



**OpScan® 4 ES**  
OPTICAL MARK READ SCANNER



**iNSIGHT™ 4 ES**  
IMAGING & OPTICAL MARK READ SCANNER

**SCANTRON™**

# OpScan® 4 ES & iNSIGHT™ 4 ES

## *Operator's Guide*





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OPTICAL MARK READ SCANNER

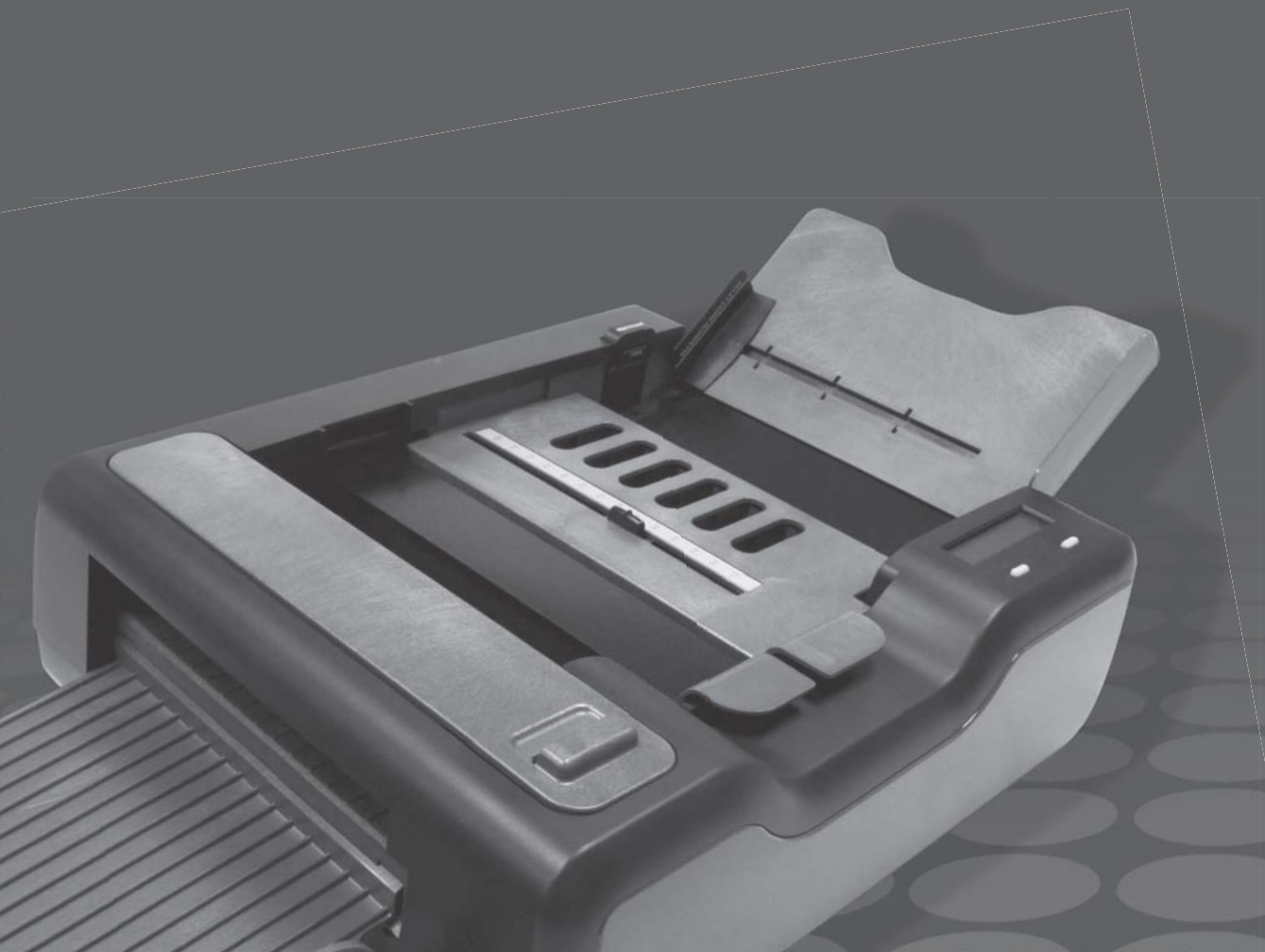


**iNSIGHT™ 4 ES**  
IMAGING & OPTICAL MARK READ SCANNER



# OpScan® 4 ES & iNSIGHT™ 4 ES

## *Operator's Guide*



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### **For Users in the United States**

This equipment complies with the requirements in part 15 of FCC Rules for a Class A computing device. Operation of the equipment in a residential area may cause unacceptable interference to radio and television reception requiring the operator to take whatever steps are necessary to correct the interference.

### **For Users in Canada**

The digital apparatus does not exceed the Class A limit for radio noise emission from digital apparatus set in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le règlement sur le brouillage radioélectrique édicté par le Ministre des Communications du Canada.

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# Preface

## About This Manual

This Operator's Guide is your guide for day to day use of your scanner. It provides the information you need to handle basic tasks related to scanner operation, simple maintenance, and troubleshooting.

This manual covers the following models:

- OpScan 4 ES
- OpScan 4 ES with SelfScore<sup>®</sup>
- iNSIGHT 4 ES
- iNSIGHT 4 ES with SelfScore

When important, differences between the scanners are explained in the text. Be sure to determine which scanner you own so that you know which information applies to you.

### Document Organization

This manual is organized as follows:

- Chapter 1, “Scanner Basics”, provides an overview of OpScan 4 ES and iNSIGHT 4 ES scanner components, features, and system requirements, as well as safety and environmental information.
- Chapter 2, “Setting Up Your Scanner” describes how to set up your scanner, install the necessary driver software, and connect to the host computer.
- Chapter 3, “Operating Your Scanner” explains how to scan sheets with your scanner.
- Chapter 4, “Scanner Modes” describes the various scanner modes, when best to use each, and how to select them.
- Chapter 5, “Display Panel Messages” explains each of the display panel messages that you might see on the LCD (liquid crystal display) display panel.
- Chapter 6, “Using the Background Menu” provides a flowchart of the background menu system, as well as explanations of each function.
- Chapter 7, “ES/ScanMark Emulation” describes how to use ES/ScanMark™ mode to emulate a Scantron ES 2010, ES 2260, or ES 2800 scanner.
- Chapter 8, “Cleaning the Scanner” explains how to clean the scanner.
- Chapter 9, “Troubleshooting” provides a troubleshooting chart designed to help you resolve any issues you encounter.
- Chapter 10, “Product Support and Services” provides information on registering your product, resources that are available to help you with your scanning project, how to order supplies and forms, and how to contact Scantron Customer Support.
- Appendix A, “Recalibration” explains when and how to recalibrate the scanner.
- Appendix B, “Transport Printer” describes printer features, how to set up and test the printer(s), as well as cleaning and troubleshooting.

- Appendix C, “Bar Code Reader” explains bar code reader components, which bar codes can be read, how to scan bar codes, troubleshooting and testing.
- Appendix D, “Select Stacker” provides information on setting up, testing, and scanning with the Select Stacker. It also covers Select Stacker display panel messages and cleaning.

## Related Documentation

This manual is part of a documentation set for the OpScan 4 ES and iNSIGHT 4 ES scanners. The documentation set provides information on packaging, installation, setup, operation, and configuration for users and system administrators. The documentation set consists of the following:

- *OpScan 4 ES and iNSIGHT 4 ES Operator's Guide* (part number 277 283 xxx\*)
- *OpScan 4 ES and iNSIGHT 4 ES Quick Start* (part number 277 284 xxx\*)
- *OpScan 4 ES and iNSIGHT 4 ES Quick Tips - Maintenance* (part number 277 298 xxx\*)
- *OpScan 4 ES and iNSIGHT 4 ES Quick Tips - Display Panel Messages* (part number 277 285 xxx\*)
- *Elements of Data Collection* (part number 277 292 xxx\*)
- *Scanning Tests, Ballots, and Surveys Using SelfScore\*\** (part number 277 300 xxx\*)

\* Where xxx indicates the current revision number.

\*\* Only included with scanners equipped with the SelfScore option.

## Contacting Customer Support

If you require assistance, see “Requesting Support” on page 145 for information on contacting Scantron Customer Support.

## World Wide Web Access

You can access our Web site at **[www.scantron.com](http://www.scantron.com)**.

## NOTES



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## Chapter 1:

# Scanner Basics



Congratulations on your purchase of the Scantron OpScan 4 ES or iNSIGHT 4 ES scanner. These scanners represent the latest in OMR<sup>1</sup> only and OMR with imaging data collection technology.

In this chapter you will find a description of your scanner's components, features, specifications, and system requirements, as well as safety and environmental information.

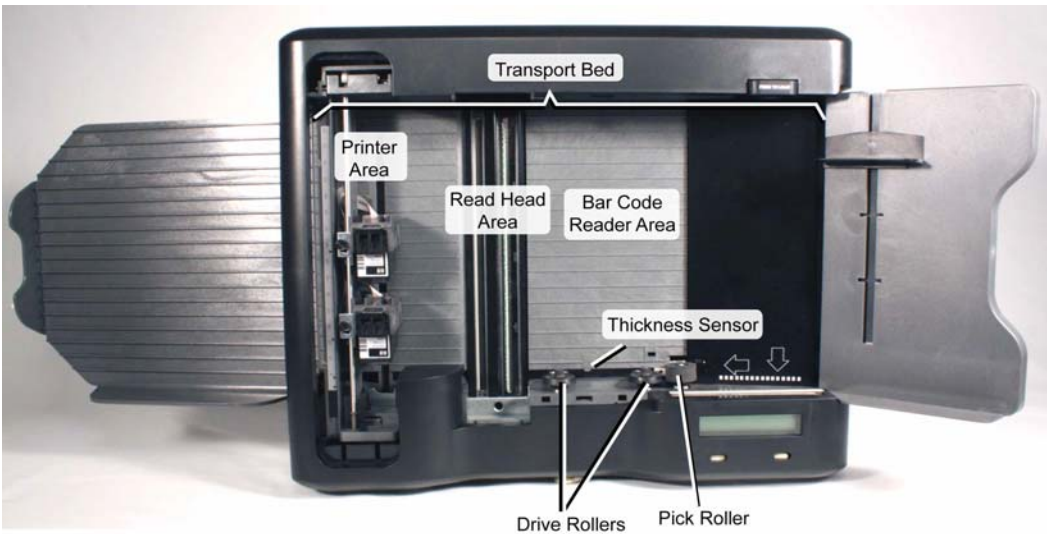
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1. optical mark recognition

# Scanner Components

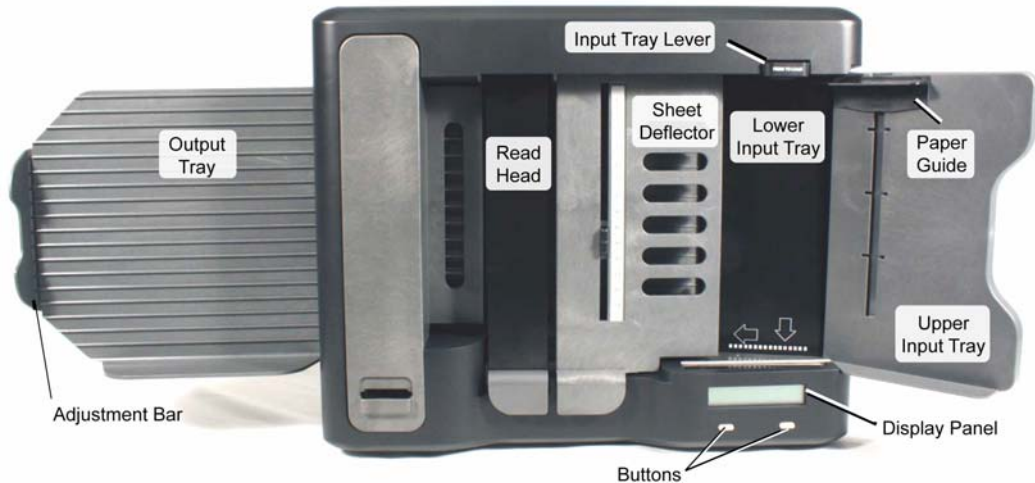
Use the illustrations below to identify scanner components, then find the component description in the corresponding table.

## Transport Bed Open View



Component	Function
Bar Code Reader Area	Optional bar code reader goes here.
Drive rollers	Pull a sheet through the transport bed.
Pick roller	Pulls a sheet onto the transport bed.
Printer Area	Optional printer components go here.
Read Head Area	Read head components go here.
Thickness sensor	Used to detect thickness of forms to ensure only one sheet is being scanned at a time.
Transport bed	Supports the sheet as it moves through the scanner.

## Transport Bed Closed View



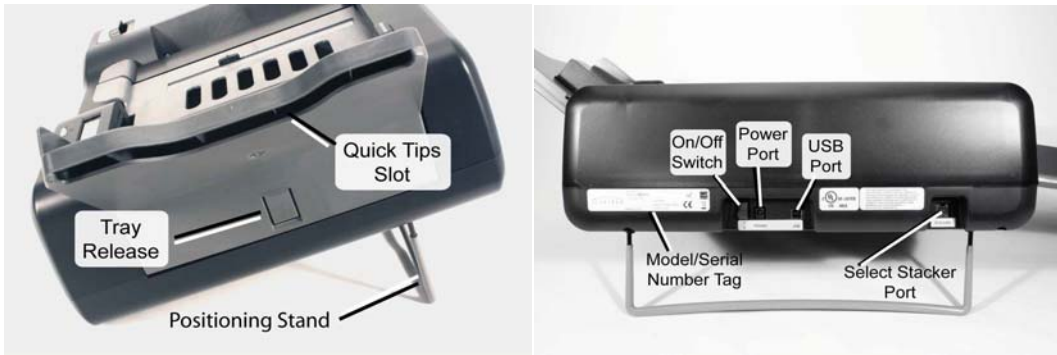
Component	Function
Adjustment bar	Stops the sheet in the output tray as the sheet leaves the transport bed. Prior to scanning, the adjustment bar needs to be adjusted to the length of the sheets being scanned.
Buttons	Enable you to start and stop the scanner and perform other menu driven functions.
Display panel	Displays messages from the scanner and the host computer. Shows the status of the scanner and provides messages on how to change the status and resolve a scanner condition.
Input trays (upper and lower)	Hold up to 100 sheets of paper for scanning. The lower input tray rises automatically as sheets feed. The upper tray has a pocket to hold the Quick Tips guides.
Input tray lever	Retains the input tray in the down position for easy loading of sheets. The input tray lever must be released for the scanner to function.
Output tray	Holds up to 100 sheets after they have been scanned.

## Chapter 1: Scanner Basics

### Scanner Components

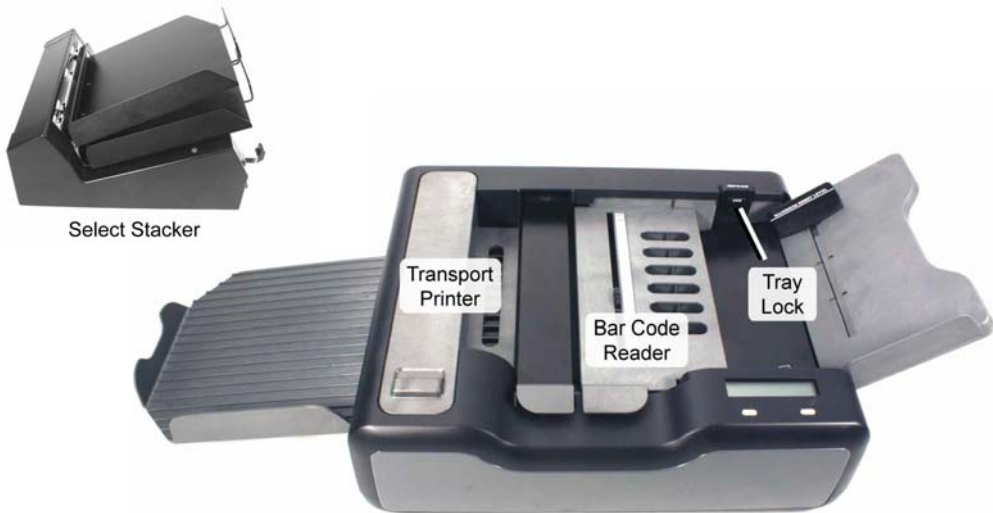
Component	Function
Paper guide	Aligns sheets in the input tray. Prior to scanning, the paper guide should be manually adjusted to the width of the sheets being scanned.
Read head	Captures data from sheets. (A label on the end of the read head shows the type of read head you have.) The read head must be down and latched for the scanner to function properly.
Sheet deflector	Keeps a sheet flat as it starts through the scanner. Acts as a cover for the optional bar code reader (if used). The sheet deflector must be down and latched for the scanner to function properly.

## Side and Back Views



Component	Function
Model and serial number tag	Provides model and serial number information. You will be asked for these numbers when calling Scantron Customer Support for assistance.
On/Off Switch	Turns scanner on (1) and off (0).
Positioning stand	Must be extended to position the scanner at the proper angle for scanning.
Power port	Provides a connection point for power input from the power supply.
Quick Tips slot	Provides a location on the scanner for the <i>Quick Tips</i> guides. The slot is located on the back of the upper input tray.
Select Stacker port	Provides a connection point for the data cable going to the optional Select Stacker.
Tray release	Releases (when pressed) the input tray for removal from the scanner. Located on the back of the upper input tray under the Quick Tips slot.
USB port	Provides a connection point for the USB cable coming from the computer.

## Front and Top View



Component	Function
Bar code reader (optional)	Reads bar codes on a sheet. The cover of the reader must be down and latched for the scanner to function properly.
Transport printer (optional)	Prints data on a sheet sent from an attached computer. The printer cover must be down and latched for the scanner to function properly.
Select Stacker (optional)	Enables the computer to select between two trays for sheet output. The Select Stacker places sheets in the bottom (select) tray based on edit criteria selected in your scanning software.
Tray lock	Locks the input tray in the down position for easier loading of sheets. The input tray lever releases the tray lock. The input tray must be up for the scanner to function properly.

# OpScan 4 ES Standard Features

## Standard Features

- 2800 sheet per hour throughput
- Automatic-feed
- Pencil mark detection
- Jam, multiple-sheet, and skew detection
- 40 character alphanumeric display panel
- Integrated diagnostics system with messages sent to scanner display panel and host computer
- Communications with host computer through a USB communications port
- Simultaneous transfer of data and scanning of forms
- Ability to read both Mark Reflex<sup>®</sup> and Trans-Optic<sup>®</sup> forms
- Handles all common spacings: .166, .166 48 cell, .200 inline, .200 offset, .200 line read, and .300 line read
- Input tray and output tray capacity of up to 100 sheets
- Sheet-handling capacity of 2.5 x 5-inch to 9 x 14-inch, 60-100 lb. offset sheets

## Options

- Dual side read head for two-sided form scanning.
- Programmable interactive printer(s) that print information on the sheet being scanned based on the scanned data. The printer(s) can print error codes, alphanumeric messages, serial numbers, validation flags, and test scores with no effect on the throughput rate.
- Bar code reader (hardware) that can read bar codes in ladder format.



- Download mode and documentation kit enables you to program the scanner using a series of commands downloaded from the host computer. Download supports use on platforms other than PC by using download programmability.
- SelfScore option, in combination with dual ink jet printers, allows operation as a test scoring machine with test scoring, survey, and ballot capabilities. SelfScore mode allows operation without connection to a host computer.
- Select Stacker allows separate stacking of sheets based on edit criteria selected in your scanning software.

## Specifications

- Physical Description
  - Length: 21.25" (54 cm)
  - Width: 14.5" (37 cm)
  - Height: 9" (23 cm)
  - Weight: 17 lbs. (7.7 kg)
- Operating Environment
  - Temperature: 60°F to 85°F (16°C to 29°C)
  - Humidity: 40% to 60%, non-condensating
- Power
  - 100-240 volt operation: 100-240 volts AC (-10%, +6%); 47-63 Hz; US 3-prong plug; 15 amp dedicated circuit
- Communications
  - USB 1.1 or 2.0 - OpScan 4 ES operates asynchronous using a virtual com port with user-defined protocol
- Operation
  - Read Heads: Contact image sensor arrays, 16 level OMR, pencil read capability

- Scanning Rate: 2,800 sheets per hour (Actual scanning rate depends on quantity of data read from the forms and the amount of processing done on the data while scanning)

# iNSIGHT 4 ES Standard Features

## Standard Features

- Selectable OMR with imaging or OMR only based data collection
- 2300 sheets per hour throughput in OMR with Imaging mode
- 2800 sheets per hour throughput in OMR only mode
- Scanner provides 8-bit, 256 grayscale levels, and 200 dpi images
- Capture, name, and archive image clips (TIFF, JPEG)
- Software recognized bar code
- Automatic-feed
- Selectable pencil or ink mark detection
- Jam, multiple-sheet, and skew detection
- 40 character alphanumeric display panel
- Integrated diagnostics system with messages sent to scanner display panel and host computer
- Communications with host computer through a USB 2.0 communications port
- Simultaneous transfer of data and scanning of forms
- Ability to read both Mark Reflex® and Trans-Optic® forms
- Handles all common spacings: .166, .166 48 cell, .200 inline, .200 offset, .200 line read, and .300 line read
- Input tray and output tray capacity of up to 100 sheets
- Sheet-handling capacity of 2.5 x 5-inch to 9 x 14-inch, 60-100 lb. offset sheets

## Options

- Programmable interactive printer(s) that print information on the sheet being scanned based on the scanned data. The printer(s) can print error codes,

alphanumeric messages, serial numbers, validation flags, and test scores with no effect on the throughput rate.

- Bar code reader (hardware type) reads bar codes in ladder format.
- Download mode and documentation kit enables you to program the scanner using a series of commands downloaded from the host computer. Download supports use on platforms other than PC by using download programmability.
- SelfScore option, in combination with dual ink jet printers, allows operation as a test scoring machine with test scoring, survey, and ballot capabilities. SelfScore mode allows operation without connection to a host computer.
- Select Stacker allows separate stacking of sheets based on edit criteria selected in your scanning software.
- Optional RealTime Character Recognition utilizing NestorReader™ software allows processing of machine and hand print data.

## Specifications

- Physical Description
  - Length: 21.25" (54 cm)
  - Width: 14.5" (37 cm)
  - Height: 9" (23 cm)
  - Weight: 17 lbs. (7.7 kg)
- Operating Environment
  - Temperature: 60° to 85°F (16°C to 29°C)
  - Humidity: 40% to 60%, non-condensating
- Power
  - 100-240 volt operation: 100-240 volts AC (-10%, +6%); 47-63 Hz; US 3-prong plug; 15 amp dedicated circuit

- Communications
  - Image operation using USB 2.0 (Can operate OMR asynchronously using a virtual com port with user-defined protocol)
- Operation
  - Read Heads: 200 dots per inch (dpi) resolution, up to 256 levels of grayscale per pixel; pencil and ink
  - Scanning Rate: 2,300 sheets per hour in OMR with Imaging mode, or 2800 sheets per hour in OMR only mode. (Actual scanning rate depends on quantity of data read from the form and the amount of processing done on the data while scanning).

# System Requirements

For information about system requirements for the OpScan 4 ES or iNSIGHT 4 ES scanner, go to [www.scantron.com/scanners](http://www.scantron.com/scanners).

# User Precautions

Users and their employers need to observe the common sense precautions applicable to the operation of any machinery. These include, but are not limited to, the following:

- Do not wear loose clothing, unbuttoned sleeves, etc.
- Do not wear loose jewelry, bracelets, bulky rings, long necklaces, etc.
- Hair length should be kept short, using a hair net if needed, or tying long hair up in a bundle.
- Remove all loose objects from the area that could be drawn into the machine.
- Take sufficient breaks to maintain mental alertness.
- The scanner and power supply must only be used indoors in a dry location.
- Use only the power supply that was provided with your Scantron scanner. Do not substitute another power supply model or another manufacturer's power supply.
- Use only the recommended cleaning supplies to prevent damage to scanner components.

Supervisors should review their practices and make compliance with these precautions a part of the job description for operation of the scanner.

# Environmental Information

- Scantron scanners are designed to meet worldwide environmental requirements.
- Guidelines are available for the disposal of consumable items that are replaced during maintenance or service. Follow local regulations or contact your local sales agent for more information.
- For disposal or recycling information, contact your local authorities or, in the U.S., visit the Electronics Industry Alliance Web site at [www.eiae.org](http://www.eiae.org).
- The product packaging is recyclable (although it should be retained in case the scanner needs to be shipped for service).

## Waste Electrical and Electronic Equipment (WEEE)



This symbol indicates that when the last user wishes to discard this product, it must be sent to appropriate facilities for recovery and recycling. Please contact your local sales agent for additional information on the collection and recovery programs available for this product.

Per European Union Directive 2002/96/EC this Category 1 IT and telecommunications equipment is not to be discarded but must be returned to the original producer/distributor for proper dismantlement and disposal. Additionally, with the receipt of this device, the producer/distributor will take for disposal one (1) other device manufactured by the producer from the same product family. Producer of this device is Pearson NCS, USA.



# UL Regulatory Compliance Statement

## CLASS 1 LED PRODUCT

- IEC 60825-1:1993 +A1:1997 +A2:2001
- This class is eye-safe under all operating conditions
- Array pulse duration 256usec, maximum power output 0.34mW.

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



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## Chapter 2:

# Setting Up Your Scanner

This chapter covers setup of your OpScan 4 ES or iNSIGHT 4 ES scanner.

## Selecting a Good Location

For best results, use the following general guidelines for placing your scanner:

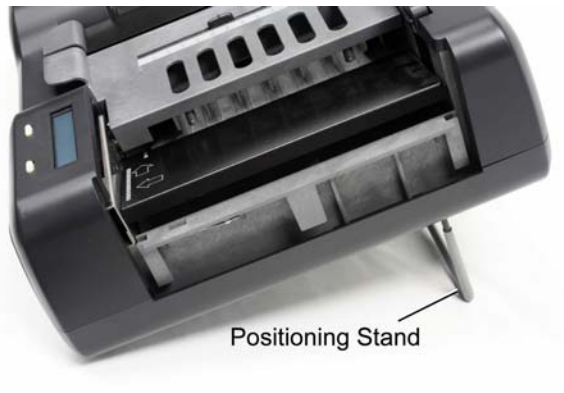
1. **Air quality.** The scanner works better and lasts longer when it is not exposed to a lot of dust.
2. **Computer hookup.** Place the scanner within 6 feet of the computer to which it is to be connected.

**NOTE:** A Scantron scanner running SelfScore in a stand-alone configuration does not need a computer hookup.

3. **Humidity.** Place the scanner in a location with 40% to 60% relative humidity. (If sheets have been in very humid or dry conditions, keep them in a climate controlled environment for 24 hours before you attempt to scan them.)
4. **Electrical noise.** Avoid locating the scanner near a generator or other type of large motor, such as an elevator, an air conditioner, or a refrigerator that produces electrical noise which might interfere with the scanner's electronics.
5. **Power source.** Use a separate source of power (with surge protection) for the scanner. The circuit from the source (breaker box) should not supply power to a major piece of equipment other than the scanner, computer, and (optional) Select Stacker.
6. **Space.** Find a location that allows you plenty of working surface around the scanner. The scanner itself is 21 X 15 X 9 in. (54 X 37 X 23 cm).
7. **Temperature.** Place the scanner in a location with temperatures between 60° and 85° F (16° and 29° C).

## Assembling the Scanner

1. Extend the positioning stand so that the scanner is placed at the proper angle for operation.



2. Install the paper guide by sliding it into the slot in the input tray.

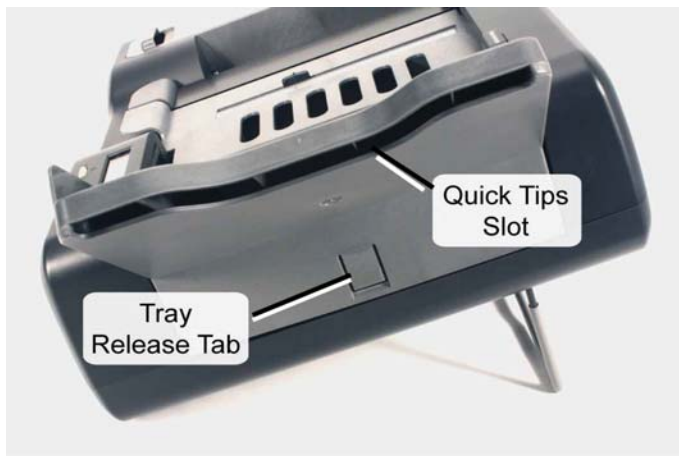


3. Install the input tray. Slide the end of the tray that has two prong-like tabs into the slots at the end of the scanner.

**NOTE:** When removing the tray from the scanner, depress the tray release tab.



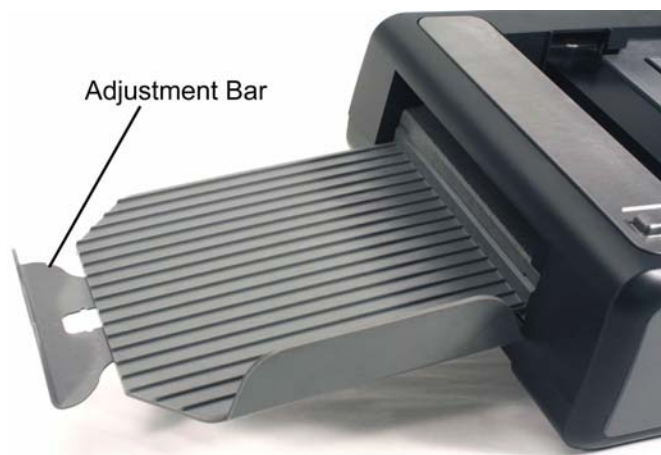
4. Insert the *Quick Tips* guides (shipped with your scanner) into the slot on the underside of the input tray. This helps prevent loss of the instructions.



5. Install the output tray (or the Select Stacker (see [Appendix D](#) then continue with the next step below)). Hook the end of the tray that has two prong-like tabs into the end of the scanner.



6. Adjust the adjustment bar to the length of the sheets that you will be scanning.



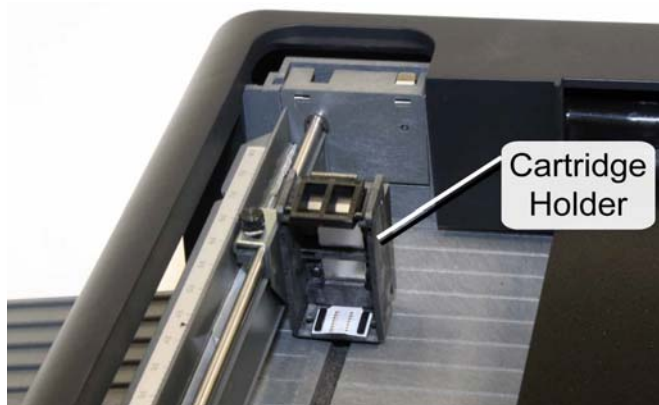
## Installing the Printer Cartridge(s)

If your scanner is equipped with the transport printer option, use the following instructions to install the printer cartridges.

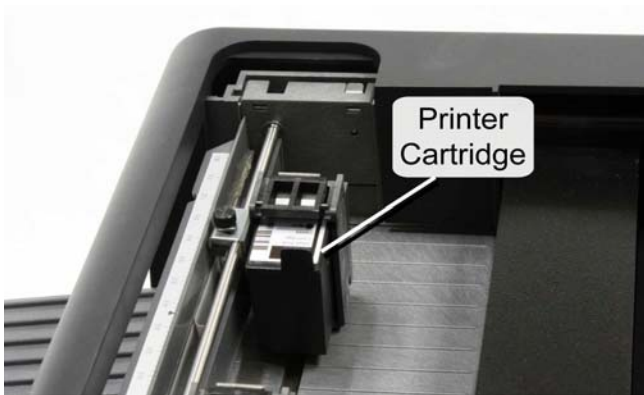
1. Unlatch and remove the printer cover.



2. Locate the cartridge holder(s).



3. Slide the printer cartridge into the cartridge holder “feet first” then press the top of the cartridge firmly into the cartridge holder until you feel two clicks. This ensures that the cartridge is fully seated.



4. If you have dual printers, repeat step 3 for the second printer.
5. Re-install the printer cover.

**NOTE:** For more printer information, refer to [Appendix B](#).



## Installing the iNSIGHT Scanner Utilities Software

**NOTE:** If your scanner is equipped with SelfScore mode and you will be using it only in that mode, you do not need to install software.

**IMPORTANT:** Before connecting your scanner to the computer and turning it on, install the scanner utilities software on the host computer as described below.

1. Insert the iNSIGHT Scanner Utilities CD into the CD-ROM drive of the computer..
2. Browse to your CD-ROM drive.
3. Double-click the **setup.exe** file to run the setup program.
4. Follow the on-screen instructions.
5. Click **Finish** when setup is complete.

## Connecting the Scanner

This section describes how to connect the power supply and computer to your scanner.

**IMPORTANT:** Before connecting the scanner to the computer and turning it on, be sure to install the scanner utilities on the host computer as described in the previous section.

### Connecting the Power Supply

1. Find the power cable and the power supply that came with your scanner.



2. Plug the end of the power cable (three-prong plug) into a properly grounded electrical outlet providing alternating current (AC).

**CAUTION:** If lightning damage is a possibility, use a power strip with surge protection.

**CAUTION:** Do not connect the scanner to an outlet that also serves another major piece of equipment other than the computer and the (optional) Select Stacker.

3. Plug the rectangular end (three receptacles) of the power cable into the open end (with three prongs) of the power supply.



4. Plug the rounded end of the power supply into the power port on the back of the scanner.

**CAUTION:** Do not plug the rounded end of the power supply into any part of the computer.



## Connecting the Scanner to the Computer

**NOTE:** If your scanner is equipped with SelfScore mode and you will be using it only in that mode, you do not need to connect the scanner to a computer.

1. Locate the USB ports on the back of your computer. Plug the A end (flat end) of the USB cable into the USB communications port

**NOTE:** A USB 1.1 (OpScan 4 ES) or 2.0 (OpScan 4 ES or  $\Delta$ NSIGHT 4 ES) communications port is required.

**NOTE:** Do not connect more than one OpScan 4 ES,  $\Delta$ NSIGHT 4 ES, or SelfScore scanner to the host computer at a time.

Plug the USB B connector (square end) into the USB port on the back of the scanner.

**IMPORTANT:** There may be a sticker covering the USB port. If so, remove it before plugging in the USB cable.



## Turning the Scanner On

**CAUTION:** Do not turn on the scanner before installing the scanner utilities software. Doing so may result in incorrect drivers being loaded. (This statement does not apply if you are using the scanner in SelfScore mode without a computer.)

1. Press the switch on the back of the scanner to turn the scanner on (I) or off (O).



2. After you turn on the scanner, wait for it to complete the self-test. The message “Initializing...” will appear on the display panel. After a few seconds, another message will appear indicating what action needs to be taken next.

## Installing Your Scanning Software

Install your scanning software. Refer to the documentation that came with your scanning software for instructions.

**IMPORTANT:** If you are replacing an older scanner but will still be using your original scanning software, you will likely find that you do not have a selection for your new scanner in your scanning software. In most cases, your older scanning software will work if you select an earlier version scanner that is compatible with the OpScan 4 ES or zNSIGHT 4 ES. Use the following as guidelines:

- If you purchased an OpScan 4 ES, select OpScan 4 in your scanning software.
- If you purchased an zNSIGHT 4 ES and will be running in OMR with Imaging mode, select zNSIGHT 4 in your scanning software.
- If you purchased an zNSIGHT 4 ES and will be running in OMR Only mode, select OpScan 4 in your scanning software.
- If you purchased an OpScan 4 ES or zNSIGHT 4 ES and will be running in ES/ScanMark emulation mode, select the ES scanner that you have replaced (ES 2010, ES 2260, or ES 2800 scanner).

## Handling the “Recalibrate/See Manual” Message

The scanner firmware does diagnostics checks each time the unit is powered on and during scanning. If the firmware determines that the read heads need to be recalibrated, you will see the following messages on the display panel.



RECALIBRATE. ....



SEE MANUAL

If you get these messages, see [Appendix A](#) for instructions regarding calibration.

## Uninstalling the iNSIGHT Scanner Utilities Software

**NOTE:** This step is not part of setup. It is included in case you want to remove the scanner utilities software from your PC (e.g. if you move the scanner to a different computer).

If you want to uninstall the scanner utilities software, use the following procedure:

1. Before uninstalling the software, close all programs and turn off the scanner.
2. Open the Control Panel from your operating system and select **Programs and Features**. Wait for the list to populate.
3. Select **Scantron iNSIGHT Scanner Utilities** from the Name list, and click **Uninstall**. A message displays asking you to confirm that you want to remove the application.
4. Click **Yes**.
5. Click **Finish** and close the Add or Remove Programs dialog box to complete uninstallation.



## **NOTES**

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## Chapter 3:

# Operating Your Scanner

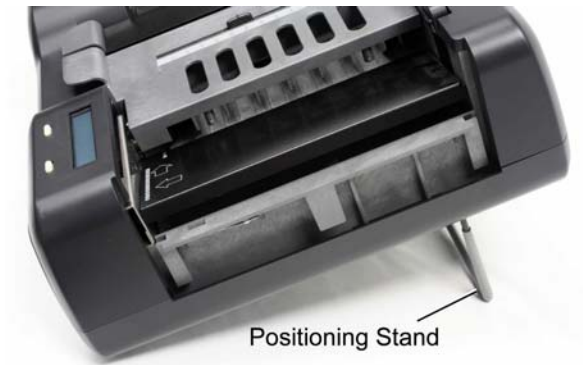
This section covers how to use your scanner for data collection.

**IMPORTANT:** Before using your scanner for high stakes testing, be sure to perform a test to ensure that your scanner and scanning software are working properly.

## Verifying Proper Setup

Before starting your scanning session, you may want to verify that the scanner is set up properly.

1. Ensure that the positioning stand is in the down position.



2. Ensure that the power supply is plugged into both a wall outlet or power strip and the back of the scanner.



3. Ensure that the scanner is connected to the computer via USB cable.



4. Ensure that the input tray and output tray (or Select Stacker) are in place and that the adjustment bar is properly positioned for the sheets being scanned.



5. Ensure that the covers on the sheet deflector (or optional bar code reader), read head, and printer (optional) are closed and fully seated.



## Configuring the Scanner

Your scanner comes preconfigured by Scantron ready to meet most scanning needs. However, should you have special requirements, use the background menus to configure the scanner. See Chapter 6, “Using the Background Menu” for information on how to configure the scanner.

## Scanning Procedure

Use the following procedure to scan a stack of sheets:

1. If there is no message in the display panel, bring the scanner out of sleep mode by pressing either button (about 2 seconds).
2. Verify that the scanner is ready to scan. With the input tray empty, the display panel should display the following message for all modes except ES/ScanMark,



INPUT TRAY EMPTY  
↓OFF↓

or this message if you're in ES/ScanMark mode.

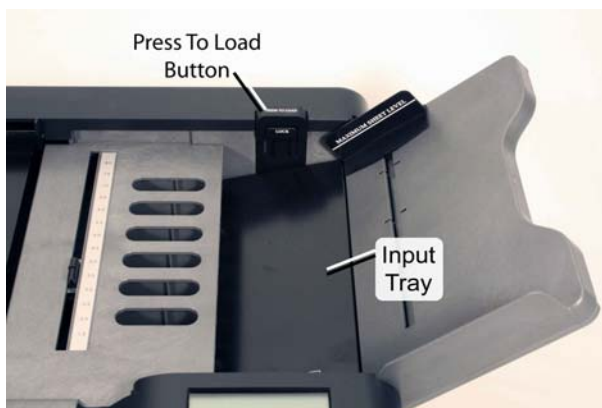


-ES/ScanMark-  
Ready

If the display does not match one of the two above, verify that you have properly set up the scanner as described in Chapter 2, “Setting Up Your Scanner”. If you are unable to correct the problem, refer to Chapter 9, “Troubleshooting”.

3. Press the **Press To Load** button on the side of the input tray and while holding it down, complete steps 4 (optional), 5, and 6 in this procedure.

**NOTE:** Depressing this lever allows the sheets you load to slide as far up into the input tray area as possible. This is important for proper feeding.



4. (Optional) If you have a large number of sheets to load, you may want to secure the Press To Load button in the down position by pushing in the **Tray Lock** while the button is depressed. To release the lock after you have loaded sheets, depress the **Press To Load** button once again and release it.

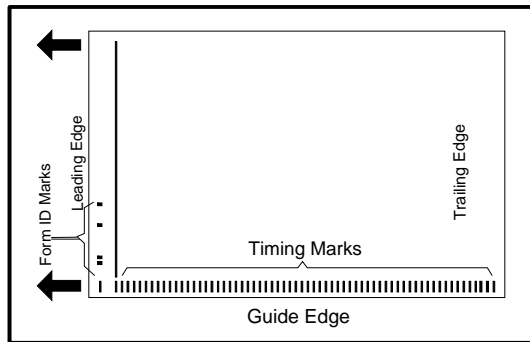




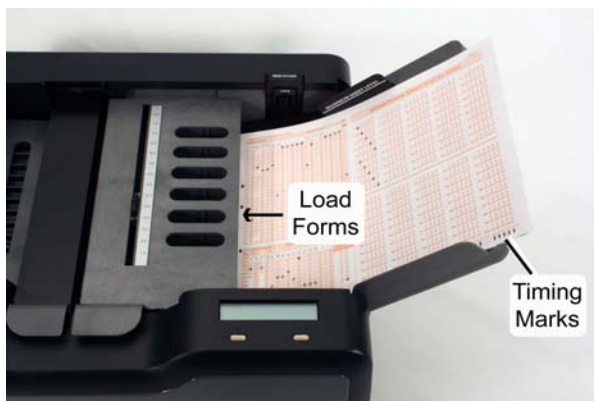
5. Load the input tray by stacking all sheets the same way as follows:

Stack the sheets so that the **leading edge** of the sheet goes into the scanner first, with the **trailing edge** going in last. Align the **guide edge** with the edge of the input tray closest to the front of the scanner (guide rail).

**NOTE:** **Form ID Marks** identify the sheet to the scanner. **Timing Marks** signal the scanner where to read across a sheet.



6. Verify that the sheets are as far toward the read head as possible. Slide the paper guide so that it just touches the sheets.



7. Open your scanning software on the host computer and use it to control the scanning process.

For software instructions, refer to the documentation for the software you are using.

## Understanding Display Panel Messages

The display panel displays information regarding:

- Scanner status
- Errors
- What to do next
- Button functionality

See Chapter 5, “Display Panel Messages” for explanations of all display panel messages. They are listed alphabetically.

## Clearing Document Jams

If documents jam during scanning, the display panel will display an error message. You can use the following general procedure for clearing jams, or see Chapter 5, “Display Panel Messages” for more information on the specific error message that you received.

1. Lift the following:
  - Sheet deflector (or optional bar code reader)
  - Read head
  - Transport Printer cover



2. Remove any sheets on the transport bed.
3. Close all covers making sure that each is fully seated.
4. Return any unscanned sheets to the input tray.
5. Press **START** (or **Cont** if in ES/ScanMark mode) to resume scanning.

## NOTES

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## Chapter 4:

# Scanner Modes

OpScan 4 ES and iNSIGHT 4 ES scanners can be operated in a number of different modes for data collection. These modes are:

- OMR w Imaging
- OMR Only
- ES/ScanMark
- Download Run and Download Debug
- SelfScore

Each of these modes is described in this chapter.

## OMR w Imaging Mode

### Applies To

- iNSIGHT 4 ES scanners
- iNSIGHT 4 ES with SelfScore scanners

### Overview

OMR with Imaging mode represents the latest advancements in data collection technology. Using OMR with Imaging mode, you can capture an image of the entire sheet or specific areas on the sheet. You can perform heads up editing where you can view an image of the grid on the sheet while you edit the ASCII data file. You can perform KFI (key from image) where you type data into the ASCII data file while viewing an image of the graybox field (i.e. comments or essay box). You can read bar codes in both ladder and fence orientations using your Scantron data collection software. You can also read machine or handprint data using optional OCR (optical character recognition) or ICR (intelligent character recognition) packages.

In OMR with Imaging mode, the scanner must be connected to a PC with Scantron software (i.e. ScanTools Plus or a custom application created from ScanTools Plus Link SDK). The software controls the scanner and captures the data.

When a new session is initiated, the software sends a “scan sheet” message to the scanner and the scanner responds by scanning a sheet. As each sheet is scanned, the scanner sends an image of the entire sheet back to the scanner for processing.

Once the image is received by the software, the data is extracted based on the form definition in the software. OMR bubble grids are resolved by the software and are converted to their ASCII equivalent. Image data is saved for each image clip area that was specified in the form definition. Bar code image data is converted to its ASCII equivalent. And, if optical character recognition (OCR) or intelligent character recognition (ICR) is being used, those grids are converted to their ASCII equivalent as well.

The resulting data is stored on the PC as an ASCII data record and image data. This process is performed for each sheet scanned until the operator ends the session.

**NOTE:** Because the data collection software (i.e. ScanTools Plus or a ScanTools Plus Link application) handles the image data sent from the scanner, you should consult your software documentation to realize the full potential of OMR with Imaging mode.

**When To Use** Use this mode if you want to:

- Convert and save bubble data to ASCII
- Convert and save bar code (ladder or fence orientation) data to ASCII
- Convert machine print to ASCII (using optional OCR software)
- Convert hand print to ASCII (using optional ICR software)
- Save grayscale or B&W images of clip regions
- Save grayscale or B&W images of the entire sheets
- View a portion of the sheet to aid in editing the ASCII data that has been collected (commonly known as heads up editing)
- View a portion of the sheet to enter data into the ASCII data record (commonly known as key from image or KFI)

**When To Avoid** Select a different mode if:

- You are only capturing bubble data and scanning speed is most important to you (OMR Only mode is 22% faster)
- Your PC does not meet the minimum requirements for ScanTools Plus or ScanTools Plus Link SDK in imaging mode (OMR Only mode uses less system resources)



- You do not have ScanTools Plus software or a custom application created with ScanTools Plus Link software or you are working on a computer platform that is not PC (Download mode works with computer platforms other than PC. SelfScore mode allows the scanner to function without connection to a PC.)
- You simply want to score tests or tally surveys or ballots and do not need to retain the ASCII data (SelfScore mode is simple to use and does not require a PC)

# OMR Only Mode

**IMPORTANT:** When running the scanner in OMR only mode, you must configure your scanning application to the virtual serial port to which the scanner is connected. If you are uncertain of the com port to which the scanner is connected, begin with the highest available and work your way down.

## Applies To

- OpScan 4 ES scanners
- OpScan 4 ES with SelfScore scanners
- $\Delta$ NSIGHT 4 ES scanners
- $\Delta$ NSIGHT 4 ES with SelfScore scanners

## Overview

OMR Only mode uses classic data collection technology. In this mode, the scanner sends an ASCII representation of the marks on the sheet to the computer for each sheet scanned.

In OMR Only mode, the scanner must be connected to a PC with Scantron software (e.g. ScanTools Plus, Remark<sup>™</sup>, Prosper<sup>™</sup>, SurveyTracker Plus<sup>®</sup>, or a custom application created with ScanTools Plus Link SDK). The software controls the scanner and captures the data.

When a new session is initiated, the software sends a “scan sheet” message to the scanner and the scanner responds by scanning a sheet. As each sheet is scanned, the scanner reads all the cells across the form at each timing mark. The scanner assigns a darkness level based on a 16 level gradient to each cell and passes this “raw” data back to the software in the PC.

The data collection software in the PC translates the raw data to ASCII data based on the form definition and stores an ASCII data record for each sheet. The process is repeated for each sheet until the operator ends the session.

## When To Use

Use this mode if you want to:

- Convert and save only bubble data to ASCII
- Use Scantron software applications such as ScanTools Plus, Remark, Prosper, SurveyTracker Plus, or a custom application created with ScanTools Plus Link SDK.
- Process sheets quickly (OMR Only mode is 22% faster than OMR with Imaging mode)

#### **When To Avoid**

Select a different mode if:

- You want to collect image, bar code, or machine or hand print data (use OMR with Imaging mode to collect these types of data)
- You cannot use Scantron data collection software or you are working on a computer platform that is not PC (Download mode works with computer platforms other than PC and does not require Scantron data collection software)
- You simply want to score tests and do not need to retain data (SelfScore mode is simple to use and does not require a PC or software)

# ES/ScanMark Mode

- Applies To**
- OpScan 4 ES scanners
  - OpScan 4 ES with SelfScore scanners
  - iNSIGHT 4 ES scanners
  - iNSIGHT 4 ES with SelfScore scanners

**Overview** ES/ScanMark emulation mode enables the OpScan 4 ES or iNSIGHT 4 ES to function like a Scantron ES 2010, ES 2260, or ES 2800 scanner. This allows you to use your existing software and form definitions with your new scanner.

In ES/ScanMark emulation mode, the scanner must be connected to a PC with Scantron software (e.g. ScanBook™, ParScore™, etc.). The software controls the scanner and stores the data.

When a new session is initiated, the software sends a form definition to the scanner. Once the form definition is loaded it is retained in memory until cleared.

After the form definition is in scanner memory, you can invoke your data collection software to start scanning sheets. As each sheet is scanned, each row of cells at each timing mark is converted to 16 level raw data. Once the raw data is gathered from the entire sheet, it is interpreted by the form definition in the scanner and sent back to the software in the PC as an ASCII data record. This process is repeated for each sheet scanned.

**When To Use** Use this mode if you want to:

- Convert and save only bubble data to ASCII
- Emulate a Scantron ES 2010, ES 2260, or ES 2800 scanner
- Use Scantron software applications such as ScanBook and ParScore

- Use existing form definitions for Scantron forms that you've used in the past
- Create new applications with your legacy Scantron scanning software

### **When To Avoid**

Select a different mode if:

- You want to collect image or machine or hand print data (use OMR with Imaging mode to collect these types of data)
- You cannot use Scantron data collection software
- You simply want to score tests and do not need to retain data (SelfScore mode is simple to use and does not require a PC or software)

# Download Run and Download Debug Mode

The Download modes enable you to program the scanner using a series of commands downloaded from the host computer. Select Download Run mode to run download programs. Select Download Debug to debug Download programs.

## Applies To

- OpScan 4 ES scanners
- OpScan 4 ES with SelfScore scanners
- $\Delta$ NSIGHT 4 ES scanners
- $\Delta$ NSIGHT 4 ES with SelfScore scanners

## Overview

**NOTE:** Download modes require an understanding of computer communications and command line programming. If you do not have these abilities, we recommend selecting a different mode.

In the Download modes, you create a program that loads the form definition to the scanner and controls the scanning process. The scanner must be connected to a computer. However, it does not have to be a PC. Download mode works with Unix, Mac, and other platforms.

There is a document that will help you use Download mode: the *Download Utility User's Guide*. We recommend acquiring this guide before you start.

To use the Download modes, first set the scanner communications parameters. Next, create a command (.DLF) file. The command file contains the form definition (the definition of the bubble grids that will be converted to ASCII). Once completed, the command file is sent to the scanner.

With the form definition loaded, send runtime parameters to the scanner using the runtime parameter (.RTP) file. Next, begin scanning by sending the initiate code. As each sheet is scanned, the scanner evaluates the cells and

converts the bubble data to its ASCII equivalent based on the stored form definition. The scanner sends an ASCII data record back to the computer for each sheet scanned.

**When To Use**

Use these modes if you want to:

- Use a host computer that is not a PC

**When To Avoid**

Select a different mode if:

- You do not have someone to set the communications parameters and to do the command line programming

# SelfScore Mode

## Applies To

- OpScan 4 ES with SelfScore scanners
- INSIGHT 4 ES with SelfScore scanners

## Overview

SelfScore mode is data collection in its simplest form. In SelfScore mode, the scanner functions as a test scoring machine that can score tests as well as tally ballots and surveys. The scanner can function as a standalone unit where the data is not retained, or can be connected to a PC if you wish to collect and manage the ASCII data. In SelfScore mode, the scanner has form definitions for standard test forms available from Scantron so there is no need to create or download a form definition.

To start a new session, load the key into the input tray and press the **START** button. The scanner scans the key and loads the key into memory. Next, load the tests into the input tray and press the **START** button. The scanner feeds tests and scores them. If desired, you can complete your scoring session by scanning an item analysis form that will provide cumulative data regarding the test.

If your scanner is connected to a PC with ScanTools Plus software, you can collect ASCII data as well. Otherwise the key and item analysis data is erased from memory when you start the next batch of tests or turn off the scanner.

## Special Features

Some of the special features supported by SelfScore mode are:

- Multiple keys
- Scoring and rescoring tests
- Combined subjective and objective and test scores
- Scores based on groups
- Letter grades on tests
- Test analysis reports (item analysis and frequency distribution)



- Printing results directly on class rosters
- Tallying surveys and ballots
- Survey and ballot results based on groups
- Survey and ballot analysis reports

**When To Use** Use this mode if:

- You want to use Scantron standard test forms
- You want to use the scanner as a stand alone test scoring machine
- You want to error mark and score tests
- You do not want to use a Scantron software application to collect data
- You have a PC and ScanTools Plus software and want to collect ASCII data.

**When To Avoid** Select a different mode if:

- You need to use a custom form (ScanTools Plus in combination with OMR with Imaging mode or OMR Only mode is best for that)
- You want to collect image, bar code, or machine or hand print data (use OMR with Imaging mode to collect these types of data)
- You want to collect data and you are working on a computer platform that is not PC (Download mode works with computer platforms other than PC)

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# 5

## Chapter 5: Display Panel Messages

One of the key features of the OpScan 4 ES and iNSIGHT 4 ES scanners is the integrated diagnostics system. During operation, the scanner performs numerous checks to ensure that the scanner is functioning properly. If the scanner detects an issue, a message appears in the liquid crystal display (LCD) panel.

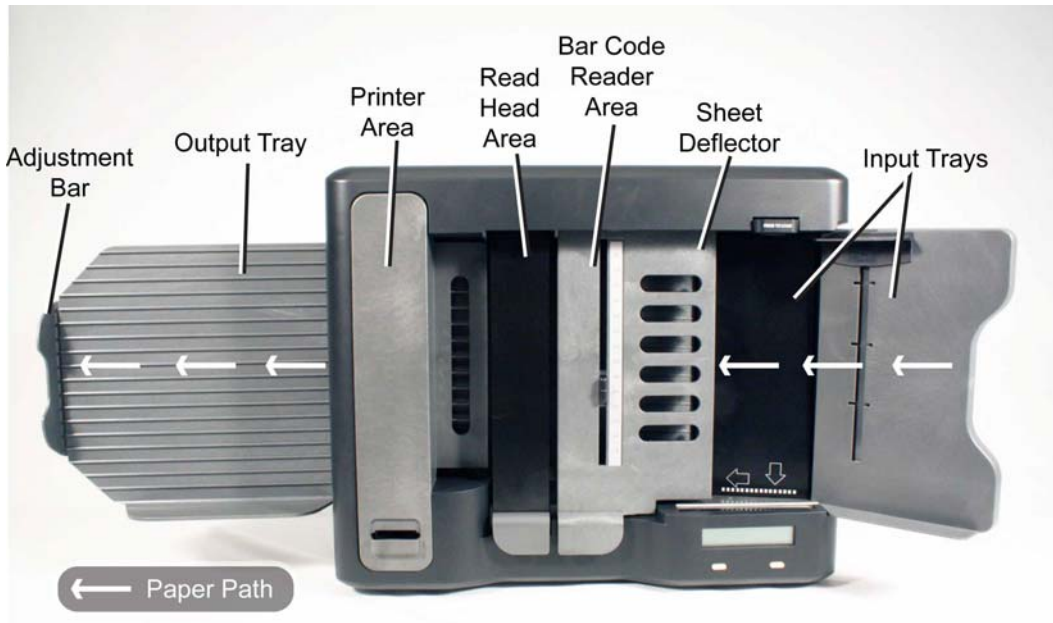
In this chapter, all of the display panel messages are listed in alphabetical order. For each display message, you will find information regarding:

- What the message means
- How to resolve the issue
- What the buttons do

**NOTE:** Except for scanners with the SelfScore option, the operator panel “blanks” if the scanner sits idle for awhile. Press any key on the panel to reactivate it.

## Scanner Paper Path

The arrows in the illustration below show the path that a sheet takes while moving through the scanner. Use this illustration as a guide to the terminology found in this chapter.



# Display Panel Messages

## Clean Read Head



This message appears when the image quality check, done before each sheet is scanned, fails. When this happens, the sheet does not feed onto the transport bed.

To resolve this condition:

1. Clean the entire top and bottom read head area. Refer to Chapter 8, “Cleaning the Scanner” for information on the recommended cleaning procedure.

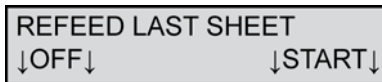
**NOTE:** Single read head scanners do not have a bottom read head.

2. Make certain the last sheet you tried to scan aligns with the edge of the input tray closest to the front of the scanner. Adjust the paper guide if necessary.

Press **START** to resume scanning.

Press **OFF** to put the scanner into sleep mode.

## Clean Read Head/Last Sheet Selected/Refeed Last Sheet



This message appears when the image quality check, done after the sheet is scanned, fails. This is sometimes caused by a sheet that jams in the read head area. It can also be caused by a dirty top or bottom read head.

**NOTE:** The “LAST SHEET SELECTED” message appears only if a Select Stacker is attached.

To resolve this condition:

1. Remove the sheet from the transport bed or the Select Stacker lower tray.

**CAUTION:** If the sheet is on the transport bed, remove it by pulling it forward or backward along the paper path. Do not pull the sheet out sideways (i.e. away from the guide rail) because you may damage the rollers.

2. Clean the entire top and bottom read head area. Refer to Chapter 8, “Cleaning the Scanner” for information on the recommended cleaning procedure.

**NOTE:** Single read head scanners do not have a bottom read head.

3. Place the sheet not scanned successfully back in the input tray.

Press **START** to resume scanning.

Press **OFF** to put the scanner into sleep mode.

### Clean Read Head/Refeed Last Sheet



This message appears when the read head cannot read a sheet completely. This is sometimes caused by a sheet that jams in the read head area. It can also be caused by a dirty top or bottom read head.

To resolve this condition:

1. Remove the sheet (if present) from the transport bed.

**CAUTION:** If the sheet is on the transport bed, remove it by pulling it forward or backward along the paper path. Do not pull the sheet out sideways (i.e. away from the guide rail) because you may damage the rollers.

2. Clean the entire top and bottom read head area. Refer to Chapter 8, "Cleaning the Scanner" for information on the recommended cleaning procedure.

**NOTE:** Single read head scanners do not have a bottom read head.

3. Place the sheet not scanned successfully back in the input tray.

Press **START** to resume scanning.

Press **OFF** to put the scanner into sleep mode.

## Clear Paper Path/Refeed Last Sheet



This message appears when a sheet remains under the read head or in another area of the transport bed too long, resulting in a jam.

To resolve this condition:

1. Clear all sheets from the transport bed.

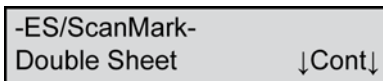
**CAUTION:** When removing a sheet from the transport bed, remove it by pulling it forward or backward along the paper path. Do not pull the sheet out sideways (i.e. away from the guide rail) because you may damage the rollers.

2. Place the sheets not scanned successfully back in the input tray.

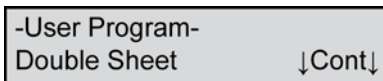
Press **START** to resume scanning.

Press **OFF** to put the scanner into sleep mode.

## Double Sheet



or



This message indicates that the scanner detected more than one form entering the paper path. This error

message can appear when the scanner detects a form printed on a heavier paper stock than the last form scanned.

To resolve this condition:

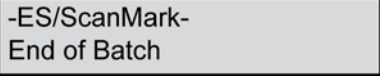
1. Remove all sheets from the transport bed.

**CAUTION:** When removing a sheet from the transport bed, remove it by pulling it forward or backward along the paper path. Do not pull the sheet out sideways (i.e. away from the guide rail) because you may damage the rollers.

2. Place the removed sheets back in the input tray.
3. Adjust the paper guide.

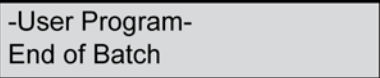
Press **Cont** to resume scanning.

## End of Batch



-ES/ScanMark-  
End of Batch

or



-User Program-  
End of Batch

This message appears after you pressed **End** on the control panel after a valid read.

This message is information only and requires no action.



#### Feed Form/End

-ES/ScanMark- Feed Form	↓End↓
----------------------------	-------

or

-User Program- Feed Form	↓End↓
-----------------------------	-------

This message appears after the scanner received a valid READ command from the computer. It indicates that the scanner is ready to read a form and that the input tray is empty.

Press **End** to end the scanning job.

#### Feed Form/Start

-ES/ScanMark- Feed Form	↓Start↓
----------------------------	---------


or

-User Program- Feed Form	↓Start↓
-----------------------------	---------

This message appears after the scanner received a valid READ command from the computer. It indicates that the scanner is ready to read a form and that the input tray has forms in it.


Press **Start** to continue scanning.

## Feeding Form



-ES/ScanMark-  
Feeding Form

or



-User Program-  
Feeding Form

This message appears when the scanner is feeding a form under the readhead.

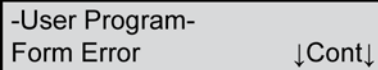
This message is information only and requires no action.

## Form Error



-ES/ScanMark-  
Form Error                      ↓Cont↓

or



-User Program-  
Form Error                      ↓Cont↓

This message indicates that the form scanned does not match the form definition downloaded to the scanner.

To resolve this condition, verify that the correct form was fed.

Press **Cont** to continue.

**F=<XXX> Z=<XXX> M=<XXXXXX>Kb C=<XXXXXX>**

-User Program-  
F=<XXX> Z=<XXX>

-User Program-  
M=<XXXXXX>Kb C=<XXXXXX>

This message appears during form definition download. F is the number of form definitions uploaded. Z is the number of zones in the last form definition uploaded. M is the amount of memory remaining. C is the number of characters returned from a downloaded form definition.

This message is information only and requires no action.

### Input Tray Empty

INPUT TRAY EMPTY  
↓OFF↓

This message means that the input tray is empty. Load forms in the input tray to advance to the next state.

Press **OFF** to put the scanner into sleep mode.

### Multiple Sheets Fed/Clear Path - Refeed

MULTIPLE SHEETS FED  
↓OFF↓                      ↓START↓

CLEAR PATH - REFEED  
↓OFF↓                      ↓START↓

This message means that more than one sheet fed onto the transport bed. The scanner detects this by measuring the thickness of the combined sheets. The scanner responds by stopping the sheets on the transport bed.

To resolve this condition:

1. Remove all sheets from the transport bed.

**CAUTION:** When removing a sheet from the transport bed, remove it by pulling it forward or backward along the paper path. Do not pull the sheet out sideways (i.e. away from the guide rail) because you may damage the rollers.

2. Place the removed sheets back in the input tray.
3. Adjust the paper guide.

Press **START** to resume scanning.

Press **OFF** to put the scanner into sleep mode.

## Not Ready



This message means that the scanner is not ready to scan sheets.

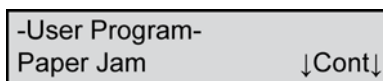
Press **START** to ready the scanner to accept commands from the host computer's software.

Press **OFF** to put the scanner into sleep mode.

## Paper Jam



or



This message appears when a sheet remains under the read head or in another area of the transport bed too long, resulting in a jam.

To resolve this condition:

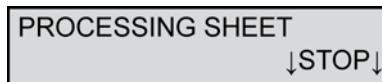
1. Clear all sheets from the transport bed.

**CAUTION:** When removing a sheet from the transport bed, remove it by pulling it forward or backward along the paper path. Do not pull the sheet out sideways (i.e. away from the guide rail) because you may damage the rollers.

2. Place the sheets not scanned successfully back in the input tray.

Press **Cont** to resume scanning.

## Processing Sheet



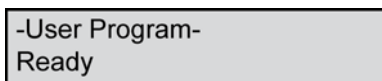
This message means that the scanner is scanning a sheet and transmitting the data to the computer.

Press **STOP** to interrupt the job that you are running.

## Ready



or



This message indicates that the scanner is ready to receive a form definition or a command from the computer.

To resolve this condition, use your scanning software on the host computer to download a form definition or to start the scanning process.

### **Recalibrate/See Manual**

RECALIBRATE. . . . .

SEE MANUAL

This message appears when the firmware within the scanner determines that recalibration is necessary. See Appendix A, “Recalibration” for instructions regarding how to recalibrate the scanner.

### **Reconfigure Host/See Manual**

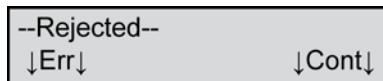
RECONFIGURE HOST . . . .

SEE MANUAL

This message appears when not in ES/ScanMark mode and when the firmware determines that the communications parameters need to be set.

To resolve this condition, reset the communications parameters to the factory standard settings. See “Comm Configuration (When Not in ES/ScanMark Mode)” on page 97 for details.

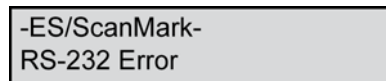
#### --Rejected--



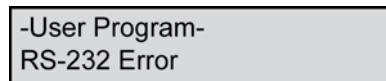
This message appears when in ES/ScanMark mode and an incorrect sheet was scanned in the Comm Config submenu. The correct form is F-7545-STC.

Press **Cont** to get back to the Feed ComConfig Sheet prompt. Feed the correct sheet to set the Comm Configuration. Press **Quit** from that menu item to abort Comm Configuration.

#### RS-232 Error



or



This message appears when in ES/ScanMark mode. It indicates that the scanner detected a mismatch in the serial communication parameters used by your scanning application and those used by the scanner.

To resolve this condition, reconfigure your scanner with the serial communication parameters used by your scanning application. See “Comm Config - Display” on page 101 for details.

#### ScanMark Init Reqd



This message indicates that the scanner failed its internal nonvolatile memory test.

To resolve this condition, press **Cont**. The scanner will automatically reinitialize the internal nonvolatile memory. You should not see the message again.

If you get the message repeatedly, contact Scantron Customer Support.

## Sensor 1 Blocked



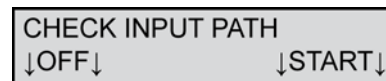
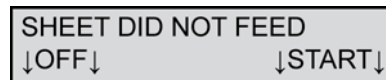
This message appears on initialization only. It indicates that the read head is blocked by paper.

To resolve this condition, verify that there is no paper blocking the paper path of the scanner. If the error persists contact Scantron Customer Support.

Press **Quit** to ignore the error.

Press **Cont** to retest the read head after clearing the paper path.

## Sheet Did Not Feed/Check Input Path



This message appears when the read head cannot detect a sheet in the transport bed within a specified period of time. This is usually caused by the sheets in the input tray not being pushed fully toward the read head when loaded.

To resolve this condition:

1. Depress the **Press To Load** button and move the sheets toward the read head.



2. Align the sheets with the edge of the input tray that is closest to the front of the scanner (guide edge).
3. Slide the paper guide so that it is just touching the sheets.

Press **START** to resume scanning.

Press **OFF** to put the scanner into sleep mode.

### Sheet Did Not Feed/Check Sheet Deflector



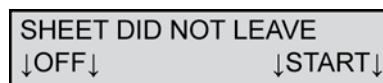
This message appears when the sheet deflector is not completely closed. The sheet deflector must be completely down for the scanner to properly sense sheets.

To resolve this condition, press down firmly on the sheet deflector so that it is fully seated.

Press **START** to resume scanning.

Press **OFF** to put the scanner into sleep mode.

### Sheet Did Not Leave Output Stacker



The scanner displays this message when a sheet jams. This error is also displayed as a result of a dirty sensor and/or dirty conditions surrounding the sensor area.

**NOTE:** Refer to the section “Cleaning the Select Stacker” on page 200 of this manual for directions on cleaning the Select Stacker.

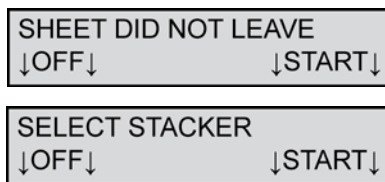
To resolve this condition:

1. Clear all sheets from the scanner and Select Stacker transport bed.
2. Blow canned air (Scantron recommends a non-condensing propellant) onto the output sensor and surrounding area to remove paper dust and debris.
3. Place any sheet(s) not processed by the host software back in the input tray.

Press **START** to continue scanning after taking corrective action.

Press **OFF** to put the scanner in sleep mode.

### Sheet Did Not Leave Select Stacker



The scanner displays this message when a sheet jams. This message is also displayed as a result of a dirty sensor and/or dirty conditions surrounding the sensor area.

**NOTE:** Repair a sheet if it is torn, or otherwise damaged. If repair is not possible, copy the marks from a damaged sheet onto a new sheet.

To resolve this condition:

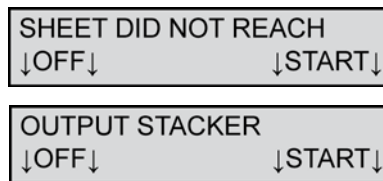
1. Clear all sheets from the scanner and Select Stacker transport bed.

2. Blow canned air (Scantron recommends a non-condensing propellant) onto the select sensor and surrounding area to remove paper dust and debris.
3. Place any sheet(s) not processed by the host software back in the input tray.

Press **START** to continue scanning after taking corrective action.

Press **OFF** to put the scanner in sleep mode.

### Sheet Did Not Reach Output Stacker



The scanner displays this message when a sheet jams, a sheet skews too far out to be read by the output stacker sensor, or a cable becomes disconnected.

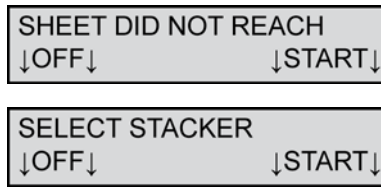
To resolve this condition:

1. Clear all sheets from the scanner and Select Stacker transport bed.
2. Check cable connections.
3. Check for obstructions in the paper path.
4. Place any sheet(s) not processed by the host software back in the input tray.

Press **START** to continue scanning after taking corrective action.

Press **OFF** to put the scanner in sleep mode.

## Sheet Did Not Reach Select Stacker



The scanner displays this message when a sheet jams, a sheet skews too far out to be read by the stacker sensor, or a cable became disconnected.

**NOTE:** To clear a jam, remove the sheet(s) from the transport bed. You may need to turn the roller knob to eject the sheet.

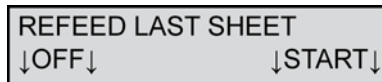
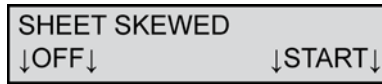
To resolve this condition:

1. Clear all sheets from the scanner and Select Stacker transport bed.
2. Check cable connections.
3. Check for obstructions in the paper path.
4. Place any sheet(s) not processed by the host software back in the input tray.

Press **START** to continue scanning after taking corrective action.

Press **OFF** to put the scanner in sleep mode.

## Sheet Skewed/Last Sheet Selected/Refeed Last Sheet



This message appears when a sheet feeds onto the transport bed at an angle or when a sheet has a torn or bent edge. When this error is detected, the sheet is stopped on the transport bed.

**NOTE:** The “LAST SHEET SELECTED” message appears only if a Select Stacker is attached.

To resolve this condition:

1. Remove the sheet from the transport bed (or from the lower tray of the Select Stacker if installed).
2. Repair the sheet if it is torn or otherwise damaged. If you cannot repair the sheet, copy the marks from the damaged sheet onto a new sheet.

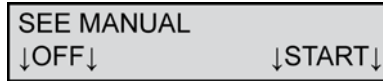
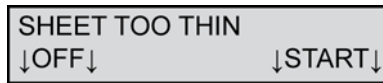
**NOTE:** Tape on a sheet may result in a “Multiple Sheets Fed” error.

3. Place the sheet (or replacement sheet) back in the input tray.
4. Adjust the paper guide so that it is just touching the sheets.

Press **START** to resume scanning.

Press **OFF** to put the scanner into sleep mode.

## Sheet Too Thin/See Manual



This message appears when the last sheet that the scanner attempted to scan was thinner than the one before it. This condition can occur when the sheet thickness error detection is being performed by the scanner. After the scanner stops and is restarted, the thickness of the first sheet is measured and stored as the reference. If multiple sheets are picked (as the first sheet after the scanner is restarted), the thickness value is larger than it should be. Consequently, the second sheet (not a multiple) will cause a “Sheet Too Thin” message to be displayed.

To resolve this condition:

1. Verify that the last two sheets in the output tray (top tray for scanner with a Select Stacker) were processed correctly.
    - The sheet left on the transport bed needs to be rescanned.
    - The last sheet in the output tray (upper tray for scanners with the Select Stacker) needs to be checked.
- NOTE:** If two sheets are stuck together they may both be in the output tray. If so, they should be separated and rescanned.
2. If necessary, perform error recovery in your software application on the host computer.

Press **START** to resume scanning.

Press **OFF** to put the scanner into sleep mode.

## Stopped



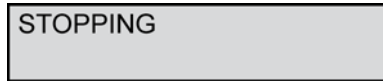
This message appears in two situations:

- When you issue instructions from the computer to the scanner to stop all processing.
- When you press the **STOP** button.

To resolve this condition, press **START** or use the software on the host computer to issue instructions to resume scanning.

Press **OFF** to put the scanner into sleep mode.

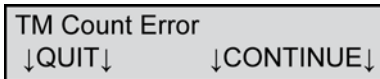
## Stopping



This message appears when the operator presses **STOP** on the scanner or issues a stop scanning instruction from the software on the host computer. The message displays until the scanner receives an acknowledgement from the computer or until the computer transmits all data. When that happens, the STOPPED message is displayed.

To resolve this condition, wait until the next message is displayed in the display panel.

## TM Count Error

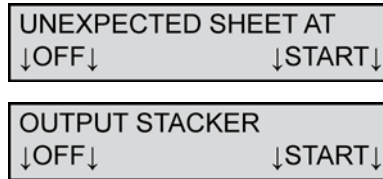


This message appears during Top or Bottom Read Validation if an incorrect sheet is scanned. The correct sheet is part number 202-171-989.

Press **CONTINUE** to continue read validation.

Press **QUIT** to abort the validation.

## Unexpected Sheet At Output Stacker



This message displays when a sheet arrives at the wrong stacker. This message is also displayed as a result of a dirty sensor and/or dirty conditions surrounding the sensor area.

**NOTE:** Refer to “Cleaning the Select Stacker” on page 200 of this manual for directions on cleaning the select stacker.

To resolve this condition:

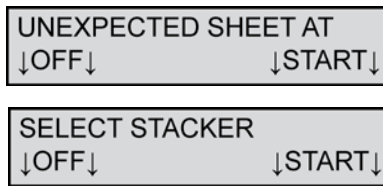
1. Clear all sheets from the scanner and Select Stacker transport bed.
2. Blow canned air that uses a non-condensing propellant onto the output sensor and surrounding area to remove paper dust and debris.
3. Place any sheet(s) not processed by the host software back in the input tray.

Press **START** to continue scanning after taking corrective action.

Press **OFF** to put the scanner in sleep mode.



## Unexpected Sheet at Select Stacker



This message is displayed when a sheet arrives at the wrong stacker. This message is also displayed as a result of a dirty sensor and/or dirty conditions surrounding the sensor area.

**NOTE:** Refer to “Cleaning the Select Stacker” on page 200 of this manual for directions on cleaning the Select Stacker.

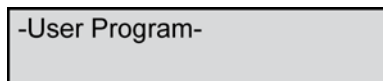
To resolve this condition:

1. Clear all sheets from the scanner's transport bed.
2. Blow canned air onto the select sensor and surrounding area to remove paper dust and debris.
3. Place any sheet(s) not processed by the host software back in the input tray.

Press **START** to continue scanning after taking corrective action.

Press **OFF** to put the scanner in sleep mode.

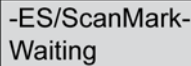
## User Program



This message indicates that the scanner received, accepted, and acknowledged a valid form definition.

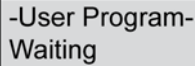
This message is information only and requires no action.

## Waiting

A rectangular display panel with a black border. The text inside is black and reads "-ES/ScanMark- Waiting".

-ES/ScanMark-  
Waiting

or

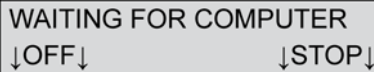
A rectangular display panel with a black border. The text inside is black and reads "-User Program- Waiting".

-User Program-  
Waiting

This message indicates that the scanner is waiting for instructions from your scanning software.

This message is information only and requires no action.

## Waiting For Computer

A rectangular display panel with a black border. The text inside is black and reads "WAITING FOR COMPUTER". Below the text are two buttons: "OFF" on the left and "STOP" on the right, each with a downward arrow.

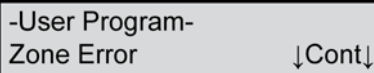
WAITING FOR COMPUTER  
↓OFF↓                      ↓STOP↓

This message means that the scanner is ready to scan and is waiting for instructions from the computer. It appears after forms have been loaded and the **START** button has been pressed

Press **STOP** to take the scanner out of the “ready” state.

Press **OFF** to put the scanner into sleep mode.

## Zone Error

A rectangular display panel with a black border. The text inside is black and reads "-User Program- Zone Error". On the right side, there is a button labeled "Cont" with a downward arrow.

-User Program-  
Zone Error                      ↓Cont↓

This message indicates that the form scanned has an error in one of the zones.

To resolve this condition, review the form for correctness.

## NOTES

*In this chapter:*

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Utilities Menu . . . . .	page 95
Diagnostics Menu . . . . .	page 108
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## Chapter 6:

# Using the Background Menu

The background menu gives you access to functions that include:

- Scanner Mode
- Default Settings
- Utility Functions
- Diagnostic Functions

The background menu is designed for quick navigation. Press the right button (usually “Next”) to bypass functions and to leave selections unchanged. Press the left button to enter submenus, run functions, or change selections.

This chapter gives you an overview of the entire background menu system in the form of a flowchart. It also covers details for each menu item.

The menu items are listed in the order that they appear in the background menu. However, not all menu items apply to each model scanner, or for each mode. See the description for each menu item to determine if it applies to the model you have and the mode that you are in.

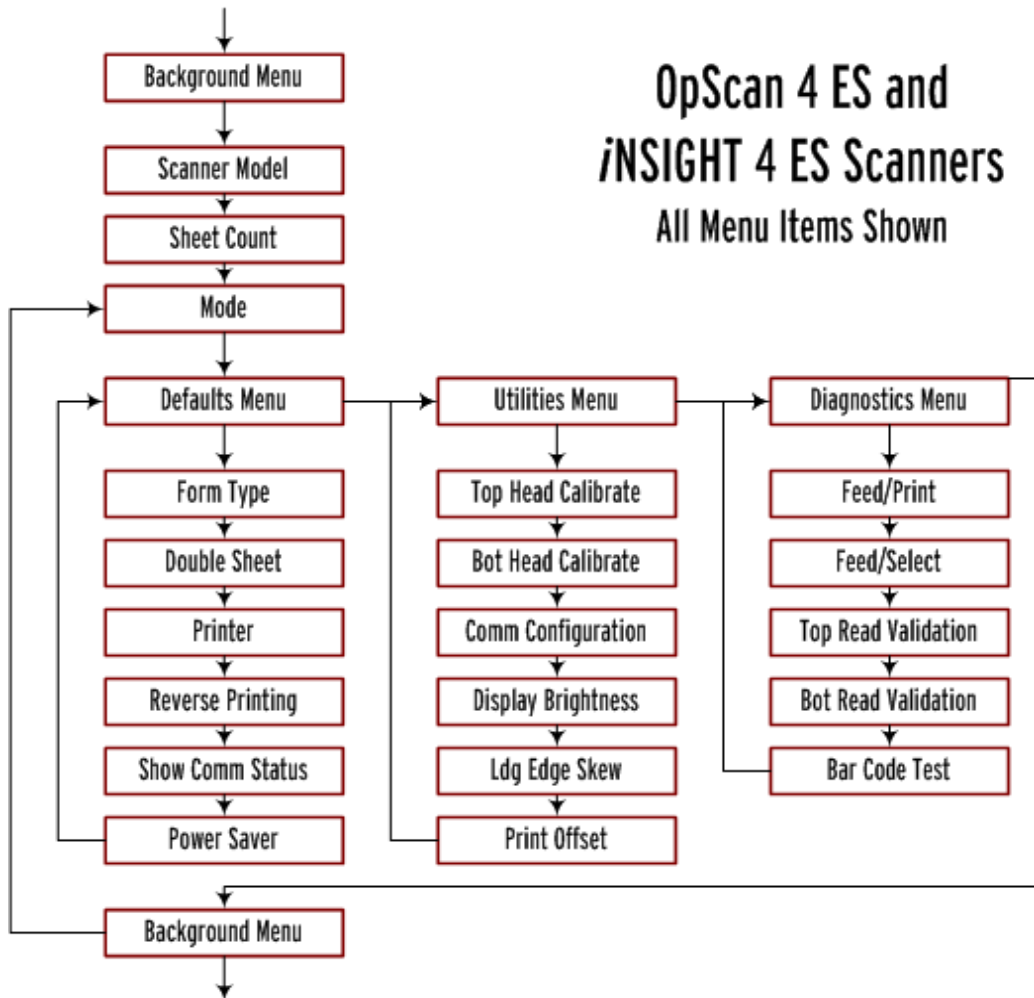
## Entering the Background Menu

Enter the background menu by holding down both buttons for about five seconds. When the message “Background Menu” appears briefly, release the buttons.



## Background Menu Flowchart

The background menu is organized as shown below. The flowchart shows ALL menu items (for all model scanners and for all modes). See the individual menu item descriptions to see if the menu items apply to your model scanner and the mode that you are in.



## Scanner Information

Scanner information is displayed immediately after you enter the background menu. These two menu items are “display only” information that cannot be changed.

### Scanner Model

<Scanner Model>
Ver <#>

↓Next↓

**Variables** Where <Scanner Model>=

- OpScan 4 ES or
- $\Delta$ NSIGHT 4 ES

And where <#>=

- Version number of the scanner firmware

**Shown For** All models, all modes

**Description** The scanner model is displayed immediately after entering the background menu. OpScan 4 ES is displayed for both OpScan 4 ES and OpScan 4 ES with SelfScore models.  $\Delta$ NSIGHT 4 ES is displayed for both  $\Delta$ NSIGHT 4 ES and  $\Delta$ NSIGHT 4 ES with SelfScore scanner models.

Press **Next** to advance to the next menu item.

### Sheet Count

Sheet Count=<Count>

↓Next↓

**Variables** Where <Count>=

- Number of sheets scanned

**Shown For** All models, all modes



**Description** Sheet count refers to the number of sheets that have been scanned since the scanner was put into service.

Press **Next** to advance to the next menu item.

# Mode Select

## Mode

Mode=<Mode>  

↓Change↓
↓Next↓

### Variables

Where <Mode>=

- OMR w Imaging (shown only for iNSIGHT 4 ES and iNSIGHT 4 ES with SelfScore scanners)
- OMR Only
- ES/ScanMark
- Download Run
- Download Debug
- SelfScore (shown only for OpScan 4 ES with SelfScore and iNSIGHT 4 ES with SelfScore scanners)

### Shown For

All models, all modes

### Description

Use this menu item to change scanner modes. For a description of each of the modes and when to use them, see Chapter 4, “Scanner Modes”.

### Button Functionality

Press **Change** to change modes.


Press **Next** to advance to the next menu item.

## Defaults Menu

The Defaults menu is the first of three submenus within the background menu system. Using the Defaults menu, (depending on scanner model and mode) you can set form type, double sheet detection, printer status, reverse printing, display of comm status, and power saver parameters. See below for a full description of each menu item.

**NOTE:** See “Background Menu Flowchart” on page 86 for a flowchart of the entire background menu.

### Defaults Menu



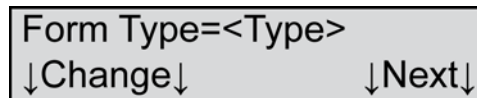
**Shown For** All models, all modes

**Description** This menu item allows you to enter the Defaults menu.

Press **Enter** to enter the Defaults menu.

Press **Next** to advance to the Utilities menu (See “Utilities Menu” on page 95.)

### Form Type



**Variables** Where <Type>=

- Pencil
- Ink

**Shown For** iNSIGHT 4 ES and iNSIGHT 4 ES with Selfscore scanners, all modes

**Description** This menu item allows you to select the form type you want to use: pencil or ink.

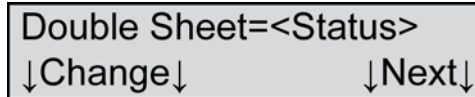
**NOTE:** This setting can also be controlled in the software (e.g. ScanTools Plus) used on the host computer.

**NOTE:** Both form types will read forms that have been pre-slugged on a laser printer.

Press **Change** to change the form type.

Press **Next** to advance to the next menu item.

## Double Sheet



**Variables** Where <Status>=

- On
- Off

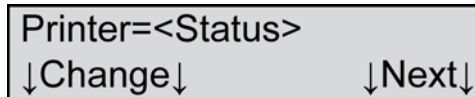
**Shown For** All models, ES/ScanMark mode only

**Description** This menu item allows you to enable (turn on) or disable (turn off) double sheet detection.

Press **Change** to change the double sheet detection status.

Press **Next** to advance to the next menu item.

## Printer



**Variables** Where <Status>=

- On

- Off

**Shown For** All models, all modes except SelfScore. It is not shown for the SelfScore mode because SelfScore requires that dual printers are enabled (turned on).

**Description** This menu item allows you to enable (turn on) or disable (turn off) the printer(s).

Press **Change** to change printer status.

Press **Next** to advance to the next menu item.

### Reverse Printing



**Variables** Where <Status>=

- On
- Off

**Shown For** All models, all modes except ES/ScanMark and SelfScore when the printer(s) are turned on

**Description** This menu item allows you to turn reverse printing on or off. When reverse printing is on, the characters print upside down when viewing the sheets as they pass through the scanner. When reverse printing is off, the characters will print right side up.

Press **Change** to change reverse print status.

Press **Next** to advance to the next menu item.

## Show Comm Status

Show Comm Status=<Status>  
 ↓Change↓                      ↓Next↓

**Variables** Where <Status>=

- On
- Off

**Shown For** All models, all modes except ES/ScanMark

**Description** This menu item allows you to either display or not display communication status. If you select “On,” characters appear in the display panel indicating communication status. The status indicators are:

- **t** for Transmitting
- **r** for Receiving
- **b** for Busy

Press **Change** to change the status.

Press **Next** to advance to the next menu item.

## Power Saver

Power Saver=<Time>  
 ↓Change↓                      ↓Next↓

**Variables** Where <Time>=

- 5, 10, 15, 30, 45, 60, or Off

**Shown For** All models, all modes

**Description** This menu item allows you to change the power saver setting. The time shown indicates the amount of time that will elapse before the scanner goes into sleep mode.

Press **Change** to change the power saver time. The power saver time will:

- Cycle through 5, 10, 15, 30, 45, and 60 minute settings
- Reset to Off
- Start over at 5 minutes

**NOTE:** The default setting for the power saver is 5 minutes.

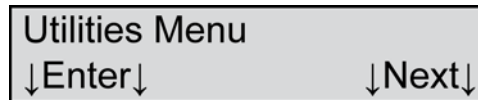
Press **Next** to accept the displayed setting and to advance to the next menu item.

# Utilities Menu

The Utilities menu is the second of three submenus in the background menu. In it, you will find utility programs that allow you to calibrate the read head(s), view and set communications parameters, adjust the display brightness, turn on and off the leading edge skew check, and adjust the printer offset. See below for a full description of each menu item.

**NOTE:** See “Background Menu Flowchart” on page 86 for a flowchart of the entire background menu items.

## Utilities



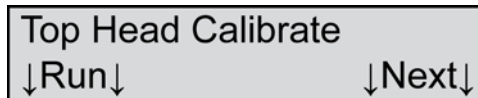
**Shown For** All models, all modes

**Description** This menu item allows you to enter the Utilities menu.

Press **Enter** to enter the Utilities menu.

Press **Next** to advance to the Diagnostics menu (See “Diagnostics Menu” on page 108.)

## Top Head Calibrate



**Shown For** All models, all modes

**Description** This dialog allows you to run the top head calibration program.

Press **Next** to skip this function and to advance to the next menu item.



The following describes how to calibrate the top read head.

Calibration automatically adjusts the scanner read system to compensate for variations in scanner components, etc. Your scanner comes calibrated and ready for use.

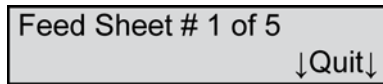
You should calibrate if you have:

- Received a Recalibrate Scanner message on the scanner display
- Moved the scanner to a new location.
- Been instructed to do so by Scantron Customer Support.

For best results, perform the following before calibrating:

- Clean the scanner and the read heads. See Chapter 8, “Cleaning the Scanner” for details.
- Ensure that the calibration sheets are clean and undamaged.

Press **Run** to calibrate the top read head. The following menu item appears.



**NOTE:** iNSIGHT 4 ES scanners require ten calibration sheets for calibration.

**NOTE:** If you run out of calibration sheets, reload the ones that are in the output tray.

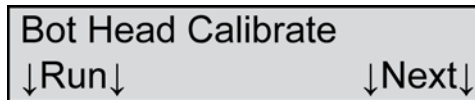
Load the calibration forms (part # 202-989-008) that came with your scanner by placing them in the input tray and depressing the **Press To Load** button. The orientation of the calibration sheets does not matter. Press **Quit** at any time to abort calibration.

When calibration is complete, the following menu item appears.



Press **Next** to complete calibration and to advance to the next menu item.

## Bot Head Calibrate



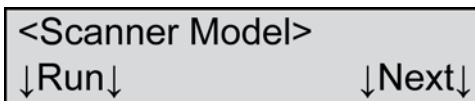
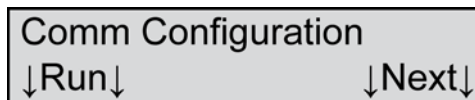
**Shown For** All models except single read head scanners, all modes

**Description** This menu item allows you to calibrate the bottom read head.

Press **Next** to skip this function and to advance to the next menu item.

For instructions on calibrating the bottom read head, refer to the instructions for Top Read Calibrate above.

## Comm Configuration (When Not in ES/ScanMark Mode)



**Variables** Where <Scanner Model>=

- OpScan 4 ES
- INSIGHT 4 ES

**Shown For** All models, all modes except ES/ScanMark

**NOTE:** The Comm Configuration menu item is not displayed if the scanner is displaying the “Recalibrate... See Manual” message.

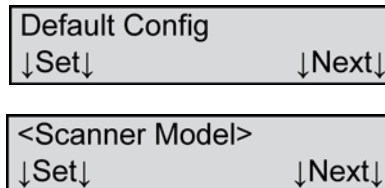
**Description** This menu item allows you to display and configure the communications parameters.

Press **Next** to skip this function and to advance to the next menu item.

The following describes how to configure the communications parameters.

Press **Run** to enter a submenu that allows you to display communications parameters, set the communications parameters to the factory default as well as to set a custom configuration. The following menu items appear.

#### Default Config - Set



The screenshot shows two menu screens. The first screen is titled "Default Config" and has two options: "↓Set↓" and "↓Next↓". The second screen is titled "<Scanner Model>" and also has two options: "↓Set↓" and "↓Next↓".

**Variables** Where <Scanner Model>=

- OpScan 4 ES
- iNSIGHT 4 ES

**Shown For** All models, all modes except ES/ScanMark

**Description** This menu item allows you to set the communications parameters to the factory default. The factory default configuration is:

- Start Record 1 = FF
- Start Record 2 = FF

- Start Record 3 = FF
- Start Record 4 = FF
- Start Record 5 = FF
- Start Record 6 = FF
- End Record 1 = 0D
- End Record 2 = 0A
- End Record 3 = FF
- End Record 4 = FF
- End Record 5 = FF
- End Record 6 = FF
- End Document = FF
- Compress = 15
- Record Length = FFFF
- Check Char = FF
- Initiate From = CPU
- Initiate Code = 11
- Positive = 11
- Negative = 1A
- X-On = FF
- X-Off = FF
- Start = 72
- Stop = 0E
- Release = 12
- Select Stacker = 1B
- Download = 1C
- Runtime = 1D
- Status = 73
- Scanner Ctrl = 65
- Print Position = 31

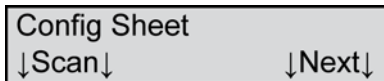
- Print Data = 32
- Display Data = 07
- End of Info = 04
- End of Batch = FF
- OCR = 1E

Press **Next** to skip this function and advance to the next menu item.

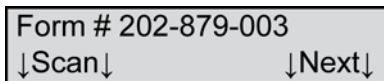
Press **Set** to set the communications parameters to the default configuration shown above.

A Comm Config Complete message will display. Press **Quit** to complete communications configuration and to exit this submenu.

### Config Sheet - Scan



A screenshot of a menu box with a light gray background and a black border. The text 'Config Sheet' is at the top. Below it, '↓Scan↓' is on the left and '↓Next↓' is on the right.



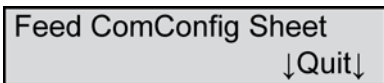
A screenshot of a menu box with a light gray background and a black border. The text 'Form # 202-879-003' is at the top. Below it, '↓Scan↓' is on the left and '↓Next↓' is on the right.

**Shown For** All models, all modes except ES/ScanMark

**Description** This menu item in the Comm Configuration submenu allows you to scan a completed Host Port Communication Configuration Sheet (form number 202-879-003).

Press **Next** to skip this function and to advance to the next menu item.

Press **Scan** to scan a configuration sheet. The following menu item appears.



A screenshot of a menu box with a light gray background and a black border. The text 'Feed ComConfig Sheet' is at the top. Below it, '↓Quit↓' is centered.

Press **Next** to abort this function and to advance to the next menu item.

To proceed with scanner configuration, feed the Host Port Communication Configuration Sheet by simply placing it in the input tray. It will automatically scan. A Comm Config Complete message will display. Press **Quit** to complete communications configuration and to exit the Comm Configuration submenu.

### Comm Config - Display

Comm Config	
↓Display↓	↓Next↓

<Scanner Model>	
↓Display↓	↓Next↓

#### Variables

Where <Scanner Model>=

- OpScan 4ES
- INSIGHT 4 ES

#### Description

This menu item allows you to display the communications configuration.

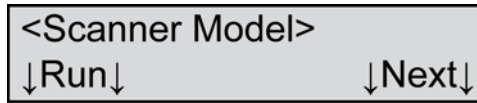
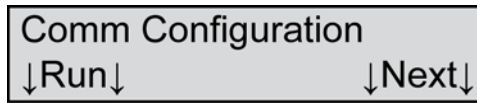
Press **Next** to skip this function and advance to the next menu item.

Press **Display** if you want the scanner to display each of the communications parameters on the display panel. There are a total of 35 parameters.

Press **Show Next** to show the next parameter.

Press **Next** at any time to abort the function and advance to the next menu item.

## Comm Configuration (When in ES/ScanMark Mode)



**Variables** Where <Scanner Model>=  
 • ES/ScanMark

**Shown For** All models, ES/ScanMark mode only

**NOTE:** The Comm Configuration menu item is not displayed if the scanner is displaying the “Recalibrate... See Manual” message.

**Description** This menu item allows you to display and configure the communications parameters.

Press **Next** to skip this function and to advance to the next menu item.

The following describes how to configure the communications parameters.

Press **Run** to enter a submenu that allows you to display communications parameters, set the communications parameters to the factory default as well as to a custom configuration. The following menu items appear.

**Default Config.**

Default Config	
↓Set↓	↓Next↓

<Scanner Model>	
↓Set↓	↓Next↓

**Variables** Where <Scanner Model>=

- ES/ScanMark

**Shown For** All models, ES/ScanMark mode only

**Description** This menu item allows you to set the communications parameters to the factory default. The factory default configuration is:

- Handshaking: None
- Command prefix: ASCII <ESC> (decimal 27)
- End-of-form: ASCII <CR> (decimal 13)
- Threshold: 42 (pencil), 30 (ink)
- Difference: 57 (pencil), 69 (ink)

**NOTE:** Because the scanner uses a virtual serial port connected through a USB port, baud rate, word length, stop bits, parity, and clear-to-send parameters no longer need to be set.

Press **Next** to advance to the next menu item.

Press **Set** to set the communications parameters to the default configuration shown above. A Comm Config Complete message will display. Press **Next** to complete communications configuration and to exit the Comm Configuration submenu.



#### Config Sheet - Scan

Config Sheet	
↓Scan↓	↓Next↓

Form # F-7545-STC	
↓Scan↓	↓Next↓

This menu item in the Comm Configuration submenu allows you to scan a completed ScanMark Configuration Sheet (form number F-7545-STC).

Press **Next** to skip this functions and to advance to the next menu item.

Press **Scan** to scan a configuration sheet. The following menu item appears.

Feed ComConfig Sheet
↓Quit↓

Feed the Scantron Configuration Sheet by simply placing it in the input tray. It will automatically scan. A Comm Config Complete message will display. Press **Quit** to complete communications configuration and to exit the Comm Configuration submenu.

#### Comm Config - Display

Comm Config	
↓Display↓	↓Next↓

<Scanner Model>	
↓Display↓	↓Next↓

#### Variables

Where <Scanner Model>=

- ES/ScanMark

#### Description

This menu item allows you to display the communications configuration.

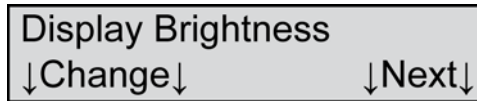
Press **Next** to skip this function and to advance to the next menu item.

Press **Display** if you want the scanner to display each of the communications parameters on the display panel. There are a total of 5 parameters.

Press **Show Next** to show the next parameter.

Press **Next** at any time to abort the function and advance to the next menu item in this menu.

### Display Brightness



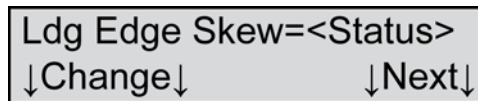
**Shown For** All models, all modes

**Description** This menu item allows you to adjust the display brightness.

Press **Next** to advance to the next menu item.

Press **Change** to increment the display brightness until you find the best setting. When the brightness reaches its minimum, it resets to its maximum.

### Ldg Edge Skew



**Variables** Where <Status>=

- On
- Off

**Shown For** All models, all modes

**Description** This menu item allows you to turn leading edge skew detection on or off.

Leading edge skew detection checks to ensure that the leading edge of the sheet is aligned properly during scanning. It helps ensure that your data collection results are accurate.

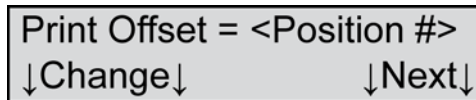
However, if you are using forms that are not cut perfectly square, leading edge skew detection can result in unwanted error messages. If that occurs, this function allows you to turn leading edge skew detection off to suppress the errors. However, Scantron cannot guarantee the accuracy of the data collected when leading edge skew detection is turned off.

**NOTE:** The default setting for leading edge skew detection is “On.”

Press **Next** to advance to the next menu item.

Press **Change** to change the leading edge skew detection status.

### Print Offset=



**Variables** Where <Position #>=

- Whole numbers from -10 to +10

**Shown For** OpScan 4 ES with SelfScore and iNSIGHT 4 ES with SelfScore models in SelfScore modes only

**Description** This menu item allows you to adjust the printer offset. Printer offset is used in SelfScore mode and helps ensure that the error marks or answer verification marks are printed right next to the question.

Press **Next** to advance to the next menu item.

Press **Change** to increment the printer offset by one. Each time you press **Change**, the offset indicator number increments by 1 up to +10, then it resets to -10. Continue pressing **Change** until you have reached the setting that you want to test. Once you have chosen a setting, score a test to determine if the alignment is correct. Readjust as necessary.

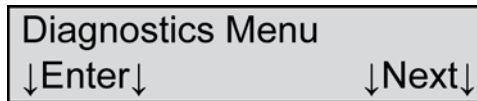
**NOTE:** The default setting for print offset is 00.

## Diagnostics Menu

The Diagnostics menu is the third of three submenus in the background menu. In it, you will find programs that allow you to test the printer, the Select Stacker, the top and bottom read heads, as well as the bar code reader. See below for a full description of each menu item.

**NOTE:** See “Background Menu Flowchart” on page 86 for a flowchart of the entire background menu.

### Diagnostics Menu



**Shown For** All models, all modes

**Description** This menu item allows you to enter the Diagnostics menu.

Press **Enter** to enter the Diagnostics menu.

Press **Next** to advance to the Background Menu menu item.

### Feed/Print?

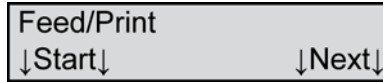


**Shown For** All models, all modes

**Description** This menu item allows you to test the scanner's feed and print capabilities. The test feeds sheets loaded in the input tray, and, if printing is on, the installed printer(s) print a string of characters.

Press **Next** to skip this test and to advance to the next menu item.

Press **Run** to proceed with the test. The following menu item appears.

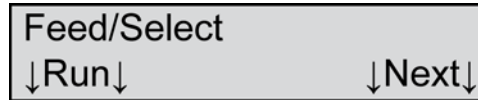


Load an expendable form or two into the input tray. (Do not use the calibration sheets that came with your scanner as you may need these in the future.)

Press **Start** to scan the sheet(s). The sheet should feed and each installed printer should print a string of characters. The test will continue as long as there are sheets in the input tray.

Press **Next** if you wish to abort the test or if you have completed the test. You will be advanced to the next menu item.

### Feed/Select



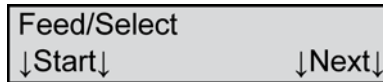
**NOTE:** This menu item only appears if a Select Stacker is connected to the scanner.

**Shown For** All models, all modes (if the Select Stacker is installed and connected)

**Description** This menu item allows you to run a test of the scanner's feed and select capabilities. This test feeds sheets loaded in the input tray and places them alternately into the top and bottom trays of the Select Stacker.

Press **Next** to skip this test and to advance to the next menu item.

Press **Run** to proceed with the test. The following menu item appears.

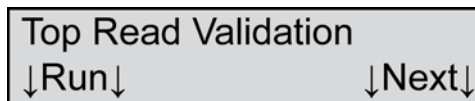


Load a stack of forms into the input tray of the scanner. (The forms will be reusable upon completion of the test.)

Press **Start** to feed sheets. The Select Stacker passes the test if sheets are placed alternately into the top and bottom trays of the Select Stacker.

Press **Next** if you wish to abort the test or if you have completed the test. You will be advanced to the next menu item.

### Top Read Validation



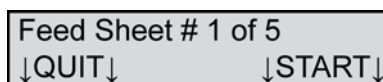
**Shown For** All models, all modes

**Description** This menu item allows you to validate the calibration and operation of the top read head.

**NOTE:** This test requires Scantron Reflective Calibration sheets (part number 202-171-989).

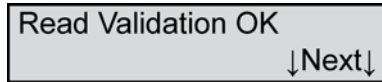
Press **Next** to skip this test and to advance to the next menu item.

Press **Run** to proceed with the test. The following menu item appears.



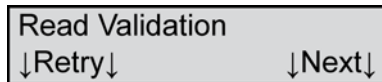
Place a stack of five, Scantron Reflective Calibration Sheets (part number 202-171-989) into the input tray so that the words “Scantron Reflective” are **on top and enter the scanner first**.

Press **QUIT** to abort the test. Press **START** to perform the test. The scanner scans the sheets. If the scanner passes the test, the following menu item appears.



Press **Next** to advance to the next menu item.

If the scanner fails the test, the following three menu items appear.



Where **x** =

- Paper
- Light Mark
- Dark Mark

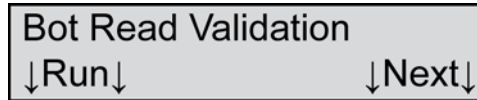
and **y** = hex value (0-9 and A-F)

If the scanner fails the test, first ensure that the calibration sheets are not dirty or damaged. If they are not, clean the scanner read head, then retest by pressing **Retry**. If the scanner still fails the test after these measures, contact Scantron Customer Support as described in “Requesting Support” on page 145.



Press **Next** to exit the test and to advance to the next menu item.

### Bot Read Validation



**NOTE:** This menu item displays only if your scanner is equipped with a bottom read head.

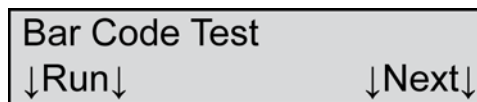
**Shown For** All models, all modes (if equipped with a bottom read head)

**Description** This menu item allows you to validate the calibration and operation of the bottom read head.

Refer to the instructions for Top Read Validation above with the following exception:

Place the Calibration Sheets in the input tray so that the words “Scantron Reflective” are **face down and enter the scanner last**.

### Bar Code Test



**NOTE:** This menu item displays only if the bar code reader option is installed.

**Shown For** All models, all modes (if bar code reader is installed)

**Description** This menu item allows you to run the bar code test.

Press **Next** if you want to skip this function and advance to the next menu item.

Press **Run** if you want to run the test. The following menu items appear.

BAR CODE TEST	
↓Run↓	↓Next↓

INPUT TRAY EMPTY	
↓Quit↓	↓Start↓

FEED BAR CODE FORMS	
↓Quit↓	↓Start↓

#91892	
↓Quit↓	↓Start↓

Load a stack of five Bar Code Diagnostic Forms #91892 (part # 202-167-144) into the input tray. Once the forms are loaded the **Start** prompt appears.

Set the bar code reader to the position that you want to test. Notice that there are lines of bar code labels at positions 25, 30, 53, 62, 67, 75, and 80.

For a recommended test procedure and details on how to interpret the test, see “Testing the Bar Code Reader” on page 186.

Press **Start** to perform the test. If all the bar code labels are read successfully, there is no change to the menu items.

Press **Next** to abort the test or if you have completed the test and wish to advance to the next menu item.

If the bar code test failed, the following menu items appear.

BAR CODE TEST FAILED	
↓Quit↓	↓Start↓

X LABEL(S) READ	
↓Quit↓	↓Start↓

Where X = the number of labels read successfully in the line that you were reading.

If you have a failure:

- Check for damaged sheets
- Verify that you have placed the bar code form correctly in the input tray
- Verify that the bar code reader cover is in the full down position
- Verify that the reader is properly positioned

If you get repetitive failures and have checked the above, contact Scantron Customer Support as described in “Requesting Support” on page 145.

Press **Continue** to run another test.

Press **Next** to abort the test and advance to the next menu item.

## Exiting the Background Menu



**Shown For** All models, all modes

**Description** After you have navigated through the background menu, the menu item shown above appears.

Press **Enter** to re-enter the background menu.

Press **Exit** to exit the background menu.

## NOTES

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## Chapter 7:

# ES/ScanMark Emulation

Running the scanner in ES/ScanMark mode makes the scanner function like a Scantron ES 2010, ES 2260, or ES 2800 scanner so that you can use your legacy Scantron software and applications with your new scanner. You can even create new form definitions with your legacy software. Most of the instructions found in this manual still pertain when using the scanner in ES/ScanMark mode. This chapter highlights the differences.

## Selecting ES/ScanMark Mode

Select the ES/ScanMark mode to make the scanner function like a Scantron ES 2010, ES 2260, or ES 2800 scanner.

1. Enter the background menu by holding both buttons until the background menu appears (about five seconds).



2. Press **Next** twice to get to the Mode menu item. The following display appears.

Mode=<Mode>	
↓Change↓	↓Next↓

Where <Mode>=

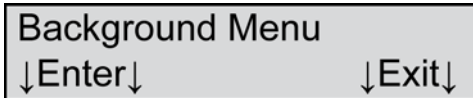
- OMR w Imaging (optional)
- OMR Only
- ES/ScanMark
- Download Run

- Download Debug
- SelfScore (optional)

3. Press **Change** until Mode=ES/ScanMark appears in the display.

A screenshot of a device display showing the text "Mode=ES/ScanMark" at the top. Below it, there are two options: "↓Change↓" on the left and "↓Next↓" on the right, both with downward arrows on either side.

4. Press **Next** three times to get to the Background Menu item.

A screenshot of a device display showing the text "Background Menu" at the top. Below it, there are two options: "↓Enter↓" on the left and "↓Exit↓" on the right, both with downward arrows on either side.

5. Press **Exit** to exit the background menu. The scanner is now ready for operation in ES/ScanMark mode.



## **Setting Up, Configuring, and Operating the Scanner**

Setup and operation of your scanner in ES/ScanMark mode is the same as for other operating modes. Refer to the following chapters for instructions on setting up, configuring, and operating your scanner.

- Chapter 2, “Setting Up Your Scanner”
- Chapter 6, “Using the Background Menu”
- Chapter 3, “Operating Your Scanner”

## Display Panel Messages

Explanations of the display panel messages that appear while in ES/ScanMark mode can be found in Chapter 5, “Display Panel Messages”. The ES/ScanMark messages are listed alphabetically along with messages displayed in other modes.

## Detecting Double Sheets

Use the double-sheet detection option to have the scanner detect when more than one form enters the scanner. If you turn double sheet detection on and the scanner detects multiple forms entering the scanner, **Double Sheet** appears on the display panel and the scanning session pauses. You then must clear the paper path to resume scanning.

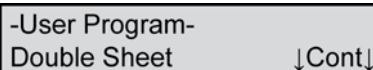
For information on how to turn on double-sheet detection, see Chapter 6, “Using the Background Menu” for information on how to enter the background menu, and then see “Double Sheet” on page 91 for information on how to turn on double-sheet detection.

### To clear a double-sheet error condition

1. If the scanner detects multiple forms entering the scanner, the display panel displays one of the following messages.



-ES/ScanMark-  
Double Sheet                      ↓Cont↓



-User Program-  
Double Sheet                      ↓Cont↓

2. Clear the paper path, being sure to get all the pieces if the form has torn.
3. Return any unscanned sheets to the input tray.

Press **Cont** to continue.

## Form Handling

The OpScan 4 ES and iNSIGHT 4 ES scanners can perform form handling using the optional Select Stacker. For information on how to attach and use the Select Stacker, see Appendix D, “Select Stacker”.

## Scoring Forms

Some ScanMark scanners had a special scoring mode that would score and error mark form number F-16457-PAR-L. The OpScan 4 ES and iNSIGHT 4 ES scanners in ES/ScanMark emulation mode do not have that special scoring mode.

However, some software applications that can be used with the OpScan 4 ES and iNSIGHT 4 ES scanners in ScanMark emulation mode (e.g. ParScore) can score and print the score on the forms. See your software documentation for details.

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## **Chapter 8:**

# **Cleaning the Scanner**

This chapter covers how to clean your OpScan 4 ES or iNSIGHT 4 ES scanner to keep it in top operating condition.

# Schedule

In general, it is best to clean your scanner once a month. However, you may need to clean your scanner's read heads more frequently depending on the following:

- Scanner operation - A scanner operating in OMR w Imaging mode (optional) may need to be cleaned more often than a scanner operating in OMR Only mode.
- Paper dust - Sheets that generate more paper dust will necessitate more frequent cleaning. Perforated sheets generate a considerable amount of paper dust.
- Read head contamination - Eraser fragments and white out, if used, can build up on the read head.

# Supplies

Recommended cleaning supplies are shown below.

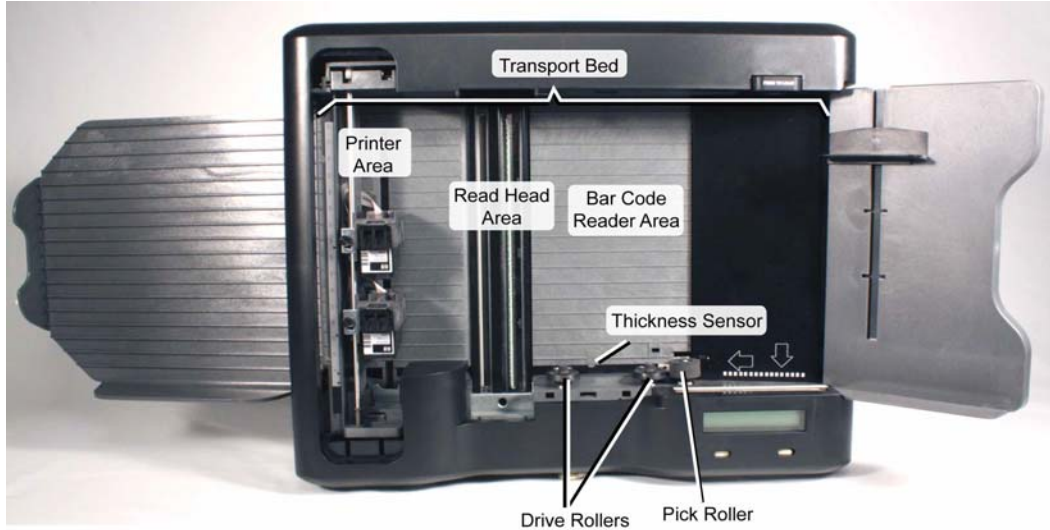
- Ammonia-based glass-cleaning solution (do not spray directly on the scanner)
- Static reducing spray (do not spray directly on the scanner)
- Lint-free cloths
- Canned air (with non-condensing propellant)



# Procedure

**IMPORTANT:** Turn the scanner off before cleaning.

An illustration to help you identify key parts that need to be cleaned is shown below. The recommended cleaning procedure follows



1. Raise the covers for the read head and sheet deflector and remove the printer cover.



2. Spray canned air (with a non-condensing propellant) directly on the transport bed area. This removes large amounts of dust and other types of debris.



## Chapter 8: Cleaning the Scanner

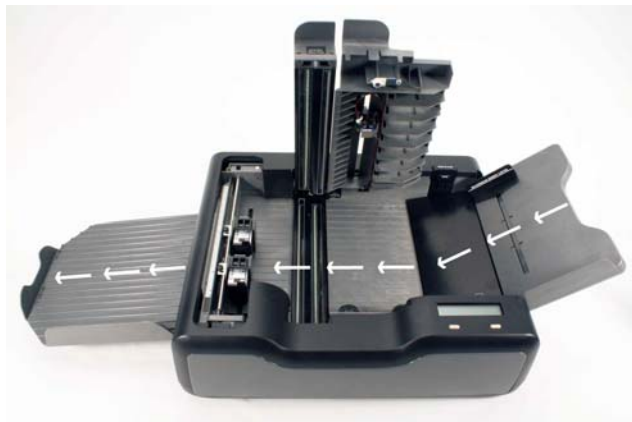
### Procedure

3. Clean out any dust or debris that has collected in the area between the top and bottom read heads where it is hinged using canned air.



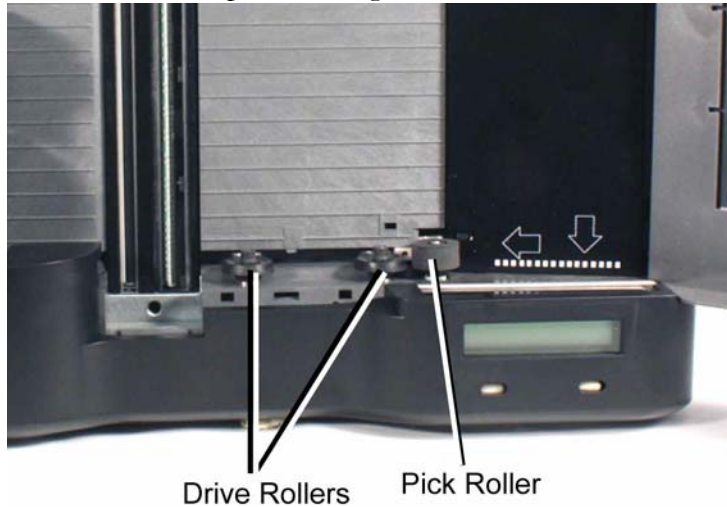
**CAUTION:** Do not use the canned air after this step as it can blow dust on areas that have been cleaned.

4. Lightly dampen a lint-free cloth with water or with a static-reducing spray.
5. Using the dampened cloth, wipe along the transport bed. Start at one end of the bed and work to the other.



6. Lightly dampen a lint-free cloth with soapy water.
7. Locate the drive rollers. Wipe the drive rollers using the lightly dampened cloth.

**CAUTION:** Do not touch the read head with the soapy cloth. Soap can damage the read head.



8. Locate the pick roller. Turn the pick roller with one finger, wiping off the roller as you turn it. This procedure removes graphite and other debris that collects on the roller.
9. Lightly dampen a fresh lint-free cloth with an ammonia-based glass cleaner.

**CAUTION:** Do not spray the cleaner directly on the read head.

10. Using the lightly dampened cloth, clean the glass on the top read head.

## Chapter 8: Cleaning the Scanner

### Procedure

11. Using the same cloth, clean the glass on the bottom read head.



**NOTE:** Single read head units do not have glass beneath the top read head. Instead, they have a black shiny strip.

12. Close the read head and sheet deflector. Also replace the printer cover.



13. Turn the scanner back on after it has had a chance to dry.

## Chapter 9:

# Troubleshooting

Use the troubleshooting chart in this chapter to diagnose any issue you encounter with your scanner. If you are still unable to resolve the problem, contact Scantron Customer Support as described in “Requesting Support” on page 145.

**NOTE:** For optional components, see the appropriate appendix for troubleshooting information.

**NOTE:** For information regarding error messages, see Chapter 5, “Display Panel Messages”.

# Troubleshooting Chart

Problem	Possible Solution
The scanner will not scan/feed documents	<p>Make sure that:</p> <ul style="list-style-type: none"> <li>the wall outlet is not defective.</li> <li>the power cord is plugged in and the power is on.</li> <li>the scanner covers are completely closed.</li> <li>the PC was restarted after installing the software.</li> <li>sheets in the input tray were lightly pushed all the way to the left with the <b>Press To Load</b> button depressed during loading.</li> <li>the number of sheets in the input tray is less than approximately 100 sheets of 60-100 lb offset paper.</li> <li>sheets meet specifications for size</li> <li>you try powering the scanner down, and then up again.</li> </ul>
Documents are jamming or multiple documents are feeding	<p>Make sure that:</p> <ul style="list-style-type: none"> <li>the paper guide is adjusted for the width of the sheets you are scanning.</li> <li>the output tray is adjusted for the length of sheets you are scanning.</li> <li>the leading and timing track edges have been tapped on a hard surface (jogged).</li> <li>sheets meet specifications for size, weight, type, etc.</li> <li>all staples and paper clips have been removed from the sheets.</li> <li>all jammed sheets have been removed from the paper path.</li> <li>the scanner has been cleaned as outlined in Chapter 8, “Cleaning the Scanner”.</li> <li>your sheets are printed by Scantron or PrintFlex/ScanFlex.</li> </ul>

Problem	Possible Solution
Documents are skewed during scanning	<p>Make sure that:</p> <ul style="list-style-type: none"> <li>the paper guide is adjusted for the width of the sheets you are scanning.</li> <li>the leading edge and timing track edges have been tapped on a hard surface (jogged).</li> <li>the scanner covers are firmly closed.</li> <li>the scanner has been cleaned as outlined in Chapter 8, “Cleaning the Scanner”.</li> <li>your sheets are printed by Scantron.</li> </ul>
Scanner pauses excessively during scanning or is running too slow	<p>Make sure that:</p> <ul style="list-style-type: none"> <li>the host computer meets minimum requirements for scanning.</li> <li>there is enough free space on the hard disk drive.</li> <li>all other applications are closed.</li> <li>the USB connection is 2.0 (INSIGHT 4 ES only).</li> </ul> <p>You can also try changing the scanning options (compression, etc.) in your scanning application.</p>
Data is not captured as expected	<p>Make sure that:</p> <ul style="list-style-type: none"> <li>respondents have properly filled out the form.</li> <li>the timing track edge of the sheets is positioned against the guide rail (edge of input tray closest to the front of the scanner).</li> <li>you are scanning the correct side of the sheet.</li> <li>you are scanning the correct form.</li> <li>there are no stray marks on the sheet.</li> <li>nothing is obstructing the read head glass.</li> <li>you are using the correct application or form definition.</li> <li>the read head is fully seated.</li> </ul>



## NOTES

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## **Chapter 10:**

# **Product Support and Services**

This chapter explains how and where to get assistance with and supplies for your OpScan 4 ES or iNSIGHT 4 ES scanner.

## Registering Your Product

**Outside the U.S.** Contact your local sales agent for product support, registration, and update information.

**Within the U.S.** Product registration ensures timely notification of downloadable updates and upgrades which are provided to you as a benefit of an active hardware support agreement or software subscription.

Online registration is required for:

- Notification of downloadable updates and upgrades for utilities
- Downloading of the updates and upgrades for utilities
- Online support requests

**NOTE:** If you are entitled to updates or upgrades, you may obtain them on physical media for an extra fee.

### Online Registration

1. Go to the Scantron Web site at **www.scantron.com**.
2. Select **Training & Support→Product Registration**. The **Product Registration** page opens.
3. Enter the appropriate information, and click Submit to register your software product with Scantron Customer Support.

Registering your product ensures you of timely notification of product updates and upgrades.

## **.Printed Documentation**

Your OpScan 4 ES or iNSIGHT 4 ES scanner comes with printed documentation for the scanner and the included software. The documentation set provides information on packaging, installation, setup, operation, configuration, and maintenance for users and system administrators.

For a list of the documentation included with your scanner, see the Preface.

## The Help System

Your OpScan 4 ES or iNSIGHT 4 ES scanner does not come with a Help system specifically for the hardware. However, the Scantron software products that you use with your scanner each come with a Help system that includes comprehensive information that may help you with your hardware issues. Use the Index and Search features in the software Help system to find information about how your scanner and software work together.

If you are facing a hardware issue, be sure to check the software Help system for information before calling Scantron Support (within the U.S.) or your local sales agent (outside the U.S.).

# Training

**Outside the U.S.** Contact your local sales agent for training information.

**Within the U.S.** While Scantron does not offer training specifically for your scanner hardware, we do offer training on most Scantron software products used with your scanner. Training is available for:

- ScanTools<sup>®</sup> Plus software
- ScanFlex<sup>™</sup> Option
- Scantron DesignExpert<sup>™</sup> software
- Prosper<sup>™</sup> assessment system
- RealTime Character Recognition utilizing NestorReader<sup>™</sup>
- Remark<sup>®</sup> Classic OMR software
- ParScore software

Types of training available include classroom training, web seminars, and Quick Start orientations.

For more information or to sign up for training:

- Visit our Web site at **www.scantron.com**, or
- Call Scantron Training at 1-800-336-3426 (extension 6123).

## Internet Resources

Go to **www.scantron.com** to access the Scantron Customer Support Web site. It gives you access to the following:

**Outside the U.S.**

- Frequently Asked Questions (FAQs) with answers about scanning hardware and software products.

**Within the U.S.**

- Online registration of your scanner or software product with Scantron Customer Support. This ensures you of timely notification of product updates and upgrades.
- Frequently Asked Questions (FAQs) with answers about scanning hardware and software products.
- Software updates (including driver and utility updates for scanners) that you can download if you have a current software subscription or hardware support agreement.

**NOTE:** New licensees of Scantron software products have access to these support resources. Continued access to some of these resources requires a continuing hardware or software subscription support agreement.

# Ordering Supplies

**Outside the U.S.** Contact your local sales agent to order supplies.

**Within the U.S.** We offer quick, easy access to supplies and user manuals for your Scantron scanner and software. You can order online or by phone or fax:

## Online

Scantron Online Store  
**[www.scantronstore.com](http://www.scantronstore.com)**  
Click **Supplies**

## Phone or Fax

Scantron Supplies Business Center  
1313 Lone Oak Road  
Eagan, MN 55121  
**Phone** 1-800-328-6290  
**Fax** 1-651-683-6230

**NOTE:** Promotional offers are typically available for online purchases only.



## Ordering Forms and Print Services

**Outside the U.S.** Contact your local sales agent for forms and print services information.

**Within the U.S.      **Standard Forms****

Scantron has a large variety of standard forms to meet your data collection needs. For an illustrated list of the forms available and to order online, visit the Web site below. To order by phone, contact Scantron Print Services at the numbers shown below.

**Online**

Scantron Online Store  
**www.scantronstore.com**

**Phone or Fax**

Scantron Print Services  
**Phone** 1-800-722-6876  
**Fax** 1-949-639-7710

### Custom Form Design and Other Services

In addition to standard forms, Scantron Print Services can also assist with custom form design. Once you have an idea of what the project entails, call Scantron Print Services at the numbers below to discuss the project with a Customer Service Representative (CSR). Scantron CSRs have the expertise needed to ensure that the job gets done right, and with the value added features that you desire.

Other services available through Scantron Print Services include background form images, merge template creation, high volume merge printing projects, and delivery and fulfillment services.

**Phone or Fax**

Scantron Print Services  
**Phone** 1-800-735-2566  
**Fax** 1-717-684-1300

# Requesting Support

**Outside the U.S.** Contact your local sales agent for support.

**Within the U.S.** If you have questions about your scanner that are not answered by the printed documentation, the Help system, or **www.scantron.com**, call Scantron Customer Support.

When you call Scantron, an operator will ask you to describe your problem. The operator will then relay information about the problem to an analyst who will call you back as soon as possible. You can reach Customer Support from 8:00 A.M. to 5:00 P.M. Monday through Friday, your local time (except for Alaska and Hawaii where support is available through 7:00 P.M. CST).

## Before calling:

1. Know the serial number of the product you are calling about. The serial number for your OpScan 4 ES or iNSIGHT 4 ES scanner can be found on the back of the scanner.
2. **Write down a description of your problem.** Include a sequence of the steps leading to the problem. Doing this ensures that you will have all the details you need when you talk to the analyst.
3. Note error messages that appear on your computer screen or the scanner display panel.
4. Have a description of your hardware ready.
  - Scanner model
  - Firmware version
  - Sheet count
5. Have a description of your software ready.
  - Software used

- Version numbers
  - Any additional modules that have been installed
6. Be available with a phone at the scanner. This is so that the analyst will be able to guide you through the troubleshooting process.

### Scantron Customer Support

**Phone** 1-800-338-5544 (U.S. only)

Scantron Customer Support can answer your questions about a variety of subjects, including:

- Installation and configuration
- Program features and operation
- Scanner and software troubleshooting
- Documentation and the Help system
- Fonts and graphics
- Software/hardware errors
- Laser printing forms
- ScanFlex and PrintFlex

# Services

**Outside the U.S.** Contact your local sales agent for services information.

**Within the U.S.** A variety of services are available including custom data collection solutions, survey research services, equipment maintenance, equipment installation, network installation, custom training solutions, custom application development, database support, software support for custom applications, and consulting services.

For information on any of these services, contact  
**Scantron:**

**Online**  
**[www.scantron.com](http://www.scantron.com)**

**Phone**  
**1-800-447-3269**

## NOTES

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## Appendix A:

# Recalibration

Calibration automatically adjusts the scanner read system to compensate for variations in scanner components. Your scanner comes calibrated and ready for use.

### Reasons to Recalibrate

Recalibration should be performed only if you received a “Recalibrate.... See Manual” message on the scanner display panel or if instructed to do so by Scantron Customer Support.

**NOTE:** Do not recalibrate unless required to do so. Recalibrating too often can produce less than optimal results.

### Procedure Overview

To recalibrate, perform the following:

- Prepare for recalibration
- Navigate the background menu
- Perform a Top Head Calibrate function

- Perform a Bot Head Calibrate function (if your scanner is equipped with a bottom read head)
- Exit the background menu

Instructions for the above tasks are found in the pages that follow.

# Preparing for Recalibration

For best results, perform the following before calibrating:

- Clean the scanner and the read head(s) as outlined in Chapter 8, “Cleaning the Scanner”.
- Ensure that the calibration forms are clean and undamaged.



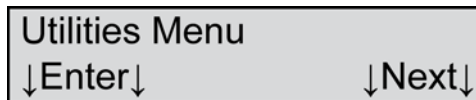
## Navigating the Background Menu

In order to recalibrate, you need to navigate the background menu to get to the Top Head Calibrate and Bot Head Calibrate functions. Use the following procedure.

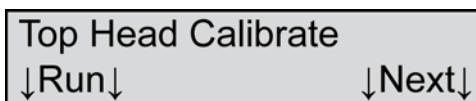
1. Enter the background menu by holding down both buttons for about five seconds. When the message “Background Menu” appears briefly, release the buttons.



2. Press **Next** five times or until you reach this menu item.

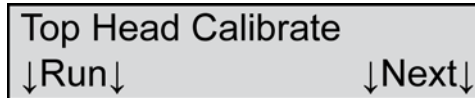


3. Press **Enter** to enter the Utilities submenu. The first menu item displayed is the one you need (shown below).

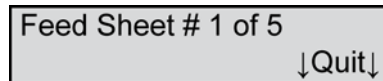


# Top Head Calibration

From the menu item shown below, perform a top read head calibration using the following instructions.



1. Press **Run** to calibrate the top read head. The following menu item appears.



**NOTE:** INSIGHT 4 ES scanners require ten calibration sheets for calibration.

**NOTE:** If you run out of calibration sheets, reload the ones that are in the output tray.

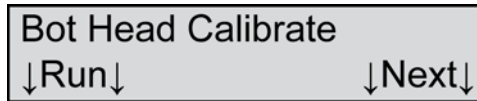
2. Load the calibration forms (part # 202-989-008) that came with your scanner by placing them in the input tray and depressing the **Press To Load** button. The orientation of the calibration sheets does not matter. Press **Start** to begin calibration. Press **Next** at any time to abort calibration.
3. When calibration is complete, the following menu item appears.



4. Press **Next** to complete calibration and to advance to the next menu item.

## Bottom Head Calibration

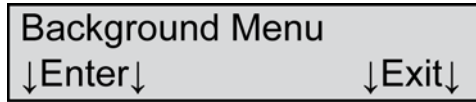
**NOTE:** Single read head scanners have only a top read head. If your scanner has a single read head, skip this part of the procedure.



From the menu item shown above, perform a bottom read head calibration using the Bot Head Calibrate function. Use the instructions for the Top Head Calibrate function to guide you through the process.

## Exiting the Background Menu

1. Press **Next** until you reach the following menu item.



2. Press **Exit** to exit the background menu.

## NOTES

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## Appendix B:

# Transport Printer

This chapter covers setting up and using the optional transport printer(s) for the OpScan 4 ES and INSIGHT 4 ES scanners.

Both single and dual printers are available.

**IMPORTANT:** Remove the cartridge from the printer and store in a sealed container in a cool place if:

- The printer is not going to be used for a period greater than two weeks.
- The scanner is going to be transported.
- The scanner is going to be turned off or unplugged (It is not necessary to remove the cartridge when allowing the scanner to go into low power sleep mode.).

## Printer Features

- Prints in any position horizontally across a sheet.  
You can adjust the printer cartridge so it prints at any position on a sheet—from just beneath the guide edge to the top scoring position.
- Prints a maximum of 23 characters—10 characters per inch.
- Prints in only the last 2.44 inches of space on a sheet.  
Since the sheet is scanned first, most of the sheet has passed under the print head by the time interactive printing begins. Only the last 2.44 inches on a sheet are available for printing.  
**NOTE:** When in optional SelfScore mode, the printers can print on the entire sheet.
- Prints in normal or reverse orientation (characters can appear right side up or upside down).  
See “Reverse Printing” on page 92 of this manual, for instructions on how to set up the option for reverse printing orientation on your scanner.

# Getting Started

To prepare your scanner for printing while scanning, perform the following:

- Install the printer cartridge(s)
- Position the printer(s)
- Turn on the printer(s)
- (optional) Test the printer(s)
- Set up your scanning software to print

Instructions for each of these tasks are found in the sections that follow.



## Installing or Replacing an Ink Cartridge

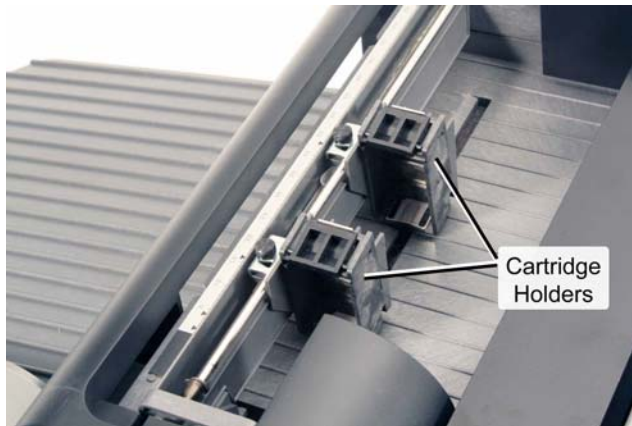
**NOTE:** The scanner does not come with the ink cartridge(s) installed.

To install or replace an ink cartridge, follow these steps:

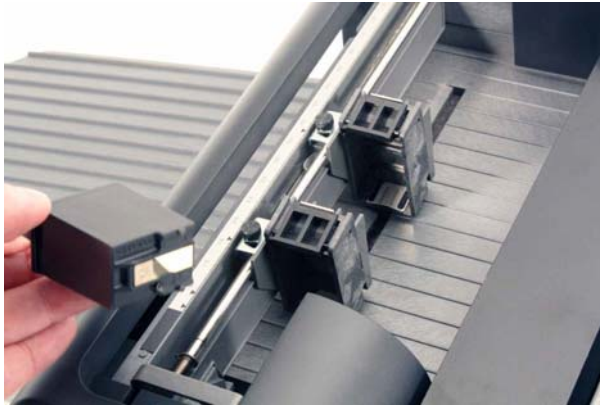
1. Unlatch the printer cover and remove it.



2. If replacing a used cartridge, remove it by holding the printer cartridge tab and pivoting the used cartridge out of the cartridge holder.



3. Prepare the new cartridge.
  - Remove the new cartridge from the box and peel off the tape that covers the ink cartridge nozzles.
  - Be careful to not touch the cartridge contacts with your fingers.
4. Install the new cartridge.



Slide the cartridge into the cartridge holder “feet first” then press the top of the cartridge firmly into the cartridge holder until you feel two clicks. This ensures that the cartridge is fully seated.



5. If your scanner is equipped with dual printers, repeat steps 2, 3, and 4 for the other printer.



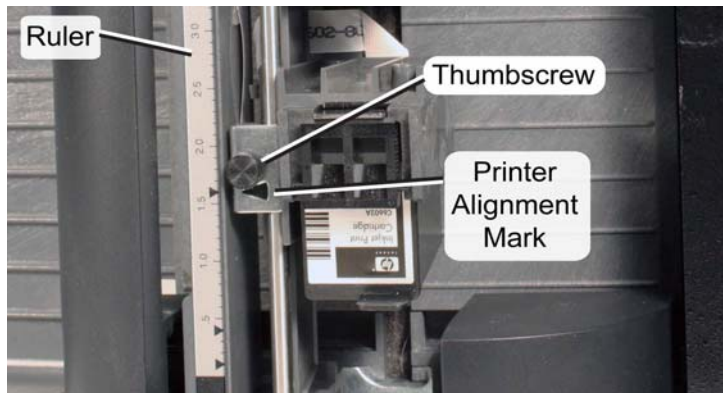
6. Adjust the position of the printer(s) as described in the next section.

## Positioning the Printer(s)

1. If the printer cover is not already removed (from a previous procedure) unlatch it and remove it.



2. Notice the location of the cartridge holder that is inside the printer assembly. Also notice the ruler, the printer alignment mark, and the thumbscrew that sit beside the cartridge holder. These are the elements used to position the printer(s).



3. Select the sheets you want to print on.

#### Printing on Any Form

Using a ruler with marks for tenths of an inch, align the ruler with the left edge of a sheet on which you want to print. Measure to the location on the sheet where you want your printing to appear. Use this measurement to position the printer.

#### Printing on SelfScore Forms

If you are using SelfScore forms, you need to adjust the printers to 1.6 and 4.3 inches. There are small triangles on the scanner printer ruler indicating these two locations.

**NOTE:** The remainder of this section demonstrates how to set the printers to 1.6 and 4.3 inches. However, these concepts can be applied to any form by simply using the measurement you obtained above.

4. Check the printer(s) to see if they are in the correct position. If not, use the following steps to position the printer(s).



5. Loosen the thumbscrew so that you can move the printer.



6. Move the printer to the desired position and lightly tighten the thumbscrew.



## Appendix B: Transport Printer

### Positioning the Printer(s)

7. If your scanner is equipped with dual printers, adjust the position of the second printer.



8. Replace the printer cover, making sure that it is firmly seated.



9. Ensure that the printer is turned on and perform a printer test using the instructions in the sections that follow.



## Turning the Printer(s) On Or Off

You can turn the printer(s) on or off using the background menu. This allows you turn off printing without having to remove the printer cartridge.

**NOTE:** If you are setting up printing for the first time, you should check to verify that the printer is turned on.

Use the following procedure to change the printer status.

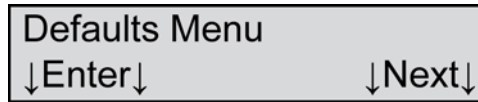
1. Hold down (at the same time) the left and right buttons found under the display panel for about five seconds to enter the background menu. When the Background Menu message appears briefly, release the buttons.



**NOTE:** For a complete listing of all background menu items, see Chapter 6, “Using the Background Menu”.



2. Press the **Next** button three times or until you reach the following menu item.



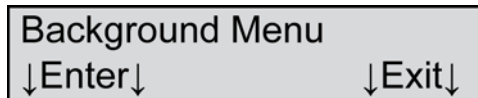
3. Press **Enter** to enter the Defaults menu.
4. Press **Next** two times or until you reach the following menu item.



Where <Status> =

- On
- Off

5. To print, the printer status should be On. To suppress printing, the status should be Off. Press **Change** if you want to change the printer status.
6. Once you have the printer status set the way you want it, press **Next** seven times or until you reach the following menu item.



7. Press **Exit** to exit the background menu.

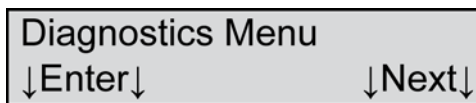
## Testing the Printer(s)

To test the printer, perform the following steps:

1. Load five expendable 8.5 by 11-inch data collection sheets in the input tray. (Do not use Calibration Sheets as you may need them in the future.)
2. Hold down (at the same time) the left and right buttons found under the display panel for about five seconds to enter the background menu. When the Background Menu message appears briefly, release the buttons.



3. Press the **Next** button five times or until you reach the following menu item.



4. Press **Enter** to enter the Diagnostics menu. The following menu item appears.

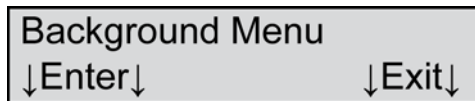


5. Press **Run** to run the Feed/Print test.

For the printer(s) to successfully pass the test, sheets must feed through the scanner and the printer(s) must print characters on the sheets. As the sheets move through the scanner, the following message is displayed:



6. If the printer prints on the sheets, press **Next** until the following menu item appears.



Press **Exit** to exit the background menu

If the printer does not print on the sheets, verify that you have installed the ink cartridge as directed and have turned the printer on. Repeat the testing procedure.

If printing still does not appear, call Scantron Customer Support for assistance as described in "Requesting Support" on page 145.

## Setting Up the Scanning Software for Printing

In order to print, your scanning software must tell the scanner printer(s) what to print. This requires proper setup of the scanning software for printing. For information regarding how to do this, consult your scanning software documentation.

## Cleaning the Cartridge Holder

If ink leaks from the cartridge, it may be necessary to clean the cartridge holder.

**NOTE:** Perform this procedure only if you are experiencing problems. You can damage the electrical contacts in the cartridge holder if you clean them too frequently.

To clean the cartridge holder:

1. Unlatch the printer cover and remove it.

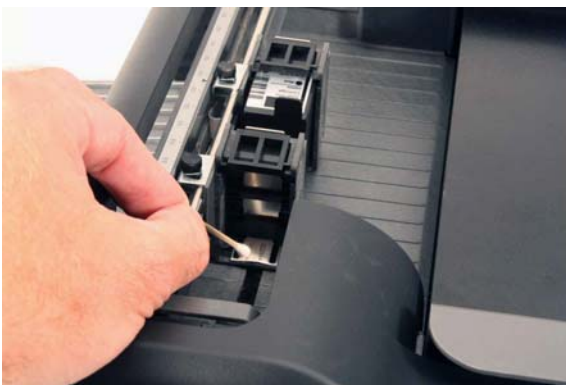


2. Remove the cartridge by holding the printer cartridge tab and pivoting the used cartridge out of the cartridge holder.

**CAUTION:** Watch for excess ink on the cartridge that can soil your hands, clothes, or other items.



3. Using a clean swab, gently wipe the area of the cartridge holder that contains the electrical contacts.



**CAUTION:** Do not spray any substance directly into or on the cartridge holder.

4. Install the cartridge. Slide the cartridge into the cartridge holder “feet first” then press the top of the cartridge firmly into the cartridge holder until you feel two clicks. This ensures that the cartridge is fully seated.

## Troubleshooting

Use the following table to troubleshoot most printer problems. If after trying the table, you are not able to resolve your difficulty, contact, Scantron Customer Support as described in “Requesting Support” on page 145.

If you have:	Do the following:
A cartridge that is leaking ink	Replace the cartridge and clean the cartridge holder. <b>NOTE:</b> If the scanner is operating in an excessively hot location [above 85° F.] or if it is not going to be used for an extended period of time, remove the cartridge from the scanner. Store the cartridge in a sealed container and place the container in a cool, dry location, such as inside a refrigerator.
A printer that previously printed but now does not print	Replace the cartridge.
Letters that are blurred or in a double image	Replace the cartridge if the quality of printing does not improve.
Letters that are not printing completely	Check to see if ink is accumulating on the silver plate on the bottom of the cartridge. If so, remove the ink using a dry, lint-free cloth. Clean the contacts on the cartridge holder.
No printing at all	Ensure that you have turned on the printer using the background menu. Also, consult the documentation that supports the software application that you have installed on your computer.
Not used your printer for a long time	Replace the ink cartridge. <b>NOTE:</b> If the scanner is not going to be used for an extended period of time, remove the cartridge from the scanner. Store the cartridge in a sealed container, and place the container in a cool, dry location, such as inside a refrigerator.

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# C

## Appendix C: Bar Code Reader

The bar code reader is an optional attachment that enables the scanner to collect data from bar codes attached to or imprinted on a sheet you scan. The scanner communicates this data to the computer to which it is attached. The bar code data collected from each sheet is processed by the scanning software and is stored in the same ASCII data record as your OMR bubble data.

This chapter covers the components, setup, use, and troubleshooting of the bar code reader.



## Components

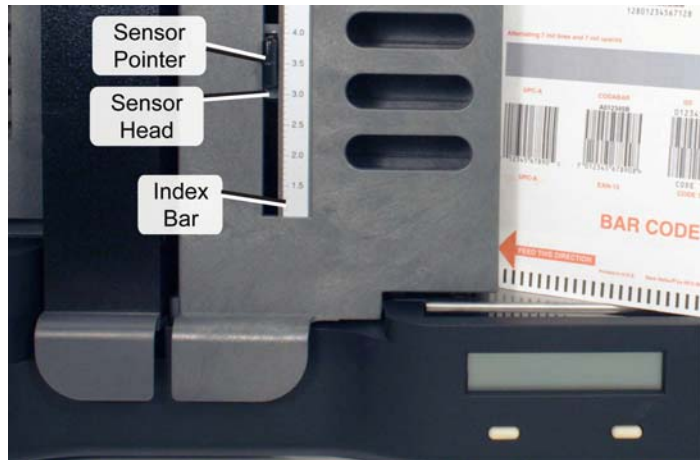
The bar code reader is positioned on top of the scanner's transport bed. It sits to the right of the read head (as viewed from the front of the scanner) and beneath the sheet deflector. The figure below shows the location of the bar code reader.



The bar code reader has three parts major parts. These parts are:

- Index Bar
- Sensor Head
- Sensor Pointer

Each of these parts is illustrated and described below.



## Index Bar

The index bar is located on top of the cover of the bar code reader. It resembles a ruler and spans the width of the transport bed below.

The index bar shows ruled markings in tenths of inches, measured from the guide edge of the scanner. It shows numbers marked every half inch, beginning at 1.5 inches and ending at 8.0 inches.

## Sensor Head

The sensor head is located on the underside of the sheet deflector. It contains a sensor that reads bar codes on each sheet as the sheet passes through the scanner.

## Sensor Pointer

The sensor pointer is located on top of the cover of the bar code reader. It indicates, through its position on the index bar, the location of the sensor head. It is used to set the sensor head to the proper position for scanning bar codes.

# Read Capability

The bar code reader reads six types of bar code formats. The table below summarizes some of the important features of each type.

Code	Type	Character Set	Character Representation
Codabar	Alphanumeric (limited)	0 through 9, -, \$, :, ., +, A, B, C, and D	Start and stop characters for code are A, B, C, and D.
Code 128 Versions A, B <sup>a</sup> and C	Alphanumeric	ASCII 128 characters (0 through 7F)	ASCII character set
European Article Numbering Code (EAN) 8 and 13	Numeric (and fixed length)	0 through 9	EAN 8 is 8 characters and EAN 13 is 13 characters.
Interleaved 2 of 5 Code (125)	Numeric	0 through 9	Each character is represented by a series of 5 bars and/or spaces.

Code	Type	Character Set	Character Representation
3 of 9 Code (Code 39)	Alphanumeric	0 through 9 A-Z, -, ., /, +, %, and space	Each character is represented by 5 bars and 4 spaces. Three of the 9 bars or spaces are wide (binary value of 1); six of the 9 bars or spaces are narrow (binary value of 0). Start and stop character for the code is an asterisk (*).
Universal Product Code (UPC), versions A (UPC-A) and E (UPC-E)	Numeric (commonly used on retail products)	0 through 9	Each character is represented by 2 dark bars and 2 spaces of varying widths. Version A (regular version of UPC) contains 12 positions: 10 numeric and 2 control characters. Version E allows for smaller code by suppressing zeros that occur within the code.

- a. Lowercase “a”, “b”, “c”, “d”, and “s”, are reserved for OpScan 4 ES and iNSIGHT 4 ES scanner use. Code 128 B cannot be used to encode data which includes these characters. These characters are defined by Scantron and cannot be changed.

#### NOTES:

- The bar code reader cannot read bar codes that produce some ASCII codes. Refer to the technical reference manual for more information.
- Bar codes with lower case characters cannot be used with Scantron software.

- With vertical alignment, you can place six types of bar code format on the top side of a sheet. Each code can have a different format.
- The bar code reader reads all bar codes on a sheet in a single pass (scan). You can print bar codes directly on a sheet or print them on a label that is attached to a sheet.
- More information is available on some bar codes. Refer to the publications that follow for information on:

Codabar, Interleaved 2 of 5 Code, and 3 of 9 Code:  
*American National Standard for Materials Handling— Bar Code Symbols on Unit Loads and Transport Packages*, part number ANSI MH10.8M-1983

*Universal Product Code: UPC Symbol Specification Manual*, Uniform Code Council, Inc., 1986

- More information is available on reading bar codes using your scanner. Refer to the following document:  
*Technical Reference Manual for the OpScan iNSIGHT 2 and iNSIGHT 4 Scanners*

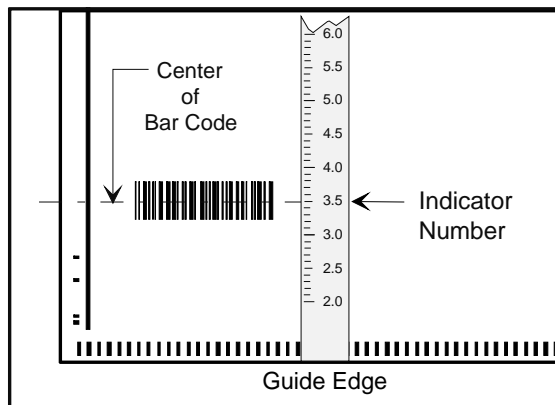
**NOTE:** The *Technical Reference Manual for the OpScan iNSIGHT 2 and iNSIGHT 4 Scanners* must be ordered separately.

# Scanning Bar Codes

The procedure for using the bar code reader is not very different from normal scanning. If you understand the basic scanning process outlined in Chapter 3, “Operating Your Scanner”, you’ll have no trouble collecting bar code data.

To read bar codes on sheets, use the following procedure:

1. Determine the location of the bar codes on the material you are scanning.
  - The sheet may be imprinted with an indicator number (the distance from the guide edge of the sheet to the center of the bar code). If it is, you can simply use that number.



- If you do not find an indicator number, use a ruler with marks for tenths of an inch to measure the distance from the guide (left) edge of the sheet to the center of the bar code. Measure to the nearest tenth of an inch.

**NOTE:** The ruler measurement is the indicator number. (For example, if the measurement is 3.5 inches, the indicator number is 3.5.)

2. Locate the number on the index bar that matches the indicator number you found in step 1. Slide the sensor head along the index bar until the sensor pointer lines up with the indicator number.



3. Scan bar coded sheets the same way as you would any others. See “Scanning Procedure” on page 38 for details.

**IMPORTANT:** Bar codes must be on the top side of the sheet as you scan it.

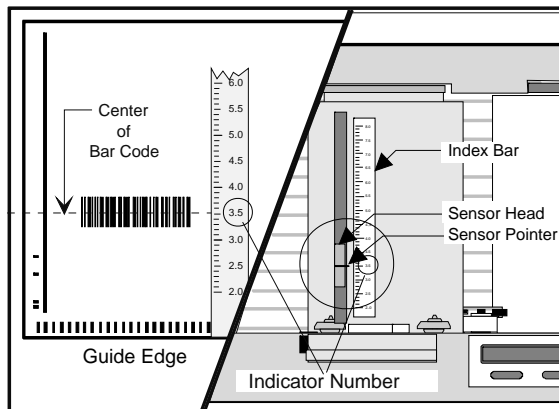
4. Use your scanning software on the host computer to begin scanning. Your scanning software must be able to accept bar code data (e.g. ScanTools Plus).

**NOTE:** If you need an explanation of any messages shown on the display panel, see Chapter 5, “Display Panel Messages”.

# Troubleshooting

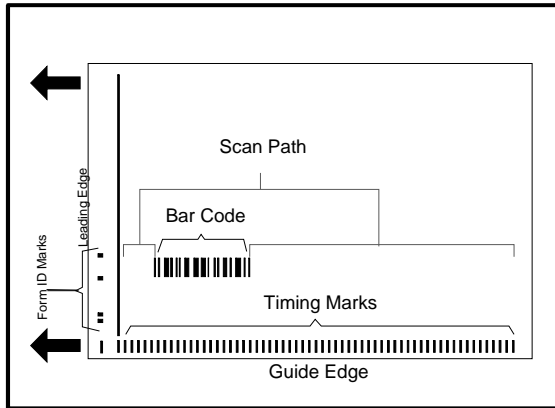
To diagnose a problem that you are having with your bar code reader, use the procedure below.

1. Verify that the configuration in your scanning software is set for bar code (e.g., in ScanTools Plus, make certain that the Bar Code option on the Scanner Configuration dialog is enabled). Consult your software documentation if you are uncertain how to proceed.
2. Verify that the bar code reader sensor is positioned to read the center of the bar code as it travels through the scanner. Do this by measuring from the guide (left) edge of the sheet to the center of the bar code. Then set the sensor pointer to that indicator number.





3. Check the scan path on the sheet. Make sure that there are no stray marks, black marks or printing in the scan path that leads to or from the bar code.



4. Make certain that the read head, printer (optional), and bar code reader covers are down and tightly closed.



5. Examine the bar code on the sheet you are trying to scan. Make sure that:
  - The bar code does not have any worn spots.
  - The bar code appears to be printed correctly on the sheet.

- The ink on the bar code is dark and consistent across the code.
  - The edges of the label are not frayed or lifted (if the bar code is a label).
  - The label is affixed in the proper spot and aligned parallel to the guide edge (if the bar code is a label).
6. Test the function of the bar code reader using the procedure in the section that follows.

## Bar Code Diagnostic Form

Use bar code diagnostic form #91892 shown below with the testing procedure that follows.

**NOTE:** Scantron forms are changed from time to time. The appearance of Bar Code Diagnostic Form #91892 as shown below may differ slightly from the one that was shipped with your bar code reader.

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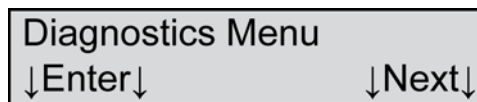
## Using the Bar Code Test Function

This section explains how to use the Bar Code Test function. Once you understand this section, go to the next section to test your bar code reader.

1. Load a stack of bar code diagnostic forms in the input tray.
2. Position the bar code reader on one of the positions on the form.
3. Hold down (at the same time) the left and right buttons found under the display panel for about five seconds to enter the background menu. When the Background Menu message appears briefly, release the buttons.

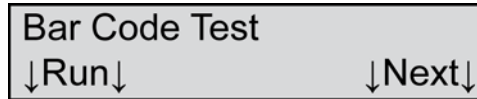


4. Press the **Next** button five times or until you see the following menu item.



5. Press **Enter** to enter the diagnostics menu.

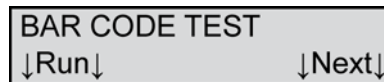
6. Press **Next** three times or until you see the following menu item.



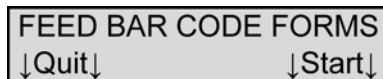
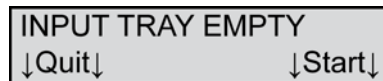
7. Press **Run** to run the bar code test.

The bar code reader is reading correctly as long as the sheets continue to feed through the scanner.

If all sheets are read successfully, the bar code reader has passed the test and the following messages appear:



If the input tray is empty, the following three messages appear:



Reposition the sensor and press **Start** to run another test, or press **Quit** to end the test.

If the bar code test fails, the following messages appear:

BAR CODE TEST FAILED	
↓Quit↓	↓Start↓

X LABEL(S) READ	
↓Quit↓	↓Start↓

Where X is the number of labels read successfully.

If you have a failure:

- Check for damaged sheets
- Verify that you have placed the bar code form correctly in the input tray
- Verify that the bar code reader cover is in the full down position
- Verify that the reader is properly positioned

If you get repetitive failures and have checked the above, contact Scantron Customer Support.

Press **Start** to repeat the test, or press **Quit** to end the test.

## Testing the Bar Code Reader

Now that you know how to use the Bar Code Test function, use the testing sequence described below to test your bar code reader.

1. Scan position 25, then scan position 80.

If your bar code reader can read both positions 25 and 80 correctly, the problem lies with your bar codes—not with your bar code reader.

If your bar code reader can read either position 25 or 80 correctly—but not the other, the problem usually

lies with the bar codes or with the depth of field on the bar code reader. (The depth of field problem is caused by the sensor head not being positioned the correct distance from the sheet or form that is in the transport bed.)

Make certain that the sheet deflector on the scanner is in the full down position. If you can't resolve the issue, continue with step 2.

**NOTE:** Positions 25 and 80 contain bar codes that are 7 thousandths of an inch wide—the most difficult to read. If the bar code reader can read both positions 25 and 80 correctly, other positions on the diagnostic sheet should also read correctly.

2. If your bar code reader cannot read positions 25 and 80, try scanning positions 30 and 75.

If your bar code reader cannot read positions 30 and 75 there may be a problem with your bar code diagnostic form. Replace the form(s) if necessary and attempt to scan positions 30 and 75 again.

If your bar code reader can read both positions 30 and 75 correctly, the problem lies with your bar code reader. Contact Scantron Customer Support as described in “Requesting Support” on page 145.

**NOTE:** Positions 30 and 75 contain bar codes that are 10 thousandths of an inch wide—the least difficult to read.

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## Appendix D:

# Select Stacker



Adding a Select Stacker to your OpScan 4 ES or *n*NSIGHT 4 ES scanner enables your scanning software to select sheets with errors (or other criteria you specify) and send them to a separate tray. This chapter covers setup, testing, operation, display panel messages, and cleaning of the Select Stacker.



## Setting Up the Select Stacker

**NOTE:** This installation procedure assumes that the scanner has already been set up and is fully operational.

1. Mount the Select Stacker to the scanner by placing the two mounting tabs securely into the holes on the scanner.



2. Install the sheet deflector as shown.



3. Mount the select stacker (lower) tray to the Select Stacker. The metal hooks go into the slots in the Select Stacker.



4. Mount the output stacker (upper) tray to the Select Stacker.



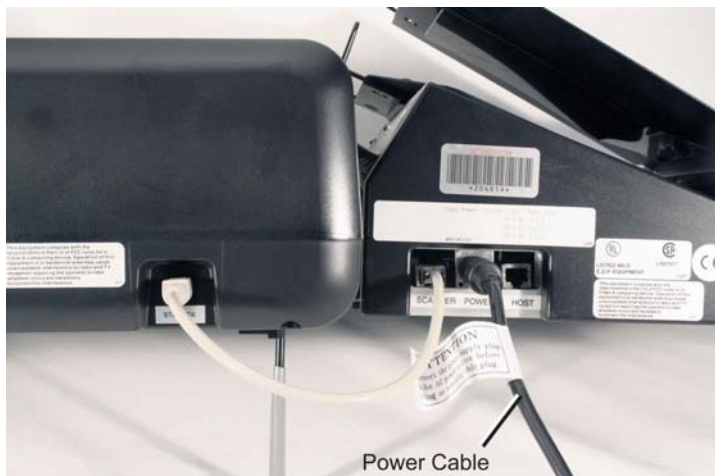
## Appendix D: Select Stacker

### Setting Up the Select Stacker

5. Connect the Select Stacker to the scanner using the special cable as shown.



6. Plug in the Select Stacker by performing the following. Connect the power cord to the power strip. Connect the power supply to the power cord. Finally, connect the power cable to the Select Stacker as shown. It is acceptable to plug the Select Stacker, the scanner, and the host computer into the same power strip.



## Testing the Select Stacker

Once you have set up the Select Stacker, you can test it to ensure that sheets are properly placed in either the output stacker (top tray) or the select stacker (bottom tray).

To test the Select Stacker, use the following procedure.

1. Hold down (at the same time) the left and right buttons found under the display panel for about five seconds to enter the background menu. When the Background Menu message appears briefly, release the buttons.



2. Press the **Next** button five times or until you reach the following menu item.



3. Press **Enter** to enter the Diagnostics menu.

4. Press **Next** once to get to the Feed/Select menu item. The following menu item appears.

Feed/Select	
↓Run↓	↓Next↓

**NOTE:** The Feed/Select menu item appears only if the Select Stacker is attached. If the menu item does not appear, the Select Stacker may not be setup correctly.

5. Press **Run** to run the Feed/Select test. The following menu item appears.

Feed/Select	
↓Start↓	↓Next↓

6. Load a stack of forms into the input tray of the scanner. (The forms will be reusable upon completion of the test.)
7. Press **Start** to feed sheets. The Select Stacker passes the test if sheets are fed and placed alternately into the top and bottom trays of the Select Stacker.

If sheets are not fed and selected properly, verify setup of the Select Stacker. If you are unable to resolve the difficulty, contact Scantron Customer Support as described in “Requesting Support” on page 145.

8. When you have completed testing, press **Next**. You will be advanced to the Background Menu menu item. Press **Exit** to exit the background menu.

Background Menu	
↓Enter↓	↓Exit↓

## Scanning Procedure

The scanning procedure is essentially the same as described in “Scanning Procedure” on page 38. The only difference is in the set up of your scanning software. You will need to set up the conditions upon which sheets are selected in your scanning software.

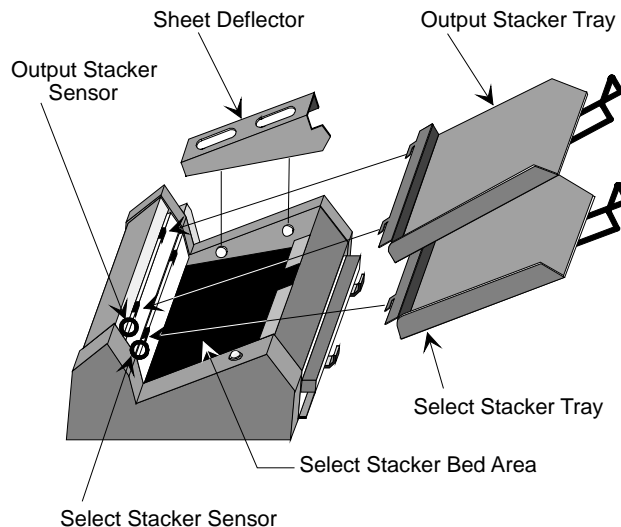
## Understanding Select Stacker Messages

When connected, the Select Stacker is part of the integrated diagnostics system that is standard on OpScan 4 ES and iNSIGHT 4 ES scanners. If an error occurs, an error message appears in the display panel.

This chapter identifies error messages associated with the Select Stacker, tells how to resolve issues, and explains button functionality.

### Terminology

- Output stacker sensor and select stacker sensor refer to the sensors located in the exit slot which monitor the paper path from the transport bed to the output stacker (top) tray and the select stacker (bottom) tray.
- Output stacker (top) tray and select stacker (bottom) tray refer to the two metal trays attached to the select stacker.



Errors are generally caused by either paper or debris that block the output or select stacker sensors. In most cases, clearing the paper jam or cleaning the sensors will resolve the issue.

## **Select Stacker Messages**

Error messages associated with the Select Stacker are covered in Chapter 5, “Display Panel Messages”. The messages are listed in alphabetical order. If an error persists after you perform the suggested procedure, contact Scantron Customer Support as described in “Requesting Support” on page 145.



# **Cleaning the Select Stacker**

Cleaning the Select Stacker helps ensure trouble-free operation. Use the following guidelines when cleaning the Select Stacker.

## **Schedule**

In general, it is best to clean your select stacker when you clean your scanner - about once a month. If you scan an extremely large number of sheets, scan sheets made of lower quality paper, or you get error messages, you may need to clean more often.

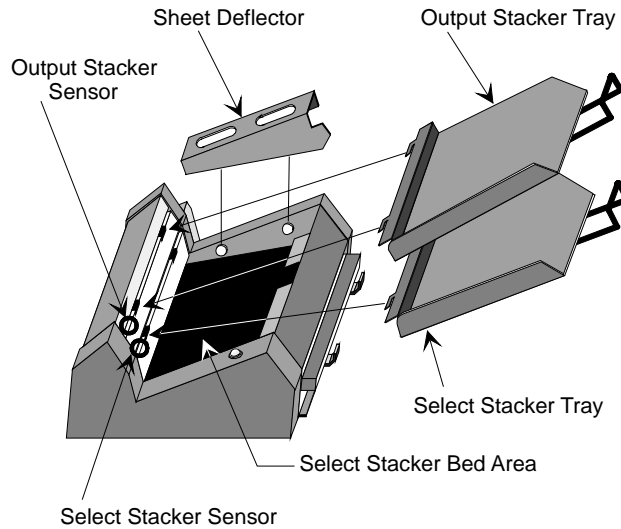
## **Supplies**

We recommend the following supplies for cleaning the Select Stacker:

- Lint-free cloths
- Static-reducing spray
- Canned air (with a non-condensing propellant)

## Procedure

The illustration below shows the location of key components. To clean the select stacker, follow the steps that follow.



1. Clean the output and select stacker sensors.
  - Spray canned air directly on the output stacker sensor.
  - Spray canned air directly on the select stacker sensor.
2. Clean the select stacker bed.
  - Remove the output stacker and select stacker trays.
  - Lift the sheet deflector up and off the two knob hangers. Set the sheet deflector aside.

## Appendix D: Select Stacker

### Cleaning the Select Stacker

- Spray canned air directly on the select stacker bed area. This removes any dust and other types of debris.
3. Clean the output stacker and select stacker trays using a lint-free cloth to remove any dust and other types of debris from the trays.
  4. Once cleaning is completed, replace the sheet deflector, the output and select stacker trays, and (if necessary) reconnect the Select Stacker to the scanner.

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## NOTES





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