



# **WIRELESS RECORDING VIDEO INSPECTION SYSTEM with 5-INCH LCD**

*USER'S MANUAL*



## **DCS500**

*Please read this manual carefully and thoroughly before using this product.*

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## KEY FEATURES

- Monitor with 5 in. (127mm) diagonal color LCD can be detached from pistol grip and probe to receive video wirelessly
- Grip and monitor are IP54 splash-proof
- Grip attaches to 1 m long x 9mm (0.35 in.) diameter flexible-obedient camera-tipped probe with IP67 rating and depth of field of 1 in. to 10 ft. (25mm to 3m). Longer and thinner probes are available.
- Squeezing trigger on pistol grip manually records video clips and still photos onto included 2GB MicroSD card or in integral 128MByte flash memory. Videos and photos can also be captured automatically in response to motion in the field of view.
- Monitor has 1 to 4X zoom function, adjustable Auto Power Off trigger, magnets on back for attaching to metal surfaces, and built-in microphone and speaker for recording and playing back voice-annotated video clips
- ScopeView software and USB cable for organizing and viewing live and recorded photos and videos on any Windows PC
- Streams video onto Internet through optional RCV100 USB wireless PC dongle
- Monitor and grip powered by separate rechargeable Li-ion batteries
- TV Out jack and A/V cable for viewing live video on NTSC or PAL TV monitor
- Four probe tip accessories (magnetic pickup, pickup hook, 45° mirror, thread protector ring)
- Custom hard plastic carrying case
- Choice of five menu languages
- 1 Year warranty

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## SAFETY INSTRUCTIONS

- Do not use the probe to inspect environments known or suspected to contain exposed electrical wiring.
- Do not use the system in the presence of flammable or explosive gases.
- Read and understand all of the instructions in this manual before using the system.
- Stay alert, watch what you are doing, and use common sense. A moment of distraction can result in serious personal injury.
- Do not over-reach. Keep proper footing and balance at all times, especially where water is underfoot.
- Always use protective eyewear. A dust mask, non-skid safety shoes, a hard hat or hearing protection may also be appropriate for certain inspection environments and tasks.
- Do not use the system to perform medical inspections.

# WHAT'S IN THE PACKAGE

The DCS500 and its accessories come in a custom molded plastic case. The instrument itself has two components: a pistol grip attached to a camera-tipped probe, and a wireless console with an LCD, multiple I/O jacks and a MicroSD card socket. Also in the case are:

- Four probe tip accessories (a 45° mirror, a pickup hook, a magnetic pickup and a thread protector ring)
- A cable with a standard-size USB plug at one end and a MicroUSB plug at the other
- An A/V cable with a mini-stereo plug at one end and two RCA plugs at the other
- A signal cable with a mini-stereo plug at both ends
- A mini-disc containing: 1) the ScopeView software program for viewing and organizing video clips and photos captured by the DCS500; 2) drivers for enabling ScopeView to run on PCs with various versions of Windows; 3) a soft copy of this user's manual in pdf format
- An AC adaptor/charger with a 9VDC, center-positive output plug
- A hard copy of this user's manual • 2GB MicroSD memory card

# PRODUCT OVERVIEW

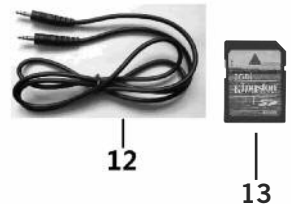
Fig. 1 shows and names all of the accessories that come with the DCS500. Fig. 2 shows the names and locations of all the controls, jacks, ports and structures of the unit. Table 1 details how the function of each front-panel button changes with the DCS500's operating mode.

Familiarize yourself with the labels, positions and functions of all buttons and connectors before moving on to the Setup Instructions and Operating Instructions.

1. 9mm diameter camera-tipped probe
2. Detachable wireless monitor
3. Wireless grip
4. Pickup hook
5. 45° mirrored viewing tip
6. Magnetic pickup
7. Thread protector ring
8. Mini-CD containing ScopeView software and instructions, Windows drivers, and soft copy of this user's manual in pdf format
9. AC charger with dual DC output cables
10. A/V cable for connecting to TV
11. USB cable for interfacing to PC
12. Signal cable for connecting grip and probe to monitor
13. 2GB MicroSD card



**Fig. 1. The DCS500 and all included accessories**



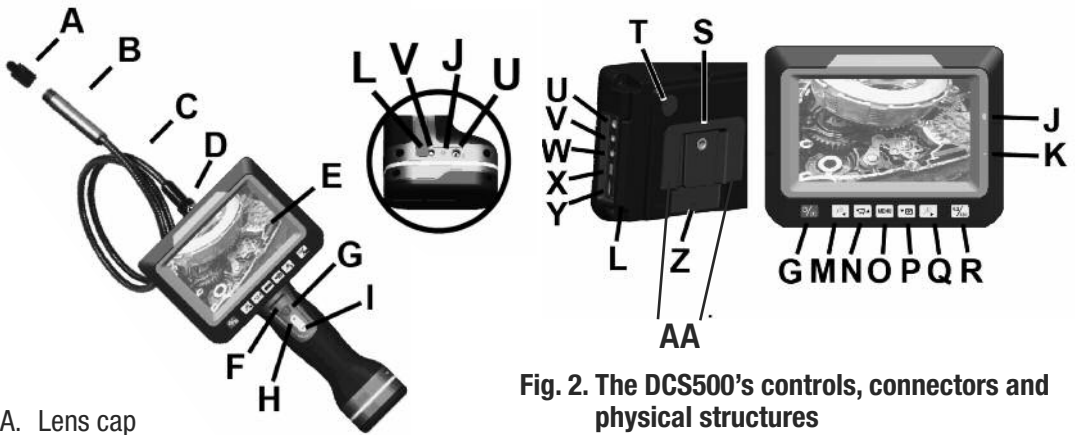













Fig. 2. The DCS500's controls, connectors and physical structures

- A. Lens cap
- B. Camera head
- C. 1 m long, 9mm diameter flexible-obedient probe
- D. Probe connector
- E. LCD
- F. Grip “power on” LED
- G. Grip and monitor power on/off (  and  ) buttons
- H. + button. Increases brightness of camera lighting
- I. – button. Decreases brightness of camera lighting
- J. Grip and monitor battery charge status LEDs
- K. Microphone
- L. Grip and monitor I/O panel rubber flaps
- M.  multi-function button (see Table 1)
- N.  multi-function button (see Table 1)
- O. **MENU** multi-function button (see Table 1)
- P.  multi-function button (see Table 1)
- Q.  multi-function button (see Table 1)
- R. **4:3/ESC** multi-function button (see Table 1)
- S. Threaded tripod mounting hole
- T. Speaker
- U. **DC9V IN** jack
- V. **LINE IN** and **LINE OUT** jacks for connecting monitor and grip
- W. **TV OUT** jack
- X. MicroUSB jack
- Y. MicroSD card socket
- Z. **RESET** button
- AA. Magnets

**Table 1. The DCS500's multi-function buttons**

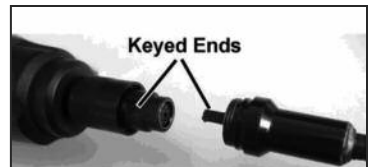
Button Label	In Preview Mode	In Playback Mode	In Menu Mode
	<b>Pressed and held</b> , powers unit off <b>Pressed briefly</b> , switches to Playback mode and displays last photo saved or first frame of last video clip recorded	<b>Pressed and held</b> , powers unit off <b>Pressed briefly</b> , switches to Preview mode	<b>Pressed and held</b> , powers unit off <b>Pressed briefly</b> , switches to Preview mode
	Zooms out on frame by 0.5X per button press from 4.0X to 1X	<b>Displays previous</b> photo or video clip	<b>Highlights selection, field or menu at left</b>
	Starts/stops recording video clip	<b>Plays/pauses</b> video clip selected for playback	<b>Selects next menu line up</b> (In Set Time/Date submenu, increments value of time/date field and selects date format)
<b>MENU</b>	Opens Auto Capture menu and displays icons of Advanced Settings, Set Time/Date and Language menus	<b>When browsing folders</b> , selects highlighted file <b>For selected files</b> , opens Playback menu with File Delete and Format Card options	<b>Selects highlighted item</b> or opens selected menu (In Set Time/Date submenu, saves all field settings and switches to Set Time/Date menu)
	Takes a photo	<b>Stops playback</b> of selected video clip	<b>Selects next menu line down</b> (In Set Time/Date submenu, decrements value of time/date field and selects date format)
	Zooms in on frame by 0.5X per button press from 1X to 4.0X	<b>Displays next</b> photo or video clip	<b>Highlights selection, field or menu at right</b>
<b>4:3/ESC</b>	Toggles LCD aspect ratio between 4:3 and 16:9	<b>Pressed once</b> , browses stored files <b>Pressed twice</b> , browses storage folders	<b>Moves up one level</b> in menu hierarchy or switches to Preview mode

## SETUP INSTRUCTIONS

### ATTACH PROBE

The 9mm probe must be attached to the pistol grip for the system to function. **To attach the probe:**

- 1) **Make sure the grip is not powered on.** Stray current from an energized grip might find a path into the wrong pins of the probe during the connection process and damage the probe.
- 2) Align the key on the probe connector with the flat on the grip's probe connector (see photo at right).
- 3) Push the two connectors together until they mate.
- 4) Hand-tighten the connection by rotating the knurled collar of the grip connector in the direction opposite the **REMOVE** arrow.



## CHARGE BATTERIES

The Li-ion batteries in the grip and console must both be charged (or charging) for the system to be ready for use.

Inside the DCS500 case is an AC adaptor/charger with two output cables (Fig. 1, Callout 9) that makes it possible to charge both batteries at the same time. To do so,

- 1) After lifting the black rubber flaps protecting the I/O panels of the grip and monitor, insert the cylindrical plug at the end of one of the cables into the **DC9V** jack at the bottom of the grip, and the plug at the end of the other cable into the **DC9V** jack on the right side of the monitor. In Fig. 2, both flaps are identified by the callout “L”, while both jacks are identified by the callout “U”.
- 2) Plug the AC adaptor into a 110VAC outlet.

While the monitor and grip are charging, the two LEDs that indicate battery charge level (Fig. 2, Callout J) will glow red. Once the batteries have been charged enough to power the grip/probe and monitor on their own, the LEDs will change color to green. Once both LEDs are glowing green, unplug the charging cables and the AC adaptor.





## INSTALL SD CARD (OPTIONAL)


To install the included 2GB MicroSD memory card (or another card of up to 16GB capacity) in the DCS500 console, lift the black rubber flap on its right side (Fig. 2, Callout L). Grasp the card between your thumb and index finger with the contacts facing up. Push the card into the socket (Callout Y) until you feel the card spring back and hear a click. If the card has been inserted properly, an icon of an SD card will replace the “M” icon in the upper right corner of the LCD. Once the monitor detects the presence of an SD card, it will store video clips and photos on the card, rather than in internal memory.

## SET AUTO POWER OFF INTERVAL (OPTIONAL)

By default, the Auto Power Off function of the DCS500 monitor is disabled. To avoid unnecessarily draining the monitor’s battery (which would make the entire system unavailable for use), General strongly recommends that you reset the Auto Power Off interval from “Never” to 5, 10 or 20 minutes of inactivity at the front-panel buttons. Having the DCS500 occasionally power off on its own is only a minor inconvenience because the unit can be restarted in less than 5 seconds.

### To change the Auto Power Off interval:

1. Press the **MENU** button.
2. Press the  button (Fig. 2, Callout Q) twice to open the Set Time/Date menu.
3. Press the  button (Fig. 2, Callout P) three times to scroll down three lines to **Auto Off Time**.
4. Press the **MENU** button to open the **Auto Off Time** submenu.

5. Press the  button to scroll down to and highlight the **5 Minutes**, **15 Minutes** or **30 Minutes** line.
6. Press the **MENU** button to save your selection. Doing so will remove the check mark next to **Never** and add a check mark next to your selection, confirming that it has been saved.
7. Press the **4:3/ESC** button (Fig. 2, Callout R) twice to return to Preview (live video) mode.

## **INSTALL THREAD PROTECTOR OR PROBE TIP ACCESSORY**

The DCS500 comes with four accessories (Fig. 1, Callouts 4 to 7) that screw on to the camera-tipped end of the 9mm probe. Each accessory has a specific purpose:

- The 45° mirror lets the probe see around corners.
- The pickup hook lets you retrieve otherwise inaccessible items seen by the probe—for example, a wedding ring accidentally dropped down a sink drain.
- The magnetic hook lets you retrieve lost or dropped metal objects—nuts and bolts, for example—located by the probe.
- The thread protector ring

Attach the thread protector before you use the DCS500 for the first time. Remove it before attaching any of the three other accessories. Reattach the thread protector after removing an accessory. Never expose the threads of the probe tip to the dangers of an inspection session.

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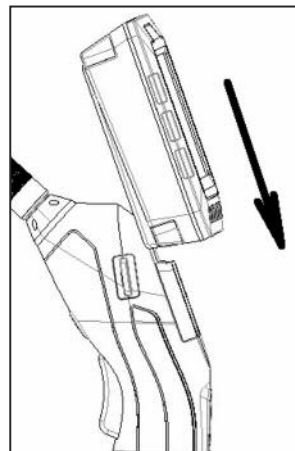
## **OPERATING INSTRUCTIONS**

The DCS500 can be operated wirelessly (with the monitor detached from the grip and probe) or with the two components physically connected.

**To attach the monitor to the grip**, position the two slots on the back of the monitor above the two tracks on the back of the grip and carefully slide the monitor down (see figure at right) until you hear a click.

**To detach the monitor**, carefully slide it up along the tracks of the grip.

When using the system in wireless mode in an electrically noisy environment, video captured by the probe may appear “streaky” on the DCS500 monitor or on a TV monitor or PC screen attached to the DCS500 monitor. To remedy the problem, try using the included signal cable (Fig. 1, Callout 12) to electrically interconnect the grip and monitor. The mini-stereo plugs at the ends of the signal cable fit the **LINE IN** jack of the monitor and the **LINE OUT** jack of the grip. On Fig. 2, both jacks are identified by the callout “V”.







You have three options for viewing live video captured by the DCS500's camera-tipped probe:




1. View it on the monitor's 5 in. LCD.
2. View it on a larger TV monitor.
3. View it on a desktop or laptop PC after connecting the PC to the DCS500 with the supplied USB cable. This option requires installing the ScopeView photo/video management/display application and an accompanying driver for the DCS500 from the mini-disc included in your system. Instructions for installing and using ScopeView can be found on p. 18 of this manual.

## **VIEWING LIVE VIDEO ON THE MONITOR**

Before using the DCS500 for the first time, remove the plastic film protecting the LCD.

**To power on the unit**, press and hold the  button on the grip and the  button on the console (Fig. 1, Callout G) for at least 3 seconds each. The LCD will illuminate and begin showing real-time video from the camera at the tip of the probe. By default, a date and time will be displayed on the bottom of the screen (see p. 16 to learn how to set the date and time). An icon representing the level of battery charge will appear left of center at the top of the screen. If you have inserted a MicroSD card, an "SD" icon will appear at the top right of the screen. If you have not inserted an SD card, this position will show the letter "M" to indicate that the only memory available for storing photos and video clips is the integral 128MByte flash memory.

To increase the brightness of the display, press the **+** button (Fig. 2, Callout H) on the grip. To decrease brightness, press the **-** button (Fig. 2, Callout I). In a brightly lit room, changing the intensity of the two LEDs at the tip of the probe has only a small effect on the brightness of video on the screen. The on-screen impact of changing brightness is more pronounced in dark environments.



**To zoom in and out on video**, use the  and  buttons. Each press of each button increases or decreases the zoom level by a factor of 50% relative to actual (1X) size. Five zoom levels are available: 1.5X, 2.0X, 2.5X, 3.0X, 3.5X and 4.0X, and each appears at the bottom left of the LCD when selected. From the 4.0X level, you cannot return to normal-size viewing without "backing out" of the zoom function by pressing the  button six times.

The 9mm diameter probe supplied with the DCS500 is "flexible-obedient", which means that you can bend and maneuver it into various positions to aim at different targets and it will hold its shape. In practice, professionals usually insert a flexible-obedient probe head-on into an orifice (a hole in wall or an engine's cylinder) or a hard-to-reach or hard-to-see area as a first step. They then pull the probe out and adjust its bend one or more times until the camera in the tip is pointing directly at the target or area of interest. With the probe inserted, you can twirl it until video appears right-side up, but in many cases you cannot change the probe's angle of approach very much. You can, however, change the probe's viewing angle by 90° by attaching the included 45° mirror accessory to the tip of the probe. See p. 8 for attachment instructions.

Before using the system, carefully read the Maintenance Tips section of this manual on pages 21 and 22 to understand how to use the probe properly and avoid using it improperly. To protect the camera-tipped end of the probe, reinstall the black rubber lens cap after each inspection session.

## VIEWING LIVE VIDEO ON A TV MONITOR



To view live video being captured by the DCS500's camera-tipped probe on an NTSC- or PAL-format television or TV monitor:



1. **Power off the DCS500** monitor by pressing and holding the  button.
2. Lift the black rubber flap at the right of the monitor.
3. Insert the mini-stereo plug at one end of the supplied AV cable (Fig. 1, Callout 10) into the **TV OUT** jack on the right side of the monitor (Fig. 2, Callout W).
4. Insert the yellow RCA plug at the other end of the cable into the television's "Video In" jack.
5. Power the DCS500 monitor on by pressing and holding the  button.
6. If you are connecting to a PAL-format TV, open the Advanced Settings menu and change the TV Output Standard setting from NTSC to PAL (see p. 15 for instructions)

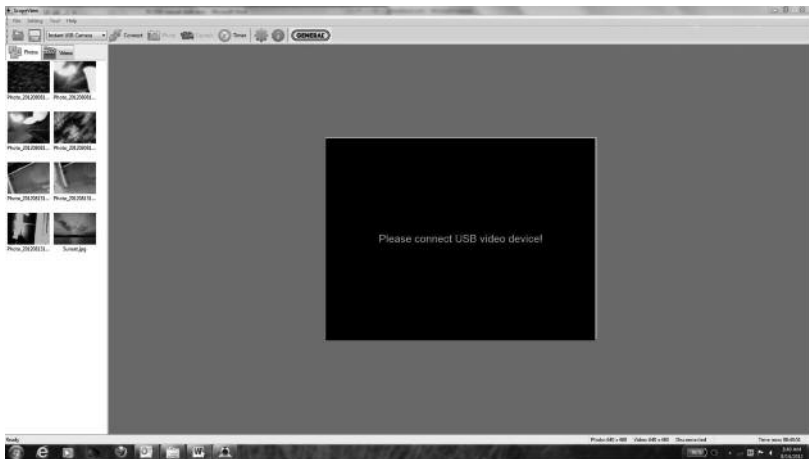
After you make the connection, you can watch live video on the DCS500 and the TV at the same time. Note: Live video exiting through the **TV OUT** jack can be zoomed in and out using the  and  buttons.

## VIEWING LIVE VIDEO ON A PC



To view live video being captured by the DCS500's probe on a PC, you must:

1. **Install the ScopeView application and a Windows driver** from the mini-disc included with your system by following the instructions beginning on p. 18 of this manual.
2. **Power off the DCS500** by pressing and holding the  button.
3. Lift the black rubber flap on the right side of the monitor.
4. Insert the MicroUSB plug at one end of the supplied USB cable (Fig. 1, Callout 11) into the MicroUSB jack on the right side of the monitor (Fig. 2, Callout X).
5. Insert the standard-size USB plug at the other end of the cable into a USB port of your PC.
6. Power on the DCS500 on by pressing and holding the  button. With the USB cable plugged in, powering on the DCS500 on will *not* cause live video to appear on the monitor. The monitor will show the familiar "waiting" hourglass, and it will continue to do so until you take the following three steps.
7. Open ScopeView.
8. Deselect "Integrated Camera" and select "Instant USB Camera" using the pulldown at the left of the toolbar below the main menu (see screen shot on next page).
9. Click the blue "Connect" button at the right of the pulldown. Your PC's screen will then begin showing the same live video feed from the DCS500's camera-tipped probe as the unit's monitor.

After you make the connection, you can watch live video on the DCS500 and your PC at the same time. Note: Live video exiting through the USB jack *cannot* be zoomed in and out using the  and  buttons.





## RECORDING AND VIEWING VIDEOS AND PHOTOS


In addition to capturing and manipulating real-time video, the DCS500 can document—via videos and photos—what the camera at the tip of its probe “sees.” Squeezing the yellow trigger on the pistol grip briefly (or pressing the front-panel  button) takes a picture of the probe’s field of view and stores it as a .jpg file in the monitor’s 128Mbyte flash memory or on an installed MicroSD card. Similarly, squeezing and holding the trigger (or pressing the front-panel  button) causes the DCS500 to begin recording an .avi video clip of the probe’s field of view onto the MicroSD memory card (if installed) or into the unit’s flash memory.

Other front-panel buttons are used to view (play back) recorded images and videos on the monitor’s 5 in. LCD and to browse their files and folders. Alternatively, recorded images and videos can be viewed on a larger TV monitor, either by ejecting the SD card and plugging it into a laptop or desktop PC (directly or through an SD card reader), or by connecting the DCS500 to a PC via the supplied USB cable.


### Taking Pictures and Recording Videos



Before recording videos and still images, you should install a MicroSD memory card (see the Setup Instructions section) and set the current date and time (see p. 16). The DCS500 provides a 128Mbyte flash memory for recording without an SD card, but the flash memory’s relatively small capacity severely limits video recording time. At the DCS500’s default D1 (720 x 480 pixel) recording resolution, the flash memory’s entire capacity will be used up by less than 4 minutes of video (recorded at 30Mbytes/sec).

**To take a picture**, make sure the DCS500 is in Preview (Live) viewing mode, with the current date and running clock at the bottom of the LCD. Squeeze the trigger briefly or press the  button. Within less than a second, the monitor will “chirp” once and a white  icon will appear briefly in the center of the LCD to indicate that a picture was taken.

**To begin recording a video clip**, squeeze and hold the trigger or press the  button on the monitor. This will cause 1) the monitor to chirp twice, 2) the current date and time at the bottom of the screen to change color from white to yellow, 3) the battery charge indicator at the top of

the LCD to disappear, and 4) a white count-up timer to appear at the upper right of the display above a flashing red **•REC** icon. The timer will count up from 00:00:00 to indicate the duration of the clip already recorded.

**To stop recording the video clip**, press the  button again. This will cause 1) the monitor to chirp twice, 2) the timer and the **•REC** icon to disappear from the top right of the display and 3) the battery charge indicator to reappear. It will also return the unit to operation in Preview mode.


You cannot pause the recording of a video. You must use the  button to stop recording and start again, creating a new file in the process. The  button is the only button that is responsive during the recording of a video.

## Viewing Saved Videos and Pictures

You have four options for viewing (playing back) videos you have recorded and pictures you have taken:


1. View them on the DCS500's 5 in. monitor.
2. View them on a larger TV monitor.
3. View them on a desktop or laptop PC by ejecting the MicroSD memory card from the DCS500 and plugging it into the PC.
4. View them on a desktop or laptop PC by connecting it to the DCS500 with the supplied USB cable. You can view the media using a) standard computer photo and video viewing applications and video applications like Windows Photo Viewer and Windows Media Player or b) the ScopeView photo/video management/display application included on the mini-disc included with your system. Instructions for installing ScopeView and the accompanying driver for the DCS500 from the mini-disc can be found on p. 18 of this manual.

The third and fourth options offer additional benefits. As you view your saved inspection videos and pictures, you can copy them to your PC. Once the videos and images are in your computer, you can share them as attachments to e-mails to others experienced at spotting and diagnosing problems in your field. In addition, any videos and pictures that you have copied to your PC can be deleted from the DCS500's flash memory and SD card, freeing up space for future photo captures and video recordings.











**To view saved pictures and videos** (and hear voice annotations of video clips) on the DCS500's monitor, power on the unit and press the  button briefly to switch from Preview mode to Playback mode. In the switch to Playback mode:

- The battery charge indicator on the top line of the display is replaced by an icon of a camera or a film strip, corresponding to the type of recording made most recently.
- The screen switches from showing "live" video to showing a static image that is either a saved image or the first frame of a saved video.
- The current date and running time clock at the bottom of the screen are replaced by three pieces of information about the static image on screen: 1) The name of the subfolder in which the image or video file is stored; 2) The image or video's file name; and 3) The date and time of its capture.

**To view saved videos and pictures on a larger TV monitor, you must first power off the unit** by pressing and holding the  button. Then:

1. Lift up the black rubber flap at the right of the LCD.
2. Insert the mini-plug end of the supplied video cable into the **TV OUT** jack on the right side of the monitor (Fig. 2, Callout W).
3. Insert the yellow RCA plug at the other end of the cable into the television's "Video In" jack.
4. Insert the adjacent white RCA plug into the "Audio In" jack of the left or right channel.
5. Power the DCS500 back on by pressing and holding the  button again.

After you make the connection, you can view recorded video clips and pictures on the DCS500 and the TV at the same time. You can also hear any voice annotations added to video clips.

**To play a saved video clip**, press the  button. Once the video starts playing, a running clock will appear at the upper right of the display to track the playback position. A white  (pause) icon will also appear, at upper left. **To pause playback of the video clip**, press the  button (which executes the  Pause command indicated at the bottom of the display). Pressing the  button will cause the white pause icon to change to a white  (play) icon. **To resume playing the video**, press the  button again (to execute the  Play function indicated at the bottom of the screen). This will cause the pause icon to reappear. **To stop the video clip being played**, press the  button (which executes the  Stop command indicated at the bottom of the display).

**To view saved videos and pictures on a PC directly from the MicroSD memory card**, open the flap on the side of the monitor. Eject the memory card by firmly pushing on it with a fingertip until the card springs back and you hear a click. If you are in Preview mode, the SD card icon at the upper right of the display will be replaced by an "M" icon. If you are in Playback mode, the DCS500 will switch to Preview mode.

Many newer PCs (and flat-screen TVs) are equipped with a slot for a standard-size SD card. If you want to plug your MicroSD card into such a slot, you will need a MicroSD to SD card adapter. They are widely available for \$5 or less from most consumer electronics retailers.

Plug the MicroSD card with your recorded inspection videos and picture into the adapter, and then plug the adapter into your PC's SD card slot.

If you have configured your PC to automatically play external media, plugging in the adapter will open an AutoPlay dialogue box that verifies insertion of an "SD card". Clicking on "Open folder to view files" reveals one folder, named "YCKC", which contains all of the videos and pictures stored on the card. Double-click on the YCKC folder icon to view the subfolders containing the individual video and picture files. The subfolders' names use the YYMMDD00 format to reflect the date on which files were added to them. For example, a subfolder titled "14033100" would contain media recorded on March 31, 2014. Video clips are in .AVI format and pictures are in .JPG format.

**To use ScopeView to view saved videos and pictures on a PC via a USB connection**, follow the instructions for Viewing Live Video on a PC on p. 10.

## To use standard PC applications to view saved videos and pictures on a PC via a USB connection:

1. **Install the ScopeView application and a Windows driver** from the mini-disc included with your system by following the instructions beginning on p. 18 of this manual.
2. Lift up the black rubber flap at the right of the LCD.
3. **Without opening ScopeView or powering on the DCS500**, insert the MicroUSB plug end of the supplied USB cable into the MicroUSB jack on the right side of the monitor (Fig. 2, Callout X).
4. Insert the standard-size USB plug at the other end of the cable into a USB port of your PC.

If you have configured your PC to automatically play external media, plugging in the USB cable will open an AutoPlay box that verifies connection of a “Removable Disk.” It will also cause the DCS500’s LCD to turn all blue, with the words “USB Disk Mode” overlaid in white.



Clicking on “Open folder to view files” reveals one folder, named “YCKC”, which contains all of the videos and pictures stored on the card. Double-click on the YCKC folder icon to view the subfolders containing the individual video and picture files. The subfolders’ names use the YYYYMMDD00 format to reflect the date on which files were added to them. For example, a subfolder named “14033100” would contain media recorded on March 31, 2014. Video clips are in .AVI format and pictures are in .JPG format.

## NAVIGATING THE FIVE MENUS



The DCS500 provides five menus which you can use to change many of the system’s operating parameters and display characteristics.



Four of the five menus become accessible by pressing the **MENU** button with the DCS500 in Preview mode. Press the button, and the first menu to appear is the Auto Capture menu. Below it on-screen, from left to right, will be the icons of the Advanced Settings, Set Time/Date and Language menus (see screen shot at right).



To choose among the four menus, use the  and  buttons as “move right” and “move left” buttons, respectively.

All four menus are navigated in identical fashion. When a menu is open, its name is displayed in an orange banner over the names of submenus on a black background. Each submenu lets you choose between or among two or more options for that functional category.

**To open any submenu**, first navigate to its line by using the  and  buttons as “move up” and “move down” buttons, respectively. Navigating to a submenu changes the background color of its line from black to orange. Then press the **MENU** button to select the submenu.

To select any of the available options inside a submenu, use the same two-step procedure. First use the  and  buttons to navigate to the option’s line, changing its background color to orange. Then press the **MENU** button to select the desired option. The only difference between selecting a submenu and selecting an option is the presence of a white check mark next to the option that is currently in force. Note that pressing the **MENU** button to change any function or parameter moves the check mark next to the new option to be enabled or activated.



## The Auto Capture menu

Submenu name	Options	Instructions/Comments
Auto Capture	On Off (default)	Select <b>On</b> to activate motion sensing
Master Capture	Photo 1 (default) Photo 3 5 Second Movie 10 Second Movie	Selects the camera action to be taken automatically in response to a motion event. <b>Photo 1</b> refers to one photo and <b>Photo 3</b> refers to three photos.
Range	1/1 (default) 1/4	Selects the fraction of screen area in which motion will be sensed and acted on. Selecting a 1/4 area generates an on-screen green box that can be moved up, down, left and right by the  ,  ,  and  buttons. After moving the box, press the <b>MENU</b> button to save its position.
Timeslot	1s 3s (default) 5s	Selects the minimum duration of a motion event needed to trigger an Auto Capture camera action
Sensitivity	Low Medium High (default)	Selects motion-sensing sensitivity to object size, color and speed. If operating at the default High sensitivity level triggers too many unwanted motion events, reduce the sensitivity to Medium or Low



## The Advanced Settings menu

Submenu name	Options	Instructions/Comments
Movie Resolution	QVGA D1 (default)	Select <b>QVGA</b> to record video clips with 320 x 240 pixel resolution. Select <b>D1</b> to record at 720 x 480 pixel resolution. D1 files offer higher video quality but take up more storage space.
File OverWrite	On Off (default)	Selecting <b>On</b> allows new files to overwrite old files when installed memory is close to full capacity. Selecting <b>Off</b> disallows overwriting, but may prevent storage of new files.
TV Output Standard	NTSC (default) PAL	Choose <b>NTSC</b> in North America, Central America, Japan, South Korea and Taiwan. Choose <b>PAL</b> in Europe, Africa and much of Asia and Africa
LCD Brightness	Low Normal Level- Normal Level (default) Normal Level+ High	Adjusts brightness to ambient conditions
Format	Yes No (default)	Formatting a MicroSD card erases its entire contents

Set to Default	Yes No (default)	Select <b>Yes</b> to reset all settings to their default value
Disk Information	N/A	Displays the total capacity of installed memory—128Mbyte internal + MicroSD card capacity (if installed)—and how much of that capacity is free (available)
Firmware version	N/A	Displays the Version Nos. of the unit's firmware and user interface



## The Set Time/Date menu

Submenu name	Options	Instructions/Comments
Set Time/Date	Current date Current time Date format	<p>A) <b>To enter the current date</b> in the default format of YY/MM/DD (year, month, day): 1) Press the  or  button to increase or decrease the YY value. Then press the  button to advance to and highlight the MM field; 2) Press the  or  button to increase or decrease the MM value. Then press the  button to advance to and highlight the DD field; 3) Press the  or  button to increase or decrease the DD value. Then press the  button to advance to and highlight the hours field on the next line.</p> <p>B) <b>To set the current time:</b> 1) Press the  or  button to increase or decrease the value in the hours field to match the current hour in 24-hour (military time) format. Then press the  button to advance to and highlight the minutes field; 2) Press the  or  button to increase or decrease the minutes value to match the current value. Then press the  button to advance to and highlight the seconds field; 3) Press the  or  button to increase or decrease the seconds value. Then press the  button to advance to and highlight the date format line below.</p> <p>C) <b>To change the date format</b> (optional): 1) Press the  or  button repeatedly to cycle through the three options: YY/MM/DD (default), MM/DD/YY and DD/MM/YY. 2) Select your preferred format. Whether or not you change the date format, <b>you must press the MENU button</b> to save all of your settings and return to the Set Time/Date menu one level above. (Hint: Pressing the  button allows you to return to any field and change its value before you press the <b>MENU</b> button to save that value and your other settings.)</p>





Photo TimeStamp	On (default) Off	Select <b>On</b> to record the date and time when a photo is saved. This information becomes part of the photo's file and is overlaid on displays of the image. Selecting <b>Off</b> prevents addition of date and time stamps to photo files. After making your selection, press the <b>4:3/ESC</b> button to save it and return to the Set Time/Date menu.
Movie TimeStamp	On (default) Off	Select <b>On</b> to record the date and time when a movie file is saved. This information becomes part of the video's file and is overlaid on playbacks of the video. Selecting <b>Off</b> prevents addition of date and time stamps to video files. After making your selection, press the <b>4:3/ESC</b> button to save it and return to the Set Time/Date menu.
Auto Off Time	Never (default) 5 minutes 15 minutes 30 minutes	Determines when the unit will power off automatically following a period of time when no front-panel buttons are pressed. Select <b>5 minutes</b> to maximize battery life. After making your selection, press the <b>4:3/ESC</b> button to save it and return to the Set Time/Date menu. Press the <b>4:3/ESC</b> button again to return to Preview mode.

## The Playback menu


Submenu name	Options	Instructions/Comments
File Delete	Single (default) All Files in Folder All	Selecting any option by pressing the <b>MENU</b> button opens a "Delete Yes or No" screen. Choose <b>Yes</b> to delete either: the <b>Single</b> movie or photo file currently on-screen; <b>All Files</b> in its Folder; or <b>All</b> files on the MicroSD memory card.
Format	Yes No (default)	Formatting a MicroSD card erases its entire contents

## The Language menu

Submenu name	Options	Instructions/Comments
N/A	English (default) Français Español Português 简体中文	Selects language of screens, menus and submenus. Use the  or  button to navigate to your preference. Then press the <b>MENU</b> button to save the selection. Finally, press the <b>4:3/ESC</b> button to exit the menu and enter Preview mode.

# INSTALLING AND USING SCOPEVIEW

## Installation Instructions

1. Place the ScopeView mini-disc in your computer's CD/DVD drive and close the drawer.
2. Manually or using AutoPlay, view the files on the disc.
3. Double-click the "ScopeView V1.2\_TY\_131125.msi line. The "Welcome to the Scope View Setup Wizard" screen will appear. Click **Next** to continue.
4. Read the End-User License Agreement and accept its terms by checking the box at lower left and clicking **Next**.
5. On the Custom Setup screen that appears next, note the advisory that ScopeView will be installed in the ProgramFiles (x86) folder of your computer's "C" drive by default. This is the recommended location. Unless you want ScopeView to be installed elsewhere on your computer, click **Next**.
6. On the screen that appears next, click **Install** to begin the installation.
7. This may begin your installation. On some PCs, clicking **Install** may generate a Windows User Account Control dialog box. Respond to the question "Do you want to allow the following program from an unknown publisher to make changes to your computer?" by clicking "Yes". This should begin your installation.
8. When the notification, "Completed the ScopeView Setup Wizard" appears, click **Finish**.
9. Show your desktop. Note that the installation has placed a  icon on it. Also note that a ScopeView subfolder has been added to your ProgramFiles folder.
10. Re-view the files on the ScopeView mini-disc.
11. Double-click on the file, "Instant USB Camera Driver V1.0.exe". The "Welcome to the InstallShield Wizard for Digital Video Camcorder" screen will appear. Click **Next** to continue.
12. When the "Install Shield Wizard Complete" screen appears with the circle to the left of the line, "Yes, I want to restart my computer now", filled in, save all of your open work and click **Finish**.
13. Power off your DCS500 and follow Steps 3 through 9 of the instructions for "Viewing Live Video on a PC" on p. 10.

When you click "Connect", the main screen of ScopeView should begin showing a live video feed from your DCS500 that looks like the photo at right:

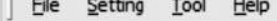

You can now use the + and – buttons on the DCS500's grip to simultaneously adjust the brightness of the DCS500's camera lighting LEDs and the brightness of video displayed on your PC.




## Using ScopeView


Once you have installed ScopeView, you can use the software to view, capture (store) and play back videos and pictures “seen” by the DCS500’s probe.


To perform these tasks, you will use five features of ScopeView:

- The main menu 
- The toolbar below the main menu
- The Preview Pane at the left of the main window
- The Photos and Videos tabs of the Preview Pane
- The Photo Control bar  at the bottom of the main window
- The status bar at the bottom of the ScopeView window




**To view live video**, establish a USB connection between the DCS500 and your PC, power on the DCS500, open ScopeView and click the  **Connect** tab. You can change the size (horizontal x vertical pixels) of the live feed that appears in ScopeView’s main window by right-clicking on the video.

**To start capturing video**, click the  **Capture** icon on the toolbar. When you do so, note that on the right side of the status bar the word “Connected” changes to “Capturing...” and that a stopwatch begins running at its right.


**To stop capturing video**, click the  **Capture** icon again. Note that this stops the stopwatch on the status bar and creates a thumbnail of the video just captured in the Preview Pane.


**To play back a captured video**, click its thumbnail in the Preview Pane.


The video will play from start to finish in the main window over a video control bar like this  that indicates both its total duration (at the right) and the current time position (at the left). Use the play, pause and stop icons to control playback.


**To preview, save, delete, or change the name or storage location of a captured video**, or display its properties, right-click the video’s thumbnail in the Videos tab of the Preview Pane and left-click the desired action.

By default, all videos and photos captured by the DCS500 are stored in a folder named ScopeView that the application creates in your MyDocuments folder. **To change the default storage location** of videos and/or photos, left-click the **Setting** button on the main menu. On the screen that appears, you can also change the default format and size of photos and the size and type of compression applied to videos. The Settings tab also lets you change the default language of ScopeView from English to Mandarin Chinese.

(All of the functions accessible through the Settings tab on the main menu are also available from the  button on the toolbar. Similarly, the Tool tab on the main menu provides access to the Connect, Photo, Capture and Set Timer functions accessible from the toolbar.

**To take a picture** of what your DCS500’s probe is currently viewing, click the  **Photo** icon on the toolbar. Note that doing so creates a thumbnail of the picture (often called a screen capture or vidcap) under the Photos tab of the Preview Pane.

To view a captured photo in the main window, double-click its icon in the Preview Pane. Note that when a picture is displayed in the main window, the Photo Control bar  also appears below it. Use the controls on the bar to **zoom in or out on the picture or rotate it 90 degrees in either direction. To view the next or previous photo**, either click the right or left arrows on the control bar or click the yellow directional arrows that appear within the main window to the right and left of the displayed image.

**To configure ScopeView and your DCS500 to automatically capture** videos and/or photos on a regular schedule, click the  button on the toolbar. You can choose a daily, weekly or monthly schedule, or specify a date, a time or a duration (for a video).

## SPECIFICATIONS

LCD Size & Type	5 in. (127mm) diagonal TFT color LCD
LCD Resolution	800 x 480 pixels
Camera Resolution	640 x 480 pixels
Grip Controls	1 to 4X video zoom in 0.5 steps, brightness + and –, start/stop video recording, take picture
Probe Diameter & Type	9mm (0.35 in.) flexible-obedient
Probe Length	1m (39 in.)
Probe Field of View	60°
Probe Depth of Field	1 in. to 10 ft. (25mm to 3m)
Camera Light Source	Four adjustable-brightness white LEDs
Water, Dust, Splash Resistance Levels	Probe & camera head: IP67 Grip and monitor: IP54
Internal Flash Memory Capacity	128MByte
SD Card Capacity	2GB (included), 16GB (max)
Video Compatibilities	NTSC and PAL
Wireless Frequency	2.468GHz
Wireless Range	33 ft. (10m), max (with no obstructions)
Movie Resolutions	D1 NTSC (704 x 480 pixels), D1 PAL (704 x 576 pixels), QVGA (320 x 240 pixels)
Movie File Type	.avi
Photo Resolution/File Type	720 x 480 pixels/.jpg
PC Interface	USB 2.0

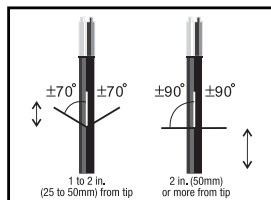
Auto Power Off Interval Options	Never (default), 5 minutes, 15 minutes, 30 minutes
Menu Languages	English, French, Spanish, Portuguese, Mandarin Chinese
AC Adaptor I/O	100 to 240VAC (in), 9VDC @ 1.3A (out)
Li-ion Battery Capacities	1500mAh @ 7.4V (grip), 1700mAh @ 7.4V (console)
Battery Charging Time, Operating Life Before Recharging	5.5 hours, ~2.5 hours
Operating Environment	32° to 113°F (0° to 45°C) @ 5 to 95% RH, non-condensing
Storage Environment (Without Batteries)	-4° to 140°F (-20° to 60°C) @ <85%RH
Dimensions of Grip (Without Probe)	11.0 x 5.4 x 2.8 in. (280 x 138 x 71mm)
Weight of Grip (Without Probe)	12.5 oz. (353g)
Dimensions of Monitor	6.1 x 4.6 x 1.5 in. (154 x 117 x 38mm)
Weight of Monitor	15.1 oz. (428g)

## MAINTENANCE TIPS

Do not bring the camera head into contact with acid, fire or hot objects by inserting the probe into a corrosive or extremely hot environment. Avoid getting oil or gas on the camera head by shutting off vehicles during inspections.

The probe contains thin wires running along its entire length. Accordingly, never insert or bend it by force, and never over-bend any part of the probe. Specifically (see figure below):

- Do not bend the probe more than 90° anywhere along its length.
- Do not bend it more than 70° within 1 to 2 inches (25 to 50mm) of its camera tip.
- Do not bundle the probe into a tight circle to store it.
- Never use the camera head end to modify surroundings or clear debris.
- Do not overtighten the collar that secures the probe to the grip.



If condensation forms inside the camera lens, let it evaporate before using the system again. To clean the camera lens and LEDs, use a cotton swab and a small amount of mild detergent. The grip requires no routine maintenance other than periodic cleaning with a soft, dry cloth. Never use a wet cloth, corrosive liquids, solvents or water.

Operate and store the DCS500 only in a cool (under 140°F or 60°C), dry, well-ventilated place. Avoid exposing the unit to sunlight for long periods of time.

The DCS500 is designed for industrial and environmental use only. Never use it for human or any other biological inspection.

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## **WARRANTY INFORMATION**

General Tools & Instruments' (General's) DCS500 Wireless Recording Video Inspection System with 5-In. LCD is warranted to the original purchaser to be free from defects in material and workmanship for a period of one year. Subject to certain restrictions, General will repair or replace this instrument if, after examination, the company determines it to be defective in material or workmanship. The warranty period begins on the date of purchase. You are encouraged to register your product online. General will extend your warranty an additional 60 days if you register at [www.generaltools.com/ProductRegistry](http://www.generaltools.com/ProductRegistry).

This warranty does not apply to damages that General determines to be from an attempted repair by non-authorized personnel or misuse, alterations, normal wear and tear, or accidental damage. The defective unit must be returned to General Tools & Instruments or to a General-authorized service center, freight prepaid and insured.

Acceptance of the exclusive repair and replacement remedies described herein is a condition of the contract for purchase of this product. In no event shall General be liable for any incidental, special, consequential or punitive damages, or for any cost, attorneys' fees, expenses, or losses alleged to be a consequence of damage due to failure of, or defect in any product including, but not limited to, any claims for loss of profits.

Register now at [www.generaltools.com/ProductRegistry](http://www.generaltools.com/ProductRegistry) to receive a 60-day extension to your warranty.

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## **RETURN FOR REPAIR POLICY**

Every effort has been made to provide you with a reliable product of superior quality. However, in the event your instrument requires repair, please contact our Customer Service to obtain an RGA (Return Goods Authorization) number before forwarding the unit via prepaid freight to the attention of our Service Center at this address:

General Tools & Instruments  
75 Seaview Drive  
Secaucus, NJ 07094  
212-431-6100

Remember to include a copy of your proof of purchase, your return address, and your phone number and/or e-mail address.



# **Specialty Tools & Instruments**

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[www.generaltools.com](http://www.generaltools.com)  
DCS500 User's Manual

Specifications subject to change without notice

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MAN# DCS500

05/11/15

