

## OPERATOR'S MANUAL



### UV/White Light Videoscope

U.S. Patent No. 6,491,408



# SPECTROLINE®



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[www.BergEng.com](http://www.BergEng.com)  
Berg Engineering & Sales Company, Inc.

1-847-577-3980  
[info@BergEng.com](mailto:info@BergEng.com)

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## Description

The COBRA CAM™ videoscope uses patented UV/white light LED technology to view color images live, capture and download to an SD card or download directly to a personal computer. The flexible camera cable can easily “snake” deep into internal components and inside concealed areas that are inaccessible to other diagnostic tools.

The COBRA CAM and its intellectual properties are covered under U.S. Patent No. 6,491,408.

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## Safety Information

Read this operator’s manual carefully before using the COBRA CAM.

### Important Safety instructions

- Do not operate the COBRA CAM with a damaged cable or if the unit itself has been damaged.
- Never use this equipment in any manner not specified in these instructions because the protection provided by the equipment may be impaired.
- The COBRA CAM is not approved for use in hazardous atmospheres. Do not attempt to use it in areas requiring explosion-proof lighting.
- Never spill liquid of any kind on the video display unit. Any liquid increases the risk of electrical shock and damage to the product. Do not use the unit around corrosive chemicals.
- Do not use this device for personal or medical use/inspection in any way.
- Always keep this unit out of the reach of children or other untrained persons.

## SAVE THESE INSTRUCTION FOR FUTURE OPERATORS TO READ

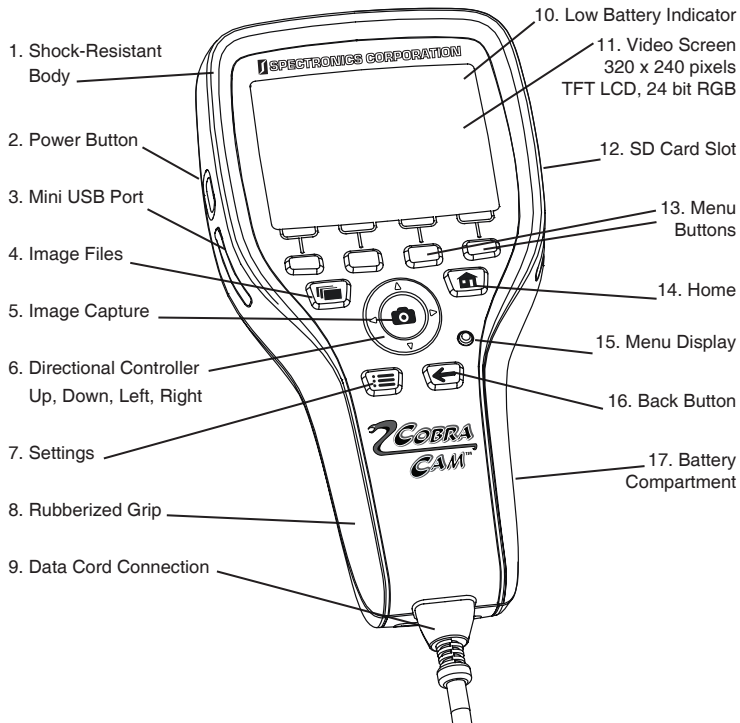


**Ultraviolet radiation emitted from this product. Avoid exposure. ALWAYS WEAR PROTECTIVE CLOTHING. EXPOSURE MAY CAUSE PREMATURE AGING OF THE SKIN AND CANCER. ALWAYS WEAR PROTECTIVE EYEWEAR; FAILURE TO DO SO MAY RESULT IN SEVERE BURNS OR LONG TERM INJURY TO EYE. Never look directly into the lamp. Exposure can cause eye and skin allergy and allergic reactions. Medications or cosmetics may increase your sensitivity to ultraviolet radiation. Consult physician before operating this product if you are using medications or have a history of skin problems or believe yourself especially sensitive to sunlight.**

**FOR PROFESSIONAL EXAMINATION USE ONLY**

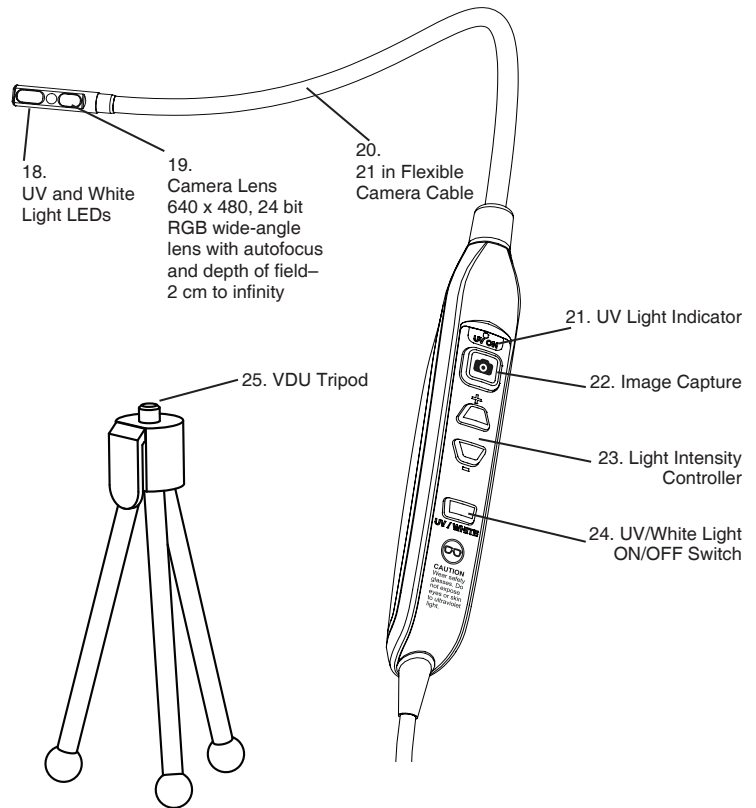


## Video Display Unit (VDU)—127213



Unit will time out and shut off automatically in 15 minutes. Restart is required.

## Camera Wand and Controller—127215



## Feature Instructions—Numbers refer to diagrams above.

- Shock Resistant Body. Formed for durability and easy gripping.
- Power Button. Push in to turn on and off.
- Mini USB Port. For uploading image files to your computer via USB cable.
- Image Files. Press to revisit images taken. Shows image number, date, and time.

**Rotate.** Menu button to turn image in 90 degree increments. *Note orange arrow on side of screen denoting original top of image.*

**Zoom+.** Each time it's pressed, it enlarges to 2X, then 4X, then back to original 1X size. With the image enlarged, use the Directional Controller buttons (6) to navigate around the image.

**Delete.** Deletes the image on screen.

**More.** To secondary menu:

**Transfer.** With USB cable connected, it will send images to your computer. See *How to Transfer Pictures* for details.

**Delete All.** This will delete the entire catalog of images in the camera. Press the **Home** button (14) to return to a live image.

- Image Capture. Press when the image you want is on the live screen.
- Directional Controller. Press the Image Files button (4) to show captured images. Use the left and right arrows of the Directional Controller (6) to move from image to image. Left to go backward, right to move forward. When in the Zoom mode, it moves the images left, right, up, or down.
- Settings. To create and change settings. Secondary Menu. **Set Date.** Use Directional Controller (6) to move left and right between day, date, and time. Use the Up and Down controls to change numbers. When complete, press **Set** to finalize. Unit will automatically go back to main screen. **Brightness.** Use controller to adjust up or down. Brightness will revert to Default on restart. Press **SET**. **Cancel** will void changes and take you back to the main screen.

- Rubberized Grip. Easy to hold, helps protect the frame from dents or scratches.
- Data Cord Connection (6-pin). Be careful when connecting not to damage pins.
- Low Battery Indicator. Blinks on the video screen when battery is low.
- LCD Screen (3.5 in). Clean with dry, soft cloth. May use alcohol, if necessary.
- SD Card Slot—Push standard 1GB\* SD card (included) into the slot on the side to insert. Push again to release/remove. \*Can use up to 64GB SD.
- Menu Buttons (LIVE Picture Mode).  
**Rotate.** Button turns image 90 degrees counterclockwise each time it is pushed. *Note: Orange arrow at edge of image identifies original top position of image.*  
**Zoom+.** Zooms from 1X to 2X to 4X and then back to 1X each touch cycle.  
**Zoom-.** In LIVE Camera mode only, will change from 4X to 2X to 1X.  
**Rotate.** Turns image clockwise.
- Home Recall. Returns to the home screen.
- Menu (Tab) Display. Press to show tabs on screen, or to turn them off.
- Back Button. Returns to the last screen shown only.
- Battery Compartment. The battery fits in the backside of the handle. Turn VDU over and pull up the end of the panel to remove and change batteries.
- UV and White Light LEDs. 4 ultraviolet (UV) LEDs and 2 white light LEDs.
- Camera Lens. Wide angle with autofocus for sharp and clear images.
- Flexible Camera Extension. Wound steel casing for durability and safety.
- UV Light Indicator. Lights up when UV LEDs are on.
- Image Capture. Press to capture the image shown on the video screen.
- Light Intensity Controller. Used for both UV and white light LEDs. Press (+) to brighten, (-) to darken.
- ON/OFF Switch. Press to switch between using UV and white light LEDs.
- VDU Tripod—Screw the Tripod into the back of the VDU and position the legs to hold the VDU in place to free your hands.



## Operating Instructions

**Fully charge your COBRA CAM before first use.**

Numbers refer to the Video Display Unit (VDU) diagram.

1. Insert the SD card into the slot (12) on the video display unit.
2. Plug the data cord (9) from the wand into the VDU at the heel of the handle.  
Be careful to insert it correctly with the widest side up.
3. Press the power button (2) and allow 30 seconds for the power up process.
4. Use the UV LEDs for dye inspection, plus many other applications. Use the white light LEDs for normal inspection (24—ON/OFF switch).
5. Insert the camera cable into the inspection area.
6. Once the inspection area is found, you may press the "Image Capture" button (5 on the VDU or 22 on the wand handle), to capture the image.
7. Captured images can be viewed, rotated, zoomed and panned on the VDU screen. (Images will not be captured to memory without the SD card inserted, but will be viewable.)
8. Images can be transferred by SD card or through the USB port.
9. Upon completion of operations, disassemble the unit and store in its case. Recharge the battery if needed.

## How to Transfer Pictures

Numbers refer to the Camera Wand and Controller diagram.

**From the SD Card:** Push the card once into the slot (12). It will release from the camera. Take the card and insert it into your SD card reader.  
Follow the directions below to transfer image files.

**From the Camera:** To a computer using Windows OS and a USB cable (not included).

- Connect the USB mini-B end of the connector to the left side of the camera (3).
- Connect the USB A connector to a USB port on the target computer.
- Press the IMAGE FILES button (4) to put the camera in playback mode.
- Press the MORE menu key (shown on the video screen).
- Press the TRANSFER menu key. (In Transfer mode, the camera will appear as an external drive to the target computer.)
- Using the Windows browser, open the external drive, and copy or move the .jpg picture files from the DCIM\100SPEC directory to the desired location on the target computer.
- Press the STOP menu item on the camera video screen to leave transfer mode.
- Disconnect the USB cable from the camera, and the target computer.

## Camera Safety

- Do not submerge any portion of the COBRA CAM into any liquid. See "Preventive Maintenance" for appropriate cleaning fluids.
- Do not insert the COBRA CAM wand into anything or anywhere that may contain a live electrical charge.
- WALLS: Shut off the circuit breaker to the whole house before using the COBRA CAM to inspect inside walls that may contain live electrical circuitry.
- PIPES: If you suspect a metal pipe could contain an electrical charge, have a qualified electrician check the pipe before using the COBRA CAM. Ground circuits, in some cases, can be returned to cast iron pipes and cause them to be charged.
- AUTOMOBILES: Be sure the automobile is not running during inspection. Do not get oil or gas on the imager head. Exposure to petroleum-based substances will eventually degrade the camera lens covering.
- GENERAL USE: Do not use anywhere the unit may come into exposure with hazardous chemicals, electrical charges or moving parts. Such situations may result in serious injury or death. Use good judgment!

## Charging the NiMH Battery

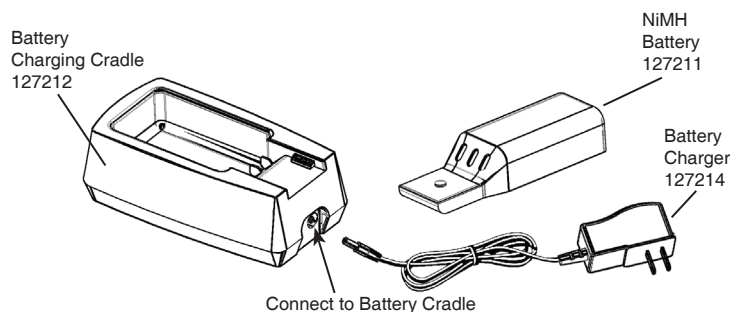
**The COBRA CAM battery must be charged before first use.**

- Remove the battery from its compartment (17 on the diagram) and press it into the battery cradle.
- Connect the battery charger to the battery cradle and plug the charger into a properly regulated AC plug.
- The indicator light on the end of the cradle will shine green while the battery is charging. The light will go off when the charge is complete (approximately one hour).
- When the charge is complete, first unplug the charger from the outlet, then unplug it from the cradle.
- The COBRA CAM can operate for approximately one hour after a full charge.
- If there is no activity, after 15 minutes the unit will time-out and shut off automatically. It will have to be restarted.

**WARNING:** Use only the charger supplied to recharge the battery.

## Care and Use of Nickel-Metal Hydride (NiMH) Batteries

- NiMH battery packs last longer when charged and stored in a temperature range between 50°F to 86°F (10°C to 10°C) away from heat, sunlight and humidity.
- *Always charge batteries to full capacity before long-term storage* (approximately 30 days) to prevent aging. After storing they must be charged, which may require conditioning (two or three charge/discharge cycles) to reach full capacity.
- Do not subject these batteries to repeated deep discharges that run the batteries down completely on a regular basis as this will greatly shorten battery life.
- NiMH batteries generally have no voltage sag until the last 10% of charge. The unit usually will operate for better than 90% of the battery's rated capacity.
- NiMHs have no toxic lead or mercury and a life expectancy of 500 charge/discharge cycles, or more, provided the battery is not overcharged or heavily discharged. **Recycle according to local disposal laws. Do not dispose of in fire. They will explode.**



## Use and Care of the COBRA CAM

- Do not operate the COBRA CAM unless this **Operator's Manual** has been read and understood completely.
- Do not submerge the hand-held display unit in water. Store in a dry place. The camera head and cable are water resistant when the unit is assembled, but the video display unit is susceptible to water infiltration.
- Do not use the camera if condensation forms inside the lens. Place in a dry area and let the water evaporate before operating.
- Do not use the unit if the ON/OFF switch is not working properly. Any unit that cannot be controlled with the switch needs to be repaired.
- Store spare equipment in the carrying case provided.
- Maintain the COBRA CAM with care. Properly maintained units last longer, are easier to work with and are less likely to cause injury.



### Use and Care of the COBRA CAM, continued:

- If the unit is dropped, check for cracks, or other conditions that may affect the unit's operation. If damaged, have it serviced before using.
- Use clean hands before turning the unit ON or OFF and before replacing batteries.
- Protect against excessive heat. The camera should be situated away from heat sources such as radiators, heat registers, stoves or other products that produce heat. Do not use the unit near moving machinery or areas where the temperature will exceed 110°F (43°C) or below 32°F (0°C).

## Preventive Maintenance

The COBRA CAM has been designed to require little maintenance. In order to maintain its performance, always follow these guidelines.

- Remove the battery from the unit before performing any maintenance.
- Handle the device with care. It is not shockproof and should not be banged or dropped. Treat it as the sensitive optical device that it is.
- Immediately clean all spilled materials from the unit and wipe dry. If necessary, moisten a cloth with mild soap and water and clean plastic areas.
- Always clean the imager head (camera and lights, **18** and **19**) after use with a soft cloth.
- Use only alcohol swabs to clean connections.
- After use, wipe the display screen (**11** LCD) gently with a soft, clean, dry cloth.
- Do not disassemble this device beyond removing the wand from the video unit. Doing so will void the warranty.

## Service

- Service must be performed only by authorized repair personnel. Service or maintenance performed by unqualified repair personnel could result in damage to the unit and will void warranty.
- Do not attempt to take any pieces of this unit apart.
- Closely follow instructions for changing accessories. Changing in a way that is improper or careless can lead to damaged connectors and faulty operation.
- Remove the batteries before cleaning. Gently clean the LCD with a dry cloth. Do not use acetone to clean surfaces.
- Remove the batteries and refer servicing to qualified service personnel under any of the following conditions:
  - If liquid has been spilled or objects have fallen onto the product.
  - If the product does not operate normally by following the operating instructions.
  - If the product has been dropped or damaged in any way.
  - When the product exhibits a distinct change in performance.

If you have any questions regarding the service or repair of the COBRA CAM, contact the Customer Service Department at Spectronics Corporation. In the United States and Canada, call toll-free 1-800-274-8888.

## Transportation and Storage

- Store the COBRA CAM indoors in its case. Avoid areas that are subject to temperature and humidity extremes, vibration or mechanical shock, dust or corrosive fumes.
- Remove the battery and charge it if the unit is being stored for extended periods of time (30 days or more). See Care and Use of NiMH Batteries for full information.
- Charge the battery before storing.

## Warranty

The warranty policy for the COBRA CAM is provided on the Certificate of Limited Warranty enclosed separately with each unit.

**NOTE:** For assistance of any kind, including help with a lamp under warranty, contact the Customer Service Department at Spectronics Corporation. In the U.S. and Canada, call toll-free 1-800-274-8888. Outside the U.S., call 1-516-333-4840. Include the model and serial numbers of the unit and the date of purchase. Shipping instructions will be provided if necessary.

If an estimate of charges for nonwarranty work or other service work is required, a quote will be furnished upon evaluation of the unit. Service work will not be performed without customer approval.

### SHIPPING

Carefully pack the COBRA CAM in the original shipping container and packing materials. Insure it for full value and ship it prepaid to the factory.

## Specifications

### Recommended Use

Indoor Viewable Distance..... 3/4 in (2 cm) to infinity  
Power Supply ..... 2.4 volt Battery Pack  
Battery Life ..... 1.0 hr (approximate)  
Battery Charge Time ..... 1.0 hr (approximate)  
Weight ..... 1.4 lb (637 g)

### Operating Environment:

Temperature ..... 32°F to 110°F (0°C to 43°C)  
Humidity..... 5% to 95% noncondensing (display unit)

### Dimensions:

Length..... 8 in (20.3 cm)  
Width ..... 4.125 in (10.7 cm)  
Height ..... 1.75 in (4.4 cm)  
Length of wand..... 82 in (208.2 cm)

### Display:

Resolution..... 320 x 240 pixels  
Screen Type ..... 3.5 in TFT LCD 24 bit RGB

### Replacement Parts

NiMH Battery ..... 127211  
Battery Charging Cradle ..... 127212  
Visual Display Unit..... 127213  
Battery Charger ..... 127214  
Camera Wand and Controller..... 127215  
Carrying Case..... 127216  
VDU Tripod..... 127555





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