



Advanced Test Equipment Corp.

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Features and Specifications



## Scope Unit

Each interchangeable scope unit consists of the handheld control unit and insertion tube. Scope unit attaches to the base unit with two secure latches. Available in NTSC or PAL format models (region specific).

Scope Unit										
Model No.	IV8420	IV8435	IV8620	IV8635	IV8635X1	IV8650	IV8675	IV8675X2	IV86120	IV86180
Scope Diameter	ø4.0 mm (0.157 in)		ø6.0 mm (0.236 in)		ø6.2 mm (0.244 in)		ø6.0 mm (0.236 in)		12.0 m (39.4 ft)	18.0 m (59.1 ft)
Scope Length	2.0 m (6.6 ft)	3.5 m (11.5 ft)	2.0 m (6.6 ft)	3.5 m (11.5 ft)	3.5 m (11.5 ft) with working channel	5.0 m (16.4 ft)		7.5 m (24.6 ft)		
Exterior	Tungsten with special processing							Smooth resin		Tungsten with special processing
Tube Flexibility	Fixed hard tube from the distal end of the insertion tube to the control unit.		TTF tube with flexibility gradually increasing toward the distal end.						Fixed hard tube from the distal end of the insertion tube to the control unit.	
Articulation Angle UP/DOWN/RIGHT/LEFT	130°		150°	130°	120°	110°	90°	70°	50°	
Weight	3.7 lb (1.7 kg)	4.2 lb (1.9 kg)	3.7 lb (1.7 kg)	4.2 lb (1.9 kg)	4.4 lb (2.0 kg)	4.4 lb (2.0 kg)	4.9 lb (2.2 kg)	5.7 lb (2.6 kg)	6.8 lb (3.1 kg)	

### Insertion Tube

Articulation Mechanics: TrueFeel™ scope tip articulation with electronic power-assisted, manual articulation.

Temperature Sensor: 2-stage indicator for high temperature warning.

## Base Unit

Model Number: IV8000-2  
 Dimensions: 9.8 in x 6.3 in x 11.2 in (250 mm x 160 mm x 285 mm)  
 Weight: 10.8 lb (4.9 kg), including battery.  
 Construction: Cast magnesium alloy chassis.

### Hardware Connectors

Video Output: S-Video, Composite BNC (NTSC/PAL-region specific).  
 Audio Input: External microphone, 3.5 mm mono jack.  
 Auxiliary Connector: Two-way communication connector for future interface development.  
 USB: One USB connector for direct flash drive recording and PC communication.

### LCD Specifications

LCD Panel: 6.5-inch daylight-view LCD, low reflection type  
 LCD Resolution: VGA High Resolution 640 x 480  
 LCD Controls: Dedicated LCD power, brightness control, 180° image rotate, TITLE and NOTE buttons located on LCD panel.  
 LCD Mounts: A standard 1/4"-20 mount on base.

## Power Supply

Internal Battery: Voltage: 14.8 V nominal, 11.5 V to 16.8 V  
 Operating Time: 150 minutes (min)  
 AC Power: Input Voltage: 100 V to 240 V  
 Supply Frequency: 50/60 Hz (with supplied AC adapter)

## Carrying Case

Construction: Pelican™ brand case made of Polypropylene Copolymer material.  
 Dimensions: 24.6 in x 11.9 in x 19.3 in (624 mm x 303 mm x 491 mm)  
 Weight: 22.0 lb (10 kg)

## MIL-STD Compliance

The operating environment performance is confirmed by the following MIL-STD-810F and MIL-STD-461E under battery operation. Refer to instructions manual for more details.

Vibration: MIL-STD-810F, Method 514.5, Procedure I (General vibration test).  
 Shock: MIL-STD-810F, Method 516.5, Procedure IV (Transit drop test).  
 Water Resistance: MIL-STD-810F, Method 506.4, Procedure I (Rain and Blowing rain test).  
 Humidity: MIL-STD-810F, Method 507.  
 Salt Fog: MIL-STD-810F, Method 509.4  
 Sand and Dust: MIL-STD-810F, Method 510.4, Procedure I (Blowing dust test).  
 Electromagnetic Interference (EMI): MIL-STD-461E, RS-103, (Radiated susceptibility test for non-metallic below deck shipboard conditions).  
 Explosive Atmosphere: MIL-STD-810F, Method 511.4, Procedure I (Operation in an explosive atmosphere test).

### Handheld Control Unit

Dimensions: 12.2 in x 3.7 in x 7.6 in (311 mm x 93 mm x 192 mm)  
 Weight: 1.7 lb (750 g)  
 Quick access buttons: The following features have dedicated quick access buttons, levers or joysticks on the hand control unit: Live mode, WiDER™ Gain Control, Brightness, Zoom, Freeze Image, Record Still/Video, Articulation Control, Articulation Lock, Menu Access, Saved Recording Index Access, Quick Last Image Recall.

## Software Controls

Image Controls: 3x digital zoom  
 9 step digital brightness control  
 5 step contrast adjustment for frozen and retrieved images.  
 Adjustable Gain Control: 4 step adjustable gain control with exclusive WiDER™ brightness level balancing technology. Decreases static interference in images.  
 Noise Reduction: Monochrome mode or Color Emphasis of red, blue or all primary colors.  
 Color Enhancement: Adjustable CCD exposure time.  
 Exposure Control: PAL: 20 ms to 500 ms  
 NTSC: 17 ms to 500 ms  
 \* fixed minimum exposure time for stereo measurement mode.  
 Display Text Options: Selectable date, time and 30-character title display.

## Measurement Functions

IPLEX FX features seven different measurement modes. Scalar measurement is available with all standard viewing tip adapters. Stereo measurements require a stereo tip adapter.

**Scalar Measurement:** Distance between two points based on a known measurement in the same image plane.  
**Stereo Measurement**  
 Distance: Distance between two points.  
 Point-to-Line: Perpendicular distance between a point and a user-defined line.  
 Depth: Orthogonal depth/height distance between a point and a user-defined plane.  
 Area/Lines: Multiple point circumference and area measurement.  
 Profile: Plot of cross section between two points.  
 Multi: Multiple measurements (distance, point-to-line, area and line) between two points.  
 Offset: Point-to-Line measurement with a parallel line passing on a measurement point.

## Recording Management Functions

Recording Media: Compact Flash Card (1 GB standard, compatible with recommended Compact Flash cards up to 4 GB).  
 USB Flash Drive recommended.

Internal Memory: 1 GB standard.  
 Image Management Functions: Search by date, Live/Saved image comparison.

### Still Image Recording

Resolution: PAL: 768 x 576; NTSC: 640 x 480  
 Standard Viewing Tip Adapters:  
 Format and Size of a Single Image (for NTSC)\*:  
 JPEG - super high quality (SHQ); approx 350 KB  
 high quality (HIGH); approx 300 KB  
 standard quality (STD); approx 200 KB  
 Stereo Tip Adapters:  
 JPEG (HIGH); approx 300 KB  
 Uncompressed TIFF; approx 640 KB

\*The still image recording capacity of the PAL format is approximately 140% of the NTSC format.

Overlay: Selectable 30 character title with date, time and system settings. Additional data can be input to an image using the ImageNotepad™ tool which provides the capability to insert up to 10 additional descriptions to an image, displayed by categories and contents. Up to 12 characters can be input for the category field and 28 characters for content field. WAV format, 60 sec max.; 16 KB/sec

Audio Overlay:

### Video Recording

Resolution: PAL: 384 x 288/768 x 576  
 NTSC: 320 x 240/640 x 480  
 Format: AVI format, Motion JPEG compression, Windows. Media Player compatible.  
 Recording Time: Approx 30 minute per 1 GB.  
 Audio: Optional selectable before recording.



## Tip Adapter Optical Specifications

### 6 mm Viewing Tip Adapters

	AT40D/IV86	AT80D/NF-IV86	AT80D/FF-IV86	AT120D/NF-IV86	AT120D/FF-IV86	AT80S-IV86	AT120S/NF-IV86	AT120S/FF-IV86
Product abbreviation	40D V86	80DN V86	80DF V86	120DN V86	120DF V86	80S V86	120SN V86	120SF V86
Character color	Black	Red	Green	Red	Green	Black	Red	Green
Optical system	Field of view	40°	80°	80°	120°	120°	80°	120°
	Direction of view	Forward	Forward	Forward	Forward	Side	Side	Side
	Depth of field *1	200 to ∞ mm	8 to ∞ mm	35 to ∞ mm	4 to 190 mm	25 to ∞ mm	18 to ∞ mm	5 to ∞ mm
	Fno.	2.4	9.5	3.1	9.2	3.3	4.0	9.6
Distal end	Outer diameter *2	ø6.0 mm	ø6.0 mm	ø6.0 mm	ø6.0 mm	ø6.0 mm	ø6.0 mm	ø6.0 mm
	Distal end *3	19.8 mm	19.8 mm	19.8 mm	19.8 mm	19.8 mm	25.2 mm	25.2 mm

### 4.0 mm and 6.2 mm Viewing Tip Adapters

	AT120D/NF-IV84	AT120D/FF-IV84	AT120S/NF-IV84	AT120S/FF-IV84	AT120D/NF-IV86X1	AT120D/FF-IV86X1	AT80S-IV86X1	AT120S-IV86X1
Product abbreviation	120DN V84	120DF V84	120SN V84	120SF V84	120DN V86X1	120DF V86X1	80S V86X1	120S V86X1
Character color	Red	Green	Red	Green	Red	Green	Black	Black
Optical system	Field of view	120°	120°	120°	120°	120°	80°	120°
	Direction of view	Forward	Forward	Side	Side	Forward	Side	Side
	Depth of field *1	4 to 190 mm	25 to ∞ mm	1 to 20 mm	6 to ∞ mm	4 to 190 mm	25 to ∞ mm	18 to ∞ mm
	Fno.	9.2	3.3	9.6	6.0	9.2	3.3	4.0
Distal end	Outer diameter *2	ø4.0 mm	ø4.0 mm	ø4.0 mm	ø4.0 mm	ø6.2 mm	ø6.2 mm	ø6.2 mm
	Distal end *3	19.7 mm	19.6 mm	22.2 mm	22.2 mm	20.6 mm	20.5 mm	24.7 mm

### Stereo Tip Adapters (4.0 mm, 6.0 mm and 6.2 mm)

	AT50D/50D-IV84	AT50S/50S-IV84	AT60D/60D-IV86	AT60S/60S-IV86	AT60D/60D-IV86X1	AT60S/60S-IV86X1
Product abbreviation	50/50D V84	50/50S V84	60/60D V86	60/60S V86	60/60D V86X1	60/60S V86X1
Character color	Blue	Blue	Blue	Blue	Blue	Blue
Optical system	Field of view	50°/50°	50°/50°	60°/60°	60°/60°	60°/60°
	Direction of view	Forward/Forward	Side/Side	Forward/Forward	Side/Side	Forward/Forward
	Depth of field *1	5 to ∞ mm	4 to ∞ mm	5 to ∞ mm	4 to ∞ mm	5 to ∞ mm
	Fno.	7.5	7.5	7.5	7.5	7.5
Distal end	Outer diameter *2	ø4.0 mm	ø4.0 mm	ø6.0 mm	ø6.2 mm	ø6.2 mm
	Distal end *3	25.0 mm	28.8 mm	25.9 mm	32.2 mm	25.9 mm

\*1. Indicates the optimal focal distance of the tip adapter. \*2. The adapter can be inserted into a ø4.0 mm, ø6.0 mm or ø6.2 mm hole when it is mounted on the scope. \*3. Indicates the length of the rigid portion at the scope's distal end when mounted.

## Tip Adapter General Specifications

Locking Mechanism: Double Threaded Attachment, with O-ring seal.  
 Illumination: Multiple high intensity LEDs with 2-stage illumination.  
 Tip Adapter Identification: Automatic SmartTip™ Recognition Technology.

## External Application Standards

Low Voltage Directive

and EMC Directive:



This device complies with the requirements of Directive 73/23/EEC and 93/68/EEC concerning electrical equipment designed for use within certain voltage limits.

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 received, including interference that may cause undesired operation. This class A digital apparatus complies with Canadian ICES-003.

WEEE Directive:



In accordance with European Directive 2002/96/EC on Waste Electrical and Electronic Equipment, this symbol indicates that the product must be disposed of as unsorted municipal waste, but should be collected separately. Refer to your local Olympus distributor for return and/or collection systems available in your country.

RoHS Directive:

RoHS compliance model.

## Operating Environment

### Insertion Tube

Operating Temperature:

In air: -13° to 212°F (-25° to 100°C)

Note: Angulation to a large angle may become difficult at low temperatures.

In water: 50° to 86°F (10° to 30°C)

Operating Atmospheric Pressure:

In air: 1013 hPa (1 atm)

In water: 1013 to 1772 hPa (1 to 1.75 atm)\*

15 to 90%

Relative Humidity:

Liquid Resistance:

Operable when exposed to machine oil, light oil or 5% saline solution.

Waterproofing:

Operable under water with viewing tip adapter attached\*. Not operable underwater with stereo measurement tip adapters.

\* Excluding IV8635X1

### All Other System Parts (Base Unit, Hand Control Unit)

Operating Temperature:

In air: -5.8° to 120°F (-21° to 49°C)

Operating Atmospheric Pressure:

In air: 1013 hPa (1 atm)

Relative Humidity:

15 to 90%

Liquid Resistance:

Operable when exposed to machine oil, light oil or 5% saline solution.

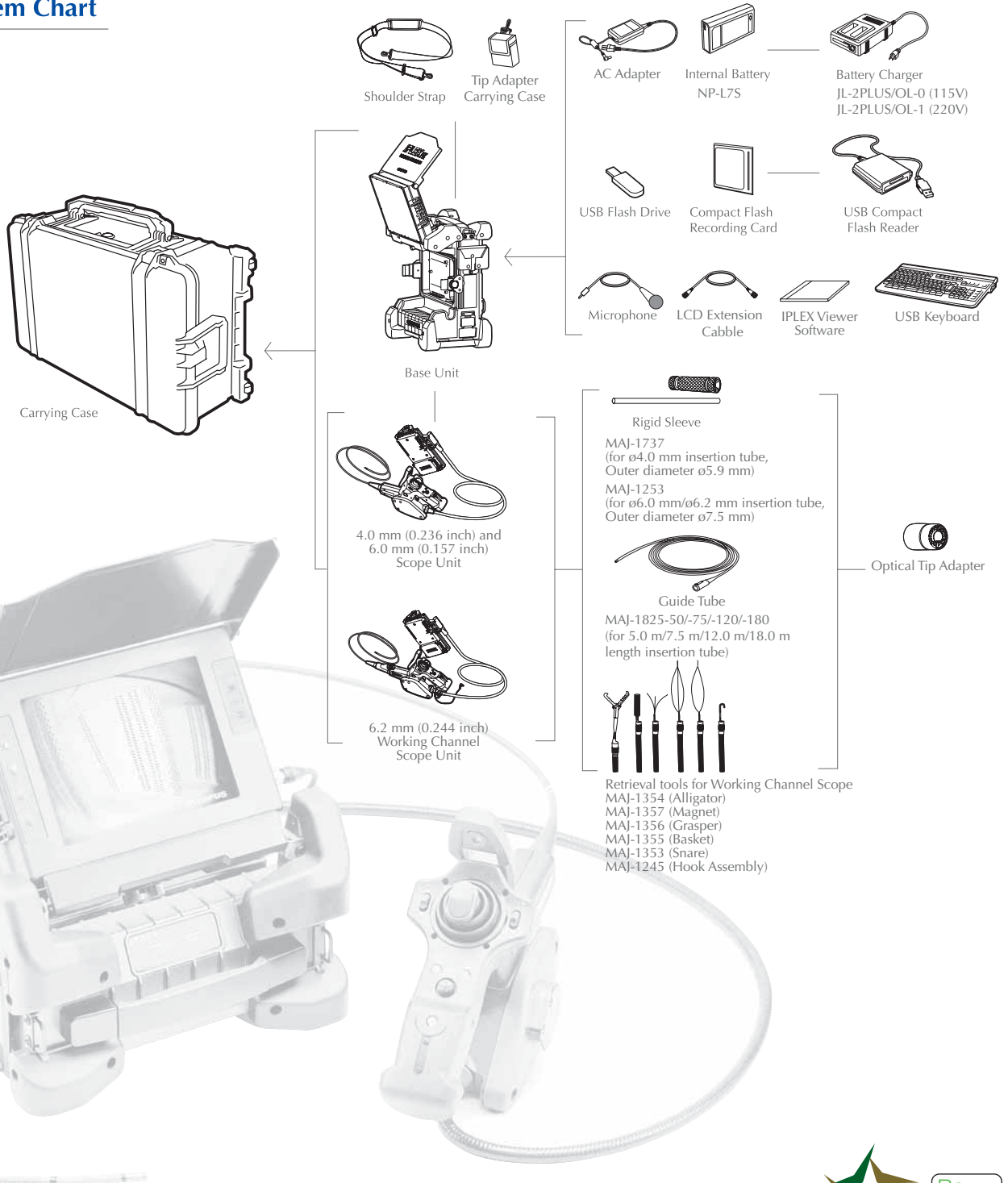
Waterproofing:

Operable in blowing rain conditions (Battery compartment must be closed). Not operable underwater.

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# System Chart



<http://www.olympus-ims.com>

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