

User's Manual

KODAK Professional Digital Camera System

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Important Safeguards and Precautions

WARNING: to prevent fire or shock hazard, do not expose the equipment to rain or moisture without its protective carrying case.



The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point in an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the equipment.

- **Read Instructions** — Read all the safety and operating instructions before operating the equipment.
- **Retain Instructions and Packaging** — Retain the safety and operating instructions for future reference. Retain the packing case for use if the equipment needs to be shipped.
- **Heed Warnings** — Heed all warnings on the equipment and in the operating instructions.
- **Follow Instructions** — Follow all operating and use instructions.
- **Cleaning** — Unplug the digital storage unit and remove the battery before cleaning. Clean only the outside cabinet, the monitor, and text display using a damp cloth. Do not use liquid cleaners or aerosol cleaners on the outside of the digital storage unit. Separate directions are included in "Cleaning the Imager" for cleaning the imager in the camera back.
- **Attachments** — Do not use attachments that are not recommended. The use of unrecommended attachments may cause hazards and serious damage to the equipment. Do not use cables other than those supplied.
- **Water and Moisture** — Do not use the AC adapter near water — for example, near a sink, or in a wet room or basement, etc. You may use the digital storage unit near water and moisture, for example in the rain, if it is housed in its protective soft pack carrying case and not plugged into the AC adapter.
- **Dust** — If you operate the camera in environments with excessive dust levels, dust may accumulate on the imager in the camera back; separate directions are included in "Cleaning the Imager" for cleaning the imager.
- **Power Sources** — You should operate the unit only from the type of power source indicated on the marking label. If you are not sure of the type of power supply that will be used, consult a dealer or local power company.
- **Grounding** — The AC adapter is equipped with a three-wire grounding-type plug with a third (grounding) pin. The three-wire plug will fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact an electrician to replace the obsolete outlet. Do not defeat the safety purpose of the grounding-type plug.
- **Power-Cord Protection** — Route power-supply cords so that you are not likely to walk on them or pinch them with items placed on or against them; pay particular attention to cords at plugs, receptacles and the point where they leave the units.

- **Lightning** — For added protection for the equipment during a lightning storm, or any time when you will leave the equipment unattended and unused for long periods of time, unplug the unit from the power outlet. This will protect the equipment from damage caused by lightning or power-line surges.
- **Overloading** — Do not overload power outlets and extension cord; this can result in a risk of fire or electric shock.
- **Object or Liquid Entry** — Never push foreign objects of any kind into the equipment openings. The objects could touch dangerous voltage points or shortout parts and cause a fire or electric shock. Never spill liquid of any kind on the equipment.
- **Servicing** — Do not attempt to service the equipment yourself. Opening or removing covers may expose you to dangerous voltage or other hazards. Never open the digital storage unit. You may dismantle the camera, camera winder, and camera back; refer to "Cleaning the Imager" in this user's manual for assistance.
- **Damage Requiring Service** — Unplug the equipment from the wall outlet and refer all servicing to the manufacturer under the following conditions:
 - When any cord or plug is damaged (send cord only).
 - If liquid has been spilled or if objects have fallen in the equipment.
 - If the equipment has been exposed to rain or water (except that the digital storage unit can be operated in the rain if housed in its protective soft pack carrying case).
 - If a unit does not operate normally according to the operating instructions. Adjust only those controls that are covered by the operating instructions.
 - If a unit has been dropped or the housing has been damaged.
 - When the equipment exhibits a distinct change in performance.
- **Accessories** — Do not place the equipment on an unstable cart, stand, bracket, or table. It can fall, causing serious injury to persons and serious damage to the equipment. Use only with a stable cart, stand, bracket, or table.
- **Battery** — Observe all cautions printed on the battery. Do not drop the battery. Do not use it for other than the specified equipment. Do not directly connect the negative and positive terminals. Do not incinerate the battery.
 Use only the supplied battery charger, or other recommended battery charger. Use only in the specified temperature ranges. Recharge the battery immediately after use.
 Do not ship the digital storage unit with a battery inside.

- **Temperature** — We do not recommend operating the unit below 40° F or above 110° F. If the digital storage unit overheats, its hard disk will shut down automatically until the temperature is in the operating range. You will still be able to make several photographs, since new images are stored in dynamic random access memory before they are saved to the digital storage unit hard disk. Refer to the DSU Hot message in "Messages: KODAK DSU Text Display (LCD)."

Notes: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

You must operate in a Class A certified area when transmitting from the equipment with the required modem.

This equipment conforms with the requirements of European Standard EN55022 with respect to radio interference for a Class A device.

The following are allowable DCS configurations:

- Image capture/acquisition mode. Kodak Camera model DC3 or DM3 connected to KODAK Digital Storage Unit model DSU, DSU/32, or DSU/B. The DSU may also be connected to the AC adapter supplied by Kodak, to an NTSC video display (user provided), the remote shutter release cable supplied by Kodak, and a computer (user supplied). The cables used to connect the camera to the DSU, the DSU to the video display, the DSU to the computer, the AC adapter to the DSU, and the AC adapter to the AC power source, must be those supplied with the KODAK Professional Digital Camera System. The cables used to connect the elements of your computer (for example monitor to computer, keyboard to computer, etc.) must be those supplied with your computer or recommended by the manufacturer of your computer equipment.
- Image transmission mode. KODAK Digital Storage Unit model DSU, DSU/32, or DSU/B. The DSU is connected to the keyboard supplied by Kodak, and a modem (user provided). The DSU may also be connected to the AC adapter supplied by Kodak, and to an NTSC video display (user provided). The cables used to connect the DSU to the keyboard, the DSU to the video display, the DSU to the AC adapter, and the AC adapter to the AC power source, must be those supplied with the KODAK Professional Digital Camera System. The cable used to connect the DSU to the modem is user provided.

Note: The Telebit Modem is certified by its manufacturer to meet RFI EMI emissions requirements of FCC Class A ONLY.

CAUTION: To prevent fire or shock hazard, use only the recommended accessories or attachments.

Technical Assistance

Refer to the following sources for assistance if you have questions as you work with the KODAK Professional Digital Camera System.

- If you encounter difficulties with hardware, images, or product performance, refer to the troubleshooting sections of this manual.
- If the text display of the digital storage unit shows a message you do not understand, refer to the "Messages: KODAK DSU Text Display (LCD)" section of this manual.
- If a box appears on the computer screen with a message you do not understand, refer to the messages sections of the manual for an explanation.
- If you need other assistance from this manual, refer to the contents and the index.
- If you are unable to find answers to your questions using this manual, customers in the United States should call Kodak between 8:00 a.m. and 8:00 p.m. (Eastern time), Monday through Friday, at 1-800-242-2424, extension 19.
- If you encounter an unusual equipment condition between 8:00 p.m. and 8:00 a.m. (Eastern time) or on weekends, customers in the United States should call 1-800-3KODAK3.
- If you are outside the United States, and you are unable to find answers to your questions using this manual, contact your local Kodak service representative.

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Before You Begin: Required/ Optional Equipment

Check the following lists to ensure that you have the appropriate hardware and software (required and optional) to use the KODAK Professional Digital Camera System.

Note: A variety of additional documents are shipped with this product; please read them now.

Required Camera Equipment

A variety of lenses for the Nikon F3 camera body.

Required Software and Hardware

Requirements for using the KODAK Professional Digital Camera System with your computer are included in the sections "Using the KODAK DCS with Your Macintosh Computer" and "Using the KODAK DCS with Your PC."

Important: Use only the supplied cables; do not use substitute cables.

Optional Camera Equipment

Electronic flash

Optional Hardware

Display

External video display unit (video monitor or television with a video setting).

Modem

A Telebit T2500 modem is required for transmitting files from a digital storage unit equipped with an optional modem connection.

Printers

Apple Macintosh Computers

KODAK XL7700 Digital Continuous Tone Printer — 8.5 x 11-inch (21.6 x 27.9-cm), 11 x 11-inch (27.9 x 27.9-cm) color printer. Includes driver for Adobe Photoshop. CAT No. 182 6221.

KODAK Thermal Printer S6600 — 8.5 x 11-inch (21.6 x 27.9-cm). (Requires KODAK SV630 Interface Kit, CAT No. 171 8568.)

KODAK XLT7720 Digital Continuous Tone Printer — 8.5 x 11-inch (21.6 x 27.9-cm), 11 x 11-inch (27.9 x 27.9-cm), A4.

IBM and Compatible Computers

KODAK XL7700 Digital Continuous Tone Printer — 8.5 x 11-inch (21.6 x 27.9-cm), 11 x 11-inch (27.9 x 27.9-cm). Aldus Photostyler software ships with the KODAK XL7700 Export Module. CAT No. 182 6221.

KODAK Thermal Printer S6600 — 8.5 x 11-inch (21.6 x 27.9-cm). Requires separate utility package.

Recommended Replacement Batteries

Panasonic LC 2012 (2 Ah)

Panasonic LC 2312 (2.3 Ah)

Recommended Replacement Battery Chargers

Chinon CV AC32

Philips V8009313K01

Aztec AZ 1223

Introduction

The KODAK Professional Digital Camera System is a portable system producing high-resolution digital imagery. With it you can make photographs and view your images immediately without a photoprocessing cycle. You can acquire these images immediately on a Macintosh or IBM (or compatible) computer for image editing.

The KODAK Professional Digital Camera System consists of a camera back and camera winder fitted to an unmodified Nikon F3 camera, and a separate digital storage unit (DSU) that connects to the camera winder via an interconnect cable.

The camera back incorporates a Kodak CCD imager available in a color and a monochrome model. When you make an exposure, the imager records data on a 1280 x 1024-pixel matrix, resulting in images composed of 1.3 million pixels of data.

The system provides high-quality images at exposure indexes equivalent to film speeds of ISO 100, 200, 400, 800,* and 1600* in color or ISO 200, 400, 800, 1600,* and 3200* in black and white.

The camera winder connected to the bottom of the camera is linked to the DSU via cable. The camera winder performs an eight-bit analog to digital conversion of the image data and transmits digital data to the DSU. The winder incorporates a shutter release button used instead of the Nikon F3 shutter release button, and a motor drive. (A power winder is required even without film because the camera is unmodified and the shutter must be recoiled after each picture.)

The DSU and camera operate from a standard rechargeable camcorder battery or the 12-volt AC adapter supplied by Kodak. When operated from

* You can obtain these speeds, but a loss of some image quality may occur (similar to when push-processing film). Refer to "Using the Nikon F3 Camera" at the end of "Tutorial: Operating the Camera and Digital Storage Unit."

the battery, the DSU and camera are portable, providing great flexibility. A soft pack provides a convenient method of carrying the DSU.

You can view the captured images immediately in black and white on a four-inch monitor built into the DSU.

You can store up to 156 uncompressed images on the 200 megabyte hard disk in a DSU without a compression board. If your DSU is equipped with a compression board, you can store 142 images if compression is off, and from 400 to a maximum of 699 images if compression is on.

Eight-megabytes of dynamic random access memory (DRAM) are incorporated in the DSU. (An upgrade to a total of 32-megabytes of DRAM is available.) As a result you can make up to a six-image burst at 2.5 images per second with eight megabytes of DRAM and up to a 24-image burst with 32 megabytes of DRAM. Then the rate slows to one image every two seconds. Images are stored briefly in DRAM before they are moved to the hard disk.

Keypad controls on the DSU (and on an optional keyboard) allow you to find images on the hard disk, load them into the DSU DRAM, and display them on the DSU image display. A two-line text display on the DSU provides you with status and control information when using the KODAK Professional Digital Camera System.

You can acquire images from the DSU hard disk to one of several computers with one of the special software drivers provided by Kodak. Once you have acquired the image, you can use your copy of image-editing software to edit the image using all of the features of that product.

Optional features allow you to connect a keyboard (available from Kodak) and your Telebit T2500 modem to the digital storage unit. You can use the keyboard to enter a variety of data with each image, including selected data defined by the Information Interchange Model of the International Press Telecommunications Council and the American Newspaper Publishers Association (IPTC-ANPA). You can use the keyboard and modem together

to telecommunicate files directly from the digital storage unit to a distant computer.

If you are working on a Macintosh computer, once you have saved images after acquiring them, you can use software provided by Kodak to compress the image files (to reduce telecommunications time and conserve disk space), add captions to images, and transmit image files to a remote site.

Tutorial: Operating the Camera and Digital Storage Unit

OPERATING
THE DCS

Follow the steps in this section to:

- Ready the KODAK Digital Storage Unit (DSU) and the camera.
- Turn on the DSU and set the film speed.
- Make photographs and set the color balance.
- Find and delete images on the DSU.
- Use the digital camera system after deleting images from the DSU.
- Create and locate a subset of images on the DSU (the Tag feature).
- Zoom images.

At the end of this section we highlight additional DSU features not covered in this tutorial.

Note: This manual assumes that you are familiar with the operation of the Nikon F3 camera. If you are not, refer to the instruction manual for that camera; it is supplied with the KODAK Professional Digital Camera System.

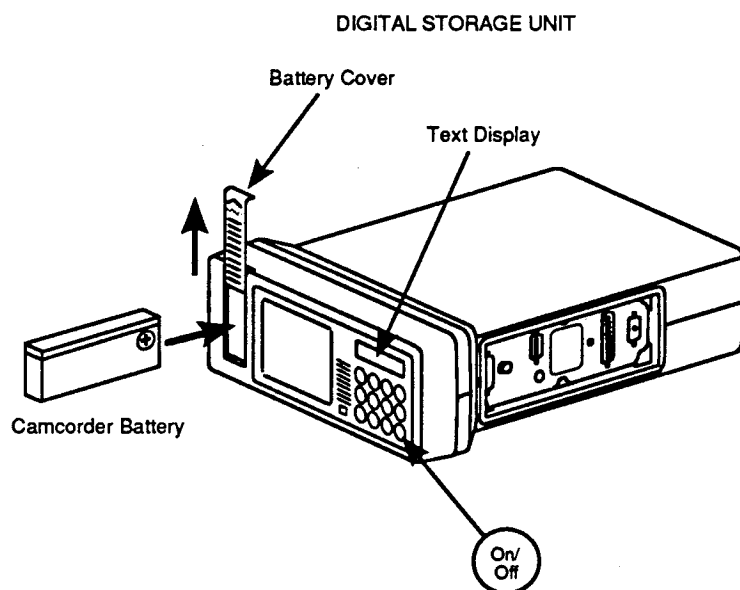
Readying the Digital Storage Unit (DSU)

Note: In this section we assume that you will be operating the digital camera system from a rechargeable battery, rather than from the AC adapter supplied by Kodak.

1. Unpack the KODAK Professional Digital Camera System.
2. Locate the Digital Storage Unit (DSU) and one of the camcorder batteries supplied by Kodak.

Note: The battery must be charged. If it is not, or if you are uncertain about it, charge the battery using the battery charger supplied by Kodak.

3. Slide up the DSU battery cover to open the battery chamber.

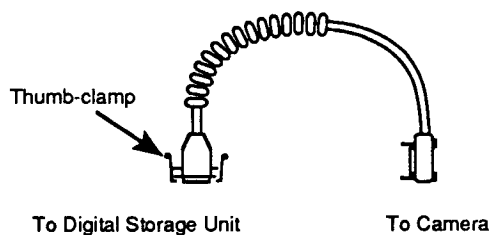


4. Slide one of the batteries supplied by Kodak into place. An arrow on the battery indicates the front of the battery. Insert the battery with the positive (+) side as shown in the illustration.
5. Push the battery forward with your thumb, and slide the battery cover down to its original closed position; then set the DSU aside.

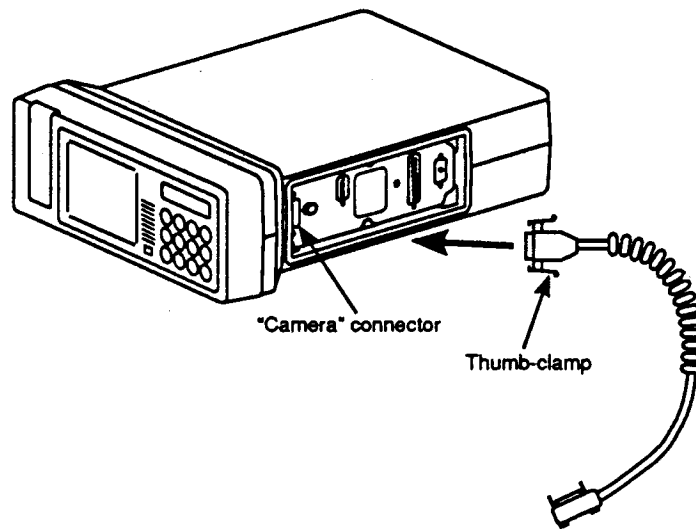
Note: The cover will not close if the battery is inserted improperly; if this occurs, reorient the battery as described in step 4.

6. Locate the Interconnect Cable for KODAK Camera Back and KODAK Digital Storage Unit (refer to the illustration below); it connects the DSU to the camera. There is a difference between the ends of this cable; the end with the thumb-clamp connects to the DSU.

Important: Use only the supplied cables; do not use substitute cables.

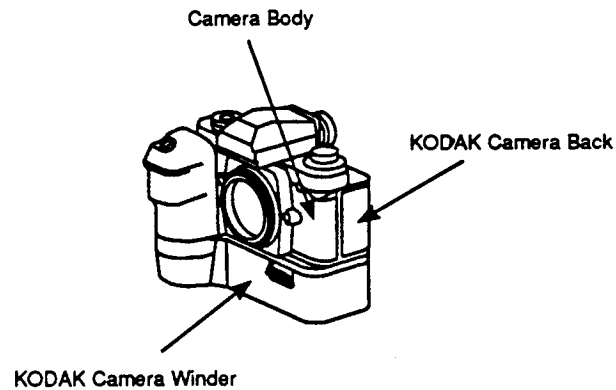


7. Clamp the appropriate end of the cable to the DSU connector labeled "Camera," to do so, squeeze the thumb clamps while inserting the plug, then release the clamps.



Readying the Camera

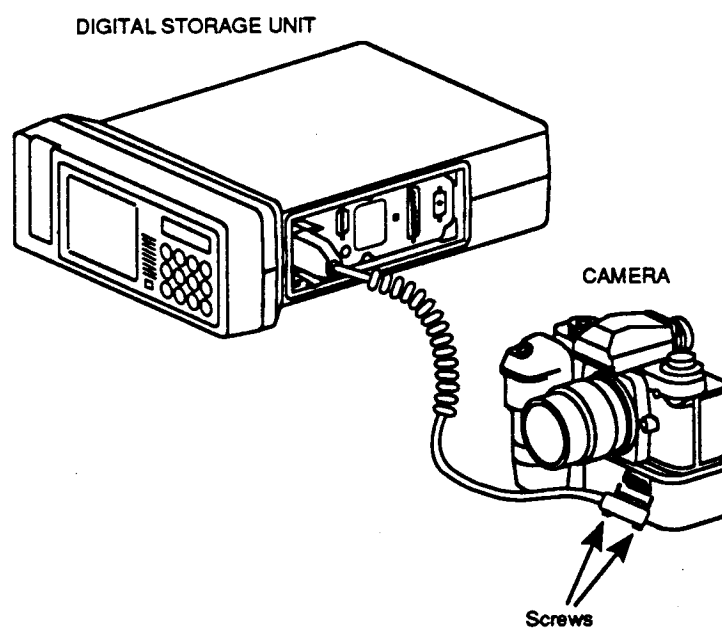
1. Locate the camera. It consists of three assembled parts: the Nikon F3 camera body, the KODAK Camera Back, and the KODAK Camera Winder.



2. Mount one of your lenses onto the camera body.

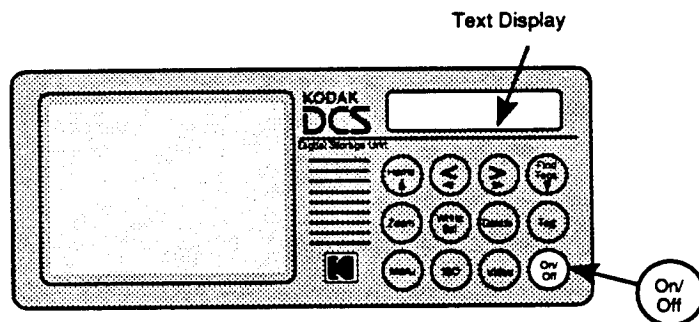
Note: We recommend that you choose a lens with a focal length of 60-75 percent of the lens you would use for 35 mm photograph. For example, if you would otherwise choose a 50 mm lens, we recommend you choose a 35 mm lens for use with the digital camera system.

3. Attach the loose end of the cable to the camera winder; tighten the screws with your fingers.



Turning on the Digital Storage Unit

You are now ready to turn on and use the KODAK Digital Storage Unit (DSU).

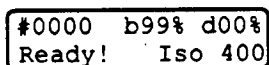


OPERATING THE PCS

1. Press the On/Off key on the DSU keypad. You briefly see this two-line text display.



You then see a text display like the following. The word **READY!** on the second line indicates that the cables and connections to the camera are all working properly and that you are ready to make photographs.



Notes: If you do not see the text display, make sure that the battery is charged. If you see another message, for example NoCAMERA, refer to "Messages: KODAK DSU Text Display (LCD)" in this manual. If you have other problems, refer to the troubleshooting sections.

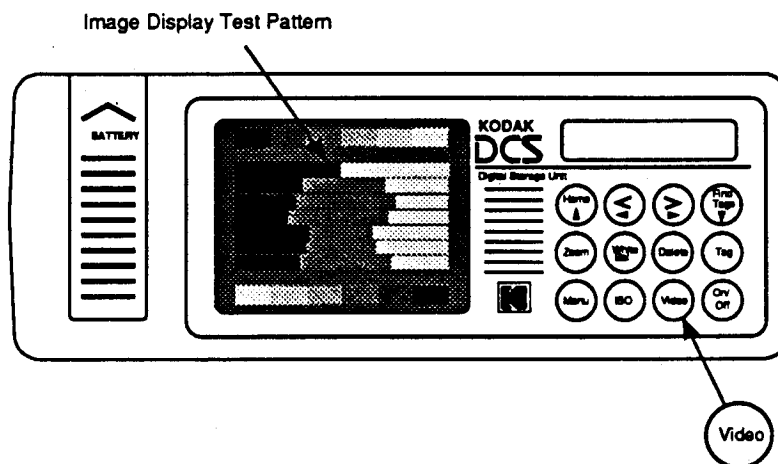
If the digital storage unit has been used previously, you may see different values on the two lines of the text display.

2. Press the Video key. You will see a test pattern on the image display.

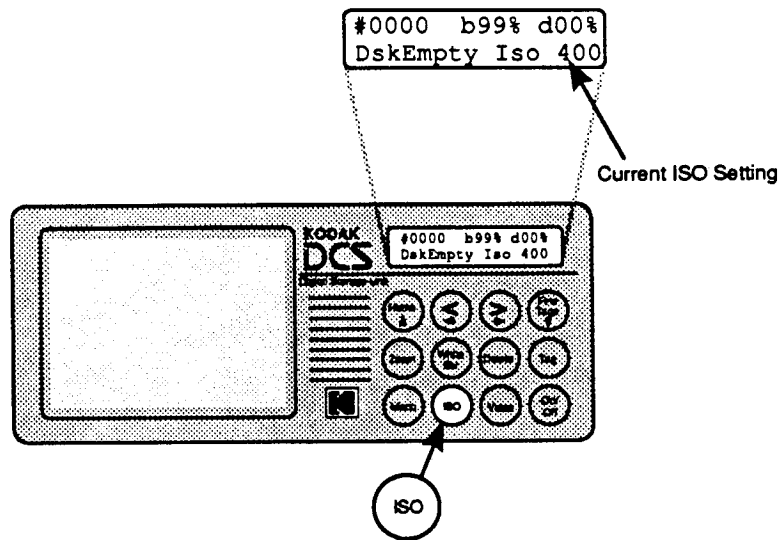
Notes: If you do not see a test pattern, your battery may not be charged; replace it with a charged battery. For additional information refer to the troubleshooting sections.

An area of the test pattern may be flashing. This indicates that the EXPOSURE INDICATOR is on, as explained briefly later in this tutorial, and more fully in the "Menu Key" in "Reference — Camera and DSU."

Because the image display is a drain on the battery, it will automatically turn off after 30 seconds of inactivity on the keypad. Press Video again to reactivate it.



Setting the ISO



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As you work with the KODAK Professional Digital Camera System, you will have to set the ISO on the camera and on the DSU.

You can change the ISO setting on the DSU by pressing the ISO key (the DSU must be turned on). With each press, the ISO rotates through four settings, with the current setting shown on the text display as illustrated above. The settings depend on whether you are using a color or monochrome camera, as shown in the following table.

<i>Color Camera ISO</i>	<i>Monochrome Camera ISO</i>
100	200
200	400
400	800
800	1600

In selecting an exposure setting, begin with lower exposure index settings and reserve the use of higher speeds only for situations requiring their use. Higher speeds may result in lower-quality images than lower speeds. Specific recommendations for the color and monochrome camera follow.

Color Start with an initial ISO setting of 200 (or 100). Both settings produce high quality images.

At an ISO setting of 400 (or 800) you may see mild reduction in the quality of the image — perhaps like the appearance of grain in film.

Monochrome Start with an initial ISO setting of 400 (or 200). Both settings produce high quality images.

At an ISO setting of 800 (or 1600) you may see mild reduction in the quality of the image — perhaps like snow in the image.

Note: Additional advice appears in "Using the Nikon F3 Camera" at the end of this tutorial.

In the following steps you will set the ISO on the camera, and then on the DSU.

1. Set the ISO on the Nikon F3 camera (lift and turn the ASA/ISO dial on the camera). Choose a setting that will match the setting you want from the table above.
2. Press the ISO key on the DSU until its setting matches the camera setting.

Note: The ISO setting on the DSU is retained when you turn off the unit.

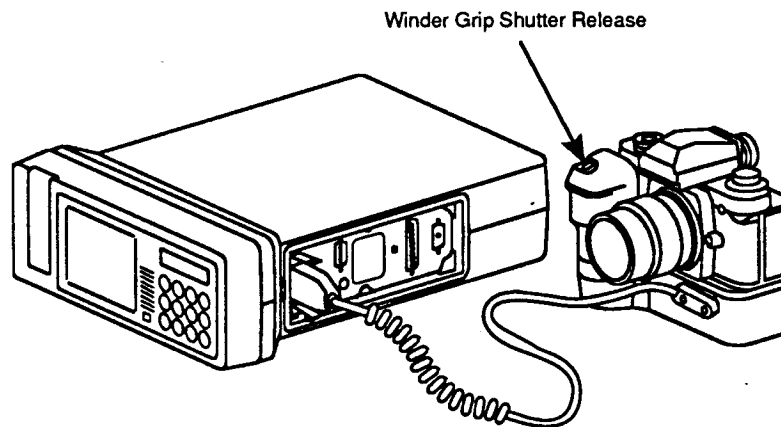
Making Pictures

You are now ready to make photographs with the KODAK Professional Digital Camera System. When you want to move around with the camera, place the DSU in its soft pack case, and carry it in a comfortable position.

Follow these steps to make pictures with the camera.

1. If the image display is off, press Video to turn it on.
2. Look through the camera viewfinder and frame the picture you want to make within the border provided by the pattern in the focusing screen.
3. Focus and make a picture by pressing the shutter release on the top of the camera winder grip. (The Nikon camera shutter release button is disabled when using the camera as part of the KODAK Professional Digital Camera System.)

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Your image appears on the image display and by default is saved to the DSU hard disk. The image display is monochrome, although your image will be saved in color if you are using a color camera.

Notes: The image displayed is of significantly lower quality than the image actually stored in the DSU. When images are acquired later on your computer, full image data are obtained.

If areas of the image are flashing back and forth between black and white, the EXPOSURE INDICATOR is on, providing on-screen indication of overexposure, normal exposure, and underexposure. For information on this feature refer to "Menu Key" in "Reference — Camera and DSU."

4. Notice that the data on the two-line text display change as you make each photograph. The top row shows from left to right: the image number, the percentage of the battery remaining, and the percent of the disk filled with your images. The word *Saved* on the second line — in the message area — indicates that the last photograph you made has been saved to the DSU hard disk.

#0001 ^c	b99%	d04%
Saved	Iso	400

Note: If a small "c" appears to the right of the image number, the current image is a color image; otherwise the image is a monochrome image.

As you make each photograph, it is stored in dynamic random access memory (DRAM) of the storage unit and then moved to the DSU hard disk; this occurs without action on your part. (Refer to the "Menu Key" section of the "Reference — Camera and DSU" to learn how to make pictures without saving them to the hard disk.)

Setting Color Balance (Color Cameras Only)

The material in this section applies only to color cameras. If you have a monochrome camera, skip this section and continue at "Making Additional Pictures."

Before making color pictures with the KODAK Professional Digital Camera System, you should set the color balance using either:

- The **BALANCE** setting on the DSU menu screen.
- The **White Bal** key on the DSU keypad.

Each is described below; additional information is contained in the "Reference — Camera and DSU" in this manual.

Important: It is very important that you establish correct color-balance settings before making photographs with the digital camera system.

However, if you do not follow the steps below, and inadvertently make pictures without establishing the proper color-balance settings, the camera system allows you to compensate in later steps. You can recover later after you have acquired the image on your computer with one of the supplied software drivers. (Refer to the discussion of the **BALANCE** setting later in this manual for the driver you will use.) Or, if your camera system is equipped with telecommunications features, you can recover before sending the image to a remote site. (Refer to "Tutorial 2" in the "Communications Tutorials" in this manual.)

Setting the *BALANCE* Setting

Follow the steps below to select one of the several preset color-balance settings.

1. Press the Menu key; the lines of text shown below appear on the image display.

```

Disk save:      OFF ON COMPRESS
Balance: DAY  TUNG  FLUOR  (WHITE)
Winder:  OFF  SINGLE  SLOW  FAST

Exposure Indicator: OFF ON
Video bright:  LOW 2 3  HIGH

SCSI ID: 0  1  2 3  4  5  6  7

Clock: 99/04/26  21:35:46  Set >>

Press "Delete" to erase disk
Hours: 00010  Exposures: 00125
Version: 01-31-99
```

2. Notice that the second line shows the word **BALANCE**, and then four color-balance choices, including: **DAY** (for daylight conditions), **TUNG** (for tungsten lighting conditions), **FLUOR** (for fluorescent lighting conditions), and **(WHITE)**.
3. Press **▼** (Find Tags) several times, and press **▲** (Home) several times; notice that the triangular line indicator (**▴**) at the left of the screen moves from row to row.

4. Press the ∇ key or \blacktriangle key until \blacksquare is on the BALANCE row; this action chooses this row, and allows you to make changes on this row.
5. Press \blacktriangleleft or \blacktriangleright to move across the row, highlighting one after another of the BALANCE choices; stop when the highlighted choice — DAY, TUNG, or FLUOR — matches the lighting conditions. (The WHITE choice is explained in the "Reference — Camera and DSU" in this manual.)
6. Press the Menu key to turn off the menu screen. (You can also press Video to return to a video display instead of the menu text display.)

Setting the White Balance

As an alternative to choosing a fixed BALANCE setting from the menu screen, you can create an exact setting to match the current light conditions. The technique described below is recommended for all artificial light conditions.

1. Make a photograph of a neutral gray or white card (for example, KODAK Gray Cards, Publication No. R-27) under the current light conditions. Data from this photograph are used to calibrate subsequent photographs until you change settings. Be sure that the center of the image is not overexposed.

If a neutral gray or white card is not available, you can make a photograph of any subject providing you center the photograph on a white or gray portion of the image.

2. Press the White Bal key. The digital camera system records a red, green, and blue value from the center of the photograph you have just made.

The message area of the text display shows WHITEBAL.

If you see MONIMAGE, you are working with a monochrome camera. No values are recorded; the White Bal key only works with color camera backs. If you see BADWHITE, the center of the image is overexposed; although white balance values are recorded, we encourage you to make another image and then press the White Bal key.

Making Additional Pictures

In the step below, you will continue to make pictures. If you are using the camera for practice as you follow these instructions, make approximately five additional pictures.

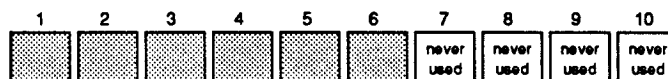
Note: If you are using a color camera and have set the color balance as described above, you do not need to reset it for each photograph you make — unless lighting conditions change. The setting is retained until you change it.

1. Make additional pictures. If you wish, hold down the winder shutter release and use the motor drive to make photographs.

In the coming steps you will learn how to delete images. So you may want to make extra pictures that you can delete later.

Finding Images (Home, <, and > Keys)

Your photographs are saved to the DSU hard disk sequentially with numbers 1, 2, 3 . . . 6. As an example, examine the figure below. Each shaded box represents an active image on the DSU. Other boxes indicate an area on the DSU hard disk in which an image has never been stored. Several keys allow you to display selected images from the hard disk on the image display. In the following discussion, assume that you have six images on your hard disk numbered 1 to 6, and that you are currently viewing image number 6.



1. If the image display is off, press Video to turn it on.
2. Press the Home key; it displays the first image from the DSU hard disk on the image display. You may see the word **LOADING** and have a brief wait before the image appears. Image 1 appears on the image display and the text display shows the word **LOADED** and indicates that you are viewing image number 1.

#0001	b99%	d04%
Loaded	Iso	400

3. Press the > key. This key displays the "next" stored image; image 2.
4. Press the < key. This key displays the "previous" stored image; image 1.
5. Press and hold down either the < key or the > key for several seconds, and then release the key. You will scroll through the existing images, including the test pattern, wrapping around to the first or last image.

If you press and hold < or >, thumbnail versions of images flash by on the image display at a rate of five images/second. A thumbnail is a subsample of data from the full image. When you release the key, the full resolution image, instead of its thumbnail, appears on the image display within two seconds. As thumbnails flash by, the corresponding image number also appears simultaneously on the text display.

DRAM and Disk Spin-up

The DSU includes eight megabytes (MB) of dynamic random access memory (DRAM). (Your DSU may have an optional upgrade to 32 MB of DRAM.) Each image is 1.3 MB, meaning that the DSU can store up to six images in DRAM at any one time. If the image you want to view is already in DRAM, it is displayed immediately with no wait. However, if the image you want must be loaded from the DSU hard disk, you briefly see the thumbnail and the word Loading, and you must wait several seconds for the full-resolution image to be loaded and displayed.

The hard disk in the digital storage unit does not spin constantly. Instead there is a period of time from when the hard disk begins spinning until it can be accessed to save or load data. That period of time, called disk spin-up, is approximately 20 seconds on the hard disk in the DSU.

After a disk access, the drive will continue to spin for up to 30 seconds, waiting for another access. If one occurs, the hard drive continues spinning for another 30 seconds. Eventually, if no access occurs for 30 seconds, the hard drive stops spinning. When the next access occurs there is another 20 second waiting time during disk spin-up.

Disk spin-up time affects the operation of the digital camera system in several ways. Examples follow.

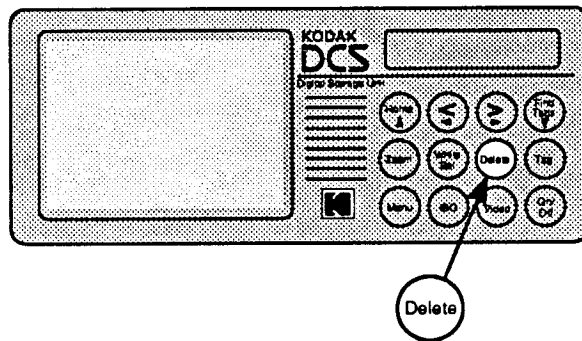
- If you turn on the DSU, press Video, and then press Home, you will need to wait for approximately 20 seconds while disk spin-up occurs, before the first image is loaded and displayed. If you promptly press the > key, you will only wait for several seconds for the "next" image to be loaded and displayed. However, if you wait for more than 30 seconds before pressing the > key, you will have to press Video again, and then wait through disk spin-up before the image loads.
- In order to make images with the camera at the fastest possible rate, make sure the hard disk inside the DSU is spinning prior to making a

burst of images. This can be accomplished by turning on the DSU and making a picture. Approximately 20 seconds after that image is made, the hard disk is spinning and ready to store an image. The hard disk continues to spin for about 30 seconds. If you make a burst of images during those 30 seconds, you will make images at the fastest possible rate — about 2.5 images per second until DRAM is full, then the rate slows to one image every two seconds.

Deleting Images (Delete Key)

You delete images one-by-one from the hard disk by pressing the Delete key when the image you want to delete is displayed on the image display. Deleting unwanted images provides additional storage for more images (by freeing disk space on the hard drive), and provides for faster access to existing images with the < and > keys.

Note: Refer to the "Menu Key" in "Reference — Camera and DSU" to learn how to erase the entire hard disk.



Read through these four steps first without performing them; then perform them.

1. If the image display is off, press Video to turn it on.
2. Locate and display an image you want to delete by pressing the Home, <, or > key until the image appears in the image display. For this tutorial we will assume it is image number 3.

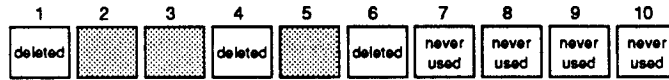
3. Press and hold in the Delete key. The text display shows the following message.

#0003	b99%	d04%
HOLD KEY	Iso	400

4. Continue to depress the Delete key for several seconds until the message HOLD KEY disappears. It is replaced by the messages LOADING and then LOADED as the next image is loaded. If no images remain, the text display will show the word DELETED. You can keep the key depressed until you have read the text display; doing so does *not* continue to delete subsequent images.

Finding Images and Making New Pictures After Deleting Images

When you delete images, existing images on the hard disk are not renumbered. For example suppose that you have six images on the hard disk numbered 1 through 6 and that you delete images 1, 4, and 6. Your hard disk will look like the following; each shaded box represents an active image. Other boxes indicate images that you have deleted, or image areas that have never been used. Notice that images 2, 3, and 5 are not renumbered.

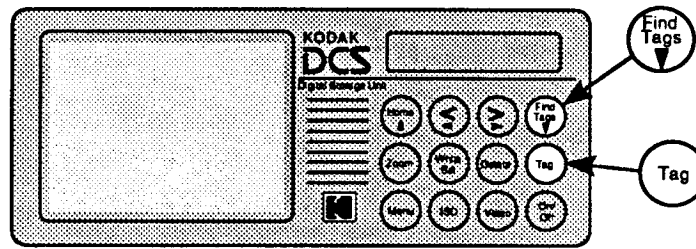


Now when you press Home, you will display image 2 — the first image on the hard disk.

If you are viewing image number 3 and press >, you will load and display image 5. Similarly, if you are viewing image 5 and press <, you will load and display image 3.

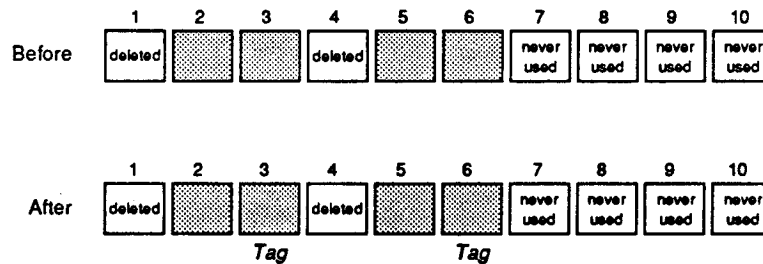
If you are viewing image 3 and make two new pictures, they will be placed together in the unused area at the “end” of the hard disk — for the hard disk in the illustration above they will be numbered 7 and 8. New pictures do not replace existing images on the hard disk and are not given the image numbers of previously deleted images.

Tagging and Locating Tagged Images (Tag and Find Tags Keys)



The KODAK Professional Digital Camera System includes a "tag" feature that allows you to flag selected images for later display or uploading from the DSU to your computer. As an example of its use, suppose that you want to tag images 3 and 6 for later viewing or uploading. Assume that your hard disk has the images shown in the following figure. Shaded boxes represent active images. Other boxes represent images you have deleted, or image areas that have never been used.

After you follow the steps in this section, images 3 and 6 will be tagged. Then if you press the Find Tags key, the next tagged image is displayed. Tag and Find Tags provide a method of flagging and moving through a subset of the images on the hard disk.



1. If the image display is off, press Video to turn it on.
2. Press Home, <, or > until image 3 is displayed. In this example, image 3 is a color image, as indicated by the small "c" next to the image number.

#0003 ^c	b99%	d04%
Loaded		Iso 400

3. Press Tag; the letter "T" appears in the text display next to the image number. (If you press Tag again the tag is removed from the image.)

#0003 ^T	b99%	d04%
Saved		Iso 400

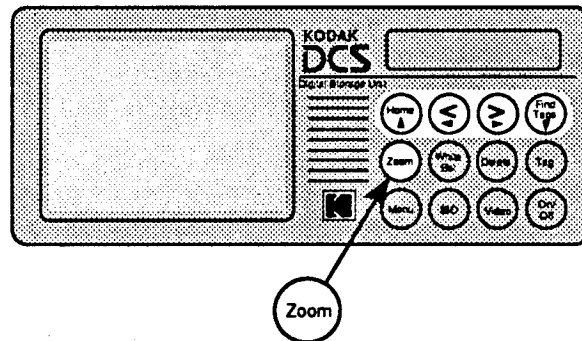
4. Display image 6, and press the Tag key to tag that image.
5. Press Find Tags. Image 3 is displayed.
6. Press Find Tags again. Image 6 is displayed.

Note: The Home, <, and > keys are unaffected by tags; these keys display the first image, the previous image, and the next image on the hard disk whether or not those images are tagged.

Zooming Images

When you press the Zoom key, the image display shows a 2:1 zoomed version of the image currently on the image display. Press Zoom again to toggle back to the full image. Zooming an image allows you to examine it more closely. For example you might use this feature to determine if the eyes of the subject of a photograph were opened or closed.

1. If the image display is off, press Video to turn it on.
2. Press Home to display the first image from the DSU hard disk on the image display.
3. Press Zoom; a 2:1 zoomed version of the image appears, and the word **Zoom** appears in the message area of the text display.



While in zoom mode, the top row of keys no longer means Home, <, >, and Find Tags. Instead they scroll the screen in the direction shown in the symbols printed on the lower half of each of these keys (▲ ◀ ▶ ▼). Notice

on the keys that the word Zoom and these four symbols have been color coded in yellow to indicate that they work in conjunction with each other.

1. Press ►. Notice that the screen scrolls to the right over the image.
2. Press and hold down ◀. The screen scrolls continuously to the left over the image.
3. Press Zoom to return to full image display.

Turning Off the Camera System

Complete these steps if you have completed your work with the KODAK Professional Digital Camera System.

1. Press On/Off to turn off the camera system.
2. (Optional) Disconnect the cabling between the DSU and the camera winder.

Note: The power to the DSU should be off when you connect and disconnect this cable.

If the DSU is on when you attach the cable, the winder may begin to run continuously. If this occurs, turn off the DSU and remove the battery. Reinsert the battery. Turn on the DSU.

Additional Capabilities

The KODAK Professional Digital Camera System provides many features in addition to the material in this tutorial. Some of those features are described briefly below.

Menu Key

The Menu key was only briefly introduced in this tutorial. In addition to color-balance and other settings, you can set the date and time, and the brightness of the video. A permanent, non-replaceable lithium battery in the DSU maintains these settings.

(Refer to the "Menu Key" section of the "Reference — Camera and DSU.")

Operation from the AC Adapter

You can operate the digital camera system from the AC adapter supplied by Kodak, rather than from a battery. (Refer to the "AC Adapter" section of the "Reference — Camera and DSU.")

Moving Images from the DSU to a Computer

You can copy or move images on the DSU hard drive to the hard drive of a computer.

Image Transmission from the DSU

Optional features allow you to connect a keyboard available from Kodak and your Telebit T2500 modem to the digital storage unit. You can use the keyboard to enter a variety of data with each image, including selected data defined by the Information Interchange Model of the International Press

Telecommunications Council and the American Newspaper Publishers Association (IPTC-ANPA). You can use the keyboard and modem together to telecommunicate files directly from the digital storage unit to a remote computer.

Image Compression and Transmission

If you are working on a Macintosh computer, once you have moved images from the DSU hard disk to your Macintosh hard disk you can use the KODAK Communications Software to compress images and, if desired, to transmit images to another site.

Using the Nikon F3 Camera

Notes: We assume that you are familiar with the operation of the Nikon F3 camera; refer to the instruction manual for that camera if needed.

This manual only describes the operations unique to the use of the Nikon F3 camera with the KODAK Professional Digital Camera System. For example, we do not describe how to set the lens aperture, since you set it as you would during regular operation of the Nikon F3 camera.

Although the digital camera system operates with an unmodified Nikon F3 camera, there are differences between normal operation of the Nikon F3 camera and its operation as part of the digital camera system. For that reason we provide a list of differences and other considerations as you begin using the camera system.

- There is no need to insert a battery in the camera, or to move the power switch on the camera; the entire camera system is powered from the battery in the DSU. A separate battery is not placed in the camera. You must turn on the DSU (press On/Off) before the camera is operable.
- You use the KODAK Camera Back incorporating a Kodak imager instead of the Nikon F3 camera back for film. The KODAK Camera Back comes attached to the Nikon F3 camera body.
- You use no film.
- The KODAK Camera Winder, that comes attached to the bottom of the camera, must remain attached for the camera to operate.
- You must use the shutter release button on top of the camera winder grip instead of the shutter release button on the Nikon F3 camera.
- We recommend that you choose a lens with a focal length from 60 to 75 percent of the lens you would use for 35 mm photograph. For example, if you would otherwise choose a 50 mm lens, we recommend (due to the difference in the size of the CCD imager and the 35 mm film dimension) you choose a 35 mm lens for use with the digital camera system.
- The electronic imager in the KODAK Professional Digital Camera System behaves more like color slide film than color negative film. As a result, using the Professional Digital Camera System is different in some situations from what you might expect with a regular film

camera. By overexposing slightly, the color quality is generally improved in shadow areas — at the expense of the loss of some highlight detail.

- The "B" time exposure setting does not work normally; instead it works identically to the "T" setting. Although other shutter speeds work as expected, you should be aware that shutter speeds of four or eight seconds can produce small imperfections in your images.
- During time exposures (when either "B" or "T" is selected on the shutter speed dial), the digital camera system will click the shutter closed after 15 seconds. (At longer shutter speeds, too much noise is recorded on the imager.)
- Using a flash is very strongly recommended, and greatly enhances performance of the camera system. Performance under fluorescent lighting conditions is almost as good as with a flash. Tungsten and mixed lighting results in lower performance.
- Flash operation is normal with one exception. The TTL flash does not work normally, since no film is present when you use the camera back. (The TTL flash depends on reflection from the film for proper exposure.) Experimentation is required to determine the proper ISO settings to achieve correct exposure. We recommend you start with a camera setting of ISO 1600 and a DSU setting of ISO 400.
- If important areas of the image are flashing on the DSU image display, they are overexposed. (You have correct exposure if unimportant areas of the image are flashing.) To compensate for overexposure with fine adjustments, turn the exposure compensation dial on the Nikon F3 camera in one-third stop increments in the negative direction. After each turn, make the image again until important areas are no longer flashing. If you need greater latitude, make adjustments with the ASA/ISO film speed dial on the camera, not on the DSU. (Refer to the instruction manual for the Nikon F3 camera if needed.)

Note: This explanation assumes the EXPOSURE INDICATOR is on, the default. For information on this feature refer to "Menu Key" in "Reference — Camera and DSU."

- If no areas of the image are flashing on the DSU image display, the image is underexposed. (You have correct exposure if unimportant areas of the image are flashing.) To compensate, follow all of the advice provided in the previous guideline, except turn the exposure compensation dial in one-third stop increments in the positive direction.

Note: This explanation assumes the EXPOSURE INDICATOR is on, the default. For information on this feature refer to "Menu Key" in "Reference — Camera and DSU."

- While working with a color camera, if lighting conditions require, you can "push" the speed to obtain acceptable results by shooting with the DSU set at ISO 800 (the maximum color setting), with the Nikon F3 film speed dial set at ASA/ISO 1600, and with the winder set to SINGLE or SLOW. (Refer to the "Menu Key" section of the "Reference — Camera and DSU" for more information on the winder setting.)

However, scene illuminants that have a low, blue-spectral content (such as tungsten or sodium vapor), may cause unacceptable results. If this occurs, there may be a way to obtain acceptable results with image-editing software on your computer. For example, on a Macintosh computer you can substitute a monochrome image for the color image by using Adobe Photoshop to produce the monochrome image from the color data. To do so, shoot at these settings, and acquire the image in Photoshop. Then choose SPLIT CHANNELS from the MODE menu and work only with data from the green plane (the "G" window).

- While working with a monochrome camera, if lighting conditions require, you can "push" the speed to obtain acceptable results by shooting with the DSU set at ISO 1600 (the maximum monochrome setting), with the Nikon F3 film speed dial set at ASA/ISO 3200, and with the winder set to SINGLE or SLOW. (Refer to the "Menu Key" section of "Reference — Camera and DSU" for more information on the winder setting.)

Communications Tutorials

Follow steps in the three tutorials in this section to:

1. Enter International Press Telecommunications Council — American Newspaper Publishers Association (IPTC-ANPA) text data for individual images on the KODAK Digital Storage Unit (DSU).
2. Transmit images — and associated IPTC-ANPA data — from the DSU to a Macintosh computer.
3. Telecommunicate (send/receive) files from a Macintosh computer to another computer.

Note: For your convenience we have included these three tutorials in both manuals.

Tutorial 1: Entering IPTC-ANPA Data

Follow the steps in this tutorial to enter text data for images on the KODAK Digital Storage Unit (DSU), using the International Press Telecommunications Council — American Newspaper Publishers Association (IPTC-ANPA) Information Interchange Model.

The IPTC-ANPA model provides a standard method for enclosing information with a photographic image (or other object). With the KODAK Professional Digital Camera System, you have the option of incorporating a variety of IPTC-ANPA information with every image. Along with other data, you can include a caption, the name of the author of the caption, a title for the image, and the location — city, state, and country — where the image was made. These data, entered with the optional external keyboard, are stored with individual images on the digital storage unit.

Later, if an image that includes IPTC-ANPA data is moved from the DSU to a computer system capable of receiving these data — for example by transmitting the file to a Macintosh computer running the included KODAK Communications Software — these data are received with the image.

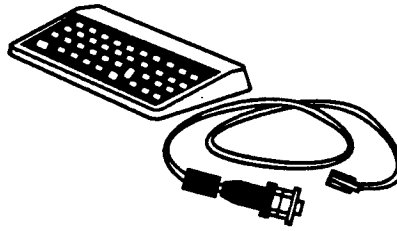
Notes: These features require a DSU equipped with the optional keyboard port.

In addition to the material in this tutorial, refer to the "Show IPTC-ANPA Window" command in the Reference section in the Communications manual for information about IPTC-ANPA data as part of image files stored on your computer, rather than on the DSU.

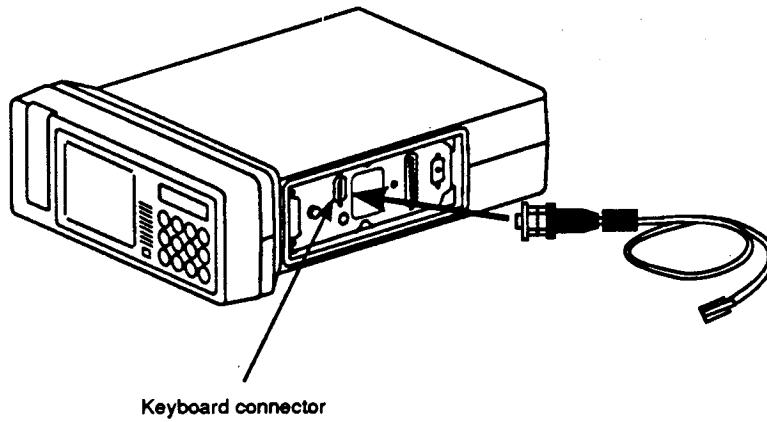
Connecting the Keyboard to the DSU

1. Locate the keyboard and keyboard-to-DSU cable.

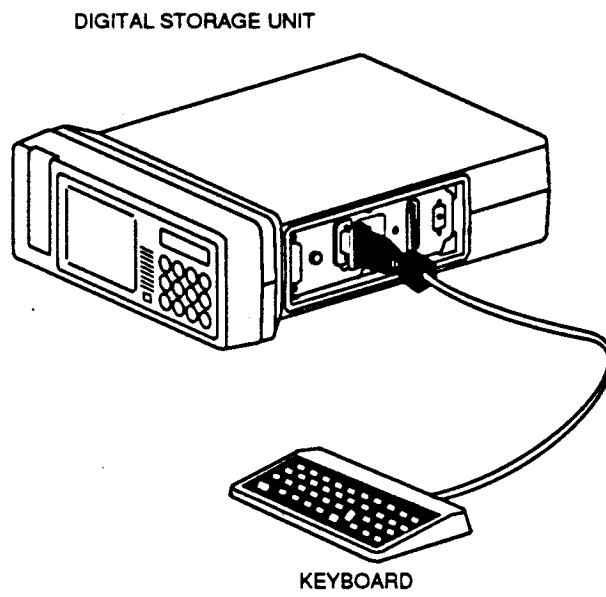
Important: Use only the supplied cables; do not use substitute cables.



2. If the DSU is on, turn it off.
3. Attach the DSU end of the cable to the connector on the DSU labeled "Keyboard."



4. Attach the loose end of the cable to the keyboard.



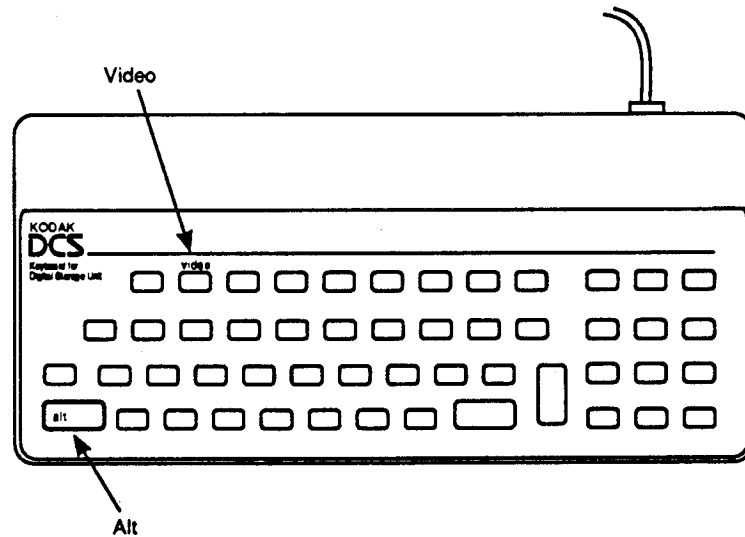
Using the Keyboard with the DSU

The external keyboard provides all of the functionality of the DSU keypad, with the exception of the On/Off key and the White Bal key. After you turn on the DSU, you can press keys on the external keyboard or on the DSU keypad.

1. Press the On/Off key on the DSU keypad.
2. Press Alt-Video (see the figure below), on the external keyboard to turn on the image display. (Alt-Video means hold down the Alt key, press the Video key, and release both keys.)

The test pattern appears on the image display. If it does not, make sure the DSU is on, and try again.

Note: The colored border around the Alt key corresponds with the color of the words and characters appearing above most of the keys on the keyboard. This indicates that the Alt key, when used in combination with one of those keys, produces the action or character printed above the key.



3. Press Alt-Home. Wait for approximately 20 seconds during disk spin-up as the words **LOADING** and **LOADED** in the DSU text display indicate that the image is loading. The image appears on the image display.
4. (Optional) Select and load another image to which you will add a caption and other IPTC-ANPA data.

To load other images, press the keys on the external keyboard that correspond to the keys you would otherwise press on the keypad. For example, press ◀ to load the previous image, ▶ to load the next image, Alt-Find Tags to load the next tagged image, or Alt-Home to load the first image.

Entering a Caption

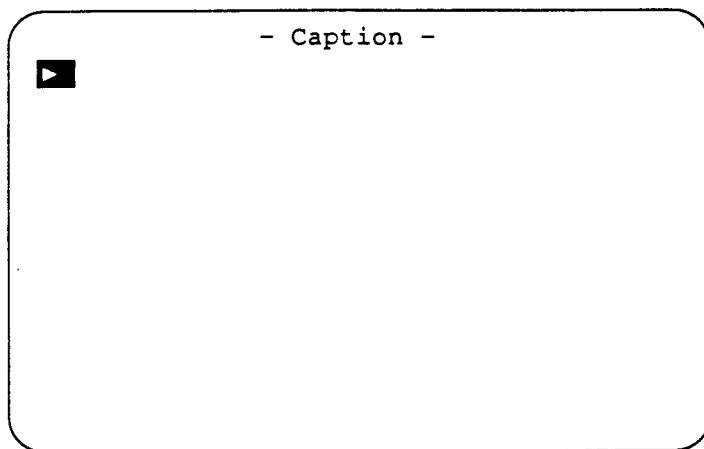
As you enter data with the external keyboard you should:

- Use the Caps key in combination with the alphabetic keys to obtain upper-case letters.
- Type digits or special characters as needed.
- Edit by pressing the four arrow keys to move the cursor to the edit area. Then press Back Space to erase the character to the left of the cursor. You can also press Ins to change to character insert mode (instead of the default type-over mode) before typing the revision.
As you delete characters with Back Space, the characters from subsequent lines are not drawn up to the end of the current line. As you type characters after pressing Ins, characters pushed ahead past the end of the line are lost — they are not wrapped to the next line.
- Press and hold almost any key to repeat its function. You might do this with an arrow key to move the cursor repeatedly in one direction.

Follow the steps below to enter a caption, one of the fields of the IPTC-ANPA file format.

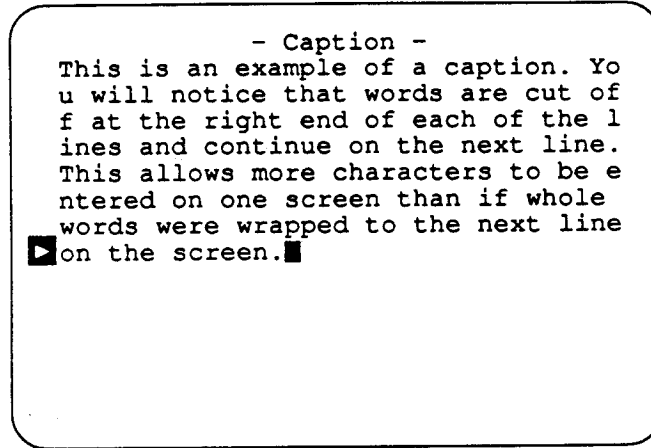
1. Press Alt-Caption to open the caption screen on the DSU image display.

Note: If the line indicator (▣) is not on the first blank line, press ▲ as needed to move it there.



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2. Type the caption for this image. A block cursor (■) moves across the line, and a line indicator (▣) shows the line on which you are working.
When you reach the end of the line, continue to type. The cursor will automatically move to the next line — splitting the word, if necessary. Your caption can be up to 525 characters in length (15 lines of 35 characters each).



3. Press Alt-Caption. The image display is turned off, and the words SAVING and then SAVED appear in the text display as the caption is saved to the DSU hard disk with the active image.

Entering Other IPTC-ANPA Data

1. Press Alt-Data to open the data screen. You will see the preformatted screen below. This screen allows you to enter additional IPTC-ANPA data.

Note: Refer to the "Data Screen" section of the "Reference — DSU and Camera" in the User's Manual for information about each of the fields on this screen.

▣ Service: ■
Product:
Byline:
Title:
Caption writer:
Obj Name:
Category:
Sup Cat:
Sup Cat:
Keywords:

City:
State:
Country code:

2. Press Return or the arrow keys to move from field to field. The line indicator (▣) shows the line on which you are working. Enter the data you want. For example, type your name in the CAPTION WRITER field.
3. Press Alt-Data. The image display is turned off, and the words SAVING and then SAVED appear in the text display as these data are saved to the DSU hard disk with the current image.

The material you enter on the data screen for one image is saved with that image and with each subsequent image you make; when you change these

data for a subsequent image, the revised data are saved with that image and with subsequent images.

This feature allows you to enter data once at the beginning of a photographic session. The data will be saved with each image made. When you are ready for another session, enter new data. To enter these data, turn on the DSU and turn on the video display — you see the test image. (This technique works with any image — not just the test image.) Press Alt-Data on the keyboard, and enter the desired data on the data screen. These data are saved with subsequent images, even if you have turned off the DSU before the next session.

Tutorial 2: Telecommunicating from the DSU to a Macintosh Computer

Follow steps in this tutorial to telecommunicate data from the KODAK Digital Storage Unit (DSU) to a remote Macintosh computer.

Notes: These features require a DSU equipped with the optional keyboard, keyboard port, and modem port.

We assume that you are familiar with connecting and using the optional keyboard. If you are not, refer to "Tutorial 1: Entering IPTC-ANPA Data."

To reduce telephone connect time, you may wish to enter material on the caption and data screens for all images to be transmitted before connecting to another site.

Telecommunications Requirements

This tutorial describes how to use the telecommunications features of the KODAK Digital Camera System to send data from the digital storage unit (DSU) to a remote Macintosh computer.

To follow the steps in this tutorial you must be prepared as follows.

- Your DSU must be equipped with the optional keyboard port and modem port. (They are labeled "Keyboard" and "Modem" on the DSU connector panel.)
- You must connect the keyboard to the DSU as described in "Tutorial 1: Entering IPTC-ANPA Data."
- You must have a Macintosh computer with at least eight megabytes of RAM at the receiving site.
- You must be using Apple System 6.0.5 (or later) and 32-Bit QuickDraw on the Macintosh computer at the receiving site. If you are not, follow directions in the "Installation" section of the Communications manual to install them now.
- You must have installed the KODAK Communications Software on the Macintosh computer at the receiving site. If it is not installed, follow directions in the "Installation" section of the Communications manual now.

- You must have two Telebit T2500 modems—one to attach to the DSU and another to attach to the Macintosh computer.
- You must have two Apple Modem cables—one to attach a modem to the DSU and another to attach a modem to the Macintosh computer.
- If a Macintosh Display Card 8•24 GC is installed in your Macintosh computer, you must disable its accelerator (use the Control Panel on the Apple menu) in order for the KODAK Communications Software to work properly.
- You must have access to a telephone line on which you will call the Macintosh computer from the DSU.
- (Optional) We recommend that you have a second telephone line available. This will allow personnel at the two sites to talk over the second line while they establish connections and send data on the first line.
- (Optional) If you use screen-saver software, we recommend that you disable it while you use the KODAK Communications Software, because some screen-saver software interferes with telecommunications activity.

This remainder of Tutorial 2 is divided into the following topics.

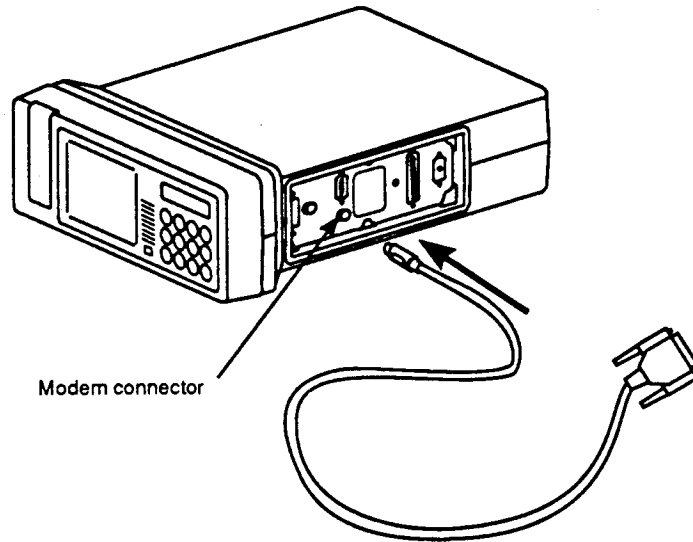
- "Sending: Preparing the DSU." Read and follow these directions the first time you are working at the sending site with the DSU.
- "Receiving: Preparing the Macintosh Computer." Read and follow these directions the first time you are working at the receiving site with the Macintosh Computer.
- "When Both Sites Are Ready." Read and follow these directions the first time you are telecommunicating when both sites have been prepared.
- "Summary: Quick Review." Read and follow these steps in later work sessions. This summary does not include all of the initial set-up steps; it provides a quick review of only the steps you must repeat during work sessions after the initial one.

Sending: Preparing the DSU

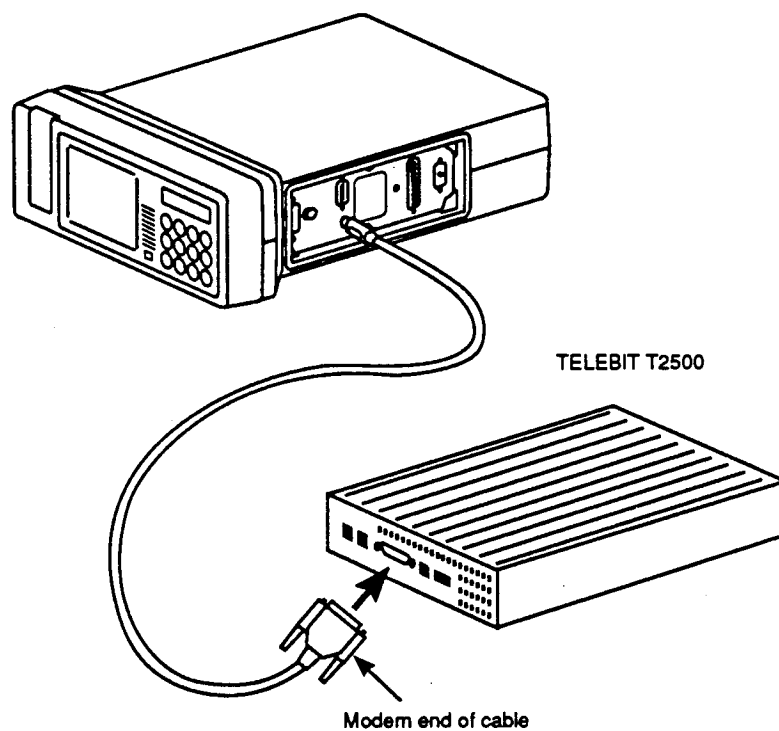
Connecting the Modem to the DSU

1. Locate the DSU, the external DSU keyboard (with cable), one Telebit T2500 modem, and one Apple Modem cable.
2. If the DSU is on, turn it off.
3. If the Telebit T2500 modem is not connected to a power source and a telephone line, make those connections now as described in the modem manual.
4. If the modem is on, turn it off.

5. Attach the appropriate end of the Apple Modem cable to the modem connector on the DSU.



6. Attach the other end of the cable to the modem.



Setting a Hardware Default Configuration on the Telebit T2500 Modem

Follow these steps to choose the Enhanced Command Mode (ECM) — Asynchronous default configuration for the modem. You will need to complete these steps only once (or once after each subsequent change in default settings).

1. If the modem is on, turn it off.
2. Hold in the T/D switch on the front panel of the modem, turn on the power and wait until three LEDs on the front panel begin to blink (PEP, CD, MR); then release the T/D switch. Only PEP remains illuminated.
3. Hold in the T/D switch again until PEP begins to blink. Release the T/D switch. CTS and MR will illuminate.

The Telebit T2500 modem at the DSU sending site is now set to the Enhanced Command Mode — Asynchronous.

Entering Modem Settings on the DSU

1. Turn on the DSU.
2. If it is not connected, connect the external keyboard to the DSU.
3. Use the external keyboard or the DSU keypad to load the image you want to send to the Macintosh computer. (Press Video, and then press Home, ◀, ▶, and/or Find Tags as needed.)
4. Press Alt-Modem; you will see the following screen. You will enter data on this screen in the next few steps; later, in a separate step you will direct the DSU to use these data.

Notes: The data you enter on this screen are retained in the DSU when you turn it off.

You can recall this screen at any time, and alter any of the data it contains.

► Dial string: **A** B C D

A:
B:
C:
D:

, = pause W = wait for dial tone

Dial mode: **TONE** PULSE
Answer time (sec): 30 **90** 180
Retry delay (sec): **10** 30 60
Retry times: 1 **2** 5 10
Modem setup: **NORM** SAT1 SAT2 SAT3
Send compress: OFF LOW **MED** HIGH
Color mode: MONO **NORM** CORRECTION

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5. Press Return (or use the arrow keys) to move the line indicator (►) to the line labeled "A:" and type the telephone number you want to dial.

Examples: 5551234

555 1234

(716) 555-1234

9,,1 W 716 555 1234

Explanation: You can type parenthesis (Alt-O and Alt-P), spaces, or a dash (Alt-2) in the number. If needed by your telephone system, type a comma (on the numeric keypad portion of the keyboard) in the telephone number to indicate that a pause should occur at this point when dialing, or type the letter "W" to indicate that the modem should wait for a dial tone before dialing the remaining portion of the telephone number. A line of text in the middle of the screen

, = PAUSE W = WAIT FOR DIAL TONE

provides on-screen reminders of the purpose of these two characters.

5. (Optional) Press Return to move to the line labeled "B:" and enter another telephone number. Repeat this step for line C and D. You can enter up to four telephone numbers. Since these data are saved when you turn off the DSU, you have a convenient method of storing up to four different telephone numbers for image transmission.
6. Press the up arrow key (▲) repeatedly until the cursor is on the DIAL STRING line at the top of the window.
7. Press the left or right arrow key (◀ or ▶) until the highlight corresponds to the telephone number you want to call. For example, to call the telephone number on line B, highlight the letter B on the top line.
8. (Optional) Change the following settings by moving the cursor to the line with the setting you want to change and pressing the left or right arrow key to highlight the choice you want.

DIAL MODE	Choose TONE or PULSE to correspond to the line type.
ANSWER TIME	The ANSWER TIME — 30, 90, or 180 seconds — specifies how long the DSU will wait for the call to be answered. Choose a lower time for "local" calls (for example for calls within the same country), and a longer time for international calls or for other calls on which you are having trouble establishing a connection.
RETRY DELAY	The RETRY DELAY — 10, 30, or 60 seconds — specifies how long the DSU will wait before trying the call again. These data are used with the RETRY TIMES data on the next line.
RETRY TIMES	The RETRY DELAY — 1, 2, 5, or 10 times — specifies how many times the DSU will try the call again if a connection is not made the first time. These data are used with the RETRY DELAY data on the previous line.
MODEM SETUP	The MODEM SETUP — NORM (normal), SAT1 (satellite 1), SAT2 (satellite 2), and SAT3 (satellite 3) — specifies which of the four settings will be sent to the modem by the DSU. NORM provides the maximum bits-per-

second transmission, with SAT1, SAT2, and SAT3 each providing progressively slower transmission speeds. With poor connections, slower transmission rates may in fact provide faster throughput (less overall transmission time), since with slower speeds, fewer transmission errors will occur, resulting in less need for the automatic retransmission of data.

Important: If you choose SAT1, SAT2, or SAT3, special modem setup must occur at the receiving end of the transmission. When receiving files on a Macintosh computer with the KODAK Communications Software, you must receive images with one of the provided phonelinks. For SAT1, SAT2, and SAT3 open SATELLITE 1 PHONELINK, SATELLITE 2 PHONELINK, or SATELLITE 3 PHONELINK respectively.

Older Telebit T2500 modems do not allow long (over 59 seconds) delays while waiting for a connection. If you experience this problem at the Macintosh computer (the computer screen repeatedly shows CONNECTING then NOT CONNECTED every five seconds), choose SATELLITE 1 PHONELINK 59, SATELLITE 2 PHONELINK 59, SATELLITE 3 PHONELINK 59 respectively. You may also want to have your modem dealer upgrade your modem with new PROMS.

9. If SEND COMPRESS is not set properly, change the setting.

SEND COMPRESS determines whether the image should be compressed before it is sent. The OFF setting sends all image data, and therefore requires the most time for transmission. If you are uncertain which choice to make, we suggest you start with HIGH compression. If this results in an unsatisfactory image at the receiving site, then reduce compression (by selecting MED or LOW) or eliminate compression (by selecting OFF).

10. If COLOR MODE is not set properly, change the setting.

Choose MONO when sending a color image, and a monochrome version of the image is required at the receiving site. Choose NORM when sending a color image and the image will be color-corrected when received on a Macintosh computer with the included KODAK

Communications Software. Choose CORRECTION when sending a color image to a remote site which will not receive the image with the KODAK Communications Software. Choose any setting when sending a monochrome image. (For additional information refer to "Modem Screen" in the Reference.)

Notes: None of these settings affect the image stored on the DSU hard disk.

CORRECTION increases significantly the connect time when transmitting images from the DSU. Therefore, use NORM when sending images to a Macintosh computer running KODAK Communications Software. With CORRECTION color-correction occurs relatively slowly during transmission, increasing connect time; however, with NORM, color-correction occurs very rapidly when the file is opened on the receiving computer.

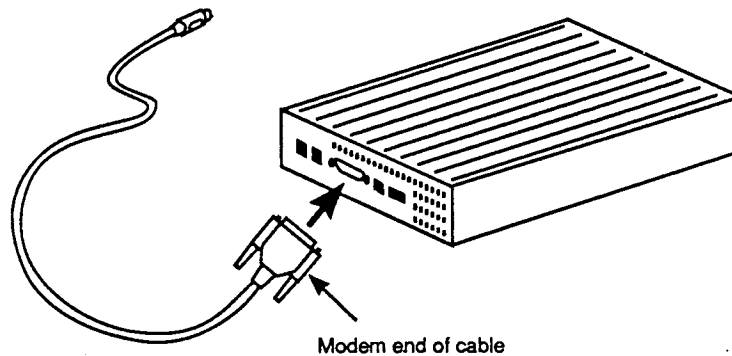
The DSU is now ready to send data.

Receiving: Preparing the Macintosh Computer

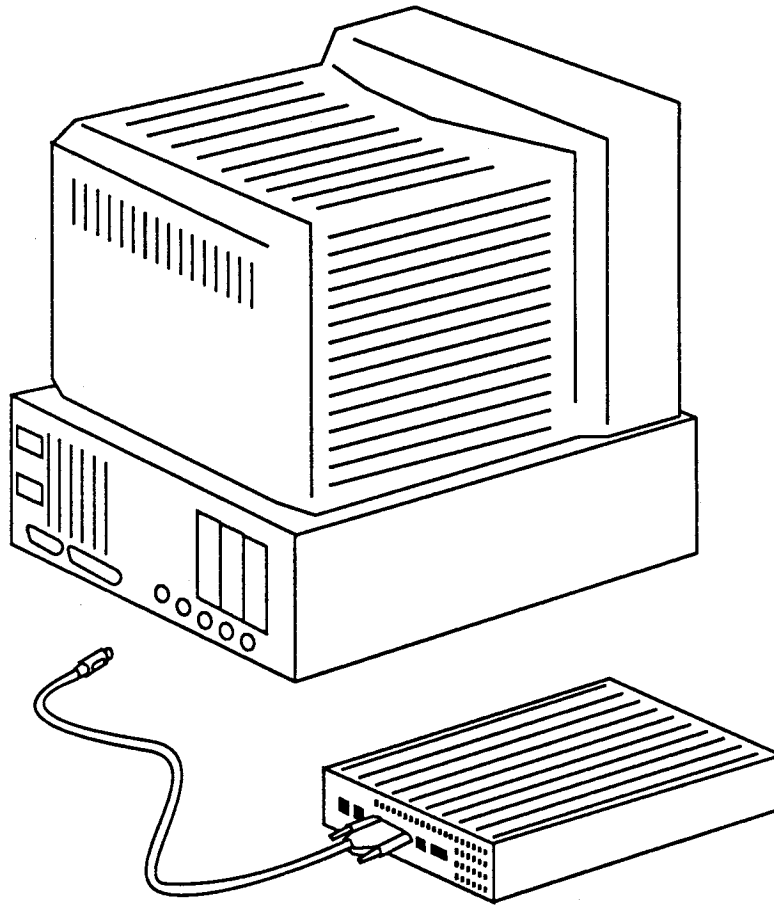
Follow these steps to connect the modem to the Macintosh Computer.

1. Locate the Telebit T2500 modem and the Apple Modem cable.
2. If it is on, turn off the Macintosh computer.
3. If the Telebit T2500 modem is not connected to a power source and a telephone line, make those connections now as described in the modem manual.
4. If the modem is on, turn it off.
5. Attach the appropriate end of the Apple Modem cable to the modem.

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6. Attach the other end of the cable to the modem port on the Macintosh computer.



Setting a Hardware Default Configuration on the Telebit T2500 Modem

Follow these steps to choose the Enhanced Command Mode (ECM) — Asynchronous default configuration for the modem. You will need to complete these steps only once (or once after each subsequent change in default settings).

1. If the modem is on, turn it off.
2. Hold in the T/D switch on the front panel of the modem, turn on the power and wait until three LEDs on the front panel begin to blink (PEP, CD, MR); then release the T/D switch. Only PEP remains illuminated.
3. Hold in the T/D switch again until PEP begins to blink. Release the T/D switch. CTS and MR will illuminate.

The Telebit T2500 at the Macintosh computer is now set to the Enhanced Command Mode — Asynchronous.

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Opening KODAK Communications Software

1. Turn on the Macintosh computer.
2. Find the KODAK DCS COMMUNICATIONS icon — it should be in the KODAK COMMUNICATIONS folder — and double-click on the icon to run the KODAK Communications Software.



KODAK DCS Communications

Note: Directions for installing the software are included in the "Installation" section of the Communications manual.

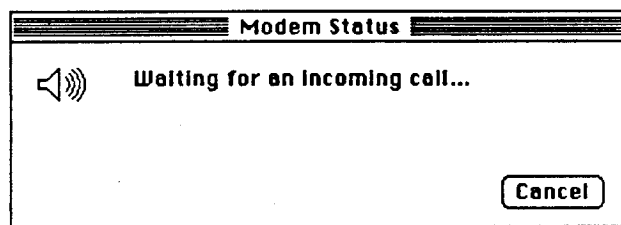
3. Wait as the application opens.

Using the Default PhoneLink for Receiving Images from the DSU

In this section you will open the Default PhoneLink supplied by Kodak for receiving communications from the DSU. You will complete these steps whenever you want to receive files sent from the DSU.

1. Choose **OPEN DEFAULT PHONELINK** from the **PHONELINK** menu. You will see a phonelink window preset with the **APPLE MODEM TOOL**, the **TTY TOOL**, and the **DIT 3.0 TOOL**. It is set to receive files at a baud rate of 19200, and sets the modem to answer the phone after one ring.

After a built-in five second delay, you will see several dialog boxes flash by, and then you will see the following dialog box. The Macintosh computer is now ready and waiting to receive files sent from the DSU.



2. Unless you are familiar with these features and want them on, turn off these three choices on the **PHONELINK** menu if they are on: **ALWAYS WAIT FOR CONNECT**, **UNATTENDED MODE**, **OPEN RECEIVED FILES**.

Note: These menu choices are on if a check mark appears at the left of the choice.

When Both Sites Are Ready

Sending Images from the DSU

Complete the steps below while working with the DSU when you know that the Macintosh computer at the remote site is ready and waiting for a transmission.

1. If the DSU is off, turn it on.
2. If the video display is off, turn it on (press Video).
3. Load the image you want to transmit.
4. Press Alt-Modem to display the Modem screen.
5. If necessary, change the modem settings.
6. If the top line of the modem screen does not highlight the correct telephone number, move the cursor to the top line and highlight the letter (A, B, C, or D) corresponding to the telephone number you want to dial.
7. Press Alt-Connect.

You will see **DIALING** in the text display message area, and you will hear the modem dialing the number. You may hear static and beeps from the modem as the connection to the remote site is made. (If you need to hangup, press Alt-Connect again; the message display will show **HANGUP**.)

Note: After 12 minutes of inactivity, the DSU will hangup the telephone line. To reconnect, press Alt-Connect to completely disconnect; then press Alt-Connect again to redial and reconnect.

8. (Optional) Indicate that a cropped version of the image is to be transmitted instead of the full image. To do so:
 - A. If the image is not visible on the image display, press Alt-Video to display the image.
 - B. Press Alt-Zoom. You will see a 2:1 zoomed version of the image, meaning that you will see one-fourth of the image on the display.
 - C. Press ▲ ◀ ▶ or ▼ as needed to display the part of the image you want to transmit.

Important: No border should be displayed.
 - D. Press Alt-Crop.

Note: This action identifies the image as cropped for the transmission. If you decide that you want to send an uncropped version of the image, you must move off the image and then move back to the image. (For example, while a cropped image is displayed, press ▶ to display the next image and then press ◀ to display the original image; the image is no longer identified as cropped.)

The word CROPPED appears in the text display. In subsequent steps only the portion of the image in the display will be sent. This action does not alter the image on the hard disk; the entire image is preserved.

Important: The cropped image must be visible on the image display when you press Alt-Send (step 11 just below).
9. (Optional) If you want to test the communication connections, you can load, crop, and send the test pattern. When compressed it becomes a small file, and will transmit more quickly than a full image, providing a test of the communications connections.
10. Wait until the DSU text display shows ON LINE.

11. (Optional) Change the color correction settings that are transmitted with the image — and stored for this image on the DSU. Follow these steps to change to a new balance setting.

- A. Press Alt-Menu.
- B. Change to the desired **BALANCE** setting. (If **BALANCE** already displays the desired settings, move to another setting and then back to the desired setting.)

Note: You can change the white balance by making an image (you must do so before you connect) or by moving to an existing image, pressing White Bal, then selecting (White) from the **BALANCE** choices on the menu screen.

12. Press Alt-Send.

You will see **PROCESS** on the text display. Then you will see a message that displays the percent of the image sent, for example 07% **SENT**.

13. (Optional) While one image is being transmitted, you can indicate that other images are to be placed in a transmission queue. To do so, press Alt-Video, load the next image to be sent (perhaps by using the Find Tags feature to load the next tagged image), crop the image if desired, and press Alt-Send. Repeat this process as needed.

Note: Do not queue an image that is currently being transmitted or that is already in the queue. You can also create an image queue before you connect; the images will automatically be sent when you connect. Use the feature with caution, since if you scroll over a cropped image, the cropping will be lost and the full image will be sent. Also, if you turn off the DSU before connecting, the queue will be lost.

14. Wait until the **SENT** message appears, indicating that the image was successfully sent to the distant site.

Important: The system will not allow you to make new images during a transmission. If you try, the text display shows **ONLINE!**

(Optional) Sending Additional Images from the DSU to the Macintosh Computer

Follow the optional steps below if you want to send additional images from the DSU to the Macintosh computer.

1. Press Alt-Video to display the active image.
2. Load and display the image you want to send.
3. Press Alt-Send. Wait as this image is transmitted. (You do not need to return to the display of the Modem screen to send an additional image.)
4. Repeat steps 2 and 3 above as needed.
5. Wait until all images have been transmitted.

Ending a Communications Session — DSU

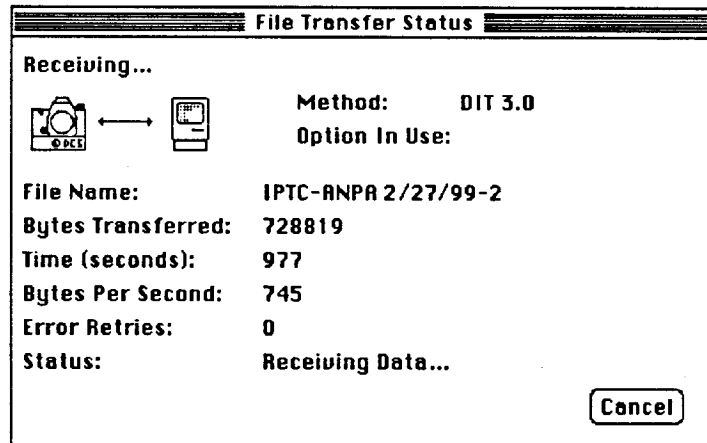
When you have finished sending all the files you want to send, follow the steps below.

1. Press Alt-Connect; you will see HANGUP and then OFFLINE as the connection is broken.
2. Turn off the modem.
3. Turn off the DSU.

Receiving the File on the Macintosh Computer

Follow these steps while working at the Macintosh computer end of a file transmission from the DSU to the computer.

1. Wait while an individual at the sending site presses Alt-Connect on the DSU to begin the connection process.
2. Wait while the following screen appears on the Macintosh computer monitor. Its data indicate that Alt-Send has been pressed on the DSU, and that data are being transmitted. Progress in the transmission of the file is reflected in the data appearing on this screen.



3. Files are automatically and sequentially named upon receipt, using the naming format "IPTC-ANPA mm/dd/yy-n" where "mm/dd/yy" is the current date, and "n" is the sequential number (1, 2, 3, ...) of the

image received. The file in the figure above is named IPTC-ANPA 2/27/99-2. The received file is automatically stored to the Macintosh hard disk in the IPTC-ANPA file format, with sequential numbers up to a maximum of 999.

Note: Suppose you have received ten images today which have been numbered 1, 2, 3, . . . 10. You delete images 3 and 8. If you make additional new images today, the first received will be numbered 3, the second will be numbered 8, the third 11, the fourth 12, and so on.

4. Wait as a message appears in the Status field of the window indicating that file transmission is complete.
5. (Optional) Wait as you receive additional files from the DSU.
6. Choose **DISCONNECT** from the **PHONELINK** menu.
7. (Optional) Choose **OPEN** from the **FILE** menu and open the file that has just been received. In the example above you would open the file IPTC-ANPA 2/27/99-2.
8. (Optional) Choose **SHOW IPTC-ANPA WINDOW** from the Window menu. Add additional IPTC-ANPA data to the data — if any — received from the DSU. (Refer to the "Show IPTC-ANPA WINDOW" section of the Communications manual for additional information about each of the fields.)
9. (Optional) Choose **SAVE AS**, and save the file with a different name and/or in a different file format.
10. Choose **QUIT** from the **FILE** menu to quit the application.
11. Turn off the modem.

Summary: Quick Review

Material in the previous sections of Tutorial 2 describe what you must do during the initial use of the modems and software. This section has been added as an abbreviated summary of steps you follow at the DSU and the Macintosh computer in later work sessions, in which you have previously performed set-up; the summary assumes the hardware is connected properly at both sending and receiving locations.

Sending Images from the DSU

1. Turn on the modem and the DSU.
2. Load the image you want to transmit.
3. Press Alt-Modem to display the modem screen.
4. Highlight the telephone number you want to call (A, B, C, or D on the top line).
5. (Optional) Call the remote site on a second telephone line and be sure the receiving site has completed steps 1 to 3 below.
6. Press Alt-Connect.
7. Wait until the words **ON LINE** appear on the text display; they indicate that the connection is made.
8. Press Alt-Send; wait as the image is sent.
(Optional) If you want to send other images, there is no need to wait until the first image is sent; instead, press Alt-Video, load another image, and press Alt-Send. Repeat as needed.
9. Wait until all images have been transmitted.
10. Press Alt-Connect to break the telephone connection to the Macintosh computer. You will see **HANGUP** and **OFFLINE** on the text display.
11. Turn off the modem, then turn off the DSU.

Receiving Images at the Macintosh Computer

1. Turn on the modem and the Macintosh computer.
2. Run the KODAK Communication Software application.
3. Choose OPEN DEFAULT PHONELINK from the PHONELINK menu.
4. Wait as files are received.
5. (Optional) Open the received files, edit or add IPTC-ANPA data, and save the files in other file formats.
6. Quit the application.
7. Turn off the modem and the Macintosh.

Tutorial 3: Telecommunicating from a Macintosh Computer to Another Computer

KODAK Communications Software is a general-purpose Macintosh computer communications tool that, in addition to receiving files from the DSU, is capable of transmitting and receiving files from computer to computer. This section describes steps you follow to use features of the software to open image and phonelink files, add captions to image files, add IPTC-ANPA data to image files, compress image files, and send and receive files.

The image and other files you telecommunicate may have come from several sources. They may have been previously received with this software, may have been acquired with the Kodak Driver for Adobe Photoshop software (as described in the User's Manual), or may be files from other sources.

Notes: This tutorial assumes that you are familiar with the information in "Tutorial 2: Telecommunicating from the DSU to a Macintosh Computer."

In addition to the material in this section, the "Reference" in the Communications manual describes all menu commands of the KODAK Communications Software.

Telecommunications Requirements

To follow the steps in this tutorial you must be prepared as follows:

- You must have a Macintosh computer with at least eight megabytes of RAM.
- You must be using Apple System 6.0.5 (or later) and 32-Bit QuickDraw on the Macintosh computer. If you are not, follow directions in the "Installation" section of the Communications manual to install them now.

- You must have installed the KODAK Communications Software on the Macintosh computer at the receiving site. If it is not installed, follow directions in the "Installation" section of the Communications manual now.
- You must have two modems — one Telebit T2500 to attach to the Macintosh computer and another modem to attach to the second computer.
- You must have the appropriate computer-to-modem cables — one to attach the modem to the Macintosh computer and another to attach the modem to the other computer.
- You must have access to a telephone line on which the computers will communicate.
- (Optional) We recommend that you have a second telephone line available. This will allow personnel at the two sites to talk over the second line while they establish connections and send data on the first line.
- If a Macintosh Display Card 8•24 GC is installed in your Macintosh computer, you must disable its accelerator (use the CONTROL PANEL on the Apple menu) in order for the KODAK Communications Software to work properly.
- If you use screen-saver software, we recommend that you disable it while you use the KODAK Communications Software, because some screen-saver software interferes with telecommunications activity.

The remaining sections of this tutorial describe how to use the general-purpose features of the KODAK Communications Software.

Opening Files

1. If it is not on, turn on the Macintosh computer.
2. If it is not running, run the KODAK Communications Software application.
3. Choose **OPEN** from the **FILE** menu. You will see the **OPEN** dialog box.
4. Find the filename of the image file you want to open, and click on it once. Notice that data at the bottom of the **OPEN** dialog box provides information about the file.
5. Click on **OPEN**. (You could also double-click on the filename to open the file.) A box displays the progress in opening the file, and then the file opens in a window.

You can have more than one file opened at a time. The number of files that you can display simultaneously depends on the size of each file and the amount of memory available on your computer. However, close unused windows for best performance, since time is required to redraw windows during a number of operations.

(Optional) Adding Captions

A caption text window provided by the software for every image allows you to enter up to 32,000 characters of editable text information (approximately seven to eight single-spaced pages). You can use this window to type a newspaper or magazine article to accompany the image, or to enter descriptive information about the image. The data in the caption window are saved in the same file as the image.

These data are separate from the IPTC-ANPA "Caption" data field that appears in the IPTC-ANPA window (refer to the next section); the IPTC-

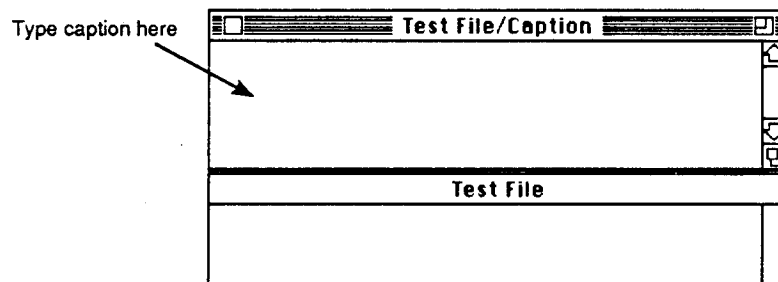
ANPA Caption field is limited to 2,000 characters. (The DSU limits the length of the IPTC-ANPA caption that can be entered to 525 characters.)

Notes: Caption text may not be accessible, and may not be saved, in other applications that can open the file. Therefore, you may want to use a different filename when you save files that you have opened and modified in other applications.

For example, Adobe Photoshop will save these data only in version 2.0 and higher. (There is one exception; files saved as PICT by Photoshop 2.0 will not save the caption.)

Follow these steps to add a caption to an opened image window.

1. Choose **SHOW CAPTION TEXT WINDOW** from the **WINDOWS** menu. A new window will open; it is the active window.
2. Type a brief description of the image into the caption window.



3. Close the caption window.

(Optional) Adding IPTC-ANPA Data

An International Press Telecommunications Council — American Newspaper Publishers Association (IPTC-ANPA) window provided by the software allows you to enter data matching the IPTC-ANPA format for every image. The data in the IPTC-ANPA window are saved in the same file as the image.

Follow these steps to add IPTC-ANPA data to an opened image window.

1. Choose **SHOW IPTC-ANPA WINDOW** from the **WINDOWS** menu. A new window will open; the new window is the active window.
2. Enter IPTC-ANPA data as needed.

Note: The "Show IPTC-ANPA Window" section of the "Reference" in the Communications manual provides a description of the techniques you use to enter these data, and an explanation of each field.

3. Close the IPTC-ANPA window.

Notes: IPTC-ANPA data may not be accessible, and may not be saved, in other applications that can open the file. Therefore, you may want to use a different filename when you save files that you have opened and modified in other applications.

For example, Adobe Photoshop will save these data only in version 2.0 and higher. (There is one exception; files saved as PICT by Photoshop 2.0 will not save IPTC-ANPA data.)

Compressing and Saving Images

Follow steps in this section to compress and save images. You use these features to change from one file format to another, or to compress a file acquired with the Adobe Photoshop driver supplied by Kodak.

You can save data in a variety of file formats, including TIFF (the default), PICT, RGB, IPTC-ANPA, KIC, and Storm Technology. For more informa-

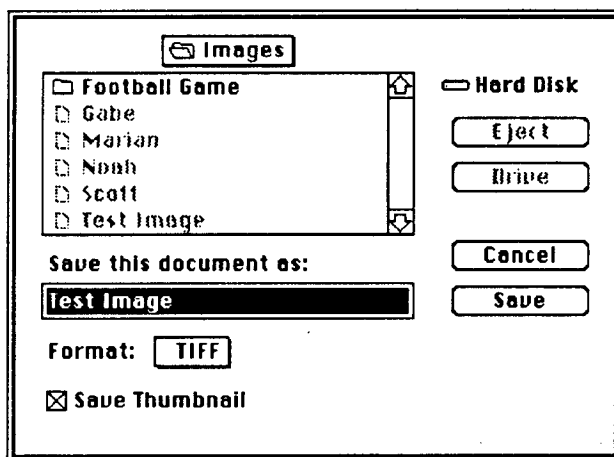
tion on these file formats, including data on file compression, see "Save As" in the "Reference" section of the Communications manual.

Note: JPEG compression and decompression technology is licensed from Storm Technology, Incorporated.

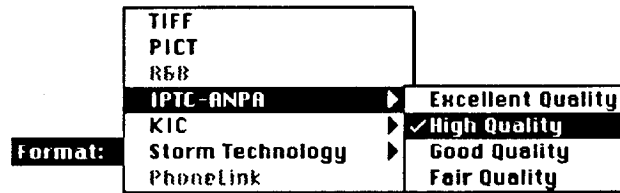
We recommend that you save files in IPTC-ANPA format. This format provides data compression, and reduced transmission time. Follow these steps to compress an image by saving it in IPTC-ANPA file format.

If the file(s) you want to transmit are already in IPTC-ANPA format, continue at the next section "Transmitting Images."

1. Open the image file you want to convert to IPTC-ANPA format.
2. Choose **SAVE As** from the **FILE** menu. You will see this dialog box; the **FORMAT** pop-up menu indicates the file type of the active file.



3. (Optional) Change the location where the file will be stored, using normal Macintosh computer techniques to choose a different disk or folder.
4. Choose a file format (we suggest you choose one of the IPTC-ANPA compression levels) from the popup **FORMAT** menu shown below.



5. Type a filename for the file.
6. Click on the **SAVE** button to save the image data. You will see a progress box as the file is saved.
7. Choose **CLOSE FILENAME** from the **FILE** menu (or click on the close box) to close the image window.
8. Repeat this process for other images as desired.

Transmitting Images

In addition to receiving images from the DSU, you can use the KODAK Communications Software to transmit (and receive) files between your Macintosh computer and other computers at a variety of sites. Since each distant computer may require different communications parameters, the software allows you to create an unlimited number of communications records, called phonelinks, each with different settings.

For example, you might have a phonelink that contains communications settings (like baud rate) that you use to receive images from the DSU, and other phonelinks that you use to communicate files between a computer in your office in Chicago and a computer in New York, and between your office and a location in Spain. You can create and save each of these settings as separate phonelink files on your disk; then later, when you need to communicate with another site, you open the previously saved phonelink for the site you want.

Before you work through the steps that follow, verify that your modem is connected properly to your Macintosh computer and to a working phone line, and notice which computer port is used for the modem cable.

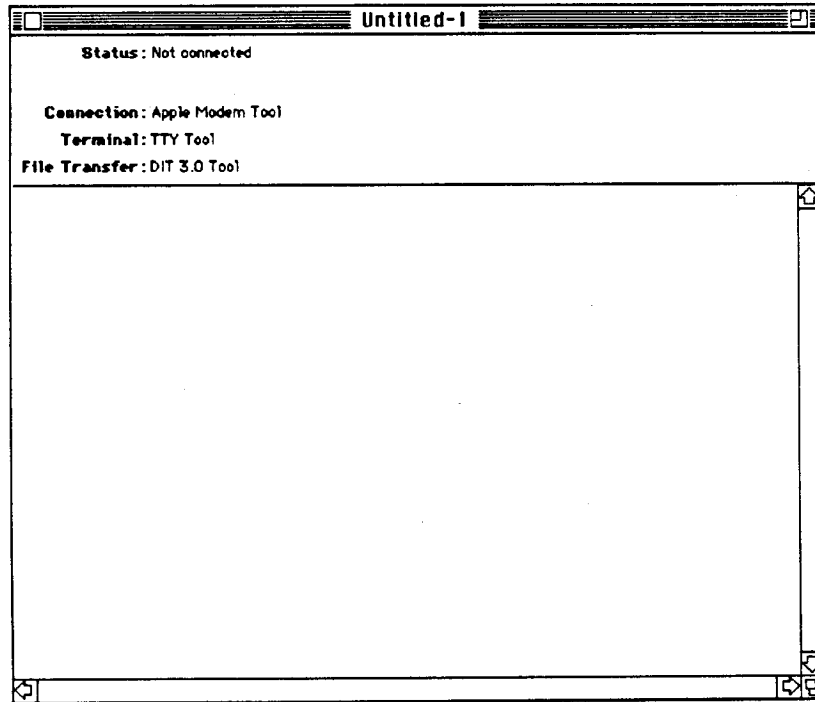
Configuring Your Modem

To communicate with another computer via a modem, the settings in your modem must match the settings in a phonelink. "Tutorial 2: Telecommunicating from the DSU to a Macintosh Computer" describes how to connect your Telebit T2500 modem to the Macintosh computer, and how to set the hardware default.

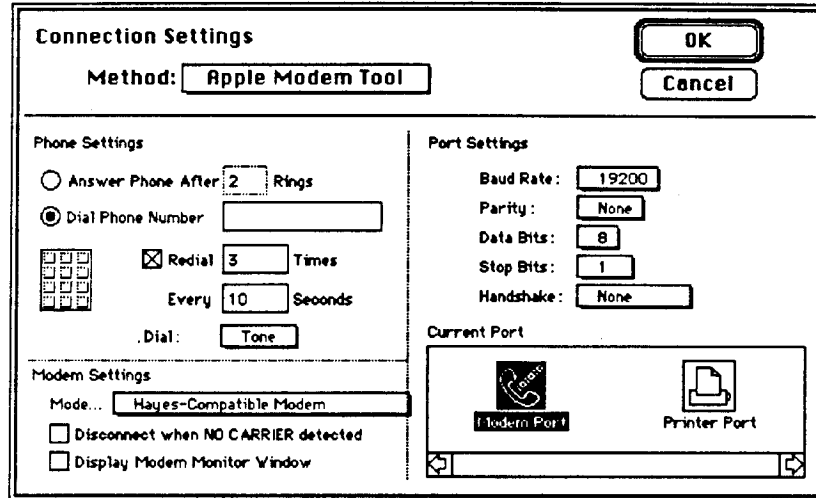
Creating a PhoneLink to Transmit an Image

In this section you will create and save a phonelink file that you will use to send files from the Macintosh computer. Then, in later sessions you will open this phonelink file whenever you want to transmit files from the computer.

1. If your Macintosh computer is not on, turn it on and run the KODAK DCS COMMUNICATIONS application.
2. If your modem is not on, turn it on.
3. Choose **PHONELINK** from the **NEW** submenu of the **FILE** menu. You see the following new phonelink window.



4. Choose CONNECTION SETTINGS from the PHONELINK menu. You will see the following dialog box.



The image shows a 'Connection Settings' dialog box with a title bar and standard window controls. At the top right are 'OK' and 'Cancel' buttons. Below the title bar, the 'Method:' is set to 'Apple Modem Tool'. The dialog is divided into three main sections: 'Phone Settings', 'Port Settings', and 'Modem Settings'. 'Phone Settings' includes options for answering the phone (set to 2 rings), dialing a phone number, and redial settings (checked, 3 times, every 10 seconds). 'Port Settings' includes Baud Rate (19200), Parity (None), Data Bits (8), Stop Bits (1), and Handshake (None). 'Modem Settings' includes a dropdown for 'Mode...' set to 'Hayes-Compatible Modem', and two checkboxes: 'Disconnect when NO CARRIER detected' and 'Display Modem Monitor Window'. At the bottom, there is a 'Current Port' section with two icons: 'Modem Port' (selected) and 'Printer Port'.

Connection Settings

Method: **Apple Modem Tool**

Phone Settings

☐ Answer Phone After **2** Rings

☒ Dial Phone Number

☒ Redial **3** Times

Every **10** Seconds

Dial: **Tone**

Port Settings

Baud Rate: **19200**

Parity: **None**

Data Bits: **8**

Stop Bits: **1**

Handshake: **None**


Modem Settings


Mode... **Hayes-Compatible Modem**

☐ Disconnect when NO CARRIER detected

☐ Display Modem Monitor Window

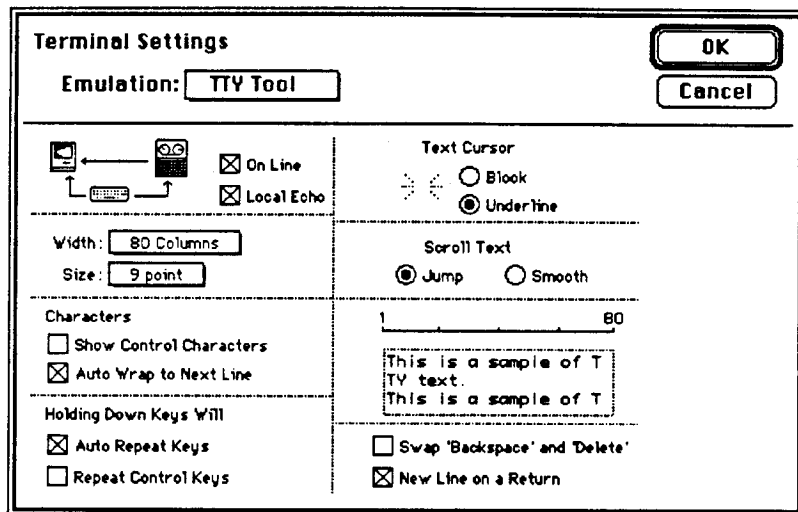
Current Port

 **Modem Port**



 **Printer Port**

5. Change settings as required. For example, enter the telephone number you will call.
6. Click on OK.

7. Choose **Terminal Settings** from the **PHONELINK** menu. You will see the following dialog box.



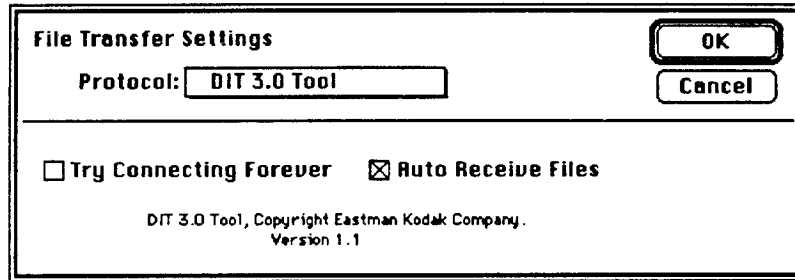
The image shows a 'Terminal Settings' dialog box. At the top, it has a title bar 'Terminal Settings' and two buttons: 'OK' and 'Cancel'. Below the title bar, there is a field 'Emulation:' with a dropdown menu showing 'TTY Tool'. The main area is divided into several sections. On the left, there are icons for a terminal window and a keyboard, with checkboxes for 'On Line' and 'Local Echo'. Below these are fields for 'Width:' (80 Columns) and 'Size:' (9 point). Further down is a 'Characters' section with checkboxes for 'Show Control Characters' and 'Auto Wrap to Next Line'. At the bottom left is a 'Holding Down Keys Will' section with checkboxes for 'Auto Repeat Keys' and 'Repeat Control Keys'. On the right side, there is a 'Text Cursor' section with radio buttons for 'Block' and 'Underline' (selected). Below that is a 'Scroll Text' section with radio buttons for 'Jump' (selected) and 'Smooth'. A horizontal scrollbar is shown with a value of 80. Below the scrollbar is a text area containing two lines of text: 'This is a sample of T' and 'TY text.'. At the bottom right, there are checkboxes for 'Swap Backspace and Delete' and 'New Line on a Return'.

Terminal Settings	
Emulation: TTY Tool	
  <input checked="" type="checkbox"/> On Line <input checked="" type="checkbox"/> Local Echo	Text Cursor <input type="radio"/> Block <input checked="" type="radio"/> Underline
Width: 80 Columns Size: 9 point	Scroll Text <input checked="" type="radio"/> Jump <input type="radio"/> Smooth
Characters <input type="checkbox"/> Show Control Characters <input checked="" type="checkbox"/> Auto Wrap to Next Line	<div>1 80</div> <div>This is a sample of T TY text. This is a sample of T</div>
Holding Down Keys Will <input checked="" type="checkbox"/> Auto Repeat Keys <input type="checkbox"/> Repeat Control Keys	<input type="checkbox"/> Swap 'Backspace' and 'Delete' <input checked="" type="checkbox"/> New Line on a Return

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8. Change settings as required.
9. Click on **OK**.

10. Choose **FILE TRANSFER SETTINGS** from the **PHONELINK** menu. You will see the following dialog box. The **DIT 3.0 TOOL** should only be used to transmit files in **IPTC-ANPA** format. (Choose another **PROTOCOL** to send files in other formats.)



The dialog box is titled "File Transfer Settings". It contains a "Protocol:" label followed by a text box containing "DIT 3.0 Tool". In the top right corner are "OK" and "Cancel" buttons. Below the protocol field, there are two checkboxes: "Try Connecting Forever" (unchecked) and "Auto Receive Files" (checked). At the bottom, it says "DIT 3.0 Tool, Copyright Eastman Kodak Company. Version 1.1".

11. Click on **OK**.
12. Choose **SAVE** from the **FILE** menu to save this phonelink file.
13. Type a filename, for example: **SPAIN PHONELINK**.
14. Click on **SAVE**.

Transmitting a File

This section presents steps you follow to transmit an image from the hard disk on your computer to another computer.

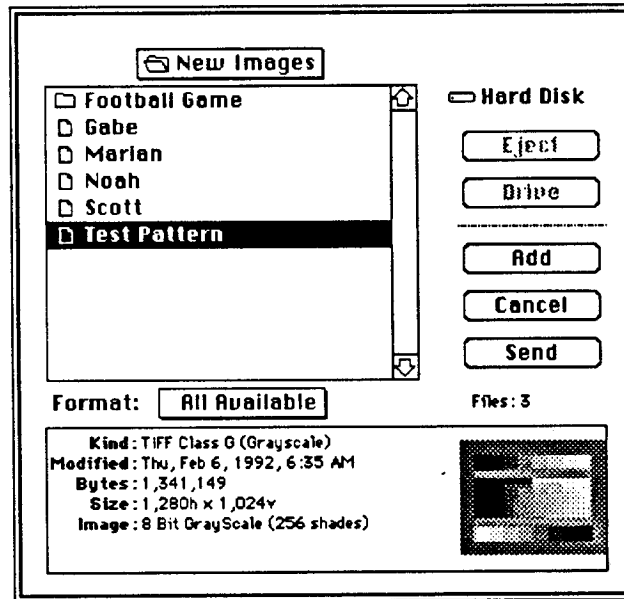
Note: As the file is sent to the remote site, a box shows the progress in sending the file. Although you can perform other work while the file is being communicated, allowing the entire file to be communicated before continuing with other work will ensure the fastest transmission with the minimal potential for problems.

1. Be certain the phonelink window is the active window.
2. Choose **SEND FILES** from the **PHONELINK** menu.

3. Select the file you want by clicking once on its name and then clicking ADD. (You can also double-click on the filename.)

Notes: You can send multiple files by clicking on the first filename, then clicking on Add, and repeating these two actions until you have selected all files you want to send.

When a folder is selected in the list box, the Add button "opens" the folder. When a file is selected the Add button "adds" the file.



4. Click on **SEND**. Wait as the connection is made with the remote site, as the modems synchronize, and as the file is sent.

The files will be transmitted only once — to the first incoming modem call. This means you should use this capability with care. If you typically have incoming calls from users other than the one to which you want to send these files, the files may be sent to an unintended caller. Once sent to one user, the file queue is canceled and is not available to subsequent callers.

Receiving Files

Follow these steps to receive an image (or other file) sent from another computer:

Note: As the file is received from the remote site, a box shows the progress in receiving the file. Although you can perform other work while the file is being communicated, allowing the entire file to be communicated before continuing with other work will ensure the fastest transmission with the minimal potential for problems.

1. If your Macintosh computer is not on, turn it on and run the **KODAK DCS COMMUNICATIONS** application.
2. If your modem is not on, turn it on.
3. Create and save a phonelink as described above in "Creating a PhoneLink to Transmit an Image;" however, use the required settings for receiving (rather than transmitting) a file.

Your settings should match those of the computer that will be sending the file(s) to your computer. For example, when you choose CONNECTIONS SETTINGS from the PHONELINK menu, you should change from DIAL PHONE NUMBER to ANSWER PHONE AFTER 1 RINGS.

Connection Settings

OK

Cancel

Method: Apple Modem Tool

Phone Settings

Answer Phone After

1

Rings

Dial Phone Number

Answer

1

Times

Every

10

Seconds

Dial

1

Time

Modem Settings

Mode... Hayes-Compatible Modem

Disconnect when NO CARRIER detected

Display Modem Monitor Window

Port Settings

Baud Rate: 19200

Parity: None

Data Bits: 8

Stop Bits: 1

Handshake: None

Current Port

Modem Port

Printer Port

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4. If the computer will be unattended while waiting for and receiving files from the remote site, complete the steps below; otherwise continue at the next step.
 - A. Choose ALWAYS WAIT FOR CONNECT from the PHONELINK menu to turn on this feature. While on (a check mark appears to the left of the command), the program is automatically reset to wait for another call after completing the current call. Because most transmissions will disconnect after the data are sent, enabling this option ensures that your unattended computer is ready to receive another transmission.
 - B. Choose UNATTENDED MODE from the PHONELINK menu to turn on this choice. While on (a check mark appears next to the command), the program disables the display of file transmission alerts that require your interaction with the software.
 - C. Be sure that the OPEN RECEIVED FILES command on the PHONELINK menu is off — there should be no check mark to the left of the command. If you leave it on, each file is opened as it is received, eventually filling memory and preventing your computer from receiving additional files.
5. Choose CONNECT from the PHONELINK menu.
6. Wait. Each call from a remote site will be answered automatically, the file will be received automatically, and the phone will automatically “hang up.” With ALWAYS WAIT FOR CONNECT chosen, the software will automatically return to a wait state, waiting for the next call.

Files are saved in the folder with the application. Each is given the name of the original file; if several files have the same name, a number (for example “#2”) is appended to filenames to ensure that each file has a unique name.

Ending a Communication Session

1. Make the phonelink window the active window.
2. Close the phonelink window. You will be asked if you want to disconnect. Click on OK. If you have changed any parameters (for example if you have changed the baud rate) and have not saved the changes, you will be asked if you want to save the changes. Respond appropriately.
3. Turn off the power to the modem.
4. Quit the application.

Reference — Camera and DSU

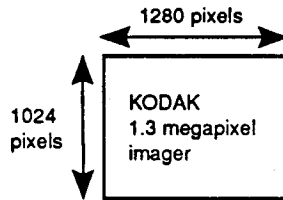
This section of the manual describes the following components of the KODAK Professional Digital Camera System:

- KODAK Camera Back and Imager
- KODAK Camera Winder
- Digital Storage Unit (DSU)
- Optional DSU Communications Features
- Messages on the DSU Text Display
- Troubleshooting the camera and DSU
- Cleaning the imager

REFERENCE

KODAK Camera Back and Imager

You use the KODAK Camera Back instead of the normal Nikon F3 film back. The camera back incorporates a 1280 x 1024-pixel CCD Kodak M3 imager that collects light on 1.3 million pixels, each 16 x 16-micrometres.



The imager is designed to contain the effect of very bright areas in the image by preventing them from smearing into adjacent areas of the image. Data collected in the imager in the camera back is sent as analog data to the KODAK Camera Winder attached to the bottom of the camera.

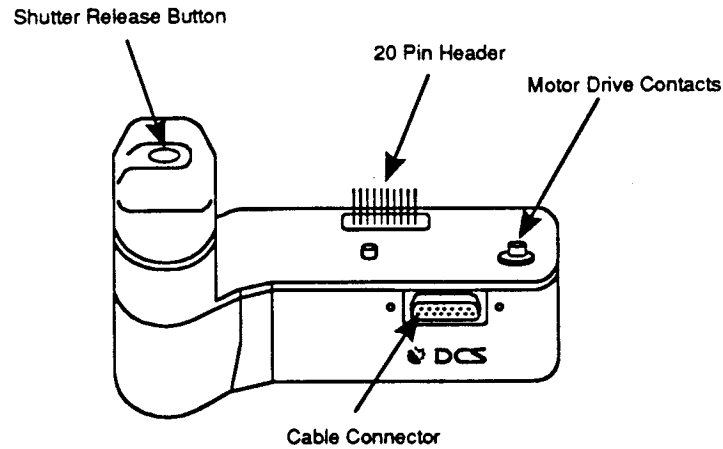
There are two versions of the imager, one for the color camera (incorporating a built-in color filter array) and another for the monochrome camera. The system provides high-quality images at exposure indexes equivalent to film speeds of ISO 100, 200, 400, 800,* and 1600* in color or ISO 200, 400, 800, 1600,* and 3200* in black and white.

Note: You can use the color camera as a monochrome camera. For example, if you are using a Macintosh computer with Adobe Photoshop, expose as you would for a color capture. Then after acquiring the image in Adobe Photoshop, choose **SPLIT CHANNELS** from the Photoshop **MODE** menu, and work only with the data from the green plane. This produces a sharper image than reducing the other color levels to zero, since three out of four pixels in the imager are green. As a result, the green plane has the most information when images are acquired in Photoshop.

You can "push" the camera to an ISO of 1600 with the color camera back and 3200 with the monochrome camera back, as described in "Tutorial: Operating the Camera and Digital Storage Unit." Higher speeds may result in lower-quality images than lower speeds.

* You can obtain these speeds, but a loss of some image quality may occur (similar to when push-processing film). Refer to "Using the Nikon F3 Camera" at the end of "Tutorial: Operating the Camera and Digital Storage Unit."

KODAK Camera Winder



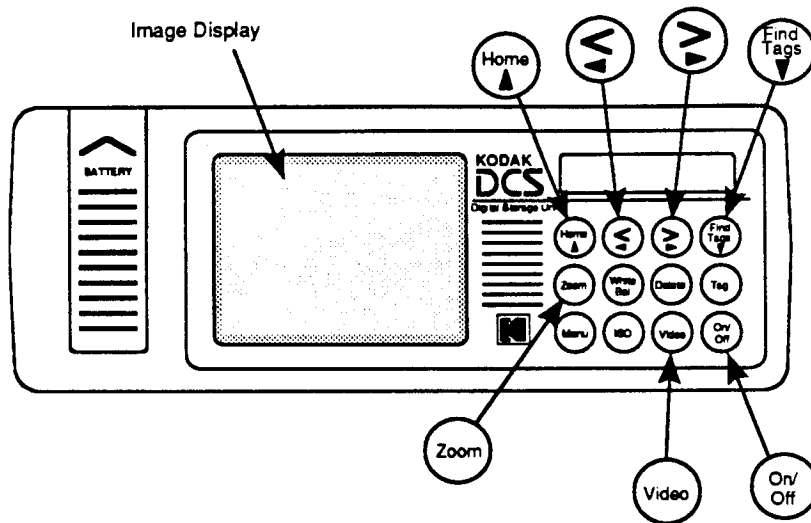
The KODAK Camera Winder attached to the bottom of the camera incorporates the following components.

Analog to digital converter	Performs an 8-bit analog to digital (A/D) conversion on the analog data collected by the imager in the electronic camera back. The resulting digital data are used throughout the remainder of the digital camera system. Digital data are sent to dynamic random access memory (DRAM) in the digital storage unit (DSU) and are subsequently stored on the DSU hard disk.
20 pin header	Makes contact with the camera back. Image data are transferred from the camera back to the camera winder through this set of pins.

Motor drive	<p>Recocks the shutter through the camera motor drive coupler. The motor drive provides for a maximum burst rate of 2.5 images/second.</p> <p>Note: The Nikon F3 camera requires that the shutter be recocked after each photograph. Since the digital camera system uses an unmodified Nikon F3 camera, the camera system must recock the shutter even though you are not using film.</p>
Shutter release button	Trips the shutter; used instead of the shutter release button on the Nikon F3 camera.
Interconnect cable	Connects the camera winder to the DSU.

Digital Storage Unit (DSU)

Image Display



The image display is a 4-inch video screen on the digital storage unit (DSU) control panel that displays a single image from dynamic random access memory (DRAM) in the DSU. You turn the image display on and off by pressing Video on the control panel keypad. (You must turn on the DSU by pressing On/Off before Video is active.) A test pattern appears when you press Video after turning on the DSU. Subsequently, as you make pictures or press Home, <, >, or Find Tags, the current image is displayed instead of the test pattern.

If you press and hold <, >, or Find Tags, thumbnail versions of images flash by on the image display at a rate of five images per second. (A thumbnail is a subsample of data from the full image.) When you release the key, the full resolution image, instead of its thumbnail, appears on the image display within two seconds.

After approximately 30 seconds of inactivity on the keypad, the image display will turn off when you are operating from a battery. Press Video again to reactivate it. The image display remains on continuously when Video is pressed while operating from the AC adapter.

The image displayed is of significantly-lower quality than the image actually stored in the DSU. When images are acquired with a computer, full image data are obtained.

Although the image is displayed in monochrome, your images are stored in color on the hard disk if you are using the color version of the KODAK Professional Digital Camera System.

You control the brightness of the image display with the VIDEO BRIGHT control available under the Menu key. (Refer to "Menu Key.")

If you press Zoom, a 2:1 zoomed version of the image appears on the image display. If you press Zoom again, the full image reappears. (Refer to the explanation in "Zoom Key.")

If you press Menu, the image display presents a series of camera system settings instead of an image. If you press Menu again, the image display is turned off. Press Video to view the current image on the image display. (Refer to the explanation in "Menu Key.")

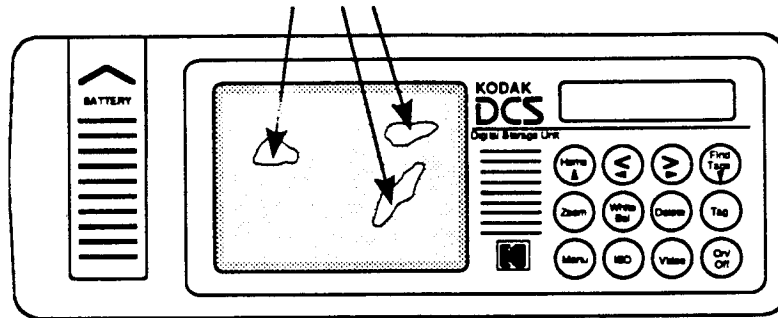
If your system includes transmission features, and you press Alt-Modem, Alt-Data, or Alt-Caption on the keyboard, the image display presents data screens instead of an image. Press Alt-Video to view the current image on the image display.

Exposure Indication

The KODAK Professional Digital Camera System provides exposure information on the image display. Areas of an image that are overexposed flash back and forth between black and white. In the following figure, the solid white non-contiguous areas, if flashing, are overexposed. You turn

this feature on and off with the EXPOSURE INDICATOR setting available when the Menu key is pressed. (Refer to the "Menu Key" section for additional information.)

Overexposed Areas in the Image Display



External Video Display

You can show the image on the DSU image display and on an external video monitor simultaneously (or on a television set that incorporates a video setting). With an external video, you can view images on a larger display than the one available on the DSU. This is helpful in deciding which images to move to the computer, which images to tag, which images to delete, and so on.

Color images are shown in monochrome on external video displays, even if those displays have color capability. The image displayed is of significantly lower quality than the image actually stored in the DSU.

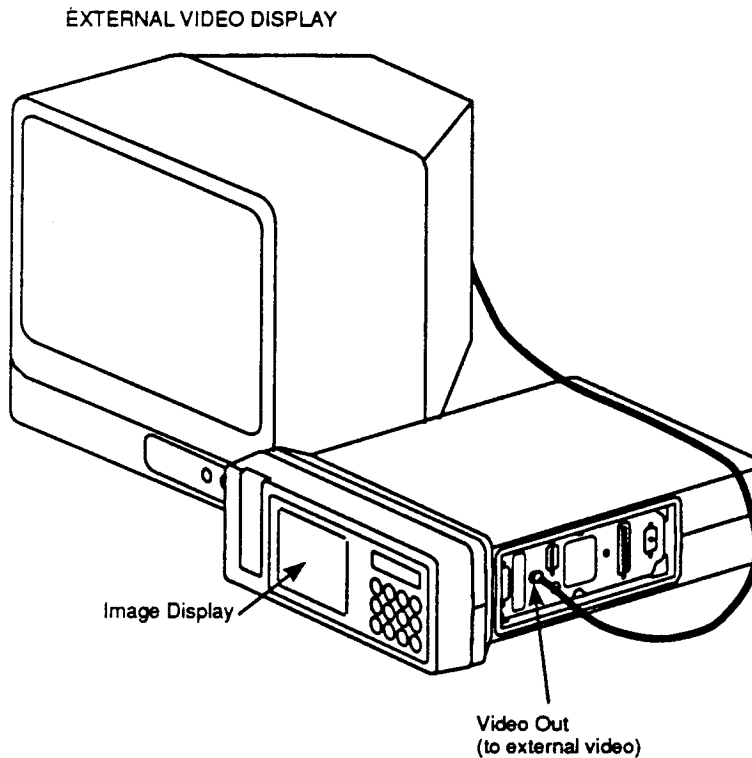
You connect the DSU to your external video monitor via a cable that links the video output connection (an NTSC video interface — 75 ohm BNC

video connector, RS-170), to your external video display. (If your monitor does not have a BNC-type connector, use the BNC-to-RCA adapter provided by Kodak.)

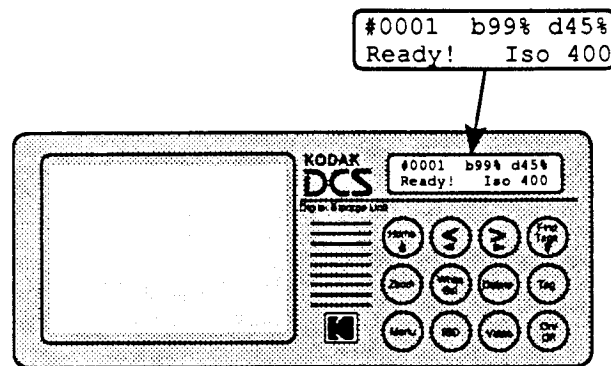
Notes: The external video display is not included with the KODAK Professional Digital Camera System.

You control the quality (brightness, etc.) of an image displayed on an external monitor with the controls on that external device.

Important: Use only the supplied cable; do not use substitute cables.



Text Display



The DSU text display is a two-line liquid-crystal display (LCD), capable of displaying 16 characters per line. It displays control data and information about the state of the DSU.

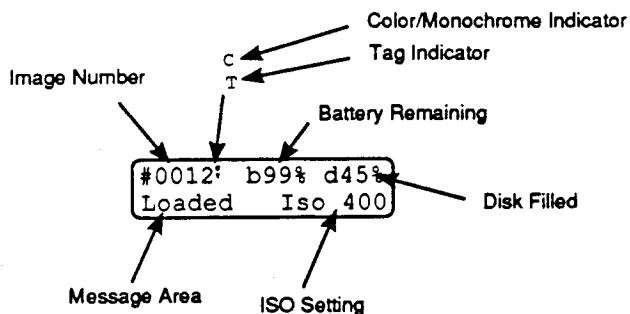
A backlight illuminates the text display. When you press On/Off, the backlight is turned on.

A text display example follows. Additional examples appear throughout the "Keypad" section next in this reference.

REFERENCE

Text Display Example

When you work with the camera, you may see two lines like these on the text display.

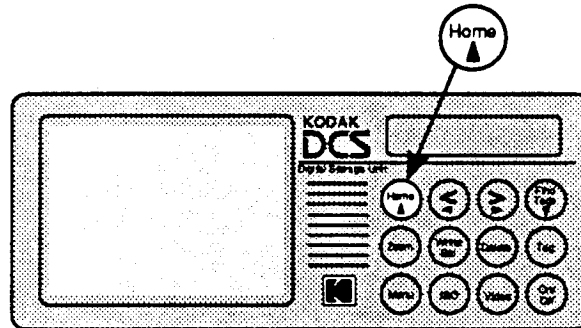


<i>Data</i>	<i>Explanation</i>
#0012	Displays the image number of the current image. (Refer to "Hard Disk" for an explanation of the numbering system used to identify images.)
C	When present, indicates that the current image is color. When no C appears the current image is monochrome.
T	Indicates that the current image is tagged. (Refer to "Tag Key.") When no T appears the current image is not tagged.
b99%	Displays the percentage of battery (b) life remaining, 99% in this example.
d45%	Displays the percentage of the hard disk (d) filled with images; 45% in this example.
LOADED	The message area. This particular message indicates that the KODAK Professional Digital Camera System has loaded an image from the DSU hard disk into dynamic access random memory. (Refer to "Messages: KODAK DSU Text Display (LCD)" for an explanation of all messages.)
Iso 400	The ISO indicator. (Refer to "ISO Key.")

Keypad

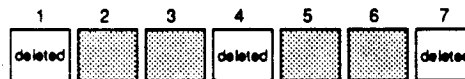
This section describes each of the keys on the digital storage unit (DSU) keypad. They are described in the order they appear on the keypad.

Home Key



Press Home to display the "first" image from the hard disk on the image display. You must turn on the DSU (press On/Off if the DSU is off) and the image display (press Video if the display is off) before Home is enabled.

The first image may not be numbered 1. As an example, each shaded box in the figure below represents an active image on the DSU. Other boxes indicate that images on the DSU have been "deleted." In this example whenever you press Home, image 2 is displayed on the image display.

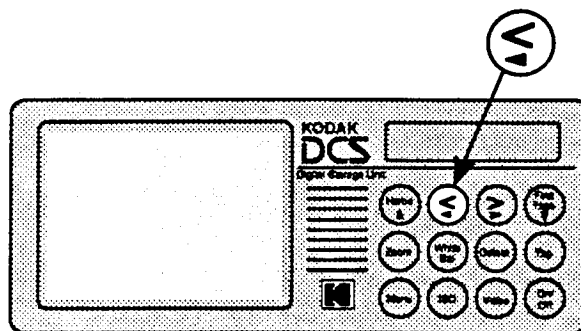


If the first image is not currently in DRAM, the word **LOADING** appears in the message area of the text display until the image is loaded and displayed.

To display images at the end of the hard disk, press Home and then press < several times. You will wrap around through the test pattern to images at the end of the hard disk.

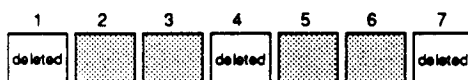
Note: After pressing Zoom or Menu, Home has a different function as described for each of those keys later in this reference.

< Key



Press < to display the "previous" image from the hard disk on the image display. You must turn on the DSU (press On/Off if the unit is off) and the image display (press Video if the display is off) before < is enabled.

As an example, each shaded box in the figure below represents an active image on the DSU. Other boxes indicate that images on the DSU have been "deleted." If you are currently viewing image 6 and you press <, the DSU will display image 5. If you press < again, image 3 is displayed.

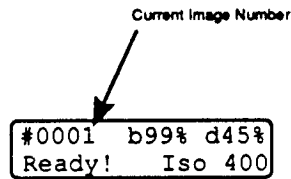


If the previous image is not currently in DRAM, the word **LOADING** appears in the message area of the text display until the image is loaded and displayed.

If you are viewing the first image on the disk and press <, a test pattern is displayed. If you press < again, the last image on the disk is displayed.

If you press and hold down <, two things occur:

- A. The current image number (at the left of the first line of the text display) scrolls down at the rate of five numbers per second.

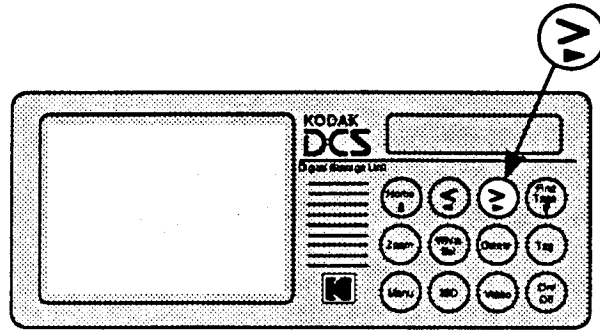


- B. Thumbnails of images corresponding to the current image number scroll in reverse on the image display at the rate of five images per second.

If you are holding down <, release the key when you see the image number and image you want. The full-resolution image appears within two seconds. Use this technique to move rapidly to an image you want.

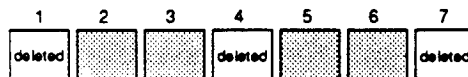
Note: After pressing Zoom or Menu, Home has a different function as described for each of those keys later in this reference.

> Key



Press > to display the "next" image from the hard disk on the image display. You must turn on the DSU (press On/Off if the DSU is off) and the image display (press Video if the display is off) before > is enabled.

As an example, each shaded box in the figure below represents an active image on the DSU. Other boxes indicate that images on the DSU have been "deleted." If you are currently viewing image 2 and you press >, the unit will display image 3. If you press > again, image 5 is displayed.



If the next image is not currently in DRAM, the word **LOADING** appears in the message area of the text display until the image is loaded and displayed.

If you are viewing the last image on the disk and press >, the test pattern appears. If you press > again, the first image on the disk is displayed.

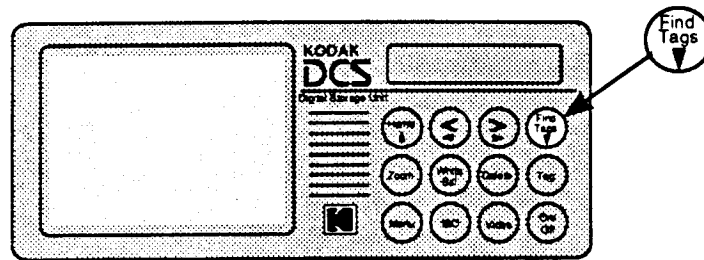
If you press and hold down >, two things occur:

- A. The current image number (at the left of the first line of the text display) scrolls forward at the rate of five numbers per second.
- B. Thumbnails of images corresponding to the current image number scroll forward on the image display at the rate of five images per second.

If you are holding down >, release the key when you see the image number and image you want. The full-resolution image appears within two seconds. Use this technique to move rapidly to an image you want.

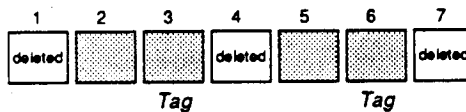
Note: After pressing Zoom or Menu, > has a different function as described for each of those keys later in this reference.

Find Tags Key



Press Find Tags to display the next “tagged” image from the hard disk on the image display. Find Tags provides a method of moving through a single subset of previously tagged images (as described in “Tag Key”) on the hard disk. You must turn on the DSU (press On/Off if the unit is off) and the image display (press Video if the display is off) before Find Tags is enabled.

As an example, each shaded box in the figure below represents an active image on the DSU. Other boxes indicate that images on the DSU have been “deleted.” Notice that images 3 and 6 have tags. If you are currently viewing image 2 and you press Find Tags, the DSU will display image 3 — the next image with a tag. If you press Find Tags again, image 6 is displayed.



If the next tagged image is not currently in dynamic random access memory, the word **LOADING** appears in the message area of the text display until the image is loaded and displayed.

If you press and hold down Find Tags, two things occur:

- A. The current image numbers (at the left of the first line of the text display) of tagged images scrolls forward at the rate of five numbers per second.
- B. Thumbnails of tagged images corresponding to the current image number scroll on the image display at the rate of five images per second.

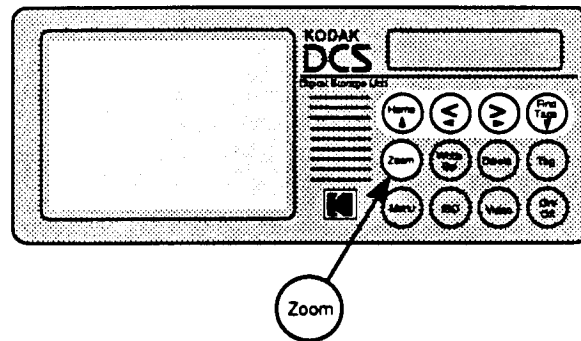
If you are holding down Find Tags, release the key when you see the image number and the image you want. The full-resolution image appears within two seconds. Use this technique to move rapidly to the tagged image you want.

Notes: Refer also to "Tag Key."

After pressing Zoom or Menu, Find Tags has a different function as described for each of those keys later in this reference.

Home, <, and > display the first, previous, or next image respectively, whether those images are tagged or not.

Zoom Key



Press **Zoom** to display a 2:1 zoomed version of the image currently on the image display. Press **Zoom** again to toggle back to the full image. (When pressed repeatedly, **Zoom** does not continue to zoom in on the image. Instead it toggles between the full image and the 2:1 zoomed image.)

Zooming an image allows you to examine it more closely. For example you might use this feature to determine if the eyes of the subject of a photograph were opened or closed.

When zoom is on, the word **Zoom** appears in the message area of the text display.

While in zoom mode, the top row of keys no longer means **Home**, **<**, **>**, and **Find Tags**. Instead they scroll the zoomed image in the direction shown in the symbols (**▲ ◀ ▶ ▼**) printed on the lower half of each of these keys. Notice that the word **Zoom** and these four symbols have been color coded in yellow to indicate that they work in conjunction with each other. Press and release any of these keys to scroll slightly in the direction shown, or press and hold down the key to scroll to the edge of the image.

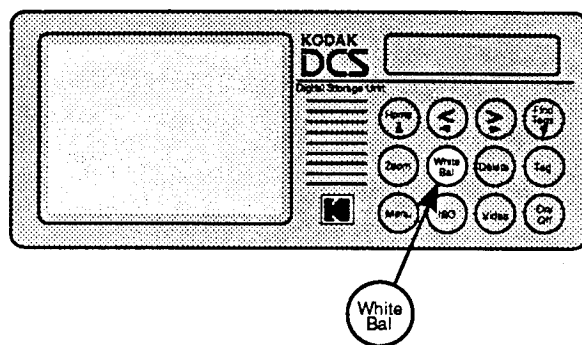
If an external video device is connected to the DSU, that device also displays and scrolls the zoomed version of the image. (Refer to "External Video Display" earlier in "Reference — Camera and DSU" for more information.)

Thumbnails cannot be zoomed. If you are viewing a thumbnail (the message area of the text display shows **LOADING**), wait until the full-resolution image is loaded (the message area shows **LOADED**), and then press **Zoom**.

Notes: After pressing **Menu**, **Zoom** has a different function as described in "Menu Key."

If you make a picture while **Zoom** is on, the new image is not displayed in zoom mode.

White Bal Key



Note: This function applies only to color camera backs.

Press White Bal (white balance) directly after making a photograph of a neutral gray or white card, to store three values (one for red, one for green, and one for blue) for the current lighting conditions with subsequent photographs made with the digital camera system. These data will be used by the driver supplied by Kodak to correct the color in those images when you acquire them into your computer.

We recommend that you use White Bal in all artificial light conditions. Follow these steps to use this feature.

1. Make a photograph of a neutral gray or white card (for example KODAK Gray Cards, Publication No. R-27) under the current light conditions. (Data from this photograph are used to calibrate subsequent photographs until you change settings.) Be sure that the center of the image is *not* overexposed.

Note: If a neutral gray or white card is not available, you can make a photograph of any subject providing you center the photograph on a white or gray portion of the image. White Bal functions like a color spot meter. It uses a 16 x 16-pixel area from the center of the 1280 x 1024-pixel imager.

2. Press the White Bal key. The digital camera system records a red, green, and blue value from the center of the photograph you have just made.

Note: The message area of the text display shows WHITEBAL. If you see MONIMAGE, you are working with a monochrome camera. No values are recorded;

the White Bal key only works with color camera backs. If you see BADWHITE, the center of the image is overexposed; although white balance values are recorded, we encourage you to make another image and then press the White Bal key.

3. Delete the image if desired.
4. Continue to make photographs normally; the red, green, and blue values from the calibration image are stored on the hard drive with each of the new images you make.

Later, when you acquire images with these values on your computer hard disk, the driver software supplied by Kodak will correct the color in the images, based on the three calibration values stored with each of the images.

The three white balance color-correction values are saved in the DSU, even when the unit is turned off. To change them, you must press White Bal again after making another photograph; red, green, and blue values from the new photograph replace the previous values.

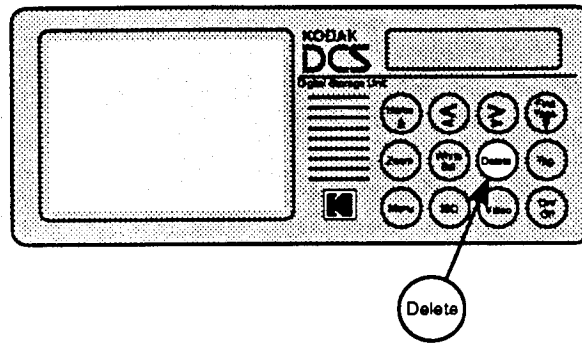
If you have set white balance values in one artificial-light condition and move to another artificial-light condition, reset the white balance before making images under the new light conditions. Both sets of images will have the appropriate color-correction values stored with them.

Your calibration images are no different from other images you make, and are stored on the hard disk on the DSU in the same way that other images are stored. As such, you can delete them immediately, or view, tag, and zoom them.

You can also leave one or more test images on the DSU hard disk while you continue to change the white balance values based on new test images. Later you can reload a previously-stored test image and press White Bal to reset the color-balancing data to match the original test image. Use this feature with caution since the current light conditions may no longer match those of the previously saved test image.

Note: Additional information on this topic appears in "Menu Key."

Delete Key



Press and hold the Delete key to delete the image displayed currently on the image display. Follow these steps to delete an image.

1. Select an image to delete by pressing Home, <, >, or Find Tags as needed until the image you want to delete appears in the image display.
2. Press and hold Delete. The text display shows lines like these:

```
#0003  b99% d04%  
HOLD KEY Iso 400
```

Note: You see the message NoDELETE when the DSU is connected to your computer; use the software driver to delete images in this situation.

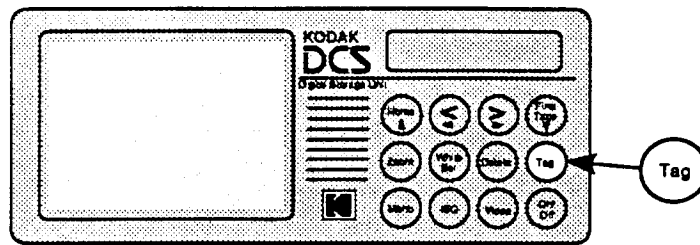
3. Continue to depress Delete for several seconds until the message HOLD KEY disappears. You can depress the key until you have read the text display; doing so does *not* continue to delete subsequent images.

We recommend that you delete images that you do not need. Removing unneeded images frees disk space, and means you will move more rapidly through the remaining images when you press <, >, and Find Tags.

Notes: You can erase the entire disk as described in "Menu Key."

After deleting an image, the text display will show LOADING and LOADED as the next image on the disk is loaded and appears in the image display. If no images remain, the text display will show the word DELETED.

Tag Key



Press Tag to flag the current image for later identification. Press Tag again to turn off the tag for the current image.

As an example of its use, suppose that you are currently viewing image number 3 and see this text display.

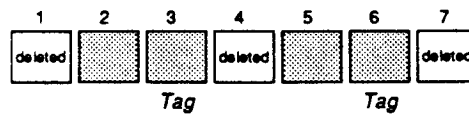
```
#0003c b99% d04%
Loaded   Iso 400
```

When you press Tag, the letter T appears in the text display.

```
#0003f b99% d04%
Loaded   Iso 400
```

If you press Tag again the tag is removed from image 3 and you will see the original text display.

You can tag any or all images on the hard disk. As an example of the use of Tag, examine the figure that follows. Each shaded box represents an active image on the DSU. Other boxes indicate that images on the DSU have been "deleted." Images 3 and 6 have been tagged by pressing Tag once when each image was displayed.

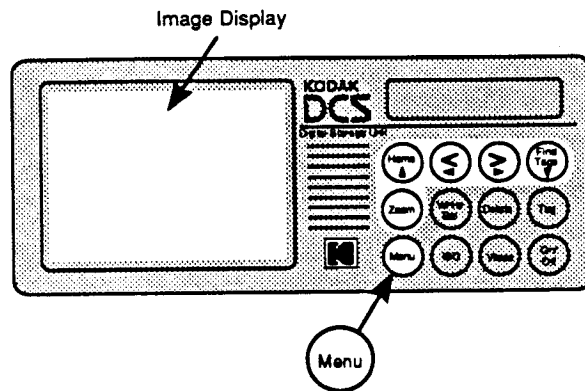


After tagging images, you can use Find Tags. When you press Find Tags, the next tagged image is displayed. For example, if you are currently viewing image 2 in the figure above and press Find Tags, image 3 will be displayed. If you press Find Tags again, image 6 will be displayed.

Tags can be useful in a number of situations. For example:

- You can tag a single image that represents the first of a series of images of a photographic assignment.
- You can tag images for subsequent selection as a group from within the software driver.
- You can tag images for subsequent individual deletion with the Delete key, or while using the software driver.

Menu Key



When you press Menu, the lines of text shown below appear on the image display. The text presents control options and status information about the camera system. A permanent, non-replaceable lithium battery in the DSU maintains these settings. If you press the Menu key again, the image display is turned off. Press Video to view the current image on the image display.

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```

Disk save:      OFF ON COMPRESS
Balance: DAY TUNG FLUOR (WHITE)
Winder:  OFF SINGLE SLOW FAST

Exposure Indicator: OFF ON
Video bright:  LOW 2 3 HIGH

SCSI ID: 0 1 2 3 4 5 6 7

Clock: 99/04/26 21:35:46 Set >>

Press "Delete" to erase disk
Hours: 00010 Exposures: 00125
Version: 01-31-99
  
```

You can make choices from the options by pressing keys on the DSU keypad. Notice the triangular line indicator (▴) at the left of one of the rows; it indicates that you are making choices from that row. To make choices from other rows, press ▼ (Find Tags) or ▲ (Home). They move the line indicator up or down a row. Once you have selected the row from which you want to make a menu choice, there are several techniques you use to make a choice from the row. Two examples follow.

Example 1: Follow these steps to set the SCSI ID.

Note: The DSU should not be connected to the computer when you change the SCSI ID.

1. Press the ▼ key or ▲ key until the line indicator at the left of the screen is on the SCSI ID row.
2. Press ◀ or ▶ to move across the row, highlighting one after another of the SCSI ID choices. Stop when the choice you want is highlighted.
3. Follow similar steps to change the options on the following rows: DISK SAVE, BALANCE, and WINDER. Each option is explained below.
4. Press Video to display an image.

Example 2: Follow these steps to set the Clock.

1. Press ▼ or ▲ until the line indicator at the left of the screen is on the CLOCK row.
2. Press ◀ or ▶ to move across the row until you highlight the first two digits of the hour.
3. Press and hold down Zoom to scroll rapidly through the valid hour choices — 0 through 23. Stop when the choice you want is highlighted. (You may also press Zoom repeatedly to set the hour. With each press it sequences through one after another of the valid hour choices.)
4. Repeat steps 2 and 3 to change the minutes and seconds.
5. Follow similar steps to change the date.
6. Press Video to display an image.

Menu Choices

Option	Explanation
DISK SAVE	Determines whether new pictures are saved to the DSU hard disk or not. Turn off DISK SAVE when you want to make pictures, but do not want to use hard disk space. (You might turn off DISK SAVE when you are composing an image or practicing with the camera.)
OFF	Each new image replaces the previous one in DRAM and is shown on the image display, but is <i>not</i> saved to the hard disk. <i>There is no way you can save that image from memory to the hard disk; however you can acquire the single current image (its image number is shown on the text display) with the software driver if you do so before you turn off the DSU.</i>
ON	Each new image is placed in DRAM, is shown on the image display, and is saved to the hard disk. This is the default setting.
COMPRESS	(Not available on all systems.) When you make an image with COMPRESS on, the image is compressed when it is stored to the DSU hard disk. This allows more images to be stored on the DSU. The image is decompressed when it is loaded for display, or for transmission to a distant site.

BALANCE Selects one of three fixed color balance settings (DAY, TUNG, or FLUOR), or select settings established with the White Bal key (WHITE). For example if you are shooting in daylight, choose the DAY option.

Note: If you make the wrong BALANCE choice from this menu, you can compensate if the image you make will be acquired to the hard disk of your computer with one of the supplied software drivers. You compensate by making another choice later from the BALANCE popup menu on the ACQUIRE dialog box of the software driver.

When you turn off the digital camera system, the current **BALANCE** setting is retained and becomes the default setting the next time you turn on the DSU.

DAY	Daylight.
TUNG	Tungsten.
FLUOR	Fluorescent.
(WHITE)	<p>Use the most recently created white balance values. Refer to "White Bal Key" for more information.</p> <p>After setting the white balance, you may wish to use another BALANCE setting. Choose the desired setting from this row. After shooting with that setting, you can revert to the previously established white balance settings by choosing (WHITE) from this row.</p>

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WINDER Controls the action of the motor drive in the camera winder.

Note: Choose OFF, SINGLE, or SLOW for reduced electronic noise in the image.

OFF Turns off the motor drive. After every picture, you must wind the camera by hand. If you are operating with limited battery power and know you will be shooting for an extended period of time, you can use this setting to conserve a small amount of power.

SINGLE Winds the motor drive once after you make a picture. To make another picture, release the shutter release button and then press it again.

This can be desirable when using the remote shutter release and when you cannot hear the camera (since only one image is made each time you push the release button).

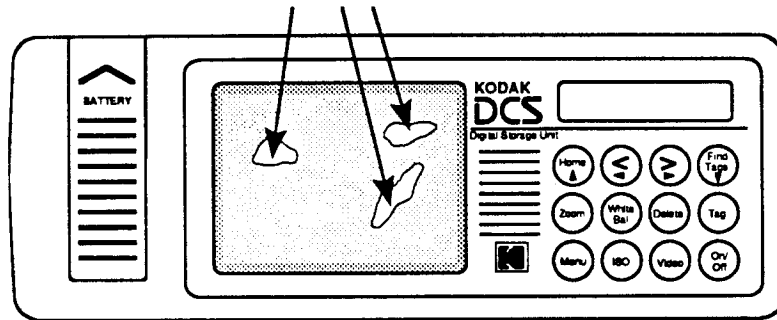
SLOW Winds the motor drive automatically after the image has been transferred from the camera back to dynamic random access memory (DRAM). This option is 0.25 seconds slower than the FAST option.

FAST Winds the motor drive while the image is being transferred from the camera back to DRAM.

You can make up to 2.5 images per second until DRAM is full, provided the image display is turned off.

EXPOSURE INDICATOR Provides on-screen (on the image display) exposure feedback for new or existing images.

Overexposed Areas in the Image Display



- | | |
|------------|--|
| ON | Areas of an image that are overexposed flash back and forth between black and white. If solid white, non-contiguous areas (see the figure above) are flashing, they are overexposed. |
| OFF | No indication of exposure is provided on the image display. |

Follow the guidelines below regarding the feedback you receive from the exposure data that appears on the image display.

- You have correct exposure if unimportant areas of the image are flashing (overexposed).
- Try to have as much of an image flashing as possible without having important subject areas flashing.
- If important areas of the image are flashing, they are overexposed. To compensate for overexposure

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with fine adjustments, turn the exposure compensation dial on the Nikon F3 camera in one-third stop increments in the negative direction. After each turn, make the image again until important areas are no longer flashing. If you need greater latitude, make adjustments with the ASA/ISO film speed dial on the Nikon camera, not on the DSU. (Refer to the instruction manual for the Nikon F3 camera if needed.)

- If no areas of the image are flashing, the image is underexposed. To compensate, follow all of the advice provided in the previous guideline, except turn the exposure compensation dial in one-third stop increments in the positive direction.
- You should expect extremely-bright subject areas to flash.
- You should expect non-contiguous areas of the image to flash.

VIDEO BRIGHT Controls the brightness of the video display. If you are working in bright light outdoors, use a higher setting. The available settings are LOW, 2, 3, and HIGH. The setting is retained when you turn off the DSU.

SCSI ID The DSU is a non-terminated SCSI device that connects to your computer with one of the included cables. This option sets the SCSI ID for the DSU. Select the choice you want by pressing and holding ◀ or ▶ to sequence through the settings.

Each SCSI device connected to the same computer must have a different ID number.

If you are working on a Macintosh computer, your computer is number 7, and the Macintosh internal

hard disk is probably number 0. Avoid those two ID numbers when you choose the SCSI ID for the DSU.

Note: The DSU should not be connected to the Macintosh computer when you change the SCSI ID.

If you are working on a PC, use only SCSI ID 0, 1, 2, 3, 4, or 5. Do not assign the number of any other attached SCSI device, and never assign 6 or 7. Assign high ID numbers to devices used most frequently.

CLOCK (date) Maintains the date in yy/mm/dd format. Set the date as explained several pages earlier in Example 2. Once set, the non-replaceable lithium battery in the DSU maintains the date setting.

The date is saved with each image you make. Later, if your DCS has communications features, when you transmit images to a remote site, the date is transmitted as the IPTC-ANPA Creation Date field. (Refer to "Show IPTC-ANPA Window" in the Communications manual.)

CLOCK (time) Maintains the time in hh/mm/ss format. Set the time as explained several pages earlier in Example 2. The clock is on a 24-hour setting; the hour choice rotates from 0-23. Once set, the non-replaceable lithium battery in the DSU maintains the time setting.

The time is saved with each image you make. Later, if your DCS has communications features, when you transmit images to a remote site, the time is transmitted as the IPTC-ANPA Creation Time field. (Refer to "Show IPTC-ANPA Window" in the Communications manual.)

SET >> Points to the Zoom key, indicating that you press Zoom to "Set" a number of menu options. This is an on-screen reminder of the key you must press to set menu options on the CLOCK row.

PRESS "DELETE" ... Erases all images from the DSU hard disk when you press the Delete key while this choice is highlighted (the line indicator is on this row). Keep the Delete key pressed until the HOLD KEY message changes to ERASED, then release the key.

When you make new pictures after erasing the hard disk, the new images are numbered from 1. (This option erases the entire disk; use the Delete Key to erase a single image.)

DSU Image Recovery

If you inadvertently erase the hard disk, an emergency procedure provides a one-time opportunity for you to recover images from the DSU. Use this procedure before you make any new images with the digital camera system.

1. If it is off, turn on the DSU.
2. If it is off, turn on the DSU menu screen by pressing the Menu key.
3. Move the line indicator (▣) to the line:
PRESS "DELETE" TO ERASE DISK.

4. Press and hold in the Delete key until the message area of the text display shows **RECOVER** (it will first show **HOLD KEY**, then **ERASED**, then — after a delay — **RECOVER**), then release the Delete key.
5. Wait until the text display shows **DONE**. The images have been recovered.
6. Follow all steps needed to connect the DSU to your Macintosh or PC computer and acquire images. (Refer to “Using the KODAK DCS with Your Macintosh Computer” or “Using the KODAK DCS with Your PC.”)
7. Turn the DSU off, then on again (or erase the DSU hard disk again). The DSU is now ready for you to make new images.

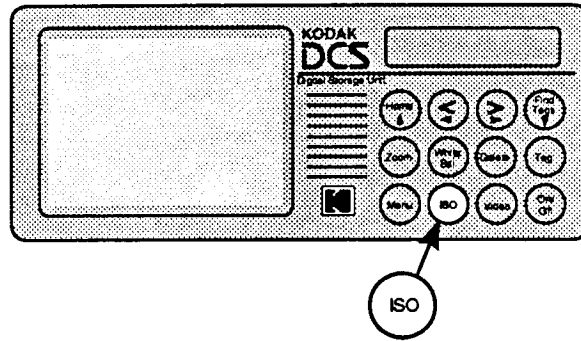
Important: If you do not complete this step, the camera system will prevent you from making new images. (The word **RECOVER** will reappear in the text display.)

VERSION Displays version information of the firmware in the DSU.

Notes: Although Home, <, >, Find Tags, and Zoom have different functions when the menu is shown on the video display, all other keys retain their functionality. This means that if you press Tag while the menu is on the video display, the last image you viewed (the image whose number appears on the first line of the text display) will be tagged.

If you press Video, the current image replaces the menu on the video display and you leave menu mode.

ISO Key



Press the ISO key to advance to the next of the four available ISO settings. The current setting appears in the text display.

#0125	b99%	d45%
Loaded	ISO	400

Select ISO settings from the following table to corresponds to the film speed setting you select on your Nikon F3 camera. If you change the setting on either the camera or the DSU, you should change the setting on the other

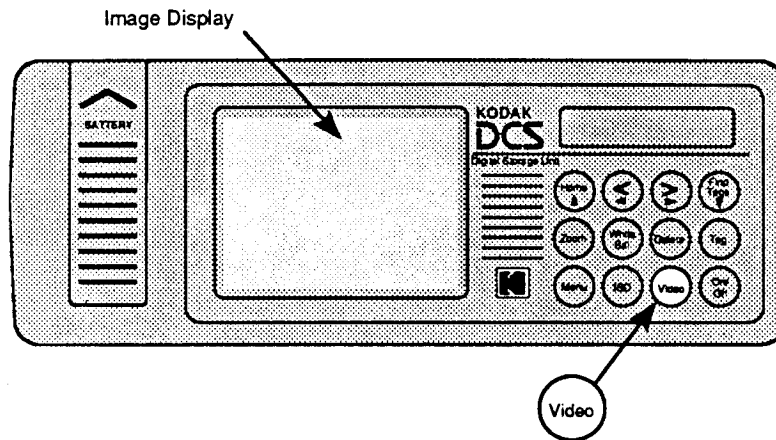
device; changing one setting does not automatically change the other. The ISO setting is retained when you turn off the DSU.

<i>Color Camera ISO</i>	<i>Monochrome Camera ISO</i>
100	200
200	400
400	800
800	1600

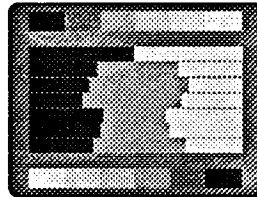
The system provides high-quality images at exposure indexes equivalent to film speeds of ISO 100, 200, 400, 800,* and 1600* in color or ISO 200, 400, 800, 1600,* and 3200* in black and white.

* You can obtain these speeds, but a loss of some image quality may occur (similar to when push-processing film). Refer to "Using the Nikon F3 Camera" at the end of "Tutorial: Operating the Camera and Digital Storage Unit."

Video Key



Press Video to toggle the image display on and off. The first time you press Video after turning on the DSU, a test pattern appears in the image display.

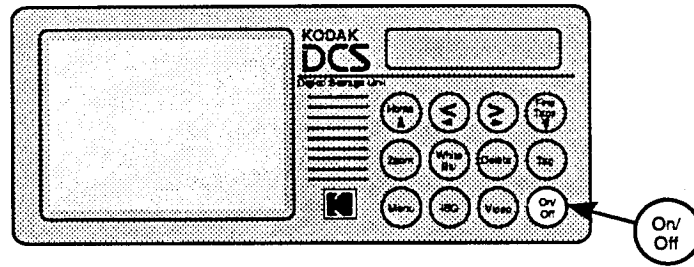


When the image display is off, Home, <, >, Find Tags, and Zoom are disabled. To use these keys, first press Video to turn on the image display.

Important: The image display does not need to be on to make photographs.

Note: Refer also the "Image Display" earlier in the "Reference — Camera and DSU" for additional information.

On/Off Key



Press On/Off to toggle the DSU on and off. You must turn on the unit for the camera to work, for any of the other keys to work, and to acquire images with the software driver.

Power must be available from either:

A rechargeable battery

When running from a battery, turn off the unit when not in use to conserve the battery.

(Refer to "Battery and Battery Charger" for additional information.)

Note: Very little power is used when the unit is on and the video display is off.

The AC adapter

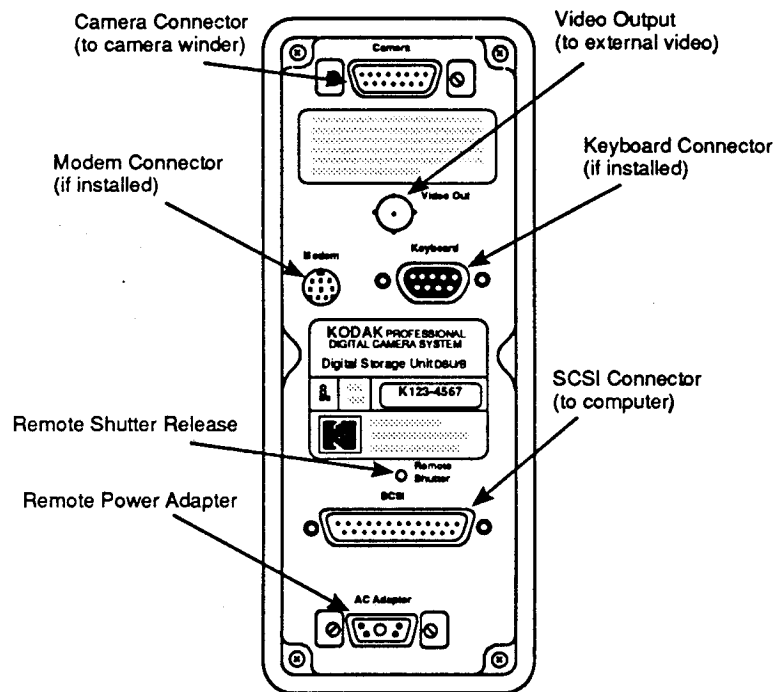
Connect the AC adapter provided by Kodak to the DSU as described later in this manual in the section "AC Adapter."

Leave the battery in the DSU when running from an adapter; the battery will charge, requiring up to four hours if it is at its lowest charge.

Note: We recommend that you keep a battery in the DSU when operating from the AC adaptor. This will ensure that enough power is available on start-up so that you are not delayed in making pictures. If no battery is in place, there will not be sufficient power to make a picture when the disk is spinning up (about five seconds after the first picture is made).

(Refer to "AC Adapter" for additional information.)

DSU Connector Panel



Important: Use only the supplied cables; do not use substitute cables.

Camera Connector (to Camera Winder)

The interconnect cable connecting the DSU to the camera winder clips to the DSU at the camera connector.

Video Output (to External Video Display)

You can view the image display simultaneously on an external video monitor or on a television set with a video setting. You connect the DSU to your external video display with the cable supplied by Kodak. The connector on the DSU is an NTSC video interface — 75 ohm BNC, male RS-170 connector. All images, black-and-white or color, are displayed in monochrome on the external monitor.

Note: The external video display is not included with the KODAK Professional Digital Camera System. You control the quality (brightness, etc.) of an image displayed on an external monitor with the controls on that external device.

Modem Connector (to External Modem)

A modem cable (not supplied by Kodak) connecting the Telebit T2500 modem to the DSU attaches to the DSU at the optional modem connector.

Keyboard Connector (to External Keyboard)

The keyboard cable connecting the DSU to the optional keyboard attaches to the DSU at the optional keyboard connector.

Remote Shutter Release

You can attach the supplied remote shutter release to the DSU at this connector. The connector is a subminiature phone jack (2.5 mm diameter).

SCSI Connector (to Computer)

You connect the DSU to your computer with a SCSI cable. The single SCSI connector on the DSU is a 25-pin, female, subminiature D connector. You can connect the DSU to the camera and to the computer at the same time, and operate both simultaneously.

When the DSU is connected to the computer, you can run the software driver to acquire images from the DSU to your computer. If the SCSI cable is not connected or not connected properly, the driver will display an error when you try to acquire an image. If this occurs, turn off the DSU and the computer and connect or reconnect the SCSI cable.

Notes: This section contains only a brief summary of the required SCSI connections. Detailed directions for connecting the DSU to a computer are included in the sections "Using the KODAK DCS with your Macintosh Computer" and "Using the KODAK DCS with Your PC."

Information on setting the SCSI ID for the DSU is contained in "Menu Key."

In normal usage you may connect and disconnect the DSU from the computer on a regular basis; for this reason you may wish to position the computer so that it is as easy as possible to access its SCSI connector.

Remote Power Adapter

You can operate the DSU from the AC adapter supplied by Kodak, instead of a battery, by connecting the DSU to the AC adapter through the remote power adaptor. The DSU operates on 12 volt DC.

Note: When operating from the AC adapter you should leave a battery in the DSU.

Hard Disk

The DSU includes a 200 megabyte (MB) Winchester hard disk. You can store up to 156 uncompressed images on the hard disk of a DSU that is not equipped with a compression board. If your DSU is equipped with a compression board, you can store 142 images if compression is off, and from 400 to a maximum of 699 images if compression is on.

The hard disk has a brief spinup period of approximately 20 seconds. Since images are stored in dynamic random access memory (DRAM) before they are moved to the hard disk, you can begin to make pictures immediately after turning on the DSU.

Even though the DSU is on, the hard disk is not continuously on.

- If you are operating from a battery, the hard disk turns off 30 seconds after the last disk activity (saving or loading an image).
- If you are running from the AC adapter, the disk will run for 5 minutes after the last disk activity.

The hard disk will restart, requiring approximately 20 seconds, when you make a new picture that is saved to the hard disk, or when you load an image from the hard disk (for example by pressing Home).

You can move images from the DSU hard disk to a computer with a software driver. The driver also allows you to delete images from the DSU hard disk.

Note: You cannot modify an image in the software and then save it to the DSU hard disk, nor can you use the DSU hard disk as a storage device for other computer applications.

Disk Status Information

The first line of the text display shows data regarding the hard disk. Included are the current image number (0003 in the figure below), whether the current image is color or not (the C below indicates color — no C indicates monochrome), the presence or absence of a tag for the current

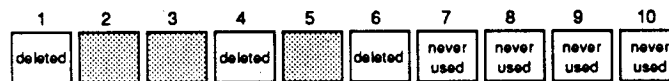
image (the T below indicates the image is tagged), the percent of the battery remaining (99% below), and the percent of the hard disk filled with images (87% below).

#0003f	b99%	d87%
Saved	Iso	400

Image Numbering System

If you begin with an empty hard disk (when you first use the system or when you erase the hard disk), images are stored with sequential numbers beginning with the number 1; that is, the first image is number 1, the second is number 2, and so on.

When you delete images, existing images on the hard disk are not renumbered. As an example of the use of the numbering system, consider the figure below. Each shaded box represents an active image on the DSU. Other boxes indicate that images on the DSU have been "deleted," while other boxes indicate that portions of the hard disk were "never used."



As you make new photographs, the new images are placed together *at the end* of the area on the hard disk that has been used for images. In the figure above, new images will be numbered 7, 8, ... New images do not replace existing images. In the illustration above, if you are currently viewing image number 2 and you make two pictures, the first will be saved as number 7 and the second will be saved as number 8.

Note: Images can be numbered up to 9999. It is possible that you will reach this number by a continuous process of making pictures, moving them to the computer, and then deleting images from the DSU hard disk. If you do reach image number 9999, the next images will be numbered 1, then 2, then 3, and so on, even if those numbers are already in use. Therefore it is possible that you may have several images with the same image number. You can avoid this by occasionally erasing the DSU hard disk after copying all needed images to your computer hard disk.

Dynamic Random Access Memory (DRAM)

The DSU includes eight megabytes (MB) of dynamic random access memory (DRAM) that can support a six-frame burst of images. (An optional upgrade to a total of 32-megabytes of DRAM supports a 24-image burst.)

An image must be in DRAM before it can be shown on the image display. There are several ways in which you can place images into DRAM.

- When you make pictures, each image is first placed into DRAM, and then moved to the hard disk. When DRAM contains no images, as it does when you first turn on the DSU, it is possible to shoot six pictures continuously (with eight MB of DRAM) at the rate of 2.5 images per second (one image every 0.4 seconds). This rate will be slower when the video display is on. If you continue to depress the shutter release button, new pictures are made at a rate of 0.5 images per second (one image every two seconds) as images already in DRAM are moved to disk to make room for the new images. (The optional 32-megabyte DRAM allows for a burst of 24 images.)
- You can also move images into DRAM from the hard disk by pressing HOME, <, >, and Find Tags while the image display is on.

Battery and Battery Charger

You can operate the digital storage unit (DSU) from a standard rechargeable 12-volt, 2.3 ampere-hour camcorder battery. (As an alternate to operating the DSU from a battery, you can run the unit from an external AC adapter as described in "AC Adapter.")

Note: When operating from the AC adapter you should leave the battery in the DSU.

You can recharge the battery with the battery charger supplied by Kodak, or with an equivalent battery charger purchased from your supplier. Batteries typically require less than two hours to recharge. Additionally, batteries will be charged in approximately four hours if they are left in the DSU while the DSU is operated from the AC adapter.

Batteries provide best performance when used at room temperature. Although you can obtain good quality images with a cold battery, you may

be delayed in making a picture or burst of images and you may see Low BATT on the DSU text display. If you anticipate making pictures in a cold setting, consider keeping batteries warm by storing them close to your body. You can revive a cold battery by warming it to room temperature.

The text display includes status information for the battery. For example, the display below indicates that the battery still has 99% of its power (b99%). When the battery is low, the second line of the text display will show LOW BATT. When this occurs, replace or recharge the battery.

#0003	b99%	d87%
Saved	Iso	400

Important Notes: Carefully read and follow the directions on the battery and with the battery charger.

Do not ship the digital storage unit with a battery inside.

The following are recommended if you need additional batteries:

Panasonic LC 2012 (2 Ah)

Panasonic LC 2312 (2.3 Ah)

The following are recommended if you need additional battery chargers:

Chinon CV AC32

Philips V8009313K01

Aztec AZ 1223

AC Adapter

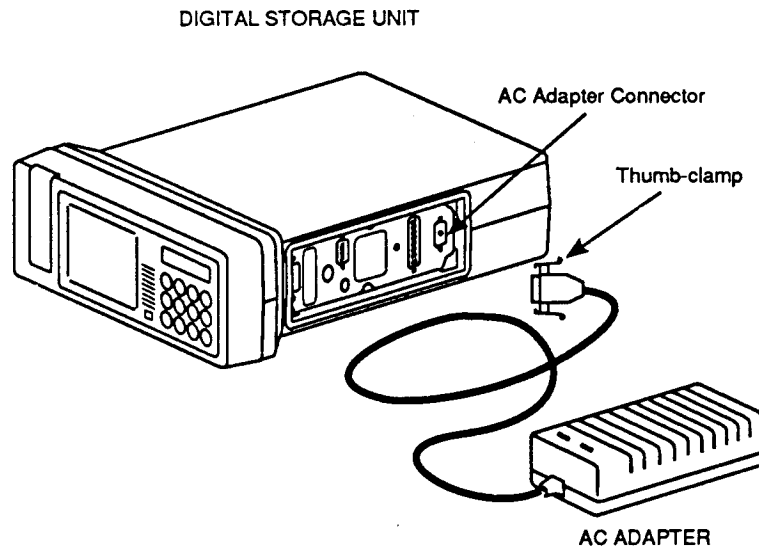
In addition to operation from a camcorder battery, you can also operate the system from an AC power outlet by using the AC adapter provided with the system. The DSU operates on 12 volt DC.

When operating from an AC power outlet:

- You should leave the camcorder battery in the DSU. This will recharge the battery in approximately four hours. It will also ensure that enough power is available on start-up so that you are not delayed in making pictures. (After the first picture is made, disk start-up requires approximately five seconds. The AC adapter alone provides insufficient power for another picture to be made during this start-up; however, there is sufficient power if a battery is in the DSU while running the system from the AC adapter.)
- You should use the camera system only in a protected, indoor environment.
- You will only need to turn on the image display once (press the Video key); the image display remains illuminated.
- You can connect the DSU to the computer and the camera.
- You should be careful that power to the DSU is not interrupted while images are being saved to the DSU hard disk. If a power interruption occurs during a save-to-disk operation, the DSU hard disk will stop functioning, corrupting information on the disk. To regain full functionality you must erase the DSU hard disk, resulting in the loss of all images on the hard disk.

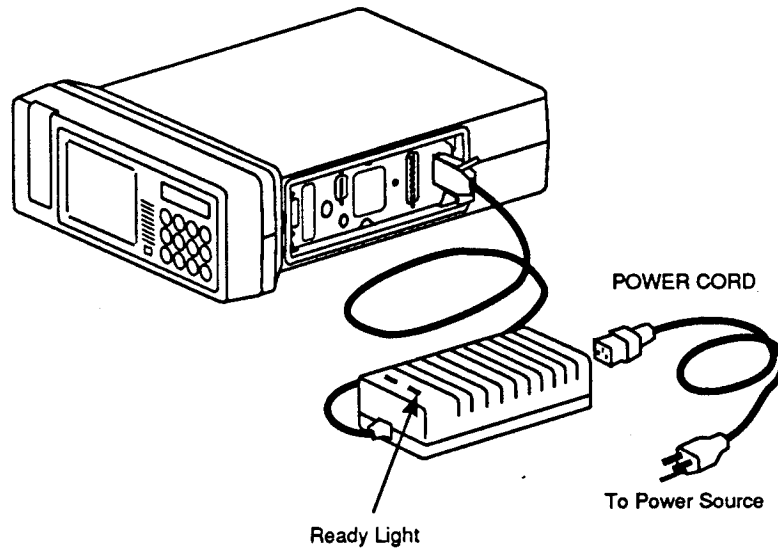
Follow these steps to operate from an AC power outlet.

1. Turn off the DSU.
2. Clamp the end of the cable extending from the AC adapter to the DSU; to do so, squeeze the thumb clamps while inserting the plug into the DSU "AC Adapter" connector and then release the clamps.



3. Connect the AC adapter power cord to the AC adapter and to a source of power that conforms to the AC input specifications printed on the adapter. A green light on top of the AC adapter indicates that the adapter is ready.

Note: If the green light is not illuminated, try another power source and, if necessary, another power cable.



REFERENCE

4. Turn on the DSU.

The KODAK Professional Digital Camera System is ready for operation.

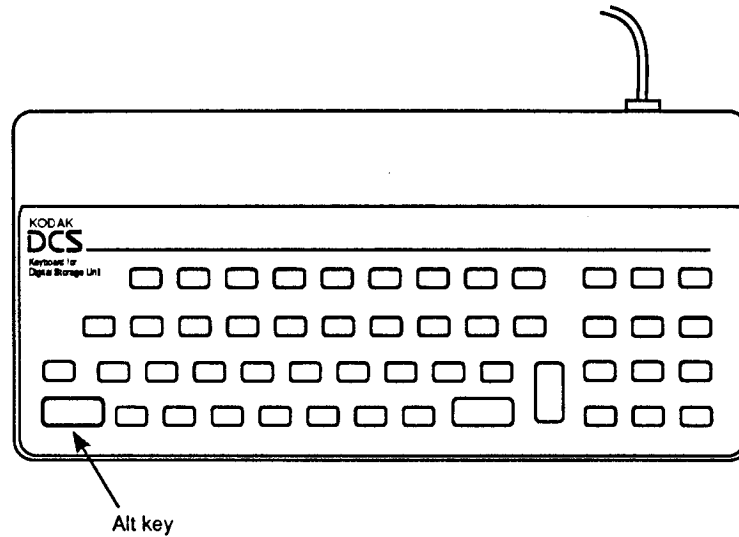
Optional DSU Communications Features

This section of the manual describes optional communications and related features available for the Digital Storage Unit (DSU) of the KODAK Professional Digital Camera System. These features include:

- A keyboard — provides for caption entry, controls the DSU, and provides access to communications features.
- Captioning — supports caption entry for each image on the DSU.
- Data entry — supports additional data entry for each image on the DSU.
- File transmission — sends files from the DSU to a Macintosh computer at a different location.

Each of these features is described below. They require that the DSU be equipped with the optional keyboard port and modem port.

Keyboard



REFERENCE

The optional external keyboard provided by Kodak connects to the DSU keyboard port with the keyboard cable. "Tutorial 1: Entering IPTC-ANPA Data" describes how to connect and use the keyboard.

All keys on the DSU keypad also appear on this keyboard, except for the On/Off key and the White Bal key. This means that once you have turned on the DSU, you can control it from the keyboard. There is no separate on/off key for the keyboard; instead, the DSU detects whether it is present or not.

Alt Key

The narrow yellow border around the Alt key is color coded to correspond with the words and characters printed above most of the keyboard keys. To obtain the action or character printed above the key, press and hold down the Alt key, press the other key, then release both keys. For example, to turn on the video display, press and hold down the Alt key, press the Video key, then release both keys.

Caption Screen

The caption screen allows you to enter a caption with each image on the DSU hard drive.

To add a caption to an image, first find and load the image on the DSU. Then press Alt-Caption on the keyboard to view the caption screen; the screen appears on the DSU image display. Once the screen is opened, data are typed using the keyboard. The CAPTION is part of the file format of the International Press Telecommunications Council — American Newspaper Publishers Association (IPTC-ANPA).

Later, if an image with a caption is moved from the DSU to a computer system capable of receiving IPTC-ANPA data — for example by transmitting the image to a Macintosh computer running the included KODAK Communications Software — the caption is received with the image. You can view the caption, edit its contents, and add data for additional IPTC-ANPA fields by opening the file with the KODAK Communications Software, and choosing SHOW IPTC-ANPA WINDOW from the WINDOWS menu.

Type the caption normally. When you reach the end of the line, continue to type; the cursor will automatically move to the next line, breaking a word in the middle if necessary.

- Caption -

This is an example of a caption. You will notice that words are cut off at the right end of each of the lines and continue on the next line. This allows more characters to be entered on one screen than if whole words were wrapped to the next line on the screen.■

You can enter up to 525 characters (15 lines by 35 characters per line). Edit the caption by pressing the four arrow keys to move the cursor to the area you want to edit. You can then press Back Space to erase the character to the left of the cursor. You can also press Ins to change to character insert mode for the line (instead of the default type-over mode) before typing the revision.

As you delete characters with Back Space, the characters from subsequent lines are not drawn up to the end of the current line. As you type characters after pressing Ins, characters pushed ahead past the end of the line are lost — they are not wrapped to the next line.

The Return key, if typed, moves the cursor to the next line on the caption screen, but does not place a carriage return character into the text. This means that later, when an image is transmitted to a computer, all spaces seen on the screen (including those at the end of a line before a new paragraph) will be transmitted as part of the caption.

When you are done, press Alt-Caption again. The image display is turned off and the words SAVING and then SAVED appear in the text display as the caption is saved to the DSU hard disk with the image.

Data Screen

The data screen allows you to enter a variety of data (such as city, state, and country) with each image on the DSU hard drive.

To add these data to an image, find and load the image on the DSU. Then press Alt-Data on the keyboard to view the data screen; the screen appears on the DSU image display.

▶ Service:■

Product:

Byline:

Title:

Caption writer:

Obj Name:

Category:

Sup Cat:

Sup Cat:

Keywords:

City:

State:

Country code:

Once the screen is opened, type data using the keyboard. Press Return to move from field to field and press the four arrow keys to move the cursor. Edit entries by pressing Back Space to erase the character to the left of the cursor. You can also press Ins to change to character insert mode for the line (instead of the default type-over mode) before typing the revision.

The material you enter on the data screen for one image is saved with that image and with each subsequent image you make; when you change these data for a subsequent image, the revised data are saved with that image and with subsequent images.

This feature allows you to enter data once at the beginning of a photographic session. The data will be saved with each image made. When you are ready for another session, enter new data. To enter these data, turn on the DSU and turn on the video display — you see the test image. (This technique works with any image — not just the test image.) Press Alt-Data on the keyboard, and enter the desired data on the data screen. These data are saved with subsequent images, even if you have turned off the DSU before the next session.

The fields — SERVICE, PRODUCT, and so on — are part of the IPTC-ANPA file format. A brief explanation of each follows. Later, if an image with these data is moved from the DSU to a computer system capable of receiving IPTC-ANPA data — for example by transmitting the image to a Macintosh computer running the included KODAK Communications Software — these data are received with the image. These data are important when

images are opened in computer systems that allow you to locate images by name, perform searches on keywords, and so on.

Additional information on IPTC-ANPA files appears in "Show IPTC-ANPA Window" in the Communications manual.

Field Enter these data (all fields are optional):

SERVICE	Enter up to 10 characters of information about the product that produced the data — for example KODAK DCS.
PRODUCT	Enter additional information about your service.
BYLINE	Enter the name of the photographer or author of the material.
TITLE	Enter a title (like PHOTOGRAPHER) for the individual credited in the BYLINE.
CAPTION WRITER	Enter the name of the author of the caption.
OBJ NAME	Enter a name for the image or text.
CATEGORY	Enter a single category code, up to three characters in length, describing the category of the image.
SUP CAT	Enter one or two supplemental categories further defining the image.
KEYWORDS	Enter a series of up to four keywords, one per line, related to the image.
CITY	Enter a city code — for example ROCHESTER — naming the site at which the image file was created.
STATE	Enter a state or province name — the site of origin of the file.
COUNTRY CODE	Enter a three character country code — for example USA — using codes from ISO 3166:1988.

When you are done, press Alt-Data again. The image display is turned off and the words SAVING and then SAVED appear in the text display as the data are saved to the DSU hard disk with the image.

Modem Screen

The modem screen of the DSU allows you to enter and save telecommunications settings you use when sending images from the DSU to a Macintosh computer at a different site. There is one set of modem data for the DSU. (This is different from the data associated with the caption screen and the data screen; those data can appear for every image on the DSU.)

To enter modem data, press Alt-Modem on the keyboard; the screen appears on the DSU image display.

```
► Dial string:  A B C D

A:
B:
C:
D:

, = pause      W = wait for dial tone

Dial mode:  TONE PULSE
Answer time (sec):  30 90 180
Retry delay (sec):  10 30 60
Retry times:  1 2 5 10
Modem setup:  NORM SAT1 SAT2 SAT3
Send compress:  OFF LOW MED HIGH
Color mode:  MONO NORM CORRECTION
```

REFERENCE

Once the screen is opened, press Return, ▼, or ▲ to move the line indicator (►) from line to line. Use the keyboard to enter telephone numbers on lines A, B, C, and/or D as described below. To make choices from other lines, move the line indicator to the desired line and then press ◀ or ▶ to highlight the choice you want.

Once data have been entered, and options selected, you make the telephone connection by pressing Alt-Connect and then Alt-Send. A full explanation of the modem screen, and its use with the Connect, Send, and Crop keys to transmit images from the DSU to a Macintosh computer at another site appears in "Tutorial 2: Telecommunicating from the DSU to a Macintosh Computer."

An explanation of each option on the screen follows:

DIAL STRING Corresponds one-to-one to the four lettered lines beneath the dial string. You enter up to four telephone numbers, one on each of the lines labeled A, B, C, and D. Then return to this line and press the left or right arrow key (◀ or ▶) until the highlight corresponds to the telephone number you want to call. For example, to call the telephone number on line B, highlight the letter B on the **DIAL STRING** line.

A (B, C, D) Type up to four telephone numbers, one per line. You can type parentheses (Alt-O and Alt-P), spaces, or a dash (Alt-2) in the number. If needed by your telephone system, type a comma (on the numeric keypad portion of the keyboard) to indicate that a pause should occur at this point when dialing, or type the letter "W" to indicate that the modem should wait for a dial tone before dialing the remaining portion of the telephone number.

A line of text in the middle of the screen —

, = PAUSE W = WAIT FOR DIAL TONE

provides an on-screen reminder of the purpose of these two characters.

Several sample formats for telephone numbers follow:

5551234

555 1234

(716) 555-1234

9,,1 W 716 555 1234

Edit or change the telephone number as needed.

DIAL MODE	Choose TONE or PULSE to correspond to the type of telephone line in use. (When you try to connect, you may hear a message that the telephone is temporarily out of order; this may indicate that you have not chosen the correct DIAL MODE.)
ANSWER TIME	<p>Specifies how long the DSU will wait — 30, 90, or 180 seconds — for the call to be answered. Choose a lower time for “local” calls (for example calls within the same country), and a longer time for international calls or for calls on which you are having trouble establishing a connection.</p> <p>If you change this setting, it automatically returns to 90, the default, the next time you turn on the DSU.</p>
RETRY DELAY	Specifies how long the DSU will wait — 10, 30, or 60 seconds — before trying the call again. These data are used with the RETRY TIMES data on the next line.
RETRY TIMES	<p>Specifies how many times — 1, 2, 5, or 10 times — the DSU will try the call again if a connection is not made the first time. These data are used with the RETRY DELAY data on the previous line.</p> <p>If you change this setting, it automatically returns to 2, the default, the next time you turn on the DSU.</p>
MODEM SETUP	<p>Specifies which of the four settings — NORM (normal), SAT1 (satellite 1), SAT2 (satellite 2), and SAT3 (satellite 3) — will be sent to the modem by the DSU.</p> <p>NORM provides the maximum bits-per-second transmission, with SAT1, SAT2, and SAT3 each providing progressively slower transmission speeds. With poor connections, slower transmission rates may</p>

in fact provide faster throughput (less overall transmission time), since at slower rates, fewer transmission errors will occur, resulting in less need for the automatic retransmission of data.

Important: If you choose SAT1, SAT2, or SAT3, special modem setup must occur at the receiving end of the transmission. When receiving files on a Macintosh computer with the KODAK Communications Software, you must receive images with one of the provided phonelinks. For SAT1, SAT2, and SAT3 open SATELLITE1 PHONELINK, SATELLITE 2 PHONELINK, or SATELLITE 3 PHONELINK respectively.

Older Telebit T2500 modems do not allow long (over 59 seconds) delays while waiting for a connection. If you experience this problem at the Macintosh computer (the computer screen repeatedly shows CONNECTING then NOT CONNECTED every five seconds), choose SATELLITE 1 PHONELINK 59, SATELLITE 2 PHONELINK 59, SATELLITE 3 PHONELINK 59 respectively. You may also want to have your modem dealer upgrade your modem with new PROMS.

If you change this setting, it automatically returns to NORM, the default, the next time you turn on the DSU.

SEND COMPRESS

Provides four compression values — OFF, LOW, MED, and HIGH — indicating the compression that should occur with the image before it is sent to another site during a telecommunications session.

We recommend that you begin by transmitting an image with HIGH compression since this will produce the fastest transmission. If the image results are unsatisfactory at the receiving site, then try again with less compression until a satisfactory image is received.

This value is not related to the optional compression used when new images are stored on the DSU hard disk (refer to Disk Save in the "Menu Key" section of

disk (refer to Disk Save in the "Menu Key" section of this manual). Instead, these choices only apply when image data are prepared for transmission to another site.

If you change this setting, it automatically returns to MED, the default, the next time you turn on the DSU.

COLOR MODE Determines the color information (including needed correction for hue and saturation) applied to a color image during transmission. The settings do not affect the image stored on the DSU hard disk.

Select a setting as follows.

- | | |
|------|---|
| MONO | The DSU will send a monochrome version of a color image by sending only data from the green color plane. This reduces transmission time, and is suggested if a monochrome image is required at the receiving site. |
| NORM | The DSU will send the image without color-correction, but will send an IPTC-ANPA 3x3 Color Calibration Matrix Table with the image. Choose NORM when the color will be corrected at the receiving site, as it will be when received on a Macintosh computer with the included KODAK Communications Software. That software detects an uncorrected image and automatically provides color-correction using the IPTC-ANPA Color Calibration Matrix Table included with the image sent by the DSU. |



CORRECTION The DSU will color-correct the image during the transmission process. Use this setting when the remote site does not support color-correction using the IPTC-ANPA Color Calibration Matrix Table.

Note: You can use this setting even when sending to the KODAK Communications Software; however, we recommend the NORM setting, since CORRECTION adds significantly more time to transmission than is required to correct the image after it is received with the software on a Macintosh computer.

If you are using a monochrome camera back choose either MONO, NORM, or CORRECTION; all settings work identically for monochrome images.

If you change this setting, it automatically returns to NORM, the default, the next time you turn on the DSU.

Messages: KODAK DSU Text Display (LCD)

The left end of the second line of the text display, called the message area (it shows the word *Loaded* in the following figure), displays a variety of messages regarding the status of the digital storage unit (DSU). An explanation of each of the messages follows.

#0125	b99%	d45%
Loaded	Iso	400

Message	Explanation
BADWHITE	You have pressed the White Bal key when the current image is overexposed in the center. Although white balance values are recorded, we encourage you to make another image and then press the White Bal key.
CONNECT	Indicates during a communication session that the DSU has successfully connected to a remote computer.
CROPPED	Appears when you press Alt-Crop (after pressing Zoom); indicates that a cropped version of the current image will be transmitted.
DEADLITH	The lithium battery permanently sealed in the DSU must be replaced; contact Kodak.
DELETED	When you delete an image, you normally see the messages <i>LOADING</i> and then <i>LOADED</i> as the next image on the DSU hard drive is loaded. However, if you have erased the last image on the hard disk, you see the message <i>DELETED</i> for several seconds. Then the message changes to <i>LOADED</i> and the test image appears in the image display.
DIALING	Appears during a communication session when you press Alt-Connect with the Modem screen in the image display. This message indicates that the DSU is dialing the telephone number you have selected.

REFERENCE

DONE	Indicates the completion of the recovery of all images just inadvertently deleted when the DSU hard disk was erased.
DskERROR	Disk error in the DSU. Turn off the DSU, and then turn it on. If the error reoccurs, contact Kodak.
DskFULL	You have saved the maximum number of images on the DSU hard disk. You will need to delete images in order to capture additional images to the DSU hard disk.
DSU HOT	The DSU is overheated; the camera and DSU will not operate. Allow the DSU to cool, and then try again.
DSUFAILED	Failure in the DSU. Disconnect all units; reconnect them and try again. If the error reoccurs, contact Kodak.
ERASED	You have erased the hard disk. The message ERASED appears for several seconds. Then the message changes to READY! and the test image appears in the image display.
FAILED	Indicates during a communications session that an operation has failed. For example, if you press Alt-Connect to dial a telephone number while viewing the Modem screen, and no modem is attached or the modem is off, this message appears. Correct the unusual condition, for example turn on the modem, and try the operation again.
HANGUP	Indicates during a communications session that you have pressed Alt-Connect to have the modem "hang up" the phone.
HOLD KEY	This message appears while you hold the Delete key to delete an image. Release the Delete key when this message disappears. Also appears when holding the Delete key to erase the DSU hard disk while in the menu screen.

LOADED	An image has been copied from the DSU hard disk into dynamic random access memory and is displayed on the image display.
LOADING	An image is being copied from the DSU hard disk into dynamic random access memory. Once the image has been loaded (after a wait of no more than 20 seconds), the message becomes LOADED.
LOW BATT	Replace or recharge the battery, or run the camera system from the AC adapter, or warm a charged cold battery to room temperature. (When operating from the AC adapter you should leave a battery in the DSU.)
MEMERROR	Memory error in the DSU. Turn off the DSU, and then turn it on. If the error reoccurs, contact Kodak.
MONIMAGE	<p>You have pressed the White Bal key when the current image is monochrome (including the test image). As a result, no color balance data are set.</p> <p>To use the White Bal key properly, the current image must be a color image.</p> <p>(See also WHITEBAL below.)</p>
NN% SENT	Indicates the percentage of an image that has been transmitted during a communications session.
NOCAMERA	<p>No camera is connected to the DSU.</p> <p>Unlike other messages that appear at the left of the second line of the text display, NOCAMERA appears at the right of the line, and remains there while other messages appear at the left of the line.</p> <p>For example, the second line of the text display may say:</p> <p style="padding-left: 40px;">READY! NOCAMERA</p> <p>This line indicates that the DSU is ready (you can acquire images with the software driver, delete images, and so on), even though no camera is attached.</p>

NoDELETE	You have pressed the Delete key on the DSU keypad when the DSU is connected to your computer; however, that key is disabled in this situation. Instead use the software driver supplied by Kodak to delete images from the DSU when the DSU is connected to your computer.
NoTAGS	You pressed the Find Tags key and none of the images on the hard disk is tagged.
OFFLINE	Indicates during a communication session that the DSU and modem are not connected to the telephone line.
ON LINE	Indicates during the initiation of a communication session that the DSU and modem are successfully connected to a computer at a remote site.
ONLINE!	The camera system will not let you make pictures while the DSU is connected during a telecommunications setting. If you attempt to make pictures, you see the message in the text display.
PROCESS	Appears after you press Alt-Send to transmit an image. Indicates that the DSU is preparing image data for transmission.
READY!	The DSU is turned on and is ready for use.
RECOVER	Indicates that the DSU is recovering all images just inadvertently deleted when the entire DSU hard disk was erased. After a recovery is complete, if the camera system will not let you make pictures, and this message appears, it means you have not completed the final step of the recovery — erasing the recovered data. To do so, either erase the DSU hard disk, or turn the DSU off, then on.
SAVED	You made a picture and the image has been saved from dynamic random access memory to the hard disk. Or other data, such as a caption, has been saved with an image.

SAVING	After you made a picture, this message appears while the image is saved from dynamic random access memory to the hard disk. Or other data, such as a caption, is being saved with an image.
SENDFAIL	Indicates during a communications session that the transmission of a file has been interrupted. For example, this message will appear if the modem at the receiving computer is turned off while a file is being received. Try the operation again. This message also appears if the hard disk on the receiving computer is full. Try again; if the message appears several times at the same point in the transmission (for example repeatedly at 17% sent) contact the receiving site to clear room on the hard disk before trying again.
SENT	Indicates that a file has been successfully transmitted during a communications session.
WAIT!	May appear after you make the maximum image burst, briefly preventing you from making additional images. Disappears when images in DRAM are moved to the DSU hard disk.
WHITEBAL	Indicates that you have successfully set color balance values by pressing the White Bal key. The current image must be a color image. (See also MONIMAGE above.)
ZOOM	Zoom is on. Press Zoom again to turn it off and to return to a full display of the image.

Troubleshooting the Camera and DSU

The troubleshooting material is divided into the following sections:

- Digital Storage Unit (DSU) Power.
- Digital Storage Unit (DSU) Image Display.
- Digital Storage Unit (DSU) Image Storage.
- Nikon F3 Camera.
- Camera Winder.
- Image Quality.

Additional troubleshooting material is contained in several "Messages" sections of this manual.

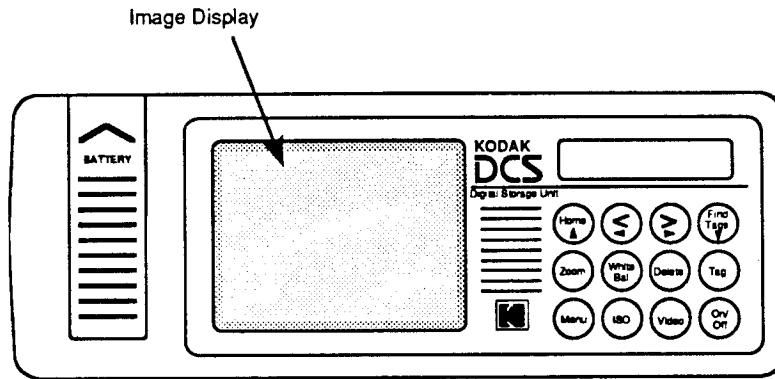
Digital Storage Unit (DSU) Power

<i>Trouble</i>	<i>Possible Cause</i>	<i>Suggested Solution</i>
No power when using a battery.	The DSU is not on.	Press the On/Off key on the DSU keypad.
	The battery is discharged.	Replace with a charged battery.
	There is no battery in the DSU.	Install a charged battery.
No power when using an AC adapter.	The DSU is not on.	Press the On/Off key on the DSU keypad.
	The cable from the AC adapter to the DSU is loose or not plugged into the DSU.	Make sure the cable is connected to the DSU and seated securely.
	The AC adapter power cord is faulty.	Replace the cable.
	The AC adapter power cord is loose or not plugged in at one or both ends.	Make sure both plugs are seated securely.
	There is no power at the power source.	Repair the source of the power and/or try another power source.
	The AC adapter is faulty.	Contact Kodak.

REFERENCE

<i>Trouble</i>	<i>Possible Cause</i>	<i>Suggested Solution</i>
The text display shows unusual characters (for example black boxes or extra spaces), and all functions are disabled.	The battery is discharged.	Replace with a charged battery or operate the storage unit from the AC adapter. (When operating from the AC adapter you should leave the battery in the DSU.)
There are delays in making a picture or burst of images when using a charged battery.	The battery is cold.	Warm the battery to room temperature.

Digital Storage Unit (DSU) Image Display



<i>Trouble</i>	<i>Possible Cause</i>	<i>Suggested Solution</i>
No image appears in the image display.	The video is off.	Make sure the power to the storage unit is on (press the On/Off key if the power is off), and then press the Video key to turn on the image display.
The image display shows a test pattern, not one of your images.	During normal operation, the test pattern appears when the image display is first turned on.	Press the Home key to load and display the first image from the hard disk.
You cannot read the image display while outdoors.	Bright light reduces the readability of the display.	Shade the image display and/or set the Video Bright control (press the Menu key to access this control) to a higher setting.

REFERENCE

<i>Trouble</i>	<i>Possible Cause</i>	<i>Suggested Solution</i>
The image breaks up or wavy patterns appear in the image display.	The battery is discharged.	Replace with a charged battery.

Digital Storage Unit (DSU) Image Storage

<i>Trouble</i>	<i>Possible Cause</i>	<i>Suggested Solution</i>
You are making pictures but they are not being stored on the DSU hard disk.	Disk Save is set to Off.	<p>Change the Disk Save control from Off to On (press the Menu key to access this control).</p> <p>Note: You cannot save new pictures to the DSU hard drive when Disk Save is Off; however, you can acquire the single current image (its image number is shown in the text display) with the software driver if you do so before you turn off the DSU.</p>

REFERENCE

Nikon F3 Camera

<i>Trouble</i>	<i>Possible Cause</i>	<i>Suggested Solution</i>
The motor winder does not advance or only advances one frame.	The motor drive is Off or is set to Single.	Reset the motor drive Winder (under the Menu key) from Off or Single to Slow or Fast.
The camera is not metering. (When you look through the viewfinder of the Nikon F3 camera, a shutter speed of 80 appears on the liquid crystal display.)	You have not advanced the frame counter to 1 (or beyond).	Advance the frame counter by repeatedly winding the film advance lever and pressing down the backup mechanical release lever on the Nikon F3 camera.
Pressing the shutter release button on the camera winder grip does not release the shutter.	The DSU is off.	Turn on the DSU.
	The DSU hard disk is full.	Delete images from the DSU hard disk.
	Dynamic random access memory in the DSU is full.	Wait a short period of time until images are saved to the DSU hard disk and then try again.
	The motor drive is Off.	Rotate the film advance lever, or reset the motor drive Winder (under the Menu key) from Off or Single to Slow or Fast.

Camera Winder

<i>Trouble</i>	<i>Possible Cause</i>	<i>Suggested Solution</i>
The pins extending from the camera winder will not mate with the connector on the base of the camera back.	One or more of the pins is bent or out of alignment.	If the pins are not bent badly, carefully straighten the pins; otherwise, call Kodak as described in "Technical Assistance."
The winder runs continuously.	The DSU was on when the interconnect cable from the camera was attached to it.	Turn off the DSU (and unplug the AC adapter if in use). Remove the battery. Reinsert the battery. Turn on the DSU.

REFERENCE

Image Quality

<i>Trouble</i>	<i>Possible Cause</i>	<i>Suggested Solution</i>
All acquired images have a consistent defect.	There is dirt or dust on the imager (inside the camera back).	Refer to "Cleaning the Imager."
Acquired images have random defects.	Random electronic "noise" is affecting the images.	Set the motor drive Winder control to Off Single, or Slow. (Press the Menu key to access this control.) The Fast setting can introduce electronic noise into the image.
	The ISO setting is too high.	Make the image again with a lower ISO setting.
Color aliasing appears in areas of the image.	Certain scene conditions (for example strong vertical lines against a generally white background), produce unavoidable color aliasing.	You may be able to remove minor aliasing effects from the image while working with the image within image editing software.

Cleaning the Imager

The imager is the component of the KODAK Professional Digital Camera System that records light data when you make an image. Even though it is located inside the camera back, it is still possible for the imager to become dirty.

The directions in this section describe how to:

- Determine if the imager needs cleaning.
- Clean the imager.

Determining if the Imager is Dirty

There are two ways to determine whether the imager needs cleaning: you can make a test image and look for imperfections in the image that indicate dirt on the imager, or you can visually inspect the imager for dirt. Both techniques are described below.

Technique 1: Examine a Test Image

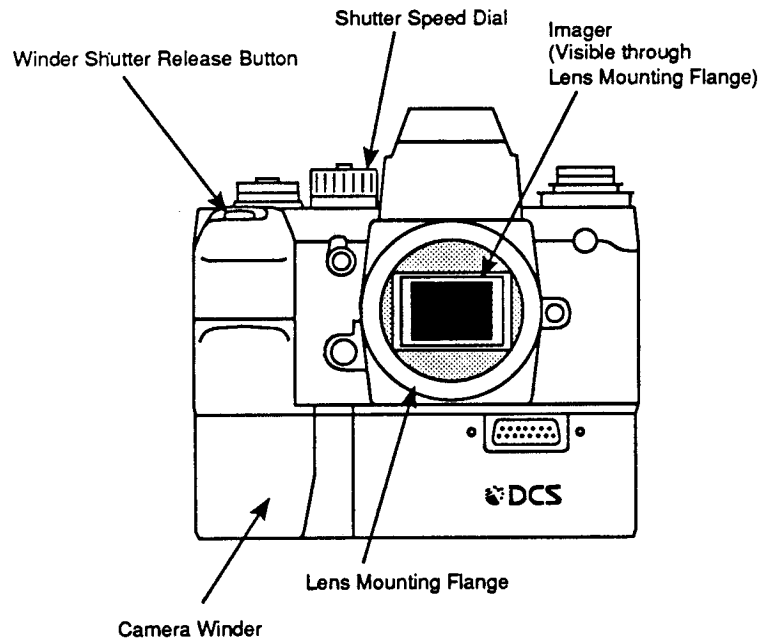
Follow these steps to make a test image and examine that image for imperfections that indicate the imager is dirty.

1. With the camera connected by cable to the Digital Storage Unit (DSU), turn on the KODAK Professional Digital Camera System by pressing the On/Off key on the DSU keypad.
2. Press the Video key to turn on the image display.
3. Set the lens aperture to $f/22$, or the highest f number, to provide for maximum depth of field.
4. Make a photograph of a plain object like a clean, white wall.
5. Examine the image on the video display (or on an external video monitor if connected); imperfections in the image, such as dark clusters or streaks, may indicate a dirty imager that should be cleaned as described below in "Cleaning a Dirty Imager."

Technique 2: Visually Inspect the Imager

Follow these steps to visually examine the imager for dirt.

1. If the camera is not attached to the DSU, connect it now.
2. If the DSU is not on, press the On/Off key to turn it on.
3. Remove the lens from the Nikon camera.
4. Set the shutter speed dial on the camera to T.
5. Press the winder shutter release button (not the Nikon shutter release button); the shutter stays open, and the imager is visible through the lens mounting flange.



6. Hold the camera so that light reflects off the imager; visually inspect the imager for grease, fingerprints, lint, or other dirt.
7. Release the shutter by turning the shutter speed dial off the T setting.
8. Mount the lens.
9. If the imager is clean, proceed to operate the camera system normally; however, if the imager is dirty, clean it using the following steps.

REFERENCE

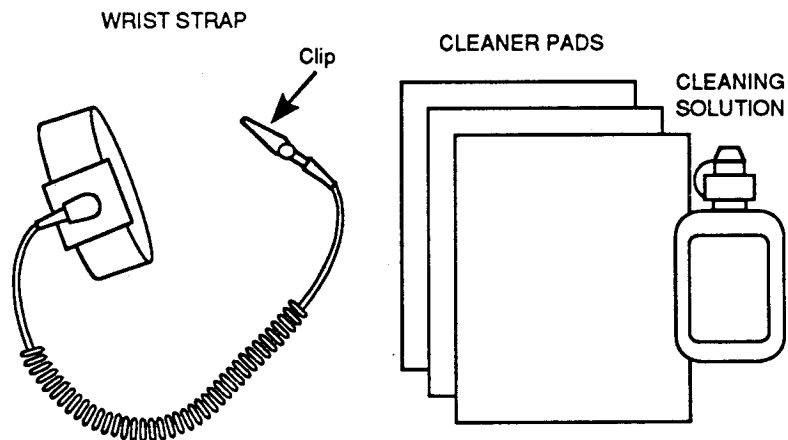
Cleaning a Dirty Imager

Caution: Use only the procedure described below. Other procedures may result in damage.

Follow these steps to clean a dirty imager.

You will need to:

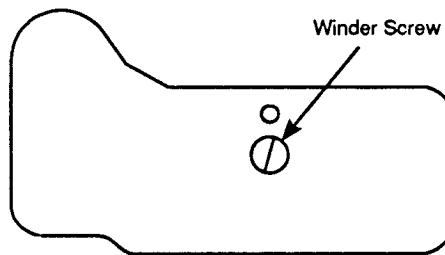
- Work on a flat, stable surface.
- Use the cleaning kit supplied with the KODAK Professional Digital Camera System. It contains an electrostatic discharge (ESD) wrist strap, low-lint web cleaner pads, and a cleaning solution. The wrist strap is used to provide protection against damaging electronic components of the camera back.



Accessing the Imager

1. If the camera is connected to the DSU, make sure the DSU is off, then disconnect the camera by removing the cable from the camera winder.
2. Use a coin to loosen the screw that holds the camera winder to the camera body; turn the winder with your fingers until you feel it disengage from the camera body.

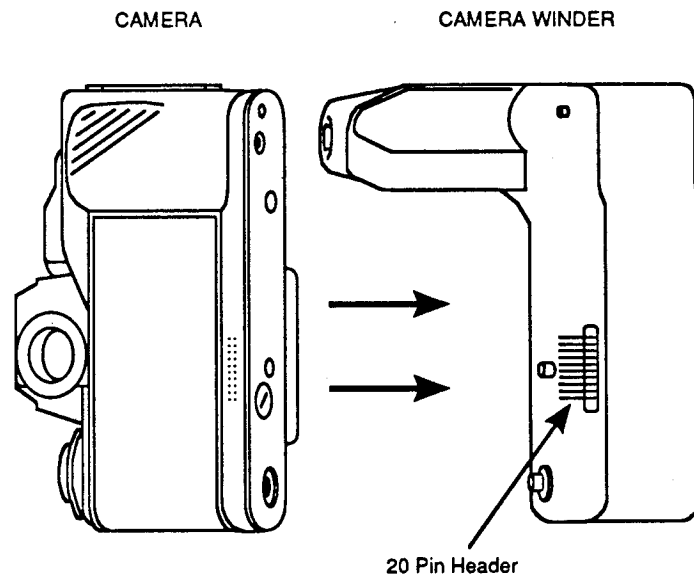
BOTTOM OF CAMERA WINDER



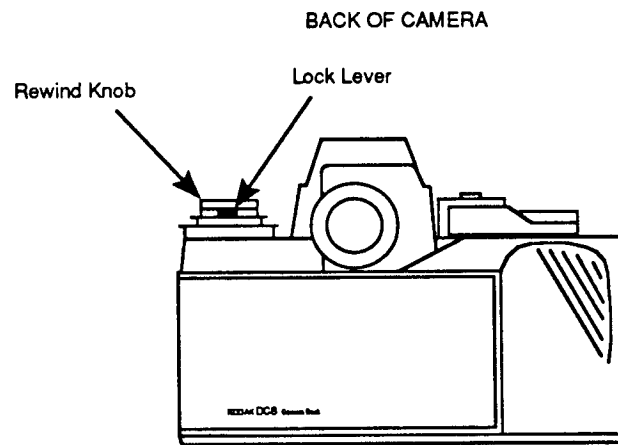
REFERENCE

3. **Important Note:** In this step you will separate the camera winder from the camera body. Use care as you perform this step, because they are connected by a set of fragile, long alignment header pins on the camera winder that engage the camera back.

Hold the camera body comfortably in one hand and the camera winder in the other hand, and *gently* pull the camera and winder straight apart; do not be startled if they suddenly disengage. Avoid rocking the two parts since this action will bend the header pins.



4. Set the camera winder aside.
5. Hold the camera body in one hand with the camera lens facing away from you; slide the camera lock lever to the right and hold it there.

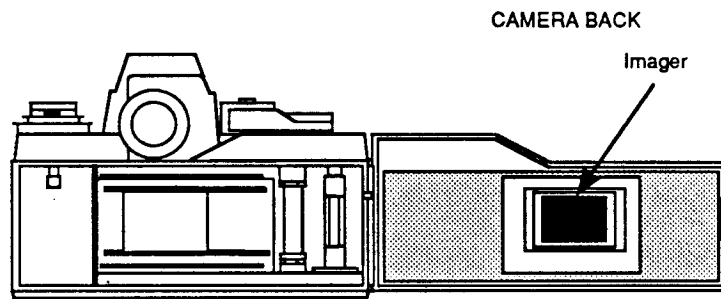


REFERENCE

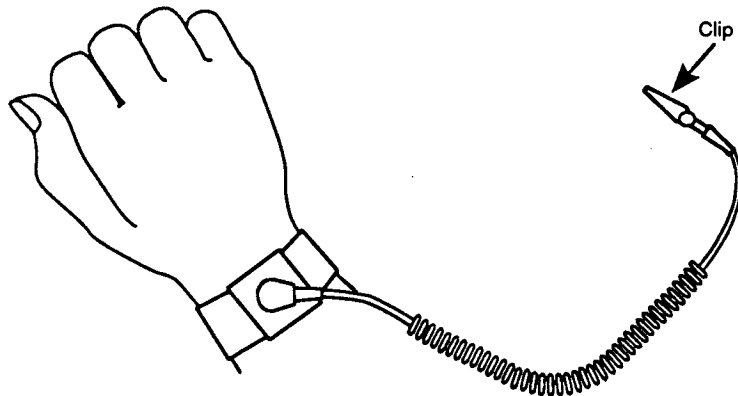
6. Lift the film rewind knob until the camera back snaps opens.
7. Rest the camera on its face on a flat surface.

8. **Note:** As you complete these steps, be certain that you do not touch the inside of the camera back (except as instructed), because it contains sensitive electronic components.

Swing open the camera back.

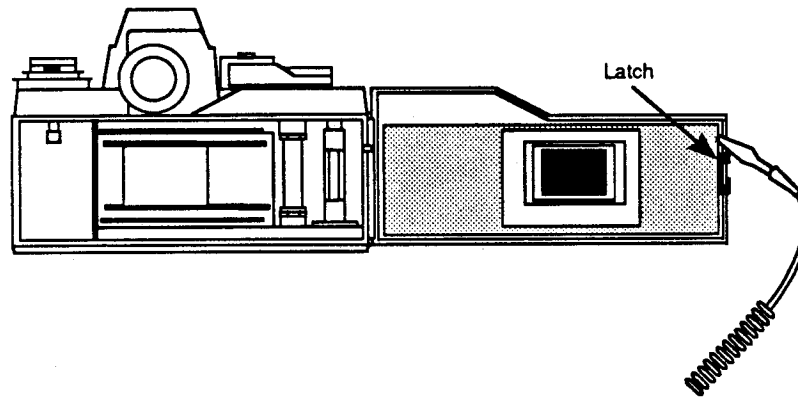


9. Assemble the wrist strap (if assembly is necessary), and attach the ESD wrist strap to your right hand as shown below.

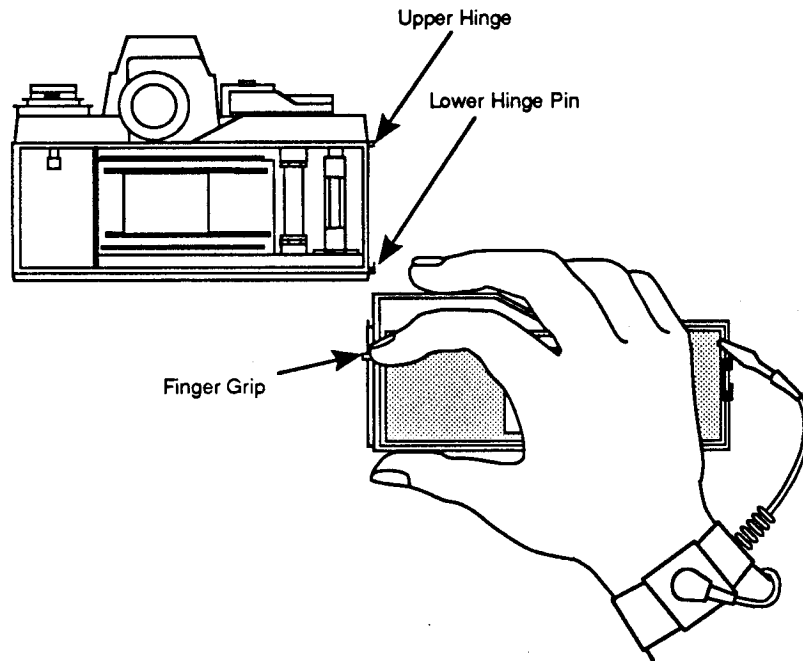


REFERENCE

10. Attach the clip on the end of the ESD wrist strap cable to the edge of the camera back above the latch; the clip should make contact with the metal shield.



11. Hold the camera back with the thumb and middle finger of your right hand, and then, as illustrated below:
 - A. Use the index finger on that hand to depress the finger grip on the inside of the camera back; this releases the camera back from its upper hinge.
 - B. Lift the camera back off the lower hinge pin and away from the camera body.
 - C. Place the camera back on the flat surface.
12. Set the camera body aside.

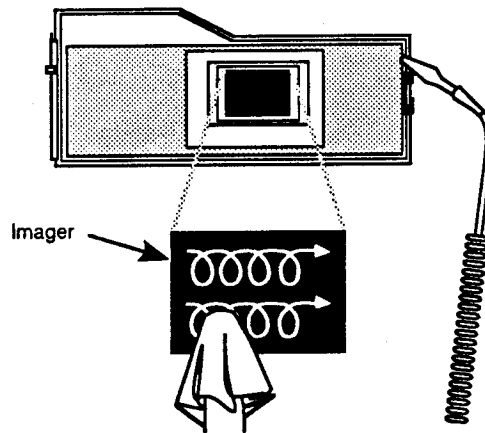


REFERENCE

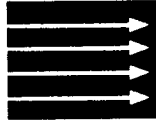
Removing Dirt from the Imager

Note: As you complete the following few steps, do not touch the shield or electronic components with your fingers (except as instructed); instead, hold the camera back by its edge.

1. Examine the imager visually. If there is lint on the imager (but not grease, fingerprints, or other dirt), continue at step 9; otherwise continue with the next step.
2. Dampen one corner of the web cleaner pad sparingly with the cleaning solution.
3. Hold the camera back firmly in place on the flat surface with your left hand.
4. Wrap the damp corner of the cleaner pad over the forefinger of your right hand.
5. Gently scrub the imager with the damp corner of the cleaner pad; use a circular motion, and move over the entire imager. This action should dislodge dirt or remove grease and fingerprints.



6. Wipe off residue on the imager surface by wiping repeatedly straight across the imager with a dry corner of the cleaner pad.



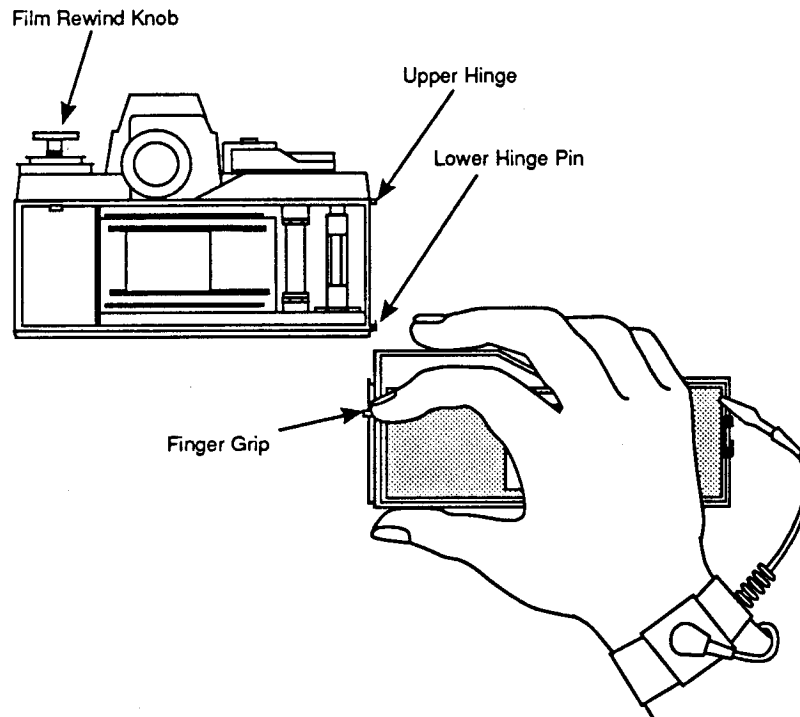
7. Lift the camera back by its edges, and examine it in the light to determine if it has been cleaned successfully.
8. If the imager is still dirty, repeat steps 2 through 7.
9. Lift the camera back by its edge, and breathe gently on the imager to fog its surface.
10. Place the camera back on a flat surface and wipe the imager with a dry corner of the cleaner pad.
11. Lift the camera back by its edge, and examine it in the light to determine if it has been cleaned successfully.
12. If there is still lint on the imager, repeat steps 9 through 11.

REFERENCE

Reassembling the Camera

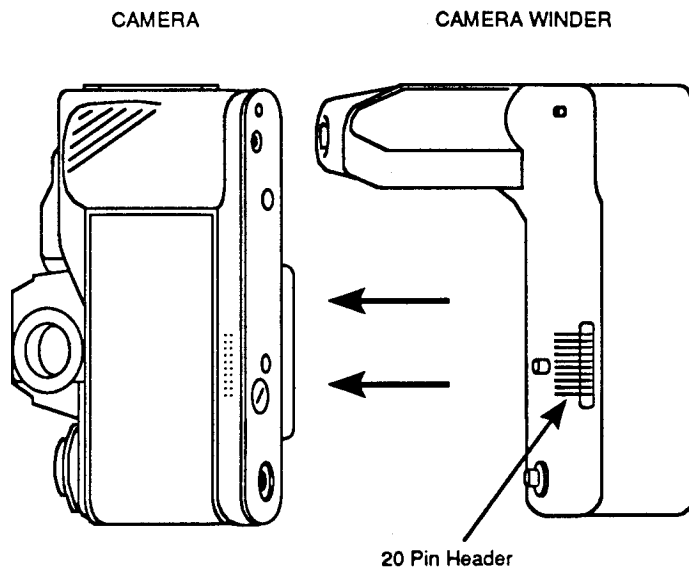
1. Hold the camera body in your left hand with the camera lens facing away from you.
2. Follow these steps to reconnect the camera back to the camera body. Be certain not to touch the shield or electronic components on the inside of the camera back.
 - A. Hold the camera back with the thumb and middle finger of your right hand.
 - B. Lift the camera back and place its corner into the lower hinge pin on the camera body.

- C. Depress the finger grip on the inside of the camera back with the index finger on your right hand, engage the top hinge, and then release the finger grip. Make sure that the upper hinge is engaged fully.



3. Remove the ESD wrist strap from the camera back and from your wrist.
4. Gently close the camera back, and click it shut. (You may need to use slight pressure to click the camera back shut.)
5. Push the film rewind knob down, returning it to its original position.
6. Wind the Nikon film advance lever and operate the backup mechanical release lever to trip the shutter; repeat these actions several times until the frame counter shows 1. This ensures that the Nikon F3 camera will meter correctly.
7. Follow these steps to reconnect the camera body and camera winder.
 - A. Hold the camera body in one hand so that you can see its back and bottom.
 - B. Hold the camera winder in the other hand with its grip away from you.
 - C. Align the header pins with their holes on the base of the camera back.
 - D. *Gently* mate the camera body and camera winder.

REFERENCE



8. Secure the winder to the camera with the winder screw; tighten the screw with a coin.
9. Reconnect the cable from the DSU to the camera winder.