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# REMOTE VISUAL INSPECTION

## PRODUCT GUIDE



- *Videoscopes* • *Fiberscopes* • *Small Diameter Borescopes* •
- *Rigid Borescopes* • *Light Sources* • *Peripheral Products* • *High Speed Video*



# Olympus Industrial Endoscopes meet needs across a wide range of areas, from maintenance to R & D

Olympus technology has made it possible to obtain views from internal or difficult to reach areas, easily and quickly, without teardown or disassembly, and without destroying exterior features.

Olympus has a comprehensive range of industrial endoscopes, such as videoscopes, fiberscopes and borescopes, with a range of ancillary equipment to match your specific requirements. These scopes, all designed and made by Olympus, offer superior imaging and performance achieved through combining Olympus expertise in optics, electronics and precision mechanics gained through years of experience. With the ease of use and durability of Olympus products, it is clear that Olympus Industrial endoscopes can make a large contribution to productivity, safety and reliability in your industry.

## SOME APPLICATION EXAMPLES

### Aerospace Industries

For examination of Airframe and Gas turbines in research, production and maintenance for military and civil aircraft. Also rockets and rocket engines.

### Security

For detection of Narcotics and other contraband items, for bomb and weapons searches, and for locating those trapped following disasters.

### Power Generation

For maintenance of heat exchange pipes, condensers, piping and turbines at nuclear, fossil fuel and hydroelectric power generation facilities.

### Industrial Machinery

For quality control and maintenance of motors, boilers, heat exchangers and machine tools.

### Refineries/Chemical Plants

For routine and urgent inspection of process piping, pressurised storage reservoirs, heat exchangers, boilers etc.

### Automotive

For quality control examinations of engines, hydraulic components and injection nozzles, as well as detection of leaks, squeaks and rattles in assembled vehicles.

### Electrical Equipment/Electronics Industries

For monitoring operation of equipment and factory automation through automatic inspection and positioning, as well as a wealth of R & D applications.

### Gas Pumping & Delivery Systems

For monitoring corrosion inside and outside gas pipes, the presence of water infiltration and flaws in outlets, and for maintenance of gas turbines used for pumping.

### Steel Industries

For equipment maintenance as well as quality control of pipes and tubes.

### Architecture/Construction

For examination of walls, ducts, structured joints, as well as for viewing inside architectural models.

### Education/Research

For monitoring animals and insects, root systems of plants etc. Also for historical and archeological applications such as internal inspection of statues and tombs.

### Railroad/Shipping

For routine inspection of motors, turbines, diesel engines, piping etc.

### Water Supply/Drainage

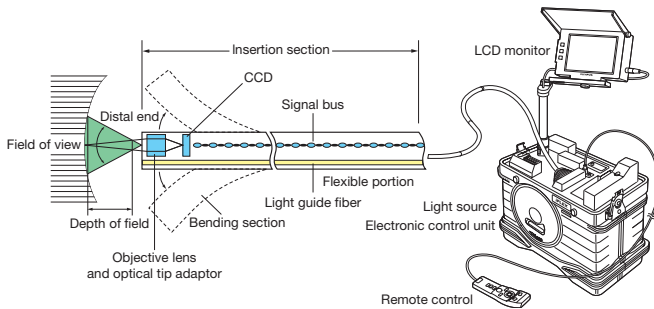
For locating rust and blockages inside pipe systems. Useful for documentation before and after lining is coated.



## Industrial Videoscopes - Providing comprehensive and remote visual inspection ability, with the highest quality colour images, accurate internal measurement, and PC interaction

Olympus Videoscopes provide bright, clear, full screen images, and offer the most versatile of inspection tools.

### STRUCTURAL DRAWING



**Ultra-compact CCD for image transmission.**  
**High-resolution images are displayed on a TV monitor.**

The videoscope captures light reflected from a subject through an objective lens and directs it to the surface on the CCD. The CCD then converts the light into electrical signals and transfers this data to the videoscope control unit. The unit then sends a video output to the monitor.

### MAIN APPLICATIONS

**Ideal when higher resolution, longer insertion and brighter images than those obtainable with fiberscopes are required. TV monitor observation only.**

For inspecting:

- Inside engines of vehicles, aircraft etc.
- Inside piping, such as heat exchangers, steel pipes and drainage pipes
- Inside long pipes, such as plant piping and condensers
- For wide cavities, such as interiors of tanks, structures and large diameter pipes
- Inside precision machinery, such as fax machines and copiers

### MAIN FEATURES

#### Bright, high-resolution images

The bright, high-resolution images captured by the high-performance CCD are larger, clearer and easier to view with full-screen colour display.

#### Interchangeable optical adaptors

You can easily change optical adaptors to suit the observation requirements such as direction of view, angle of view and depth of field. Simultaneous direct and side-viewing and super-wide-angle adaptors are also available.

#### TTF tube with superb insertability and durability

The superior insertability of the Olympus-designed TF (Tapered Flex) tube allows you to easily negotiate bends. Incorporated in the IPLEX inserting tube, the new TTF (Tough Tapered Flex) tube design features a braided tungsten exterior and is three times more durable than conventional tubes.

#### Observation functions including zoom and brightness adjustment

In addition to zoom observation and various image adjustment functions such as brightness and sharpness adjustment, the IPLEX system offers a convenient comparison function that displays live and recorded images simultaneously.

#### Digital image recording with voice annotation

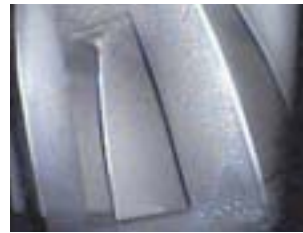
Digital still and movie image recording provides flexible and powerful image management. Voice annotation recording is also possible.

#### Stereo measurement capability

Up to six different stereo measurement modes are available to facilitate high-precision measurement, including distance, height and depth.

#### 4 way tip angulation

The tip of the videoscope can be moved in four directions, controlled by the user, allowing the negotiation of difficult access routes and scanning during the inspection.



Bright, High-Quality Images



Image Recording & Report Generation



4 way Tip Angulation



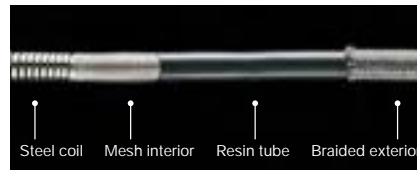
Optical Tip Adaptors



Forward/Side-Viewing Adaptor



Ultra-Wide-Angle Adaptor



"Tough Tapered Flex" Tube

Featuring a more flexible distal end and stiffer proximal end, this Olympus-developed tube design provides the superior insertion capability you need to perform inspections more easily.



Stereo Measurement



Real-time Spot Ranging

# IPLIX II R

## IPLIX II R SERIES

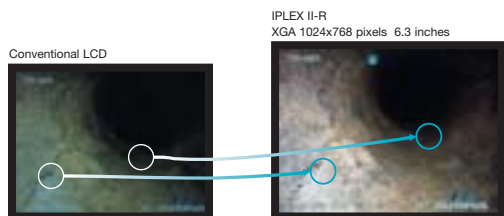
### INDUSTRIAL VIDEOSCOPE IPLIX II R (Basic model)

Convenient observation, measurement, recording and portability. Designed for imaging excellence.

#### Clear Images

Olympus went to great lengths to maximize this feature in the new IPLIX II R Series. Pooling its cutting-edge technology and accumulated expertise in the field of industrial inspection, Olympus combined only the highest performance complementary components and technologies, such as the advanced optical system CCD, image-processing algorithm, and LCD, to achieve exceptionally high image quality and ensure highly accurate inspection.

\*Note: WiDER (Wide dynamic extended range) is available for IPLIX II-R (SA models).



#### Ease of use, durability

##### Simplicity from the moment you arrive at the inspection site

Olympus meticulously refined every feature of IPLIX II R Series with everyday practicality in mind to make inspections totally hassle-free.

##### Simple one-handed operation

The lightweight ergonomically designed remote control unit lets you conduct all operations with a single hand. Designed to minimise the fatigue of extended operation.



##### Sturdy body

A highly rigid chassis and protective outer shell provide superior resistance to everyday shock and vibration. The shell consists of an ABS resin and polyamide compound that absorbs the shock of impact by dispersing it throughout the entire shell.

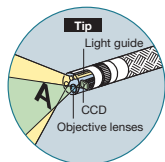
##### Durable, easy-to-insert insertion tube

The Tough Tapered Flex tube is widely acclaimed for its superior insertability and durable inner construction (3 times more durable than conventional tubes.)

#### Greater inspection flexibility

##### 50-watt metal-halide lamp

Bright illumination is provided by a 50-watt metal-halide lamp. Both the lamp and its light guide feature designs highly acclaimed for providing quality brightness and light distribution that contribute to precise inspection.



##### Extended exposure

Extended exposure through longer shutter speeds allows the CCD to accumulate more available light. When viewing wide cavities like vessels and large pipes, extended exposure can be very useful. The wide dynamic range also contributes to clearer large-void observation.



##### Smooth, stepless zooming

The stepless zooming feature allows magnification to be adjusted between 1x and 3x in a smooth, continuous manner that keeps the image clearly in focus at all times. This feature enables the inspection of wide areas of the object as well as close-ups when problem areas are discovered.

### INDUSTRIAL VIDEOSCOPE IPLIX SA II R (Advanced model)

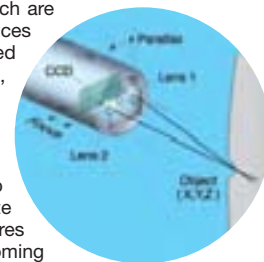
### IPLIX SA II R NET (Network model)

Simple on-site inspection and network features allow easy remote management and control.

#### Super Stereo Measurement

Note: Super Stereo Measurement is available for IPLIX SA II R and IPLIX SX II R only.

Stereo measurement technology allows accurate measurement of images captured by two parallax lenses. This technology employs the principles of triangulation, which are also used by human eyes to judge distances and the evenness of surfaces. Highly reputed for its accurate all-directional measurement, stereo measurement was first offered by Olympus in an industrial video scope in 1996. Now stereo measurement technology has taken a significant step forward. This new improved version, called Super Stereo Measurement, offers easier, more accurate measurement through the addition of features such as more precise point placement, zooming and proprietary spot-ranging. A new optical lens adaptor design and improved operating software further enhance measurement speed and accuracy. As the leader in 3D measurement technology for remote measuring, with over ten years of experience in the market, Olympus continues to evolve this technology, making its videoscopes ready for the inspection demands of the future.



#### Accurate measurement via zoom window

The zoom window allows up to 4x magnification of images. This helps decrease human errors when measuring between points and improves the accuracy of overall measurement.



#### Clear indication of distance to object

Proprietary spot-ranging technology from Olympus greatly enhances inspection efficiency by clearly indicating the distance from the tip of the scope to the object on screen - in real-time. The distance is indicated via numerical value and color-coded bar, allowing users to easily determine the optimum measurement distance.



#### Certified Accuracy

The measurement verification block supplied with the stereo optical adaptors is supplied with a certificate confirming its accuracy, established using instrumentation calibrated to NIST\*. In addition, the stereo tip adaptor can be optically matched to individual IPLIX II R Series videoscopes to provide enhanced accuracy.

\*US National Institute of Standards and Technology

## IPLEX II R



### Network functions

Optionally available for IPLEX SA II R

The advanced network functions of IPLEX II R allow technical experts to observe images in near real-time from the headquarters or technology center when executing major operations remotely by IPLEX II. The innovative advances of IPLEX II R reduce regular checkup costs in corporate support systems and allow immediate response when performing crisis management tasks.

### Real-time delivery of moving images

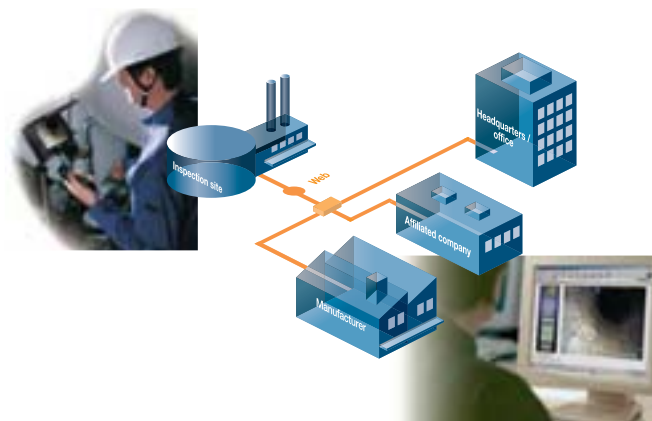
Moving images captured by the CCD in IPLEX SA II R's insertion tube provide inspectors with near real-time observation, allowing evaluation without delay or qualified personnel on hand.

### Remote operation as if you were at the inspection site

Remote operation of IPLEX SA II R functions such as insertion tube tip angulation, zooming and image recording is possible on a PC via LAN.

### Still image transmission

Captured still images can be manually or automatically (by timer) sent at fixed intervals by email directly from IPLEX SA II R without the user of a PC.



### Multi-language display

In its quest to bring greater user-friendliness to operators around the world, Olympus equipped IPLEX SA II R with a multi-language display. This feature allows users to choose one of several languages for the displayed interface. (PAL standard versions: English, German, French, Spanish, Italian, simplified Chinese and Russian. NTSC standard versions: English, French, Spanish, Japanese, Korean, and traditional Chinese.)

### Other observation functions

- Convenient recording card storage for still and moving images
- Easy comparison of images
- Title entry for easy categorization
- Versatile data management function

### IPLEX II R Optical Adaptor Specifications

		IPLEX SA II R Advanced model	IPLEX II R <sup>1</sup> Basic model
<b>Scope Variation</b>			
Outer diameter	Insertion tube length	Product code	
ø4.4mm	3.5m	IV7435A-2	IV7435-2
	3.5m	IV7635A-2	IV7635-2
	5.0m	IV7650A-2	IV7650-2
	7.5m	IV7675A-2	IV7650-2
	9.6m	IV7696A-2	IV7696-2
<b>Basic Functions</b>			
Interchangeable optical adaptor <sup>2</sup>	For the specifications, see "Optical Adaptor Specifications"		
4-way motorised angulation (with fine-tuning mode)	Angulation range (up-down/right-left): IV74 Series - 120°, IV76 Series - 150°		
Tough Tapered Flex insertion tube	Tube design that becomes more pliable towards the distal end with crush resistance more than 3 times as high as that of a conventional model		
Scope length index line	Provided at every 1m from the distal end		
LCD monitor <sup>3</sup>	6.3" XGA full-colour, detachable from main unit		
LCD fixing device (monopod)	Two-step expandable, maximum height 964mm		
Remote controller	Provided with LCD monitor connector		
50-W metal-halide light source	Lamp life: Minimum 300 hours		
Integrated shock-resistant case	Dimensions: 508 (W) x 290 (D) x 528 (H)mm Weight: 22kg (IV7635A)		
Insertion tube winding drum	Winding drum system		
AC power supply	Voltage: 100 to 120V/220 to 240V Max power consumption: 250VA Frequency: 50/60/400 Hz		
DC power supply	Voltage: 12V to 30V Max power consumption: 288W		
<b>CCU Functions</b>			
Freeze	Selectable between freeze and field, 4-frame memory possible <sup>4</sup>		
Seamless digital zoom	Max 3x		
Exposure	17 to 500 msec		
Brightness adjustment	7 steps		
Gain	Selectable from Low, Standard, Boost 1, Boost 2*, Boost 3 <sup>5</sup>		
Enhancement	3 steps		
Comparison	Live image and retrieve image are displayed on half-split screen		
Menu language selection	PAL: English, German, French, Spanish, Italian, Russian and simplified Chinese NTSC: English, Spanish, French, Japanese, Korean and traditional Chinese		
Video signal input	Composite video output terminal (BNC): 1 (75Ω) S-video terminal: 1 (75Ω)		
Video signal output	S-video terminal: 1		
Audio signal output	Monaural x 1 (RCA Pin)		
<b>Measurement Functions</b>			
Scalar measurement	✓		
Stereo measurement (Distance)	Option		
Stereo measurement (Point-to-Line)	Option		
Stereo measurement (Depth)	Option		
Stereo measurement (Area/Lines)	Option		
Stereo measurement (Profile)	Option		
<b>Network Function</b>			
Ethernet and wireless control	Option		

<sup>1</sup> The IPLEX II R can be upgraded to the IPLEX SA II R after purchase.

<sup>2</sup> The distal end optical adaptor is optional.

<sup>3</sup> A portion of some images may not be displayed due to manufacturing reasons.

<sup>4</sup> Basic model only.

<sup>5</sup> IPLEX SA II R/IPLEX SX II R only.

<sup>6</sup> Only Japanese or English on IPLEX II R.

### IPLEX II R Optical Adaptor Specifications

Scope	Optical Adaptor	Optical System				Distal End				
		Field of view	Direction of view	Depth of field	F No.	Outer diameter	Rigid distal end length <sup>1</sup>			
IV74	AT40D-IV74	40°	Forward	200-∞mm	2.4	ø4.4mm	19.7mm			
	AT80D/NF-IV74	80°		8-∞mm	9.5		20.2mm			
	AT80D/FF-IV74	80°		35-∞mm	3.1		20.1mm			
	AT120D/NF-IV74	120°		4-190mm	9.2		20.2mm			
	AT120D/FF-IV74	120°		25-∞mm	3.3		20.1mm			
	AT80S-IV74	80°		Side	25-∞mm		3.7	23.1mm		
	AT120S/NF-IV74	120°			1-20mm		9.6	23.1mm		
	AT120S/FF-IV74	120°			6-∞mm		6.0	23.1mm		
	AT40D-IV76	40°			Forward		200-∞mm	2.4	ø6.0mm	19.3mm
	AT80D/NF-IV76	80°					8-∞mm	9.5		19.8mm
AT80D/FF-IV76	80°	35-∞mm	3.1			19.7mm				
AT120D/NF-IV76	120°	4-190mm	9.2			19.8mm				
AT120D/FF-IV76	120°	25-∞mm	3.3			19.7mm				
AT80S-IV76	80°	Side	18-∞mm			4.0	25.2mm			
AT120S/NF-IV76	120°		1-25-∞mm			9.6	25.2mm			
AT120S/FF-IV76	120°		5-∞mm	5.9		25.2mm				
AT100D/100S-IV76	100°/100°		Forward/Side	2-150mm		7.0	27.2mm			
AT220D-IV76	220°		Forward	3-100mm		4.3	ø8.4mm	21.1mm		

<sup>1</sup> The rigid portion at the scope's distal end when the adaptor is mounted

### Stereo Measurement Optical Adaptor Set Specifications

Scope	Set Name	Optical Adaptor	Optical System				Distal End	
			Field of view	Direction of view	Depth of field	F No.	Outer diameter	Rigid distal end length <sup>1</sup>
IV74	MAJ-1044D	AT60D/60D-IV74	60°	Forward	5-∞mm	7.5	ø4.4mm	25.9mm
	MAJ-1044S	AT50S/50S-IV74	50°	Side	4-∞mm			31.9mm
IV76	MAJ-1046D	AT60D/60D-IV76	60°	Forward	5-∞mm	7.5	ø6.0mm	26.3mm
	MAJ-1046S	AT60S/60S-IV76	60°	Side	4-∞mm			30.7mm

### IPLEX II R Operating Environment

- **Operating temperature:** Insertion tube: In air: -25-80°C\* Under water: 10-30°C  
Other parts than above: In air: 0-40°C
- **Operating atmospheric pressure:** Insertion tube: In air: 1013hPa (1atm)  
In water: 1013-1985hPa (1-1.96atm)  
(IV7635-2, 7650-2, 7696-2, 7635A-2, 7650A-2, 7675A-2, 7696A-2)  
Under water: 1013-1368hPa (1-1.35atm) (IV7435-2, 7435A-2)  
Other parts than above: In air: 1013hPa (1atm)
- **Liquid resistance:** Insertion tube, remote control: No trouble even when machine oil, light oil and 5% saline is attached.
- **Other parts than above:** No trouble with the case outer finishing even when machine oil, light oil and 5% saline is attached.
- **Waterproof:** Insertion tube: Can be used under water.  
Drip-proof: Remote control, LCD monitor: Can be used in rain but cannot be used under water.  
Other parts than above: Neither waterproof nor drip-proof.

\* Angulation to a large angle may become difficult under low temperatures.



## ■ IPLEX SX II R Optical Adaptor Specifications

Scope	Optical Adaptor	Optical System				Distal End	
		Field of view	Direction of view	Depth of field	F No.	Outer diameter	Rigid distal end length*
IV7635X1	AT120D/NF-IV76X1	120°	Forward	4-190mm	9.2	ø6.2mm	20.6mm
	AT120D/FF-IV76X1	120°		25-∞mm	3.3		20.5mm
	AT80S-IV76X1	80°	Side	18-∞mm	4.0		24.6mm
	AT120S-IV76X1	120°		5-∞mm	5.9		24.6mm

\* The rigid portion at the scope's distal end when the adaptor is mounted.

## ■ Stereo Measurement Optical Adaptor Set Specifications

Scope	Set Name	Optical Adaptor	Optical System				Distal End	
			Field of view	Direction of view	Depth of field	F No.	Outer diameter	Rigid distal end length*
IV7440X1	MAJ-1044D	AT60D/60D-IV74	60°	Forward	5-∞mm	7.5	ø4.4mm	26.3mm
	MAJ-1044S	AT50S/50S-IV74	50°	Side	4-∞mm	7.5	ø4.4mm	30.7mm
IV76	MAJ-1046D	AT60D/60D-IV76	60°	Forward	5-∞mm	7.5	ø4.4mm	25.9mm
	MAJ-1046S	AT50S/50S-IV76	60°	Side	4-∞mm	7.5	ø4.4mm	30.7mm
IV7635X1	MAJ-1241D	AT60D/60D-IV76X1	60°	Forward	5-∞mm	7.5	ø4.4mm	26.7mm
	MAJ-1241S	AT60S/60S-IV76X1	60°	Side	4-∞mm	7.5	ø4.4mm	32.4mm

## ■ IPLEX SX II R Equipment Components and Functions

Scope	
Product code	IV76190X1    IV7696X1    IV7440X1    IV7635X1
Outer diameter	ø6.0mm    ø6.0mm    ø4.4mm    ø6.2mm
Insertion tube length	19.0m    9.6m    4.0m    3.5m
Channel port	✓
Basic Functions	
Interchangeable optical adaptor	For the specifications, see "Optical Adaptor Specifications"
4-way motorised angulation (with fine-tuning mode)	Angulation range (up-down/right-left): IV7635X1/IV7696X1 - 150°, IV7440X1 - 130°, IV76190X1 - 70°
Tough Tapered Flex insertion tube	Tube design that becomes more pliable towards the distal end with crush resistance more than 3 times as high as that of a conventional model
Scope length index line	Provided at every 1m from the distal end.
LCD monitor	6.3" XGA full-color, detachable from main unit
LCD fixing device (monopod)	Two-step expandable, maximum height 964 mm
Remote controller	LCD monitor
50-W metal-halide light source	Lamp life: Minimum 300 hours
Integrated shock-resistant case	Dimensions: 508 (W) x 290 (D) x 528 (H)mm Weight: 22.8kg (IV7635X1)
Rod handle & casters / Vertical and horizontal operation / Insertion tube winding drum	
AC power supply	Voltage: 100 to 120V/220 to 240V Max power consumption: 250VA Frequency: 50/60/400 Hz
DC power supply	Voltage: 12V to 30V Max power consumption: 288W
CCU Functions	
Freeze	Selectable between freeze and field, 4-frame memory possible
Exposure	17 to 500m sec (NTSC) 20 to 500m sec (PAL) / Brightness adjustment: 7 steps
Gain	Selectable from Standard, Boost and Low
Comparison	Live image and retrieve image are displayed on half-split screen
Menu language selection	PAL: English, German, French, simplified Chinese, Spanish, Italian and Russian NTSC: English, Japanese, French, Spanish, Korean and traditional Chinese
Video signal output	Composite video output terminal (BNC): 1 (75Ω) S-video terminal: 1 (75Ω)
Video signal input	S-video terminal: 1
Audio signal output	Monaural x 1 (RCA Pin)

## ■ IPLEX SX II R Operating Environment

- **Operating temperature:** Insertion tube: In air: -25~80°C\*  
Under water: 10~30°C  
Other parts than above: In air: 0~40°C
- **Operating atmospheric pressure:** Insertion tube: In air: 1013hPa (1atm)  
In water: 1013~1418hPa (IV7440X1)  
Other parts than above: In air: 1013hPa (1atm)
- **Liquid resistance:** Insertion tube, remote control:  
No trouble even when machine oil, light oil and 5% saline is attached
- **Other parts than above:** No trouble with the case outer finishing even when machine oil, light oil and 5% saline is attached.
- **Waterproof:** Insertion tube: Can be used under water (IV7440X1).
- **Drip-proof:** Remote control
- **LCD monitor:** Can be used in rain but cannot be used under water
- **Other parts than above:** Neither waterproof nor drip-proof

\* Angulation to a large angle may become difficult under low temperatures

# IPLEX SX II R

## IPLEX SX II SERIES

### INDUSTRIAL VIDEOSCOPE SYSTEM

#### IPLEX SX II 6.2mm (with channel)

#### IPLEX SX II 6.0mm

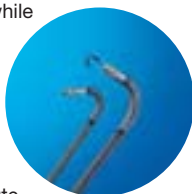
#### IPLEX SX II 4.4mm

Purpose-built to meet the specific requirements of gas turbine, Nuclear or Pharmaceutical inspections, the IPLEX SX II R provides improved access to intricate engine interiors, enhanced hooking and retrieval operation for exceptional ease of use, together with all high-quality capabilities synonymous with Olympus, such as advanced observation performance and proven stereo measurement.

- All features of the IPLEX SA II R unit including stereo measurement
- Working channel in 3.5m, 6.2mm model for hooking and retrieval
- Control unit can be removed from case for enhanced portability
- New 9.6m and 19.0m, 6.0mm diameter instruments
- New 9.6m instrument with smooth outer coating for Nuclear and Pharmaceutical applications

#### World's slimmest (ø6.2mm) scope with channel incorporated

With a diameter of only 6.2mm, this is the world's slimmest videoscope to incorporate a working channel. The channel port can be mounted on the remote control, further enhancing operability, while the hook assembly features a highly responsive Olympus-original design that optimises hook operation for inspection of the second nozzle guide vane of the F100 engine.



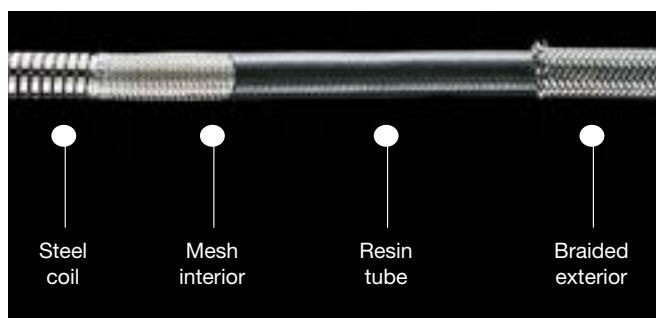
#### Interchangeable scopes

The IPLEX SX II R range includes a ø4.4mm scope (without a channel) that enables inspection of minute parts. Long length 6.0mm diameter instruments are also available for inspections in Nuclear and Pharmaceutical applications. Interchangeability between scopes makes for a simple and very cost effective system.



#### Rigid Sleeve

Useful as an auxiliary insertion tool and also makes the scope easier to handle. Simply fit and lock the sleeve onto the tip of the insertion tube.



#### Optimised for jet engine inspection

Olympus' innovative Tapered Flex technology is well known for its unequalled insertion capability. The IPLEX SX II R's "Tough Tapered Flex" tube has been designed to provide optimum flexibility in aircraft engine inspection and excellent resistance to crushing.



#### Various working tools available

Versatile tools are available to meet a wide range of inspection requirements such as retrieval of foreign objects and dropped objects. Snare, basket, three-prong grasper, magnet and alligator forceps are available.



#### Belt holder for hands-free operation

The remote control with channel port mounted can be attached to a belt around your waist. This allows you to operate the scope without having to hold the remote control, and leaves your hands totally free for other tasks when you're not operating the remote control.



#### Portable package design

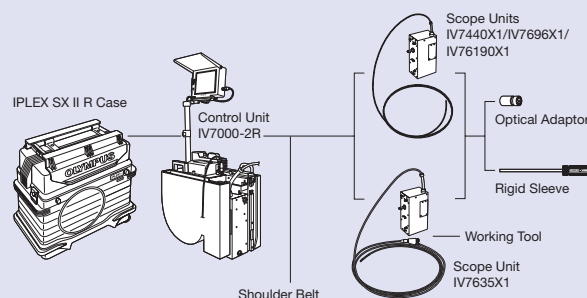
An integrated all-in-one design offers superior portability and faster, more efficient set-up and takedown. Removing the control unit from the case allows you to carry the IPLEX SX II R on your shoulder, enhancing mobility in confined spaces and elevated locations.

#### Interchangeable with longer working-length instruments

A range of working lengths are available including 9.6m, 19m and a smooth-coated 9.6m for ease of decontamination.



### IPLEX SX II R System Chart





# IPLEX MX R

## IPLEX MX SERIES

### INDUSTRIAL VIDEOSCOPE SYSTEM IPLEX MX R

Weighing from just 4.4kg, this lightweight, ultra-compact videoscope system uses an internal battery as the first power option, resulting in new levels of portability.

The IPLEX MX R is also the first videoscope to feature LED technology available in 4.4mm or 6mm diameter insertion tube, which is coupled to the renowned precision and quality of Olympus optics to provide bright, high resolution images. Integral still image storage further boosts the versatility of IPLEX MX R, aiding decision making and documentation.



#### Extended Battery Operation

Now you don't have to worry about interruptions or delays even when doing long inspections. The IPLEX MX R uses a large capacity yet incredibly small Lithium-ion battery and newly developed high intensity, LED's for illumination, maintaining low power consumption. A single battery provides two and a half hours operation, which can be doubled when using the optional external battery kit.



#### Maximum Mobility

The IPLEX MX R has been designed to carry to the inspection site with just a shoulder strap. Weighing from just 4.4kg, body mounting the IPLEX MX R during the entire inspection is a real and safe possibility. It's that mobile!



### Easy to Access Controls and Easy to Set Up

The control handle has easy-to-use buttons for fingertip operation. The operator has quick access to the system features: zoom, image freeze and storage, brightness, and brightness boost mode. Getting started is as simple as pressing one button.



Scope tip with LED illumination

### Digital Image Recording

Over 900 digital images (JPEG format) can be recorded on the provided 128 MB Compact Flash card. Images can be quickly transferred to your PC for full and immediate viewing.

The IPLEX Manager software provides a powerful image management platform, including report writing capability and image annotation.



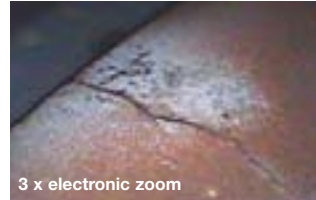
Control Section

### Power Assist Articulation for Easy Movement

The newly developed power assist articulation gives you more articulation with less work.

The lower power consumption of this articulation method means longer battery life.

Just a light touch of the joystick moves the scope 120 degrees in any direction (2.0m/3.0m models).



3 x electronic zoom

### Exceptional Insertability and Durability

The Olympus-original 'Tough Tapered Flex' insertion tube design provides superior insertability. Excellent crush resistance increases equipment reliability and reduces the overall cost of ownership.



### Advanced Specs Meet All Your Needs

With its 6.0mm diameter insertion tube and 4-way articulation capability, the IPLEX MX R is ideal for almost any inspection requirement. That versatility is supported by an extensive array of on-demand functions including freeze, electronic zoom, extended exposure and digital image recording.

A monochrome-boost mode is also incorporated to further increase image sensitivity - ideal for low-light conditions.

### SIDE VIEW RIGID SLEEVE (for IPLEX MX R)

#### MAJ-1730 (for ø4.4mm)

#### MAJ-1731 (for ø6.0mm)

Side view rigid sleeve with prism-style LED illumination enables effective inspection of small gas turbine engines.



### HIGH MAGNIFICATION ADAPTOR (for IPLEX MX R)

#### MAJ-1566 (for ø6.0mm)

High magnification adaptor locks onto the IPLEX MX R insertion tip, providing approx. 20x high magnification observation on the MXR monitor.



IPLEX MX R (IV76 front view), magnification shooting, wide-angle image



IPLEX MX R (IV76 front view) with MAJ-1566

### ■ IPLEX MX R Equipment Components and Functions

Scope		IV7415X2	IV7430X2	IV7620X2	IV7630X2	IV7650X2	IV7680X2	
Product code	Effective length	1.5m	3.0m	2.0m	3.0m	5.0m	8.0m	
	Outer diameter	ø4.4mm			ø6.0mm			
Insertion tube	Tube exterior	Tungsten with special processing						
	Flexibility	TTF tube* design that becomes more pliable towards the distal end						
Field of view	Field of view	100°		120°				
	F No.	F3.3						
	Image sensor	CCD						
	Direction of view	Forward			Forward. Can be changed to side view by using the side view mirror			
	Depth of field	12-76mm		18-1,000mm				
Articulation angle	Articulation section	4 way, UP/DOWN/RIGHT/LEFT 120°				4 way, UP/DOWN/RIGHT/LEFT 90°		
	Articulation control	Joystick control with power assist mechanism				Manual		
Water proofing	No trouble even when machine oil, light oil or 5% saline is attached							
Weight		0.5kg	0.6kg	0.5kg	0.6kg	0.8kg	1.2kg	
<b>Main unit</b>								
CCU	Long exposure	1/60 - 1 sec. Exposure time is set automatically						
	Boost mode	Monochrome brighter image by high gain amplifier than ordinary color image						
	Zoom	Electronic linear zoom up to 3x						
	On screen display	Date, time and Olympus logo (selectable)						
	Menu language	English, German, French, Spanish and Japanese (selectable)						
Image recording	Video output	BNC x 1, S-video x 1						
	Image format	JPEG						
LCD	Medium	CF card provided as standard						
	Recordable images	Over 920 images with 128MB CF card						
Power supply	LC module	5.6 inch TFT full colour						
	TV system	NTSC or PAL						
Battery operation time	AC	100-120V, 200-240V 50/60Hz						
	DC	14.4V Max power consumption 27W						
Dimensions	AC	200(W) x 220(H) x 80(D)mm (excluding projections)						
	DC	223(W) x 247(H) x 137(D)mm (including projections)						
Weight	AC	3.4kg (including LCD)						
	DC	3.8kg (including LCD and battery)						
<b>Carrying case</b>								
Dimensions	620(W) x 410(H) x 240(D)mm (excluding wheels)							
Portability	Wheel and belt for transportation							

\* 3x strength of conventional TF tube.

### ■ Side View Mirror Adaptor Specifications

Mirror adaptor	Outer diameter	Direction of view	Field of view	Depth of field
AT50S-IV76X2	ø7.4mm	Forward-oblique 50°	50°	5~∞mm

- Side View Mirror Adaptor is exclusively for use on IV76
- A mirror image is reflected on part of the forward-viewing image
- After underwater use, remove the adaptor immediately to clean and dry it

### ■ IPLEX MX R Operating Environment

- **Operating temperature:** Insertion tube: In air: -25~80°C\* Under water: 10~30°C  
Other parts than above: In air: 0~40°C
- **Operating atmospheric pressure:** Insertion tube: In air: 1013hPa Under water: 1013~1317hPa  
Other parts than above: In air: 1013hPa
- **Relative humidity:** 15~90%
- **Liquid resistance:** Insertion tube, remote control: No trouble even when machine oil, light oil or 5% saline is attached
- **Other parts than above:** No trouble with the MX R case outer finishing even when machine oil, light oil or 5% saline is attached
- **Waterproof:** Insertion tube: Waterproof: Can be used under water  
Other parts than above: Neither waterproof nor drip-proof

\* Caution: Angulation to a large angle may become difficult under low temperatures

### Environmentally Friendly Olympus Products Signature

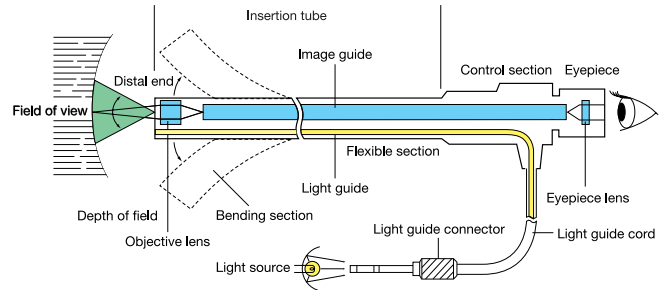
This logo distinguishes Olympus products manufactured in accordance with the company's highest standards of environmental conservation. The IPLEX II R Series and IPLEX MX R Series comply with the European RoHS Directive. The use of lead, mercury, cadmium, hexavalent chromium, PBBs, and PBDEs is restricted.



## Wide range of diameters, superior optics and maximum flexibility for a versatile industrial inspection system



### STRUCTURAL DRAWING



### High quality glass fibres for image transmission. Observation through an eyepiece.

Each Olympus Industrial Fiberscope is comprised of the insertion tube (the distal end, bending section\* and flexible section), as well as the control and eyepiece section. Image guide fibres, light guide fibres and wires for tip angulation are all built in.

\*The 0.6mm diameter IF6PD4 does not incorporate bending and control sections.

### MAIN APPLICATIONS

**Ideal for internal inspection of piping, machinery, structural members etc. Highly flexible for versatility and multi-purpose applications.**

For inspecting:

- Inside water supply/drainage pipes and plant piping
- Inside engines of vehicles, aircraft etc.
- Inside machines such as motors and boilers
- Inaccessible areas within steel towers, buildings etc.
- Operating conditions of machines etc.

### MAIN FEATURES

#### High resolution

Original Olympus high-performance optics technology, such as high-density glass fibre bundles, offers the world's highest level of fiberoptic resolution and bright, sharp images.

#### TF Tube with superior insertability

IF5 Series scopes (except IF2D5) employ the proven TF (Tapered Flex) Insertion Tube. Ideal for insertion into multiple-bend pipes, the flexibility changes continuously - being highly flexible at the tip and more rigid at the control section. As a result, IF5 Series scopes can easily be passed through bends and elbows. At the same time, the gradually increasing rigidity of the tube as it approaches the control section assures easier transmission of pushing/twisting strength after the first bend. All scopes featuring the TF tube are marked with the logo shown below.



#### Tip angulation

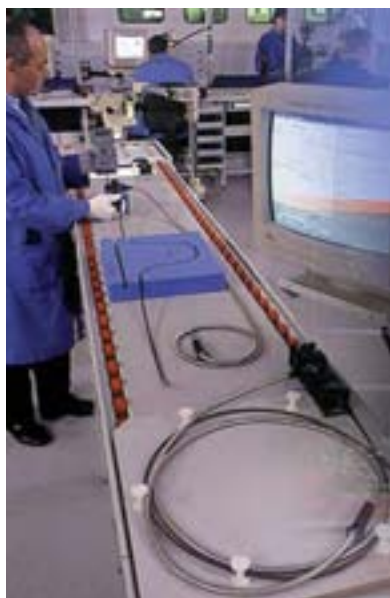
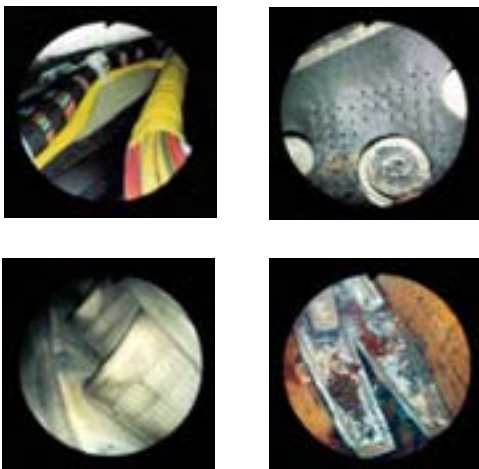
The distal end can be moved in either two or four directions, by hand-held controls (all models except 0.6mm diameter).

#### Interchangeable optical adaptors

Facilitate a wide variety of viewing angles and directions in just one scope (most models).

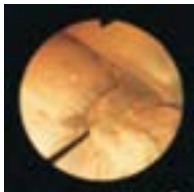
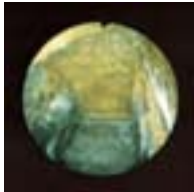
#### Fully waterproof insertion section

#### Photo and video documentation



## INDUSTRIAL FIBERSCOPES IF6C5X1/IF8C5/IF11C5

Standard fiberscopes with excellent resolution.



### IF6C5X1 Scope Specifications

	IF6C5X1-8	IF6C5X1-13	IF6C5X1-20	IF6C5X1-30	
Optical system	Field of view	30°/60°/100° (convertible using optical adaptor)			
	Direction of view	Direct/side viewing (convertible using optical adaptor)			
	Depth of field	See optical adaptor specifications (fixed focus)			
	Illumination system	Light guide system			
Distal end	Outer diameter	ø6.0mm			
	Distal end length	13.7mm			
Bending section	Angulation range	Up 120°, Down 120°, Right 100°, Left 100°			
Insertion tube	Outer diameter	ø6.0mm (TF tube)			
Working length		800mm	1300mm	2000mm	3000mm
Total length		1065mm	1565mm	2265mm	3265mm
Light guide cable length		2000mm			

### IF6C5X1 Optical Adaptor Specifications

		Field of view	Direction of view	Depth of field
Provided	AT60D/FF-IF6C5	60°	Direct viewing	11-∞mm
	AT30D-IF6C5	30°	Direct viewing	26-372mm
	AT60D/NF-IF6C5	60°		5-102mm
AT100D-IF6C5	100°	4-∞mm		
Optional	AT30S-IF6C5	30°	Side viewing	21-138mm
	AT60S/NF-IF6C5	60°		4-85mm
	AT60S/FF-IF6C5	60°		9-∞mm
	AT100S-IF6C5	100°		4-∞mm

### IF8C5 Scope Specifications

		IF8C5-10	IF8C5-15	IF8C5-20	IF8C5-30
Optical system	Field of view	30°/60°/100° (convertible using optical adaptor)			
	Direction of view	Direct/side viewing (convertible using optical adaptor)			
	Depth of field	See optical adaptor specifications (fixed focus)			
	Illumination system	Light guide system			
Distal end	Outer diameter	ø8.4mm			
	Distal end length	21.9mm			
Bending section	Angulation range	Up 120°, Down 120°, Right 100°, Left 100°			
Insertion tube	Outer diameter	ø8.4mm (TF tube)			
Working length		1000mm	1500mm	2000mm	3000mm
Total length		1250mm	1750mm	2250mm	3250mm
Light guide cable length		2000mm			

### IF8C5 Optical Adaptor Specifications

		Field of view	Direction of view	Depth of field
Provided	AT60D/FF-IF8C5	60°	Direct viewing	20-∞mm
	AT30D/NF-IF8C5	30°	Direct viewing	30-70mm
	AT30D/FF-IF8C5	30°		60-250mm
AT60D/NF-IF8C5	60°	9-50mm		
Optional	AT100D/NF-IF8C5	100°	Direct viewing	3-200mm
	AT100D/FF-IF8C5	100°		9-∞mm
	AT30S-IF8C5	30°	Side viewing	45-90mm
	AT60S/NF-IF8C5	60°		8-40mm
	AT60S/FF-IF8C5	60°		20-240mm
	AT100S/NF-IF8C5	100°		3-140mm
	AT100S/FF-IF8C5	100°		9-200mm

### IF11C5 Scope Specifications

		IF11C5-10	IF11C5-20	IF11C5-30
Optical system	Field of view	30°/60°/100° (convertible using optical adaptor)		
	Direction of view	Direct/side viewing (convertible using optical adaptor)		
	Depth of field	See optical adaptor specifications (fixed focus)		
	Illumination system	Light guide system		
Distal end	Outer diameter	ø11.3mm		
	Distal end length	25.5mm		
Bending section	Angulation range	Up 120°, Down 120°, Right 100°, Left 100°		
Insertion tube	Outer diameter	ø11.3mm (TF tube)		
Working length		1000mm	2000mm	3000mm
Total length		1250mm	2250mm	3250mm
Light guide cable length		2000mm		

### IF11C5 Optical Adaptor Specifications

		Field of view	Direction of view	Depth of field
Provided	AT60D/FF-IF11C5	60°	Direct viewing	27-390mm
	AT30D/NF-IF11C5	30°	Direct viewing	38-70mm
	AT30D/FF-IF11C5	30°		65-120mm
AT60D/NF-IF11C5	60°	11-45mm		
Optional	AT100D/NF-IF11C5	100°	Direct viewing	5-40mm
	AT100D/FF-IF11C5	100°		16-300mm
	AT30S-IF11C5	30°	Side viewing	55-100mm
	AT60S/NF-IF11C5	60°		11-40mm
	AT60S/FF-IF11C5	60°		28-440mm
	AT100S/NF-IF11C5	100°		3-22mm
	AT100S/FF-IF11C5	100°		12-250mm

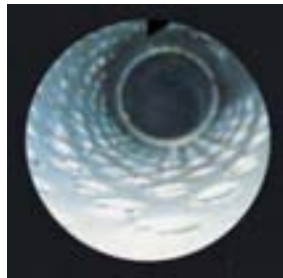
### IF6C5X1/IF8C5/IF11C5 Operating Environment

- Operating temperature: Insertion tube: In air: -10-80°C (14-176°F)  
In water: 10-30°C (50-86°F)
- Operating pressure: Insertion tube: In air: 10-50°C (14-122°F)  
In air/water: 1013-1317hPa (1-1.3atm)
- Drip-proof control section for durable performance in adverse conditions
- Fully waterproof insertion section for underwater use (corrosion-protected against machine oil, kerosene and 5% saline)

Note: As with any fiberscope, due to normal product characteristics all models may show a small number of broken fibres. The angulation angle decreases as the scope is coiled.

## INDUSTRIAL FIBERSCOPES IF6PD4/IF2D5/IF4D5/IF4S5

Ultra-thin diameters.



### Scope Specifications

		IF6PD4-6	IF6PD4-11	IF2D5-6	IF2D5-12	IF4D5-7	IF4D5-15	IF4S5-7	IF4S5-15	
Optical system	Field of view	58°		75°		65°		60°		
	Direction of view	Direct viewing						Side viewing		
	Depth of field	1 ~ 50mm (fixed focus)		2 ~ 50mm (fixed focus)		6 ~ 60mm (fixed focus)		4 ~ 40mm (fixed focus)		
	Illumination system	Light guide system								
Distal end	Outer diameter	ø0.64mm		ø2.4mm		ø4.1mm				
	Distal end length	-		6mm		8.5mm		11.3mm		
Bending section	Angulation range	-		Up 120°, Down 120°						
Insertion tube	Outer diameter	ø0.64mm (non-TF tube)		ø2.4mm (non-TF tube)		ø4.1mm (TF tube)				
	Working length	490mm	990mm	600mm	1170mm	700mm	1500mm	700mm	1500mm	
Total length		670mm	1170mm	850mm	1420mm	910mm	1710mm	910mm	1710mm	
	Light guide cable length	2000mm		2000mm		2000mm				
Operating temperature	Insertion tube	In air: 10~40°C (50~104°F) In water: 10~30°C (50~86°F)		In air: 10~40°C (50~104°F) In water: 10~40°C (50~104°F)		In air: -10~80°C (14~176°F) In water: 10~30°C (50~86°F)				
	All portions except insertion tube	In air: 10~40°C (50~104°F)				In air: -10~50°C (14~122°F)				
Operating pressure	Insertion tube	In air: 1013hPa (1atm)		In air/water: 1013hPa (1atm)		In air/water: 1013hPa ~ 1165hPa (1~1.5atm)				
	All portions except insertion tube	In air: 1013hPa (1atm)								

- Waterproof insertion tube.  
Drip-proof control section (except IF6PD4).

## INDUSTRIAL FIBERSCOPE IF5D4X1-14

Specifically for PT-6 engine inspection.

### IF5D4X1-14 Scope Specifications

		IF5D4X1-14
Optical system	Field of view	49°
	Direction of view	Direct viewing (convertible using optical adaptor)
	Depth of field	5~50mm
	Illumination system	Light guide system
Distal end	Outer diameter	ø5.0mm
Bending section	Angulation range	Up 120°, Down 120°
Insertion tube	Outer diameter	ø5.0mm
Working length		1200mm
Total length		1440mm
Light guide cable length		2000mm

### IF5D4X1-14 Optical Adaptor Specifications (supplied as standard)

Optical adaptor	Field of view	Direction of view	Depth of field
AT50S-IF5D4x1	49°	Side viewing	5~50mm

- Operating temperature: Insertion tube: In air: -10~80°C (14~176°F)  
All portions except insertion tube: In air: 10~50°C (14~122°F)
- Operating pressure: Insertion tube: In air: 1013hPa (1atm)

## INDUSTRIAL FIBERSCOPE IF8D3X2-23/MD-999

For JT8D jet engine inspection.



### IF8D3X2-23 Scope Specifications

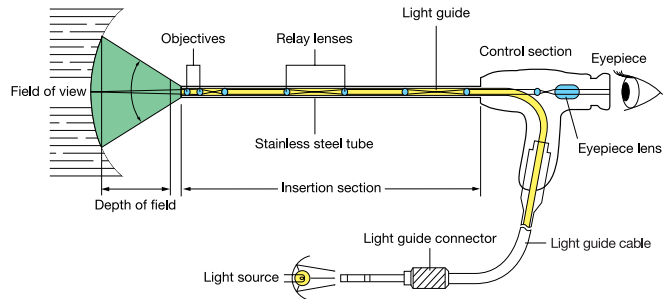
		IF8D3X2-23	
Optical system	Field of view	80°	
	Direction of view	Forward viewing	
	Depth of field	8~∞mm	
	Illumination system	Light guide system	
Insertion tube	Distal end	Outer diameter	ø8.4mm
		Rigid distal end length	15.6mm
	Bending section	Angulation range	Up 185°, Down 105°, Right 105°, Left 105°
Insertion tube	Outer diameter	ø8.4mm	
Working length		2280mm	
Total length		2500mm	
Light guide cable length		2000mm	

- Operating temperature: Insertion tube: In air: 10~80°C (50~176°F)  
All portions except insertion tube: In air: 10~80°C (50~176°F)
- Operating pressure: In air: 1013hPa (1atm)

## Enhanced brightness and image clarity - the Series 5 industrial rigid borescopes are ideal for direct line access inspections



### STRUCTURAL DRAWING



**Unbeatable relay lens optics for sharp image transmission with light guide fibres for bright illumination. Wide selection available to suit any requirements.**

Incorporating a multiple-element relay lens system in a durable stainless steel insertion tube, Series 5 industrial rigid borescopes deliver superb high-resolution images. Detachable light guide fibres transmit illumination from a separate light source directly to the site.

### MAIN APPLICATIONS

**Ideal for internal inspection of sites that can be accessed head-on with relatively shallow insertion. Excellent images are delivered by eye or when a TV camera is attached.**

For inspecting:

- Inside narrow-diameter holes and pipes
- Inside cast and hydraulic parts and honing-processed holes
- Inside aircraft engines, hollow walls or buildings, machinery, structures etc.

### MAIN FEATURES

**Ideal for TV monitor inspection**

Up to six times brighter images than conventional models.

**Clear, high-resolution images**

Excellent detail reproductions. Sharp image is easy on the eyes, helping reduce inspector fatigue.

**Focus adjustment mechanism**

Easy to use focus control.

**370° orbital scan**

Upward pointer keeps you oriented when using the rotation function (except direct viewing scopes and R160 models).

**Increased field of view**

32% larger field of view in 4mm  $\phi$  models and 96% larger field of view in 6mm  $\phi$  models.

**Accurate image reproduction**

Distortion at image edges has been dramatically reduced.

**Even illumination**

New tip design ensures more even illumination even when viewing close-range subjects.

**Outstanding durability**

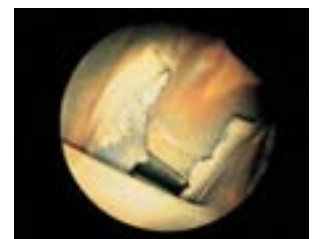
Stainless steel insertion tube usable at temperatures between -20°C and 150°C as well as under pressure of up to 1.7 atmospheres.

**Ergonomic control section**

Extremely comfortable and functional.

**Comprehensive range**

Almost 200 models available featuring various diameters, working lengths and viewing directions and angles.



Rigid borescopes are used where there is straight line access to the inspection area. They provide cost effective solutions for applications as diverse as maintenance, quality control, research, development and security.

The Series 5 product design provides:

- Large, bright, clear, high-resolution images
- A wide range of robust, versatile instruments
- A fully integrated system

To satisfy customer and application requirements, the Olympus Series 5 range also includes:

- Series 5 Swing Prism Borescope
- Series 5 Zoom Swing Prism Borescope
- Series 5 Engine Borescope

## STANDARD SERIES 5 BORESCOPE

The Series 5 standard range is available in a choice of seven diameters from 4-16mm. The standard range also offers varying lengths and direction of view and field of view.



## SERIES 5 SWING PRISM BORESCOPE

The Series 5 swing prism borescope has been designed to allow the operator to scan a large area, saving time and expense. The direction of viewing can be adjusted continuously between 45° to 115°, coupled with a field of view, this allows a total viewing arc of 120° to 140°. The Series 5 Swing borescope is available in both 6mm and 8mm diameters.



## SERIES 5 ZOOM SWING PRISM BORESCOPE

The Series 5 Zoom swing prism borescope has been added to the successful swing prism range. It incorporates the same characteristics as the standard swing prism, but with the added feature of 2 x optical zoom. This allows the user to zoom onto an object of interest, providing a magnified view.



## SERIES 5 ENGINE BORESCOPIES

The Series 5 engine borescope has been designed to meet manufacturer and user specification requirements specifically for a number of key military and commercial aero engines.



### Borescope R120 - 039 - 090 - 35 ILG

① ② ③ ④ ⑤ ⑥

- ① Series 5 Borescope
- ② Diameter 0.1mm (eg 12mm)
- ③ Working length cm (eg 39cm)
- ④ Direction of view degrees (eg 90° lateral)
- ⑤ Field of view degrees (eg 35°)
- ⑥ Integral light guide (12 & 16mm diameter only)

R040-021-000-60	R080-104-045-50	R100-067-045-50
R040-033-000-60	R080-124-045-50	R100-095-045-50
R040-022-045-60	R080-144-045-50	R100-025-090-35
R040-033-045-60	R080-024-090-50	R100-025-090-50
R040-022-090-60	R080-025-090-35	R100-029-090-10
R040-033-090-60	R080-028-090-10	R100-039-090-50
	R080-034-090-50	R100-039-090-35
	R080-035-090-35	R100-043-090-10
R060-017-000-50	R080-044-090-50	R100-053-090-50
R060-032-000-50	R080-045-090-35	R100-053-090-35
R060-047-000-50	R080-048-090-10	R100-057-090-10
R060-063-000-50	R080-054-090-50	R100-067-090-50
R060-017-045-50	R080-064-090-50	R100-067-090-35
R060-032-045-50	R080-065-090-35	R100-081-090-35
R060-047-045-50	R080-074-090-50	R100-095-090-50
R060-063-045-50	R080-084-090-50	R100-095-090-35
R060-017-090-50	R080-104-090-50	R100-099-110-50
R060-032-090-50	R080-124-090-50	R100-095-110-50
R060-047-090-50	R080-144-090-50	
R060-063-090-50	R080-024-110-50	R120-039-090-35 ILG
R060-078-090-50	R080-034-110-50	R120-053-090-35 ILG
	R080-044-110-50	
	R080-054-110-50	R160-059-000-35 ILG
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R080-044-000-50	R080-094-110-50	R160-143-000-35 ILG
R080-064-000-50	R080-104-110-50	R160-059-090-35 ILG
R080-084-000-50	R080-124-110-50	R160-101-090-35 ILG
R080-124-000-50		R160-122-090-35 ILG
R080-144-000-50		R160-143-090-35 ILG
R080-024-045-50		
R080-044-045-50	R100-038-000-50	
R080-064-045-50	R100-066-000-50	
R080-084-045-50	R100-039-045-50	

### Borescope R080 - 044 - 045SW115 - 50ZM25

① ② ③ ④ ⑤ ⑥

- ① Series 5 Borescope
- ② Diameter 0.1mm (eg 8mm)
- ③ Working length cm (eg 44cm)
- ④ Direction of view degrees (eg 45° to 115°)
- ⑤ Field of view degrees (eg 50°)
- ⑥ Field of view zoom range (eg 50° to 25°) (zoom models only)

#### Swing-Prism and Zoom Swing-Prism Specifications

R060-023-045SW115-50	R080-043-045SW115-50
R060-031-045SW115-50	R080-044-045SW115-20
R060-046-045SW115-50	R080-053-045SW115-50
R060-077-045SW115-50	R080-063-045SW115-50
R060-024-045SW115-50ZM25	R080-064-045SW115-20
R060-032-045SW115-50ZM25	R080-083-045SW115-50
R060-047-045SW115-50ZM25	R080-103-045SW115-50
R060-062-045SW115-50ZM25	R080-024-045SW115-50ZM25
	R080-034-045SW115-50ZM25
R080-023-045SW115-50	R080-044-045SW115-50ZM25
R080-024-045SW115-20	R080-054-045SW115-50ZM25
R080-033-045SW115-50	R080-064-045SW115-50ZM25

#### Aero-engine Model Specifications

Instrument	Engine	Instrument	Engine
R055-047-000-55	Pegasus	R080-034-110-55	TRENT
R055-047-090-55	Pegasus/RB199	R100-017-090-35	TRENT
R055-085-090-55	Pegasus	R100-024-090-35V	CFM-56
R060-047-090-55	M88	RE080-012-090-60	CFM-56
R060-047-060-30	M88	RE080-029-060-60	CFM-56
R060-032-070-40GI	MTR-390	RE080-029-110-60	CFM-56
R055-017-090-60	MTR-390	RE100-041-090-35V	GE-90
R080-025-110-35GI	RTM-322	RE100-068-090-55	GE-90
R060-024-070-60	RTM-322	RE080-043-060-55	GE-90
R080-024-060-50	RTM-322	RE080-043-110-55	GE-90
R080-041-070-60	TRENT		

Note: Many aero-engine inspections use standard or swing-prism borescopes. Contact our application specialists for specific advice.

## SMALL DIAMETER BORESCOPIES

Ultra-thin Borescopes, as small as 0.9mm diameter for extremely tight spaces.

For applications where access to the area of interest is only possible through an aperture less than 4mm, the Olympus range of small diameter borescopes offers a wide choice of specifications. These instruments are ideal for many applications, including the inspection of electronic components, fine castings, fuel injectors and hydraulic systems.

Small diameter borescopes are available in 0.9, 1.2, 1.7, 2.5 or 2.7mm diameter insertion tubes and up to 250mm working length. The instruments' direction of view can be direct (000°), fore-oblique (015°) or lateral (090°) and with the introduction of a new range of instruments, two types of image transmission are available.

The X series range uses a high resolution fiber conduit image transmission system which provides excellent image quality and a more robust, semi-flexible insertion tube. This also allows smaller diameter models to be produced, including a new 0.9mm version which offers distinct advantages in some applications. A range of models are also available with Sub-1mm close focus viewing capability. Models shown with an '★' in the table below are available in this configuration. K Series models use a 'Selfoc' optical lens system which offers exceptional image resolution and image brightness, but does not offer the same robustness as the fibre versions.

Any one of the Olympus light sources can be used with the small diameter borescopes including, on the X Series, the ILK-M1 - a compact battery powered light source developed specifically for these instruments. All instruments include a 32mm eyepiece, which ensures compatibility with the full range of borescope accessories, including photographic, CCTV and viewing adaptors.

- **Fibre Conduit (X Series)**  
Incorporates the very latest in condensed fibre conduit image transmission technology, for high resolution and durability
- **Selfoc Lens (K Series)**  
A continuous rigid rod lens for image transmission gives the highest resolution



K Series



X Series



### Small Diameter Borescope Specifications - X Series

Outer diameter	Working length	Direction of view	Field of view	Depth of field
ø0.9mm	60mm or 150mm	Direct (0°) or Forward-oblique (15°)	70°	Direct: 3 to infinity *
				Forward-oblique: 2 to 7
ø1.2mm	60mm or 150mm	Direct (0°) or Forward-oblique (15°)	70°	Direct: 3 to infinity *
				Forward-oblique: 2 to 7
ø1.7mm	150mm or 250mm	Direct (0°) or Forward-oblique (15°) Lateral (90°)	70°	Direct: 4.5 to infinity *
				Forward-oblique: 3 to 12 *
				Lateral: 3 to 12 *
ø2.5mm	150mm or 250mm	Direct (0°) or Forward-oblique (15°) Lateral (90°)	70°	Direct: 4.5 to infinity
				Forward-oblique: 3 to 12
				Lateral: 3 to 12

### Small Diameter Borescope Specifications - K Series

Outer diameter	Working length	Direction of view	Field of view	Depth of field
ø1.2mm	96mm	Direct (0°) or Forward-oblique (15°)	45°	All models 1mm - 40mm
			53°	
ø1.7mm	96mm or 186mm	Direct (0°)	62°	
			80°	
	99mm or 188mm	Lateral (90°)	62°	
ø2.7mm	186mm	Direct (0°)	62°	
			80°	
	188mm	Lateral (90°)	62°	

- **Operating temperature:** Insertion tube: In air: -10-80°C (14-176°F)  
In water: 10-30°C (50-86°F)  
All portions except insertion tube: In air: -10-50°C (14-122°F)
- **Operating pressure:** Insertion tube: In air/water: 1013hPa (1atm normal pressure)  
All portions except insertion tube: In air: 1013hPa (1atm normal pressure)





## SolView

The Olympus SolView is a simple and cost-effective ESD safe tool to inspect the quality of Ball Grid Arrays (BGAs) and other surface mount electronic components. Battery power eliminates the need for external power supplies, making this a truly portable inspection solution. This innovative design concept employs easily adjustable front and back LED illumination offering clear bright images.

### SolView-90

Enables you to view a solder joint from a perpendicular angle. The probe tip sits beside the component and looks beneath the component. A backlight illuminator is available with this probe that has a range span of 4mm to 50mm.

### SolView-00

Enables direct observation of surface mount components on printed circuit boards for general component inspection including through hole plating quality, device positioning, track and solder deficiencies.

### OmniStage

An XYZ Stage that provides a convenient base for inspecting printed circuit boards over an extended period of time. The SolView is secured over a multi-directional platform where the printed circuit board is located, making inspections rapid and accurate.

### Other Accessory Equipment

For more sophisticated system solutions OmniStage can be combined with CCTV equipment and the Olympus i-SAVE image capture device. Alternatively for quick image capture Olympus Camedia Digital Photographic Cameras can be used with SolView. If measurement is a requirement then 'Olympus Iplex Manager Software' is available for basic linear measurement and analysis at the PC.



#### ■ Olympus SolView Specifications

Model	Field of view	Direction of view	Depth of field	Tip Footprint	Tip Length	Entrance Pupil Height
SolView-00	45°	Direct 00°	0.5~∞mm	6.05 x 1.65mm	11.5mm	0.3mm
SolView-90	45°	Direct 90°	0.5~∞mm	4.65 x 1.65mm	11.5mm	0.3mm

#### ■ OmniStage Specifications

Model	Platform Diameter	X-axis Movement	Y-axis Movement	Weight
OmniStage	440mm (accommodates board sizes up to 300mm x 300mm)	305mm	75mm	<17kg

**Note:** Both models have variable focus control from 0 to -4 dioptres.

- 2 x LR6 (AA) batteries are required for operation and provide 8 hours run time. Compatible with either non-rechargeable or rechargeable batteries

**Note:** Both SolView and OmniStage are electrostatically safe (ESD).

- **Operating Temperature:** (NB. Is dependent on the battery specification)  
Cold: +10°C ± 2°C  
Dry: +40°C ± 2°C
- **Operating Pressure:** 71 kpa to 106kpa
- **Liquid resistance:** All external materials and backlight, resistant to wiping with: water, 5% Salt water, 100% Isopropyl alcohol, solder paste (wet) and flux residue



In remote visual inspection applications the choice of light source is vital. When deciding which is the most appropriate, consideration must be given to size, weight and light output.

The Olympus range of light sources have been designed to meet the customers needs and requirements, from the high intensity range of light sources, which offer versatility and maximum light output, to the more economical, lower power consumption tungsten range.

- If viewing over longer distance, or in particularly dark areas, use a high intensity light source, which incorporates an arc lamp, such as metal halide or UHP
- If a lower cost light source is required, and viewing distance is smaller, then use a Tungsten halogen light source
- If using from a battery, or if low power consumption is required, then a low wattage lamp (such as ILH-2B) will offer longest battery life

Remember that a high intensity arc lamp will provide much more light than a Tungsten halogen lamp, particularly with small diameter instruments. Contact your local distributor for selection advice, and try the complete system on a typical application.

### SPECTRAL OUTPUT (see Figure 1)

The spectral output of a lamp details the amount of electro-magnetic radiation produced across a range of wavelengths, from ultra-violet (UV), through the visible spectrum, to infra-red (IR). Radiation wavelengths are expressed in nanometres (nm), one nanometre being  $10^{-9}$  metres.

The visible spectrum is between approximately 390 and 770nm, with ultra-violet being below and infra-red being above this range. In order to give true colour images, the light source should have a relatively even output across the visible spectrum. Ideally, the amount of IR radiation produced should be minimised, as IR radiation is converted to heat, which may then require a dissipation system, adding cost, volume and weight to the light source.

The spectral outputs of the three most frequently used lamp types are shown in Figure 1 and compared with that of the sun.

### COLOUR TEMPERATURE

The colour temperature of a lamp is an indication of its radiance and is measured in degrees absolute ( $^{\circ}$ K in SI units).

Typically, tungsten-halogen lamps have a colour temperature of  $3,200^{\circ}$ K, whilst metal-halide are around  $7,000^{\circ}$ K and UHP arc lamps are around  $10,000^{\circ}$ K. The colour temperature of the sun is  $5,900^{\circ}$ K.

With tungsten-halogen lamps, the colour temperature can be reduced by decreasing the voltage across the lamp filament. Some light sources use this method to adjust the 'intensity' of the light output. Unfortunately, this 'rheostat' type control increases the 'yellowing' of the resultant illumination.

For this reason, all Olympus light sources use a mechanical shutter to control light output, as the full colour temperature of the lamp is preserved.

### POWER

A lamp's power rating refers to the power required to operate it – it is not a direct indication of a lamp's illumination power. For instance, a 50W metal-halide or UHP lamp will produce a higher illumination level (in output per unit area) than a 500W tungsten-halogen lamp.

## HIGH INTENSITY LIGHT SOURCES ILH-2A/ILH-2B

The ILH-2A and ILH-2B light sources have a custom designed high output 50W metal halide arc lamp. This produces nearly x 3 the output of the ILK-7. The unit is small in size and as well as being used with borescopes and fiberscopes, can be installed into the System Case 2 or used separately.

Both the ILH-2A and ILH-2B have two Hirose power outputs offering a 12VDC 2 amp total for operation of Olympus ancillary equipment.

### SPECIFICATIONS

Lamp:	50W metal halide
Weight:	3kg
Dimensions:	173 x 235 x 85mm
Power Supply:	ILH-2A – 110-230VAC 50-60Hz, 115V 400Hz, ILH-2B – 12VDC (or 110-230VAC with AC Adaptor)
Power Consumption:	100W max



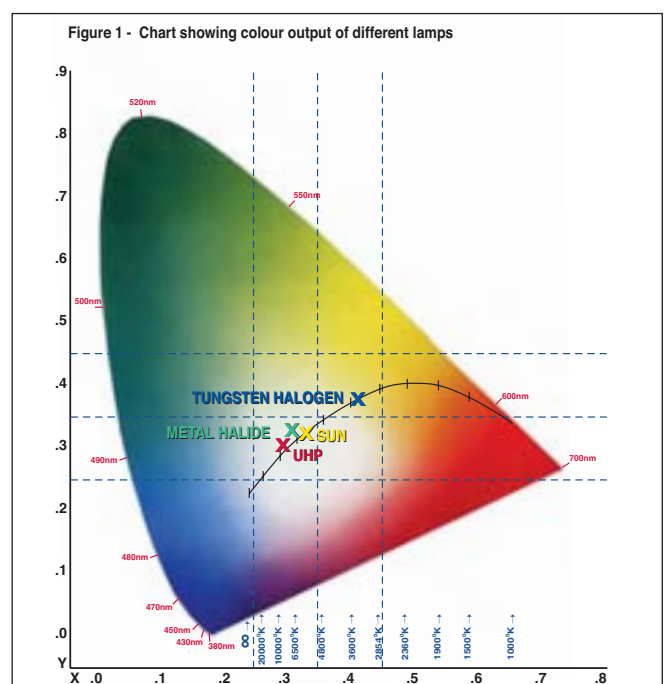
## ILP-1

The ILP-1 light source has been specifically designed for large void inspections. Incorporating the latest UHP lamp technology it is now the brightest, most powerful light source ever produced by Olympus.

The ILP-1 has two Hirose power outputs offering a 12VDC 4 amp total for operation of Olympus ancillary equipment.

### SPECIFICATIONS

Lamp:	120W Ultra High Performance (UHP)
Weight:	4kg
Dimensions:	197 x 288 x 105mm
Power Supply:	100-120VAC, 200-240VAC, 115VAC 400Hz
Power Consumption:	230W max



## TUNGSTEN HALOGEN LIGHT SOURCES ILK-7/ILK-7A/ILK-7B

The ILK-7 range of light sources incorporates a 150W tungsten-halogen lamp offering features necessary to meet most industrial needs.

### SPECIFICATIONS

Lamp:	150W tungsten-halogen
Weight:	2.3kg
Dimensions:	178 x 230 x 76mm
Power Supply:	ILK-7 – 100-120V 50-60Hz, 115V 400Hz ILK-7A – 100-240V 50-60Hz, 115V 400Hz 12VDC ILK-7B – 100-240V 50-60Hz, 115V 400Hz
Power Consumption:	190W max



## LIGHT SOURCE ILK-D1

The ILK-D1 portable light source has been specifically designed for use with a battery belt, being operated from a 12V supply. The light source has a large spring clip to enable it to be mounted on a belt or jacket pocket.

### SPECIFICATIONS

Lamp:	75W tungsten-halogen
Weight:	0.6kg
Dimensions:	140 x 80 x 60mm
Power Supply:	12VDC
Power Consumption:	80W



## LIGHT SOURCE ILK-D2

The ILK-D2 is a compact, portable light source powered from a 12V DC supply. It can be mounted on a belt using a spring clip.

### SPECIFICATIONS

Lamp:	100W tungsten-halogen
Weight:	0.6kg
Dimensions:	75 x 147 x 168mm
Power Supply:	12VDC
Power Consumption:	105W



## LIGHT SOURCE KLS-131

The KLS-131 light source can be used as a stand alone system or as part of the modular borescope system. It is available with either XLR connector or crocodile clips for car battery use.

### SPECIFICATIONS

Lamp:	50W tungsten-halogen
Weight:	0.6kg
Dimensions:	137 x 53mm
Power Supply:	12VDC
Power Consumption:	80W



## LIGHT SOURCE ILK-M1

The ILK-M1 light source is specifically designed for use with X Series Small Diameter borescopes. It is battery powered and uses a 2.5V lamp.

### SPECIFICATIONS

Lamp:	Tungsten-halogen
Weight:	50g
Dimensions:	2.8mm diameter
Power Supply:	3VDC type battery



## Battery Options

For portability, many Olympus Industrial light sources can be powered from battery packs. Different models are available to suit individual needs, all including long life nickel-cadmium cells.



The IC-2 belt incorporates a built-in charger which can be used from 100 and 230V supplies.

The 'Lok-on' belt uses separate battery packs, to allow continuous use.



# i-SPEED 2

## THE PERFECT POINT AND SHOOT HIGH-SPEED CAMERA SYSTEM

The *i-SPEED 2* camera is self-contained incorporating a custom designed Olympus CMOS sensor with on-board processing. Operating up to 33,000fps, images capturing onto the integral memory options of either 2GB or 4GB in colour or monochrome format.

The camera is controlled by the lightweight RCP (remote control pad), patented Olympus CDU (controller display unit) or via direct connection to a PC. The CDU is exclusive to Olympus, incorporating an 8.4" high-resolution LCD monitor, which allows set-up, recording, playback and saving of images without the need for a PC.

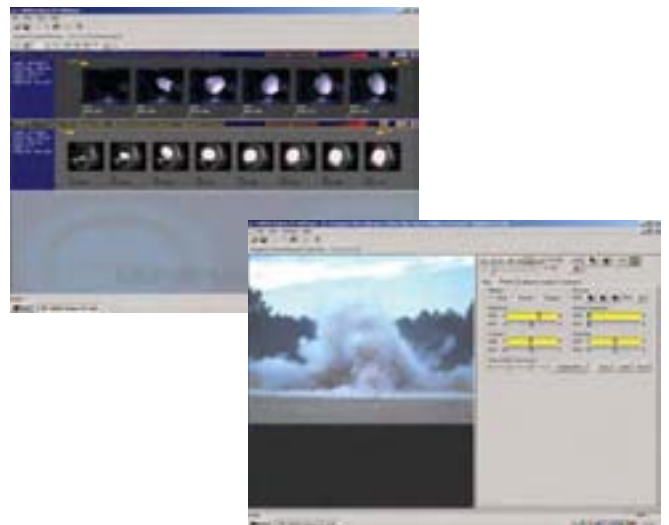
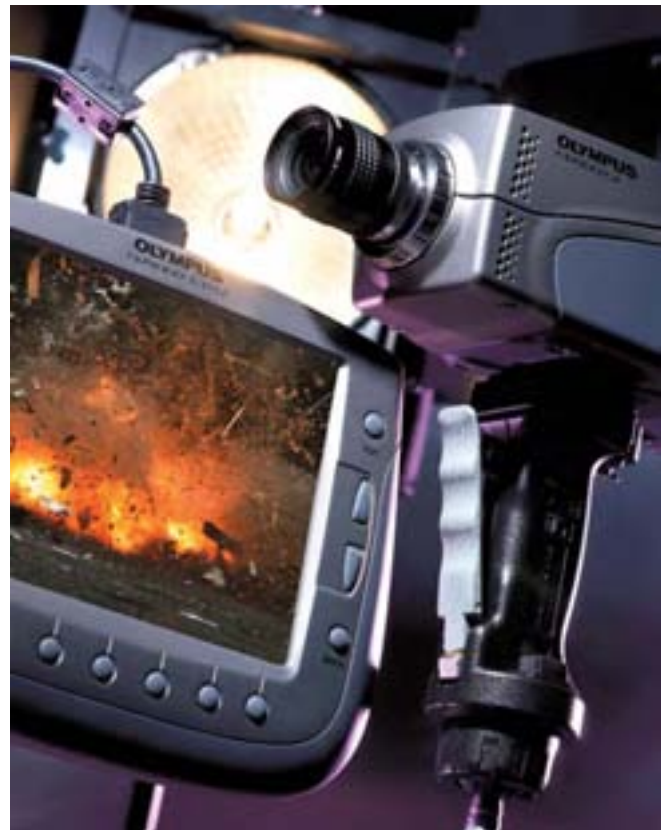
*i-SPEED* applications include automotive and aerospace testing, manufacturing and production, ballistics and range testing.

The Olympus *i-SPEED* is the perfect point and shoot high-speed video camera.

Olympus supply accessories including lenses, lighting and endoscopes.

### i-SPEED 2 FEATURES

- Exclusive Olympus (CDU) camera display unit
- 800 x 600 resolution at 1000fps
- Recording speeds up to 33,000fps
- Olympus custom designed CMOS sensor
- Built in measurement, storage and editing capability through CDU - no PC required
- Monochrome or colour camera options
- Ethernet link for image download and PC control
- Continuous streaming live video from four outputs
- Various trigger modes include Record on Command (ROC) and Burst Record on Command (BROC)
- Exclusive Olympus back focus control
- Exclusive Olympus *i-SPEED* software
- Compact flash storage
- Synchronisation to multiple cameras
- Real time zoom and pan
- Upgradeable memory options
- Integral electronic shutter to five microseconds
- High-G (HG) models available for impact test applications
- C-mount lens fitted allows connection to a wide range of lenses
- Optional Hi-magnification lenses available
- Compatible with Olympus rigid borescope and flexible fiberscopes



### i-SPEED 2 SOFTWARE

As part of the *i-SPEED 2* product range Olympus can supply unique software packages that enables each camera to be controlled from a workstation or laptop. The software packages are available in three versions offering essential features for controlling one or multiple synchronised *i-SPEED 2* cameras.

The features include:

- Record, connect, download, playback, saving and loading of video
- Distance, speed, angle and angular velocity measurements
- 64 point automatic tracking
- Tracking of two relative points (moving origin)
- Report generator in HTML format
- On-video annotation and saving (frame and global comments)
- Export distance, speed, data and comments to excel
- Saving of files containing all processing and tracking information
- Connection to external data acquisition hardware
- Connection to IRIG and GPS hardware

## *i*-SPEED 1GB

For production engineering and troubleshooting applications.

The features of the *i*-SPEED 1GB include:

- 800 x 600 sensor resolution
- 1000fps recording capability
- On-board editing function
- Live image review and playback with the Olympus-exclusive control unit (CDU)

This is a basic camera to meet low budget requirements, where advanced software analysis or very high speed imaging are not required.



## Accessories

### ALL YOU NEED FOR HIGH SPEED VIDEO

To complement the *i*-SPEED 2 digital high speed video camera and to suit the varying and demanding needs of high speed video applications, Olympus can offer a wide range of accessories.



#### LENSES

C-mount lenses ranging from 6.5mm ultra wide to a 75mm telephoto, along with a choice of zoom lenses are available. The size of the camera sensor means that more expensive photographic lenses are not required. C-mount lenses are easily attached to the camera and do not compromise image quality.

For high magnification applications, a lens set is available that provides a primary image magnification of over 3 times.

Extension tubes used in conjunction with standard C-Mount lenses can also offer increased magnification.



#### LIGHTING

Olympus can offer a large selection of lighting equipment to suit the majority of applications. From 1000W focussed beam lighting for large machinery applications, to Olympus light sources available for small detailed requirements such as enclosed areas and inside machinery.

## INFRA-RED TELESCOPIC CAMERA SYSTEM

For large vessel inspection. The Infrared Telescopic Camera System (IRTC) features a CCD camera with integral infrared illumination mounted on a telescopic arm, together with a compact monitor and battery module. The complete system is supplied in a single rugged carrying case.

- Up to 12 metres viewing distance in darkness
- Up to 2 hours battery life in continuous use
- High resolution monochrome monitor
- Robust carrying case



Corrosion of heat exchanger end plate

Viewing head	Size	150 x 46 x 28mm (compact version) including illuminator 230 x 46 x 28mm (standard version) including illuminator
	Camera	Monochrome, 380 x 420 lines resolution
	Sensitivity	0.2 lux at fl.2
	Illumination	Infrared LED array - 850nm (compact version) - 950nm (standard convert version)
	Power	12V DC, supplied by battery within chest pouch
Telescopic Pole	Type	Lightweight, telescopic
	Length	435 - 1530mm (extended)
	Weight	0.5kg (including camera head/ illuminator)
Monitor	Type	Monochrome - CRT
	Size	120 x 230 x 60mm with 4" screen
	Resolution	420 lines
Battery	Type	12V 2.5Ah Cyclon, sealed lead acid
	Run Time	Minimum: 2 hours continuous use (compact version) 1 hours continuous use (standard version)
	Charge Time	2 hours provides 95% capacity, full charge approx 8 hours
Battery Charger	Type	Constant voltage
	Input	198 - 264V AC, 50Hz or 100 - 110V AC, 60Hz
	Output	14.4V DC max, 2.2A
Chest Pouch	Padded nylon with sun shield. Neck and waist straps with quick release buckles	
Carrying Case	Double skinned, toughened ABS. Waterproof, with O ring seal and pressure relief valve.	
Standard Set	Telescopic pole with camera head/ illumination, control unit, 4" monochrome monitor, 1 x battery pack, battery charger, chest pouch, carrying case and instructions.	
Accessories	Protective cover for camera head. Wrist strap.	

## i-Save

# i-SAVE

The Olympus *i-SAVE* image capture and storage device is a convenient and compact alternative to traditional CCTV video recording equipment for on-site inspections.

*i-SAVE* incorporates a 6.5" VGA screen and internal storage capability for both single framed (JPEG) and movie images (MJPEG) to a removable compact flash card. The movies are stored as .mov files and are fully compatible with the Olympus IPLEX manager software and can be played back on QuickTime player under Windows.

A range of accessory cables are available to connect the *i-SAVE* to cameras for use with borescopes and fiberscopes. The single cable provides power and video signals resulting in a simple to operate system. Connection is also possible to the Basic IPLEX monopod and remote control handle.

The product has been designed for convenient handheld applications and incorporates an internal battery (Ni-MH) that can provide approximately 2 hours operation time. An internal fast charger is also included in the *i-SAVE*. The unit is PAL and NTSC auto selectable, controlled via an intuitive menu, images are saved with automatic file numbering and easily identified using the thumbnail gallery. A full file name editor is also provided.



## ACCESSORY CONNECTION CABLES



The Olympus *i-SAVE* is simply connected to a range of accessory cameras for use with Olympus endoscopic products including Borescopes, Fiberscopes and Videoscopes, resulting in a self contained inspection and recording system. The cables provide both power and video signals.

### i-Save Specifications

System	PAL / NTSC Auto selecting	
Resolution	640 x 480 (VGA)	
Screen Size	6.5" TFT LCD	
Dimensions	165mm (w) x 60mm (h) x 280mm (l)	
Weight	1.7kg nominal	
Power (internal)	12VDC IN, 90-264VAC, 47-63Hz (auto selecting) Internal battery NiMH 6 cell battery (voltage 7.2 nominal) Capacity: 4Ahr (typical run time 2 hrs) Internal fast charger (typical charge time 5 hrs)	
Inputs	BNC Composite S-Video Feature Connector	
Outputs	BNC Composite	
Storage Media	Compact flash cards type 1 & 2 (64Mb - 1Gb)	
File System	JPEG still capture, 640 x 480 resolution MJPEG movie capture, 320 x 240 resolution	
Software	Compatible with IPLEX Manager V2 Standard quicktime media player	

Accessory Cables	Connection cable to Watec S-Video Cameras (Example: WAT-231S)	Provides both power and video to the camera from the <i>i-SAVE</i> unit
	Connection cable to Watec Composite Cameras (Example: WAT-902H)	
	Connection cable to Sony XC-999 / XC-555 Cameras	
Connection Remote Control	Connection cable to IPLEX II remote control	Provides both power and video to the <i>i-SAVE</i> from the IPLEX videoscope system
Connection Monopod	Connection cable to IPLEX II monopod	
Connection Cable	Connection cable to Olympus ILH-2 and ILP-1 Light Sources	Provides power from Olympus light to the <i>i-SAVE</i> unit

### i-Save Standard Set

Standard Set	i-SAVE image capture device
	64MB compact flash card
	12V Power Supply (auto select)
	Mains Cable
	Instructions



**DIGITAL CAMERA ADAPTORS**

**AI-DC3/AK-DC3**

**AI-DC4/AK-DC4**

**AI-DC5/AK-DC5**

Now you can take advantage of the superior image quality and high resolution of an Olympus CAMEDIA digital camera to document your inspection results. Simply connect the camera to your Olympus Industrial fiberscope or borescope via the AI-DC or AK-DC digital camera adaptors. Images are available immediately and are ready-made for e-mail, insertion into word processor documents, presentations and more.

- Endoscopic images can be documented using the high-resolution CAMEDIA digital camera
- Fiberscope and borescope images can be turned into digital data at the touch of a button and downloaded to a PC without having to make prints
- An inspection site's external view can be documented with the camera alone, and the internal view can be documented when the camera is connected to the endoscope



CAMEDIA digital camera connected to Olympus Industrial fiberscope via AI-DC



CAMEDIA digital camera connected to Olympus Industrial borescope via AK-DC

**Specifications**

	AI-DC3/AI-DC4/AI-DC5	AK-DC3/AK-DC4/AK-DC5
Compatible scope	IF4D5/4S5	Series 5 industrial rigid borescopes
	IF5D4X1	K12/17/27 (mini borescopes) X009/X012/X017/X025 (small diameter borescopes)
	IF6C5X1	IF6PD4
	IF8C5	IF2D5
	IF11C5	IF8D4X2/X3
Connection with camera	Screwed into tripod socket of camera*	
Compatible camera	AI-DC3/AK-DC3	C-2000ZOOM/C-2020ZOOM/C-3030ZOOM/ C-3100ZOOM/C-4040ZOOM/C-4100ZOOM/ C-3020ZOOM/C-4000ZOOM/C-5050ZOOM
	AI-DC4/AK-DC4	C-5060ZOOM/C-7070
	AI-DC5/AK-DC5	SP-350
Construction	Two components: stay-provided mount for scope eyepiece and intermediate ring for camera filter thread.	

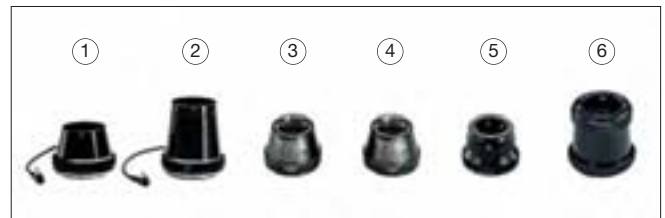
Note: When the adaptor is connected to the fiberscope, interference between the fiberoptic matrix and the LCD pixels may cause striped patterns (moiré). To prevent moiré, set the camera's focus to manual mode.

\* When the adaptor is connected to the camera, the camera's tripod socket cannot be used.

To secure the camera on a tripod, use the optional fiberscope holder (MB-936/MB-937) or borescope tripod mount (KN-29).

**OM ADAPTORS**

For connection of SC35 still camera to Fiberscopes and Rigid Borescopes.



Scope	OM adaptor	Magnification ratio	Brightness ratio
IF3 Series IF7D3X3-26, 32 IF13D3-60, IF8D3X2-23 Image Carriers	SM-2S ①	1.0	1.0
	SM-3S ②	1.375	0.529
IF4D4/4S4, IF5D4X1 IF6D4, IF8D4, IF11D4 IF4D5/4S5, IF6C5, IF6C5X1 IF8C5, IF11C5	AI-3M ③	1.0	1.0
	AI-4M ④	1.319	0.575
IF6PD4, IF2D4, IF2D5 Rigid Borescopes Small Diameter Borescopes Modelscope	SM-R ⑤	1.0	1.0
	AK-1M ⑥	1.8	0.31

**C-MOUNT ADAPTORS**

For connection of TV cameras to Fiberscopes and Rigid Borescopes.



Scope	C-Mount adaptor	Magnification ratio	Brightness ratio
IF3 Series IF7D3X3-26, 32 IF13D3-60, IF8D3X2-23 Image Carriers	MC-05 ①	1.0	1.0
	MC-08 ②	1.6	0.39
	MC-10 ③	2.0	0.25
IF4D4/4S4, IF5D4X1 IF6D4, IF8D4, IF11D4 IF4D5/4S5, IF6C5, IF6C5X1 IF8C5, IF11C5	AI-10C ④	0.8	1.56
	AI-11C ⑤	1.0	1.0
	AI-12C ⑥	1.51	0.44
	AI-3C ⑦	2.0	0.25
IF6PD4, IF2D4, IF2D5 Rigid Borescopes Small Diameter Borescopes Modelscope	AK2-3C	0.45	-
	AK2-4C	0.6	-
	AK2-5C ⑧	0.75	1.8
	AK2-10C ⑨	1.0	1.0
	AK2-20C ⑩	1.35	0.55
	MC-R44 ⑪	1.85	0.3
	MC-R58 ⑫	2.4	0.17

## Viewing Adaptors

These adaptors allow the eyepiece of a rigid borescope or flexible fiberscope to be extended or angled for a more comfortable viewing position.



### Viewing Adaptors Specifications

Adaptor Name	Angle	Arm Length / Magnification
AK2-18-90	90° angle	18cm arm
AK2-9-60	60° angle	9cm arm
AK2-8-90	90° angle	8cm arm
AK2-79-90	90° angle	79cm arm
AK2-80-00	Direct Viewing	80cm arm
AK2-ZOOM	Direct Viewing	1.5 to 3x magnification

## GT for IV6C6-20/IV7635 GT for IV6C6-35/IV7650

This guide tube for industrial endoscopes provides a second movable joint for incredibly flexible control.

Note: Pratt & Whitney approved for JT8D engine inspection.



## Engine Turning Tools

The Olympus Electronic Engine Turning Tool (OTT) can offer increased speed and efficiency for all internal turbine inspections. Using a simple hand held controller each blade can be precisely positioned for an optimal view, allowing single operator inspections. The Engine Turning Tool is designed to be attached to engines quickly and easily - the engine-specific adaptor connect the drive motor directly to the engines' gearbox turning point or air starter position. Once connected the operator can select rotation speed and direction (forward or reverse). The Olympus Turning Tool is suitable for use on most turbine engines for aerospace and power generation applications.

The Olympus Turning Tool uses an electric stepper motor rather than compressed air, making its operation precise, quiet and efficient. The range consists of four different models, depending on the specific engine requirements. Features include blade identification on an easy to read LED, convenient foot switch, offering hands-free operation and many other specific features, outlined below.

### ● OTT-1

This turning tool package is a high specification unit. A complete kit includes a Central Processing Unit, Hand Controller, Foot Pedal, Software Module, Engine Adaptor and all required cables. Features of this turning tool include video overlay, variable torque settings, interchangeable engine adaptor, backlash compensation, blade counting and tagging, auto indexing and adjustable rotation speed, direction and dwell time.

### ● OTT-2

This turning tool is specifically designed for the F100 engine. Features of this unit are the same as those of the OTT-1, but without the video overlay function.

### ● OTT-3

The OTT-3 is the most portable turning tool in the Olympus range. The unit is simple yet effective, employing the same engine adaptor as in the OTT-1 system. The use of these engine adaptor results in a turning tool with flexibility for use with a variety of engine configurations and inspection requirements. The base equipment can be expanded by the addition of further engine adaptor, to make the equipment suitable for use on various engines at little extra cost.

### ● OTT-4

The OTT-4 turning tool is a lightweight unit, targeted at specific engines, designed to achieve simple but efficient engine turning capabilities. Note, however, that there is no compatibility with other turning tools in the Olympus Range.



Pratt & Whitney	General Electric	International Aero Engines	SNECMA	CFMI	Rolls-Royce
JT8D	CF34-8CI	V2500	M88	CFM56-3	TAY/SPEY
JT8D Starter	CFE738			CFM56-5	RB211-535
JT9D	CF6-50			CFM56-7	RB211-524
PW2000	CF6-80A				TRENT 500/700/800/900
PW4000	CF6-80C2 NON FADEC				BR710
F100	CF6-80C2 FADEC				BR715
OTT1	CF6-80C2 IDG				RB199
F100 LP	GE90				F402
TF30	F101				INDUSTRIAL TRENT
F118	F108				RB211-24G DLE
	F110-100				501K
	F404				
	TF39				
	LM2500				
	LM5000				
	LM600				



**REMOTE CONTROL EXTENSION CABLE (for IPLEX)****MAJ-1091** Length: 4m

Extends the remote control cable, allowing more freedom of movement during operation. Attaching this cable and removing the monitor from the monopod allows you to operate the main IPLEX unit while moving freely around a wider area.

Note: The remote control shown in the photograph is supplied as a standard part of the IPLEX system, and is also available as a spare part.

**RIGID SLEEVE (for IPLEX)****MAJ-1281** (for ø4mm dia. insertion tube)**MAJ-1253** (for ø6mm and ø6.2mm dia. insertion tube)

Useful as an auxiliary insertion tool and also makes the scope easier to handle. Simply fit and lock the sleeve over the scope insertion tube.

**RETRIEVAL TOOLS**

Various types of retrieval tools are available which can be used either internally, with 6.2mm or 7.3mm diameter videoscopes and fiberscopes, or externally, using a fixing kit, with instruments of 6mm diameter and above.

**MULTI-PURPOSE SLEEVE**

Useful to provide a constant insertion depth of rigid borescopes.

**CCTV EQUIPMENT**

Various CCD cameras, CRT and LCD monitors and video recording equipment products are available for TV observation. For details of the latest models, contact your local Olympus sales representative.

**LIGHT GUIDE CABLE**

This accessory transmits light from a separate light source to a rigid borescope, but is not required for a flexible videoscope or fiberscope. Different types and lengths are available for specific applications.

**FIBERSCOPE AND VIDEOSCOPE HOLDER**

This accessory enables mounting of a fiberscope's and Series 6 videoscope's control section onto commercially available tripods or other similar devices.

For IV6C6, IV8C6, IV7D6, IV6C5-110/160, IV6C5XI, IF8C5: MB-937

For Fiberscopes other than the above: MB-936

A separate holder is available for Series 5 borescopes (KN-29).

**PACKAGING**

Packaging has always been a very important part of the Olympus product range. We have therefore standardised our packaging to suit various customer needs including dedicated customised packaging for system configurations.

Olympus can offer a variety of hardcase and softbag solutions.

## Product Lineup

The IPLEX R Series satisfies all your inspection needs.

### IPLEX SA II R NETWORK

- High-end model with all the functionality of the IPLEX SA II R model
- The addition of Ethernet and Wireless Network connection
- Control your inspections from anywhere in the world



### IPLEX SA II R

- Intuitive, advanced features including still image and movie recording together with superb image control functions
- The addition of a Stereo Measurement optical tip adaptor allows six modes of accurate, repeatable measurement



### IPLEX SX II R

- All the features of IPLEX SA II R with interchangeable insertion tubes of 4.4mm, 6.0mm or 6.2mm diameter
- The 6.2mm diameter model incorporates an internal working channel for foreign object retrieval



### IPLEX II R

- Basic model designed for total ease of use and high-quality images
- Includes an XGA high-resolution LCD monitor and drum-mounted insertion tube
- Wide range of optical tips available



### IPLEX MX R

**Easy inspection anytime, anywhere.**  
**Mobile IPLEX brings total convenience to field maintenance.**

- 4.4mm or 6.0mm diameters
- High efficiency via clear, high-resolution images and stepless zoom
- Excellent mobility thanks to compact, lightweight, battery-powered design
- Simple, intuitive operation
- Complete control of inspection regardless of location and skill level



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