GENERAL®

RUGGEDIZED RECORDING VIDEO INSPECTION SYSTEM

USER'S MANUAL

DCS350

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

TABLE OF CONTENTS

INTRODUCTION

Thank you for purchasing General Tools & Instruments' DCS350 Ruggedized Recording Video Inspection System. Please read this user's manual carefully and thoroughly before using the instrument.

The DCS350 is designed to be used in harsh environments such as automotive garages, industrial plants and construction sites. Its wand-type thermoplastic rubber (TPR) grip and integral LCD are IP54 splash-proof and drop-resistant to a height of 1m (3.3 ft.). The unit can be operated with one hand, leaving your other hand free to use tools.

The DCS350's grip and LCD get their input from a camera-tipped probe. The system's standard probe—which is IP67 water, oil and dust-proof—is 1m (3.3 ft.) long and has a diameter of 12mm (0.47 in.), making it ideal for inspecting hard-to-reach or hard-to-see areas. Longer and thinner probes are available for special applications; see p. 24 for details and ordering instructions.

Live video within the probe's field of view is displayed on the DCS350's high-quality 3.5 in. (89mm) diagonal color LCD. Alternatively, live video can be viewed on 1) an NTSC- or PAL-format TV or TV monitor via an included video cable or 2) any Windows PC by running included ScopeView software and using an included USB cable to connect the PC to the DCS350.

4X zoom and video flip buttons make the DCS350 an even more versatile inspection tool. Quadrupling the size of any component in the video frame makes it less likely that a problem will be overlooked. The reason to invert video is to align the probe's field of view with its real-world surroundings. In practical terms, this function makes it easier to read upside-down labels and serial numbers by flipping them right-side up.

Finally, the DCS350 can record still images and video clips with or without voice annotation onto an included 2GB MicroSD memory card or in 64MB of built-in flash memory. The DCS350 can even be set up to automatically take one or more photos or videos whenever motion is detected in all or part of its field of view.

All saved photos and videos can be viewed instantly on the unit's LCD. Alternatively, saved photos and videos can be viewed on a PC using ScopeView or standard computer software. To view saved media on a PC, you can either 1) remove the SD card from the DCS350 and plug it into the PC directly or through an SD card reader or 2) leave the SD card in the DCS350 and connect the unit to the PC using the USB cable. In this configuration, the PC treats the DCS350's SD card and flash memories as an external drive.

The standard DCS350 system includes three accessories sized for the tip of the 12mm probe: a 45° mirror, a pickup hook and a magnetic pickup. These accessories and the DCS350's grip and attached probe are packaged in a hard plastic protective case along with this user's manual and four "AA" batteries.

KEY FEATURES

- Double-molded grip and monitor are IP54 splash-proof and drop-proof to height of 1m (39 in.)
- Includes long (1m/39 in.), thin (12mm/0.47 in. diameter), flexible-obedient camera-tipped probe with depth of field of 1 to 12 in. (25 to 300mm)
- Compatible with longer (2m and 3m) and thinner (9mm and 5.5mm) probes, and 12mm probe extensions that extend inspection range to 16 ft. (5m). All probes and extensions are IP67 oil, water and dust-proof.
- One-button recording of video clips and still photos onto included 2GB MicroSD card or in integral 64MB flash memory
- Built-in microphone and speaker for recording and playing back voice annotations of video clips
- ScopeView software and USB cable for organizing and viewing live and recorded photos and videos on any Windows PC
- TV Out jack and video cable for viewing live video on NTSC or PAL TV or TV monitor
- 3.5 in. (89mm) diagonal color LCD
- Video flip and 1-4X zoom buttons
- Three probe tip accessories (magnetic pickup, pickup hook and 45° mirror)
- Adjustable Auto Power Off interval
- Custom hard plastic carrying case
- Choice of five menu languages
- Powered by four "AA" (chargeable or non-rechargeable) batteries
- 3 Year warranty

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 CASE

The DCS350 and its accessories come in a custom molded plastic case. The instrument itself has two main components: a pistol grip permanently attached to an LCD monitor, and a 12mm detachable camera-tipped probe. Also in the case are:

- Three probe tip accessories (a 45° mirror, a pickup hook and a magnetic pickup)
- A cable with a standard-size USB plug on one end and a mini-USB plug on the other
- A mini-disc containing: 1) the ScopeView software program for viewing and organizing video clips and photos captured by the DCS350; 2) a driver for enabling ScopeView to run on Windows PCs; 3) a soft copy of this user's manual in pdf format
- A video cable with a black mini-plug on one end and yellow and white RCA plugs on the other
- A 2GB MicroSD memory card
- Four "AA" batteries
- A hard copy of this user's manual

PRODUCT OVERVIEW

Fig. 1 shows and names all of the accessories that come with the DCS350. 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 DCS350'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.
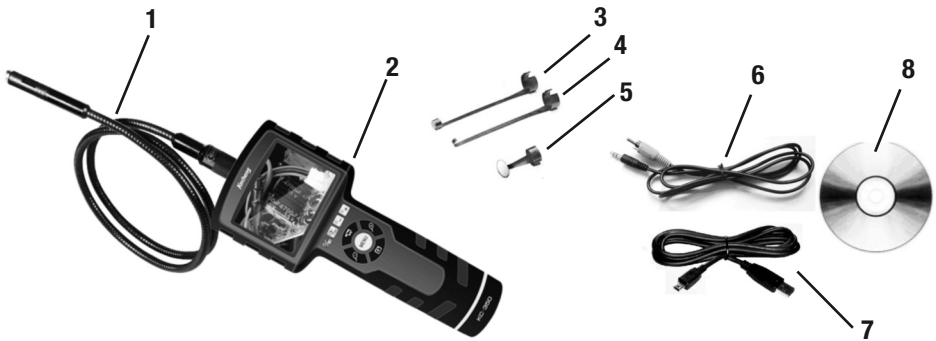
1. 12mm camera-tipped probe
2. Grip and monitor
3. Magnetic pickup
4. Pickup hook
5. 45° mirrored viewing tip

6. Video cable
7. USB cable
8. Mini-CD containing ScopeView software, a driver for the DCS350, and a soft copy of this user's manual in pdf format

Fig. 1. The DCS350 and all included accessories

A. Lens cap

B. Camera head

C. 1m long, 12mm diameter flexible-obedient probe

D. Probe connector

E. **TV OUT** jack

F. MicroSD memory card socket

G. Mini-USB jack

H. ☀+ button. Increases brightness of camera lighting

I. ☀− button. Decreases brightness of camera lighting

J. ℘ multi-function button (see Table 1)

K. ⊡ multi-function button (see Table 1)

L. Battery compartment

M. LCD

N. ℅ₑₛ꜀ multi-function button (see Table 1)

O. ℅▣ multi-function button (see Table 1)

P. ▶⊡ multi-function button (see Table 1)

Q. ℘ button (see Table 1)

R. **MENU** button

S. Microphone

T. Speaker

U. **Reset** button

Fig. 2. The DCS350's controls, connectors and physical structures

6

Table 1. The DCS350's multi-function buttons

| Button Label	In Preview Mode	In Playback Mode	In Menu Mode
⏻/▶	**Pressed and held**, powers unit off **Pressed briefly**, enters Playback mode and displays last photo recorded or first frame of last video recorded	**Pressed and held**, powers unit off **Pressed briefly**, no action	**Pressed and held**, powers unit off **Pressed briefly**, switches to Playback mode
⟲/ESC	Flips (inverts) video	**Pressed once**, browses stored files **Pressed twice**, browses storage folders	Moves up one level in menu or exits to Preview mode
☀−	**Pressed briefly**, decreases brightness of camera lighting by one level **Pressed and held**, decreases brightness continuously (Note: Brightness is at its lowest level at unit startup)		
☀+	**Pressed briefly**, increases brightness of camera lighting by one level **Pressed and held**, increases brightness continuously (Note: Brightness is at its lowest level at unit startup)		
MENU	Opens Auto Capture menu and displays icons of Advanced Settings, Set Time/Date and Language menus	**When browsing folders,** selects highlighted file **For selected files**, opens Playback menu with File Delete and Format Card options	Selects highlighted item/setting/action, except in Set Time/Date submenu (where pressing button saves all field settings and returns to Set Time/Date menu)
⊖	Zooms out on video by 0.5X per button press from 4.0X to 1X	Displays previous photo or video clip	Opens menu at left or highlights selection or field at left
⊕	Zooms in on video by 0.5X per button press from 1X to 4.0X	Displays next photo or video clip	Opens menu at right or highlights selection or field at right
▶🎥	Starts/stops recording video clip	**When browsing folders**, displays older folders **For selected video files**, plays and pauses video clip	Selects next menu line up (In Set Time/Date submenu, increments time/date field value and selects date format)
📷	Takes a photo	Stops video playback	Selects next menu line up (In Set Time/Date submenu, decrements time/date field value and selects date format)

SETUP INSTRUCTIONS

INSTALL BATTERIES

The DCS350's battery compartment is accessible from the bottom of the grip (Fig. 2, Callout L).

To install batteries,

1. Use a Phillips-head screwdriver to loosen the single screw securing the battery compartment cover. Remove the cover and set it aside.

2. Extract the battery magazine from the grip by pulling on the tab at its end (see top figure).

3. Load four "AA" batteries—either the included non-rechargeable Alkaline units, or rechargeable batteries you supply yourself—into the magazine, using the polarity markings within it as a guide (see bottom figure).

4. Push the loaded magazine back into the grip (it fits only one way).

5. Replace the battery compartment cover and secure it to the grip by tightening the Phillips-head screw.
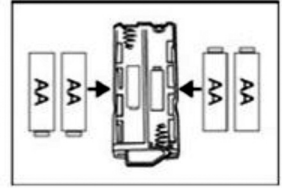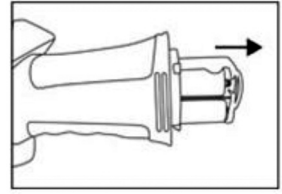
ATTACH PROBE

The DCS350 ships with the probe attached to the grip. If the probe is detached, the LCD will show a blue screen and the advisory "No Signal".

To attach the included probe or any compatible probe,

1. Line up the alignment key on the probe connector with the flat on the coupling (see photo below).

2. Push the two ends together until they mate.

3. Tighten the connection by turning the collar in the opposite direction of the **REMOVE** arrow on the collar.
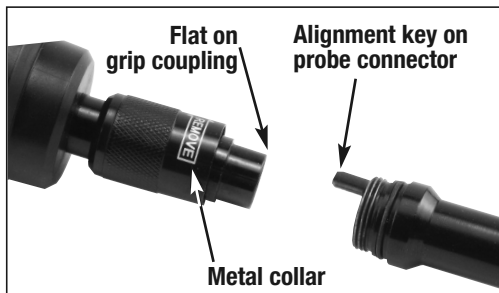
To detach the probe, perform the attachment procedure in reverse. To loosen the connection between the two components, turn the collar in the direction indicated by the **REMOVE** arrow.

INSTALL SD CARD

To install a MicroSD memory card (either the included 2GB card or another card of up to 16GB capacity) in the DCS350, lift up the black rubber flap at the right of the LCD. Grasp the card between your thumb and index finger with the contacts facing up (see photo).

Push the card in until you feel it spring back and hear a click. If the card has been inserted properly, an icon of an SD card will replace the "M" icon at the upper right of the LCD.

SET AUTO POWER OFF INTERVAL

By default, the Auto Power Off function of the DCS350 is disabled. To minimize how often you must change batteries, 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 DCS350 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 J) twice to open the **Set Time/Date** menu.

3. Press the ▣ button (Fig. 2, Callout K) three times to scroll down three lines to **Auto Power Off Time**.

4. Press the **MENU** button to open the **Auto Power 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 ✗⁄ₑₛc button (Fig. 2, Callout N) twice to return to Preview (live video) mode.

ATTACH PROBE TIP ACCESSORY (OPTIONAL)

The DCS350 comes with three accessories that snap onto the camera-tipped end of the included 12mm 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.

To attach an accessory, slip its semicircular end over the flats of the camera head. Then rotate the accessory 90° until it snaps into place (see photos).

Accessory

9
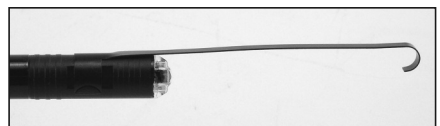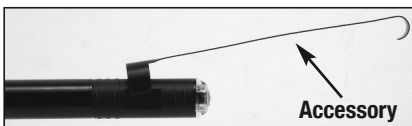
OPERATING INSTRUCTIONS

You have three options for viewing live video captured by the DCS350's camera-tipped probe:

1. View it on the DCS350's 3.5 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 DCS350 with the supplied USB cable. This option requires installing the ScopeView photo/video management/display application and accompanying driver for the DCS350 from the mini-disc included in your system. Instructions for installing and using ScopeView can be found on pp. 20 through 22 of this manual.

VIEWING LIVE VIDEO ON THE LCD

Before using the DCS350 for the first time, remove the plastic film protecting the LCD. Also remove the lens cap protecting the camera..

To power on the unit, press the ⌇ button (Fig. 1, Callout O). 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. 18 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 64MB flash memory.

To increase the brightness of the display, press the ☀+ button (Fig. 2, Callout H). **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 invert live video, press the ⌇esc button until the video "flips". Use this feature to align the probe's field of view with its real-world surroundings, or to make it easier to read equipment labels and serial numbers.

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 video flip and zoom functions can be used at the same time when viewing video on the DCS350's LCD.

The standard 12mm diameter probe supplied with the DCS350 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

10

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 45° by attaching the included mirror accessory to the tip of the probe. See p. 9 for attachment instructions.

Before using the system, carefully read the Maintenance Tips section of this manual on p. 24 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.

The DCS350 is designed to be powered for several hours by the same set of four "AA" batteries. It's time to replace the batteries when the words Low Battery appear, flashing in white, on the left side of the display and a battery icon appears, flashing in red, at the top of the display. To replace the batteries, follow the procedure on p. 8 of this manual.

VIEWING LIVE VIDEO ON A TV MONITOR

To view live video being captured by the DCS350's camera-tipped probe on an NTSC- or PAL-format television or TV monitor, **you cannot just plug in the video cable. You must perform the following steps in the order presented**:

1. **Power off the DCS350** by pressing and holding the � button.
2. Lift up the black rubber flap at the right of the LCD.
3. Insert the mini-plug end of the supplied video cable into the **TV OUT** jack on the right side of the LCD (Fig. 2, Callout E).
4. Insert the yellow RCA plug at the other end of the cable into the television's "Video In" jack.
5. Power the DCS350 back on by pressing and holding the ⅓ button again.
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. 17 for instructions)

After you make the connection, you can watch live video on the DCS350 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. But it *cannot* be inverted by pressing the ⅓ₑₛ𝒸 button.

## *VIEWING LIVE VIDEO ON A PC*

To view live video being captured by the DCS350's probe on a PC, **you cannot just plug in the USB cable. You must perform the following steps in the order presented**:

1. **Install the ScopeView application and DCS350 driver** from the mini-disc included with your system by following the instructions beginning on p. 20 of this manual.
2. **Power off the DCS350** by pressing and holding the ⅓ button.
3. Lift up the black rubber flap at the right of the LCD.
4. Insert the mini-plug end of the supplied USB cable into the mini-USB jack on the right side of the LCD (Fig. 2, Callout G).
5. Insert the standard-size USB plug at the other end of the cable into a USB port of your PC.

6. Power the DCS350 back on by pressing and holding the ⌕ button again. With the USB cable plugged into the DCS350, powering the DCS350 on will ***not*** cause live video to appear on its LCD. The LCD will show the familiar "waiting" hourglass, and it will continue to do so until you do the following.

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 below).
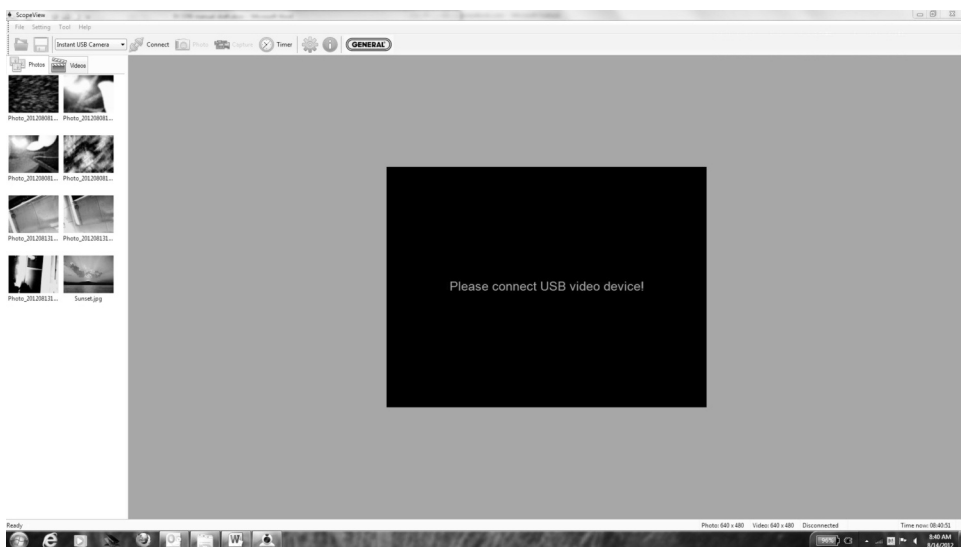
9. Click the blue "Connect" button at the right of the pulldown. Your PC screen will begin showing the same live video feed from the DCS350's camera-tipped probe as the unit's LCD.

After you make the connection, you can watch live video on the DCS350 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. It also *cannot* be inverted by pressing the ⌕ₑₛ꜀ button.

RECORDING AND VIEWING VIDEOS AND PHOTOS

In addition to capturing and manipulating real-time video, the DCS350 can document—via videos and photos—what the camera at the tip of its probe "sees." When you press the front-panel ⌕ button, the unit begins recording an .avi video clip of the probe's field of view, either onto the included 2GB MicroSD memory card (if installed) or on the unit's 64MB flash memory.

Similarly, pressing the front-panel ⌕ button takes a picture of the probe's field of view and stores it as a .jpg file on the SD card or in the unit's flash memory.

Other front-panel buttons are used to view (play back) recorded images and videos on the grip's 3.5 in. LCD. 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 DCS350 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. 18). The DCS350 provides a 64MB flash memory for recording without an SD card, but the flash memory's small capacity severely limits video recording time.

To take a picture, make sure the DCS350 is in Preview (Live) viewing mode, with the current date and a running clock at the bottom of the display. Press the ⬜ button briefly. Within less than a second, a white ⬜ icon will appear briefly in the center of the display to indicate that a picture was taken.

To begin recording a video clip, press the ⬜ button **and hold it for at least 2 seconds**. This will cause the current date and time at the bottom of the screen to change color from white to yellow, the battery charge indicator at the top of the LCD to disappear, and 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 the timer and the •**REC** icon to disappear from the top right of the display and the battery charge indicator to reappear. It will also return the unit to operating 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 DCS350's 3.5 in. LCD.

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 DCS350 and plugging it into the PC.

4. View them on a desktop or laptop PC by connecting it to the DCS350 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 DCS350 from the mini-disc can be found on pp. 20 through 22 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 DCS350'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 DCS350's monitor, power on the unit and press the ⌁ button briefly to switch from Preview to Playback mode. In the switch to Playback mode:

- The Battery Charge icon 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 four pieces of information about the static image on screen: 1) The date it was captured; 2) The time it was captured; 3) The name of the subfolder in which the image or video file resides; and 4) The image or video file name.

**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 LCD (Fig. 2, Callout E).
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 DCS350 back on by pressing and holding the ⌁ button again.

After you make the connection, you can view recorded video clips and pictures on the DCS350 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 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 DCS350 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 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 indicate the date on which files were added to them. For example, a subfolder named "12083100" would contain media recorded on August 31, 2012. 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. 11.

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

1. **Install the ScopeView application and DCS350 driver** from the mini-disc included with your system by following the instructions beginning on p. 20 of this manual.

2. Lift up the black rubber flap at the right of the LCD.

3. **Without opening ScopeView or powering on the DCS350**, insert the mini-plug end of the supplied USB cable into the mini-USB jack on the right side of the LCD (Fig. 2, Callout G).

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 DCS350'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 YYMMDD00 format to reflect the date on which files were added to them. For example, a subfolder named "12083100" would contain media recorded on August 31, 2012. Video clips are in .AVI format and pictures are in .JPG format.

NAVIGATING THE FIVE MENUS

The DCS350 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 DCS350 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 photo).

To choose among the four menus, use the $\wp$ and $\wp$ buttons as "move right" and "move left" buttons, respectively. To access the fourth menu—the Playback menu—press the **MENU** button with the DCS350 in Playback mode.

All five 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 back 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 **On** 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. **Photo 1** refers to one photo and **Photo 3** refers to three photos.
Range	1/1 (default) 1/4 1/16	Selects the fraction of screen area in which motion will be sensed and acted on. Pressing the **MENU** button to select a 1/4 or 1/16 screen area generates an on-screen green box that can be moved up, down, left and right by the ⬚ , ⬚ , $\wp$ and $\wp$ buttons. After moving the box, press the **MENU** button to save its position.
Timeslot	1s 3s (default) 5s	Selects the minimum duration of a motion events needed to trigger Auto Capture
Sensitivity	Low Medium High (default)	Selects the sensitivity of the motion-capture function

⚒ The Advanced Settings menu

Submenu name	Options	Instructions/Comments
Movie Resolution	QVGA D1 (default)	Select **QVGA** to record videos with 320 x 240 pixel resolution. Select **D1** 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 **On** allows new files to overwrite old files on MicroSD cards close to full capacity. Selecting **Off** disallows overwriting, but may prevent storage of new files.
TV Output Standard	NTSC (default) PAL	Choose **NTSC** in North America, Central America, Japan, South Korea and Taiwan. Choose **PAL** in Europe 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 an SD card erases its entire contents
Set to Default	Yes No (default)	Select **Yes** to reset all settings to their default value
Disk Information	N/A	Displays the total capacity of the MicroSD card 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	A) **To enter the current date** 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; Press the 🖳 or 📷 button to increase or decrease the DD value. Then press the 🔎 button to advance to and highlight the hours field on next line. B) **To set the current time**: 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. C) **To change the date format** (optional): 1) Press the 🖳 or 📷 button to cycle through the three options: YY/MM/DD (default), MM/DD/YY and DD/MM/YY. 2) Whether or not you change the date format, **you must press the MENU button** 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 **MENU** button to save that value and your other settings.)

☑ The Set Time/Date menu (continued)

Submenu name	Options	Instructions/Comments
Photo TimeStamp	On (default) Off	Select **On** 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 **Off** removes date and time stamps from image displays. After making your selection, press the ⌇ₑₛ꜀ button to save it and return to the Set Time/Date menu.
Movie TimeStamp	On (default) Off	Select **On** to record the date and time when a movie file is saved. This information becomes part of the video's file and is over-laid on playbacks of the video. Selecting **Off** removes date and time stamps from video playbacks. After making your selection, press the ⌇ₑₛ꜀ 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 if no front-panel buttons are pressed. Select **5 minutes** to maximize battery life. After making your selection, press the ⌇ₑₛ꜀ button to save it and return to the Set Time/Date menu. Press the ⌇ₑₛ꜀ button again to return to Preview mode.

🗑 The Playback menu

Submenu name	Options	Instructions/Comments
File Delete	Single All Files in Folder All	Selecting any option by pressing the **MENU** button opens a "Delete Yes or No" screen. Choose **Yes** to delete either: the **Single** movie or photo file currently on-screen; **All Files in** its **Folder**; or **All** files on the MicroSD memory card.
Format	Yes No (default)	Formatting an SD 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 **MENU** button to save the selection. Finally, press the ⌫ₑₛc 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 V1.1-TY.msi" icon or 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 your desktop. 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 DCS350 and follow Steps 3 through 9 of the instructions for Viewing Live Video on a PC on pp. 11 and 12.

When you click **Connect**, the main screen of ScopeView should begin showing a live video feed from your DCS350 that looks like this:
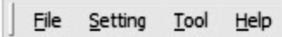
You can now use the thumbwheel on the DCS350's grip to simultaneously adjust the brightness of the DCS350's camera lighting LEDs and the brightness of video displayed on your PC.

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 DCS350's probe.

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

- The main menu   File   Setting   Tool   Help
- 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   (+) (-) (1:1) (◄◄) (►►) (↺) (↻)   at the bottom of the main window
- The status bar at the bottom of the ScopeView window

        Photo: 640 x 480   Video: 640 x 480   Connected   Time now: 14:45:29
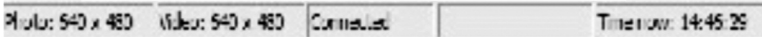
To view live video, establish a USB connection between the DCS350 and your PC, power on the DCS350, open ScopeView and click the 🔗 Connect tab. You can change the size (horizontal x vertical pixels) of the live feed that appears in ScopeView's main window by right-clicking on the video. Be aware that because the DCS350's camera has a resolution of 320 x 240 pixels, the 640 x 480 display option is achieved by "pixel doubling" and is not a true higher-resolution display.

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 `II ▪ 00 00 01 ━` `00 00 28` 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 DCS350 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 DCS350'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 `+ - 1:1 ◀ ▶ ↺ ↻` 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 DCS350 to automatically capture videos and/or photos on a regular schedule, click the ⊘ Timer 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

Display Size & Type	3.5 in. (diagonal) TFT color LCD
Camera and Display Resolution	320 x 240 pixels
Grip Controls	180° video flip, 1 to 4X video zoom in 0.5 steps, brightness + and –, start/stop video recording, take picture
Probe Diameter & Type	12mm (0.47 in.) flexible-obedient
Probe Length	1m (39 in.)
Probe Field of View	60°
Probe Depth of Field	1 to 12 in. (25mm to 300mm)
Camera Light Source	Two adjustable-brightness white LEDs
Impact Resistance	To height of 1m (39 in.)
Water, Dust, Splash Resistance Levels	Probe & camera head: IP67 Grip and monitor: IP54
Internal Flash Memory Capacity	64MB
SD Card Capacity	2GB (included), 16GB (max)
Video Compatibilities	NTSC and PAL
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
Battery Life	>2 hours
Menu Languages	English, French, Spanish, Portuguese, Mandarin Chinese
Operating Environment	32° to 113°F (0° to 45°C) @ 5 to 95% RH
Dimensions of Grip	10.6 x 3.0 x 4.0 in. (270 x 75 x 100mm)
Weight of Grip	1 lb. (454g)
Dimensions of Case	15 x 11 x 3.5 in. (381 x 279 x 89mm)
Weight of Case and Contents	4 lb. (1.8 kg)
Power Source	Four "AA" batteries (included)

MAINTENANCE TIPS

- The camera at the tip of the probe is a sensitive, sophisticated device. Do not use the probe as a hammer or to clear debris.

- Do not insert or bend the probe by force. Over-bending any section of the probe to a radius of less than 2 in. (50mm) may permanently damage delicate internal cables.

- Do not bring the camera 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.

- If condensation forms inside the camera lens, let it evaporate before using the system again.

- Remove the batteries if planning to store the unit for months or longer.

- Properly dispose of used batteries. Exposure to high temperatures can cause batteries to explode, so do not incinerate them. Some countries regulate battery disposal. Please follow all applicable rules.

OPTIONAL PROBES AND PROBE EXTENSIONS

Although the DCS350 comes with a 1m long, 12mm diameter close-focus probe (Model No. P230-1), the grip can accept any probe or probe extension designed for The Seeker 200, 300 or 400 Series of video inspection systems. The table below lists the key features of all other compatible probes and probe extensions.

Model No.	UPC	Diameter	Length	Depth of Field
P230-1F	01474 5	12mm (0.47 in.)	1m (3.28 ft.)	4 in. to 8 ft. (100mm to 2.4m)
P230-1X	01387 8	12mm (0.47 in.)	1m (3.28 ft.)	N/A (probe extension)
P230-2X	01390 8	12mm (0.47 in.)	2m (6.6 ft.)	N/A (probe extension)
P230-3X	01391 5	12mm (0.47 in.)	3m (9.8 ft.)	N/A (probe extension)
P495-1N	01423 3	9mm (0.35 in.)	1m (3.28 ft.)	1 to 12 in. (25 to 300mm)
P495-2N	01467 7	9mm (0.35 in.)	2m (6.6 ft.)	1 to 12 in. (25 to 300mm)
P495-3N	01468 4	9mm (0.35 in.)	3m (9.8 ft.)	1 to 12 in. (25 to 300mm)
P455-1N	01466 0	5.5mm (0.22 in.)	1m (3.3 ft.)	0.25 to 4 in. (6 to 100mm)
P455-2N	01469 1	5.5mm (0.22 in.)	2m (6.6 ft.)	0.25 to 4 in. (6 to 100mm)
P455-3N	01470 7	5.5mm (0.22 in.)	3m (9.8 ft.)	0.25 to 4 in. (6 to 100mm)

WARRANTY INFORMATION

General Tools & Instruments' (General's) DCS350 Ruggedized Recording Video Inspection System is warranted to the original purchaser to be free from defects in material and workmanship for a period of three years. 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.

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.

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
80 White Street
New York, NY 10013
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.

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DCS350 User's Manual

Specifications subject to change without notice