Leica DFC295 & DFC290 HD

Microscope Cameras for Efficient and Comfortable Documentation



Fast and Easy Presentation and Documentation

The Leica DFC295 and DFC290 HD are powerful digital color cameras for real-time image capture. These latest generation cameras use state-of-the-art innovation in the area of digital imaging and permit precise documentation and presentation of microstructures. Leica technologies are continuously developed with the aim of making even the most complex photography applications as user friendly as possible. Furthermore, the cameras can be integrated with almost any microscope system. Whether for documentation, presentation or critical analysis – there is a Leica microscope camera available for every application.

In contrast to the Leica DFC295, the DFC290 HD has an additional HDMI interface on which a live image can be displayed parallel to the FireWire interface (Dual Live Stream). As soon as you connect an HD-compatible display device (projector, monitor or flat screen TV), you can view the live image on the PC screen as well as on the additional HD screen in previously unattainable quality.

HIGH-RESOLUTION IMAGES

The Leica DFC295 and DFC290 HD cameras provide sharp, high-contrast images that are extremely true to detail. Correct color reproduction, exact image geometry, and precise dimensioning provide optimal image analysis, measurement and image processing results. The core of the camera is a sensitive 1/2" CMOS sensor with 3 Megapixel resolution.

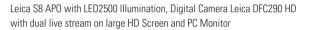
FAST LIVE PREVIEW

The Leica cameras allow you to take flicker-free live images in real time. You can also focus and align the images directly at the PC. The microscope image appears on the monitor with practically no delay in full camera resolution and at a rate of up to 25 images per second (depending on the size of the live video and the exposure time).

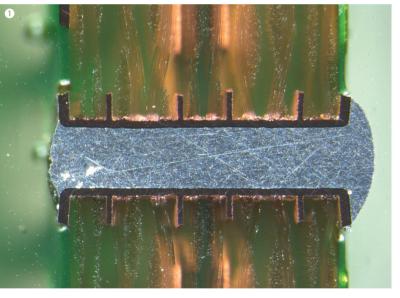
SAVING IMAGE SETTINGS

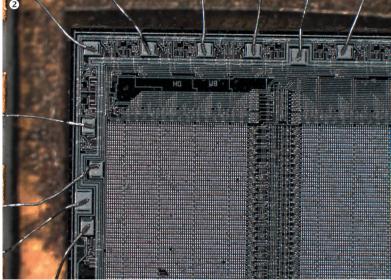
White balance and image brightness are regulated for the entire image, which also ensures exact reproduction. Alternatively, you can define a freely selectable region of interest for the gray balance. The online histogram permits precise setting of the gamma, contrast, and brightness values. Individual image settings can be saved in configuration files, and recalled at any time















HIGH-PERFORMANCE LEICA LAS SOFTWARE

Leica Application Suite (LAS) integrates Leica microscopes, macroscopes, digital cameras, and software into one common environment to provide an easy-to-use and consistent imaging solution with unrivalled performance. The versatility of LAS makes it suitable for a diverse range of life science and industrial applications such as materials quality control, pathology, pharmaceutical testing, and many more. LAS accelerates the visualization, enhancement, measurement, documentation and archiving of digital images. This powerful software solution can control all functions of Leica Compound Microscopes, Stereomicroscopes, and Macroscopes. By providing all the necessary tools for the installed applications to communicate with each other as well as with peripheral devices connected to the computer, LAS simplifies routine and research analysis.



THE HD REVOLUTION!

High Definition with regard to image and color quality goes far beyond anything previously experienced. The result is pin-sharp images, true to detail and with excellent color reproduction. HD technology provides up to five times more detail richness than all previous formats — with a clarity and resolution that will reveal previously hidden details.

720P HD READY

This format achieves approximately double the detail resolution of PAL or NTSC video formats.

1080P FULL HD

This superior format offers the currently best available resolution and detail sharpness on Flat Panel TVs and Full HD projectors.

LEICA DFC295 & LEICA DFC290 HD:

- Fast, full-color live image capture in real time
- > 3 Megapixel standard resolution (2048 × 1536 pixel
- ing on monitor size and exposure time)
- Various image sizes from small (VGA) to very large (7 MPx)
- → CMOS sensor with Bayer Array RGB
- Large pixels for high sensitivity
- Shading correction for live image and captured image
- → FireWire-B interface

LEICA DFC290 HD ONLY:

- HDMI output for direct display on HD monitors,
 Flat Screen TVs or HD projectors
- > CIE Lab color processing in the camera head
- Autonomous image output without PC possible
- Simultaneous live image display on PC monitor (FireWire) & HD Screen (HDMI)





Technical Details

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DIGITAL CAMERA

Camera type	Digital camera for microscopy with control software	
Sensor	Progressive Scan CMOS, Micron (MT9T001)	
Sensor grade/size	6.55 mm × 4.92 mm (type 1/2)	
Color filter	RGB Bayer mosaic	
Protective color filter	Hoya CM500S (IR cut-coating filter at 650 nm)	
Shutter control	Electronic rolling shutter / Progressive scan readout	
Number of pixels	3 Megapixel, 2048 × 1536	
Max. scalable resolution (only PC)	7 Megapixel, 3072 × 2304	
Pixel size	3.2 μm × 3.2 μm	
Color depth	30 bit	
A/D converter	10 bit	
Dynamic range	> 55dB / 600:1	
Readout noise	σ < 1.8 LSB (10 bit) typical	
Exposure time	0.1 msec - 2 sec	
Gain control / Gain	1× - 4× / 0 - 12 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 SPEED	LEICA	DFC295		LEICA DFC290 HD	
Image formats*	fast (49 MHz)	HQ (24.5 MHz)	Image formats	fast (49 MHz)	HQ (24.5 MHz)
2048 × 1536 — Full frame	12	6	2048 × 1536 — Full frame	9	_
1600 × 1200 — UXGA Center Scan	16	9	1920 × 1080 - 1080p	12	_
1280 × 1024 — SXGA Center Scan	18	13	1600 × 1200 - UXGA	12	_
1024×768 – XGA	22	17	1280 × 960 - SXGA	22	12
640×480 - VGA	35	25	1280 × 720 — 720p	20	_
			1024 × 768 — XGA	24	12
			640×480 - VGA	32	_

* with FireWire B interface, 5 msec exposure time, in frames per second fps

COMPUTER

Min. Computer configuration

Intel Core 2 Duo 2.4 GHz, or faster 2 GB RAM, high res graphic card with 128 MB or 256 MB RAM, Direct X V9c or V10 FireWire-B port or free PCI-express slot DFCTwain, Leica LAS Software Windows 7 Prof. or Ultimate, 32 or 64-bit Windows Vista SP2, 32-bit only Windows XP, SP3, 32-bit only

INTERFACES

 Optical
 C-mount

 Recommended video adapter
 0.5× or 0.55×

 Reight Institute
 Figure 15554204 Regard (URAM) 1.2 for REGGE

Digital output FireWire IEEE1394-B 9-pin (HDMI 1.3 for DFC290 HD only)

PHYSICAL AND ENVIRONMENTAL

 Power consumption
 ~ 4W

 Power supply
 via FireWire cable

 Housing
 Aluminum die cast

 Size
 112 × 74 × 68.4 mm

 Weight
 340 g

 Operating temperature
 -5° C to +50° C

 Relative Humidity
 10% - 90% non-condensing

Assembly Diagram

Cables

12 730 186 FW-B-B, 2.5 m 12 730 211 HDMI-Cable, 3 m

FireWire-Cards

12 730 210 FW-B. PCI-Express 12 730 446 Notebook Kit FW-B 12 730 447 FW-B, PCI-Express Low Profile



11 541 544* 11 541 543 10 445 929* 10 447 367 0.55× 0.7× 0.5× 0.63× *recommended Compound Stereomicroscopes

DFC295

12 730 469

ORDER NUMBERS

12 730 469 ①	LEICA DFC295 Camera kit comprising: Leica DFC295 Camera, PCI-Express FireWire-B card, FireWire B-B cable, 2.5 m, Leica SW
12 730 468 2	Leica DFC290 HD Camera kit comprising: Leica DFC290 HD Camera, PCI-Express FireWire-B card, FireWire B-B cable, 2.5 m, HDML-cable 3 m, Leica SW

The statement by Ernst Leitz in 1907, "with the user, for the user," describes the fruitful collaboration with end users and driving force of innovation at Leica Microsystems. We have developed five brand values to live up to this tradition: Pioneering, High-end Quality, Team Spirit, Dedication to Science, and Continuous Improvement. For us, living up to these values means: Living up to Life.

INDUSTRY DIVISION

The Leica Microsystems Industry Division's focus is to support customers' pursuit of the highest quality end result. Leica Microsystems provide the best and most innovative imaging systems to see, measure, and analyze the microstructures in routine and research industrial applications, materials science, quality control, forensic science investigation, and educational applications.

ORDER NUMBERS (OPTIONS/EXTRAS)

Microscopes

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12 730 210	4	PCI-Express FireWire-B card for PCs without FireWire (3 ports)
12 730 447	4	PCI-Express FireWire-B card for PCs without FireWire (2 ports) low profile
12 730 466	4	FireWire-B notebook kit, comprising of PCI-Express card (2 ports), power supply 100-240 V, FireWire-A-B adapter
12 730 186	6	FireWire B-B cable, 2.5 m, 9/9-Pin
12 730 211	6	HDMI-cable 3 m

DFC290 HD 🙆

12 730 468

Leica Microsystems – an international company with a strong network of worldwide customer services:

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Canada · Concord/Ontario	+1	800 248 0123	847 405 0164
Denmark · Ballerup	+45	4454 0101	4454 0111
France · Nanterre Cedex	+33	811 000 664	1 56 05 23 23
Germany · Wetzlar	+49	64 41 29 40 00	64 41 29 41 55
Italy · Milan	+39	02 574 861	02 574 03392
Japan · Tokyo	+81	3 5421 2800	3 5421 2896
Korea · Seoul	+82	2 514 65 43	2 514 65 48
Netherlands · Rijswijk	+31	70 4132 100	70 4132 109
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· Shanghai	+86	21 6387 6606	21 6387 6698
Portugal · Lisbon	+351	21 388 9112	21 385 4668
Singapore	+65	6779 7823	6773 0628
Spain · Barcelona	+34	93 494 95 30	93 494 95 32
Sweden · Kista	+46	8 625 45 45	8 625 45 10
Switzerland · Heerbrugg	+41	71 726 34 34	71 726 34 44
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