

Operation Manual

12810x Series HandHeld Videoscope



POB 381, Westfield, MA 01086
33 Airport Road, Westfield, MA 01085

Tel: (413) 562-3606

Fax: (413) 568-9809

email: iti@scopes.com www.scopes.com

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INTRODUCTION

Thank you for selecting Instrument Technology, Inc. (ITI) to fulfill your remote viewing needs.

Since 1967, ITI has been the Leader in Remote Viewing. ITI consistently provides cutting edge technology to customers world-wide.

ITI specializes in the design, development and manufacture of Remote Viewing Instruments (RVI) and systems including Borescopes, Fiberscopes and Videoscopes.

ITI offers over 2,000 standard products as well as products custom designed for unique applications. No matter which ITI product is used, our customers find they are able to observe hostile and difficult to reach environments never dreamed possible before. Though ITI products can solve many remote viewing problems, it is always best to select the proper instrument for any given application. Only then can success be assured.

Your satisfaction is guaranteed with all products purchased from Instrument Technology, Inc. Feel free to contact ITI or your local ITI Representative with any questions.

WARRANTY

Instrument Technology, Inc. warrants that the equipment is fit for the purposes described herein for a period of one year after the date of shipment when used in accordance with the directions for use, and agrees to repair or replace any such defective component part at no cost to the customer.

There are no other express or implied warranties. ITI's sole obligation and purchaser's exclusive remedy for breach of any warranty shall be limited to repair or replacement of the product at the option of ITI. This warranty does not cover, and ITI will not be liable for any resulting direct, proximate, incidental or consequential damages. This warranty does not apply if the product has been subject to misuse, negligence, accident or improper application, nor shall ITI be responsible for work done or repairs made by others.

▲ WARNING: Read this manual completely.

SAFETY INFORMATION DEFINITIONS

- **▲DANGER:** Indicate[s] a hazardous situation which, if not avoided, will result death or serious injury. The signal word "DANGER" is to be limited to the most extreme situations. DANGER [signs] should not be used for property damage hazards unless personal injury risk appropriate to these levels is also involved.
- **▲WARNING:** Indicate[s] a hazardous situation which, if not avoided, could result in death or serious injury. WARNING [signs] should not be used for property damage hazards unless personal injury risk appropriate to this level is also involved.
- **▲CAUTION:** Indicate[s] a hazardous situation which, if not avoided, could result in minor or moderate injury.

CAUTION: [Signs] without a safety alert symbol may be used to alert against unsafe practices that can result in property damage only.

- **NOTICE:** [this header is] preferred to address practices not related to personal injury. The safety alert symbol shall not be used with this signal word. As an alternative to "NOTICE" the word "CAUTION" without the safety alert symbol may be used to indicate a message not related to personal injury.



Figure 1, HandHeld VS Controls

Front Controls

Power/Menu/Menu Back Button

- Press and hold for 3 beeps to power ON device
- Press and release to enter or leave Menu mode

Menu Navigation Buttons (Up, Down, Right)

- Use to navigate menu options; use Right button to navigate through saved files gallery

Menu Select Button

- Use to select desired menu option
- Use to display photo/video recordings gallery, use to playback file

Zoom Button

- Press to zoom 2X, 3X, and again to return to 1X zoom

Video Button

- Press and release to start video recording; recording icon appears on screen.
- Press again to stop recording; icon disappears from screen.

Illumination Level Button

- 5 levels of LED brightness plus OFF.

Still Capture Button

- Press and release to capture still image; camera icon flashes on screen.

Side Ports

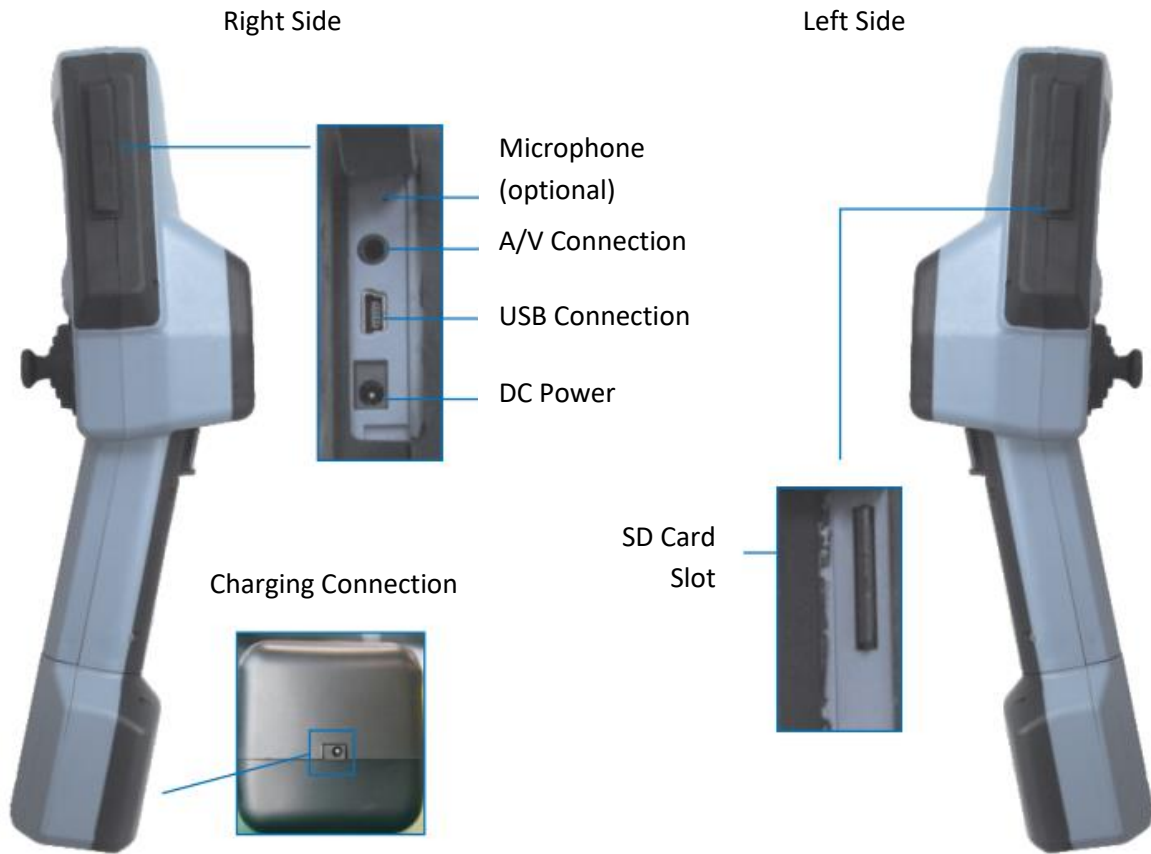


Figure 2, Side Ports

Working Length

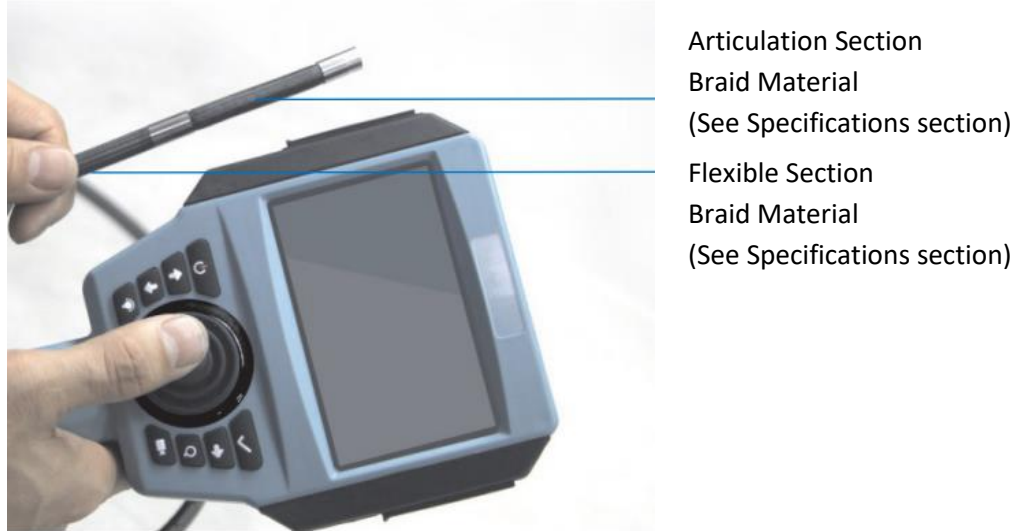


Figure 3, Sections of Working Length (Probe)

Note: Working Length Probe is NOT removable.

Battery Installation and Removal

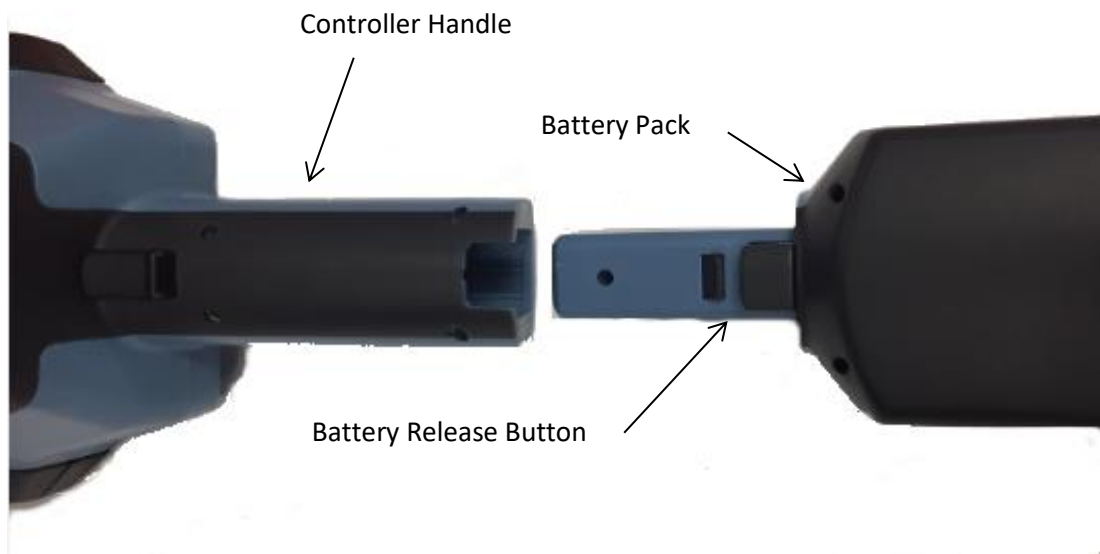


Figure 4, Battery Pack

Videoscope Operation

1. Make sure the battery and SD card are installed before turning on the device.
2. Turn on the device and assure LED's are operating. Adjust illumination level as needed.
 - a. WARNING: operating camera continuously for greater than 2 hours may shorten life of imaging sensor. Allow camera tip to cool for 20 minutes prior to reuse.
3. Insert working length into inspection area.
 - a. CAUTION: Straighten bending section prior to removal.
 - b. CAUTION: Do not articulate in confined spaces. Avoid obstacles and restricted areas.
4. Use the joystick to direct tip to area to be inspected.
5. Adjust illumination and/or zoom for optimal image.
6. Capture still image or video recording.
 - a. Still image will display a camera icon in the upper left corner
 - b. Video recording will display a movie camera icon on screen while recording, push button again to end recording.

7. Playback

a. Browsing:

1. Press and hold the "Select" button until the image/video record gallery displays on screen.
2. Use "Right Arrow" button to advance to file of interest.
3. Press "Select" button to select file and again to Play file.
 - a. Notice: Pressing "Right" arrow button will play next file.
4. To exit playback mode push "Power" button.

Note: a movie camera icon on file icon indicates a video file; no icon appears on the still image files.

b. Editing:

Still images can be cropped by zooming in, positioning and saving the image.

1. Select the image to edit.
2. Press zoom button to enlarge and use menu navigation buttons position the desire area. Notice: there is no "Left" button.
3. Press the "Select" button to initiate the "Trim This Photo" dialog box to appear.
4. Select from the choice given and press the "Select" button again to confirm your choice. A new file is created if YES was selected.






c. Deleting file:

Within file editing, a file can be deleted

1. Select image to delete.
2. Press and hold "Select" button for 2-3 seconds and the "Delete This File" dialog box will appear.
3. Select from the choice given and press the "Select" button again to confirm choice (Yes or No)
 - a. Notice: default option is No

Menu Operation

1. Enter Menu mode by pressing and release of the Power button.
2. 5 menu pages (modes) exist :

- A. Camera Sensor  (if present)
- | | | |
|----|----------------------------|--------------------------------|
| a. | White balance (if present) | Auto, A type, B type, C type |
| b. | AGC (if present) | Auto, x4, x8, x16 |
| c. | Exposure (if present) | 11 setting from EV+1.7 to -1.7 |
| d. | FPS (if present) | 30fps, 20fps, 15fps |
- B. Display Monitor 
- | | | |
|----|-------------------------|-----------------------|
| a. | Screen brightness | Up/Down - +5, 0.0, -5 |
| b. | Screen contrast | Up/Down - +5, 0.0, -5 |
| c. | Image proportion | 4:3, 16:9 |
| d. | Image mode (if present) | Normal, Bright |
- C. Setup 
- | | | |
|----|------------------|---|
| a. | Date/Time set | Yr/Mn/Dy – Time – 24hr |
| b. | Auto save | On/Off |
| c. | Language | EN, JP, CH, DE, FR, IT, NL, TR, DA, FIN, KR, PT, RU, ES |
| d. | Format (SD Card) | Yes/No |
- D. Sound 
- | | | |
|----|----------------|---------------|
| a. | Shutter | On/Off |
| b. | Start Up Sound | 1, 2, 3, None |
| c. | Beep | On/Off |
| d. | Volume | 0, 1, 2, 3 |
- E. Utilities 
- | | | |
|----|------------------|------------------------------------|
| a. | TV system | NTSC/PAL |
| b. | Power frequency | 50Hz, 60Hz |
| c. | Firmware updates | No/Yes |
| d. | Auto shut down | Off, 5 min, 10 min, 15 min, 30 min |

3. Notice: to use menu follow these general steps.
 - A. Use Up and Down arrows to navigate between menu categories.
 - B. Press Right arrow to select menu category.
 - C. Press Select button to view category options.
 - D. Press Select again to set desired option value.
 - E. Press Menu button (Power button) to exit Playback mode and return to Live mode.

Specifications

WORKING LENGTH

Diameter	Ø2.85mm (.112")	Ø4.5mm (.177")	Ø6.2mm (.244")*	Ø8.4mm (.331")
Length	1m/1.5m	1.5m/3m	1.5m/3m	1.5m/3m/6m
Material	Stainless Steel	Tungsten	Tungsten	Tungsten
Articulation	2-Way	4-Way	4-Way	4-Way
Angle Nominal**	140°	170°/150°	170°/160°	160°/150°/100°
Mode	Manual Joystick	Manual Joystick	Manual Joystick	Manual Joystick
Ingress Rating	IP64	IP64	IP64	IP64

IMAGING

Camera Sensor	CMOS	CMOS	CMOS	CMOS
Pixels	160k	640x480	1280x720	1280x720
Viewing Angle	90°	60°/90°	120°	120°
f/number	4.0	2.8/4.8	5.0	5.0
Depth of Field	5-50mm	8-80mm (90°)	5-50mm	5-50mm
		60mm – INF (60°)	15mm - INF	15mm - INF
Zoom	1x to 3x	1x to 3x	1x to 3x	1x to 3x
Illumination	5 Levels	5 Levels	5 Levels	5 Levels
Display Monitor	4.3", 800x480	4.3", 800x480	4.3", 800x480	4.3", 800x480

RECORD/PLAY

Photo	jpg 1024x768
Video	avi 800x400
Storage	SD Card

POWER

Battery	Li-ion, 3.7V
Capacity	6000mAh
Operating	4 hours
Charge	5 hours
AC Charger	100-240VAC, 50/60Hz

MENU

File Save/Delete	
14 Languages	
Time/Date	
Format SD Card	

KIT INCLUDES

HH Videoscope	AC Power Supply
Battery Pack	w/foreign adapters
32GB SD Card	Case and Foam
Desktop Stand	Manual
Video Output Cable	

OUTPUTS

Video Port	NTSC/PAL
USB Port	File Transfer to PC

PHYSICAL

Material, Handle	ABS and TPE
Temp, Operating	-10°C to 50°C (14°F to 122°F)
Weight, HH	.73kg (1.6lbs)
Weight, Kit	5.73kg (12.6lbs)
Size, Kit	55.9cmx45.7cmx16cm (22"x18"x6.3")

OPTIONS

Wireless	WiFi to phone/tablet
Audio	Microphone
Infrared (IR)	940nm LED
Ingress Protection	IP67 for diameters 4.5mm and larger

* 6.2mm diameter is 6.4mm (.252") for IP67

** Reduce articulation angles 30° for IP67

Trouble Shooting

Symptom	Remedy
Abnormal bending angle	Check the cable; should be straightened before each use.
No images	Check the connection to the power supply.
Out of Focus Image	Adjust distance between camera tip and object of interest. Turn off the Videoscope and clean the lens.

⚠WARNING

- Do not immerse in water unless scope is specifically configured for immersion.
- Do not allow to contact a power source. The device is an electrical conductor.

⚠CAUTION

- Do not disassemble. No user serviceable components. Warrantee will be voided.
- Check batteries before use. Do not use if any sign of damage, corrosion or liquid ingress.
- Inspect the equipment before each use. Do not use if any sign of damage or liquid ingress.

CAUTION

- Do not use out of -10°C to 50°C temperature range.
- Do not use in a corrosive environment.
- Do not use near a magnetic environment.
- Do not use in extremely dusty environments.
- Keep the equipment clean, do not scratch the monitor.
- Do not operate when working length is coiled or bent, this can damage the articulation wires. Working length should be nearly straight when operating to achieve best operation.
- To avoid damage to the probe during inspection, keep the probe straight during insertion and removal.
- Clean probe and distal tip after use.
- Store in the case with battery removed.

Repair Policy

If your equipment requires factory attention, contact ITI's Customer Service Dept. at (413) 562-3606 for a Return Material Authorization. Please be prepared to furnish your model and serial numbers. Return the equipment to ITI, freight prepaid.

Ship to:

Instrument Technology, Inc.
33 Airport Road
Westfield, MA 01085-1357

Please note Return Material Authorization on Purchase Orders, and all shipping documents.

Upon receipt of your equipment, ITI will assess its condition to determine if repairs are needed. If repairs are required, we will quote repair costs and a schedule for repairs. Your options at this point are:

1) Accept Repair

To proceed with the repair, ITI will require a purchase order for the full quoted repair price.

2) Decline Repair - Upgrade to a New Instrument

Choosing this option requires a purchase order for the new equipment at its quoted price. ITI will ship out the next available unit.

3) Decline Repair

Please Note - Most repair evaluations require a partial or complete disassembly of the equipment. Once disassembled, it is impossible to return it to the customer in "as received" condition. At the customer's option, ITI will either return your equipment in its disassembled state, or dispose of it.

Notes