



Scanners
High Performance OMR

| S C A N T R O N .

Scantron® Scanners

Elements of Data Collection

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Chapter 1: Introduction

Using a Scantron scanner to collect data from paper forms can save countless hours of tedious labor. Once you're up and running, you'll find that using your Scantron scanner is both easy and fun. This manual is intended to guide you through the data collection process so that you're up and running quickly and efficiently.

Document Organization

This manual is organized as follows:

Chapter 1, “Introduction” provides a brief overview of this manual.

Chapter 2, “Data Collection Forms” provides basic information regarding form components as well as care and handling of forms.

Chapter 3, “Form Selection Or Design” provides information on how to select a standard form, how to have a custom form designed for you, or how to design a custom form for yourself.

Chapter 4, “Form Instructions” describes how to create instructions that will help ensure that your forms are filled out correctly.

Chapter 5, “Form Printing” describes how have forms professionally printed for you and how to print your own forms using a PostScript laser printer.

Chapter 6, “Form Folding” describes how to fold and unfold forms for optimum results.

Chapter 7, “Product Support and Services” describes how to contact Scantron. Everything from registering your product, to signing up for training, to ordering supplies and forms, to contacting customer support is covered.

Related Documentation

This manual covers the overall data collection process. The documentation that comes with your Scantron scanner and your Scantron software is also essential to getting you up and running quickly and efficiently.

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Chapter 2: Data Collection Forms

At first glance, data collection forms may look like any other sheets of printed paper. However, they are much more than that because of the many elements that go into them. These elements must be printed correctly and must be in the proper location so that the scanner can collect accurate data from the form.

This chapter introduces you to data collection forms, the elements that comprise them, as well as proper care and handling.

Form Components

Certain elements are common to data collection forms used with Scantron scanners. Below is a list of the important elements:

- Form ID Marks
- Timing Marks
- Skew Marks
- Document Edges
- Response Grids
- Response Designators
- Field Context Areas
- Write-in Areas
- Bar Codes

Forms have these elements so that the data is scanned correctly. Below are definitions for these common elements that will help you understand your forms and the scanning process better.

Form ID Marks

Form ID marks typically appear at the leading edge of the document but could be placed elsewhere if desired. They are a unique combination of rectangular or square black marks that identify the specific form to the scanning software (such as ScanTools[®] Plus software). Multiple page documents, such as booklets, must have unique form ID marks on each page.

Form ID Marks

The diagram shows a form titled "DEMOGRAPHICS" with two main sections: "SOCIAL SECURITY NUMBER" and "BIRTHDATE". The "SOCIAL SECURITY NUMBER" section is a 10x3 grid of circles containing numbers 0-9. The "BIRTHDATE" section is a 12x3 grid of circles containing months (Jan-Dec), days (0-9), and years (0-9). Four blue lines point from the text "Form ID Marks" to four black rectangular marks at the top left of the form.

SOCIAL SECURITY NUMBER										BIRTHDATE		
0	0	0	0	0	0	0	0	0	0	Jan	DAY	YEAR
1	1	1	1	1	1	1	1	1	1	Feb	0	0
2	2	2	2	2	2	2	2	2	2	Mar	1	1
3	3	3	3	3	3	3	3	3	3	Apr	2	2
4	4	4	4	4	4	4	4	4	4	May	3	3
5	5	5	5	5	5	5	5	5	5	June	4	4
6	6	6	6	6	6	6	6	6	6	July	5	5
7	7	7	7	7	7	7	7	7	7	Aug	6	6
8	8	8	8	8	8	8	8	8	8	Sept	7	7
9	9	9	9	9	9	9	9	9	9	Oct	8	8
										Nov	9	9
										Dec		

It's a good idea to review your scanning software documentation to determine the maximum number of form ID marks that may be used in your document. And, keep a log of all form ID mark sequences you use to avoid confusion over form identification while scanning.

Timing Marks

Timing marks are the black rectangles printed along the guide edge of the form. Collectively, they are known as the timing track. Because timing marks trigger the scanner to read across the sheet, response grids, form ID marks, and any other scannable data must be located in line with a timing mark.

Timing
Marks

DEMOGRAPHICS

SOCIAL SECURITY NUMBER

0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9	9	9

BIRTHDATE

	DAY	YEAR
<input type="radio"/> Jan		
<input type="radio"/> Feb		
<input type="radio"/> Mar	0	0
<input type="radio"/> Apr	1	1
<input type="radio"/> May	2	2
<input type="radio"/> June	3	3
<input type="radio"/> July	4	4
<input type="radio"/> Aug	5	5
<input type="radio"/> Sept	6	6
<input type="radio"/> Oct	7	7
<input type="radio"/> Nov	8	8
<input type="radio"/> Dec	9	9

OCCUPATION

- ☐ Homemaker
- ☐ Professional/Technical
- ☐ Executive
- ☐ Middle Management
- ☐ Clerical
- ☐ Retired
- ☐ Blue Collar
- ☐ Student
- ☐ Military
- ☐ Other (Please specify)

AGE (optional)

- ☐ Under 25
- ☐ 25-34
- ☐ 35-44
- ☐ 45-60
- ☐ Over 60

COMMENTS

Skew Marks

When non-precision printing is used, it is sometimes necessary to use additional alignment marks to ensure that the data is read accurately. These marks are called “skew marks” and appear on the side opposite the timing marks.

DEMOGRAPHICS

SOCIAL SECURITY NUMBER

0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9

BIRTHDATE

<input type="radio"/> Jan	DAY	YEAR
<input type="radio"/> Feb	0	0
<input type="radio"/> Mar	1	1
<input type="radio"/> Apr	2	2
<input type="radio"/> May	3	3
<input type="radio"/> June	4	4
<input type="radio"/> July	5	5
<input type="radio"/> Aug	6	6
<input type="radio"/> Sept	7	7
<input type="radio"/> Oct	8	8
<input type="radio"/> Nov	9	9
<input type="radio"/> Dec		

OCCUPATION

- ☐ Homemaker
- ☐ Professional/Technical
- ☐ Executive
- ☐ Middle Management
- ☐ Clerical
- ☐ Retired
- ☐ Blue Collar
- ☐ Student
- ☐ Military
- ☐ Other (Please specify)

AGE (optional)

- ☐ Under 25
- ☐ 25-34
- ☐ 35-44
- ☐ 45-60
- ☐ Over 60

COMMENTS

Skew Marks

NOTE: Skew marks are recommended (but optional) to ensure optimum accuracy for .200 and .300 line read forms when using the iNSIGHT™ 20 or iNSIGHT 30 scanners.

Document Edges

A scannable form has four distinct edges that are identified by how each is oriented to the scanner. Each edge has specific characteristics relative to registration, tolerances, and scanning performance.

Leading Edge

Guide Edge

DEMOGRAPHICS

SOCIAL SECURITY NUMBER

0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9	9	9

BIRTHDATE

☐ Jan

☐ Feb

☐ Mar

☐ Apr

☐ May

☐ June

☐ July

☐ Aug

☐ Sept

☐ Oct

☐ Nov

☐ Dec

DAY	YEAR
0	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9

OCCUPATION

☐ Homemaker

☐ Professional/Technical

☐ Executive

☐ Middle Management

☐ Clerical

☐ Retired

☐ Blue Collar

☐ Student

☐ Military

☐ Other (Please specify)

AGE (optional)

☐ Under 25

☐ 25-34

☐ 35-44

☐ 45-60

☐ Over 60

COMMENTS

Outside Edge

Trailing Edge

The edge of the document that first passes through the scanner read head is the leading edge. The leading edge is always one of the short edges of the data collection form and is perpendicular to the timing track. (Data collection forms are always fed into the scanner in portrait orientation.) Typically, the form ID marks appear at the leading edge, on the first timing mark.

Opposite the leading edge is the trailing edge. This is the edge that is last to pass through the scanner read head.

The guide edge is the long edge of the form that is parallel to and closest to the timing marks.

The side opposite the guide edge is the outside edge.

The edges of the form are defined relative to scanning and are not affected by whether the page layout is portrait or landscape or by the orientation of the text.

NOTE: The *iNSIGHT* 20 and *iNSIGHT* 30 are bottom-feed scanners which means that forms are pulled from the bottom of the stack in the input tray. While it is necessary that we show the forms face up for illustrative purposes, the forms in those two scanners are actually placed face down in the input tray for scanning.

Response Grids

The purpose of response grids is to provide the respondent with a guide for marking data within specific scanner identifiable positions. Response grids can be ovals, circles, or check boxes.

OMR Response Grids

DEMOGRAPHICS

SOCIAL SECURITY NUMBER BIRTHDATE

0	1	2	3	4	5	6	7	8	9	Jan	DAY	YEAR	
0	1	2	3	4	5	6	7	8	9	Feb	1	0	0
0	1	2	3	4	5	6	7	8	9	Mar	1	1	1
0	1	2	3	4	5	6	7	8	9	Apr	1	1	1
0	1	2	3	4	5	6	7	8	9	May	2	2	2
0	1	2	3	4	5	6	7	8	9	June	3	3	3
0	1	2	3	4	5	6	7	8	9	July	4	4	4
0	1	2	3	4	5	6	7	8	9	Aug	5	5	5
0	1	2	3	4	5	6	7	8	9	Sept	6	6	6
0	1	2	3	4	5	6	7	8	9	Oct	7	7	7
0	1	2	3	4	5	6	7	8	9	Nov	8	8	8
0	1	2	3	4	5	6	7	8	9	Dec	9	9	9

OCCUPATION AGE (optional)

☐ Homemaker
☐ Professional/Technical
☐ Executive
☐ Middle Management
☐ Clerical
☐ Retired
☐ Blue Collar
☐ Student
☐ Military
☐ Other (Please specify)

☐ Under 25
☐ 25-34
☐ 35-44
☐ 45-60
☐ Over 60

COMMENTS

Response Designators

Response designators are characters inside response grid bubbles that indicate the meaning of the responses. Alpha, numeric, or symbol characters can be used.

DEMOGRAPHICS

SOCIAL SECURITY NUMBER

BIRTHDATE

Jan
Feb
Mar
Apr
May
June
July

DAY YEAR

OCCUPATION

Homemaker
Professional/Technical
Executive
Middle Management
Clerical
Retired
Blue Collar
Student
Military
Other (Please specify)

COMMENTS

Designators

Field Context Areas

A field context area is a designated space on a document for hand printed characters. Field context areas aid the respondent in filling in the correct response positions within a grid.

Field Context Areas

The diagram shows a demographic form with the title "DEMOGRAPHICS" at the top. Below the title are two main sections: "SOCIAL SECURITY NUMBER" and "BIRTHDATE".

The "SOCIAL SECURITY NUMBER" section consists of a 9x9 grid of circles, each containing a digit from 0 to 9. A blue box highlights the top row of this grid, and a blue arrow points from the label "Field Context Areas" to this box.

The "BIRTHDATE" section consists of a 12x3 grid of circles, each containing a digit from 0 to 9. A blue box highlights the top row of this grid, and a blue arrow points from the label "Field Context Areas" to this box.

The "BIRTHDATE" section also includes a list of months (Jan, Feb, Mar, Apr, May, June, July, Aug, Sept, Oct, Nov, Dec) on the left, and a "DAY" and "YEAR" label above the grid.

The data in field context areas is not converted into ASCII data by the software. It is on the form so that the person processing the form can review the data and make corrections if necessary.

On **OMR only** scanners, editing is manual and requires that the processor find the actual paper form to view the field context area.

However, on **OMR with imaging** scanners, the field context area can be stored as an image clip so that an operator can view the area on-screen if there is a problem with the data. During processing or at any time after, corrections can be keyed into the data file while viewing these image clips on-screen. This process is called heads-up editing and it is done entirely within the scanning software (i.e. ScanTools Plus).

Write-in Areas

A write-in area is an area where the respondent can write in a response. **OMR only** scanners cannot read these areas so processor must manually collect the data from the actual paper forms.

OMR with imaging scanners can save an image clip of the write-in area for viewing using the scanning software. In some cases the image is archived so that it can be viewed at some point in the future. In other cases, the image is viewed while processing or editing the data file so that the data can be keyed in (this is called “key from image” or KFI). In still other cases, the hand written or machine printed data is converted directly to ASCII data by optional intelligent character recognition or optical character recognition (ICR or OCR) programs.

Signatures, comments, and open-ended essay questions are typical information types that are captured in write-in areas.

The diagram illustrates a data collection form with three distinct sections, each enclosed in an orange border. On the left side of the form, there are ten thick black horizontal bars. The first section, titled 'OCCUPATION', contains a list of ten radio button options: Homemaker, Professional/Technical, Executive, Middle Management, Clerical, Retired, Blue Collar, Student, Military, and Other (Please specify). The second section, titled 'AGE (optional)', contains five radio button options: Under 25, 25-34, 35-44, 45-60, and Over 60. The third section, titled 'COMMENTS', consists of three horizontal lines for text entry. A blue arrow points from the text 'Write-in Area' to the 'COMMENTS' section, indicating that this area is where handwritten or typed responses are captured.

OCCUPATION

- ☐ Homemaker
- ☐ Professional/Technical
- ☐ Executive
- ☐ Middle Management
- ☐ Clerical
- ☐ Retired
- ☐ Blue Collar
- ☐ Student
- ☐ Military
- ☐ Other (Please specify)

AGE (optional)

- ☐ Under 25
- ☐ 25-34
- ☐ 35-44
- ☐ 45-60
- ☐ Over 60

COMMENTS

Write-in Area

Bar Codes

Scantron scanners have the capability of reading software bar code data through ScanTools Plus software. The bar code can be printed on the form, or be applied as a sticker. The bar code is read by the scanner and converted directly to ASCII data.

On **OMR with imaging** scanners, bar codes can be placed in ladder (vertical) or fence (horizontal) orientation anywhere on the sheet and on either side of the form.

Scantron **OMR only** scanners can also read bar codes. However, they require an optional piece of hardware called a bar code reader. The reader is mounted on the sheet deflector next to the read head. Because the bar code reader is statically mounted, bar codes must be placed in ladder orientation can only occur on the top side of the form.

The diagram shows a sample data collection form with two main sections for data entry:

- OCCUPATION** (Vertical list):
 - ☐ Homemaker
 - ☐ Professional/Technical
 - ☐ Executive
 - ☐ Middle Management
 - ☐ Clerical
 - ☐ Retired
 - ☐ Blue Collar
 - ☐ Student
 - ☐ Military
 - ☐ Other (Please specify)
- AGE (optional)** (Horizontal list):
 - ☐ Under 25
 - ☐ 25-34
 - ☐ 35-44
 - ☐ 45-60
 - ☐ Over 60

At the bottom right, there is a barcode with the number 123456 printed below it. A label "Bar Code" with a pointer indicates the barcode.

Care and Handling

The care you take in handling your sheets has a direct bearing on the results you receive from your scanner. The following summarizes how to care for and handle the forms you use with your scanner.

Cleanliness

Dirt and other types of smudges, such as a fingerprints, can interfere with the way your scanner reads a sheet. Keep the sheets clean and in good condition.

Humidity

If sheets have been in very humid or dry conditions, keep them in an atmosphere controlled (60° to 80 ° Fahrenheit or 15° to 27° Celsius with 40% to 60% humidity) environment for 24 hours before you attempt to scan them.

Static is a condition that results from sheets being kept in an environment that is too dry. It can interfere with the way your scanner operates.

Marks

Some Scantron scanners can collect data from pencil marks only, while other Scantron scanners can select between pencil and blue and black ink. Be certain to use the appropriate type of writing instrument for the color option selected for your scanner.

Repairability

Sheet repair is possible in many cases. A list of possible repairs follows:

- If a sheet is folded or crumpled, it can be flattened by placing a flat weight on it overnight.

- If a sheet has dark marks on it, you can erase them or use correction tape to cover them up. If using liquid correction fluid, be sure to allow it to dry thoroughly before scanning as otherwise it can get on the read heads and cause errors.
- If a sheet is torn you can use tape to repair. Be sure to verify that the form is read correctly if taping over marks or the timing track.

NOTE: Tape on a sheet may generate a multiple-feed error that appears in the software.

If you are unable to repair the damaged sheet, copy the marks from the damaged sheet onto a new one.

NOTE: Protective sleeves cannot be used as a repair method for data collection because of the effect the sleeve has on calibration.

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Chapter 3:

Form Selection Or Design

While data collection forms are a very special type of printed form, they are easy to obtain. You can buy standard forms, have a custom form designed for you, or design your own form. This chapter explains all three options.

Selecting a Standard Form

Scantron stocks standard, pre-packaged data collection forms for a variety of popular applications. Test answer sheets, surveys, ballots, grade reports, course requests, attendance reports, and many other types of forms are available.

Outside the U.S. To order standard forms outside the U.S., contact your local sales agent.

Inside the U.S. 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	Phone or Fax
Scantron Online Store www.scantronstore.com	Scantron Print Services Phone 1-800-722-6876 Fax 1-949-639-7710

Having a Custom Form Designed for You

Scantron Print Services

Outside the U.S. Scantron Print Services are available only for U.S. customers. For design services outside the U.S., contact your local sales agent.

Inside the U.S. You can rely on experts to design your form, by using Scantron Print Services. Scantron Print Services designers have a thorough understanding of scannable form design and its relationship to Scantron scanning systems. The following are some of the services that they can perform to enhance your data collection forms:

- Organize your form for easy readability and comprehension to ensure that you collect accurate data.
- Highlight your materials with photography, line art, illustrations, or various typefaces.
- Customize your pieces by adding your logo to promote your organization's identity (your logo can even be embossed or foil stamped to further enhance your company's image).
- Expand your audience by printing in multiple languages.
- Incorporate popular numbering methods including serial numbering, bar coding, litho-coding (a binary serial number applied to the form during printing), and OCR-A and OCR-B numbering to ensure data accuracy.
- Make processing easier by adding corner cuts, alignment notches, or perforations to your form.
- Improve processing performance by using drop out inks for critical data capture areas.

Chapter 3: Form Selection Or Design

Having a Custom Form Designed for You

If you would like to take advantage of the experience provided by Scantron Print Services, they can be reached by phone or fax:

Scantron Print Services

Phone 1-800-735-2566

Fax 1-717-684-1300

Designing Your Own Form

NOTE: If you are not designing your own form, you do not *need* to know the information covered in this section. However, you may find some of it helpful when working with professional forms designers. You have the option of going through this section or skipping to Chapter 4, “Form Instructions”.

Using Scantron DesignExpert™

Another option for form design is using Scantron DesignExpert to design your own form. Scantron DesignExpert is a powerful Windows® tool that enables you to compose a custom form that precisely fits your needs. It gives you the ability to apply page design elements to your form including text, images, captions, lines, boxes, colors and more. Most importantly, it enables you to place response grids and image clip areas (OMR with Imaging scanners only) that can be read by your Scantron scanner.

Scantron DesignExpert can create cut forms, continuous forms, multi-part forms, and booklets. And the forms created can be printed by Scantron Print Services, or, with the PrintFlex™ option, can be printed on plain paper using a PostScript® laser printer.

NOTE: You must have ScanTools Plus software with the ScanFlex™ option to scan forms created with PrintFlex.

Scantron DesignExpert has two other functions in addition to its page design capabilities:

- exporting documents to ScanTools Plus
- pre-slugging information into forms.

Exporting documents to ScanTools Plus requires only a little extra work in Scantron DesignExpert. All you need to do is to specify data types and ensure that the orientation for the response grids is correct. With that

done, most applications can be exported directly to ScanTools Plus for scanning.

Pre-slugging forms with information is also easy using Scantron DesignExpert. You simply set up a database with the information to be merged. Then you set up the fields on your form to accept merge-sort information. Finally, you link the fields in your database to the fields on your form. When you print, the forms are automatically filled with information from the database. Response grids, field context areas, and bar codes can all be pre-slugged with information from your database.

NOTE: You do not need the PrintFlex option to pre-slug your forms. Scantron DesignExpert comes standard with the ability to merge-sort and pre-slug forms.

For more information on Scantron DesignExpert, consult your sales representative or go to our website at www.scantron.com and select **Software→Scantron DesignExpert**.

Design Criteria

Starting the Design Process with Some Questions

Some questions that you will need to answer regardless of the form design option chosen are:

- What is the form's purpose?
- Who will use the form?
- What is the age and reading skill of the form user?
- Where will the form be used?
- Will the form be mailed?
- Does the form need to be personalized?
- Are detailed instructions needed (or is training provided)?
- What degree of accuracy in the collected data is required?

- Does the form need to match other collateral pieces?
- Are there form size requirements for mailing, machine processing, or filing?
- How will I identify individual form users (e.g. student ID)?
- What personal data needs to be collected (e.g. first name, last name, middle initial, social security number, etc.)?
- How many questions will there be?
- How many possible answers will there be?
- How can the questions be grouped?
- Will the forms be folded?
- Are background form images needed?
- Will image clips of the form be saved?

Some additional design criteria are covered below:

Ink or Pencil?

It is important to know up front whether respondents will be using ink or pencil. The advantages of each are listed below:

Medium	Advantage
Ink	<ul style="list-style-type: none">• Answers cannot be changed• Easier for the respondent to make dark marks• No. 2 Pencil marks are also detected
Pencil	<ul style="list-style-type: none">• Answers can be changed by erasing• Ink marks will not be detected• Provides greater flexibility in colors that can be used on the form

In your ScanTools Plus application, you must select the type of writing utensil that your respondents used on the

forms to be scanned. To do this, you select **Applications**→**Settings** and select either **ink** or **pencil**.

NOTE: Selecting ink or pencil will affect the drop out color choices for your forms.

NOTE: Pre-slugging (filling in responses ahead of time for the respondent) with a laser printer does not affect your color setup. Either an ink or pencil setup will read laser printing.

Which Drop Out Colors?

Selecting the colors for the data areas of your form is another important task. Colors can make your form more interesting and easier to read. There are many colors to choose from that can be used on scannable forms. However, it is important that the colors you select for your response areas be “drop out” colors. Drop out colors are colors that are not read by the scanner. Drop out colors typically contain no black ink that could be read by the scanner. Response bubbles and designators must be printed in either a color that will drop out, or a screen that is below the scanner’s threshold for an acceptable response.

Scantron Print Services will be able to supply you with a list of acceptable drop out colors. There are more available colors for pencil forms than for ink forms. In addition, pencil forms can have more than one color on the form (although they must be approved color combinations), whereas ink forms are generally one color.

This is one reason why it’s important that your forms are printed by a printing service that routinely prints scannable forms. Using a color that does not drop out can make your forms unscannable. Unfortunately, having a bad drop out color is often not discovered until the forms have already been filled out. If this happens, the data typically must be hand tallied if the survey or test cannot be re-administered — a very expensive and time-consuming proposition. That is why we recommend

testing scannability before administering the survey or test.

Timing Marks

If desired, timing marks may be removed from areas of the form where no data capture is required. Timing marks are uniformly spaced at 5, 6, or 8 per inch depending on design requirements.

If you intend to fold the form, special, 1/2"-long timing marks are used where the fold will occur. These long timing marks ensure that the fold does not cause a false timing mark reading.

Response Grids

Response grids are printed in a drop out color appropriate to the mark type. This includes the response itself and any printing falling inside the response.

Perpendicular to the timing track, responses grids have a consistent spacing. That spacing is .166" for North American units, yielding 47 or 48 response positions or cells across an 8 1/2"-wide sheet of paper. International units have a spacing of .200" for 40 cells or .300" for 24 cells defined across an A4 form. Parallel to the timing track, spacing is either 5, 6, or 8 per inch.

It is possible to use more than one spacing interval parallel to the timing track on a single form by using a "split sheet" design.

Response Designators

If multiple characters are used inside the response (e.g., JAN, FEB, 100, etc.), we recommend that the border of the bubble be screened to 40%. This will make the designators more legible in the event of an overlap with the response bubble stroke.

Field Context Areas

It is beneficial to provide field context areas above numeric or alpha response grids to help verify correct

information during scanning. In addition to the benefit that the form user gets in filling out the form, it is also possible to take an image clip (**OMR with Imaging** scanners only) of the field context area so that the data can be checked during editing if there is a discrepancy.

Write-in Areas

Text, lines, and shading in write-in areas should be printed in a drop out color to avoid interference with data.

Captions can be printed in black or other scanner readable colors to aid in the verification process and in the viewing of archived images.

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Chapter 4: Form Instructions

Instructions on a form guide and inform the user. The benefits of providing effective instructions include:

- Better completion rate
- Better data accuracy
- Less time for users to fill out the form
- Less time for operators to process the form.

This chapter covers important considerations for form instructions.

Audience

When preparing form instructions, make sure you include all form users, not just the person filling out the form. Almost all forms are processed by at least one other person who may also need instructions.

Some questions you should consider are:

- From start to finish, who will be using the form?
- What are the characteristics of each of the form users?

Instruction Techniques

General Guidelines

- Make the form as self-instructing as possible by building the instructions right into the form. Separate instruction pages may be used if necessary although there is a risk of having no instructions if they are lost.
- It is sometimes necessary to print instructions on the back of the form. Be sure to tell the form user about them on the front of the form so they aren't missed.
- Use graphics when possible to draw attention to and demonstrate instructions. For example, a picture of a correctly marked response bubble shows the form user what to do.
- If marking examples are shown, use the correct marking instrument color. If the response bubble is to be filled with a black mark, then use black in the example. Don't show the fill in red just because that's the other color used on the form.
- Use plain language. Don't make the instructions any more complicated than they have to be. Complicated instructions cause confusion.

Instructions That Don't Look Like Instructions

Sometimes, the elements of a form provide instruction to the form user without looking like an instruction or being in a section labeled “Instructions:” The title of the form is an instruction. It should tell what the form is used for and by whom.

- | Stock No. | Quantity | Item Description | Page | Unit Price | Total | |
|-----------|----------|------------------|-------------|------------|---------|---------|
| 8 | D39951 | 3 | SAMPLE ITEM | 228 | \$23.50 | \$71.50 |
| 1 | | | | | | |

-

- Last, First, MI**

- If you divide a form into sections, the section names become instructions because they tell the user about the context of the section. For example, in a survey section labeled “Demographic,” the form user will expect to see questions about their age, gender, salary, etc.
- Consistency is an instruction. As you set the pattern for how a form is filled out, you are training the form user. If you change something significant in mid-form, you may have to “re-train” the form user. For example, if you use the “caption on line” technique for labeling write-in areas and then switch to the “caption under line” labeling technique in the middle of the form the user may make mistakes.

Locate Instructions Where They Will do the Most Good

- Locate general instructions and examples near the top of the first page so that the form user will see them right away. Examples of general instructions include “Use a No. 2 Pencil” or “Marking Examples.”
- Instructions and examples that only apply to a particular section of the form should be located right at that section.



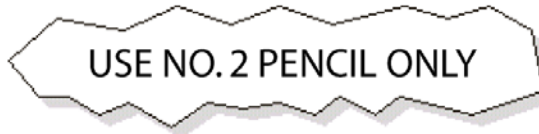
1. What kind of pie do you like?
Mark all that apply.

- ☐ Apple
- ☐ Banana Cream
- ☐ Blueberry
- ☐ Cherry
- ☐ Lemon Meringue
- ☐ Peach
- ☐ Pecan
- ☐ Pumpkin
- ☐ Rhubarb

- Avoid instructions on the back of the form, if possible. Instructions are less effective if the form user has to refer to a separate page. The form user might not even realize they are there. If it's absolutely necessary for the instructions to be on the back, place a notice on the front of the form such as “See Instructions on Back.”

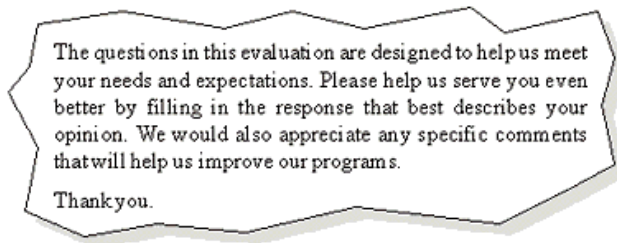
Use Typographical Techniques to Get Instructions Noticed

- If instructions are brief, use an upper case sans serif type such as Arial or Helvetica to get the form user's attention.



TIP: Be care not to overuse uppercase text. Too much uppercase can make it look like you're shouting at your respondents.

- If instructions are lengthy, use upper and lower case serif type. It's easier to read.



- To really draw attention to instructions, use bold type or color or both. Some display typefaces will also do the job.

Test the Instructions

Don't guess as to whether the form instructions work, test them. The form designer should always fill out the forms they design to see if the instructions make sense and result in a correctly completed form. In addition, ask your colleagues to fill out forms to test them. Ask them to complete the form according to the instructions and then record their comments about any problems they had. Look at the completed forms to see if they are correctly filled out.

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Chapter 5: **Form Printing**

There are essentially two options for printing data collection forms: you can have your forms professionally (precision) printed, or you can print your own.

Professional (Precision) Printing

NOTE: Scantron Print Services are available only for U.S. customers. For print services outside the U.S., contact your local sales agent.

Having your forms professionally printed by a precision printer helps ensure data collection accuracy. Precision printers use top quality paper with a consistent brightness, hold tight registration tolerances, and ensure that their colors will drop out. As mentioned above, it is critical that the colors used drop out properly to ensure that your completed forms are scannable.

Scantron Print Services division has over 40 years experience in precision printing scannable forms. Our forms are guaranteed to scan properly. If for some reason, Scantron forms are found defective and unscannable, Scantron will take the necessary steps to resolve the problem -- including using alternative data capture methods. And we will treat the situation as a top priority.

For information on Scantron Print Services, go to **www.scantron.com** and select **Services→Print Services** or contact us by phone or fax:

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

Printing Your Own Forms

NOTE: Scanning forms that you've printed yourself requires a Scantron scanner with imaging (i.e. *INSIGHT 2*, *INSIGHT 4*, *INSIGHT 4 ES*, *INSIGHT 20*, *INSIGHT 30*, *INSIGHT 70*, *INSIGHT 150*, or *5000i*).

If the number of forms you need to print is limited, you may decide that printing your own forms is the best option for you. Scantron makes printing and scanning your own forms possible through the use of a PostScript laser printer and two Scantron products: Scantron DesignExpert with the PrintFlex option and ScanTools Plus with the ScanFlex option.

The optional PrintFlex module of Scantron DesignExpert software allows you to print plain paper forms. With PrintFlex, you have use of the same standard Scantron DesignExpert tools used to create text, images, captions, lines, boxes, colors, and response grids. In addition, the PrintFlex module adds form alignment information to the form as well as timing marks that meet the technical requirements of a data collection form. Simply print the form on a color or black and white PostScript laser printer to output scannable forms. Check the printed form with the ScanFlex alignment tool, and re-size if necessary using Scantron DesignExpert.

Scanning the PrintFlex forms requires the ScanTools Plus ScanFlex option and the image capabilities of your Scantron scanner. ScanFlex dynamically resizes the image of the scanned page to account for variations in laser printing.

NOTE: If using the color capabilities of a color laser printer, it is important that you test for proper color drop out prior to administering your survey or test.

The PrintFlex/ScanFlex options are designed to give you autonomy with your forms. You decide how many and when to print. And, with the PrintFlex/ScanFlex option,

you can change and print your forms right up to the time that the survey or test is administered.

Printing with PrintFlex requires 24 lb. bond paper with a brightness of 84. If desired, this paper can be purchased at the Scantron Online Store at **www.scantronstore.com**.

NOTE: The Scantron Online Store is available only for U.S. customers. To purchase PrintFlex paper outside the U.S., contact your local sales agent.

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Chapter 6: Form Folding

While non-folded forms will generally scan better than folded forms, data collection forms can be folded if it is done properly. There are guidelines to follow for folding a sheet prior to its use and for unfolding it prior to scanning.

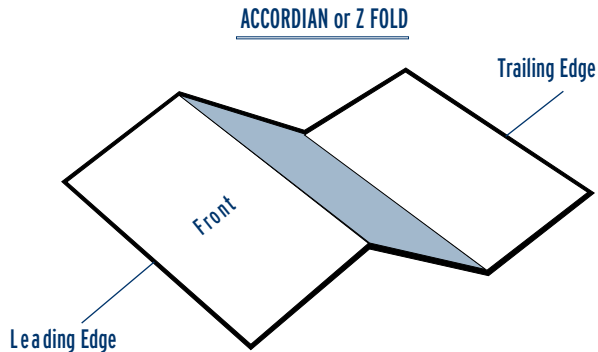
NOTE: Fold creases should only occur on special, half inch long timing marks that contain no response positions. Half inch long timing marks are used to ensure that a false timing mark reading does not occur on the fold.

Folding Instructions

Follow the instructions below to fold your sheets.
Measurements are based on an 8 1/2" x 11" sheet.

- **Accordion fold**—folded dimensions 3 2/3" x 8 1/2" (approximately)

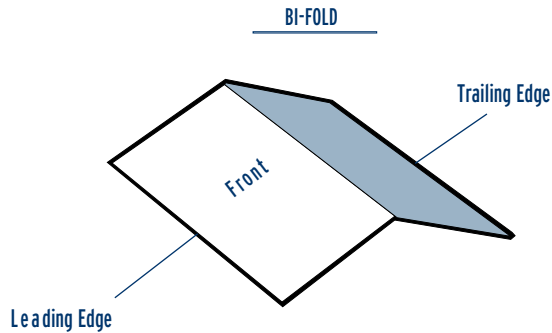
With the front side of the sheet facing up, fold the sheet into thirds so that the leading edge section folds down and the trailing edge section folds up.



NOTE: For best results with your scanner, Scantron recommends accordion folding (rather than the other two types of folds).

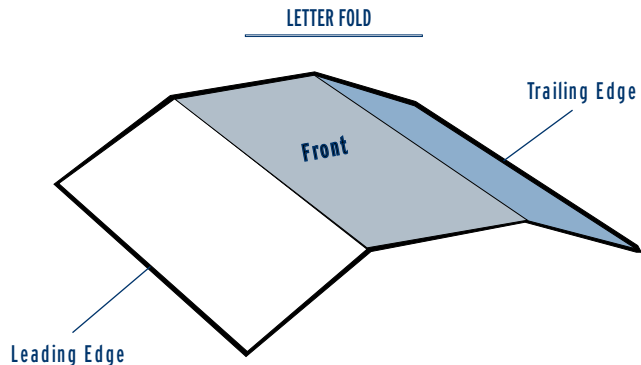
- **Bi-fold**—folded dimensions 5 1/2" x 8 1/2" inches (approximately)

With the front side of the sheet facing up, fold the sheet in half so that the leading edge section folds down.



- **Letter fold**—folded dimensions 3 2/3" x 8 1/2" (approximately)

Fold the sheet in thirds (plus or minus 1/8 of an inch) so that the leading and trailing sections of the back side of the sheet fold down.



NOTE: If you are folding sheets manually, fold each sheet one at a time. If you are folding sheets using a mechanical process, fold the sheets in stacks of 25 sheets or less.

Unfolding Instructions

We suggest that you unfold sheets and stack them flat 24 hours before you scan. Stacked sheets should be kept in an atmosphere controlled environment where temperatures are in the range of 60° to 80° Fahrenheit (15° to 27° Celsius), and humidity is in the range of 40% to 60%. Stack them as flat as possible, using the following procedure.

1. Straighten the sheets by “back folding” them—fold them opposite of their initial fold. Then fold the sheets back the same way they were originally folded.
2. Straighten the sheets so that they lie flat. Smooth them out with your hand or with a heavy object. (The flatter they are, the better they scan.)
3. Make certain that the leading edges of the sheets are down and enter the scanner first.

For Best Results...

We recommend loading the input tray with a small number of prefolded sheets. The number that the scanner can handle varies with the degree of flatness you obtain when you unfold and stack them.

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Chapter 7:

Product Support and Services

This chapter covers ways that you can get help from Scantron to get up and running with your data collection project.

Documentation

Each Scantron scanner and software product comes with documentation designed to get you up and running quickly and efficiently. Be sure to read the printed documentation that came with your product(s) prior to use.

In addition to the printed documentation, Scantron software products also have robust Help systems designed to answer most questions that you will have. If you have a software question, be sure to check the Help system before calling for support.

Training

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

Within the U.S. We have training available for most Scantron software products used with your scanner. Training is available for:

- ScanTools[®] Plus software
- ScanFlex[™] Option
- Scantron DesignExpert[™] Software
- Prosper[™] assessment system
- RealTime Character Recognition utilizing NestorReader[™]
- Remark[®] Classic OMR 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 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
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. Have the model and serial number of your product ready to give to Scantron Customer Support.
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.
4. Have a description of your hardware ready.
 - Computer, including processor and speed, amount of memory, disk size, available disk storage space, and operating system.
 - Laser printer, if applicable, including whether PostScript[®] or PCL, color or black and white, and equipped for duplex printing or not.
5. Have a description of your software ready.

- The software you are using, the version numbers, and 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

For hardware call 1-800-338-5544 (U.S. only)

For software call 1-800-445-3141 (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 at:

Online
www.scantron.com

Phone
1-800-447-3269

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Scantron® Scanners

Trust the Scantron family of high-accuracy data collection tools with unique OMR and image capture features to streamline your current processes, and provide you with a springboard to take advantage of emerging technologies.

Please visit us at www.scantron.com for a complete overview of the Scantron family of scanners or call us at 1-800-SCANTRON (1-800-722-6876) for more information.

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