



# Leica DFC420

## Leica DFC420 C

Digital FireWire Color Cameras  
for Analysis and Documentation

*Leica*  
MICROSYSTEMS

# Fast and Easy Analysis and Documentation

## Stunning, High-Resolution Detail

Excellent picture quality is essential for precise image analysis, documentation, and reporting. The Leica DFC420 and DFC420 C Digital Camera systems provide detailed high-resolution pictures with outstanding accuracy and brilliant color reproduction. The exceptional picture quality and ease of use, makes these cameras the perfect choice for all analysis and documentation needs. Furthermore, the sharp images produced are absolutely true to color and free from noise effects.

## Excellent Picture Quality

The Leica DFC420 and DFC420 C are based on a 5-megapixel sensor with a resolution of up to 12.5 megapixels via Leica's advanced bicubic/interpolation algorithms. The camera's CCD signal is processed in a series of steps so that optimum signal quality is attained even before digitization occurs. These cameras digitize the image information from the CCD chip directly in the camera head, which leads to excellent noise suppression and perfect acquisition of the unprocessed CCD signal. Digitization takes place with a resolution of 12 bits and Leica's true color calibration takes care of the natural color reproduction, which produces excellent picture quality.

## Live Image Control

The camera's real-time live preview speed allows a sample to be adjusted and focused directly on a computer monitor. Focusing takes place conveniently without having to spend further time, re-adjusting the microscope's eyepieces

## Uniquely Engineered

The Leica DFC420 incorporates a three-tiered cooling system designed to eliminate thermal noise buildup in the camera. An integrated Peltier cooling system draws heat away from the CCD, eliminating excited electrons in the camera head. Leica's unique metallic camera housing with heat-dissipating fins pulls heat away from the camera. The DFC420, like all Leica cameras, uses the photo coupler as a heat dissipation conduit.

## DFC420/ DFC420 C Feature highlights

- Live image control provides fast focusing and positioning of the sample
- Provides 864 × 648 progressive scan previews of up to 15 frames per second
- 5-megapixel CCD Bayer Array RGB filter produces brilliant pictures
- Exposure times range from 1 msec to 600 sec (DFC420 C: to 600 sec)
- Features 36-bit RGB color depth
- Partial scan mode offers the fastest scanning of a freely defined area at full resolution
- Easily and quickly connects to all microscopes via a c-mount interface
- An intuitive user interface offers convenient image capture and processing functions for PC and MAC
- Two-color LED displays operational status
- Ultra compact housing saves space
- Quickly transfer images with standard FireWire 1394a interface for PC and Mac

## DFC420 C Feature highlights

- Peltier Cooling for high dynamic range and minimum noise for recordings under low light .
- 2 × 2 binning mode for increased brightness as faster frame rate in low light situations

COOLED

### Low illumination is a Snap

The DFC420 C allows crisp, sharp images to be created without noise, even under low illumination. Interfering thermal noise is effectively reduced with active cooling by means of a Peltier element. With the innovative, fast readout procedure, even high-resolution low light recording is now a reality.

### Compact Design

The camera's compact housing, specifically designed for microscopy applications, is easy to attach to the microscope. The camera is not much larger than a computer mouse and does not require an external power supply, which reduces workstation clutter.

### Easy to Use

The Leica DFC420 and DFC420 C cameras operate automatically, shutter and filter changes can be done without disturbing work at the microscope. Leica's digital technology simplifies all operations, from image capture through to image archiving, and allows digital retouching and analysis. The camera is equipped with a c-mount interface for the widest range of microscope applications.

### Intuitive solutions for PCs and MACs

The camera's software makes on-screen digital recording an undemanding process, whether you are using a PC or MAC. The easy-to-use interface is specifically designed for microscopy applications. A variety of intuitive image capture and editing functions ensure that the recorded images are immediately available for viewing and further processing.

## Equipment components

### Order numbers

12730077	Leica DFC420 camera kit
12730081	Leica DFC420 C camera kit

Each kit contains the following items:

Leica DFC Twain Software for PC  
Leica FireCam Software for Mac  
Leica Application Suite (LAS) Software for PC  
Leica IM50 Image Manager for PC  
2.5m, 6 to 6 pin FireWire cable

### Additional Items

12447053	OHCI FireWire PCI Card for PCs without FireWire interface
12447066	Laptop PCMCIA FireWire interface card
12447140	FireWire cable – 4m, 6 to 6 pin
12730180	FireWire power kit – FireWire hub with power supply for use with 4-pin FireWire or Unpowered 6-pin FireWire



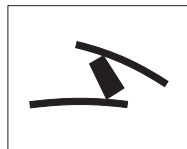
Leica DM4000 M Microscope with  
Leica DFC420 C Digital Camera running  
Leica Application Suite (LAS)

# Technical Data: Leica DFC420/ DFC420 C



Digital Camera	Leica DFC420 / DFC420 C	
Camera type	Digital camera for microscopy with control software	
Sensor	Interline transfer frame readout CCD – ICX452	
Sensor Grade/Size	Grade Zero / 8.10mm × 6.64mm, Diagonal 8.93mm (Type 1/1.8")	
Color filter	RGB Bayer mosaic	
Protective color filter	Hoya CM500 S (IR cut off 650 nm)	
Shutter control	Electronic global shutter / 3 frames interlaced readout	
Number of pixels	5 Megapixel, 2592 × 1944	
Pixel size	2.78µm × 2.78µm	
Color depth	36 bit	
A/D converter	12 bit	
Dynamic range	DFC420: > 57 dB / > 700:1 dB	DFC420 C: > 58 dB / > 800:1 dB
Readout noise	σ < 6 LSB (12 bit) typical	
Exposure time	DFC420: 1 msec – 60 sec	DFC420 C: 1 msec – 600 sec
Dark current	1.2 LSB/sec at 12 bit typical	
Gain control/Offset control	10× / 0.. 255 LSB (12 bit)	
Live image	On computer screen	
Shading correction	Yes, stored for all formats	
Brightness correction	available	
Cooling	DFC420: not available	DFC420 C: Δ–20°K to ambient
Region of interest	Freely adjustable in 2 pixels steps from 2 × 2 up to full resolution	
<b>Image Formats</b>	<b>Pixels</b>	<b>Speed f.p.s., Fast / HQ</b>
Interlaced large	2592 × 1944	5/2.5
Interlaced medium	1728 × 1296	7.5/3.7
Progressive large	864 × 684	14.9/7.5
Progressive medium	576 × 432	45/ 22
2 x 2 Binning only DFC420 C	576 × 432	45/ 22
Modes	Formats in Fast (29.5MHz) or High Quality (14.75MHz) modes as indicated above, trigger or free running	
<b>Computer</b>	<b>PC</b>	<b>MAC</b>
Min. computer configuration	Pentium 4, 2.5 GHz, 1GB RAM 24 Bit graphics, 1024 × 768, CD-ROM drive 4-pin or 6-pin FireWire OHCI or free PCI slot	G4, G5, Intel Duo 512MB RAM CD-ROM drive
Supported operating systems	Windows 2000, Windows XP	MAC OSX
Software	Leica DFC Twain Leica LAS Software Leica Image Manager	Leica FireCam
<b>Interfaces</b>		
Optical	c-mount	
Recommended video adapter	0.5 or 0.55×	
Data	Single cable FireWire – IEEE1394a 6-pin	
Digital Input connector	Opto-decoupled trigger	
Digital Output connector	Flash synch or readout active	
Software trigger	Async trigger	
Operation status	Green / Yellow LED	
<b>Physical and Environmental</b>		
Power consumption	DFC420: ~4 W	DFC420 C: ~6 W
Power supply	Via FireWire cable	
Housing	Aluminum die cast	
Size	DFC420: 112 × 74 × 69mm <sup>3</sup>	DFC420 C: 132 × 74 × 69mm <sup>3</sup>
Weight	DFC420: 340g	DFC420 C: 495g
Operating temperature range	+5 to +35°C	
Relative humidity	10%..80% non-condensing	

Winner 2005



Innovationspreis  
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[www.leica-microsystems.com/DFC420\\_DFC420 C](http://www.leica-microsystems.com/DFC420_DFC420 C)

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