

HASSELBLAD H4D^{200MS}

Hasselblad has raised the bar yet again concerning the capture of super high-quality images. Building on the achievements and success of the H4D-50MS, a new clever development of the multi-shot capture technology takes still-life studio photography to mind blowing 200Mpix resolution. From fine cars to miniature artworks and from delicate fabrics to diamonds – or quite simply where only the best reproduction is acceptable – the 200Mpix multi-shot image offers true color and moiré free capture, providing an astonishing level of detail.

As if that was not enough, this new camera still claims all the advantages of the H4D line – True Focus, Ultra Focus, Digital Lens Correction plus a host of top of the range features that make the H4D such an outstanding camera system – so it can double up as a top flight, hand held single-shot workhorse as well. Versatility was always a Hasselblad cornerstone.



Three cameras in one

The H4D-200MS includes three capture modes:

- normal single-shot capture delivering 50Mpix resolution images of live subjects
- multi-shot capture (4 shots) delivering 50Mpix high detail images of still subjects outperforming the single-shot capture of cameras with higher resolution
- multi-shot capture (6 shots) delivering 200Mpix ultra high detail of still subjects delivering outstanding representation of the utmost level of fine detail

Non-compromising details and colors

The H4D-200MS camera uses a 50Mpix sensor mounted onto the Hasselblad patented symmetrical multi-shot frame, which accurately positions the sensor with a sub-micron accuracy using piezo-

electrical actuators. Capturing 6 shots with the sensor positioned accurately at a sequence of quadrants of the pixel, color information from the Bayer-patterned pixels is used to create a 200Mpix capture.

Ultra-Focus and Digital Auto Correction for image perfection

The H4D-200MS employs its Ultra-Focus engine to realize the full potential of the H system lens program, bringing a new level of sharpness and resolution. The Digital Lens Correction (DAC) automatically removes any chromatic aberration, distortion and vignetting when images are processed using Phocus. The design of the HCD 28mm and 35-90mm lenses have been optimized for the actual 36.7 x 49.1mm area of the sensor to make it more compact and to work in conjunction with DAC.

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All 11 members of the H system lens line use central lens shutters, which adds flexibility by allowing flash to be employed at shutter speeds up to 1/800s. The central shutter also improves image quality by reducing camera vibration. Thanks to the large format of the H System cameras, there is a considerably shallower depth of field range, making it much easier to utilize selective focus to create effect.

View-camera work

The H4D-200MS has been designed to allow the digital capture unit to be detached and used on a view camera by way of an H system adapter. In this configuration the digital capture device can work with electronic shutters from e.g. Rollei and Schneider, either stand-alone using the flash sync signal from the shutter or tethered to a computer with full control of the electronic shutter from the computer.

Medium format digital capture

In digital photography, the advantages of larger format cameras have become even more obvious. The 6x4.5 cm window allows the Hasselblad H4D-200MS to use one of the largest image sensors currently available in digital photography – up to more than twice the size of a 35mm camera sensor. Consequently the sensor holds more and larger pixels, which deliver the highest possible image quality in terms of moiré-free color rendering without gradation break-ups in even the finest lit surfaces.

A choice of bright viewfinders

One of the important traditional advantages of the medium format is the extra-large and bright viewfinder image, enabling extremely precise compositions and easy operation in low lighting. An interchangeable waist-level viewfinder, the HVM, is available for the entire range of H system cameras.

Unique Hasselblad Colors

The new Hasselblad Natural Color Solution (HNCS) enables you to produce outstanding and reliable out-of-the-box colors, with skin tones, specific product colors and other difficult tones reproduced easily and effectively.

GPS recording accessory

Hasselblad's Global Image Locator (GIL) is an accessory for any H system digital capture product. Using the GIL device all images cap-

tured outdoors are tagged with GPS coordinates, time and altitude. This data is key to a number of future applications involving image archiving and retrieval. One example is the direct mapping of images within the Phocus software to Google Earth.

Modes of operation and storage

The Hasselblad H4D-200MS offers a choice of storage devices: CF cards or a computer hard drive. With these two operating and storage options, you are able to select a mode to suit the nature of the work in hand, whether in the studio or on location.

Phocus for professional level workflow

Phocus provides an advanced software toolbox that has been especially designed to achieve optimum workflow and absolute image perfection from Hasselblad raw image files.

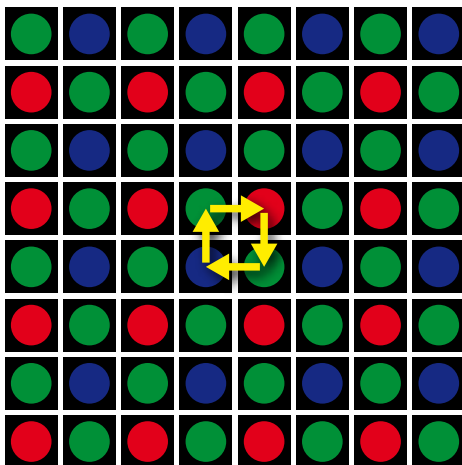
With the H4D-200MS camera system Phocus provides:

- **Uncompromising Image Quality**
- **Special extended camera controls** with which to operate your H4D-200MS camera. These features, such as live video for easier shot set-up and workflow, or the ability to control the lens drive for focusing when the camera is in a remote position or when the digital capture unit is mounted on a view camera, bring a level of flexibility to the way you shoot.
- **The extended metadata** (GPS, HTS 1.5 etc). included in all Phocus images provides for accurate and detailed cataloging and indexing, easy image management, and includes added GPS data functionality in order to allow a range of functions. Phocus links GPS data directly to Google Earth, for example, making geographic reference a snap and image storage and retrieval much easier. With the HTS 1.5, all settings are stored as metadata in the image file for full function with DAC lens corrections.
- **Perfect Viewing Quality.** The Phocus Viewer delivers image viewing quality that matches every detail of what you will see later in Photoshop. In addition, the Phocus Viewer allows you to customize layout and composition to suit your current or desired work flow, providing a wide range of options including full view, compare, browse, horizontal, or vertical view, and so on. You can have multiple folders open simultaneously for side-by-side viewing, comparison, and selection.

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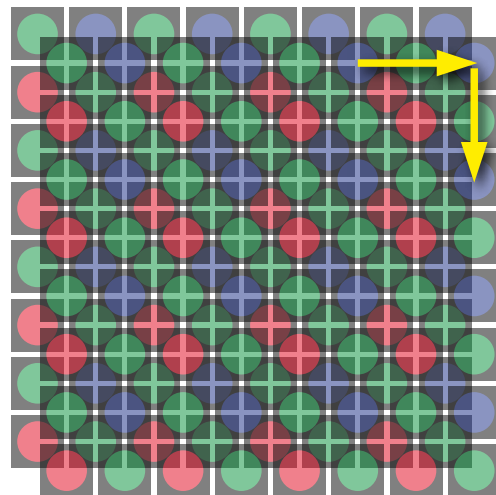
Single-shot

The key to the single-shot quality from a CCD sensor is the use of a Bayer Mosaic filter. This is a specific filter layout that is used in conjunction with software to interpret the color data from the sensor. A single-shot system delivers one colour per pixel, and the remaining two channels must be estimated and calculated using a best guess strategy. This is done in Hasselblad cameras by using algorithms that optimize color rendition and sharpness without disturbing the perception of the human eye by the artefacts always present in raw single shot captures.



Multi-shot

The advanced Hasselblad Multishot (4-shot) technology eliminates the issues that the single-shot interpolation routine can sometimes introduce, such as moiré and color rendering issues, by physically moving the sensor 1 pixel at a time, thereby capturing the red, green and blue information in each individual pixel point and then combining these captures into one. This results in a true color and moiré free capture with increased level of detail as there is no need for interpolation at all.



Ultimate Still Imaging

High precision piezo-electrical actuators control movements of the sensor in $\frac{1}{2}$ and in one pixel increments. By combining six shots, offset by a combination of both $\frac{1}{2}$ pixel increments and one pixel increments, the colors, Red, Green and Blue of each point are obtained with a double resolution in both the X and Y directions. The result is an astonishing 200Mpixel full color image with no artifacts, such as moiré.

The Bayer Mosaic filter pattern covers the pixels of the sensor. Moving the sensor in one pixel increments between shots, allows for the exact R, G, B values to be captured in every pixel. The multiple captures are then assembled to deliver the correct colors and ultimate definition of detail.

Adding captures, each offset by a $\frac{1}{2}$ pixel sensor movement, creates space for extending the sensor resolution from 50Mpix to 200Mpix. The outstanding definition of color and detail is maintained.

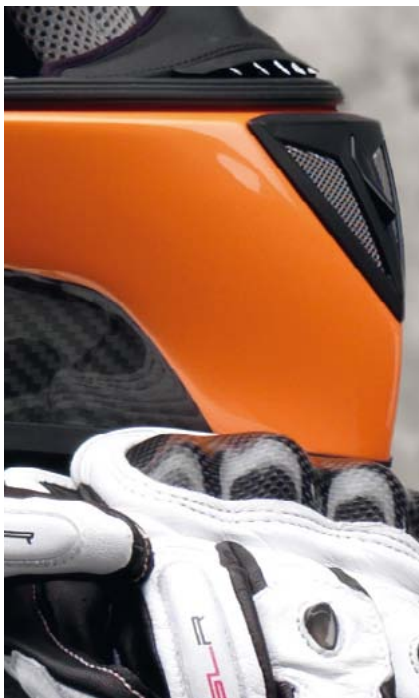
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Outstanding image quality

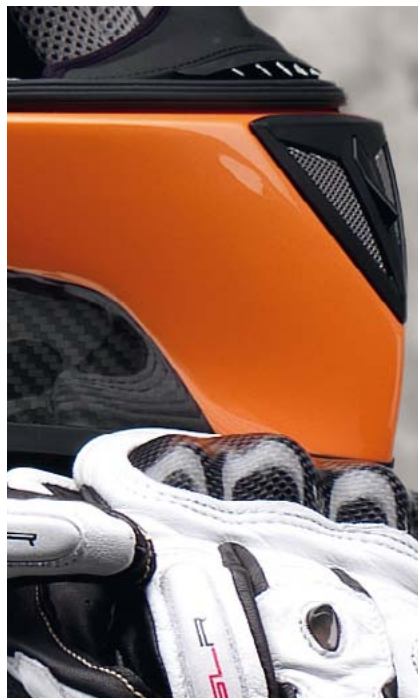
The use of multi-shot capture delivers true color accuracy and exact definition of detail. Depending on the subject matter, your choice of either the 4-shot or 6-shot capture mode will deliver an image quality not seen in any other camera system.



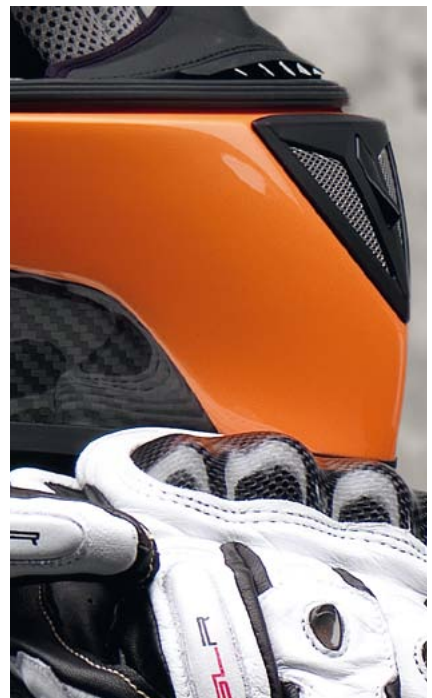
Photo: Milo profi fotografie



1-shot at 200%



4-shot at 200%



6-shot at 100%

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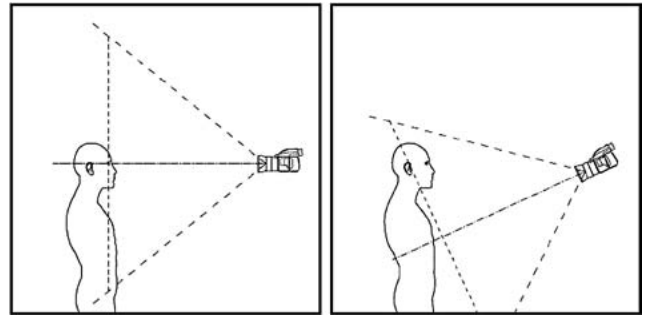
True Focus and Absolute Position Lock

True Focus helps solve one of the most lingering challenges that faces serious photographers today: true, accurate focusing throughout the image field. Without multi-point auto-focus a typical auto-focus camera can only correctly measure focus on a subject that is in the center of the image. When a photographer wants to focus on a subject outside the center area, they have to lock focus on the subject and then re-compose the image. In short distances especially, this re-composing causes focus error, as the plane of focus sharpness follows the camera's movement, perpendicular to the axis of the lens.

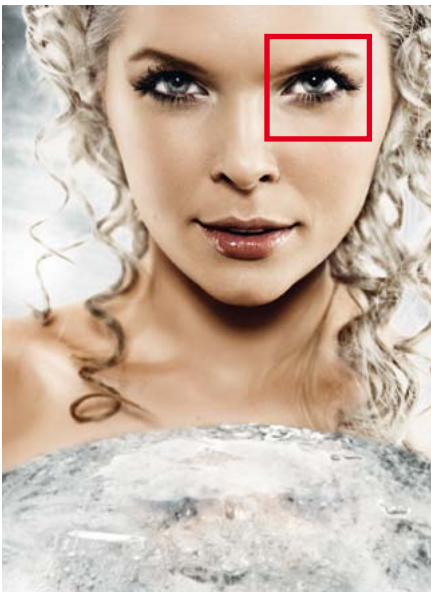
The traditional solution for most DSLR cameras has been to equip the camera with a multi-point AF sensor. These sensors allow the photographer to fix an off-center focus point on an off-center subject, which is then focused correctly. Such multi-point AF solutions are often tedious and inflexible to work with. Due to the physics of an SLR-camera, the off-center focus points that are offered are all clustered relatively close to the center of the image. To set focus outside of this center area, the photographer is still forced to focus first, and then shift the camera to reframe, with a resulting loss of accurate focus.

To overcome this problem, Hasselblad has used modern yaw rate sensor technology to measure angular velocity in an innovative way. The result is the new Absolute Position Lock (APL) processor, which forms the foundation of Hasselblad's True Focus feature.

The APL processor accurately logs camera movement during any re-composing, then uses these exact measurements to calculate the necessary focus adjustment, and issues the proper commands to the lens's focus motor so it can compensate. The APL processor computes the advanced positional algorithms and carries out the required focus corrections at such rapid speed that no shutter lag occurs. The H4D's firmware then further perfects the focus using the precise data retrieval system found on all H System lenses.



The plane of focus changes when the camera is tilted for composition.



The middle image shows the result when not using True Focus. While this image looks relatively sharp, the rightmost image where True Focus has been used, is razor sharp.

Photo: Marcel Pabst

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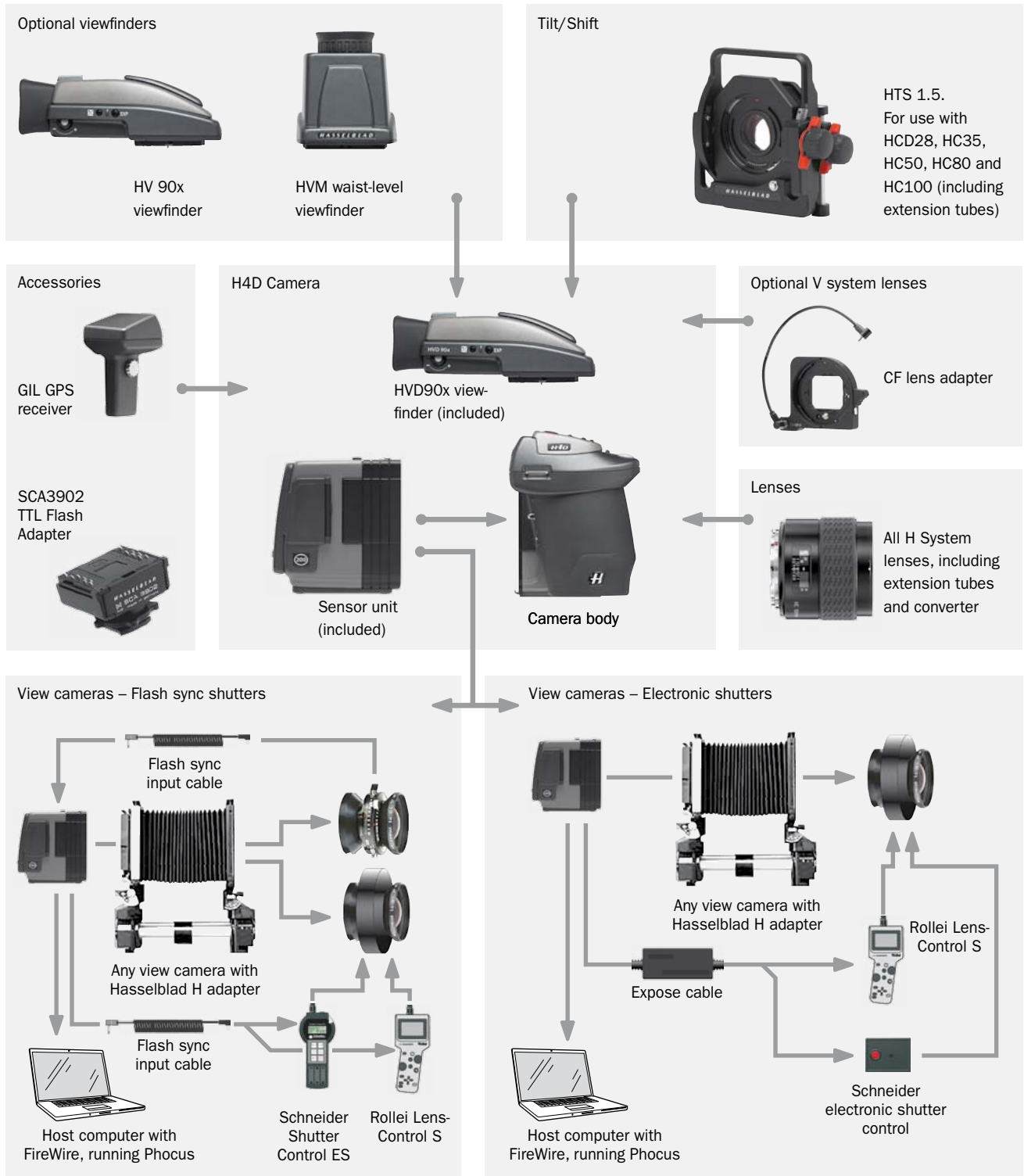
Technical specification

DIGITAL FEATURES	
Sensor size	50 Mpix (6132×8176 pixels)
Sensor dimensions	36.7×49.1 mm
Image size	RAW capture 75/300/1200 MB on average. TIFF 8 bit: 150/150/600 MB (1-shot/4-shot/6-shot)
File format	Lossless compressed Hasselblad RAW 3FR
Shooting mode	Single shot, 4-shot and 6-shot
Color definition	16 bit
ISO speed range	ISO 50, 100, 200, 400 and 800
Storage options	CF card type U-DMA (e.g. SanDisk Extreme IV) or tethered to Mac or PC
Color management	Hasselblad Natural Color Solution
Storage capacity	8 GB CF card holds 120 images on average
Capture rate	1.1 seconds per capture. 33 captures per minute (single-shot)
Color display	Yes, 3 inch TFT type, 24 bit color, 230 400 pixels
Histogram feedback	Yes
IR filter	Mounted on CCD sensor
Acoustic feedback	Yes
Software	Phocus for Mac and Windows
Platform support	Macintosh: OS X 10.7,10.6,10.5. Windows: XP, Vista, Windows 7 (64 bit)
Computer requirements	When capturing 6-shot images with the H4D-200MS, 8GB of RAM should be considered the minimum and it is advised to use a reasonably fast disk to handle the large file sizes, such as 7200 or 10000 rpm drives. Please refer to the Phocus read-me file for detailed system requirements
Host connection type	FireWire 800 (IEEE1394b)
View camera compatibility	Yes, Mechanical shutters controlled via flash sync. Electronic shutters can be controlled from Phocus
Operating temperature	0 - 45 °C / 32 - 113 °F
Dimensions	Complete camera w. HC80 mm lens: 153 × 131 × 207 mm [W × H × D]
Weight	2450 g (Complete camera w. HC80 mm lens, Li-Ion battery and CF card)

CAMERA FEATURES	
Camera type	Large sensor full format DSLR
Lenses	Hasselblad H system lens line with integral central lens shutter
Shutter speed range	128 seconds to 1/800 second
Flash sync speed	Flash can be used at all shutter speeds
Viewfinder options	<ul style="list-style-type: none"> • HVD 90x: 90° eye-level viewfinder w. diopter adjustment (-5 to +3.5D). Image magnification 3.1 times. Integral fill-flash (G.No. 12 @ ISO100). Hot shoe for SCA3002-system flashes from Metz™ • HV 90x-II: 90° eye-level viewfinder w. diopter adjustment (-4 to +2.5D). Image magnification 2.7 times. Integral fill-flash (G.No. 12 @ ISO100). Hot shoe for SCA3002-system flashes from Metz™ • HVM: Waist-level viewfinder
Focusing	Autofocus metering with passive central cross-type sensor. Ultra focus digital feedback. Instant manual focus override. Metering range EV 1 to 19 at ISO 100
Flash control	Automatic TTL centre weighted system. Uses built-in flash or flashes compatible with SCA3002 (Metz™). Output can be adjusted from -3 to +3EV. For manual flashes a built-in metering system is available
Exposure metering	Metering options: Spot, Centre Weighted and CentreSpot. Metering range Spot: EV2 to 21, Centre Weighted: EV1 to 21, CentreSpot: EV1 to 21
Power supply	Rechargeable Li-ion battery (7.2 VDC / 1850 mAh)
Film compatibility	No

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Connectivity diagram



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H4D-200MS lens range

Specification subject to change without notice.

		
HCD 4/28mm	HC 3.5/35mm	HC 3.5/50-11mm
		
HC 2.8/80mm	HC 2.2/100mm	HC Macro 4/120-11mm
		
HC 3.2/150mm	HC 4/210mm	HC 4.5/300mm
		
HC 3.5-4.5/50-110mm	HCD 4-5.6/35-90mm Aspherical	All C-type lenses from the V system with optional CF lens adapter