# EXTECH INSTRUMENTS

# High Definition VideoScope

## Model HDV600

## *Introduction*

Congratulations on your purchase of this Extech HDV600 series Video Borescope. This instrument is designed for use as a remote inspection device. It can be used to peer into tight spots, record and playback real-time video and images. Typical applications include HVAC inspection, automotive inspection, cable routing, and automotive/boat/aircraft inspection. The monitor is designed with dual left or right handed controls for maximum flexibility and is available with a full line of accessories. This meter is shipped fully tested and, with proper use, will provide years of reliable service.

### Models and Descriptions:

| | |
|---|---|
| HDV600 | VideoScope (Monitor only) |
| HDV610 | VideoScope w/1m flexible cable, 5.5mm diameter |
| HDV620 | VideoScope w/1m semi-rigid cable, 5.8mm diameter |
| HDV640 | VideoScope w/1m Articulating semi-rigid cable, 6mm diameter |
| HDV640W | VideoScope w/1m Wireless Articulating semi-rigid cable, 6mm diameter |

Note: Additional probe lengths and configurations are available. A list is available at the end of this guide.
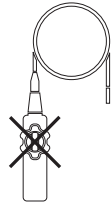
## ⚠ *Cautions*

⚠ The IP67 waterproof rating does not apply when the bottom panel access cover is removed.

⚠ For the Articulating Probe, do not operate the articulation knob with the probe in a coiled configuration. This will damage the articulation controls!

# *Description*

## Monitor
1. Probe connector
2. Camera button
3. Video button
4. Rotate image button
5. Display
6. Zoom buttons
7. Light intensity buttons
8. Power Button
9. Scroll buttons
10. Selection buttons
11. USB connector
12. Microphone
13. SD card slot
14. Video output jack
15. Reset button
16. AC adaptor connector
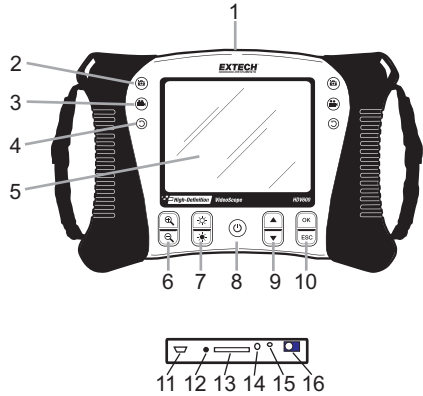


## Articulating Probe
1. Articulation knob
2. Articulation tension knob
3. Articulating camera
4. Light intensity buttons
5. Power button
6. AC Adaptor and extension cable sockets
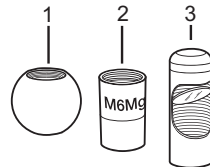7. Carrying strap
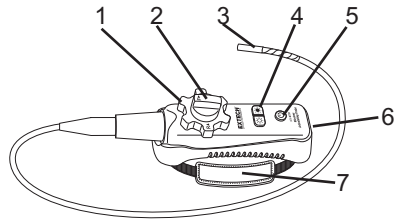


## Wireless Transmitter
1. Probe Connector
2. Light Intensity buttons
3. Power button
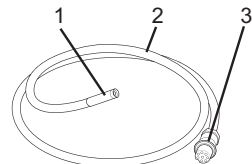4. AC Adaptor and extension cable sockets
5. Carrying strap
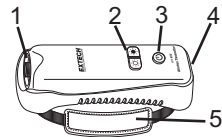


## Probe accessories
1. Anti-snag tip
2. Magnet
3. 45° Mirror



## Probe
1. Camera
2. Shaft
3. Monitor connector

# *Setup*

## Battery Charging and Status Indication:

**Note:** A fully charged battery will allow approximately 5 hours of continuous use.

1.  Turn the meter off and then connect the AC adaptor to charge the meter.

2.  After several hours, turn the meter on. The battery icon will indicate either:
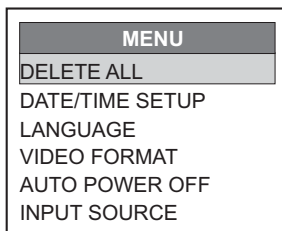
    A:  Fully charged

    B:  Charge in progress

3.  If the battery is charged, remove the AC adaptor and observe that the fully charged 4 bar icon ▮▮▮▮ appears.

4.  If the battery icon indicates less than 4 bars, turn the meter off and continue charging.

5.  Always wait for a full fully charged indication to maximize operation time and to maintain battery health.

**Note:** The battery will not properly charge if the meter is on during the charging cycle.


## Startup

1.  Insert the SD card into the bottom SD slot

2.  Press the Power button to turn the monitor on. The battery icon will briefly appear indicating the battery condition.

3.  Press OK to open the setup MENU

4.  Press the ▲ or ▼ button to scroll through the MENU selections.

5.  Press OK to open the highlighted selection.

6.  Press the ▲ or ▼ button to scroll through the items in an open menu item.

7.  Press the ▲ or ▼ buttons to increase or decrease the selected value.

| MENU |
| --- |
| DELETE ALL |
| DATE/TIME SETUP |
| LANGUAGE |
| VIDEO FORMAT |
| AUTO POWER OFF |
| INPUT SOURCE |

8.  After there has been a change, press the OK button to save the change or the ESC button to exit without the change.
    Note: After 10 seconds of inactivity, the Setup menu will exit without storing changes.

## MENU Description:

| | |
| --- | --- |
| **DELETE ALL:** | Erase all stored pictures and videos |
| **DATE/TIME SETUP:** | Set the date (year/month/day), time (hour:minute:second) and display on/off |
| **LANGUAGE**: | Set the menu display to any one of 21 languages. |
| **VIDEO FORMAT**: | Set the video output to NTSC or PAL format. |
| **AUTO POWER OFF:** | Set the APO to 5, 10, 15, 30 minutes or DISABLE. |
| **INPUT SOURCE**: | Set Direct or Wireless. |

# *Operation*

1. Connect the probe to the monitor.

2. Press the Power button to turn the monitor on.

3. Maneuvere the probe into position to view the area to be examined. The probe can be bent into the shape of the area to be examined. Optimum focus distance is 2 to 6cm (0.79 to 2.3")

4. Optimum focus distance is probe dependent, but the typical range is 2 to 6cm

## Zoom

Press the 🔍 or 🔍 zoom buttons to increase or decrease the display resolution from 1X to 2X.

## Light Intensity

Press and release the 🔆 or 🔆 buttons to increase or decrease the camera LED light intensity

Note: the camera LEDs become warm when set to maximum intensity

## Taking a Picture

Press the 📷 button to take and store a picture into memory. The 🖼 icon will appear on the display when a picture is taken.

## Recording a Video

Press the 🎥 button to start recording a video. The 🎥 ● REC icons will appear on the display when a video is being recorded. Press the 🎥 button to stop the recording. Audio will be recorded on the video via the microphone on the bottom of the monitor.

Note: The bottom access cover must be removed for audio recording.

⚠️ The IP67 waterproof rating does not apply when the bottom panel access cover is removed.

## Display Rotation

Press the ↻ button to rotate the display 90 degrees.

## Installing probe accessories

Three accessories (mirror, anti-snag tip and magnet) are supplied with each probe.
Attach the accessory by unscrewing the probe ring and screwing on the attachment.

## Articulating probe

The articulating probe, with adjustable tip angle, is used for improved viewing angles and optimum inspection when the probe is inserted into the inspection location. The articulating probe is available in a direct (wired) or wireless version.
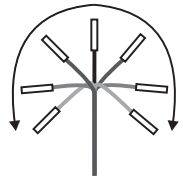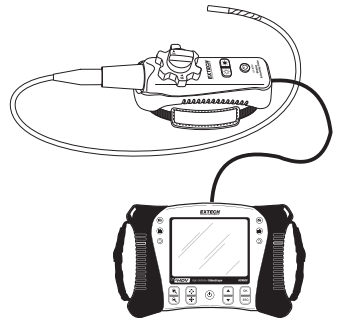
Wireless version

Note: The battery must be fully charged for wireless operation. A weak battery may result in meter shut down.

1. Connect the AC adaptor to the transmitter and charge the battery.

2. Press and hold the Power button for 4 seconds to turn the monitor on, then select "WIRELESS" under the INPUT SOURCE selection in the MENU screen.

3. Press and hold the Power button for 4 seconds to turn the transmitter on. The camera video will be transmitted to the monitor display.

4. Insert the probe into the area to be inspected.

5. Turn the probe outer knob to adjust the camera tip to the viewing angle needed.

6. Turn the upper knob to increase or decrease the outer knob tension
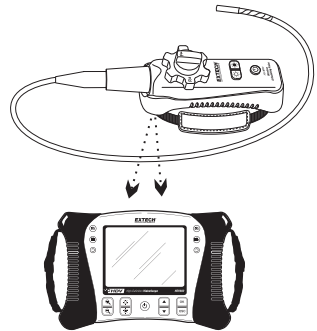
Direct version

1. Connect the probe to the monitor using the supplied patch cable.

2. Press and hold the Power buttons for 4 seconds to turn the probe and the monitor on

3. Insert the probe into the area to be inspected.

4. Turn the probe outer knob to adjust the camera tip to the viewing angle needed.

5. Turn the upper knob to increase or decrease the outer knob tension

6. In this mode, light intensity is controlled by the buttons on the monitor, not by the buttons on the transmitter.
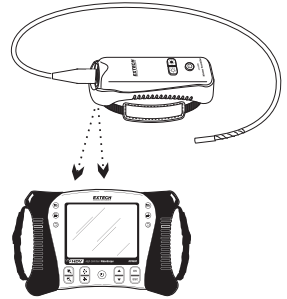
## Wireless transmitter

The wireless transmitter is intended for use in areas that are difficult to access or in situations when is hard to maneuver the probe with the display attached. The probe can also be connected directly to the monitor using the patch cord.

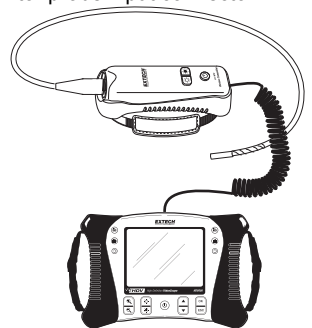Note: The battery must be fully charged for wireless operation. A weak battery may result in meter shut down.

Wireless Mode

1. Connect the AC adaptor to the transmitter and charge the battery.

2. Attach the probe to the transmitter.

3. Press and hold the Power button for 4 seconds to turn the monitor on, then select "WIRELESS" under the INPUT SOURCE selection in the MENU screen.

4. Press and hold the Power button for 4 seconds to turn the transmitter on. The camera video will be transmitter to the monitor display.

Direct Mode

1. Connect the AC adaptor to the transmitter and charge the battery.

2. Attach the probe to the transmitter.

3. Connect the patch cord between the transmitter and the monitor probe input connector

4. Press and hold the Power button for 4 seconds to turn the transmitter on.

5. Press and hold the Power button for 4 seconds to turn the monitor on, then select "DIRECT" under the INPUT SOURCE selection in the MENU screen.

6. In the direct mode, light intensity is controled by the buttons on the monitor, not by the buttons on the transmitter.

## Viewing a Stored Photo or Video in the Display

1. Press the ▲ button to access the pictures or videos in memory. Each button press will step through the files with the file number appearing on the screen  (i.e. IMG00005)

2. Pictures will appear with the 🖼 photo icon on the display.

3. Videos will appear with the 🎬 film icon on the display.

4. To play a video, select a video file and press the ⏺ button. The ▶ play icon will appear during playback. Press the ⏺ button again to pause playback. The ⏸ pause icon will appear.

## Viewing an Image or Video on a PC

There are two methods to transfer stored files to a pc.

1. Remove the SD card from the monitor and insert it into the SD reader in the pc.
2. Connect the monitor to the pc with a USB cable.

Images are saved in *.JPG format and videos saved in *.AVI format
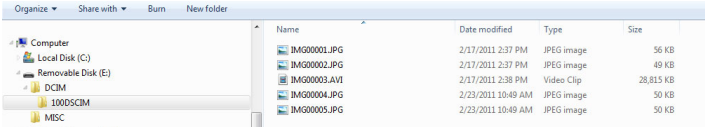


## Deleting stored Images or Videos

1. Press the ▲ button to access the pictures or videos in memory.
2. When the file to be deleted appears, press the OK button and the DELETE YES/NO box will appear.
3. Press the ▲ button to highlight YES and then press the OK button to delete the file.
4. Press the ESC button to exit at any time without deleteing the file.

## Video Output

1. Turn the monitor on and select "PAL" or "NTSC", to match the video monitor to be used, under the VIDEO OUTPUT selection in the MENU screen and press OK.
2. Insert the video cable into the VIDEO OUT socket on the bottom of the monitor. Connect the other end of the cable into the VIDEO IN jack of a TV or other monitor.
3. The unit will output a high quality video image.

### Reset button

If the monitor becomes unresponsive due to an EMI field or other magnetic event, use a paper clip or other pointed object to press the RESET button located on the bottom panel

### Rear stand

The rear stand can be set to three positions. Lower (stored), middle position for bench viewing and upper position for hanging.

### FCC Information

This device complies with part 15 of the FCC rules.
Operation is subject to the following two conditions:
1.  This device may not cause harmful interference
2.  This device must accept any interference received, including interference that may cause undesired operation.

### Battery Replacement

The charging circuit is designed only for the lithium battery included with the meter. The meter should be returned to one of our repair facilities for replacement. Non-approved lithium battery could cause damage to the instrument or hazard to the users.

You, as the end user, are legally bound (**Battery ordinance**) to return all used batteries and accumulators; **disposal in the household garbage is prohibited!**

You can hand over your used batteries / accumulators at collection points in your community or wherever batteries / accumulators are sold!

**Disposal:** Follow the valid legal stipulations in respect of the disposal of the device at the end of its lifecycle

## *Specifications*

**Monitor**

| | |
|---|---|
| LCD Screen | 14.5cm (5.7") Viewable 13.5cm (5.3")<br>Active matrix, 640x480 pixels |
| Interface | Mini USB 1.1 and AV out |
| Recording medium | SD Card |
| SD memory | 2GB maximum |
| Compression format | MPGE4 |
| Still image format | JPEG (640x480) |
| Video Recording Format | AVI (640x480) |
| Video output Format | NTSC and PAL |
| Receiver Frequency | 2.4GHz |
| Receiver Sensitivity | -87dBm (SNR = 42dB, Fmod = 15kHz) |
| Video System | NTSC / PAL |
| Data | Video / Audio |
| Audio type | Stereo |
| Tripod mount | On rear, Accepts standard tripod screw |
| Battery | 3.7V rechargeable Li-Polymer |
| Power adaptor | 100 to 240V input / 5VDC output |
| Operating/Storage Temperature | -10 to 60°C(14 to 140°F) / -40 to 80°C(-40 to 176°F) |
| Operating Humidity (Max.) | 80% |
| Dimensions (W x D x H) | 24.1 x 17.8 x 7.0cm (9.5'x7"x2.75") |
| Weight | 1474g (3.25lb) |

**Transmitter**

| | |
|---|---|
| Frequency | 2.4GHz |
| Data | Video / Audio |
| Video System | NTSC / PAL |
| Battery | 3.7V rechargeable Li-Polymer |
| Power adaptor | 100 to 240V input / 9VDC output |
| Unobstructed Effective Range | 10m |
| Operating/Storage Temperature | -10 to 60°C(14 to 140°F) / -40 to 80°C(-40 to 176°F) |
| Dimensions (W  D  H) | 19 x 7 x 6.35cm (7.5' x 2.75 x 2.5") |
| Weight (approx) | 431g (0.95lb) |

## Camera

| | |
|---|---|
| Imaging Sensor | CMOS |
| Video Format | NTSC |
| Brightness Control | Manual |
| Lamp Type | LED |
| Interface | Composite Video |
| Waterproof Capacity | IP57 |
| Operating Temperature | -20°C to 70°C (-4°F to 158°F) |

## Probes and Cameras

| | |
|---|---|
| Articulation | 240°±20° manual tip articulation |
| Accessories | Mirror, magnet and anti-snag Ball (excluding 25mm diameter cables) |

| Part Number | Description | OD | Length | Camera | Focus Distance |
|---|---|---|---|---|---|
| HDV-TX1 | Articulating Semi-Rigid | 6mm | 1m | 640x480 | 2 to 6cm |
| HDV-WTX1 | Wireless Articulating Semi-Rigid | 6mm | 1m | 640x480 | 2 to 6cm |
| HDV-TX2 | Articulating Semi-Rigid Cable | 6mm | 2m | 640x480 | 2 to 6cm |
| HDV-WTX2 | Wireless Articulating Semi-Rigid | 6mm | 2m | 640x480 | 2 to 6cm |
| HDV-4CAM-1FM | Macro lens Flexible | 4mm | 1m | 320x240 | 2 to 6cm |
| HDV-5CAM-1FM | Macro lens Flexible | 5.5mm | 1m | 640x480 | 2 to 6cm |
| HDV-5CAM-3F | Long depth of field Flexible | 5.5mm | 3m | 640x480 | 6 cm to ∞ |
| HDV-5CAM-3FM | Macro lens Flexible | 5.5mm | 3m | 640x480 | 2 to 6cm |
| HDV-5CAM-10F | Long depth of field Flexible | 5.5mm | 10m | 640x480 | 6 cm to ∞ |
| HDV-5CAM-1RM | Macro lens Semi-Rigid | 5.5mm | 1m | 640x480 | 2 to 6cm |
| HDV-5CAM-3R | Long depth of field Semi-Rigid | 5.5mm | 3m | 640x480 | 6 cm to ∞ |
| HDV-5CAM-3RM | Macro lens Semi-Rigid | 5.5mm | 3m | 640x480 | 2 to 6cm |
| HDV-25CAM-10G | Fiberglass | 25mm | 10m | 640x480 | 6 cm to ∞ |
| HDV-25CAM-30G | Fiberglass | 25mm | 30m | 640x480 | 6 cm to ∞ |