

## OLYMPUS IMAGING PRODUCT SPECIFICATIONS



### DP70 Digital Camera

The DP70 is a 12.5-megapixel, 12-bit cooled digital color camera offering high sensitivity and high-speed data transfer. This camera is equipped to capture images with outstanding color fidelity from demanding applications including fluorescence.



### DP12 Digital Camera

The 3.3-megapixel DP12 offers users maximum flexibility. Use it as a stand-alone digital camera, operated conveniently from the compact handset control unit, or interface it to a PC via USB technology.



### Hamamatsu Video & Digital Cameras

View Hamamatsu's line of high resolution video and digital cameras specially developed for microscopy and other scientific applications.



### MicroFire Digital Camera

The MicroFire is a 2-megapixel, 12-bit FireWire™ digital camera. Comes complete with easy-to-use PictureFrame software, allowing images to be acquired effortlessly. Imaging has never been this easy! Choose from either a color or monochrome model.



### Q-Color 3 & Q-Color 5 Digital Cameras

The Q-Color digital camera series is available in 5.0 and 3.2-megapixel versions. Both deliver high-resolution images with outstanding detail and great color for documentation and publication. Available with or without cooling.



### MagnaFire SP Digital Camera

This high performance, megapixel digital camera is designed to provide high-resolution, full-color images viewable on a PC via its FireWire™ (IEEE 1394) high-speed interface.



### CC12 & FVII Digital Cameras

For digital imaging systems offering high performance and megapixel resolution, choose from a color or monochrome 12-bit cooled FireWire™ digital camera featuring high dynamic range, low noise, and high sensitivity for outstanding results.



## Video Cameras

Olympus' wide array of high-quality color video cameras give you all the image quality and flexibility you need for an efficient viewing experience.



## Film Cameras

We offer a full line of film cameras, ranging from completely manual to fully automatic, for varying levels of creativity and ease of use.

### DP70 Camera Specifications

DP70 Camera	Type	Single Chip Color CCD Camera, Piezo shifted
Imaging Sensor	Cooling	Peltier device, Ta-10° C
	Size	2/3 inch
	Effective Pixels	1.45 million pixels (1.5 million total)
	Scanning	Progressive scan
	Color Filter	RGB Bayer primary color filter
Image Resolutions		4080x3072, 2040x1536, 1360x1024, 680x512
Sensitivity		ISO equivalents of 200/400/800/1600
Bit Depth		12-bit per R,G,B (48-bit image file)
Metering Modes	30%, 1%, & 0.1% spot (moveable)	
Exposure Range		1/44,000 sec. to 60 sec.
Exposure Controls	Exposure Modes	Auto, manual, SFL auto
	AE Lock	Available
	Exposure Adjustment	Range: +/-2.0eV in 1/3eV stop
Image Integration	Mode	Integral or average
	Number	64 frames
Binning Options		Off (1x), 2X, 4X For preview image only
White Balance	Mode	Auto, manual, and one-push
Black Balance	Mode	Auto, manual, and one-push
Image Format		BMP, TIFF, JPEG, PICT, and AVI
Computer Interface		PCI bus interface
Image Transfer Rate		Approximately 3 sec. (at max. resolution 4080x3072)
Frame Rate		15 frames/sec. max. @ 680x512
OS		Windows XP, 2000, NT 4.0

**DP70 PC Specifications:**

	Minimum	Recommended
	IBM PC-AT compatible, Pentium III	IBM PC-AT compatible, Pentium 4
CPU	Pentium III 450 MHz or more	Pentium 4, 1.3GHz or more
Chip Set	Intel 440BX AGP, Intel 815E	Intel 845, Intel 845D, Intel 850
RAM	SDRAM 512 MB or more PC100, PC133	SDRAM 512 MB or more PC100, PC266, PC600, PC800
HDD	Empty capacity of 200 MB or more	Empty capacity of 200 MB or more
Graphic Card	16 MB or more	16 MB or more
PCI Bus	PCI Rev. 2.1	PCI Rev. 2.1
OS	Win 2000/XP/NT4.0	Win 2000/XP/NT4.0
PC Case Size	Large enough to house a 352x126x29mm PCI board	Large enough to house a 352x126x29mm PCI board
Power Supply	250W or more	250W or more



<b>DP12 Digital Camera Specifications</b>	
Imaging Sensor:	1/1.8 inch (~0.55") interlace scan CCD w/3.34 Mpixels (actual 3.24 Megapixel)
Image Recording:	<p>Sensitivity: 25/50/100 ISO equivalent            Metering System: 1% spot, 30% average            Exposure Control: Automatic, Manual, AE lock            Exposure Time: Automatic 1/4000 sec.-1/2 sec., Manual 1/4000sec.- 8 sec.            Exposure Adjustment: +/-2EV (1/3 increments)            3 White Balance Modes: Full auto, one touch, manual            Recording Media: 3.3V SmartMedia Card* (SSFDC) <i>*Not Included</i></p> <p><b>Resolution:</b>            SHQ (TIFF) 2048x1536 (Approx. 9.4MB)            SHQ (JPEG) 2048x1536 (Approx. 2.3MB)            HQ (JPEG) 1600x1200 (Approx 790KB)            SQ1 (JPEG) 1024x668 (Approx 580KB)            SQ2 (JPEG) 640x480 (Approx 230KB)</p>
Image Display:	<p>3.5 inch 200,000 pixel TFT color LCD Monitor</p> <p><b>Live image display:</b>            max. 30 frames/sec            Image magnifications 1X, 2X (electronic zoom)</p> <p><b>Stored image display:</b>            30 frames/sec            Image magnifications: 1/16X, 1/9X, 1/4X, 1X, 2X, and 4X</p>
I/O:	<p>DC Input            Data Output: USB            Video Output: Composite (NTSC/PAL)            SSFDC slot (SmartMedia)</p>

**DP12 Features & Benefits:**



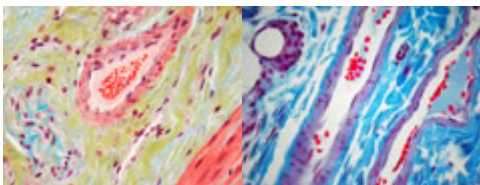
- 3.34 Megapixel (2048 x 1536) 1/1.8" (~0.55") interlace scan CCD.
- High-resolution, large, 3.5" tilting 200,000 pixel color LCD monitor (now integrated into the separate compact control unit) for easy, accurate focusing and framing. Allows display of 16 images at once!



- Easy use of operation; the DP12 is operated entirely from the separate handset control unit. Users can choose between 3 ISO ratings and automatic or manual exposure modes ensuring acquisition of images with optimum quality.
- Easy image adjustment with 3 white balance selections, 1% spot metering, 30% average metering, and  $\pm 1/3$  stop exposure adjustment.
- New focusing indicator and 2X electronic zoom function for easy low magnification focusing.



- Calibrated scale bar that can be superimposed horizontally or vertically on the displayed image.
- Single storage SmartMedia™ slot for SmartMedia™ memory cards (up to 128MB).
- USB interface located on the separate handset control unit for optional connection to a PC.
- Images can be acquired in color or grayscale.
- Standard C-mount thread.



## Hamamatsu Video & Digital Camera Specifications

	<a href="#">ORCA 285</a>	<a href="#">ORCA-ER</a>	<a href="#">ORCAII-ER</a>	<a href="#">ORCAII-BT-512</a>	<a href="#">ORCAII-BT-1024</a>
Imaging device	Interline	Interline	Interline	Full frame	Full frame
CCD	ICX - 285	ER -150	ER -150	S7170	CCD47-10
Number of Pixels	1344 x1024	1344 x 1024	1344 x 1024	512 x 512	1024 x 1024
Pixel size	6.45 x 6.45 um	6.45 x 6.45 um	6.45 x 6.45 um	24 x 24 um	13 x 13 um
Noise	8 e- RMS	6 e- RMS	3 e- & 6 e- RMS	6 e- RMS	4 e- RMS
Full well capacity	18,000 e-	18,000 e-	18,500 e- & 40,500 e-	230,000 e-	80,000 e-
Dynamic range	2,250:1	3,000:1	3,100:1 to 13,500:2	38,300:1	20,000:1
Digitizer(s)	12 bit	12 bit	12 & 14 bit	12 & 14/16 bit	12 & 14/16 bit
Peak QE	60%	70%	70%	90%	80%
Clock	14.75 MHz	14.75 MHz	10 M & 1.25 MHz	2.5 M & 156 KHz	5 M & 312.5 KHz
Frame rate	8.8 Hz	8.8 Hz	0.85 Hz & 1.25 MHz	0.45 Hz & 156 KHz	0.21 Hz & 312 KHz
Cooling temp.	5 degrees C	-30 degrees C	-60 degrees C	-60 degrees C	-60 degrees C
Dark current	0.8 e/p/s	0.03 e/p/s	0.0065 e/p/s	0.3 e/p/s	0.01 e/p/s
Hi/Low Light mode	No	Yes	Yes	No	No
Mechanical shutter	No	No	No	Required	Required
Shortest exposure	10 us	10 us	30 us	20 ms	20 ms
Longest exposure	10 sec	4200 sec	2 hours or longer	2 hours or longer	2 hours or longer
Anti-blooming	Yes	Yes	Yes	No	No
Digital output	IEEE1394	IEEE1394	RS-422/IEEE1394	RS-422	RS-422

<b>MicroFire™ Camera Specifications</b>	
CCD Array	1600 x 1200 Pixels, 7.4 x 7.4 microns
Format:	14.8mm diagonal (2/3" format)
Hardware Interface:	IEEE 1394 (FireWire™), 6 pin
Software Interface:	MicroFire™ Proprietary, SDK Available
Binning Modes:	1X1 (1600 X 1200) 2X2 (800 X 600) Monochrome only 3X3 (512 X 400) Color only 4X4 (400 X 300) Monochrome only
Subframing modes:	User-defined # of lines, in multiples of 2 Range: 100 lines - 1200 lines
Frame Rates (max):	10 FPS @ 1600 x 1200 18 FPS @ 800 x 600 (2x2 binning) 24 FPS @ 512 x 400 (3x3 binning) 30 FPS @ 400 x 300 (4x4 binning) 48 FPS @ 1600 X 100 (subframed mode)
Exposure Time Range:	500 microseconds - 60 seconds
Gain Range:	1x - 16x
Bit Depth:	36 Bit Color
Optical Interface:	C-mount (1-32 thread), 17.5mm backfocus
Computer Recommendations:	1GHz or better PC, Windows™ 98 SE/ME/2000/XP 1600 x 1200, 32-bit color video 512 MB RAM

<b>Q-Color 3™ Specifications</b>	
<b>Sensor</b>	Sony ICX252AQ – 8.933mm diagonal – 1" x 1.8" (1/2") optical format
Resolution	2080 x 1542 active pixel resolution, 3.2 M active pixels
CCD Type	<b>Interlaced*</b> , interline, Bayer color (R,G,B primary color mosaic filters on chip)
Pixel Size	3.45 $\mu$ x 3.45 $\mu$
Well capacity	8600 e <sup>-</sup>
Readout noise	9.8 e <sup>-</sup>
S/N ratio	58 dB
Dark current (cooled)	2.3 e <sup>-</sup> /pixel/second
Dark current (uncooled)	9 e <sup>-</sup> /pixel/second
<b>Readout Speed**</b>	20 MHz in 8-bit, 10 MHz in 10-bit
8-Bit (default setting)	Full resolution – 5.4 fps Full frame readout time 210 ms (8bit) 420 ms (10-bit)
2x2 binning	9.2 fps (8-bit) 4.1 fps (10-bit) in full color
3x3 binning	12 fps (8-bit) 6 fps (10-bit) in full color
4x4 binning	14 fps (8-bit) 7 fps (10-bit) in full color



<b>ROI</b>	Region of Interest (up to 100 fps)
<b>Exposure Times</b>	1.6 ms to 17.9 minutes with 1 $\mu$ resolution
<b>Cooling</b> (optional)	Approx. 10° C below ambient Reduces dark current during long exposure times
<b>Power</b>	Cooled – 560mA@12V=6.72W Uncooled – 310mA@12V=3.72W The Q-Color 3™ can only draw power through a FireWire™ port. An auxiliary power supply cannot be hooked up directly to the Q-Color 3™. A PCMCIA FireWire™ card with an auxiliary power supply is required to run the Q-Color 3™ on a laptop.
<b>Mounts</b>	Standard C-mount for microscopes or lens Standard camera tripod mount 1 / 4" – 20

### Q-Color 5™ Specifications

<b>Sensor</b>	Sony ICX282AQ - 2/3" optical format
<b>Resolution</b>	2580 x 1944 active pixel resolution, 5.0 Megapixels
<b>CCD Type</b>	<b>Interlaced*</b> , interline, Bayer color (R,G,B primary color mosaic filters on chip)
<b>Pixel Size</b>	3.4 $\mu$ x 3.4 $\mu$
<b>Well capacity</b>	8600 e <sup>-</sup>
<b>Readout noise</b>	9.8 e <sup>-</sup>
<b>S/N ratio</b>	58 dB
<b>Dark current (cooled)</b>	2.3 e <sup>-</sup> /pixel/second
<b>Dark current (uncooled)</b>	9 e <sup>-</sup> /pixel/second
<b>Readout Speed**</b>	20 MHz in 8-bit, 10 MHz in 10-bit
8-Bit (default setting)	Full resolution – 3.5 fps Full frame readout time 286 ms (8bit) 555 ms (10-bit)
2x2 binning	5.9 fps (8-bit) 3.0 fps (10-bit) in full color
3x3 binning	7.4 fps (8-bit) 3.75 fps (10-bit) in full color
4x4 binning	8.9 fps (8-bit) 4.5 fps (10-bit) in full color
ROI	Region of Interest (up to 30 fps)
<b>Exposure Times</b>	1.6 ms to 17.9 minutes with 1 $\mu$ resolution
<b>Cooling</b> (optional)	Approx. 10° C below ambient Reduces dark current during long exposure times
<b>Power</b>	Cooled – 560mA@12V=6.72W Uncooled – 310mA@12V=3.72W The Q-Color 5™ can only draw power through a FireWire™ port. An auxiliary power supply cannot be hooked up directly to the Q-Color 5™. A PCMCIA FireWire™ card with an auxiliary power supply is required to run the Q-Color 5™ on a laptop.
<b>Mounts</b>	Standard C-mount for microscopes or lens Standard camera tripod mount 1 / 4" - 20



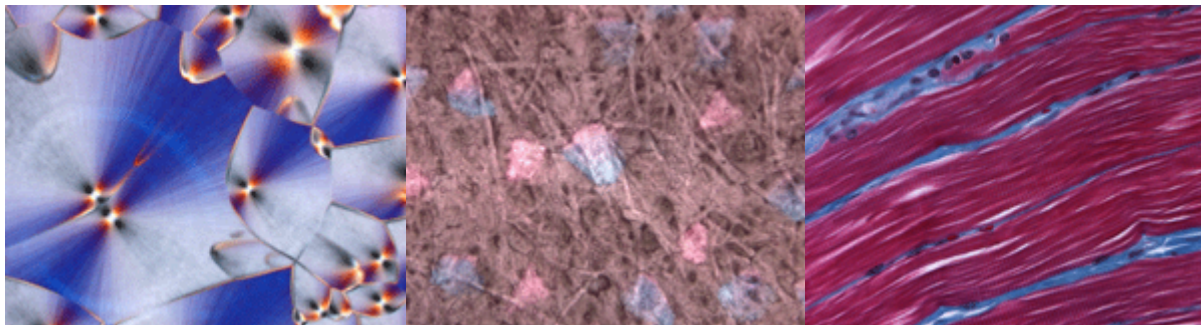
## MagnaFire™ SP Camera Specifications

Description:	Megapixel color imaging camera system designed for scientific microscope imaging applications
Physical Dimensions:	47mm high, 166mm wide, 166mm deep; weight: 1.5kg.
Operating Environment:	Operating Temperature: +5°C to +35°C Storage Temperature: -10°C to +60°C Humidity: 0 - 80% relative non-condensing Shock and Vibration: as per ISTA guidelines
Camera Power Supply:	Power Supply Dimensions: 213mm long, 155mm wide, 64mm tall; weight 1.7kg Line Voltage: 100-240V~, 50/60Hz, 33VA; 250mA maximum current Fuse Type: 5 X 20mm, 400mA, SB, IEC 127
Regulatory Compliance:	UL/CSA, CE laboratory rated.
Image Sensor:	SONY ICX085 AK Color Interline Transfer CCD, 2/3 in., 1300 x 1030 x 6.7μ square pixels.
Image Size:	1280x1024 pixels.
Dynamic Range:	60dB
Signal to Noise Ratio:	60dB
Color Image Formation:	Single pass exposure matrix color
File Bit Depth:	10bit, 16bit, user defined
Live Image Display Rate:	10 images/second, full field, full resolution
Computer Interface:	IEEE 1394 Firewire™, 400 megabits/sec.
Bright Field Image Capture Time:	Full field, full resolution color: < 2.0 sec.
Dark Current:	4 electrons/pixel/sec. @ 0°C nominal.
Read Noise:	16 electrons/pixel.
Well Depth:	16,000 electrons.
Exposure Control:	Full automatic, manual override. 0.00017 sec to 10+ minutes/color in normal mode. 0.00017 sec to 1 minute/color in Turbo mode. Manual settings at 1/16 stop intervals.
Camera Shutter:	Electronic, software controlled.
Optical Interface:	Industry standard "C" mount (17.5mm backfocus). No relay lens optics required.
Camera Control and Display Software:	Windows™ 98 (Second Edition), Windows™ 2000

## CC12 & FVII CAMERA SPECIFICATIONS

### CC12:

- 1376 x 1032 x 6.45 $\mu$ m square pixel 2/3" CCD color imaging sensor
- PC interface: FireWire™ (IEEE 1394)
- High 36 (3 x 12) bit dynamic range
- Rapid image transfer rate
- Variable binning allows focusing of even the weakest signals
- High frame rate, up to 22 fps in binning mode
- Low noise; Peltier cooled to 10°C ambient
- Exposure times from 100 $\mu$ s to 160 seconds
- Real-time functions that make use of the entire dynamic range: automatic gain, white balance, and live histogram display
- Ability to create multiple configurations that include all camera settings relevant to image acquisition, binning, clipping, calibration, and pre- and post-processing macro commands



### FVII:

- 1376 x 1032 x 6.45 $\mu$ m square pixel 2/3" CCD monochrome imaging sensor
- PC interface: FireWire™ (IEEE 1394)
- High 12 bit dynamic range
- Ideal for [fluorescence](#) applications that require merging multiple exposures
- Rapid image transfer rate
- Variable binning allows focusing of even the weakest signals
- High frame rate, up to 22 fps in binning mode
- Low noise; Peltier cooled to 10°C ambient
- Exposure times from 100 $\mu$ s to 160 seconds
- Real-time functions that make use of the entire dynamic range: automatic gain, white balance, shading correction, and live histogram display
- Ability to create multiple configurations that include all camera settings relevant to image acquisition, binning, clipping, calibration, and pre- and post-processing macro commands

Color Video Camera Specifications							
	<a href="#">DXC-990</a>	<a href="#">DXC-390</a>	<a href="#">DXC-190</a>	<a href="#">OLY-750</a>	<a href="#">ODEI75D Digital/Video</a>	<a href="#">OLY-200</a>	<a href="#">OLY-150IR Infrared</a>
CCD Size	3-CCD 1/2"	3-CCD 1/3"	1/2"	3-CCD 1/3"	3-CCD 1/2"	1/3"	1/2"
Lens Mount	Sony Bayonet	C-Mount	C-Mount	C-Mount	C-Mount	C-Mount	C-Mount
S/N Ratio	63dB	62dB	50dB	62dB	60dB	50dB	56dB
Resolution (TV lines)	850	800	470	750	750	480	570
Output	RGB, Y/C, Composite	RGB, Y/C, Composite	Y/C, Composite	RGB, Composite, S-Video	RGB, Composite, S-Video	Composite	Composite
RS-232 Control	Yes	Yes	No	Yes	Yes	No	No
Application	Brightfield	Brightfield	Brightfield	Brightfield, Fluorescence	Brightfield, Fluorescence	Brightfield	Infrared 700nm- 950nm

Film Camera Specifications				
	<a href="#">PM10M</a>	<a href="#">PM10SP</a>	<a href="#">PM20</a>	<a href="#">PM30</a>
Camera Type	Manual	Automatic	Automatic	Automatic
Film Types	35mm/Polaroid	35mm/Polaroid	35mm/Polaroid	35mm/Polaroid
Spot Metering	-	1%	1%	0.1% & 1%
Light Meter	External	Silicon photodiode	Silicon photodiode	CCD
Reciprocity Correction	-	3 settings	8 settings	8 settings
Bracketing	-	-	3, 5, 7 frames	3, 5, 7 frames
Exposure Adjustment	N/A	0.25-4.00 (±2EV)	0.25-4.00 (±2EV)	0.25-4.00 (±2EV)
Data Imprinting	N/A	Optional	Optional	Built-in
Fluorescence Mode	-	-	Yes	Yes: 2 types