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.

❶ Cross section of a soldered joint
❷ Inspection of bonding wires
❸ Damaged metal device
❹ Head of an insect

Leica S8 APO with LED2500 Illumination, Digital Camera Leica DFC290 HD
with dual live stream on large HD Screen and PC Monitor
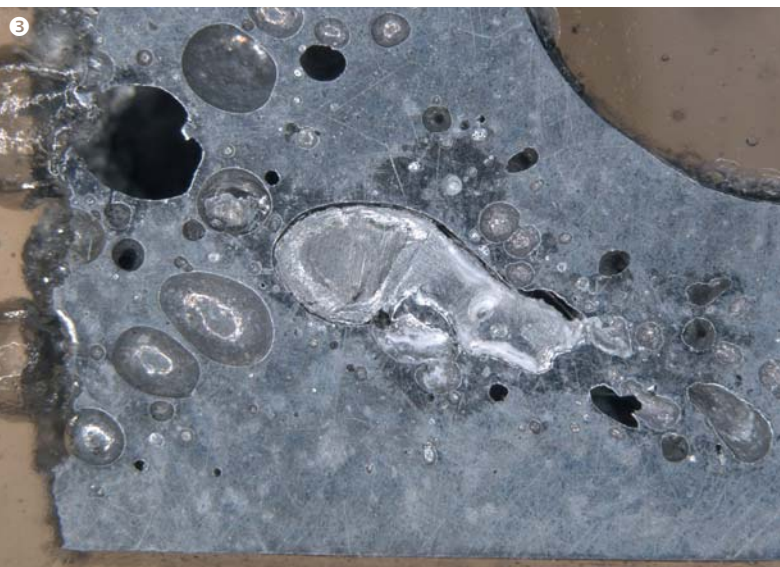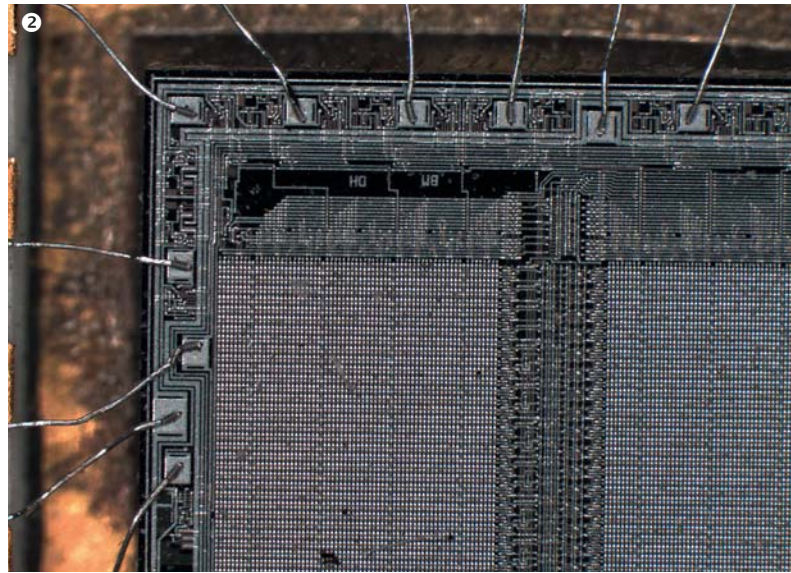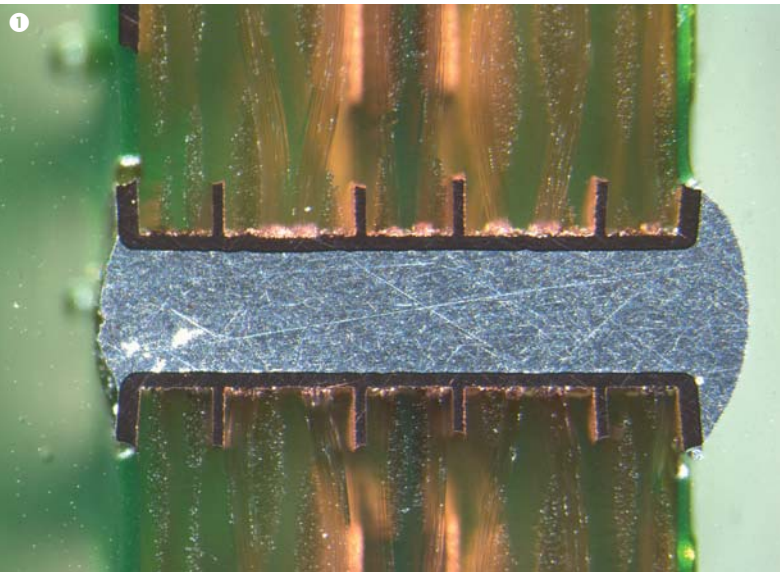
HIGH-PERFORMANCE LEICA LAS SOFTWARE

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)
› 1024 × 768 live preview with up to 25 images per second (depending 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

DIGITAL CAMERA	LEICA DFC295 / LEICA DFC290 HD
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	$\sigma < 1.8$ 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×
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

❶ **DFC295**
12 730 469

DFC290 HD ❷
12 730 468

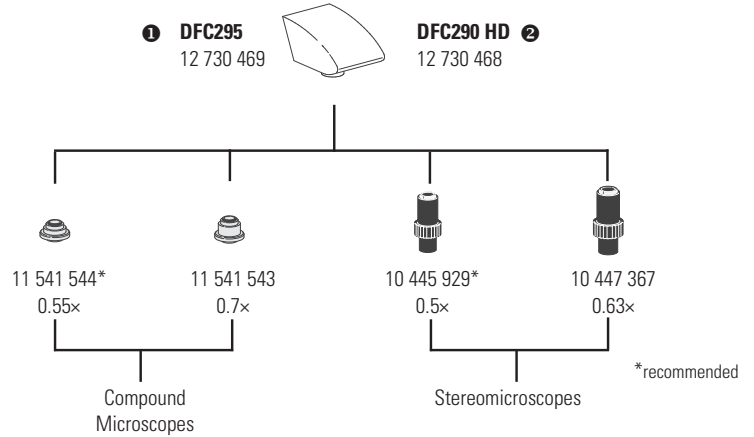❸ **Cables**
12 730 186 FW-B-B, 2.5 m
12 730 211 HDMI-Cable, 3 m

❹ **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*
0.55×

11 541 543
0.7×

10 445 929*
0.5×

10 447 367
0.63×

*recommended

Compound
Microscopes

Stereomicroscopes

ORDER NUMBERS	
12 730 469 ❶	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 ❷	Leica DFC290 HD Camera kit comprising: Leica DFC290 HD Camera, PCI-Express FireWire-B card, FireWire B-B cable, 2.5 m, HDMI-cable 3 m, Leica SW

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

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.

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