Leica DFC340 FX

Digital FireWire Camera System
for Fluorescence Microscopy

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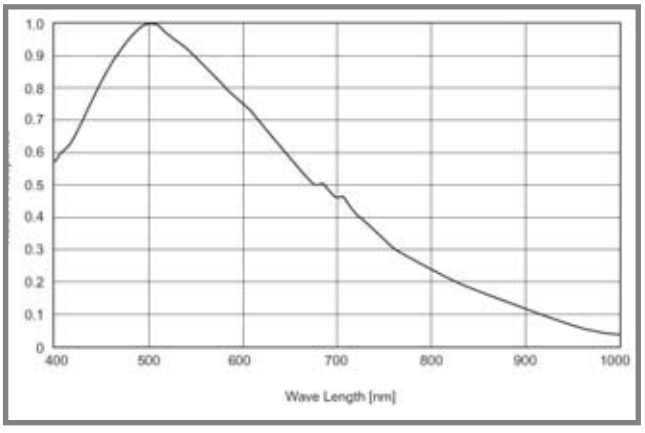
More Detail, More Sensitivity = Great Results

Low light fluorescent photography creates special demands on digital cameras. To address these demands, Leica has developed the Leica DFC340 FX high-resolution, high-sensitivity monochrome digital camera system. The Leica DFC340 FX is specifically designed for imaging applications where only limited light is available.

Greater detail, more information

State-of-the-art CCD technology creates bright, brilliant, high-detail images with reduced noise. The high dynamic range offered by the Leica DFC340 FX allows dark and light objects to be recorded and evaluated within the same image. The 2-megapixel CCD sensor ensures that each image reveals extraordinary detail for the most critical publication-quality. The progressive scan readout mode provides full resolution in every live and captured frame. A variety of binning and readout modes adapt to both bright and dim signals in the images to ensure near real time live speeds while reducing the chance of photo bleaching the most sensitive samples. In addition, the camera offers fast frame rates for real time focusing and live observation. Unmatched image quality and ultimate user-friendliness make the Leica DFC340 FX the ideal choice for black and white imaging applications.



Relative Response Curve CCD Sensor

Feature highlights

- The 2-Mpixel CCD provides brilliant images, 1600×1200 resolution resolves the finest details
- 8 or 12 bit grayscale digitization allows users to select the amount of detail required for their images.
- Features high linearity over the whole light intensity range.
- 29.5 MHz pixel clock provides fast image read-out, high-speed focus, image capture (8-bit only).
- 14.75 MHz pixel clock offers reduced readout noise for high-quality images (8 and 12 bit).
- Integrated dual lens with micro lenses increases sensitivity.
- Progressive-scan CCD captures full resolution in every frame.
- 45 µsecond to 2 minute exposure time is ideal for very bright and low light specimens.
- Live images for fast focusing and positioning, and selectable binning modes, increase light sensitivity and frame rate.
- Gain control of 1× – 10× facilitates live previews of low light specimens.
- Peltier cooling produces a high dynamic range and permits both dark and light objects to be recorded in the same image- without variations
- Easily attaches to microscopes, standard lenses, and optical equipment using the C-mount interface.
- Subcompact, fanless design offers easy setup.
- Reliable FireWire interface for effortless installation, hot-swapping, and laptop connectivity provides great ease of use.
- Intuitive user interface with user-friendly image capture and processing functions include: Leica Application Suite/Leica FireCam/Leica Twain Driver; all work with Windows and Mac operating systems and are compatible with numerous third-party software packages.
- Flash & Trigger connector enables precise integration with shutters, filter wheels, etc.

Resolution to the smallest detail
The Leica DFC340 FX images fine structures and delivers top picture quality for all fluorescence applications. The results are extremely sharp images with fine grayscale and extraordinary dynamic range without noise interference. The Leica DFC340 FX is based on a 2-megapixel sensor and provides a dynamic range of approximately 1000:1 or 60dB.

Effective cooling ensures perfect images
Under conditions with minimum light intensity, photoelectric elements must be cooled to produce noise-free images with excellent grayscale. Leica's method of active cooling via a Peltier element effectively reduces disruptive thermal noise in the sensor. This allows imaging under consistent conditions and facilitates professional, reproducible images.

Compact camera system
The compact camera housing with effective cooling is designed specifically for microscope applications. It easily fits to all microscopes and is the size of a computer mouse. A small LED at the back of the camera displays all camera functions (i.e., power status, image capture, data transfer information).

Easy handling with C-mount and FireWire
The Leica DFC340 FX makes imaging easy. The camera is fully automatic and is equipped with a C-mount interface for connection to a wide range of microscopes. A standard FireWire interface (IEEE1394a) is available for simple, reliable data transmission to the computer (transfer rate up to 400 Mbits).

Intuitive solutions for PCs and MACs
The camera's software makes digital recording on the screen quick and easy, using either a PC or MAC. The easy-to-use interface is specifically designed for microscopy applications. Numerous intuitive image capture and editing functions ensure that the recorded images are immediately available for viewing and further processing, which offers the highest quality and full use of all the benefits of digital technology.

Leica DM5000 B Fluorescence Microscope
with Leica DFC340 FX Digital Camera

Leica DFC340 FX – Technical data

Camera type	Digital monochrome high sensitity cooled camera for fluorescence microscopy with control software		
Housing	Aluminium, Size (L × W × H) 132mm × 74mm × 59mm, Weight 495g		
Exposure	45 µseconds – 120 seconds		
Cooling	Active (Peltier cooling)		
External manual trigger	Present		
Flash synchronization	Present		
Shading correction	Present		
Sensor			
CCD sensor	1/1.8" – CCD ICX274 Interline progressive scan		
Sensitive surface	7.04mm × 5.28mm		
Pixel size	4.4µm × 4.4µm		
Full well capacity	14000 electrons		
Read out noise	Sigma < 4 LSB (12 Bit) typical		
Dark current	0.75 electrons / pixel / second		
Signal-to-noise ratio	1000:1; 60 dB		
Image formats	**Pixels**	**Pixel Clock / fps**	**Pixel Clock / fps**
Full frame set	1600 × 1200	slow / 5	fast / 10
Binning 2 × 2	800 × 600	slow / 10	fast / 20
Binning 3 × 3	532 × 400	slow / 15	fast / 30
Binning 4 × 4	400 × 300	slow / 20	fast / 40
Modes	Formats in fast (29.5 MHz) or slow high quality (14.75 MHz) as indicated above		
AD converter	12-bit		
Analogue gain	1 × – 10 ×		
Software			
Supported operating systems PC	Win2000, Win XP		
Supported operating systems MAC	Mac OSX 10.3 and higher		
Software PC	DFC Twain, Leica IM50 archiving software, Leica LAS		
Software MAC	Leica FireCam		
Interfaces			
Optical	C-mount		
Recommended video adapter	0.5 / 0.55 ×		
Data	TWAIN, IEEE 1394a FireWire 6-pin single cable		
Power supply	12 V via computer		
Power consumption	5 W		
Computer	FireWire interface		
Miscellaneous			
Minimum Computer configuration PC	Pentium 4, 1 GB RAM, 24 bit true color, Firewire onboard or 1 free PCI slot		
Minimum Computer configuration MAC	G4, 512 MB RAM		
Operating temperature range	+5 to +35°C		
Air humidity	max 80%, non condensing		

Equipment components

Order numbers		
12 730 076	Leica DFC340 FX camera kit including:	Leica Firecam software for MAC
	DFC340 FX camera head	Leica IM50 and Leica LAS software for PC
	Leica Twain software for PC	2m, 6 to 6 pin FireWire cable

12 447 140	optional	4.5m cable for DFC340 FX, 6 to 6 pin
12 447 053		OHCI PCI FireWire card for PCs without FireWire interface
12 447 066		Laptop PCMCIA Firewire interface card
12 730 049		Laptop power kit – Power supply for use with 4-pin FireWire or npowered 6-pin FireWire

Detailed information on the product
and contact addresses can be found at

www.leica-microsystems.com/dfc340_fx

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