



Leica DFC310 FX

High Sensitive Digital Color Fluorescence Camera

Living up to Life

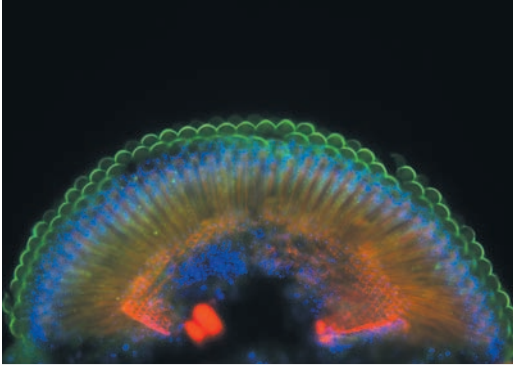
Leica
MICROSYSTEMS

Fast Acquisition of

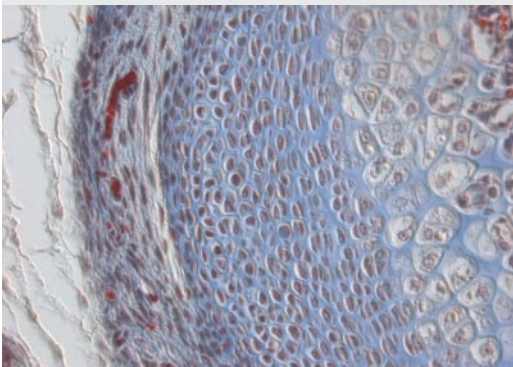
The digital color camera Leica DFC310 FX is designed for demanding applications in cell biology, developmental biology, and medicine. Stained histological sections as well as fluorescence labelled specimens can be documented with highest color fidelity. Active cooling of sensor elements using a Peltier element creates noise-free images even at the lowest light intensities. Moreover, various acquisition modes such as binning allow for the precise monitoring of fast dynamic processes in living cells: the new Leica DFC310 FX is ideally suited for GFP-expressing or vital stained micro and macro specimens.

Colorful documentation

Due to its 36 bit color depth and the option of automated white balance, stained specimen or macro specimen can be documented with highest color fidelity. The 1392 x 1040 pixel of the Leica DFC310 FX ensure that even the faintest detail is captured.



Cross section of Drosophila eye, triple fluorescence



Tadpole endothelium, Differential Interference Contrast



GFP-expressing embryos of zebrafish.
Courtesy of: Dr. Brant Weinstein, National Institutes of Health, Bethesda, MD



Fluorescence Images

High quality fluorescence images

At the heart of the Leica DFC310 FX is a 2/3" progressive scan interline sensor. The broad dynamic range is a prerequisite for the simultaneous capture of dark (non-labeled) and bright (fluorescent labeled) areas in the specimen. Even faint labeled probes can be displayed due to the high sensitivity of the new Leica DFC310 FX. The cooling of the chip effectively reduces the noise level of the signal.

Capture motion with precision

In Partial Scan Mode, freely definable areas can be captured with precision. The extremely high scanning frequency allows efficient documentation of 3D moving objects at full camera resolution. The camera delivers up to 71 images per second in 4 x 4 binning mode. The top scan rate allows fast focusing using the monitor and perfect parameter adjustment. At the same time, specimen photobleaching is avoided. Recording can also be performed in high resolution mode.

Intuitive imaging solutions for PC and MAC

The software that accompanies the camera ensures fast and easy capturing of digital images. The Leica DFC310 FX is PC or MAC compatible, and the camera is easy to operate using an interface specifically designed for microscopy applications. Numerous intuitive image capture and editing functions ensure immediate availability of high quality recorded images for viewing and processing. The new Leica DFC310 FX allows all the advantages of digital technology to be fully utilized.

The automated research microscope Leica DM6000 B with the digital color camera Leica DFC310 FX and Leica Application Suite software.



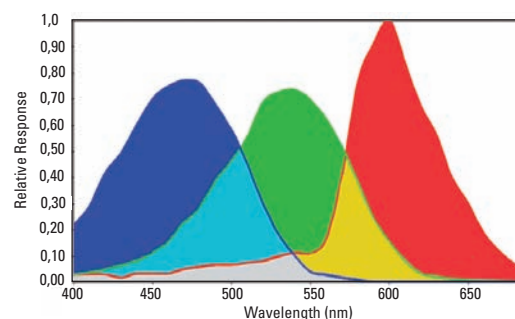
Many advantages for your research application

- 1.4 megapixel CCD with Bayer Array RGB Filter
- 36 Bit RGB color depth
- High linearity over the complete dynamic range
- Variable exposure times (4 μ sec – 10 min)
- Due to active cooling of the sensor minimized noise levels
- Binning mode ideal for fast acquisition of living cells
- Partial Scan Mode allows fastest readout of free definable regions of interest (ROI)
- Up to 71 frames per second
- FireWire b interface for fast data transfer
- For PC and MAC environment
- Easy to use software features useful functions for acquisition and processing

Equipment Components

Order No.

- | | |
|------------|------------------------------------|
| 11 547 001 | Leica DFC310 FX camera set for MAC |
| 11 547 002 | Leica DFC310 FX camera set for PC |



Quantum efficiency of Leica DFC310 FX (acquired with Twain, white balance applied)

Technical Data: Leica DFC310 FX

| Digital Camera | | Leica DFC310 FX | |
|----------------------------------|---|---|--|
| Camera type | Digital color high-sensitivity cooled camera for fluorescence microscopy with control software | | |
| Sensor | Interline progressive scan CCD – ICX285 EXview HAD CCD sensor | | |
| Sensor grade/size | Grade Zero/10.2 mm x 8.3 mm, diagonal 11 mm (Type 2/3) | | |
| Color filter | RGB Bayer mosaic | | |
| Protective color filter | Hoya CM500S (IR cut-off at 650 nm) | | |
| Shutter control | Electronic global shutter/progressive scan readout | | |
| Number of pixels | 1.4 megapixel, 1392 x 1040 | | |
| Max. scaled resolution (PC only) | 3.3 megapixel, 2088 x 1560 | | |
| Sensitive area | 9 mm x 6.7 mm | | |
| Pixel size | 6.45 µm x 6.45 µm | | |
| Color depth | 36 Bit | | |
| A/D converter | 12 Bit | | |
| Dynamic range | > 62 dB (typical) | | |
| Readout noise | < 3 LSB (12 Bit) typical | | |
| Full well capacity | 16000 electrons | | |
| Exposure time | 4 µsec. – 10 min. | | |
| Dark current | 0.04 e-/pixel/sec at 12 Bit typical | | |
| Quantum efficiency (relative) | Blue 470 nm 77%; Green 530 nm 73%; Red 600 nm 100% | | |
| Offset control | 0 – 255 LSB (12 Bit) | | |
| Live image | On computer screen | | |
| Shading correction | Yes, stored for all formats | | |
| Brightness correction | On all binning modes | | |
| Cooling | Active Peltier thermoelectric cooling element | | |
| Cooling temperature | Δ – 20°K to ambient | | |
| Region of interest (ROI) | Freely adjustable in 1 pixel steps from 1 x 1 up to full resolution | | |
| Image Formats | Pixels | Speed f.p.s. | |
| Full frame fast | 1392 x 1040 | 20 | |
| Full frame HQ | 1392 x 1040 | 10 | |
| Binning 2 x 2 fast | 696 x 520 | 39 | |
| Binning 2 x 2 HQ | 696 x 520 | 19 | |
| Binning 4 x 4 fast | 348 x 260 | 71 | |
| Binning 4 x 4 HQ | 348 x 260 | 35 | |
| Modes | Formats in fast (40 MHz) or high quality (20 MHz) modes as indicated above, trigger or free running | | |
| Computer | PC | MAC | |
| Min. computer configuration | Pentium 4, 2 GHz, 512 MB RAM 24-Bit graphics, 1024 x 768 CD-ROM drive 9-Pin FireWire-OHCI or free PCI slot | G4 or G5, 512 MB RAM CD-ROM drive | |
| Supported operating systems | Windows XP, Vista (32 and 64 bit) | MAC OS 10.4 and 10.5 | |
| Software | Leica DFC Twain (6.12) | Leica Firecam | |
| Interfaces | | | |
| Optical | C-Mount | | |
| Recommended video adapter | 0.7x | | |
| Data | Single cable FireWire – IEEE1394b 9-pin | | |
| Digital input connector | Opto-decoupled trigger | | |
| Digital output connector | Flash Sync or readout active | | |
| Software trigger | Async trigger | | |
| Physical and Environmental Data | | | |
| Power consumption | ~5 W | | |
| Power supply | Via FireWire cable | | |
| Housing | Aluminium die cast | | |
| Size | 132 x 74 x 69 mm | | |
| Weight | 503 g | | |
| Operating temperature range | +5 – +35°C | | |
| Relative humidity | 10% to 80% non-condensing | | |