



# Leica DFC400

**High Performance Digital FireWire Color Camera System  
for Professional Microscopy**

Living up to Life

**Leica**  
MICROSYSTEMS

# Ultra High Speed Photography

Excellent picture quality is essential from initial setup, through to documentation and reporting. The Leica DFC400 digital camera system provides images with the highest color fidelity, speed and detail. The camera is ideal for precise image analysis in industry, research and life science applications.

## **High sensitivity, excellent color and real-time readout**

Speed is an essential factor for demanding image analysis applications. Particularly when creating a Mosaic or during z-Stacking whereby hundreds of single sample images are processed.

Thanks to state-of-the-art CCD technology, the new camera system achieves maximum frame rates of up to 20 fps in full frame mode and an astonishing 40 fps when you select color binning mode or a smaller region of interest.

The highly sensitive image sensor allows you to acquire image streams at short exposure times in perfect color and high dynamic range. The Leica DFC400 is the ideal solution for excellent results in all image analysis applications.

## **High-performance Leica LAS software**

The Leica Application Suite software included in the scope of supply offers numerous functions for recording and retouching images. Beginners as well as experienced users can thus use the full potential of the digital technology. The captured images can be edited, printed out and reproduced as often as you wish without any loss in quality.

The TWAIN driver included in the delivery can be used to transfer photographs to other image editing programs without any problems. In addition, intelligent camera options allow you to conveniently set up the camera parameters. Leica cameras have automatic white balance and advanced illumination control and are thus ready to produce perfect images in seconds.



Leica Z16 APO A with motorized IsoPro™ stage and Leica DFC400

Creating crisp, sharp images has never been easier with the new Leica Application Suite (LAS) software. LAS features automatic functions for microscope setup and calibration, annotation, and measurements. When LAS is used with an automated microscope, you can store and recall camera and microscope parameters to exactly reproduce previously made pictures. Digital data can also be analyzed, modified, evaluated and integrated into reports quickly and easily.

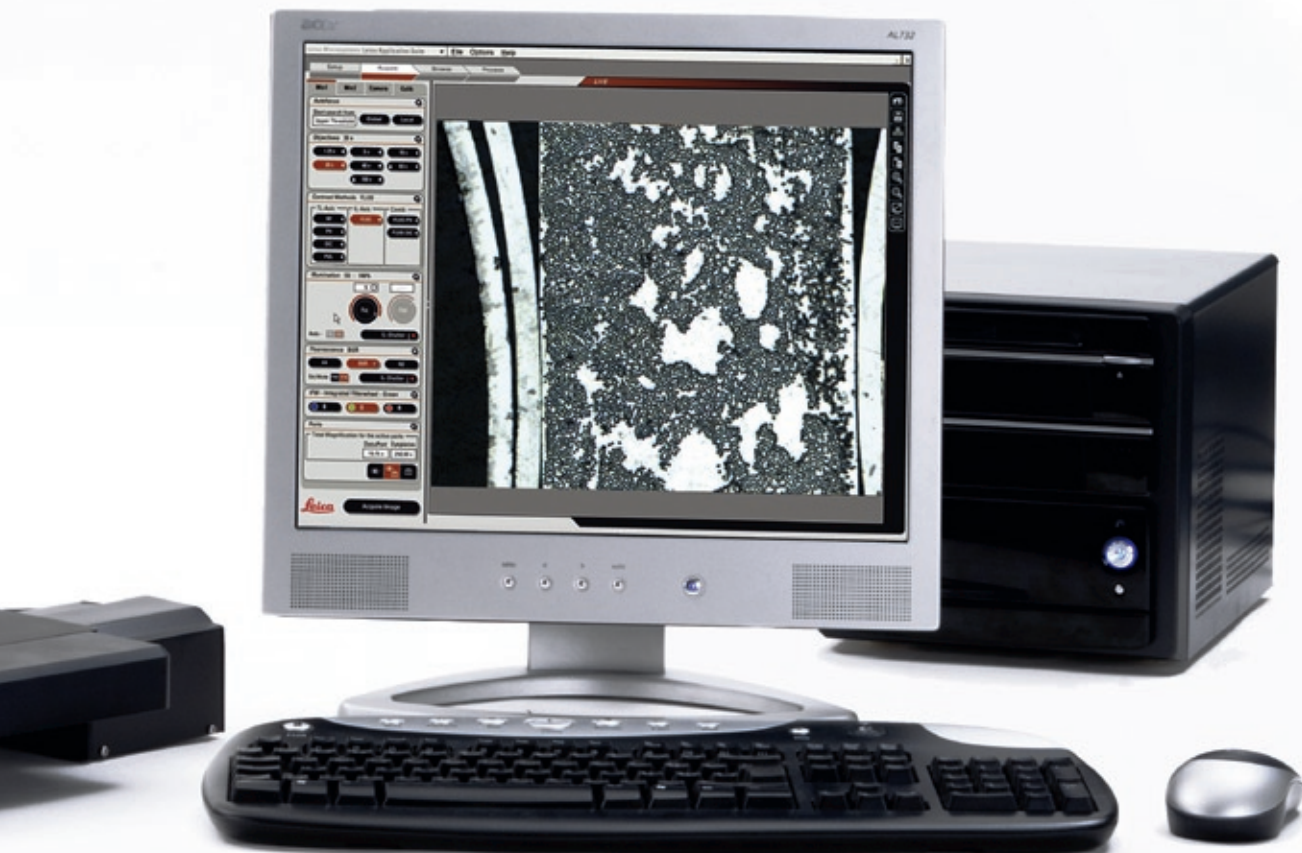
#### **Intuitive solutions for PC**

The camera's software makes digital recording on the screen quick and easy, when used on a PC. The easy-to-use interface is specifically designed for microscopy applications. Numerous intuitive image capture and editing functions ensure that recorded images are immediately available for viewing and processing, offering the highest quality and full use of all the benefits of digital technology.

#### **Advantages**

- 0.5" interline progressive scan CCD with highly sensitive 1.4 megapixel resolution
- 40 frames per second for binning mode, 20 fps in full frame mode
- High linearity over the whole dynamic range and minimum noise
- Progressive scan of each exposure provides complete full images without disturbing horizontal skipping artefacts as known from interlaced image sensors
- 12 or 8 bit digitizing option allows the selection of the right degree of detail for the particular application.
- Partial Scan Mode: Ultrafast read-out of definable areas at full resolution, also in combination with binning
- Camera power supply and fast data transfer via FireWire IEEE1394 b
- Trigger port for exact synchronization
- Shutter speeds from 4 $\mu$ s to 60 seconds
- Easy installation on to the microscope
- Full system integration in Leica Application Suite
- Control of camera via Twain Interface

**DFC400**



# Technical Data: Leica DFC400

| <b>Digital camera</b>              |   |
|------------------------------------|---|
| Camera type                        | Digital camera for microscopy with control software                                     |
| Sensor                             | Progressive Scan CCD, IXC267  |
| Sensor grade/size                  | 6.4 mm × 4.8 mm (type 1/2)  |
| Color filter                       | RGB Bayer mosaic  |
| Protective color filter            | Hoya CM500S (IR cut-coating filter at 650 nm)   |
| Shutter control                    | Electronic global shutter/Progressive scan readout                                      |
| Number of pixels                   | 1.4 megapixel, 1392 × 1040  |
| Max. scalable resolution (only PC) | 3.1 megapixel, 2088 × 1560  |
| Pixel size                         | 4.65 μm × 4.65 μm   |
| Color depth                        | 36 Bit  |
| A/D converter                      | 12 Bit  |
| Dynamic range                      | Type > 58 dB / 800:1  |
| Readout noise                      | $\sigma < 7$ LSB (12 bit) typical   |
| Exposure time                      | 4 μsec – 60 sec   |
| Gain control/Gain                  | 1× – 10× / 0-20 dB  |
| Shading correction                 | Yes, stored for all formats   |
| Region of interest                 | Freely adjustable in 2-pixel steps from 2 × 2 up to full resolution                     |
| Live image                         | HQ (20 MHz) <span style="float: right;">fast (40 MHz)</span>                            |
| Full frame - 1392 × 1040           | 10 <span style="float: right;">20</span>  |
| 2 × 2 binning - 696 × 520          | 19 <span style="float: right;">39</span>  |
| Minimum system requirements PC     | Pentium 4, 2.5 GHz, 1 GB RAM, 24-bit graphics card, CD drive, FireWire or free PCI slot |
| Supported operating systems        | Windows XP Service Pack2, Windows Vista (Ultimate recommended)                          |

| <b>Interfaces</b>                 |                                 |
|-----------------------------------|---------------------------------|
| Optical                           | C-mount                         |
| Recommended video adapter         | 0.5× or 0.63×                   |
| Digital output                    | FireWire IEEE1394b 9-pin        |
| <b>Physical and Environmental</b> |                                 |
| Power consumption                 | ~4W                             |
| Power supply                      | via FireWire cable              |
| Housing                           | Aluminum die cast               |
| Size                              | 112 × 74 × 68.4 mm <sup>3</sup> |
| Weight                            | 340g                            |
| Operating temperature             | +5 °C - +50 °C                  |
| Relative humidity                 | 10%..90% non-condensing         |

| <b>Order numbers</b> |   |
|----------------------|---|
| 12 730 203           | Leica DFC400 Camera kit comprising: Leica DFC400 Camera, Leica software, FireWire cable a-b |
| 12 447 053           | OHCI-PCI FireWire card for PCs without FireWire interface                                   |
| 12 447 066           | PCMCIA FireWire interface for laptops   |
| 12 730 186           | FireWire cable, 3m, b-b, 9/9-pin  |
| 12 730 187           | FireWire cable, 3m, a-b, 6/9-pin  |
| 12 730 188           | FireWire Power kit comprising: 110/220V power pack for 4-pin FireWireA or 6-pin FireWireA   |