Leica IC D

Compact, Integrated Digital Camera for Stereomicroscopes

Leica
MICROSYSTEMS

Leica IC D – Compact, Powerful, User-friendly

The Leica IC D digital FireWire camera is a powerful imaging system in a small package. Its 3.3 Megapixel sensor along with APOchromatic lens correction allow beautiful color images to be captured. The IC D attaches to Leica M-Series stereomicroscopes as well as many competitors' stereoscopes. This digital camera is the perfect solution for professional imaging, archiving, analysis, processing, presentation, and printout. In addition, training other users on microscopic techniques is easy and comfortable since the IC D sends images to both stereo eyepieces and the camera simultaneously.

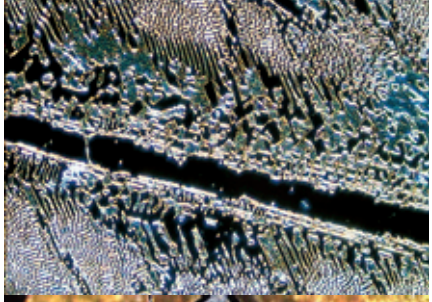
Compact design

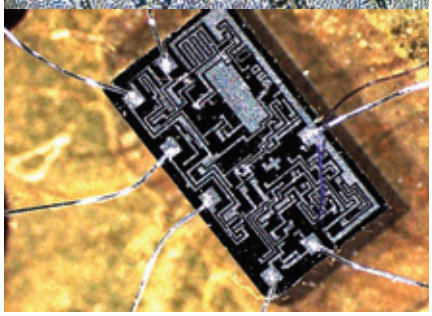
The Leica IC D camera is positioned between the binocular head and the zoom optics, which eliminates the need for additional phototubes and C-mount adapters. This makes the IC D solution cost-effective while making the stereoscope slimmer, more compact, and, thereby, more ergonomic. Further, there is only one cable required for connection of the IC D to a laptop or desktop computer, which keeps the workplace tidy.

Feature highlights

- Low-noise high-performance CCD sensor without pixel error
- 3.3 Megapixel chip CCD with Bayer Array RGB filter
- Resolution of 2088 × 1550 pixels, interpolated up to 7.3 Megapixel = 3132 × 2325 pixel
- Color depth up to 36-bit RGB
- Fast data transfer using a single standard FireWire connection (IEEE 1394a)
- Live window for quick focusing and specimen
- Exposure time between 230 µs and 30 s
- Simple connection to all Leica M-Series stereomicroscopes without the need for C-mounts
- Intuitive user interface with practical functions for image archiving and processing
- Perfect X-Y sensor adjustment for image stitching (compiling of several individual images into one larger image)

Leica MZ9$_5$ stereomicroscope with integrated Leica IC D digital camera





Powerful performance
The 3.3 Megapixel RGB sensor of the IC D provides a resolution of 2088 × 1550 pixels (interpolated up to 7.3 Megapixels = 3132 × 2325 pixels) which perfectly blends speed, manageable image size, and image quality. Light captured by the IC D's sensor is directly converted to a 12 bit digital signal in the camera head, which ensures the richest color detail. Further, advanced color algorithms in the IC D guarantee true color reproduction and excellent image quality.

Leica IC D FireWire technology allows high data transfer speed to the computer without a loss of information or image when viewed at the monitor.

User-friendly software
When you purchase a Leica IC D digital camera, free software is provided to operate this imaging system. Beyond simply capturing and archiving images, this software allows users the ability to display live or captured images in full-screen mode for training new users or simply making the image easier to see. Auto-exposure can be turned on to save time spent adjusting the image brightness via the mouse. In addition, there is a Zoom Focus window available in the live image, which allows users to adjust the focus in real time independent from the microscope's eyepieces.

When it is time to ask more from your IC D camera, Leica offers add-on software modules. These range from a Movie Maker package, which is helpful when viewing a moving process or teaching a procedure, to a live, on-screen Reticule package, which projects scale bar or comparison picture overlays on the live image.

The Leica IC D is also compatible with imaging programs, other than those provided by Leica, via a TWAIN interface. Thus, software such as Adobe Photoshop can be used to operate the IC D.

Technical data for Leica IC D

Camera type	Digital camera for Leica M-Series stereomicroscopes with control software	
Sensor	Interline Transfer Frame Readout CCD - ICX252AQ	
Sensor type	Grade Zero	
Color filter	RGB Bayer Mosaic	
Protective filter	Hoya CM500S (IR cut-off at 650 nm)	
Shutter control	Global electronic shutter/interlaced scan mode	
Number of pixels	3.3 Megapixel 2088 × 1550 / max. interpolated resolution 7.3 Megapixel 3132 × 2325	
Sensitive area	7.2mm × 5.35mm	
Pixel size	3.45µm × 3.45µm	
Color depth	36 bit	
A/D converter	12 bit	
Dynamic range	> 57 dB	
Read-out noise	≦ 6.0 LSB (12 bit) typical	
Exposure time	230µs – 30s	
Dark current	1.2LSB/s at 12 bit typical	
Relative quantum efficiency	Blue 465 nm 98%; green 530 nm 100%; red 610 nm 94% (sensor only)	
Gain control/offset control	10× / 0.. 255 LSB (12 Bit)	
Live image	On computer screen for all formats	
Shading correction	Yes, stored for all formats	
Brightness correction	In all color binning modes	
Cooling	Passive heat dissipation via metal housing	
Regions of Interest (ROI)	Freely adjustable in 2-pixel increments of 2 × 2 until the complete resolution	
Image formats	**Pixel**	**Images per second Fast / HQ**
Full image Color or monochrome	2088 × 1550	5 / 2.5
2 × 2 Binning color or monochrome	1044 × 772	10 / 5
3 × 3 Binning color or monochrome	696 × 514	15 / 7.5
4 × 4 Binning color or monochrome	520 × 384	20 / 10
Progressive sub-sample	696 × 516	33 / NA
Progressive R or G B monochrome	1044 × 775	10 / 5
Modes	Formats in fast (20MHz) or high-quality mode (10MHz), see above	
Computer		
Minimum requirements PC Hardware	Pentium 4 with 2GHz, 512MB RAM, 24-bit graphics card, 1024 × 768, CD-ROM drive, onboard 1394a FireWire OHCI or free PCI slot for FireWire PCI card	
Supported operating systems	Windows 2000, Windows XP	
Software	Leica DFC Twain	
Interfaces		
Optical	Compatible with stereomicroscopes of series M	
Recommended video adapter	Not required, integrated camera housing	
Data	Single cable FireWire – IEEE1394a 6-pin	
Technical data and operating environment		
Energy consumption	~ 6 W / external power supply: None, supply via FW	
Housing	Aluminum die cast	
Dimensions	129.5 × 97.5 × 40.0mm³ / Weight 550g	
Permissible temperature range	+10 to +35°C	
Relative humidity	10% to 80% non-condensing	

Order numbers	
12 730 054	Leica IC D camera kit consisting of:
10 447 363	Leica IC D camera
12 447 120	2m, 6-pin to 6-pin FireWire cable
12 447 119	Leica DFC Twain software
Optional accessories	
12 447 053	OHCI FireWire PCI card for PC without FireWire interface
12 447 066	Laptop PCMCIA FireWire interface card
12 730 049	Laptop Kit (4-6-pin cable + external power supply)

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