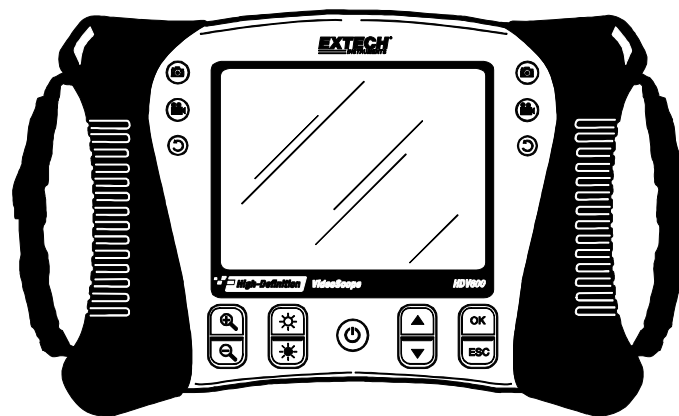




User Manual

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.



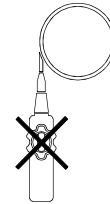
Cautions



The IP67 waterproof rating applies to the monitor when the bottom panel access cover is fully in place.



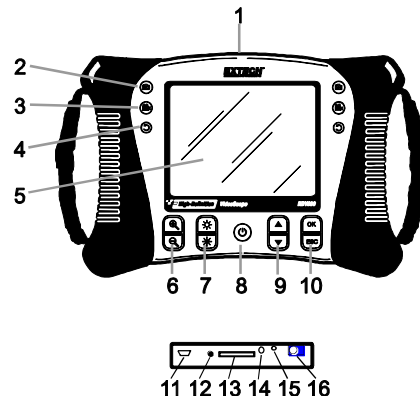
For the Articulating Probe, do not operate the articulation knob with the probe in a coiled configuration. This will damage the articulation controls!



Description

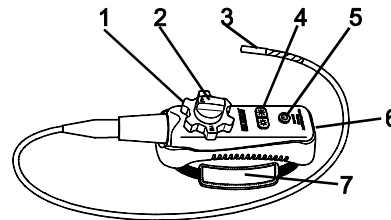
Monitor

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



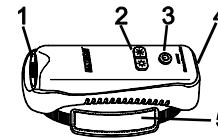
Articulating Probe

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



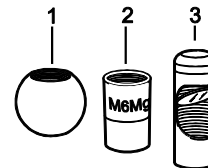
Wireless Transmitter

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



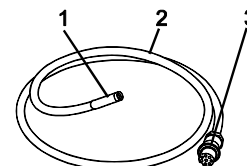
Probe accessories

1. Anti-snap tip
2. Magnet
3. 45° Mirror



Probe

1. Camera
2. Shaft
3. Monitor connector

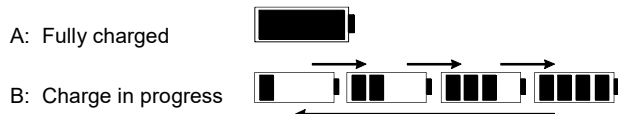


Setup

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:

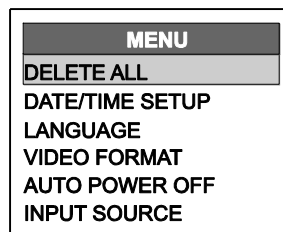


3. If the battery is charged, remove the AC adaptor and observe that the fully charged 4 bar icon  appears.
4. If the battery icon indicates less than 4 bars, turn the meter off and continue charging.
5. Always wait for a full fully charged indication to maximize operation time and to maintain battery 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.
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   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.

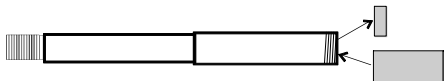
 The IP67 waterproof rating applies to the monitor when the bottom panel access cover is fully in place.

Display Rotation

Press the  button to rotate the display 90 degrees.

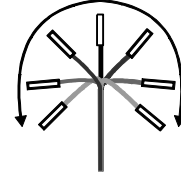
Installing probe accessories

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

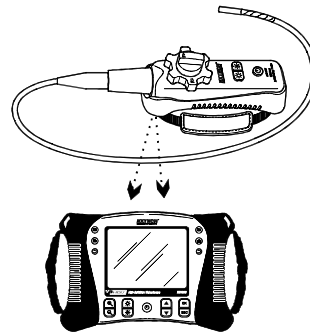
The articulating probe, with adjustable tip angle, is used for improved viewing angles and optimum inspection when the probe is inserted into the inspection location. The articulating probe is available in a direct (wired) or wireless version.



Wireless version

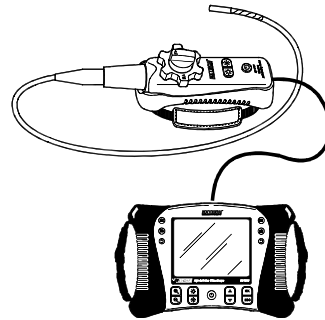
Note: The battery must be fully charged for wireless operation. A weak battery may result in meter shut down.

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.



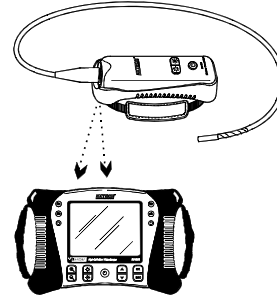
Wireless transmitter

The wireless transmitter is intended for use in areas that are difficult to access or in situations when it 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.

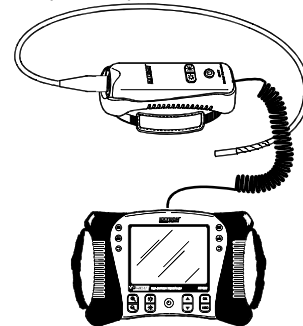
Wireless Mode

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 transmitted 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 controlled by the buttons on the monitor, not by the buttons on the transmitter.



Viewing a Stored Photo or Video in the Display

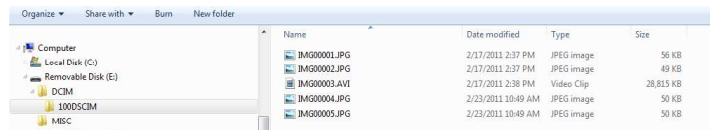
1. Press the ▲ button to access the pictures or videos in memory. Each button press will step through the files with the file number appearing on the screen (i.e. IMG00005)
2. Pictures will appear with the  photo icon on the display.
3. Videos will appear with the  film icon on the display.
4. To play 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



Name	Date modified	Type	Size
IMG00001.JPG	2/17/2011 2:37 PM	JPEG image	56 KB
IMG00002.JPG	2/17/2011 2:37 PM	JPEG image	49 KB
IMG00003.AVI	2/17/2011 2:38 PM	Video Clip	28,815 KB
IMG00004.JPG	2/23/2011 10:49 AM	JPEG image	50 KB
IMG00005.JPG	2/23/2011 10:49 AM	JPEG image	50 KB

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 deleting 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.

Video Profiles Menu

The HDV600 monitor has 2 factory default profiles (Default1 and Default2) and one User profile for Brightness, Contrast, Hue, and Saturation camera settings. To access the Factory Default menu, follow this procedure.

1. Press the OK button and using the arrow button navigate to Video Format. Press OK
2. Highlight NTSC and press the Still camera button.
3. Use the down arrow to select Default1 or Default2. The user can also adjust each video parameter manually for the best picture.
4. Press the ESC button 2 times to return to the image view mode.

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.

Safety: Please dispose of batteries responsibly; never dispose of batteries in a fire, batteries may explode or leak. If the meter is not to be used for 60 days or more, remove the battery and store separately.



Never dispose of used batteries or rechargeable batteries in household waste.

As consumers, users are legally required to take used batteries to appropriate collection sites, the retail store where the batteries were purchased, or wherever batteries are sold.

Disposal: Do not dispose of this instrument in household waste. The user is obligated to take end-of-life devices to a designated collection point for the disposal of electrical and electronic equipment.

Specifications

Monitor

LCD Screen	14.5cm (5.7") Viewable 13.5cm (5.3") Active matrix, 640x480 pixels
Interface	Mini USB 1.1 and AV out
Recording medium	SD Card
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%
Ingress protection	IP67
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
Ingress protection	IP67
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 ∞

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