



# BS360

*Compact and Powerful  
Omni-directional Laser Scanner*

***User's Manual***







## **Installation & User's Manual**

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**BS-360**



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## Preface

BS-360 is a high performance, omni-directional, and the smallest laser barcode scanner in the world. It is designed for various built-in and self integrated solutions, such as self-service kiosks, POS (Point-of-Sales) terminals, price checkers, healthcare solutions, mobile computers, hand-held scanners, etc.

## Features

### *Integrability*

The compact design allows the unit to be mounted with ease on a host system with minimum space requirement.

### *Quality and Durability*

The components are of top quality and the case is solid, moist and dust resistant. All of these secure a long and service free operation time.

### *Flexibility and Connectivity*

The multiple connection interface (RS232, Keyboard Wedge, USB, and Powered USB) allows the unit to communicate with the host system with considerable flexibility.

### *Scanning Capability*

The unique design of scan pattern provides an ideal scan performance in the retail environment.

### *Decoding Capability*

- The barcode decoding capability is up-to-date, including GS1 DataBar and all major 1D barcode symbologies.
- The STAR reconstruction software enables the reading of fragmented and damaged barcodes.

### *Upgradability*

The user-friendly feature of firmware upgrade significantly saves cost and time.

## About this manual

This manual contains four chapters and three appendices:

- The first chapter provides the product safety information. The second chapter describes this scanner's general features and installation. The third and forth chapter accounts for the use of this scanner.
- The connector types and pin definitions, technical specifications, and troubleshooting can be found in the appendices.



# **Chapter 1**

## **Product Safety**

## 1.1 LASER SAFETY

**English:**

This 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:**

BS-360 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  $\mu$ W 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 scanner 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.

**WARNING!**

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

## 1.2 DECLARATION OF CONFORMITY

**Model Number: BS-360**

**Product View:**



**Will comply with the following product specifications:**

Laser Safety: - IEC/EN 825-1 (2007)

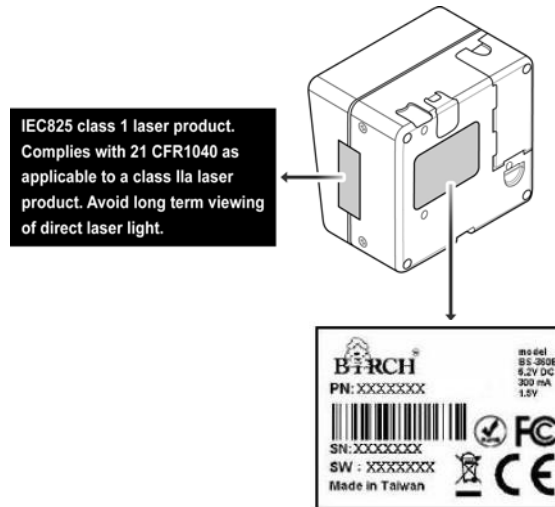
Electrical Safety: - EN 60950

EMC: - EN 55022:2006 + A1:2007

- EN 55024:1998 + A1:2001 + A2:2003

### 1.3 SCANNER LABELING

The product label and the laser safety label are on the back and the side of BS-360 as indicated in the illustration below. All labels are attached by the manufacturer and should not be removed.



The information about the serial and part numbers can be found on the product label. These official registration numbers are strictly related to the device. The supplier may ask for these numbers when the scanner needs servicing.

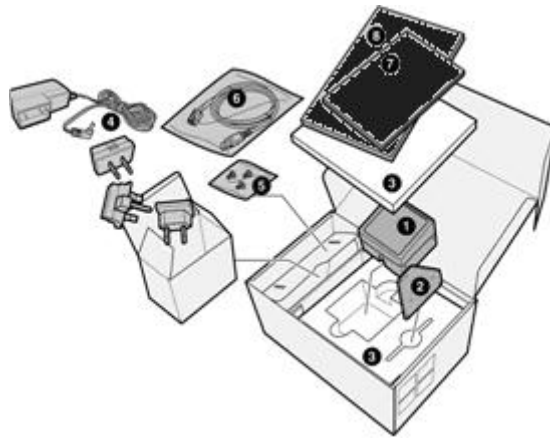
## **Chapter 2**

### **Installation**



## 2.1 UNPACKING

Your package comes with the following items:

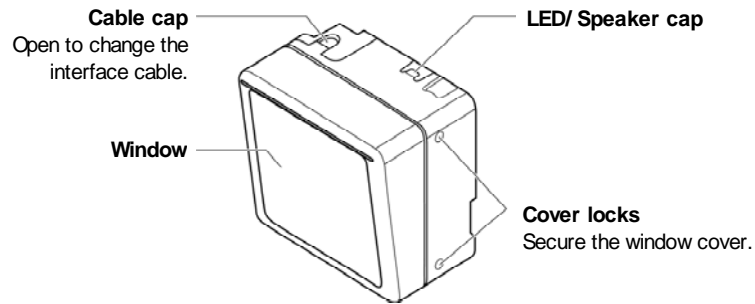


Item	Name	Description
1	Scanning unit	The main unit of the scanner
2	Fit plate (optional)	Use to mount BS-360 on your host system.
3	EPE packing foam	Use to protect package items.
4	AC adapter set	Required if BS-360 cannot be directly powered See 2.4 Powering on page 12.
5	Screws	Use to fix this scanner on your host system.
6	USB cable	Use to connect the scanner with your host system. See page 10 for other optional cables.
7	Configuration Guide	Use to configure BS-360 with barcodes.
8	User's Manual	Provides installation and use instructions.

### NOTE

- If anything is missing or appears to be damaged, immediately contact your dealer.
- You can mount BS-360 without the fit plate, but the plate may be suitable for your special mounting requirements. Contact your dealer for more information.
- Store the original packaging box. Use it to transport the scanner for future servicing.

## Exterior View





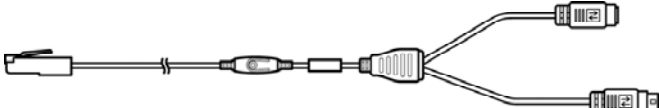

### NOTE




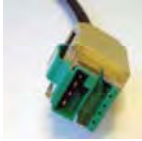
The scanner beeps whenever data has been read correctly. Both frequency and volume can be adjusted (see section 2.1.1 Speaker frequency and 2.1.2 Speaker volume on the Configuration Guide).

## 2.2 CONNECTING

### Interface Selection

BS-360 allows you to connect your host system using four different interface cables: RS232, Keyboard Wedge, USB, and Powered USB. On powering up, the scanner senses the type of the interface used and switches to the appropriate protocol.

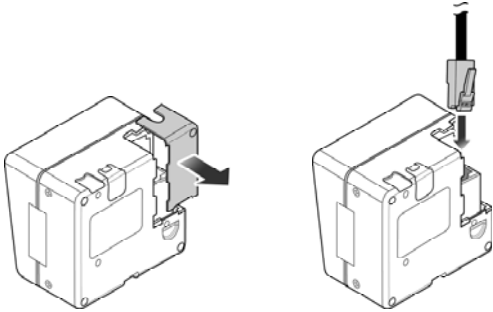
Interface Cable	Connector type
<b>RS232</b> (Product Number: 0114-SM01121)	Sub-D 9-pin
	
<b>Keyboard Wedge</b> (Product Number: 0114-SM02121)	Standard PS2
	

<b>USB</b> (Product Number: 0114-SM04121)	USB connector
	
<b>Powered USB</b> (Product Number: 0114-S801121)	Powered USB connector
	

**Getting connected**

To connect the scanner to your host system, follow the steps below:

- 1. Open the cable cap of BS-360.
- 2. Connect the desired interface cable to the scanner.



- 3. Close the cable cap.
- 4. Connect the interface cable to your host system.

**2.3 MOUNTING**

To mount BS-360, follow the steps below:

**NOTE**

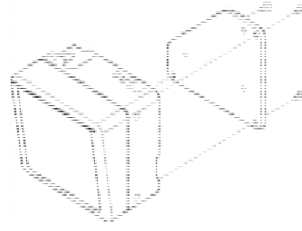
Before fixing BS-360 to your host system, connect the desired interface cable to the scanner first (See section 2.2 Connecting).

**Standard package**

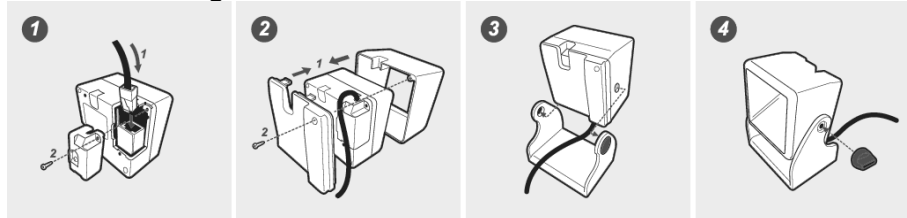
1. Place BS-360 on the inside of your host system and mark the places for the mounting holes. See Appendix for this scanner's dimensions.
2. Drill the mounting holes in your host system.
3. Fix BS-360 on the inside of your host system with screws.

**Special package (with the fit plate)**

1. Fix the fit plate to BS-360 with screws.



2. Attach BS-360 to the scanner stand of your host system.

**Standard Package with the Stand**

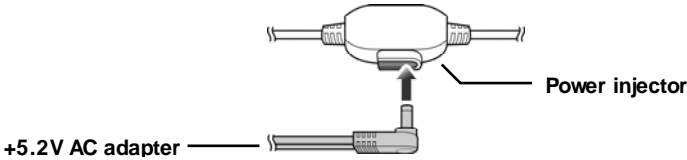
- Step 1: Remove the screw from the cable cap, detach the cap and insert the interface cable, and then lock the cap up with screw.
- Step 2: Assemble front and back cases with this scanner unit inside, put the interface cable downward in the back case's cable channel and then lock the cases up with screw.
- Step 3: Attach the scanner unit with case to the stand.
- Step 4: Locking the adjustable red bolt with the scanner unit with case and stand.

2.4 POWERING

BS-360 is designed to use a single cable for both data transmission and power supply. This requires that your host system can provide sufficient power on its data port (RS232, KBW, or USB).

Power injector

Some applicable th scanner interface cables have a power injector to connect an external power supply in case the host system cannot supply sufficient power for the scanner.



Cable	Power injector
RS232, Keyboard Wedge	√
Powered USB, USB	×

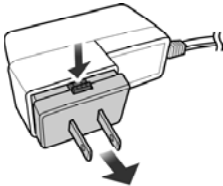
NOTE

- Though some cables have a power injector, this does not mean that you must use a power supply.
- For safety reasons, an automatic switch will disconnect the power provided by the host system, as soon as a separate power adapter is connected to the power injector.

Changeable power plugs

To change the power plug suited to your area, follow the steps below:

1. Press and hold the tab on the AC power adapter.
2. Remove the changeable plug outwards.



3. Replace with the desired power plug.

## 2.5 INITIALIZING

When using BS-360 for the first time, you need to initialize the communication parameters first. Follow the steps below to initialize:

1. Ensure that the desired interface cable is connected to the scanner and your host system.
2. Power up the scanner.
3. Initialize the communication parameters by scanning the programming barcode 1.1 and 1.3 on the Configuration Guide.

### NOTE

The procedure is required only once. However, when changing the cable from one type to another, you need to perform the procedure again.

### KBW mode

In KBW (Keyboard Wedge) mode, the scanner defaults to the International Keyboard layout (ALT-method) for communication.

### NOTE

To change the settings to national keyboards in KBW mode, refer to section 3.4 on the Configuration Guide.

### RS232 mode

In RS232 mode, the default communication parameters are 9600,N,8,2. Using the Configuration Guide, you may select one of the various presets, or set each parameter by hand.

### USB mode

In USB mode, the scanner defaults to Keyboard Emulation Mode. This scanner transmits the data in International Keyboard layout (ALT-method) for communication.

### NOTE

The USB must be directly connected to the host-USB port and not through an (un-powered) USB hub.

Other available USB communication selections are:

- USB IBM fixed POS scanner
- USB IBM handheld scanner emulation
- USB COM port emulation

**NOTE**

See section 3.5 USB communication on the Configuration Guide for more information.

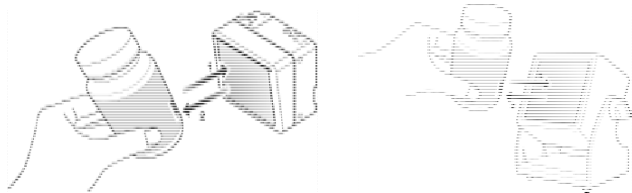


## **Chapter 3**

### **Using this Scanner**

3.1 SCANNING BARCODES

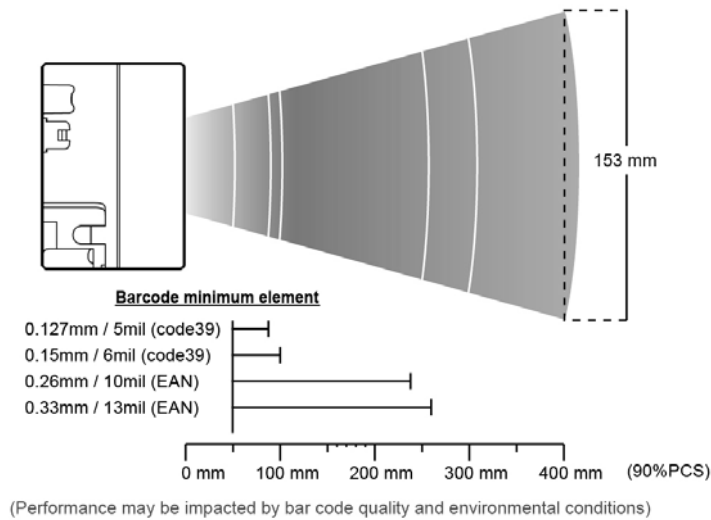
BS-360 is an omni-directional presentation scanner featuring a 6 directional scan field with a 24-line scan pattern. Barcode labels can easily be read by presenting them to the scanner.



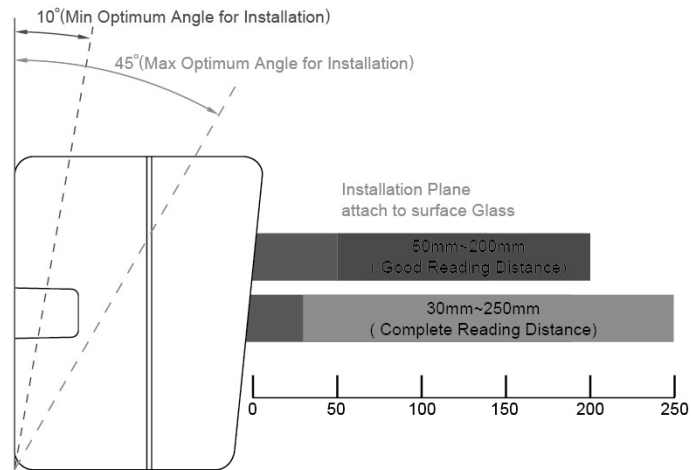
NOTE

Since BS-360 is a **presentation** scanner, best results are obtained if the barcode is moved **towards** the scanner.

BS-360's scan volume is illustrated in the figure below. The optimal reading zone lies between 5 and 30 cm from the scanner window. The scan depth varies depending on the size of the barcode.



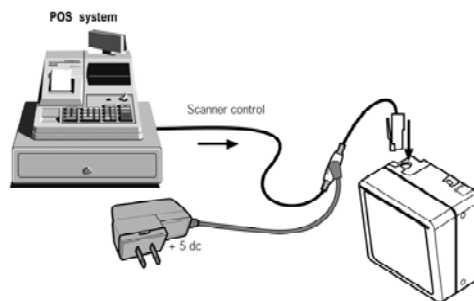
## Operation



### 3.2 CONTROLLING

BS-360 can be controlled from the POS/PC system via the RS232 interface or via USB while using comport emulation. Control is achieved by transmitting single byte commands to the scanner. The following commands are available:

ASCII code	Function	Byte is also called
05 Hex	Power-up re-initialization	ENQ or <Ctrl-E>
0E Hex	Enable (cancels disable)	Shift Out or <Ctrl-N>
0F Hex	Disable	Shift In or <Ctrl-O>
12 Hex	Sleep	DC2 or <Ctrl-R>
14 Hex	Wake (cancels sleep)	DC4 or <Ctrl-T>



**NOTE**

More commands are available upon request. Please contact your dealer for more information.

**3.3 MAINTAINING**

BS-360 requires little maintenance. Only occasional cleaning of the scanner 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.

**NOTE**

Please contact your dealer for specific cleaning material.

## **Chapter 4**

### **Applications**

## BS-360 as a Core Module of your Application Solutions

Barcodes have become a distinguishing mark of modern civilization. The familiar stripes are popping up almost everywhere in everyday life: libraries, retail stores, supermarkets, post offices, bill payment for services, law firms, shipping companies, enterprises, distributors, manufacturers, hospitals, etc.



The benefits of bar coding are obvious: improved data accuracy and accessibility enable a company to make correct decisions about future needs and actions. Consequently, profits are up.

**Case: Benefits of Bar Coding for Retail Stores**

- Building a competitive infrastructure
- Synchronizing supply with demand
- Creating high profitability
- Trimming operational costs

Although the applicable areas of barcode are extremely varied, the purpose is the same: improving data/materials management and reducing operation costs. All of these require a high performance barcode scanning solution. In all barcode-based solutions, the core unit is the barcode scanning module. BS-360 features high integrability, flexibility, scanning, and decoding capability. The compact design allows it to be integrated easily into almost any host system with minimum space requirement. Possible applications are:

- POS terminals
- Mobile computers
- Hand-held scanners
- Healthcare solutions
- Price checkers
- Self-service kiosks, etc.



## **Appendices**

- A. Connection Types and Pin Definitions
- B. Technical Specifications
- C. Troubleshooting

## A. CONNECTOR TYPES AND PIN DEFINITIONS

BS-360 supports multiple interface: RS232, KBW (Keyboard Wedge), USB, and Powered USB. The various pin definitions for each type of interface are given below.

### IMPORTANT

Various interface cables are available depending on the kind of host system you are using. Contact your supplier for availability. In case you need a special purpose cable, you can refer to the information below.

**The Connector type:** RJ-48, 10 pins.

### Pin Definition for multiple interface

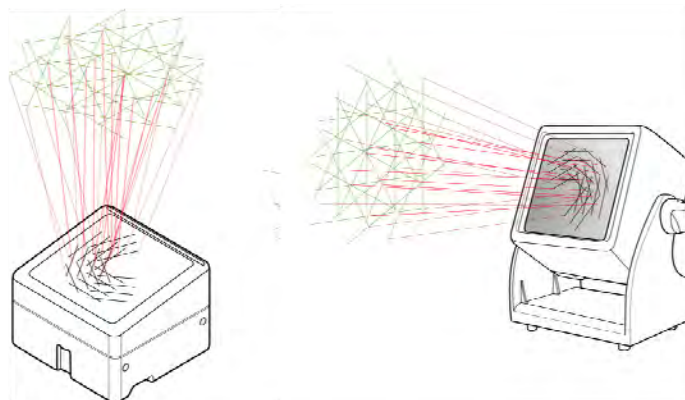
	Multiple Interface			
	RS-232	KBW	USB/ Powered USB	
Pin	Description	Description	Description	Remark
1	-	-	IFID	IFID=Interface ID
2	CTS	PC-Clock	-	
3	RxD	PC-Data	-	
4	TxD	KB-Data		IFID=Interface ID
5	RTS	KB-Clock	-	
6	Ground	Ground	Ground	Ground
7	+5.2V	+5.2V	+5.2V	5.2V, may be used to power scanner
8	D-Power	D-Power	D-Power	8-16V DC input to power scanner*
9	-	IFID: connect to '6'	D +	IFID=Interface ID D + = USB data
10	-		D -	D - = USB data

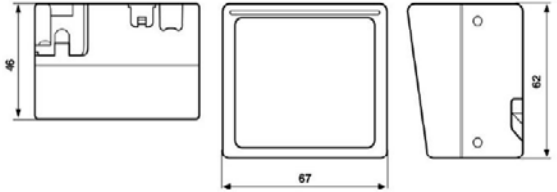
\*The scanner only requires one single DC input.

## B. TECHNICAL SPECIFICATIONS

Electrical	
DC input to scanner	+5 V DC, (AC Adapter 100~240V)
Power output	1.25 Watt @ +5 V DC
Scanner Characteristics	
Light source	650 nm visible laser diode
Depth of field	Up to 260 mm @ 13 mill .33 PCS 90%
Scan pattern	6 direction scan field, 24 lines scan pattern
Scan rate	2000 scans/sec
Light level	Max 4800 LUX
Barcode types	EAN/UPC/JAN + Add-on, ISBN, Code 128, EAN 128, Code 93, Code 39, Code 32, Codabar, Interleaved 2 of 5, MSI-Plessey, GS1 DataBar compliance (symbol 1-9)

**Scan pattern @ 10 cm**



Physical Characteristics	
Depth	46 mm / 1.81 inch
Width	62 mm / 2.44 inch
Height	67 mm / 2.63 inch
Weight	130 g
Color	Black
	
Environmental	
Operating Temperature	0°C ~ 40°C
Storage Temperature	-20°C ~ 60°C
Humidity	5% ~ 95% RH (non-condensing dew)
Safety	
Laser Safety	IEC/EN 825-1 (2007)
Electrical Safety	EN 60950
EM Compatibility	
Radio and TV Interference	EN 55024/22, FCC Part 15 class B, CNS 13438

## C. TROUBLESHOOTING

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

Problem	Diagnostic Tips
The scanner is on but a barcode cannot be read.	<ul style="list-style-type: none"><li>• The scanner window is dirty. Clean the scanner window as described in section 3.3.</li><li>• The presented barcode type is not enabled. Select the barcode type with the Configuration Guide.</li><li>• The scanner is disabled by the host. Refer to section 3.2.</li><li>• The barcode type you presented to the scanner is not supported by this scanner.</li></ul>
The scanner does not accept more than two or three barcodes.	<ul style="list-style-type: none"><li>• There is no proper handshaking with the host system. Switch the host system on and check connection and communication settings.</li></ul>
A barcode is read by the scanner but not accepted by the host system.	<ul style="list-style-type: none"><li>• 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.</li><li>• The communication settings of the host and scanner do not match. Ensure that the setting values for both devices are the same. For proper adjustment values, refer to the Configuration Guide.</li><li>• The communication cable does not suit your host system. Contact your supplier for the correct communication cable.</li><li>• The data format is not supported by the software running on the host</li></ul>

	system.
USB communication is not working.	<ul style="list-style-type: none"><li>• In case of KB emulation you can select various 'keyboard languages' or the universal 'Alt-input-method' (default). You may want to try programming barcodes from section 3.4 on the Configuration Guide.</li><li>• In case of KB emulation in combination with the Alt-input method, check that Num-Lock of your keyboard is on.</li><li>• In MS-windows environment, verify with the device manager that the HID (Human Interface Device) is installed for the scanner.</li><li>• Check that the scanner and the host system both expect the same USB protocol (KB emulation, RS232 emulation or IBM POS protocol). See the Configuration Guide for setup codes and reset the scanner after making any changes. When using a standard-USB cable, the scanner defaults to the USB KB emulation protocol with ALT-method character transmission. When using USB plus power cable (with the green connector), the scanner defaults to USB-IBM-POS protocol for tabletop scanners. These settings are restored</li></ul>

	after programming “back to default” using the Configuration Guide.
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