USER GUIDE

EZ-S.N.AP ®

V | 2.0

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Preface

Welcome to EZ-SNAP!

The *EZ-SNAP User Guide* tells you how the EZ-SNAP saves you time and money by providing a more intelligent way of synchronizing vital order information with photographic exposures on film and/or digital devices. This overview is intended to provide a high-level glance at the many features and benefits of this new and innovative approach to the photographic process.

Structure of the Manual

This manual is organized by function. Operations are presented in order of probable use, but feel free to review the information in whatever manner you desire – even skip sections if the content is familiar.

Chapter 1 introduces the EZ-SNAP intelligent camera trigger. It provides an overview of the hardware and software modules that together make one of the finest photographic order entry systems available.

Chapter 2 walks you through the EZ-SNAP installation process. It provides a step by step walk through for installing your EZ-SNAP hardware and software.

Chapter 3 shows you how to use the EZ-SNAP to perform order entry during your photography session. It shows you how to scan setup information to start your session, how to photograph your subjects, and how to perform information transfer.

Chapter 4 provides a technical reference for troubleshooting and enhancing the EZ-SNAP.

Style and Conventions

In order to make this manual as easy to use as the EZ-SNAP, we have adopted the following conventions:

Icons

Occasionally, an icon (small picture) will appear in the left margin. Each icon has a specific meaning. The paragraphs that follow identify the icons and their intended use.

Warning!
Warnings contain critical information. Typical warnings include cautions about products, processes, and methods that have proven to be unreliable, unstable, or non-supported. Failure to read a warning could result in serious consequences.

Note:
Notes alert you to information of special interest or provide clarification on a particular EZ-SNAP feature. Notes supplement standard content and are not required reading.

Hint:
As you may have guessed, the helpful hints suggest ways to make your life easier. The tips are based on suggestions from other EZ-SNAP users.

Terminology and Type

- Fields and forms are referenced by their proper names.

- Literal entries (commands you type) appear in `monospaced` type.

- Important new terms appear in *italics*.

- Optional entries appear in italics in square brackets [*option*].

- Single keys appear capitalized in brackets, such as [A] and [ENTER].

Questions and Comments

Copies of this manual and related documents can be obtained directly from our World Wide Web site at http://www.phototools.com . If you can't find an answer to your question in the manuals, check the list of Frequently Asked Questions (FAQ) on our web site.

To provide feedback on this manual or suggest improvements, please send e-mail to support@phototools.com.

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Disclaimer

This document is designed to provide information about the RSC EZ-SNAP hardware, computer program and related applications. Every effort has been made to make this document is as complete and accurate as possible, but no warranty or fitness is implied.

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Dedications

This book is dedicated to the select few labs that recognized the vision and potential of the RSC EZ-SNAP during the 1997-1998 season.

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Introducing EZ-SNAP

The EZ-SNAP consists of three simple modules. These modules are used to store information in a Microsoft Access97® database, produce camera card and listing reports, scan order entry information at the camera, and then finally to produce photographs and other items with the information from the database. Central to these three modules is the database file.

The Three Modules

The EZ-SNAP consists of three modules:

1. A very simple Microsoft Access97® database for maintaining customer, order, and equipment information. This database is referred to as the EZ-INFO database and is commonly named EZ_INFO.MDB. Customized versions of this database are commonly named after the company using the customizations.

2. The EZ-SNAP for performing order entry at the camera. The EZ-SNAP is a PC based hand held computer with an 8 line display and an attached laser scanner for reading bar codes in a variety of formats. It stores scanned information in internal memory until the operator transfers the information to another computer using the built-in serial port or modem.

3. The RSC EZ-LINK® application for communications between the EZ-SNAP and the photo studio and/or processing lab. This is a very simple program designed to use the serial communications port(s) attached to a personal computer to transfer information scanned into the EZ-SNAP to the PC. The information is transferred in file format that must be translated into the Microsoft Access97® database. The EZ-INFO database contains a special form for performing this task.

The EZ-INFO database

The heart of the EZ-LAB is simply a Microsoft Access97® database file. The database file contains relatively few tables, forms, queries, and reports. The power of the database is contained in the few Modules designed and programmed by Redmer Software Company in the Microsoft Visual Basic for Applications® language. These modules are for performing more complex tasks such as interfacing with production systems and translating text files received from the EZ-SNAP.

In a processing lab environment, the database file is usually located on a network file server so that production machines and multiple people can work in the database simultaneously.

The structure of the database is very simple. Each database object contains a brief description of its function (Select Details from the View menu to access descriptions). Each of the database objects used in the EZ-INFO is described in detail in the *EZ-INFO Technical Reference Manual*.

The EZ-SNAP

The EZ-SNAP provides unmatched reliability, accuracy, and productivity for fully automated point of sale activities during any photo session. The terminal features a light-weight, hand-held laser scanner which replaces the standard Photo Control ZII camera trigger and provides a more intelligent way to synchronize vital customer order information with each frame exposed on the film. Simply plug the scanner into your camera, and your ready to shoot! There are no extra cables or power sources required. You can enter order data on the keypad, or for higher speed through the laser barcode scanner using barcodes produced using the EZ-INFO database. The unit is capable of storing order information for approximately 5000 frames including setup information for each roll including bar coded light set, camera, photographer, twin check, and magazine numbers for quality control purposes.

Simply scan an order number and any number of packages, sizes, or service products. Then press a key to fire the camera. The program automatically keeps track of roll and frame numbers each time the camera is fired. When the photo session is completed, the information can be easily transferred to any PC for reporting, invoicing, and production purposes. The EZ-SNAP provides information transfer through a standard PC communications port including the ability to send order information over the phone lines using an optional built-in modem.

EZ-SNAP Features

- Durable light weight construction built for industrial applications
- Laser Scanner capable of firing from distance of 15ft.
- Storage for up to 5000 orders
- Handles Blinks, Slates, & No Packages
- Battery lasts nearly 40 hours per 90 minute charge
- No extra cables or power requirements

EZ-SNAP Operating System

The EZ-SNAP uses the DR DOS™ operating system that is compatible with and extends the industry-standard MS-DOS™. Using DR DOS provides access to a number of commercially available software development tools. Additional tools, available from the manufacturer, make programming the system easier and provide access to special features including the scanner and cradle modem.

EZ-SNAP Battery and the CRD1000 Cradle

The EZ-SNAP uses a rechargeable NiCad battery pack. Batteries are recharged using the CRD1000 Cradle. A 15-volt power adapter plugs into the CRD1000 Cradle and into a 115-volt AC wall outlet. The battery is recharged when the EZ-SNAP is placed into the CRD1000 cradle, even when communications are taking place.

EZ-SNAP Power Battery Life

Power saving features of the EZ-SNAP include auto-off and power save modes, which reduce power consumption while waiting for the operator to provide input. These features conserve battery power, lengthening the time between charges or replacement. The EZ-SNAP auto-off feature is set to 3 minutes by default.

Environmental Specifications

The following table summarizes the conditions under which the terminal is intended to operate.

Condition	Range
Operating Temperature	0 Celsius to 40 Celsius
Storage Temperature	-20 Celsius to 60 Celsius
Humidity (operating)	0 to 95% (non-condensing)
Altitude	Up to 10,000 feet

Note:

Batteries lose power faster at extremely high and low temperatures, and at temperatures below 0 Celsius, the LCD operates slowly.

Storage

If the EZ-SNAP will not be used for longer than a week, it should be stored in a cool, dry place, away from dust. It is best to remove the battery during storage. If you are storing the EZ-SNAP for a shorter period of time, you may leave the battery in the EZ-SNAP. However, if the battery is left in the EZ-SNAP for an extended period of time, any data in the EZ-SNAP may be lost. The NiCad battery must remain charged to avoid data loss. ** Be sure to recharge the NiCad batteries after storage.

Cleaning

The EZ-SNAP requires a minimum amount of maintenance. However, it should be kept clean to prolong the life of the hardware and avoid any problems such as dust and dirt build up beneath the keys.

To clean the EZ-SNAP, use a clean, soft, dampened cloth with mild cleaner such as soap and water. Avoid using abrasive paper, cloth, or abrasive/corrosive cleaners. Wipe the entire EZ-SNAP, avoiding the scanner window and the LCD display. Clean the keypad and the scanner trigger.

Wipe the scanner window and the LCD display with a lens tissue or other material suitable for cleaning optical material such as eyeglasses.

Warning!
> Do not pour, spray, or spill any liquid onto any part of the EZ-SNAP, particularly the laser scanner or scanner head components. Also try to avoid introducing moisture into the EZ-SNAP enclosure when cleaning the keypad. Make sure to dry the EZ-SNAP completely and thoroughly using a soft cloth, especially the keypad and exposed gold contacts in the RJ-45 connector.

Maintaining Batteries

Primary power for the EZ-SNAP is provided either by a 9-volt alkaline battery or by a rechargeable, nickel cadmium (NiCad) battery pack. To prevent the loss of data while replacing batteries, the EZ-SNAP has a supercap battery backup. The supercap does not provide enough power for the EZ-SNAP to operate, so be sure to replace or recharge the primary batteries immediately upon receiving a low battery message. The supercap provides sufficient power to preserve the contents of memory for approximately 5 minutes while the batteries are being replaced.

Replacement Batteries

A NiCad battery is available from RSC (NiCad battery pack 350 MaH #3045-003).

9-volt alkaline batteries vary slightly in size, so some may not make good electrical contact. The following batteries are known to be proper size and therefore are assured to work:

- Eveready #522
- Duracell #MN1604 and #MN1604-AS, or equivelent

Powering the EZ-SNAP On and Off

Because the EZ-SNAP is battery powered, it is important to save as much power as possible. The period of time that the EZ-SNAP can be used before its batteries must be recharged or replaced can be increased by turning it off when data is not being entered.

When powered off, the EZ-SNAP saves power by not performing any processing or display functions. However, any programs or data in the system's memory are retained. When the EZ-SNAP is powered up again, the display is restored and processing continues where it was when the EZ-SNAP was powered down. Before the EZ-SNAP powers up, it checks the battery life to ensure reliable operation and data storage.

To turn the EZ-SNAP power on and off under normal power conditions, simply press the red [PWR] key. In automatic power mode, when the EZ-SNAP is on battery power, a number of events may turn the power on and off. Some of these are:

- The system may power ON when a key other than the [PWR] key is pressed.
- The system may power ON when the scanner trigger is pressed.
- The system may power OFF automatically to conserve power when not used for 90 seconds.

If the EZ-SNAP hangs, or locks up and simply pressing [PWR] will not power it off, then the power may be forced off. To force the power off, press and hold the [PWR] key for 15 seconds. Since the EZ-SNAP is still locked up when powered off, turning the power back on will not solve the problem. To recover the data held in memory, you must perform a warm start.

Starting the EZ-SNAP

The EZ-SNAP is really just a small Personal Computer, or PC. But unlike a PC the power key on the EZ-SNAP does not force the computer to be restarted. Therefore the program and the data stored on the EZ-SNAP are still in tact after powering the device on and off. When it is necessary to initialize an EZ-SNAP, either a warm start or cold start must be performed.

The Warm Start

A warm start resets the operating system while preserving the program and the data. This process is similar to pressing the [Ctrl][Alt][Del] keys on a standard PC, except that it does not clear the system's memory. To perform a warm start:

On the 35-key EZ-SNAP:

- Turn the terminal off by pressing the [PWR] key.
- Press and hold the [F] and [J] keys.
- Press and release the [PWR] key.
- Release the [F] and [J] keys.

On the 46-key EZ-SNAP:

- Turn the terminal off by pressing the [PWR] key.
- Press and hold the [4] and [5] keys.
- Press and release the [PWR] key.
- Release the [4] and [5] keys.

The Cold Start

A cold start fully resets the system and clears memory, including any data that may have been previously stored. This procedure must be used only when all other methods of clearing the EZ-SNAP have failed because all setup information will also be lost. To cold start the EZ-SNAP:

On the 35-key EZ-SNAP:

- Turn the terminal off by pressing the [PWR] key.
- Press and hold the [SPACE], [FUNC], and [UP ARROW] keys.
- Press and release the [PWR] key.
- Release the [SPACE], [FUNC], and [UP ARROW] keys.

On the 46-key EZ-SNAP:

- Turn the terminal off by pressing the [PWR] key.
- Press and hold the [A], [B], and [D] keys.
- Press and release the [PWR] key.
- Release the [A], [B], and [D] keys.

The EZ-LINK® Application

The EZ-LINK® is a Microsoft Windows based application designed to communicate with the EZ-SNAP via a serial communications port. The application uses the industry standard x-modem protocol for simple communications and includes error correction capabilities. The main purpose for the application is to transfer the information files from the EZ-SNAP to a personal computer where they can then be translated into the Microsoft Access97® database or custom system. The EZ-SNAP Interface is a very simple program to install, configure, and maintain. It consists of a single simple window and runs as a non-interactive process under Microsoft Windows, which means that it can run in the background while other non-communications applications are in use. The application is written in the Microsoft Visual Basic® and is shipped with complete source code.

Information Flow

The information flow within EZ-LAB is quite simple and is depicted in the drawing below. For school photography, student information is received from the school in the form of a printed list or file on diskette. The information is keyed into or electronically imported into the Microsoft Access97® database. Camera cards are produced on a laser printer with barcodes that uniquely identify each student within the EZ-INFO. When the students are photographed, their camera card barcode is scanned along with the student order information into the EZ-SNAP. The information is then back to the studio or to the processing lab via modem or to a PC directly via serial cable. Once the information is received, reports are generated and the information is copied into the lab production system to produce the photographic products.

(1) Student List is received from school and
keyed into or imported into Microsoft Acces97®.

(2) Camera Cards are produced with barcodes
and delivered to subjects to be photographed.

(4) Photographs and digital-image based
service items are produced directly from
the information contained within the
Microsoft Access97® database.

(3) Camera Cards are scanned at the camera
using the Symbol PDT3100 terminal. The
information is then sent back to the studio
and/or lab electronically.

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EZ-SNAP Installation

The EZ-SNAP consists of several hardware and software components. All of the components may or may not be required depending upon your system configuration and particular needs. Each of the components will be described in more detail in following sections.

The EZ-SNAP Terminal

The EZ-SNAP Terminal is the hand-held scanner used to scan bar codes and perform data entry at the camera. The terminal is available with either 25 key or 46 key (full Alpha/numeric) keypads. The terminals use a NiCad rechargeable battery for power during the photo shoot.

The CRD1000 Recharging Communications Cradle

The CRD1000 Recharging Communications Cradle is used to recharge the EZ-SNAP battery and to communicate with a host computer using either the built-in serial port or phone modem. The recharge time from fully drained is approximately 3 hours. The unit may be used for communication with a host computer while the battery is recharging. Therefore, in most situations one CRD1000 unit is used to service more than one EZ-SNAP.

The EZ-SNAP Serial Cable

The EZ-SNAP Serial Cable is a small black coiled cable with a 9-pin female serial port on one end and a RJ-41 modular connector on the other. This cable is used to attach the EZ-SNAP terminal to the EZ-SNAP to Camerz® Z-II Camera Cable. The cable may also be used to attach the EZ-SNAP to another computer or to a serial line printer for printing cards, receipts, and labels, etc.

The EZ-SNAP to Camerz® Z-II Camera Cable

The EZ-SNAP to Camerz® Z-II Camera Cable is used to connect the EZ-SNAP terminal to the trigger port on the Camerz® Z-II Camera. Once attached, the EZ-SNAP will trigger the camera using power from the internal NiCad battery. The EZ-SNAP to Camerz® Z-II Camera Cable is a heavy weight short cable and has a metal 9-pin connector on one end and a two-pin AMP connector on the other end.

The EZ-SNAP Application

The EZ-SNAP Application is a computer software program that is stored in the EZ-SNAP to perform operations specific to the photographic process. The main purpose of the software is to allow the user to scan quality control information such as camera, lights, and photographer and then scan order information for each exposure triggered by the terminal. The information is stored in the terminal until the operator performs an upload to a host computer. Once the information is uploaded, it is permanently erased from the terminal memory and the terminal is reset for another photo session. The application is upgraded periodically with new features and problem corrections (often referred to as Bugs), and distributed as a package on diskette or over the Internet. A special software program is included to re-program the terminal with software upgrades. Please refer to the *EZ-SNAP Administration* section for more details.

EZ-LINK®

EZ-LINK® is a computer software program that is designed to communicate with the EZ-SNAP terminal via a computer serial port. Please refer to the RSC EZ-LINK® User Guide for installation and usage instructions.

Preparing for Installation

This section assumes that the EZ-SNAP terminals have NOT been programmed with the EZ-SNAP Application. If the terminals have already been programmed, please skip that section of the installation procedure.

Prior to installing the EZ-SNAP terminals, ensure that your host computer is operational and meets the following minimum requirements:

1. Intel Pentium based PC running at a speed of 100mhz or higher.

2. A minimum of 16mb RAM is installed.

3. A minimum of 100mb of free disk space is available.

4. A serial port is available for direct connection and configured as COM1, COM2, COM3, or COM4.

5. A phone modem is available for remote connection and configured as COM1, COM2, COM3, or COM4.

6. Microsoft Windows 95®, Windows 98®, or Windows NT® is loaded and properly configured for use with both serial ports and phone modems. RSC recommends installing the Operating System with ALL available options selected for system administration.

Warning!

Please make sure your PC hardware is properly configured and functioning properly PRIOR to installing any of the EZ-LAB modules. If you are running Microsoft Windows 95® or Microsoft Windows 98®, check the "System Devices" tab on the "System" control panel and make sure none of the devices have a question mark next to them (indicating device conflict or improper driver loaded). If one or more of the devices shown has a question mark, then consult your hardware vendor for resolution. If you are running Microsoft Windows NT 4.0® or higher, check both the System and Application event logs for possible hardware or driver errors.

Installing the Symbol EZ-SNAP Terminal

1. Remove the EZ-SNAP terminal from the packing box and enclosed plastic wrap.

2. READ the enclosed "Symbol Series 3100 Quick Reference" very carefully and familiarize yourself with this terminal parts.

3. Release the hand strap from the bottom of the terminal by pulling straight down and away from the terminal base.

4. Unlock the battery compartment door by turning the black switch 90 degrees counter-clockwise.

5. Open the batter compartment by lifting the door straight off and down from the terminal.

6. If the 9-volt battery connector is installed in the battery compartment, remove it by pulling straight out on the small white molex connector.

7. Insert the gray plastic NiCad battery connector into the two white battery receptacles.

8. Remove the EZ-SNAP NiCad battery from the packaging box.

9. Insert the NiCad battery into the EZ-SNAP, making sure to leave the attached black pull strap facing up. DO NOT insert the battery with the strap beneath it, because it will be very difficult to remove the battery without pulling the strap!

10. Place the battery compartment door back on the terminal and lock it by turning the black switch 90 degrees clockwise. You may have to apply some pressure to close the battery compartment door.

11. Replace the hand strap.

12. Remove the CRD1000 Recharging Communications Cradle from the box and enclosed bag.

13. Remove the CRD1000 Power Supply from the box.

14. Plug the Power Supply into CRD1000 Recharging Communications Cradle and an available 110-volt power outlet. RSC recommends using an isolated surge suppressor for powering both the cradle and the host PC. In environments where there is a lot of electrical noise and potential for reversed polarity, RSC recommends using the same physical power strip or surge suppressor for both the cradle and the host PC.

15. Place the EZ-SNAP unit into the CRD1000 Recharging Communications Cradle and wait for approximately 30 seconds for the green recharging light to start to flash. If the light does not flash after 30 seconds, press the power key and check for activity on the terminal. If the recharging light still does not flash, ensure that the battery has been properly installed and that power is applied to the CRD1000.

16. Allow the EZ-SNAP terminal to charge fully. This will take approximately 3 hours. When fully charged, the green recharging light will display solid, i.e. not blink.

Connecting the Symbol EZ-SNAP terminal to the host PC

The EZ-SNAP terminal communicates with the host PC directly using the standard RS-232 serial communications port on the CRD1000 Recharging Communications Cradle. The EZ-SNAP must be connected directly to the host PC to load the EZ-SNAP Application for the first time and for future software upgrades. The CRD1000 Recharging Communications Cradle also features a phone modem that is used to communicate with the host PC from a remote location. The modem is documented in a later section.

1. Disconnect the power from the CRD1000 Recharging Communications Cradle.

2. Perform a shutdown and disconnect the power from the Host PC.

3. Connect a standard RS-232 serial modem cable to the CRD1000 Recharging Communications Cradle. Ensure that the connection is tight, and use the screw mounts to secure the cable is firmly in place. Permanent damage may occur if the cable becomes loose or falls off during programming of the terminal.

4. Connect the other end of the serial modem cable to the serial port on the host PC. Ensure that the connection is tight as explained in step 1.

5. Connect the power to the CRD1000 Recharging Communications Cradle.

6. Connect the power to the host PC and start the system.

Installing the EZ-SNAP Application

The EZ-SNAP Application is a computer software program that runs on the EZ-SNAP terminal. However, new EZ-SNAP terminals may not have the program loaded onto them, or may have a version of the software that is out of date. This section describes the procedures to install the program onto the terminal from the host PC.

1. Create a folder on the host PC hard drive named RSC.

> From the Windows Explorer, select the C disk drive by clicking on it once. The drive will become highlighted. Select the New option from the File menu, then select the New Folder option from the popup menu. A new folder will display on the right side of the menu. Name the folder RSC. Double-click on the folder to open it.

2. Create a folder within the RSC folder named EZSNAP.

3. Insert the RSC EZ-SNAP CD-ROM into your CD-ROM drive and locate the EZSNAP Folder.

> If you do not have the RSC EZ-SNAP CD-ROM, then you may download the EZ-SNAP Application from the RSC Web Site (http://www.redmer.com) and decompress the download file in the EZSNAP directory.

4. Copy the contents of the folder to EZSNAP folder on your C disk drive.

5. Start a DOS session by selecting the Command Prompt option from the Programs menu (located under your Windows Start menu).

6. Change to the EZSNAP directory on your C disk drive.

> Type:
> ```
> C:    [Enter]
> CD\RSC\EZSNAP   [Enter]
> ```

7.   Edit the BURN.BAT batch file.

　　　Type:
```
EDIT BURN.BAT  [Enter]
```

　　　The DOS-BASED text editor will load and the contents of the burn.bat batch file will display in the window.

8.   Change the communications port number specified in the batch file to match the communications port being used on the host PC to communicate with the EZ-SNAP terminal.

9.   The serial communications port is set to COM1 by default. To change the serial port to COM2, simply change the 1 at the end of the sendhex command line to 2.

10.   Save the file by selecting Save from the File menu.

11.   Exit the program by selecting Exit from the File menu.

12.   Perform a command-boot on the EZ-SNAP by pressing the [PWR][SHIFT][BK SP] keys simultaneously twice.

13.   Select Program Loader from the cold boot menu by pressing the down arrow key [ALPHA][N].

14.   Select the 19200 baudrate by pressing the up-arrow, then press [Enter].

15.   Select 7 data bits, odd parity, no flow control, then press [Enter] to begin the program load process.

16.   On the host computer, type BURN, then press [Enter] twice.

17.   The program will display the number of characters transferred indicating that the program load process is taking place. If the number of characters transferred does not display, there may be a physical connection problem. The terminal will display an error message such as "STATUS 0020." Indicating that an error occurred. In case of an error, simply check the connections, and try the process over again.

18.   The terminal will display the message "STATUS 0000" when the program load process is completed successfully.

19. Perform a warm-boot on the terminal by pressing [PWR][F][J] twice.

20. The terminal will display messages while the operating system and program are loading. The program title screen will display for 2 seconds, then the main menu will display. The main menu has four options available, "Shoot Pictures", "Transfer Direct", "Transfer Modem", and "Setup". Each of these options will be explained in detail in the sections that follow.

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Using EZ-SNAP

The EZ-SNAP Application is very simple to use and consists of only a few screens to master. In fact, the EZ-SNAP has proven to be so simple, most photographers have been completely trained in less than 30 minutes. To start using EZ-SNAP, simple press the red power key labeled [PWR] in the upper left hand corner of the keypad.

The Main Menu

The EZ-SNAP Main Menu presents four (4) options to you: Shoot Pictures, Transfer Direct, Transfer Remote, and Setup. If your EZ-SNAP does not display the Main Menu, then simply re-boot it using one of the following key combinations:

Press [PWR][F][J] twice on the 35-key EZ-SNAP.
Press [PWR][4][5] twice on the 46-key EZ-SNAP
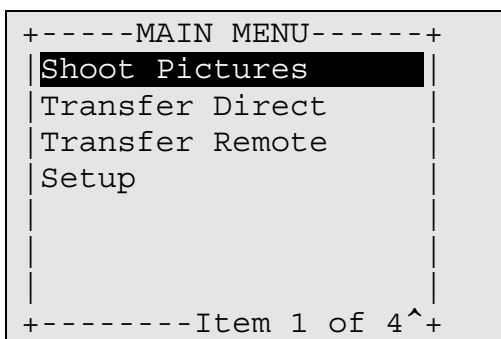
```
+-----MAIN MENU------+
|Shoot Pictures      |
|Transfer Direct     |
|Transfer Remote     |
|Setup               |
|                    |
|                    |
|                    |
|                    |
+--------Item 1 of 4^+
```
The RSC EZ-SNAP Main Menu.

Note:

IMPORTANT: Note the (^) character in the lower right hand corner of the screen. This identifies the whether or not the keyboard is in Alpha (Letter) or Numeric (Numbers) mode. The character shown in the screen drawing is the caret character (^) and indicates that the keyboard is set to Alpha mode. However, the keyboard should ALWAYS be in numeric mode for normal use. To toggle the mode of the keyboard, press the blue [ALPHA] key. The mode should now be indicated by the (v) symbol. Pressing the [ALPHA] key simply toggles the keyboard mode from using numbers to letters and back again for those keys with dual purposes.

To select an option from the Main Menu, press the up arrow and down arrow keys to highlight the option you want to select, then press the red [Enter] key. The arrow keys are depicted with black triangles that point up and down on the [M] and [N] keys. Note that the currently selection menu option is shown in Reverse Video. There are no other key choices available on the Main Menu.

Shoot Pictures

To shoot pictures, simply highlight "Shoot Pictures" on the Main Menu, then press [Enter]. The EZ-SNAP will display one of the following screens depending whether or not the EZ-SNAP has been used previously to shoot pictures.

```
+----DATA EXISTS-----+
|                    |
|Data will be added  |
|to the end of the   |
|current file.       |
|[0640] Students     |
|Press ENTER to Start|
|                    |
+--------------------+
```
Displays if the unit has already been used.

```
+-----DATA FILE------+
|                    |
|Data file empty.    |
|                    |
|                    |
|                    |
|Press ENTER to Start|
|                    |
+--------------------+
```
Displays if the unit has been cleared (unused).

The unit will then display the ROLL SETUP screen. This screen is used to record pertinent order information that identifies the information for the photo shoot with the physical film in the manufacturing plant. Simply enter the information using the keypad or scan barcodes to complete the order entry. After the last field has been scanned or keyed, the EZ-SNAP will automatically display the shoot screen. Make sure you have scanned or keyed all of your information correctly prior to scanning or pressing [ENTER] on the last field. All fields on the ROLL SETUP screen are required, meaning that none of them can be left blank. If you make a mistake, simply use the up and down arrow keys to move between the fields.

```
+         ROLL SETUP      +
Cust    _____
Photog  _____
Lights  _____
Camera  _____
Roll      _____
Mag       ____    Type  __
Job       _____
```
The ROLL SETUP Screen.

The fields available on the ROLL SETUP screen are:

Cust   A code that uniquely identifies a customer. In school photography, this code is used to identify the school. Portrait studios use this field to identify the studio.

Photog A code that uniquely identifies the photographer using the EZ-SNAP.

Lights A code that uniquely identifies the light set, or conditions depending upon the job type.

Camera A code that uniquely identifies the camera.

Roll   A code that uniquely identifies the segment of film loaded in the camera. This is usually the roll number, or twin-check code.

Mag   A code that uniquely identifies the film magazine or canister.

Type   A code that identifies the job type (underclass, sports, proms, studio)

Job   A code that uniquely identifies the job or photo shoot.

After scanning or keying the job code, the SHOOT screen will display. This is the primary screen used for taking photographs and is used to expose each frame on the film.

```
Roll 12345  Frame  0001
Card  v_____    ____
Dens +0




```

The SHOOT Screen, prior to order entry.

The SHOOT screen is easier to use than it looks! The twin-check number that you scanned on the ROLL SETUP screen displays in the upper left-hand corner of the screen. The current frame number is displayed directly to the right of the twin-check number and increases with each exposure. The next line is where you enter data. For each subject photographed, you must enter a card number and one or more product selections. The card number is scanned or keyed into the field directly to the right of the Card prompt. All product code are scanned or keyed in the area directly to the right of the card prompt. You can switch between the two fields by pressing the either the [ENTER] key or the left and right arrow keys, [K] and [L].

Up to 10 product codes may be scanned for each exposure. If more than one of a particular product code is required, simply scan it twice. To fire the camera, simply press one of the alpha keys in the top two rows of the keypad [A] through [J].

```
Roll 12345  Frame  0001
Card  866951_____    ____
Dens +0
PK A
PK B
PK B



```

The SHOOT Screen, after order entry, ready to shoot.

A bit about Barcodes

The EZ-SNAP is designed to use a defined set of barcodes to perform order entry rapidly and error-free. To help ensure that the right codes are scanned into the right places, the EZ-SNAP uses something called delimiters. These are simply unique letters that are affixed to the start and end of the barcode. The EZ-SNAP checks the letters before storing the bar-coded information internally. If the letters do not match what the EZ-SNAP is expecting, an error message is displayed.

The barcodes that may be scanned on the SHOOT screen are always delimited with either a "C" or "K". Any code delimited with the letter "C" is scanned into the Card field on the left-hand side of the screen. Any code delimited with the letter "K" is scanned on the right-hand side of the screen in the Product field.

Slates and Blinks

The EZ-SNAP uses special barcodes for processing slates and blinks. We recommend shooting 3 slates at the start and end of each roll. Slates are identified by the EZ-SNAP as cards with an ID of SLATE. If the subject blinks or you choose to take another exposure of the same subject with the same product order, simply scan the blink barcode. The EZ-SNAP stores the card id BLINK for the exposure. In the manufacturing plan, frames exposed with the blink code will replace the previous frame. The frame previous to a blink will typically not be printed. There is no need to scan order information for slates or blinks.

No Orders, and Multi-Pose

The EZ-SNAP will not expose film without both a card number and at least one order for each subject. If the subject does not require order information, you must scan the No Order barcode. This is NOT the same as a blink. Frames with the No Order code may receive service items.

The Multi-pose code is used to shoot the same subject multiple times with the same card number. This code is typically used for Proms or other events where the same subject is present in multiple exposures.

Sitting Identification

The sitting identifier is used to identify the type of exposure. It is defined by the manufacturing plant and may specify a code for the sitting itself, or a particular background, lighting conditions, etc.

Making Density Corrections

The density correction field displays immediately below the Card field and is used to identify subjects that are light or dark. Density corrections are very technical and subjective in nature. These should be used with great caution because failure to make a correct density correction will directly impact the print quality.

Warning!
Exercise extreme care when making density corrections. Also make sure that your lab uses the corrections sent from the EZ-SNAP prior to use. Only small number of our customers use this feature because of the potential negative impact on production quality.

The EZ-SNAP Function Keys

The EZ-SNAP also has a set of predefined function keys for performing special tasks. These keys also have associated barcode labels that can be scanned as an alternative to using the key combinations. To press a Function key on the EZ-SNAP, press the [FUNC] or [FNC] key, then the number of number you want. For example, F1 is available by pressing [FUNC] then [1]. The following special keys are available on the SHOOT SCREEN:

F1	Help
F2	Change ROLL SETUP
F3	Change UNIT
F4	Change FRAME
F5	Clear PRODUCTS
F10	Exit to Menu

The EZ-SNAP Function Key Assignments

Warning!
> One of the most common mistakes made by photographers using the EZ-SNAP is forgetting to change the ROLL SETUP information when changing film. Changing this information is CRITICAL to the success of the system because the twin-check number uniquely identifies the segment of film about to be exposed.

When the Photo Session is Complete

When the photo session is complete, press [F10] to return to the Main Menu. Now that we recorded order information for each subject, the information must be transferred to the manufacturing plant. This is accomplished using one of the two transfer options on the Main Menu.

Transfer Direct

The Transfer Direct option is used to send the information from the EZ-SNAP to a Personal Computer via a direct cable connection. This option is used in scenarios where the EZ-SNAP is physically brought to the manufacturing plant after each session or where the information is held on a local PC for later modem transfer, as may be the case in a studio. The Transfer Direct option is very simple to use and there are no options available to change! To transfer information:

1. Place the EZ-SNAP in a CRD1000 Recharging Communications Cradle.

2. Select the Transfer Direct option on the Main Menu.

3. Make sure either the RSC EZ-LINK application or Mustang Software Qmodem Pro® is running and properly configured on the PC. Also make sure that the CRD1000 Recharging Communications Cradle is attached to the proper serial port on the PC.

4. Press [Enter] on the EZ-SNAP. The red COM light will blink and the unit will display messages indicating that the transfer is taking place. **DO NOT REMOVE THE EZ-SNAP FROM THE CRADLE UNTIL THE RED LIGHT STOPS BLINKING.** If the EZ-SNAP is removed during communications, permanent physical damage may result.

Transfer Remote

The Transfer Remote option is used to send the information from the EZ-SNAP to a remote computer over the phone line via a phone modem. This option is used in scenarios where the EZ-SNAP cannot be physically brought to the manufacturing plant after each session. Once configured, the Transfer Remote option is very simple to use and there are no options available to change! To transfer information:

1.   Place the EZSNAP in a CRD1000 Recharging Communications Cradle.

2.   Select the Transfer Remote option on the Main Menu.

3.   Make sure either the Mustang Software Qmodem Pro® is running on the remote computer and properly configured on the PC. Also make sure that the CRD1000 Recharging Communications Cradle is attached to a non-switched phone line.

4.   Press [Enter] on the EZ-SNAP. The red COM light will blink and the unit will display messages indicating that the transfer is taking place. **DO NOT REMOVE THE EZ-SNAP FROM THE CRADLE UNTIL THE RED LIGHT STOPS BLINKING.** If the EZ-SNAP is removed during communications, permanent physical damage may result.

As you may well have noticed, the Transfer Remote option works exactly the same as the Transfer Direct option with the exception that the cradle is plugged into a phone line instead of directly to a Personal Computer.

So what is the difference? You might ask! The Transfer Remote option requires a bit more information to accomplish the task. One piece of information is the phone number to dial, another is the modem type to use. The EZ-SNAP works with either the modem built into the CRD1000 Recharging Communications cradle or any Hayes® compatible modem attached to the serial port on the CRD1000 Recharging Communications cradle. The following section describes how to setup the Transfer Remote options using the SETUP option on the Main Menu.

The Setup Menu

The EZ-SNAP Setup Menu enables you to configure a variety of features such as product definitions and Remote Transfer options. To access the Setup Menu, simply select "Setup" from the Main Menu, then press [Enter].

The Setup Menu presents options for defining product codes and configuring the Remote Transfer options.

```
+-----SETUP MENU-----+
|Product Definitions |
|Remote Phone Number |
|Select Modem Type   |
|Select Protocol     |
|Select Dial/Pulse   |
|Select Init Command |
|                    |
+--------Item 1 of 6^+
```

The RSC EZ-SNAP Setup Menu.

Note:

Most of the Setup options are defined once and remain constant over a period of time. We do not recommend changing setup values or using the Setup menu unless you are very familiar with how the EZ-SNAP works and are familiar with Modems and communications.

A few Words about Sub-Menus
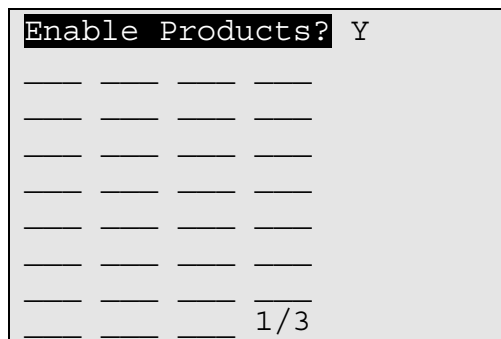
The Setup Menu is a sub-menu of the EZ-SNAP Main Menu meaning that it is only accessible through the Main Menu. Some of the options on the Setup Menu are sub-menus. For example, the "Select Modem Type" menu option presents a menu of choices to choose which type of modem is used for remote communications. To return from any sub-menu to the previous menu, simply press the red [CLR] key.

Setup Product Definitions

The EZ-SNAP is able to handle a virtually unlimited number of product codes by default (any combination of 3-characters alpha numeric). However, there is no validation to ensure that you have entered a valid product code during the shoot. The only validation by default is the delimiter character, which identifies that the code scanned was a product-type code.

To validate your data entry, the EZ-SNAP provides Product Definitions. You may define up to 99 different product codes when the Use Product Definitions feature is enabled. During the shoot, the EZ-SNAP checks to make sure that each of the product codes keyed or scanned matches one of the valid codes in your Product Definitions prior to exposing the film. If one or more of the assigned codes do not match, an error message is displayed.

To define product codes on the EZ-SNAP, select "Product Definitions" from the Setup Menu then press [Enter]. The setup procedure consists of four screens that allow you to enter product codes numbered 1 to 99.

```
Enable Products? Y
___ ___ ___ ___
___ ___ ___ ___
___ ___ ___ ___
___ ___ ___ ___
___ ___ ___ ___
___ ___ ___ ___
___ ___ ___ ___
___ ___ ___ 1/3
```

The Define Products Screen, page 1 of 3.

Setup Remote Transfer

To transfer information from the EZ-SNAP to a remote computer the Transfer Remote option is used from the Main Menu. This option uses information that is configured from options on the Setup Menu. These options were placed under a separate menu to avoid changing accidentally. In fact, if the phone number, modem types, and other communications parameters remain constant, the photographer should not have to access the Setup menu at all.

As mentioned in the Setup Menu section, the menu provides six (6) options. Five of the options are for setting the Remote Transfer options. These options are: Remote Phone Number, Select Modem Type, Select Protocol, Select Dial/Pulse, Select Init String. Each of these options is explained in this section.

```
+-----SETUP MENU-----+
|Product Definitions |
|Remote Phone Number |
|Select Modem Type   |
|Select Protocol     |
|Select Dial/Pulse   |
|Select Init Command |
|                    |
+--------Item 1 of 6^+
```
The RSC EZ-SNAP Setup Menu.

Setting the Remote Phone Number

This is perhaps the most important setup option because without it the EZ-SNAP will not know which number to dial when transferring information. To change the number, simply highlight the Remote Phone Number option, then press [Enter]. Enter the number to dial in the space provided on the Phone Number setup screen, then press [Enter] to save it. Remember to include any prefixes and area codes that may be required just like making any regular voice call.

```
+ SETUP PHONE NUMBER +
|Remote Phone Number:|
|                    |
|_____|
|                    |
|                    |
|Press Enter to Save.|
|                    |
|                    |
|                    |
+--------------------+
```
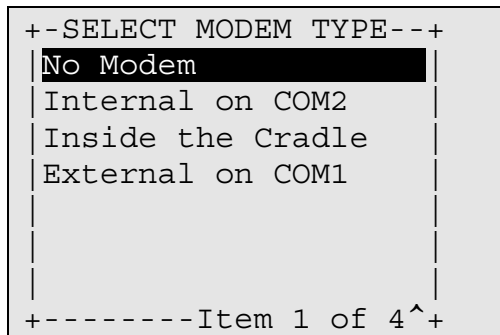The RSC EZ-SNAP Remote Phone Number Screen.

Selecting the Modem Type

To select which type of modem to use, select the "Select Modem Type" option on the Setup Menu. The Select Modem Type menu will display. This menu provides four choices: No modem, Internal on COM2, Inside the Cradle, External on COM1. In most cases, the modem inside the cradle is used to transfer information.

```
+-SELECT MODEM TYPE--+
|No Modem            |
|Internal on COM2    |
|Inside the Cradle   |
|External on COM1    |
|                    |
|                    |
|                    |
|                    |
+--------Item 1 of 4^+
```
The RSC EZ-SNAP Modem Type Selection Menu.

Selecting the Protocol

A computer protocol, much like a human protocol is a set of rules that govern how two computers communicate with each other. The EZ-SNAP is capable of sending information in four different protocols. The one most commonly used is X-modem. In fact, all RSC Applications that communicate with the EZ-SNAP use X-modem. To select a protocol, simply highlight the one you need to use for your particular application, then press [Enter].
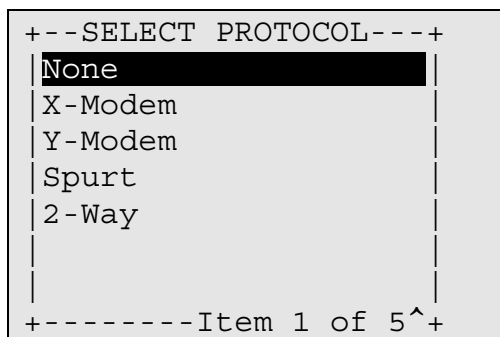
```
+--SELECT PROTOCOL---+
|None                |
|X-Modem             |
|Y-Modem             |
|Spurt               |
|2-Way               |
|                    |
|                    |
+--------Item 1 of 5^+
```
The RSC EZ-SNAP Protocol Selection Menu.

Selecting Dial or Pulse Phones

The EZ-SNAP has been designed to work in a wide variety of scenarios and under diverse conditions. Depending upon the locale, telecommunications equipment may vary. While most areas in the United States and Canada have modern tone dialing features, some offer only pulse dial. That does not present a problem for the EZ-SNAP, which works well with both and also provides a customizable command line for external modems that may rely on other forms of dialing. To select a dialing method, simply highlight the option you need then press [Enter].
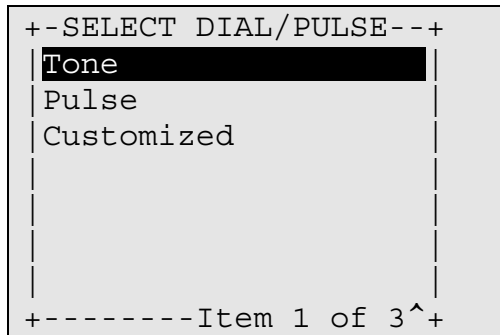
```
+-SELECT DIAL/PULSE--+
|Tone                |
|Pulse               |
|Customized          |
|                    |
|                    |
|                    |
|                    |
|                    |
+--------Item 1 of 3^+
```
The RSC EZ-SNAP Dial/Pulse Selection Menu.

Selecting a Modem Initialization Command

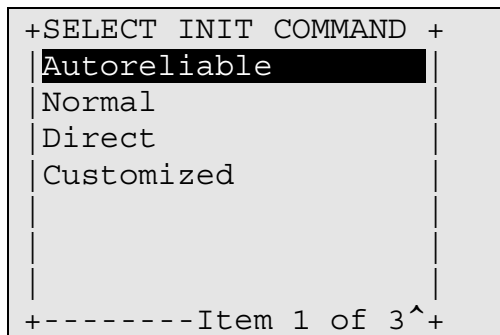Modem initialization commands are used to establish communication between the EZ-SNAP internal serial port and the phone modem. Most initialization commands reset the modem internally as well, which helps prevent recurring problems when phone line conditions are less than ideal. In situations using the Cradle Modem, the Normal modem initialization command will work just fine. In other cases, such as when an external modem is connected, the modem initialization command may need to be set. To select a modem initialization command, simply select the one you need from the Modem Initialization menu, then press [Enter].

```
+SELECT INIT COMMAND +
|Autoreliable        |
|Normal              |
|Direct              |
|Customized          |
|                    |
|                    |
|                    |
+--------Item 1 of 3^+
```
The RSC EZ-SNAP Modem Initialization Command Selection Menu.

4

Technical Reference

This chapter provides technical information for system administrators and third parties interested in expanding the capabilities of the EZ-SNAP. Thus this chapter assumes a relatively high degree of technical literacy. The EZ-SNAP is an open architecture system, meaning that all of the specifications are published and made available for others to expand on and improve. This chapter provides all of the technical details on how the system works internally. This chapter provides information on the following internal components:

- The EZ-SNAP Application Architecture
- The EZ-SNAP Internal File Structures
- The EZ-SNAP Distribution Package
- The EZ-SNAP Barcode Specifications
- The Mustang Software Qmodem Pro® EZ-SNAP Script

The EZ-SNAP Application Architecture

The EZ-SNAP Application was designed to provide maximum flexibility for performing order entry during any photography session. Some of the design considerations were:

Footprint	The application must occupy a minimal amount of memory and reserve space for a relatively high number of data scans.
Ease of Use	The application must present a minimal number of screens to user and must be simple enough to use during the photo session that the operator does not need to look at the screen or fumble for certain keys.
Flexibility	The application must apply to multiple markets, thus information types must be generic and possibly multi-purpose.
Maintenance	The application code must be highly maintainable and portable across hardware platforms to provide maximum compatibility with future scanner platforms.

Footprint

The application footprint refers to its size in memory. Memory in the EZ-SNAP is limited and is of a fixed size, which means that it cannot be increased like the memory in a PC. The entire application, operating system, device drivers and other read-only files must fit into a 256k block. To keep the application size down, it is written in Microsoft C/C++ 8.0®, compiled with the medium memory model and optimized to favor size over execution speed. This results in a smaller executable file that may run slightly slower than one optimized for speed. However, speed really is not an issue because the EZ-SNAP does not perform any complex computations or data-intensive operations.

Ease of Use

Ease of use issues were left to a group of photographers to decide. We worked closely with the people who would be using the EZ-SNAP every day to decide what functions would be included and excluded, what the screens would look like, and what keys performed each function. The application consists of two types of screens, menus and data entry screens. All of the menus are processed with a commercially available menu processor, and all of the data entry screens utilize the same low-level keyboard and processing routines for maximum consistency. To remain consistent with other hand-held scanner applications, we borrowed menu routines and scanning routines from other applications. This resulted in less unique source code to maintain for the application.

Flexibility

Our goal was to make the EZ-SNAP flexible enough to handle a wide variety of photographic applications including the school market, proms, dances, sports, and studio portrait photography. As a result, the information stored in the EZ-SNAP is generic in both terminology and content. The customer for each roll could be a school code or some other identifier for a studio or other organization. A generic card number identifies the exposures and the associated codes are stored as generic products. Product codes are generic 3 alphanumeric entries that could represent prints, packages, services, or any other type of item.

Maintenance

Our maintenance goal really consisted of two smaller goals: easy to maintain hardware and easy to maintain source code. On the hardware side, we chose to use the most durable, popular scanner on the market. We built the camera cables using techniques from the automotive industry for maximum durability and reliability. On the software side, we utilized commercially available software wherever possible and built our source code around a very simple modular structure. This has resulted in an application that is very easy to maintain and migrate to other platforms. Some of the hidden power of the EZ-SNAP exists in its simple and elegant design that will afford for rapid change and product evolution over time.

What's on the EZ-SNAP?

As previously mentioned, the EZ-SNAP is simply a small PC that runs a DOS® operating system. It is very similar to larger PCs that run DOS®. Instead of disk drives, the EZ-SNAP uses a special type of memory called EEPROM, or Electronically Erasable and Programmable Read Only Memory. This is also sometimes called NVM, or Non-Volatile Memory. The EZ-SNAP application, operating system, and device drivers are stored in this NVM area. Note: The NVM can be accessed from DOS just like a disk drive, the NVM is logical disk drive B:. All of the data you key in and scan in are stored in volatile RAM, or Random Access Memory. The RAM is organized as a RAM-disk and is logical disk drive D: from DOS. So what is in this NVM? You might ask. The answer is quite simply a very few files, some of which may be familiar to you already:

NVM Contents

COMMAND.COM	The DR-DOS® Command Processor.
EZSNAP.SYS	The config.sys file, which loads device drivers.
EZSNAP.BAT	The autoexec.bat file, which loads the EZ-SNAP program.
EZSNAP.EXE	The EZ-SNAP Application.
XMODEM.SYS	The X-Modem driver.
SCAN3000.EXE	The laser scanner driver.
TDREM.EXE	A two-way communication application.
ETA3000.SYS	A memory management utility.
CLEAR.BAT	A batch file to manually clear volatile memory (erase data files).

The EZ-SNAP System Configuration File

The EZ-SNAP System Configuration file serves the same function and has the same syntax as the CONFIG.SYS file under any DOS® based operating system. On the EZ-SNAP, the configuration file is quite small and simple. It loads the required device drivers for the memory manager and the modem.

EZSNAP.SYS

Command	Description
Break=Off	Disable [CTRL][Break] keys.
Files=20	Set handles to support up to 20 open files.
Device=b:eta3000.sys	Load memory manager.
Device=b:xmodem.sys	Load protocol driver.
Shell=a:shell.com	Set command interpreter.

The EZ-SNAP Auto-execution Batch File

The EZ-SNAP Auto-execution batch file serves the same function and has the same syntax as the AUTOEXEC.BAT file under any DOS® based operating system. On the EZ-SNAP, the batch file is quite small and simple. It loads the required device drivers for the scanner and the EZSNAP application.

EZSNAP.BAT

Command	Description
@echo=Off	Disable command display.
Path=a:;b:;d:	Set DOS file search path.
SET NO87=TRUE	Disable x87 numeric coprocessor.
Scan3000	Load scanner resident driver.
EZSNAP	Load the EZ-SNAP program.

Hint:
> You can view these files by exiting to DOS from the EZ-SNAP program. To exit the program, press [F8] from the SHOOT screen. To reload the program, either type EZSNAP then press [ENTER] or restart the EZ-SNAP. Remember, that all the non-volatile application files are stored on the B: drive (NVM disk).

The EZ-SNAP Internal File Structures

The EZ-SNAP stores the data you key in and scan in file structures on the RAM disk, which is logical-drive D. The EZ-SNAP uses five simple files internally to store your information: the unit file, setup file, card file, product file, and modem file. Each of the files are stored in a simple fixed position flat-file format without delimiters using the ASCII character set. Each of these files is explained in this section.

The Unit File

The simplest file on the EZ-SNAP is undoubtedly the unit file. This file simply stores an alphanumeric code that identifies the physical EZ-SNAP unit. This number is usually assigned once and left alone for the duration of the product life. The unit code usually contains the last four digits of the EZ-SNAP serial number, although some labs prefer to number theirs numerically.

A typical unit file:

```
0002
```

In the example above, the unit code is set to 0002.
The unit code is four (4) bytes plus a carriage-return/line-feed pair at the end of the line. The file size is a fixed 6 bytes.

The Setup File

The setup file contains one line of information for each roll exposed using the EZ-SNAP. Each line in the file has a one to one correspondence with the information on the ROLL SETUP screen. The file is of variable length, which means that it may have one or more lines.

A typical setup file:

```
0110/09/9710:000204_____0001_____0008_____0003_____00162_____0008_01
0210/09/9710:530204_____0001_____0008_____0003_____00163_____0008_01
0310/09/9711:310204_____0001_____0008_____0003_____00164_____0008_01
```

In the example above, there are 3 lines in the setup file, indicating that 3 rolls, or segments of film, were exposed using the EZ-SNAP.

Each line contains the following information in fixed format:

Bytes	Sample Data	Description
1 & 2	01	The physical line number of the setup in the file (01..99)
3 – 10	10/09/97	The date that the setup was saved.
11 - 15	10:00	The time that the setup was saved.
16 – 25	0204_____	The customer code.
26 – 35	0001_____	The photographer code.
36 – 45	0008_____	The light set code.
46 – 55	0003_____	The camera code.
56 – 65	00162_____	The roll or twin-check number.
66 – 75	_____	The job number.
76 – 79	0008	The magazine number
80 – 83	_01	The work type.
84 & 85		A carriage-return/line-feed pair.

The Card File

The card file contains one line for every exposure taken with the EZ-SNAP. Each line has a one to one correspondence with the SHOOT screen. The file is of variable length, which means that it may have one or more lines.

A typical card file:

```
000100010001     +0                                     SLATE_____
000200010002     +0                                     SLATE_____
000300010003     +0                                     SLATE_____
000400010004     +0C__                                  223116____
00050001000592   +008_                                  223129____
000600010006     +0B__01_03_03_03_03_                   223117____
```

In the example above, there are 6 lines in the card file, indicating that 6 exposures were taken using the EZ-SNAP.

Each line contains the following information in fixed format:

Bytes	Sample Data	Description
1 – 4	0001	The physical line number of the card in the file (0001..9999)
5 – 8	0001	The physical line number of the setup record in the setup file that was current when this line was saved.
9 – 12	0001	The exposure number taken on the current setup. This number identifies the physical exposure, or frame on a roll or contiguous segment of film.
13 – 14	92	The staff code, which indicates that the exposure requires special services.
15 – 16	__	The sitting code.
17 – 18	+0	The density correction.
19 – 48	C__	The first product code, these repeat 10 times in three character blocks.
49 - 58	223129____	The card number.

The Product File

The product file contains one line for every product that will be scanned with the EZ-SNAP. Each line has a one to one correspondence with the PRODUCT SETUP screen. The file is fixed length, 100 rows.

A typical product file:

```
Y
A__
B__
C__
..
```

In the example above, the first line is set to Y for Yes, which indicates that product verification is enabled. Otherwise, it is set to N. Only 3 of the product definition lines are shown. There are 99 product definition lines in the actual file.

Each file contains the following information in fixed format:

Bytes	Sample Data	Description
1	Y	Indicates if product verification is enabled.
2 & 3		A carriage-return/line-feed pair.
4 – 6	A__	The first product code, these repeat 99 times, each followed by a carriage-return/line-feed pair.

The Modem Setup File

The modem setup file is the only file that is stored in binary format and never transmitted from the EZ-SNAP to another computer. Because of the binary format, it is not suitable for use in any other application, thus the format is not documented beyond the internal program documentation.

The EZ-SNAP Distribution Package

The EZ-SNAP application, operating system, and device drivers are shipped together in a single package called the "EZ-SNAP Distribution Package." This package is also available on the RSC world-wide-web-site at http://www.redmer.com. The package consists of several files that are compressed into a self-extracting archive using the popular PKWARE® package.

Package Contents

The EZ-SNAP Distribution package consists of two executable files, three DOS batch files, and one Intel® Hex file. The following table lists the files and describes their purpose.

File	Description
Burn.bat	A simple batch file used to program, or "burn" the EZ-SNAP application image into the EZ-SNAP hardware.
Getfile.bat	A simple batch file that may be used to retrieve, or get one a file from the EZ-SNAP via a direct connection.
Sendfile.bat	A simple batch file that may be used to send a file to the EZ-SNAP via a direct connection.
Sendhex.exe	The low-level communications program used to the burn the EZ-SNAP application image into the EZ-SNAP hardware.
Tft3000.exe	The low-level communications program used to send and retrieve files from the EZ-SNAP via direct connection.
EZSNAP.HEX	The EZ-SNAP application, operation system, and device driver files stored in Intel® EEPROM Hex image format.

The EZ-SNAP Barcode Specifications

The EZ-SNAP was designed to work with barcodes produced either by the EZ-INFO database, or other program capable of generating either code 39, UPC, or 2 of 5 barcode labels. The format most commonly used for EZ-SNAP application is the code 39 specification. We recommend using a Microsoft Windows 95®, Microsoft Windows 98® or Microsoft Windows NT® compliant TrueType® font on a laser printer. Although some customers have had success using dot-matrix printers, we do not recommend using them for reasons of speed and print quality.

Delimiters

To keep the scanning sequence in order and to prevent accidental miscoding of information, i.e. scanning data into the wrong place, we have implemented a set of barcode delimiters. These delimiters are simply unique characters that are affixed to both ends of the bar-coded data. The following table lists the delimiters for each EZ-SNAP field:

Field	Delimiter
- SETUP FIELDS -	
Customer	S
Photographer	R
Light Set	L
Camera	A
Magazine	M
Roll/Twin Check	<none>
Work Type	T
Job Number	J
- SHOOT FIELDS -	
Card	C
Slate	C
Blink	C
Multi-pose	C
Product	K
Density	K
No Package	K
Sitting	K
Staff	K
- MISC FIELDS -	
Questions	Q

Special Barcode Values

In addition to the delimiters, EZ-SNAP features are available through the use of special pre-defined barcode values. These values have been chosen carefully to avoid potential conflicts with valid user data. This section depicts the special barcodes and their meaning.

Barcode	Value	Description
K900K	900	Staff Modifier Code
K901K	901	Staff Modifier Code
K902K	902	Staff Modifier Code
K903K	903	Staff Modifier Code
K904K	904	Staff Modifier Code
K905K	905	Staff Modifier Code

K906K

906   Staff Modifier Code

K907K

907   Staff Modifier Code

K908K

908   Staff Modifier Code

K909K

909   Staff Modifier Code

K910K

910   Increase density by 1.

K911K

911   Decrease density by 1.

K960K

960   Clear current order information. Scan once to clear products, twice to clear order.

*K970K

970   Toggle no order.

*

CSLATEC   SLATE   Slate

CBLINKC   BLINK   Blink

CMPOSEC   MPOSE   Multi-pose

K800K   800   First sitting code. Sitting code can be anything in the range of 800 – 900, specified in product code field.

CSETUPC   SETUP   Return to setup screen for new setup.

CMENUC   MENU   Return to the main menu.

CHELPC   HELP   Display help screen

The Mustang Software Qmodem Pro® EZ-SNAP Script

The EZ-SNAP communicates with remote devices using the very popular x-modem and y-modem protocols. This means that it is capable of communicating with a wide variety of commercially available and custom applications. We recommend using the Mustang Software Qmodem Pro® for Windows 95 or Windows NT because of the high performance, expandability, and low cost of the product. We have simplified the process of sending information from the EZ-SNAP to the Qmodem application with a custom Qmodem script.

The RSC EZ-SNAP Qmodem script is designed to put the Qmodem software in host mode where it waits for the EZ-SNAP to dial in. The script is quite simple and is a trimmed-down and slightly customized version of the script that ships with the Qmodem software. You can obtain the Qmodem script by downloading it from the RSC world-wide-web site at http://www.redmer.com. Otherwise, you may choose to make the modifications to the HOST.QSC file yourself. All of the changes are to the main processing loop, which is at the very bottom of the file.

The modified main processing loop should look like the following code:

```
'--------------------------------------------------------
'
' System......: RSC EZ-SNAP
'
' Module......: QModem Host Script (Modified from Mustang QmodemPro Host Script.
'
' Description.: This module simply waits for a call from the EZ-SNAP terminals
'               and responds to the xModem file transfer already initiated by the
'               terminal application.  The files are stored in ASCII text format
'               and named using the current date and time.  In situations where
'               multiple lines are used, the file names should be prefixed with
'               the port identifier to ensure uniqueness.
'
'--------------------------------------------------------
do
  dim fname as string
  dim dt as datetime

  PrelogFileName    = ConfigScriptPath+"\"+PrelogFileNamePart
  MenuFileName      = ConfigScriptPath+"\"+MenuFileNamePart
  ProtocolFileName  = ConfigScriptPath+"\"+ProtocolFileNamePart
  LogoffFileName    = ConfigScriptPath+"\"+LogoffFileNamePart
  HelpFileName      = ConfigScriptPath+"\"+HelpFileNamePart
  UserFileName      = ConfigScriptPath+"\"+UserFileNamePart
  MsgHeaderFileName = ConfigScriptPath+"\"+MsgHeaderFileNamePart
  MsgDetailFileName = ConfigScriptPath+"\"+MsgDetailFileNamePart
  LoadConfig
  InitModem
  do
    cls
    print "QmodemPro for Windows Host Mode"
    print "------------------------------"
    print "RSC EZ-SNAP Interface"
    print "Version 1.00, October 30, 1997."
    print "(c) 1997 Redmer Software Co."
    print "------------------------------"
    print "Press F9 to quit the host mode"
```

```
    print "Modem ready for calls..."

  loop until WaitForCall
      print
  timeout off
  ForceLogoff = False
  print "Call connected at "; BaudRate; " baud"

  'Call Qmodem routine to get the current date and time
  getcurrentdatetime(dt)

  'Set the file name to the current date and time, formatted to the second
  'NOTE: The format strings ARE case sensitive.
  fname = formatdate("yyMMdd", dt) + "_" + formattime("hhmmss", dt) + ".TXT"

  'Download the three files from the EZ-SNAP with single download call into
  'into the name specified using the X-modem protocol.
  download (fname, XMODEM)

loop
```