

Product Description

PRODUCT NAME: OpScan iNSIGHT™ Scanner

The new OpScan iNSIGHT™ scanner combines high accuracy optical mark read (OMR) processing with the flexibility of imaging applications to enhance your data collection capabilities.

Accuracy of OMR

OpScan iNSIGHT scanners can do OMR processing using ScanTools® II software and are plug-compatible with the applications designed for the OpScan® 2/3/4/4xp/4u family of scanners.

Using Pearson NCS' Picture Perfect™ technology, the OpScan iNSIGHT system helps to ensure each sheet's electronic image is a high quality representation of the paper original. It interprets multiple-choice answers accurately because it uses grayscale images, not bitone images, to distinguish between erasures and intended marks.

Flexibility of Image

With the addition of Image ScanTools™ software, OMR capability is enhanced with the following features:

- One OpScan iNSIGHT scanner combines the advantages of a pencil read scanner (many form colors available) and an ink read scanner (reads both pencil and blue/black ink), both in the same scanner. The user selects the pencil or ink light source in Image ScanTools or by cartridge when running in OMR mode.
- **iEdit** allows you to view images and edit errors on the screen (heads-up editing). There is no more need to sort through stacks of paper. Data validation errors are identified and will automatically be displayed to the editor.
- X's and check marks are supported. Survey applications benefit from an easy- to-mark format.

- Images can be clipped for review by an editor. Many use this capability to review and code survey comments or evaluate "show your work" items.

Electronic images are typically converted to data after scanning, but the OpScan iNSIGHT system can extract data while the paper is still on the scanner's bed. This allows you to:

- Identify forms with errors and send them to the optional select stacker. An operator can get these forms repaired before data is finalized, which is much more efficient.
- Ensure all pages of a booklet are present and in sequence
- Using the **iName™** feature, give image files unique names using data from the form for easy search and retrieval using Microsoft® Windows Explorer®. This feature is a simple, low cost solution for image management when images are retrieved rarely.
- Capture images and data from the form to use as archive index values for use with a robust form management system that handles frequent access to images in a secure storage environment.

Productivity

The OpScan iNSIGHT system offers three features to reduce scanning imperfections, ensuring that data is found in proper locations: Dynamic Deskew™, Picture Perfect, and Image Quality Sentry™.

- Dynamic Deskew minimizes physical paper skew at the source.
- Picture Perfect synchronizes the camera with the speed of the form to provide linear images.
- Image Quality Sentry notifies the operator of dust, erasure fragments or other



irregularities that affect the quality of the image and offers instructions on how to correct the situation.

Mark Discrimination Accuracy

In addition, multiple-choice answer accuracy is better using grayscale images. Notice how erasure marks can be mistaken for a mark in the bitone image (left) but not the grayscale (right).



Grayscale is displayed to the editor and used for mark discrimination. Because bitone images are much smaller files sizes, however, most users output bitone files for long term storage.

Compatibility

The OpScan *i*NSIGHT scanner can replace the OpScan 2/3/4/uxp/4u scanners with no change to software, forms, or applications. You may unplug one unit and replace it with the new scanner.

Applications defined using Image ScanTools software on the 5000i™ scanner can also be run on the OpScan *i*NSIGHT scanner with no changes.

The system outputs industry-standard TIFF images that are compatible with the NCS Accra™ forms processing software for full ICR/OCR data collection and with the Xtender family of Document Management Software. Image ScanTools software can also automatically generate index values in the format required by ApplicationXtender® software.

Data Collection Options

The OpScan *i*NSIGHT scanner allows you to choose the methods of data collection and image capture that meet your needs.

Scanner Options:

- Single or dual side read
- User selectable Ink or pencil read
- Select stacker
- Transport printer
- Bar code reader

- Download capability permits ASCII coded output, which simplifies use of the scanner without a PC
- SelfScore® module for classroom test scoring, surveys, and ballots

OMR & Image Mode Features

- Bitone or grayscale, full-sheet or image clips
- Conversion of electronic images of hand- and machine-print fields into ASCII data
- Optical mark recognition (OMR)
- Mark sense (bubbles, check marks, check boxes)
- Heads up editing with grayscale images
- Graybox search (there/not there) for validating if a signature is present, for instance
- Key from image (open-ended questions)
- Dropout ink colors enabling either pencil or ink read capabilities
- Image archive and retrieval

Software

Both ScanTools II and Image ScanTools software from Pearson NCS are designed to allow fast and easy data collection utilizing optical mark recognition (OMR). The software allows users to create, define, and run OMR “applications” that validate data, score, and convert data to specified formats.

A simple ScanTools application can be developed to read a single-page scan form or, a very sophisticated application can be developed to automatically process multiple, intermixed single-page and multiple page booklets. The application for a booklet ensures that all pages of a booklet are present or the booklet is identified as a problem form. An application can consist of up to 255 different forms. Each form in an application can consist of up to 99 pages.

Form data fields, as well as data output formats are defined in the ScanTools software with an easy-to-use interface. No programming skills or languages are required. Pre-defined formats for the most common OMR mark grids (alphabetic, numeric, etc.) can be selected, or the “translate” option can be used to convert any mark on a form to any specified character(s) in the output data record. The ScanTools software can also combine bar code information with the translated mark information if

the OpScan scanner is equipped with a bar code reader.

OpScan scanners not only detect marks on a form, but they also evaluate the “darkness” of each mark that is scanned. The software uses this darkness information to accurately differentiate between intended marks on a form and smudges or poor erasures. Through the ScanTools software, the mark sensitivity and discrimination parameters can be “fine-tuned” to meet special requirements.

Once the form has been defined, editing and validation rules and actions can be specified. These “edits” can include completeness, multiple response, left and right justification, and range. Edits are interactive with scanner hardware features such as printing user-defined error messages on the forms as they are scanned. The ability to sort valid forms from invalid forms is available if the OpScan scanner is equipped with a second output tray. Data output may be rejected or flagged when an edit fails.

For each form (single or multiple-page) scanned, a data record can be produced in popular ASCII file formats including:

- Fixed format
- Delimited (tab, comma, or other)
- DIF
- SPSS® format

Data editing, conversion, or scoring may take place while scanning, or be executed “off-line” after the data has been collected. With Image ScanTools, data editing is done by looking at grayscale images on the screen thereby avoiding the need to find the paper form.

SCANTOOLS SOFTWARE OPTIONS

Application Development Option: This option provides the complete ScanTools development system that includes all form setup and data definition modules. Run-time applications may be created, modified, and tested in an integrated software environment.

Scan-Only Option: The scan-only option is a “run-time” version that includes all of the scanning capabilities of the ScanTools software without the application development components. This provides an easy and economical way to distribute run-time applications to end-users.

Scoring Option: The ability to provide basic test scoring of multiple choice or true/false items is available in ScanTools software. A test key is used

to determine right from wrong answers and calculate a raw score. Multiple forms and sub-tests are supported. Keys may be scanned in at run-time or built into the scoring application.

iCR Option: This option will allow you to process hand print and machine print numeric characters in the same application OMR bubbles are resolved. The **iCR** option allows you to use your laser printer to pre-print numeric identification information on cut-sheet forms. Expensive pre-slug ribbons are eliminated and alignment problems are resolved. Since OCR/ICR characters require less space on the form than OMR pre-slug grids, there is more space available for graphics or additional data collection.

iTest: Included with Image ScanTools is *iTest*, an application that will scan, score and store your two standard test answer sheets. Also included is a export profile for ReMark applications.

iSurvey: Also included with Image ScanTools is *iSurvey* that will help you setup your survey application quickly and easily. Our standard survey forms and application definitions will help you collect your survey data.

User Exits: For additional editing and functionality beyond the standard capabilities of ScanTools software, user exits provide the ability to create applications that take advantage of custom code. ScanTools software provides “exit” points throughout the scanning process where a user’s custom code may be inserted and executed. A user exit “Wizard” is provided to make the creation of user exits as easy as possible.

User exits are standard capabilities within ScanTools II Application Development software and Application Development with Score.

Download Option: The download option is available for use with OpScan scanners. In situations where the scanner needs to communicate directly with a mainframe application, the download option allows the run-time application and edits to be loaded directly into the scanner’s memory. Multiple run-time applications may be stored in the scanner’s memory and accessed from the host system at any time.

Maintenance, Support & Training

- One year of support and maintenance included

- ScanTools training at an Pearson NCS regional center or on site
- Real-Time OCR training
- User exit programming/conversion, and training. User exit training is available for students who have taken ScanTools training and are familiar with C++. The class covers creation of user exit programs, sample code, and best practices for user exits.

Professional Services

Pearson NCS offers a full range of professional services from needs assessment to project management and process consulting. Specifically for the OpScan *i*NSIGHT scanner, services include:

- Creation of custom Real-Time OCR applications
- MS-DOS® User Exit Conversion
- Custom User Exits

Professional Services offers the ability to create Real-Time OCR applications for customers who would rather not do this themselves and who wish to expand the capabilities of Real-Time OCR to alpha characters.

All user exit work will include a functional specification. User exits are C++ user exits and test decks are provided to confirm the software functions as specified.

- Pearson NCS Mark Reflex® and TransOptic® forms are plug-compatible
- Easy to change between pencil and ink read applications using Image ScanTools application parameter
- Compatible with all prior Pearson NCS scanners including the Sentry® 3000

OMR with Imaging Mode

- OpScan *i*NSIGHT scanner and Image ScanTools software
- Use Mark Reflex forms or design new OpScan *i*NSIGHT forms to take advantage of Imaging mode features
- Pencil or ink read
- Grayscale OMR
- X's or check marks
- Heads up editing
- Key from image
- Simple archive and retrieval using Windows Explorer
- Real-Time OCR
- Robust forms processing of alphanumeric handprint data using NCS Accra software
- Robust document management using ApplicationXtender software

Recap of Product Features

OMR Mode

- OpScan *i*NSIGHT and ScanTools II software work with no modification to programs (plug-compatible)

Technical Hardware Specifications:

Physical Description

- Length: 21.25"
- Width: 14.5"
- Height: 9"
- Weight: 17 lbs.

Environment

- Operating Temperature: 60° - 85° F (16° - 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
- Cords: Plug to power supply = 8 ft; Power supply to scanner = 6 ft.

Components

- Read Heads: 200 dots per inch (dpi) resolution, up to 256 levels of grayscale per pixel; pencil and ink read capabilities
- Form Transport: Open bed design, automatic form feed

Image Mode Communications

- USB: Required for imaging mode v2.0

OMR Mode Communications

- Asynchronous: RS232 for OMR mode using user-defined protocol
- OMR Only Communication speed: from 1,200-38,400 baud
- Main Port: Local or remote connection; cable at no charge when specified by the customer at time of scanner order
- Auxiliary Port: Allows connection of a terminal printer or video display in series with the scanner; cable may be purchased from Pearson NCS
- Compatible: Sentry 3000® scanner emulation mode

Operation

- Forms: 2.5" x 5" to 9" x 14" (60-100 lb. Offset). Uses both Mark Reflex® and Trans-Optic® forms
- Pencil or ink forms may be used: OMR only mode – selected using a cartridge; Imaging mode – selected using Image ScanTools software.
- Form Input Capacity: Auto-feed, 100 sheets

- Output Stacker Capacity: 100 sheets main stacker, 100 sheets select stacker (if present)
- Controls: Two push button programmable switches
- Message Display: 40 character, alphanumeric
- Scanning Rate: Model 18 – 1,800 sheets per hour; Model 22 – 2,200 sheets per hour (Actual scanning rate depends on quantity of data read from the form and the amount of processing done on the data while scanning).

Options

- Dual side read head for two-sided form scanning
- Select stacker separates forms that fail edit checks
- A programmable interactive printer that prints information based on scanned data – such as error codes, alphanumeric messages, serial numbers, validation flags, and test scores – with no effect on the throughput rate
- Bar code reader delivers application information
- SelfScore® module for classroom test scoring and surveys
- iTEST Test scoring application

Software Compatibility

- OMR- only mode: Existing software programs used with Pearson NCS OpScan scanners (RS232) are compatible.
- Imaging mode: Supported by Image ScanTools.

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Printed in U.S.A. 7/03 202-053-004

