User's Manual

Omni-Directional Laser Barcode Scanner

User's Manual

Important
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to EN55022, and 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 user's manual, may cause harmful interference to radio communications. Operation of the 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. Any unauthorized changes or modifications to this equipment could void the user's authority to operate this equipment.

For CE-countries:
- This equipment is in conformity with the CE standards

Table of contents

Preface

The unit is a new presentation laser scanner which allows hands free bar code scanning. Bar code labels are read by presenting the labels towards the unit. Scanning labels with this unit hardly requires any arm movement.
As a result only little free space on the counter top is necessary.

This unit can either be fixed on a counter surface or on a flexible stand. The flexible stand allows you to direct the scan pattern in a way that is optimal for your application.

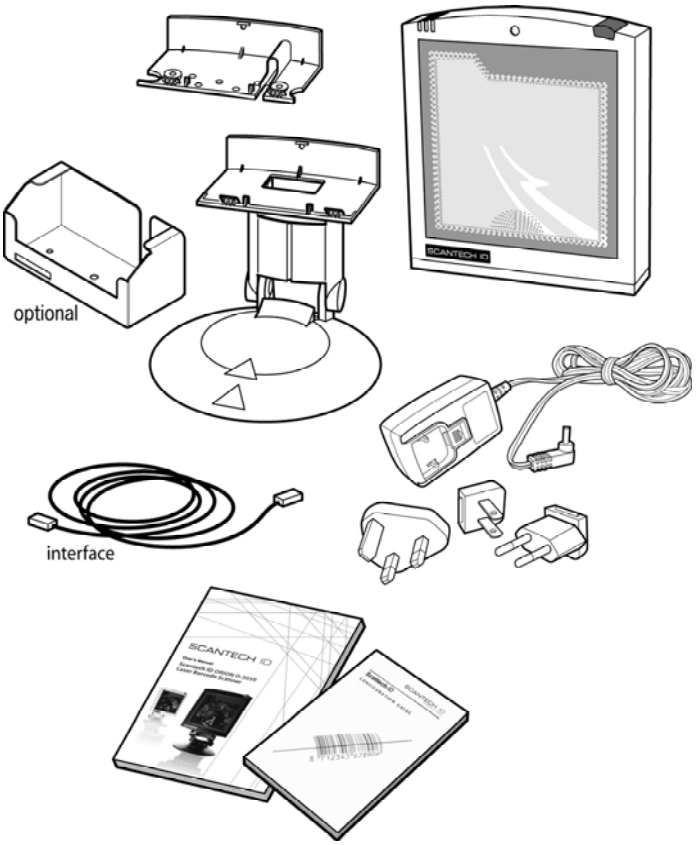
This unit reads all popular bar code symbologies. An important feature of this unit is its programmable sleep mode. If the unit is not used within a programmable period of time, the unit switches off automatically. The unit can be re-activated by pressing the switch on top of the unit.
This unit is available in two colour versions, both supporting multiple interface for communication with any host system. The multiple interface versions are: RS-232 + USB + P-USB + Keyboard Wedge.

This manual contains two chapters and three appendices. The first chapter describes this unit and its general features. The description for installation can be found in the second chapter. Precisely follow the instructions for the installation of the unit. Default settings can be changed with the bar code labels from the Configuration Guide that came with the unit. Appendix A gives the pin definition for the Data ports of the unit. The pin definition may be required when you want to make a new cable for communication with the POS/ computer. Technical specifications of this unit can be found in Appendix B. Refer to Appendix C for troubleshooting if the unit is not working properly.

Chaper 1 Product Overview

1.1 UNPACKING

Remove the unit and its accessories from the box and packing material. Refer to the packing list to make sure you have received all the items ordered. Visually inspect the unit and accessories for any evidence of physical damage. Refer to the upper figure on page 5 to locate the interface label and make sure that the unit interface corresponds with the host system interface. Immediately contact your supplier if anything appears to be damaged, or if the supported interface does not correspond with the host system interface.



The specific parts of this unit are:

Sleep mode button – When a sleep mode time-out is programmed, the unit can be re-activated by pressing this switch. The sleep mode feature is programmable with the menu labels from the Configuration guide.
NOTE: The default value for the sleep mode time-out is set to 30 minutes. When the unit is in sleep mode, the LED is intermittently flashing red.

LED – A red LED indicates that the unit is ready to read a bar code. A green LED indicates a good read.

Good read buzzer – The buzzer is heard whenever data has been read correctly. The frequency and volume can be adjusted

Standard parts & accessories:

Flexible scanner stand – The rotary and flexible stand allows you to direct the scan pattern in a way that is optimal for your application (a mounting kit with screws and tapes is included).

Back cover plate – This plate serves to fix the unit to the counter.

Interface cable – One of various types of cable to connect to your host computer / POS system.

Power supply – Powers your scanner via the AC power outlet if your scanner is not directly powered.

User's manual – This manual in print

Configuration guide – Booklet containing barcodes for configuration of your scanner

Optional parts & accessories:

Counter stand – The stand serves to fix the unit to the counter.

1.2 DECLARATION OF CONFORMITY

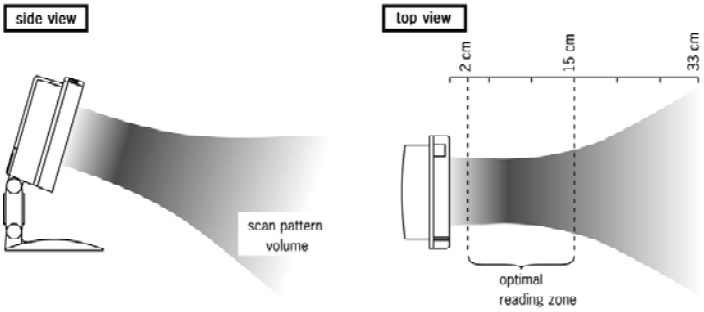
Will comply with the following product specifications:

Laser Safety: - IEC 825-1 (1993)
Electrical Safety: - EN 60950 (1992), IEC 950 (1991)
EMC: - EN 55022:2006 + A1:2007
- EN 61000-3-2: 2006
- EN 61000-3-3: 1995 + A1:2001 + A2:2005
- EN 55024:1998 + A1:2001 + A2:2003
- IEC 61000-4-2: 1995 + A1: 1998 + A2: 2000;
- IEC 61000-4-3: 2006 + IEC: 61000 -4-4: 2004;
- IEC 61000-4-5: 2005 + IEC: 61000 -4-6: 2003; +A1: 2004 +A2: 2006;
- IEC 61000-4-8: 1993 + A1: 2000; IEC 61000 -4-11:2004

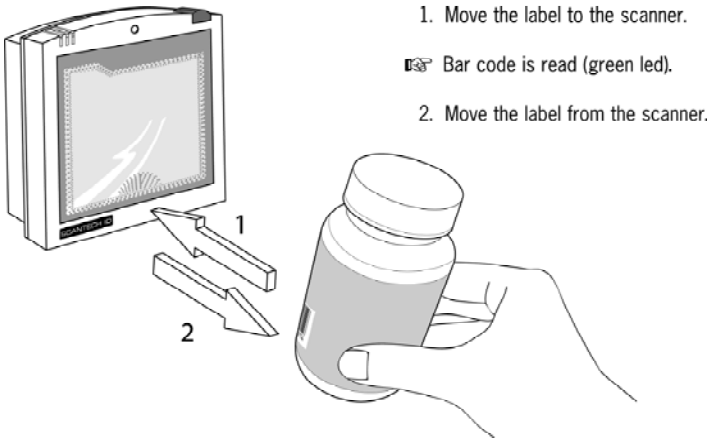
1.3 SCANNING BAR CODES WITH THE EC-OS-7200

This unit is an omni-directional presentation scanner featuring a 7 directional scan field with a 24 lines scan pattern. Bar code labels can easily be read by presenting them to the unit.

The unit's scan volume is illustrated in the figure below. The optimal reading zone lies between 2 and 15 cm from the unit window, but bar codes can be read up to 30 cm (11.8 in.) from the unit window.
If a scanner with flexible stand is purchased, the stand allows you to direct the optimal reading zone in a way that suits your application most.

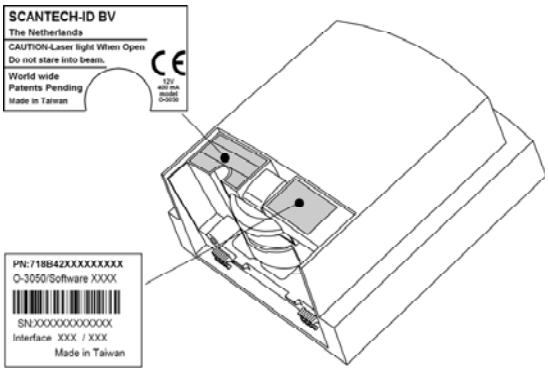


Scanning a bar code label with a presentation scanner is very simple: present the product's bar code label to the unit as illustrated in the figure below.

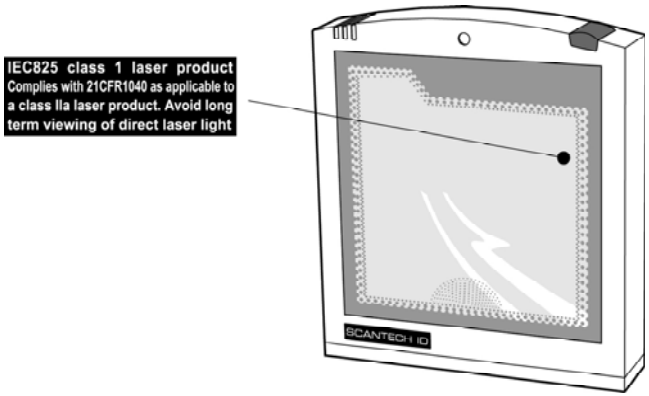


1.4 SCANNER LABELLING

Two labels are present on the housing of the EC–OS–7200 as indicated in the figure below. Two labels are also visible through the unit window. All labels are attached by the manufacturer and should not be removed.



The unit's serial number is found underneath the bar code label as depicted in the figure above. This official registration number is strictly related to the device. The supplier may ask for this number when the unit needs servicing.



Laser safety

German:
Der Strichcode-Scanner entspricht den Sicherheitsvorschriften nach IEC 825-1 (1993) für ein Laserprodukt der Klasse I. Er entspricht auch U.S. 21CFR1040, anwendbar auf ein Laserprodukt der Klasse IIa. Vermeiden Sie langzeitiges Hineinblicken in direktes Laserlicht.

Dutch:
De scanner voldoet aan de veiligheidsnormen IEC 825-1 (1993) voor een Klasse I laserproduct. Tevens voldoet de scanner aan U.S. 21CFR1040, van toepassing op een Klasse IIa laserproduct. Vermijd langdurig kijken in direct laserlicht.

French:
Le scanner est conforme aux normes de sécurité IEC 825-1 (1993) s'appliquant à un produit laser de la classe I. Il est également conforme à la U.S. 21CFR1040 telle qu'elle s'applique à un produit laser de la classe IIa. Eviter de rester exposé longtemps à la lumière directe du laser.

Danish:
Skanneren er i overensstemmelse med sikkerhedsstandarden IEC 825-1 (1993) for laserprodukter i klasse I. Den er også i overensstemmelse med U.S. 21CFR1040, der gælder for laserprodukter i klasse IIa. Undgå at se direkte på laserlys i længere perioder.

Finnish:
Skanneri täyttää luokan I lasertuotteelle IEC 825-1:ssä (1993) asetetut turvavaatimukset. Se täyttää myös U.S. 21CFR1040:ssa asetetut vaatimukset siltä osin kuin ne koskevat luokan IIa lasertuotetta. Vältä pitkäaikaista suoraan laservaloon katsomista.

Swedish:
Avsökaren uppfyller säkerhetsnormen IEC 825-1 (1993) för laserprodukter av klass 1. Den uppfyller dessutom U.S. 21CFR1040 som gäller för laserprodukter av klass IIa. Undvik att titta i direkt laserljus under längre perioder.

Norwegian:
Skanneren er i samsvar med sikkerhetsstandarden IEC 825-1 (1993) for laserprodukter i klasse I. Den er også i samvar med U.S. 21CFR1040 for laserprodukter i klasse IIa. Unngå å se langvarig på direkte laserlys.

Italian:
Lo scanner è conforme alle norme di sicurezza IEC 825-1 (1993) relative ad un prodotto laser di Classe 1. È inoltre conforme alla norma U.S. 21CFR1040 relativa ad un prodotto laser di Classe IIa. Evitare l'esposizione prolungata all'emissione diretta di luce laser.

Portuguese:
O scanner está conforme as normas de segurança IEC 825-1 (1993) para a Classe 1 dos produtos laser. Também está conforme a norma U.S. 21CFR1040 aplicada nos produtos laser da Classe IIa. Evite expor os olhos directa e prolongadamente aos raios laser.

Spanish:
El scanner reune las normas de seguridad IEC 825-1 (1993) para un producto laser de Clase 1. Y también reune las normas U.S. 21CFR1040 que se aplican a un producto laser de Clase IIa. Se debe evitar mirar muy fijo en luz lasérica directa.

English:
The scanner complies with safety standard IEC 825-1 (1993) for a Class I laser product. It also complies with U.S. 21CFR1040 as applicable to a Class IIa laser product. Avoid long term viewing of direct laser light.

Optical:
The use of optical instruments with this product will increase eye hazard. Optical instruments include binoculars, microscopes and magnifying glasses but do not include eye glasses worn by the user.

Radiant Energy:
The unit uses a low-power laser diode operating at 630…670 nm in an opto-mechanical scanner resulting in less than 0.6 mW peak output power. Laser light observed at 13 cm (5.1 in.) above the window through a 7 mm (0.28 in.) aperture and averaged over 1000 seconds is less than 3.9 µW per CDRH Class IIa specification. Do not attempt to remove the protective housing of the scanner, as unscanned laser light with a peak output up to 0.8 mW could be accessible inside.

Laser Light Viewer:
The unit window is the only aperture through which laser light may be observed on this product. A failure of the scanner motor, while the laser diode continues to emit a laser beam, may cause emission levels to exceed those for safe operation. The scanner has safeguards to prevent this occurrence. If, however, a stationary laser beam is emitted, the failing scanner should be disconnected from its power source immediately.

Adjustments:
Do not attempt any adjustments to or alteration of this product. Do not remove the scanner's protective housing. There are no user-serviceable parts inside.

CAUTION: Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous laser light exposure.

1.5 MAINTAINING THE SCANNER

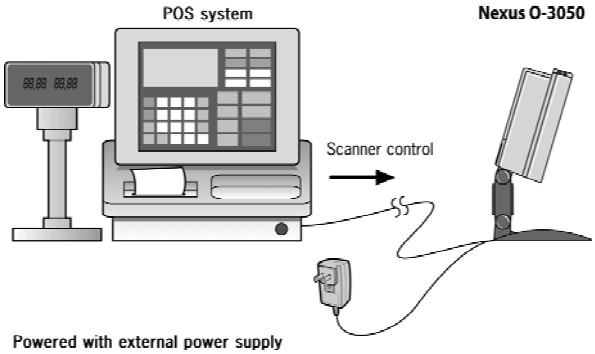
The unit requires little maintenance. Only occasional cleaning of the unit window is necessary to remove dirt and fingerprints. Cleaning can be performed during operation with a non-abrasive glass spray cleaner and a soft lint-free cloth.

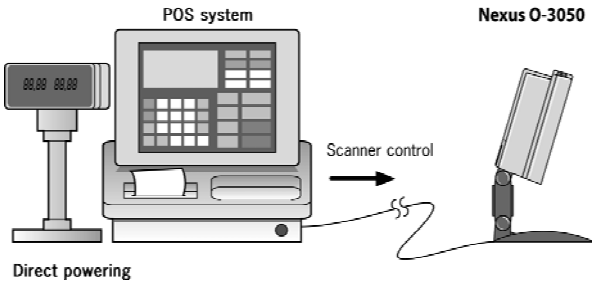
1.6 CONTROLLING THE SCANNER FROM THE POS SYSTEM

The EC–OS–7200 can be controlled from the POS system via the RS232C interface. Control is achieved by transmitting the following single byte commands to the unit. Default setting the following commands are available (more details upon request):

ASCII code	function	byte is also called:
05 Hex	power-up re-initialization	ENQ or <Ctrl-E>
OE Hex	enable (cancels disable)	Shift Out or <Ctrl-N>
OF Hex	disable	Shift In or <Ctrl-O>
12 Hex	sleep	DC2 or <Ctrl-R>
14 Hex	wake (cancels sleep)	DC4 or <Ctrl-T>

When the unit is disabled (indicated by the blinking red LED), the motor of the unit will stay on until the unit goes into sleep mode.





Chapter 2 Installation

Depending on the way you want to use the unit, this unit can be installed in two different ways: fixed on a counter surface or on a flexible stand. Instructions for installation on a counter surface are given in Section 2.1. Instructions for installation on the flexible stand are given in Section 2.2.

Due to many POS systems on the market, a large number of communication cables are available. Make sure that you have the right cable to connect the unit to your POS or computer.

NOTE

The unit and the host system must be switched off before starting the installation of the unit. By following this precaution you prevent any electrical damage.

You are advised to install the unit in an air circulated place out of direct sunlight.

2.1 CONNECTING THE SCANNER

Before you connect any cables to the unit, check whether you should guide them through the foot or counter surface!

This unit features a triple interface in one standard unit:

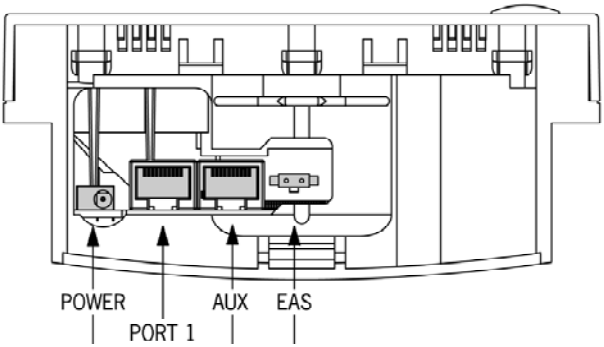
- RS232 + Keyboard Wedge (KBW) + USB and powered USB.

It also provides:

- Auxiliary port for additional scanner
- EAS connector
- Power connector

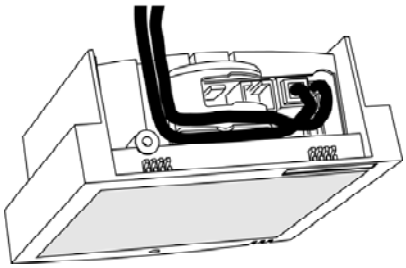
If you use “Direct Powering”, power is supplied by the host and you do not need to connect an external power supply to the Power Input entry.

Use the illustration below to see where to connect your cable(s) to the unit.



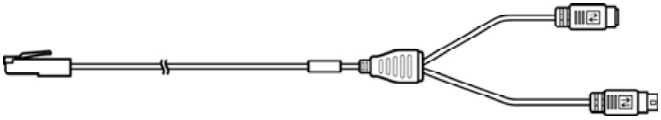
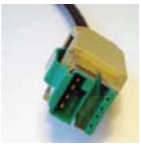
Before closing the back cover later on (see mounting instructions in chapter 2.3 and 2.4) guide the cables through the unit as shown in the illustration below.

Data port 1. Connect the communication cable to this port if the host system features the **RS232C**, **KBWedge**, or **USB** interface.



2.2 INTERFACE SELECTION

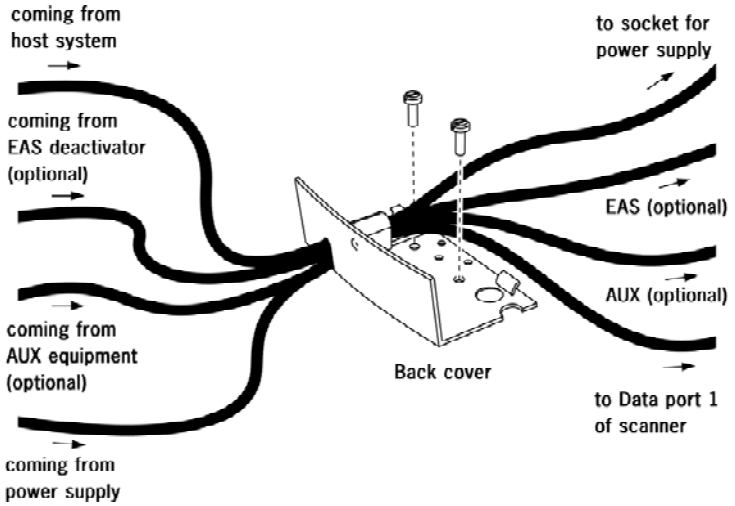
This unit allows you to connect your host system using four different interface cables: RS232, Keyboard Wedge, USB, and Powered USB. On powering up, the unit senses the type of the interface used and switches to the appropriate protocol.

Interface Cable	Connector type
RS232 (Product Number: 0114-S806121)	Sub-D 9-pin
	
Keyboard Wedge (Product Number: 0114-S805121)	Standard PS2
	
USB (Product Number: 0114-S802121)	USB connector
	
Powered USB (Product Number: 0114-S801121)	Powered USB connector
	

2.3 INSTALLING THE SCANNER ON A COUNTER SURFACE

To install the unit without the flexible scanner stand, follow the instructions below.

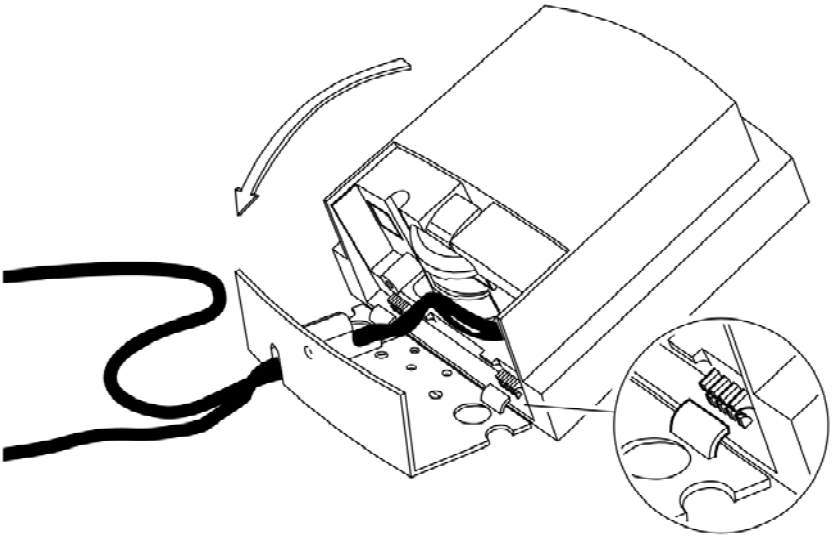
1. Remove the two rubber feet from the back cover. Lead the communication cable and power supply cable through the slit. Fasten the back cover to the surface with two screws as illustrated in the figure.



NOTE

- You can use the back cover as a template to mark the places for the mounting holes at the counter surface and drill two holes.
- If you do not want to drill holes in the counter top, the unit can be installed without fixing it to the surface. In this case the rubber feet will prevent the unit from sliding.

2. Position the unit as indicated in the figure below and rotate the unit around the cover. Make sure that connectors and cables are placed as indicated in the figures, to allow easy attachment of the unit to the back cover. Press the unit until a "click" is heard.



3. Plug the remote ends of all cables into the appropriate connections of your host POS-system.
4. If you are using an external power supply, power on the unit by plugging the power supply into an AC power outlet. Switch on the host system.

IMPORTANT

To activate USB or KBW interface, scan the following codes from the Configuration Guide:

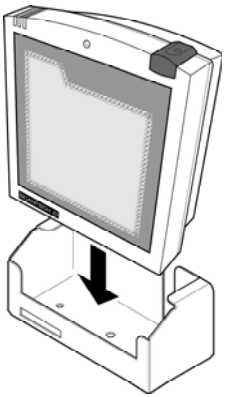
1. **Open** the unit Programming Mode by scanning code 1.1.
2. **Return to factory default settings** by scanning code 1.3.

Once the unit is installed, you can start scanning bar code labels. If you want to change the default settings of the unit, proceed to the Configuration Guide which came with the unit.

2.4 INSTALLING THE SCANNER WITH THE COUNTER STAND

To install the unit with the light stand, follow the instructions below:

1. Fix the stand to the desired place using screws and the screw holes on the stand.
2. Get all cables connected.
3. Position the unit into the stand as indicated in the figure below.



4. Turn on the host system.

Once the unit is installed, you can start scanning bar code labels. If you want to change the default settings of the unit, proceed to the Configuration Guide which came with the unit.

2.5 INSTALLING THE SCANNER USING THE FLEXIBLE SCANNER STAND

To install this unit on the flexible scanner stand, lead the cables through the stand to be connected to the unit. Furthermore the stand should be fastened to the counter top. Finally, this unit should be fastened to the stand.

You are advised to precisely follow the next steps:

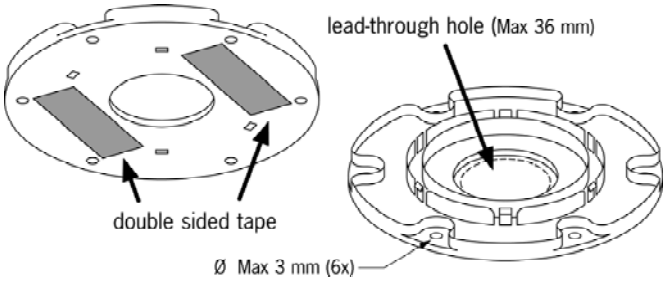
1. Remove the cover disk (center cap) from the stand and remove the bottom plate from the stand.

2. Place the bottom plate on the counter and mark the places for the mounting holes on the counter top and mark the hole to lead the cables through.
3. Drill the mounting holes and the lead-through hole.

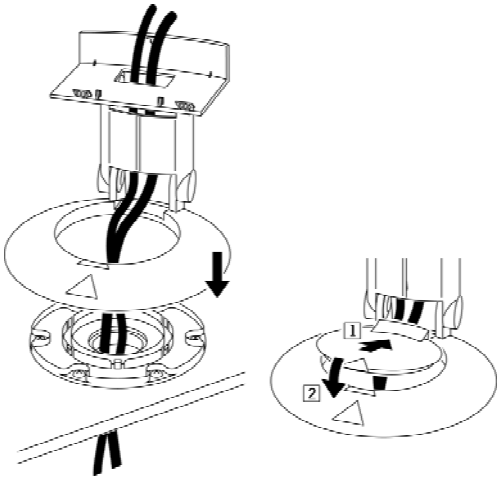
NOTE

If you prefer not to drill in your counter, you can mount the stand using the provided double-sided tape and have the cables leave the foot at the rear, just above the circular basis.

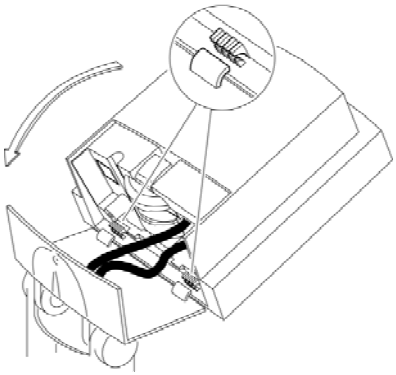
4. Fix the bottom plate on the counter top using the screws or tape from the mounting kit.



5. Lead the cables from the bottom upwards through the hole in the counter, through the bottom plate and through the scanner stand.



6. Click the stand on the bottom plate.
7. Connect the cables to the unit. Refer (for the data cable in particular) to chapter 2.1 for the correct connections.
8. Place this unit onto the flexible stand and rotate the unit as indicated in the figure. Make sure that connectors and cables are properly placed to allow easy attachment. Press the unit until a "click" is heard.



9. Click the cover disk on the foot of the stand.
10. Connect the data cable to the host.
11. Place the unit in the desired angle. In case you have an external power supply, plug the power supply into an AC power outlet.
12. Switch on the host system.

IMPORTANT

To activate USB or KBW interface
scan the following codes from the Configuration Guide:

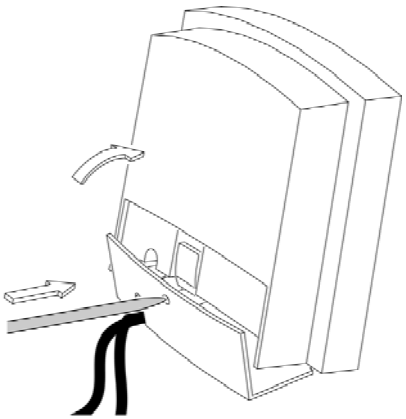
1. **open** the unit Programming Mode by scanning code 1.1
2. **return to factory default settings** by scanning code 1.3

Once the unit is installed, you can start scanning bar code labels. If you want to change the default settings of the unit, proceed to the Configuration Guide which came with the unit.

2.6 REMOVING THE SCANNER FROM THE BACK COVER PLATE

To remove this unit from the back cover plate, that is either attached on the counter or on the scanner stand:

1. Locate the small hole at the back cover of the unit.
2. Remove the back cover by pressing it with the tip of a stick as indicated in the figure.



Appendices

A. Connector types and pin definitions

B. Technical Specifications

C. Troubleshooting

A CONNECTOR TYPES AND PIN DEFINITIONS

This unit supports triple interface in one standard unit: RS232, Keyboard Wedge (KBW) and USB/USB plus power. The various pin definitions for the applicable Data port are given on page 20 and 21. The connector to be used for the port is indicated below.

To activate USB or KBW interface, follow this sequence:

1. Plug in the appropriate interface cable and then power up the unit.
2. Scan the following codes from the Configuration Guide:

- **Open** the unit Programming Mode by scanning code 1.1
- **Return** to factory default settings by scanning code 1.3

Pin definitions for multi interface: Connector: RJ-48, 10 pins

	Multiple Interface				
	RS-232	**KBW**	**USB**	**Powered USB**	
Pin	**Description**	**Description**	**Description**	**Description**	**Remark**
1	-	-	IFID	IFID	IFID = Interface ID
2	CTS	PC-Clock	-	-	-
3	RxD	PC-Data	-	-	-
4	TxD	KB-Data	-	-	IFID = Interface ID
5	RTS	KB-Clock	-	-	-
6	Ground	Ground	Ground	Ground	Ground
7	-	PC - 5V	PC - 5V	-	-
8	-	-	-	+12V	Direct Power, may be used to power scanner
9	-	IFID: connect to '6'	D **+**	D **+**	IFID = Interface ID D **+** = USB data
10	-	-	D **-**	D **-**	D **-** = USB data

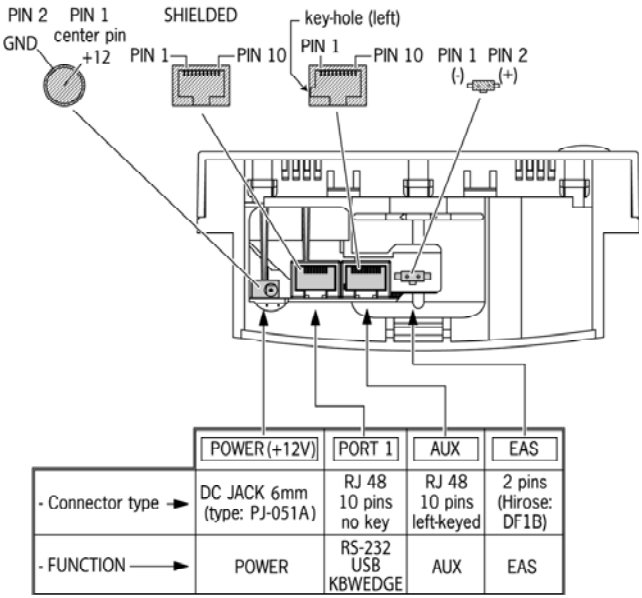
Pin definition for all scanner versions:

	AUX Port for HH scanner	
Pin	**Description**	**Direction**
1	+5 VDC	output
2	CTS	input
3	RXD	input
4	(reserved)	-
5	RTS	output
6	GND	-
7	(reserved)	-
8	(reserved)	-
9	(reserved)	-
10	(reserved)	-

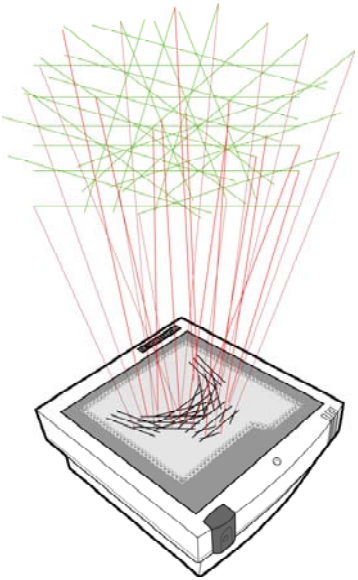
	EAS	
Pin	**Description**	**Direction**
1	(-)	-
2	(+)	-

	POWER	
Pin	**Description**	**Direction**
1	+12V	input
2	GND	

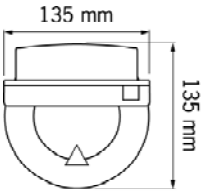
The EAS connection is used to connect the internal deactivation antenna to an external EAS control unit.

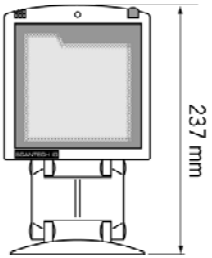


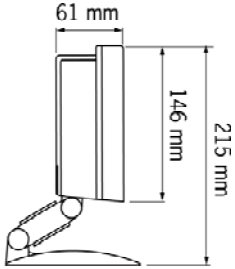
B TECHNICAL SPECIFICATIONS

Electrical	
Power supply voltage	100 – 240 V ac 50/60 Hz (adapter)
DC input to scanner	12VDC, 165mA nominal, 95mA standby
Interfaces	RS-232 + USB + Powered-USB + Keyboard Wedge
Optical	
Light source	Visible laser diode (650 nm)
Depth of field	330 mm
Scan pattern	7 directions scan field, 24 lines scan pattern
Scan rate	2000 scans / second
	
Decoding	
Bar code types	EAN/UPC/JAN + Add-on, Code 32 (Ital. Pharmacode)
	Code 128, EAN 128, Code 39 (+ full ASCII), Code 93, Codabar, Interleaved 2/5 and GS1 Databar

Physical	
Weight	500 g
Weight with stand	675 g
Dimensions	H x W x D : 146 x 135 x 61 mm : 5.75 x 5.35 x 2.40 inch
Dimensions with stand	H x W x D : 215-237 x 135 x 135 mm : 8.47 – 9.34 x 5.35 x 5.31 inch







Environmental	
Operating temperature	0° C ~ 40° C
Humidity	20% ~ 95% RH (non-condensing)
Safety	
Laser safety	IEC 825-1 (1993) Class I, U.S. CDRH: 21CFR1040 Class II a
Electrical safety	EN 60950 second edition
	UL1950, c-UL (according CSA22.2.950)
Flammability rate	94V-0
EM Compatibility	
Radio and TV interference	EN 55024/22, FCC Part 15 class B, CNS 13438
Electro Static Discharge (ESD)	IEC 801-2 (1991)

C TROUBLESHOOTING

This section contains information on solving problems you may encounter when using the unit. If troubles occur, take a moment to read the information in this section. However, before referring to the diagnostic tips make sure that the unit is installed as described in Chapter 2 and that all cables are properly connected.

Problem	Diagnostic Tips
The unit is on but a bar code cannot be read. The LED is red.	▪ The unit window is dirty. Clean the unit window as described in the Maintenance section. ▪ The presented bar code type is not enabled. Select the bar code type with the Configuration Guide. ▪ This unit is disabled by the host. Refer to Section 1.6. ▪ The bar code type you presented to the unit is not supported by the unit.
The unit is on, but the motor is not rotating. A bar code cannot be read. The LED is intermittently flashing red.	▪ The unit is in sleep mode. Press the switch on top of the unit to reactivate the unit (or use the wake protocol. Refer to section 1.6).
The LED is alternating red/green	▪ Mirror motor is defective and must be replaced (Authorized personnel only).
The LED is alternating red/green and beeps are heard.	▪ Possible failure of the scanning safeguard circuit. Immediately disconnect the unit from its power source. Contact your supplier.
The unit does not accept more than two or three bar codes	▪ There is no proper handshaking with the host system. Switch the host system on and check connection and communication settings.

Problem	Diagnostic Tips
The LED is orange.	▪ The laser is not functioning. The laser is defective. Contact your supplier.
The LED is blinking orange.	▪ The ambient temperature is too high. Make sure the unit has enough air ventilation and is not placed in direct sunlight.
The LED remains green	▪ The unit is continuously seeing a bar code. Remove all bar code labels from the scan volume of the unit and try again. ▪ The unit cannot send the data to the host system. There is no proper handshaking between the unit and the host. Scanner buffer is full. Make sure that all cables are connected and your host system is ready to receive data.
A bar code is read by the unit but not accepted by the host system.	▪ The communication cable is not connected to the serial port of your host system. Refer to the manual of your host system to locate the serial port. ▪ The communication settings of the host and unit do not match. Ensure that the setting values for both devices are the same. For proper adjustment values see the Configuration Guide. ▪ The communication cable does not suit your host system. Contact your supplier for the correct communication cable. ▪ The data format is not supported by the software running on the host system.

Problem	Diagnostic Tips
USB is not working	▪ Unless you use USB plus power, you need a separate power connection to the unit like the external power supply. ▪ Restart the unit by temporarily disconnecting the power. This may help the POS system to detect the unit. The very first time the PC might install some general drivers, possibly from your computer setup CD. ▪ In case of KB emulation you can select various 'keyboard languages' or the universal 'Alt-input-method'. ▪ In a windows environment verify with the device manager that a HID (Human Interface Device) is installed for the unit. ▪ Ensure that both the unit and POS-system/Computer expect the same USB protocol (KB emulation, RS-232 emulation or IBM POS protocol). See Configuration Manual for setup codes and reset (re-power) the unit after making any changes.