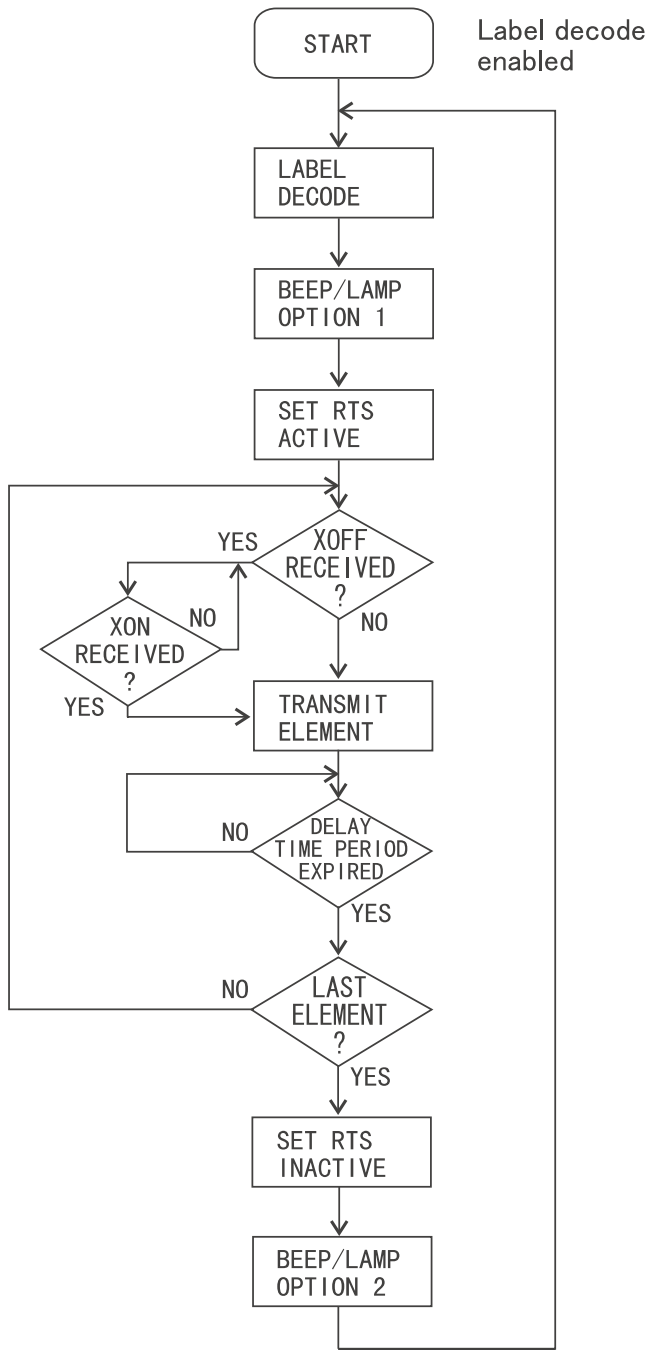


Figure 4-5. Software-flow operating mode with intercharacter delay

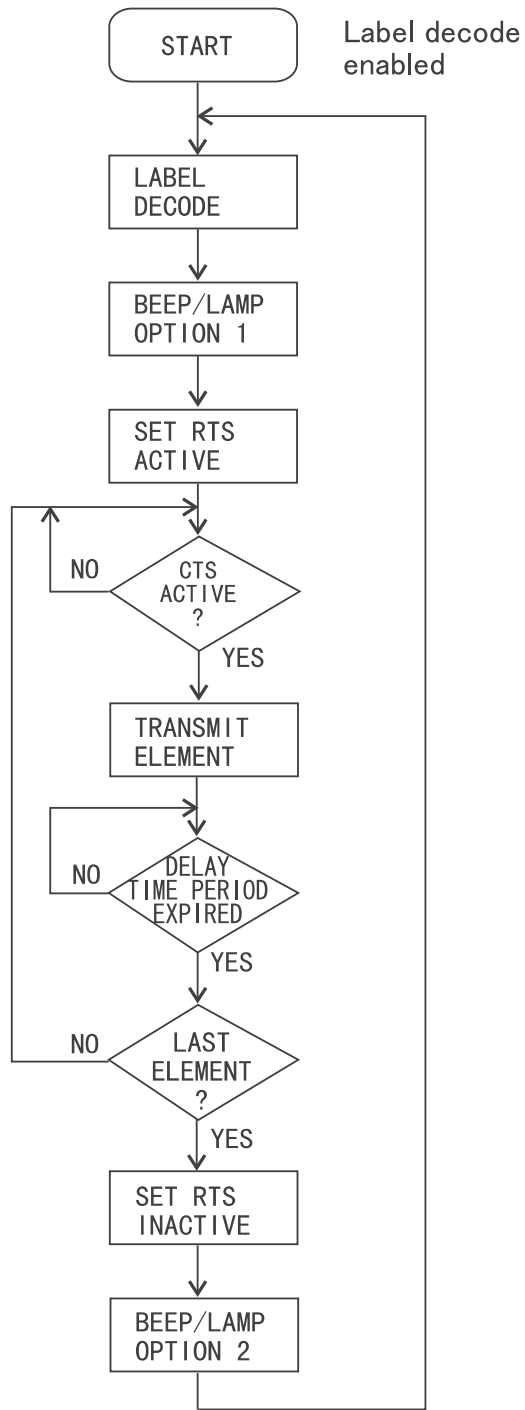


Figure 4-6. Hardware-flow operating mode with intercharacter delay

Message formats

Messages should be transmitted in standard ASCII (7 or 8 bit) characters. The message termination character should be an ASCII CR (0x0D) character. Figure 4-7 shows a typical format:

Label Type	Message format Options
UPC-E	ppiiXXXXXXciiss
UPC-E w/ P2 ADDON	ppiiXXXXXXcPPiiss
UPC-E w/ P5 ADDON	ppiiXXXXXXcPPPPPiiss
*UPC-E w/ C128 ADDON	ppiiXXXXXXcPP.....PPiiss
EAN-8	ppiiXXXXXXciiss
EAN-8 w/ P2 ADDON	ppiiXXXXXXcPPiiss
EAN-8 w/ P5 ADDON	ppiiXXXXXXcPPPPPiiss
*EAN-8 w/ C128 ADDON	ppiiXXXXXXcPP.....PPiiss
UPC-A	ppiiXXXXXXXXXXciiss
UPC-A w/ P2 ADDON	ppiiXXXXXXXXXXcPPiiss
UPC-A w/ P5 ADDON	ppiiXXXXXXXXXXcPPPPPiiss
*UPC-A w/ C128 ADDON	ppiiXXXXXXXXXXcPP.....PPiiss
EAN-13	ppiiXXXXXXXXXXciiss
EAN-13 w/ P2 ADDON	ppiiXXXXXXXXXXcPPiiss
EAN-13 w/ P5 ADDON	ppiiXXXXXXXXXXcPPPPPiiss
EAN-13 w/ C128 ADDON	ppiiXXXXXXXXXXcPP.....PPiiss
UPC-D1	ppiiDDDDDDDDDDDDDDiiss
UPC-D2	ppiiDDDDDDDDDDDDDDDDDDDDiiss
UPC-D3	ppiiDDDDDDDDDDDDDDDDDDDDDDDDDDDDiiss
UPC-D4	ppiiDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDiiss
UPC-D5	ppiiDDiiss
*CODE 3 OF 9	ppiiXXXX.....XXciiss
*CODABAR	ppiaXXXX.....XXciiss
*INTERLEAVED 2 OF 5	ppiiXXXX.....XXciiss
*CODE 93	ppiiXXXX.....XXiiss
*CODE 128	ppiiXXXX.....XXiiss
*UCC/EAN-128	ppii]CmXXXX.....XXiiss

Figure 4-7. Message formats

Variable-length messages with a maximum of 32 data characters:

- a = configurable map of codabar start characters
- b = configurable map of codabar stop characters
- c = configurable check character
- m = modifier option value determined from UCC/EAN-128 label data
- p = configurable global or universal prefix character
- i = configurable label identifier character, either a prefix or a suffix
- s = configurable global or universal suffix character
- P = addon data character
- D = digits encoded in label, including number system, flag, and check characters
- X = digits encoded in label, including number system and flag

Message timing

The RS-232 scanner interface message transmission must conform to the specifications shown in Figure 4-8.

Error detection

There is no error detection.

Interface timing

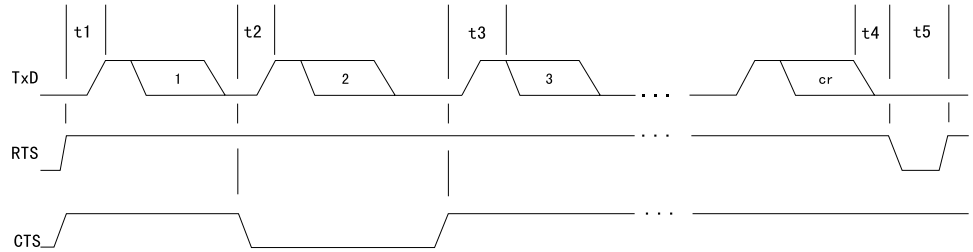


Figure 4-8. RS-232 scanner interface timing

Time	Description	Minimum	Maximum
t1	Time from RTS sending to TxD start bit (Note 1)	1 μ s	1 ms
t2	Set-up time from CTS receiving to TxD start bit (Note 2)	1 μ s	N/A
t3	Time from CTS sending to TxD start bit	1 μ s	5 ms
t4	Time from end of stop bit to RTS receiving	-10 μ s	500 ms
t5	Time from RTS receiving to RTS sending of the next message	20 μ s	N/A

Notes:

1. The **CTS** sent or not sent, according to the configuration you have chosen.
2. If the **CTS** is sent, and is received at least **t2** before the following Start Bit, only one additional character is transmitted. If the **CTS** is received before an **RTS** is sent, no characters are transmitted.
3. The minimum interval between transmitted characters is 0 ms.

POS commands and processing requirements

This section describes the following:

- POS commands
- Processing requirements
- Assignment of RS-232 cable pins

POS commands

The POS terminal can issue the following commands to the scanner:

Disable scanner

Puts the scanner in an operating mode in which the scanner does not accept label data.

Enable scanner

Puts the scanner in an operating mode in which the scanner can accept label data.

Reset scanner

Resets the scanner.

For details about the product, refer to the applicable Product Software Functional Specification.

Processing requirements

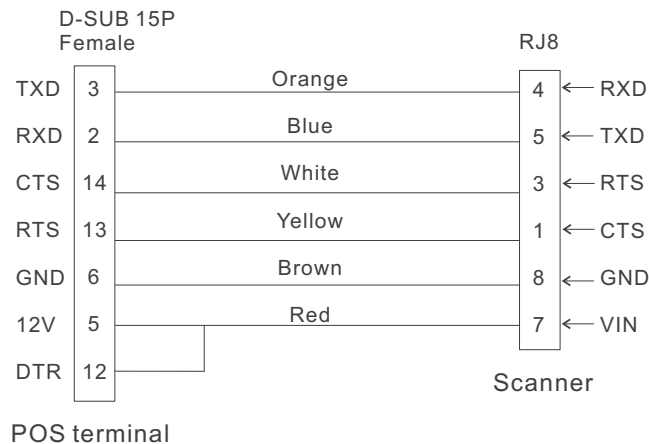
Beep and lamp responses

The following responses are product configurable:

Option 1 Beep and light key lamp after a successful decoding

Option 2 Beep and light key lamp after a data transmission

Assignment of RS-232 cable pins



Chapter 5. Operation

This chapter presents instructions for the following procedures:

- Using the 4685-L0D scanner
- Doing maintenance work

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Operating modes

The 4685-L0D scanner has the following mode.

Normal mode: The scanner is fully functional, ready to scan. The scanner status indicator, which is green, is dimly lighted.

Sleep mode: The scanner is not in operation. It goes into this mode when it has not scanned anything in the period of time you have preset. You can reactivate it by moving your hand or any other object in front of the scan window.

Beeps

Reading a bar code

Sound	Status
Four short beeps	Power has been turned on. The scanner has passed the self-test and is operating properly.
One short beep	The bar code has been read.
No sound	A data transfer error has occurred. The data last scanned has been erased. Scan the last bar code again.
Repeat beeps	The scanner failed the self-test.

Reading a parameter

Sound	Status
One short beep	The bar code has been read correctly, and the scanner is ready to read the next one.
Three beeps	A parameter has been entered.
Six rapid beeps	A wrong parameter has been entered.
One short beep, one long beep	Error conditions are occurred.

LED indicator

The LED indicator on the top of the scanner indicates scanner functions, as follows:

LED indicator	Status
Dim	The scanner is operational and ready to scan.
Illuminates for one second	The bar code has been read.
Flashes at 1 Hz with a 50% duty cycle	The scanner is in programming mode.
Flashes at 1 Hz with a 10% duty cycle	The scanner has been disabled by a command from the host.

Scanning with the 4685-L0D scanner

With two scan windows, the 4685-L0D scanner can be easily adapted to either fixed/portable or targeted handheld scanning. The front scan window, with its multiple scan pattern, is used for most retail items. The rear scan window emits a single targeted scan pattern for handheld scanning of bar codes on hard-to-read or bulky items, or to read an individual bar code among many bar codes.

Fixed-mode scanning

Fixed-mode scanning provides ease of use by reducing the need to pick up the scanner to read a bar code. A specially designed scan pattern minimizes the need for the operator to position the item for scanning.

The scanner stand can be adjusted forward and backwards as needed. For most applications, the best scanning position is straight up and down. Figure 5-1 shows the range of movement.

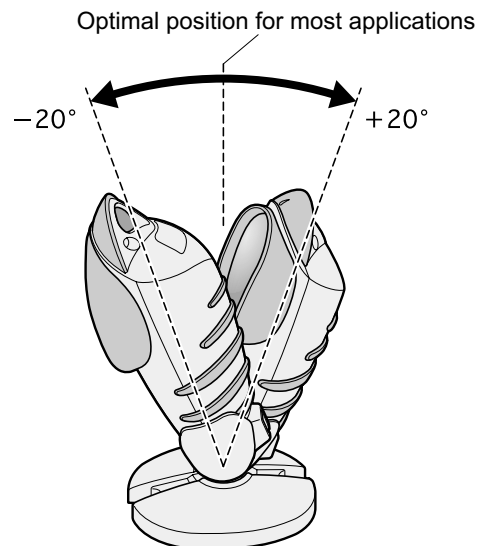


Figure 5-1. Adjustments of the scanner position

To use the scanner in fixed mode, place the scanner into the stand and make sure it is seated securely. In this mode, the scanner can read bar codes in either the sweep mode or the presentation mode.

Sweep scanning

To perform a sweep scan, move (sweep) the product, with the bar code facing the front window, laterally through the scan volume. As Figure 5-2 shows, the scan volume for fixed scanning extends about 23 cm (9 inches) in front of the scan window.

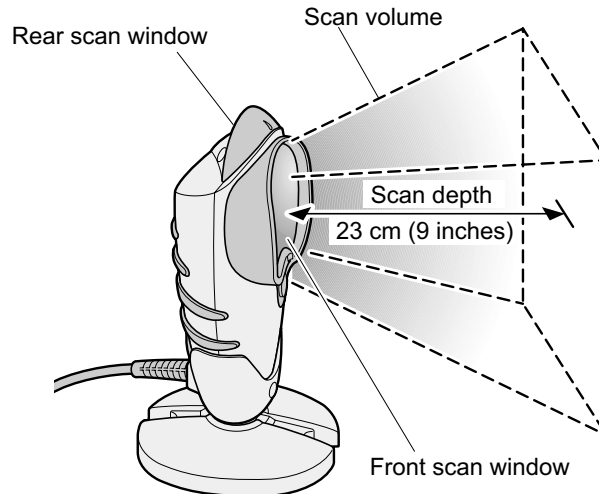


Figure 5-2. Scan volume and scan depth

The optimal scanning distance is at the center of the scan volume, or about 11 cm (4.5 inches) from the window.

Figure 5-3 shows the motion of an item swept past the front scan window.

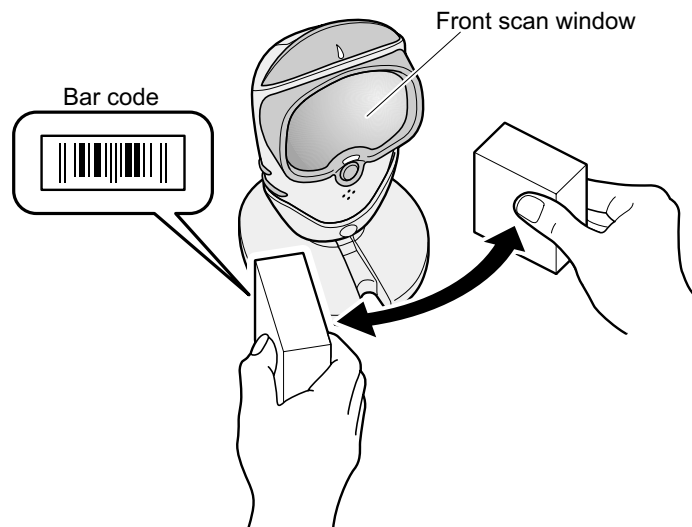


Figure 5-3. Sweep scanning

Presentation scanning

For the best performance, face the bar code towards the center of the front scan window. Move the product with the bar code towards the scanner, as shown in Figure 5-4.

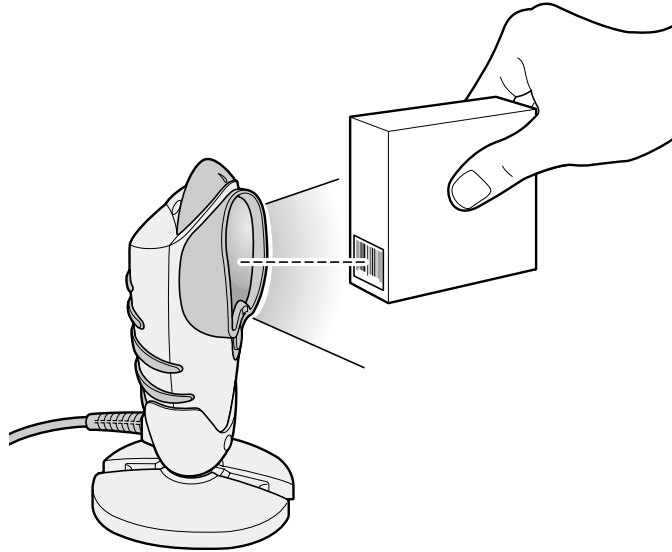


Figure 5-4. Presentation scanning

Portable scanning

To use the 4685-L0D scanner as a portable scanner, remove it from the stand, but do not press the trigger switch. Sweep the scanner over the bar code, using the front scan window as in Figure 5-5.

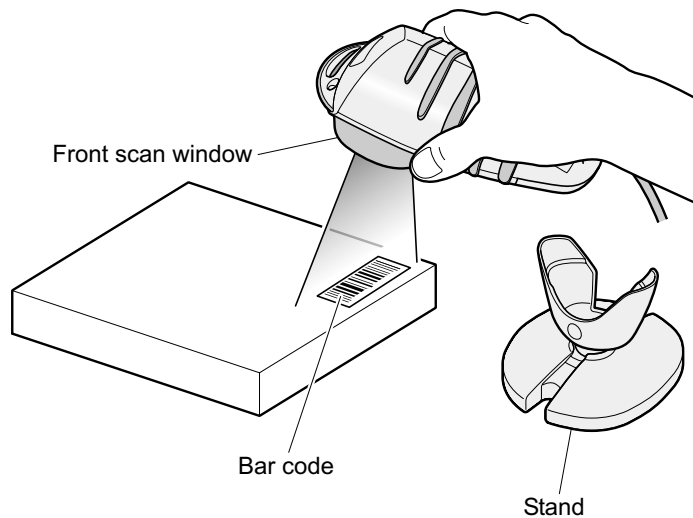


Figure 5-5. Portable scanning

Targeted handheld scanning

With targeted handheld scanning, the operator can point the scanner instead of lifting a heavy or bulky item that is in the customer's hands or shopping cart. A specially designed pointer line helps the operator aim at the bar code.

The scanner's shape cradles comfortably in the operator's hand. Its weight is distributed evenly to maximize balance and minimize fatigue.

To use the 4685-L0D scanner as a targeted handheld scanner:

- 1** Grasp the scanner in the palm of the hand, with the thumb on or near the trigger switch.

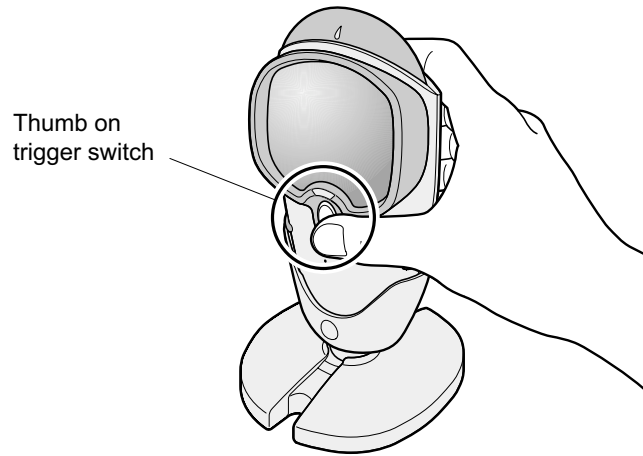


Figure 5-6. Using the 4685-L0D scanner as a targeted handheld scanner (1)

- 2** Lift the scanner from the stand, and position it over the product to be scanned.

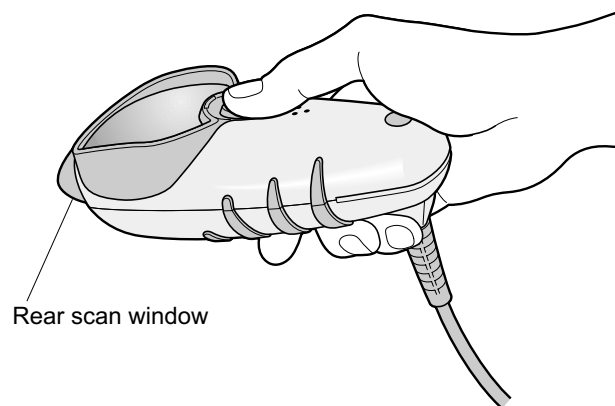


Figure 5-7. Using the 4685-L0D scanner as a targeted handheld scanner (2)

- 3** Use the pointer line to find the center of the bar code. A small bar code label needs to be close to the scan window; a large one should be farther away.

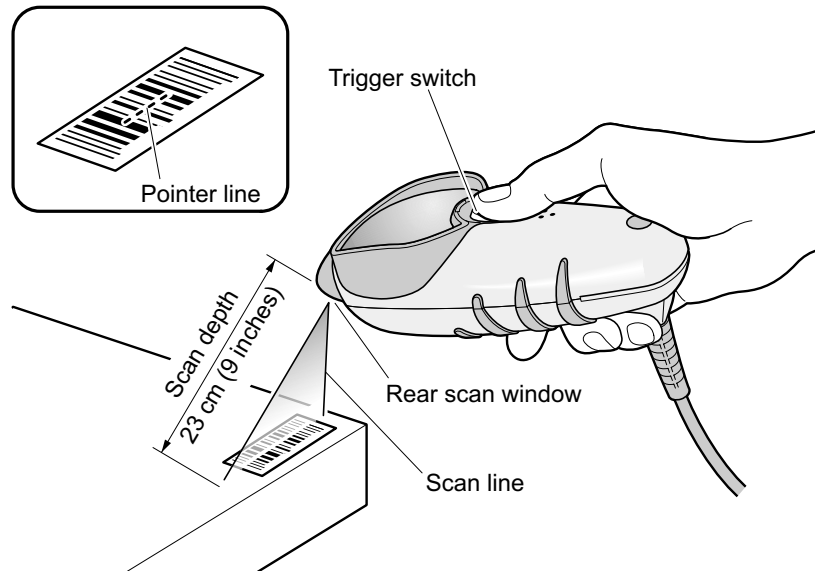


Figure 5-8. Aiming the pointer

- 4** With your thumb, press the trigger switch to scan the bar code as shown in Figure 5-9. When you hear the “good read” tone, release the trigger switch.

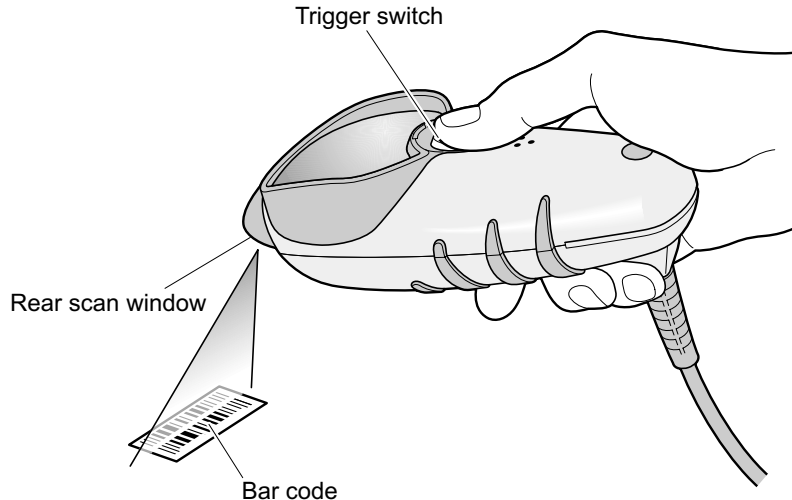


Figure 5-9. Press trigger switch to line scan

To continue scanning in the targeted handheld mode, repeat step 3, placing the pointer line on the next item's bar code, and step 4, pressing the trigger switch.

If the scanner does not give an indication of correct reading after you pass the bar code over the window, pass the product backward over the window to try again.

If this attempt succeeds, be careful not to pass the product over the window for a third time; to do so would cause the scanner to read the same bar code again.

If the scanner doesn't read the bar code after a few tries, go through the following list of possible reasons why:

- Make sure that no part of the package or your finger is between the bar code and the scanner.
- Make sure the scanner laser is on. If the POS terminal encounters an error, or is timed out, the scanner is disabled.
- Check the condition of the bar code on the product.
 - Blots, imperfect printing, or other defects may interfere with scanning.
 - A bar code on polyfilm wrapping may have gotten folded, wrinkled, or otherwise deformed. Pull the wrapping to straighten out the bar code.
 - Frozen or refrigerated products may be coated with frost or dew. Wipe off any moisture with your finger or a towel.
- Make sure that the scan window is clean. See “User maintenance.”
- Make sure you are waiting long enough between tries. The scanner pauses briefly after each reading, to avoid reading the same label twice if you hold it over the window too long.
- See whether the scanner has gone into sleep mode. If it is not used for the length of time specified in the configuration, the motor and the laser are turned off automatically, and the green indicator lamp flashes. To return the scanner to operating mode, wave your hand over the scan window.

User maintenance

Daily maintenance: The operator can perform the following work only.

- Cleaning the scan windows

Using a lint-free towel or tissue with nonabrasive ammonia-based glass cleaner.

Chapter 6. Maintenance information for service staff

This chapter provides instructions for the service staff to following in maintaining the 4685-L0D scanner.

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Troubleshooting

Actions

The following describes the actions to take when trouble occurs with the 4685-L0D scanner.

Conditions	Causes and actions
<ul style="list-style-type: none">• The scanner does not turn on.• The scanner does not beep.• The scanner status indicator does not light up.	<p>Possible causes:</p> <ul style="list-style-type: none">• The POS interface cable is not securely connected to POS terminal or the scanner.• The POS interface cable has failed.• The scanner has failed. <p>Actions:</p> <p>Turn off the POS terminal, and check the connection between the POS interface cable and the scanner or the POS terminal.</p> <p>Replacement:</p> <ul style="list-style-type: none">• POS interface cable• Scanner
<ul style="list-style-type: none">• The reading laser (VLD) does not turn on.• The polygon mirror does not rotate.	<p>Possible causes:</p> <ul style="list-style-type: none">• The POS interface cable is not properly connected.• The scanner is not correctly configured for the operating system of the POS terminal.• The scanner is in sleep mode.• The POS interface cable has failed.• The scanner has failed. <p>Actions:</p> <ol style="list-style-type: none">1. For the RS-485 model, turn off the POS terminal and the scanner, and make sure that the POS interface cable is securely connected to port 9/E or 9 of the POS terminal. For the USB model, unplug the POS interface cable from the port and plug it in again (you need not turn off the POS terminal).2. Check the configuration of the scanner for the POS terminal.3. Move your hand over the front of the window to make the scanner go from sleep mode to operating mode. <p>Replacement:</p> <ul style="list-style-type: none">• POS interface cable• Scanner

Conditions	Causes and actions
<ul style="list-style-type: none"> • The reading laser (VLD) comes on, the scanner has difficulty reading the bar code label. • The scanner does not read with one pass or does not read at all. 	<p>Possible causes</p> <ul style="list-style-type: none"> • The bar code label is defective or smudged. • The bar code label is defective. • The bar code symbology is not enabled (for RS-232 model). • The scan window has flaws or is smudged. • The scanner has failed. <p>Actions:</p> <ol style="list-style-type: none"> 1. Make sure the bar code label is in good condition. <ul style="list-style-type: none"> • If the bar code label is smudged, clear it. • If the bar code label is defective, enter the data from the keyboard. 2. Try to read the bar code on another product. If the scanner reads that code, it is in good condition. 3. Enable the bar code symbology using by programming bar code (for RS-232 model). 4. Clean the scan window, or replace the scanner. <p>Replacement:</p> <ul style="list-style-type: none"> • Scanner

Diagnostic tests

The following diagnostic tests are available for the 4685-L0D scanner.

Basic assurance test (BAT)

The BAT (self-diagnosis test) is performed when the power is supplied to the unit, indicated by the beep sound and the scanner status indicator (green).

	Beeps	Scanner status indicator (green)
When power is supplied	–	–
BAT completed	Four beeps	Green lamp
BAT error	Repeated beeps	Flashing green lamp

Diagnostic tests

A diagnostic test program for the RS-232 model is available on the Web. For more information, go to the following Web site:

<http://w3.apsd.yamato.ibm.com/Distribution/POSIO/indexe.htm>

To test the RS-485 model, load the diagnosis program from the diagnosis diskette. For details, see the manual for each terminal.

To test the USB model, see the manual for the SurePOS 700 Series. POS Device Diagnostics is a Java-based diagnostic program for all SurePOS 700 Series systems. For information on obtaining and installing this program, refer to the *SurePOS 700 Series Installation and Operation Guide*. POS Device Diagnostics is used to gather information for problem resolution, as follows:

- The user interface displays an icon for each attached device.
- POS Device Diagnostics tests devices and reports the results. If the—fails or you need more information, use the online help for assistance.

Accessing the program

Before accessing the POS Device Diagnostics program, make sure that all other applications are stopped. Open the POS Device Diagnostics program from your desktop or from your Start menu.

Obtaining instructions and help

POS Device Diagnostics provides extensive help for using the diagnostic screens, along with instructions for running the tests and utilities. Also, for any error detected in a device test there is a Help button that links to a troubleshooting procedure for that specific error. You can also obtain help by selecting Help in the top left corner of the screen.

Program updates

Because installing or updating the POS Device Diagnostics program will affect the configuration of the operating system, installing or updating this program is the responsibility of the user.

The POS Device Diagnostics program is included in the IBM POSS Suite, which can be downloaded from the IBM Retail Store Solutions Web site at <http://www2.clearlake.ibm.com/store/support/html/pubs.html>

The IBM POSS Suite includes:

- POS Device Diagnostics
- POSS for Windows 2.0.0
- OLE for POS (OPOS) 1.4.1
- JavaPOS 1.4.1

For more information about the POS Device Diagnostics program, refer to *Point of Sale Subsystem: Installation, Keyboards, and Code Pages*, also available from the IBM Retail Store Solutions Web site.

On-line test for 4690 OS (OLT) (RS-485 model only)

1 The POS terminal must be turned on with the initial program loaded (IPL).

Note: For additional information, see the *Problem Determination Guide* for the operating system.

2 On the POS terminal, press the S1 key, enter 91, and press the S2 key. The message "T0010 ENTER TEST REQUEST" appears on the POS terminal.

3 Enter 171 and press the S2 key. The message "T1701 READ A LABEL WITH SCANNER" appears on the POS terminal.

4 Scan a few bar code labels. When a bar code label is correctly scanned, the LED on the scanner illuminates in green and the bar code number is printed on the POS terminal.

Note: If the scanner does not operate properly, contact the service staff.

For the manuals for each terminal equipment, see "Related publications" on page xix.

Parts

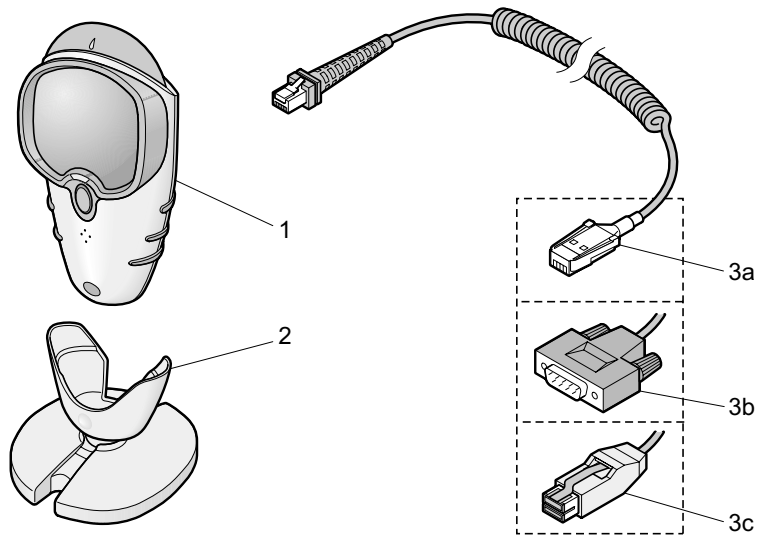


Figure 6-1. Parts

Index	Parts	FRU part number	Feature code
1	Scanner unit (RS-485)	07K9122	4850
1	Scanner unit (RS-232)	07K9123	8000
1	Scanner unit (USB)	07K9121	9540
2	Stand	07K9127	—
3a	POS interface cable (RS-485)	07K9125	4850
3b	POS interface cable (RS-232)	07K9126	8000
3c	POS interface cable (USB)	07K9124	9540

Connecting and disconnecting the POS interface cable

Important

Before detaching any part, shut down the host system.

Disconnecting

Press down the connector latch of the cable, and remove the POS interface cable from the scanner.

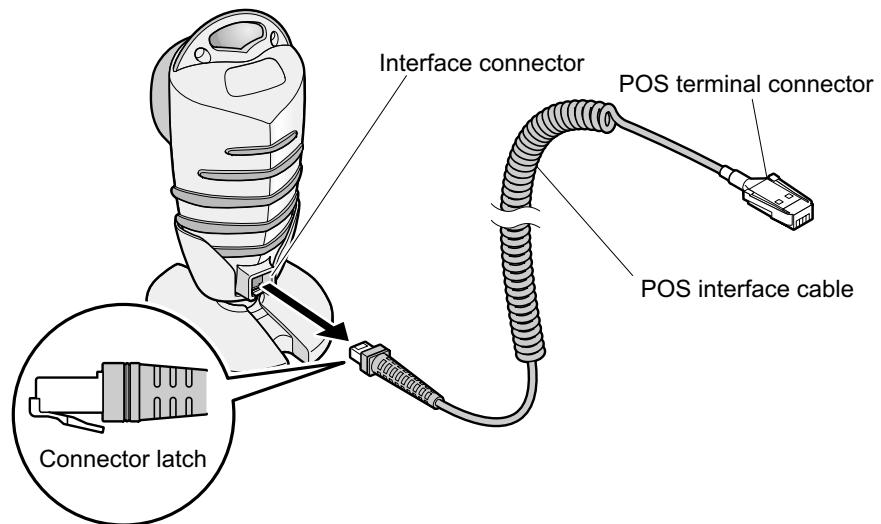


Figure 6-2. Disconnecting the cable

Connecting

Push the POS interface cable connector into the interface connector of the scanner until it latches.

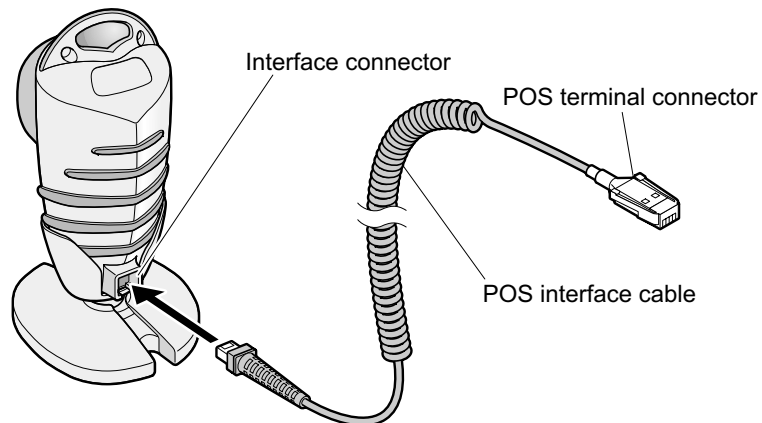


Figure 6-3. Connecting the cable

Appendix. Checking the safety of the scanner

This chapter describes how to identify any conditions that might lead to danger for the service staff in the course of maintenance work.

Safety checklist for service staff	A-2
Inspecting the scanner	A-2
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Safety checklist for service staff

Inspecting the scanner

See Section 1 of *Electrical Safety for IBM Customer Engineers*, S229-8124.

The inspection procedure described below is designed to help identify any dangerous situations regarding the product. All the equipment is provided with safety instructions to protect the user and the service staff from injury. Take the necessary precautions against any possibility of danger that may not be covered by the following procedures.

When danger is present, you must judge whether it is likely to become critical or whether it is possible to continue work without solving the problem.

Check the following situations and possible danger:

- Electrical danger: The primary voltage on the frame may result in a critical or fatal electric shock.
- Mechanical danger: Loosening, loss, wear, or breakage of hardware may result in serious injury.
- Use of chemicals or solvents not specified by IBM

Disconnect all non-IBM or additional equipment before inspecting the unit according to the following checklist.

Checklist:

- 1. Remove the ac power cord from the outlet on the wall.
- 2. Make sure that the power cords, ac or dc, are not worn or damaged.
- 3. Check whether the unit has been modified by anyone other than IBM. If it has, make sure that the R009 non-IBM modification addition survey form has been filled out.
- 4. Check whether the wire has been damaged or any insulation has been lost.
- 5. Check whether any electrical connections or terminals are exposed.
- 6. Check the units for any sign of damage caused by metal scratches, contamination, water, other liquid, fire, or smoke.
- 7. Check whether the ac and dc power cords comply with standards for the voltages they carry.
- 8. Connect the ac power cord to the outlet, and check whether the unit is turned on.

Test chart



UPC-A



UPC-E



EAN-13



EAN-8



2 of 5 Interleaved
without C/D



2 of 5 Interleaved
with C/D



CODABAR(NW-7)
without C/D



CODABAR(NW-7)
with C/D



CODE39



CODE39
with C/D



CODE128

IBM

Part Number: 07K9119

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