

foster + freeman

Advanced fingerprint capture & enhancement

DCS[®] 5

UV | VIS | IR



Advanced fingerprint capture & enhancement



DCS[®]
UV|VIS|IR

5

DCS 5 is a comprehensive imaging system for the detection, capture and enhancement of almost any type of fingerprint on any surface or background to ensure that maximum detail is revealed.

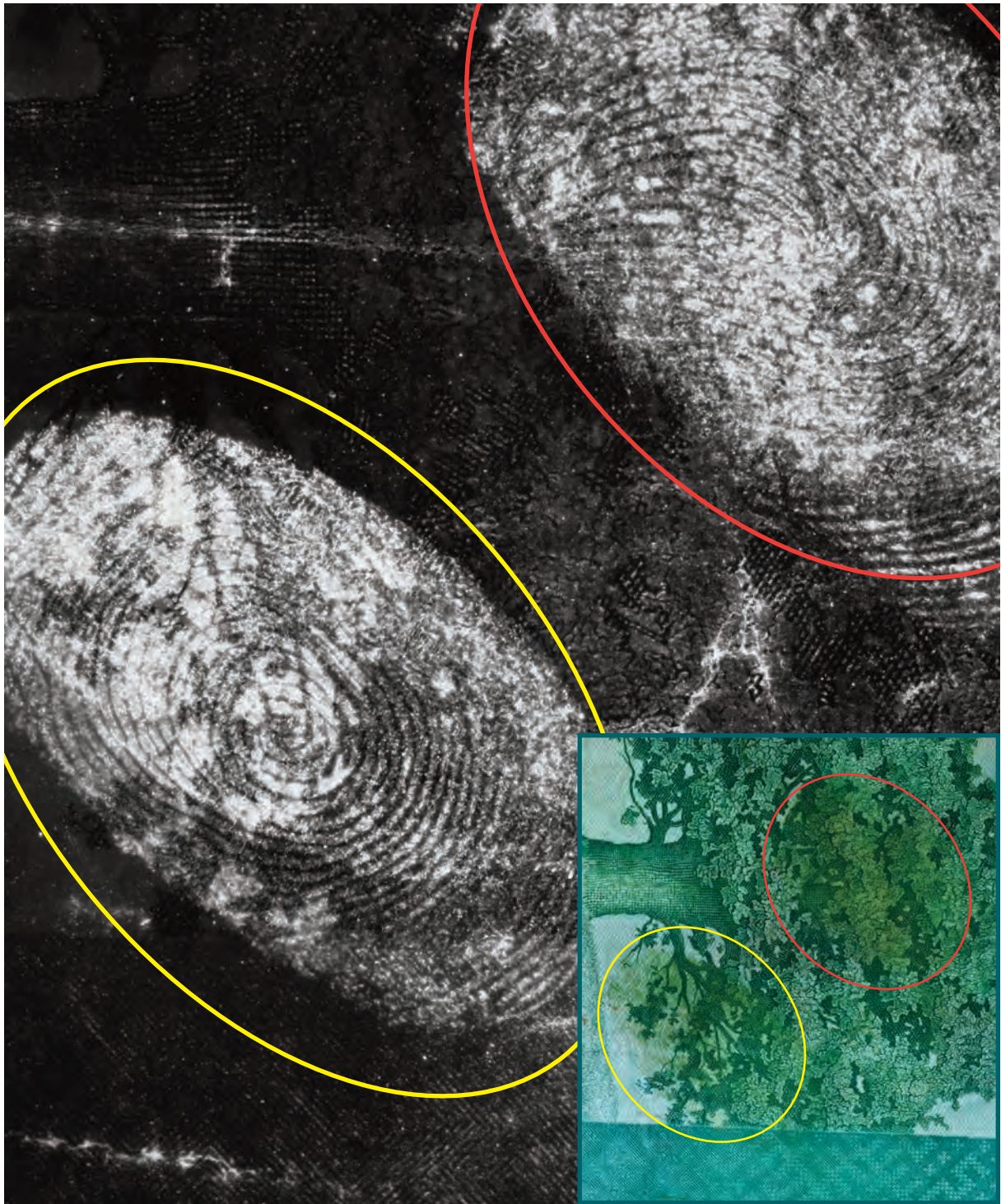
Not only does the DCS 5 high resolution, 36.3MP camera fitted with application specific macro lenses produce images of exceptional quality, advanced digital enhancement, applied simply, maximises print detail to improve the value of evidence.

Precise wavebands of illumination from UV through the visible to IR are provided to improve the visualisation of every type of fingerprint whether it be latent, contaminated or chemically treated.

DCS[®] 5

Advancing the Science of Fingerprint Detection

DCS 5 reveals fingerprints on a densely patterned banknote dusted with *fp*NATURAL 1, Foster + Freeman's new IR fluorescent powder



DCS[®]5

Imaging Techniques

Fluorescence Imaging

Many latent fingerprint treatments such as Ardrox, DFO, BY40 and fluorescent powders fluoresce under specific wavelengths of light.

Using the DCS 5 multi-wavelength ring light an operator is able to select the optimum wavelength to generate the maximum intensity of fluorescence for each type of treatment.

Plastic bag treated with Polycyano UV and examined under UV illumination.

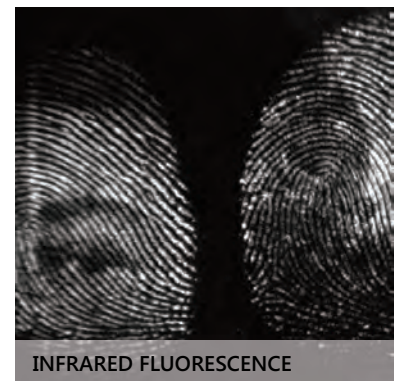
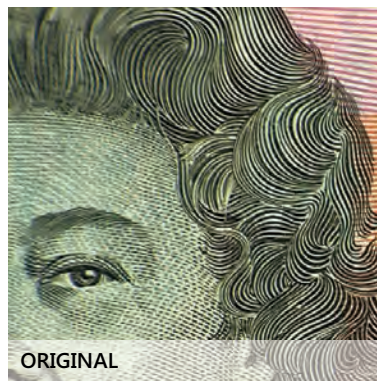


Infrared Imaging

Interfering backgrounds may be suppressed appearing white as they reflect IR whereas some chemical treatments such as Physical Developer and certain powders absorb IR and appear black.

Foster + Freeman's new fingerprint dusting powder 'fpNatural 1' fluoresces brightly in the infrared when illuminated with red light. Its application has the advantage of eliminating interference from most backgrounds which rarely fluoresce at this wavelength.

Polymer banknote treated with fpNatural 1 IR Fluorescent Powder, illuminated with red light using the Crime-lite 8x4Mk3 and viewed in the IR.



Reflected longwave UV Imaging

Many surfaces such as glass and plastics absorb UV and appear black, which improves the visibility of both treated and untreated latent prints which often reflect UV. Images can then be significantly enhanced using the DCS5 software.

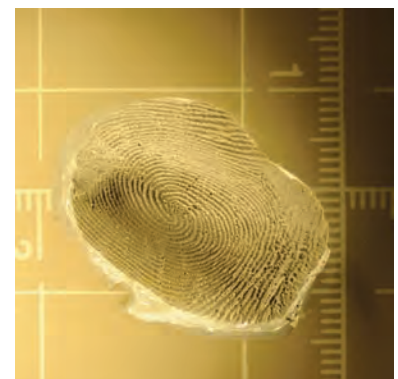
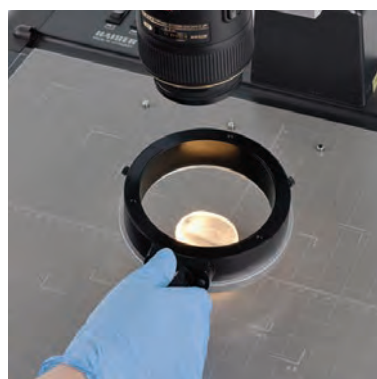
Untreated latent fingerprint on clear perspex. Perspex appears black when illuminated and viewed under UV revealing the fingerprint which reflects UV.



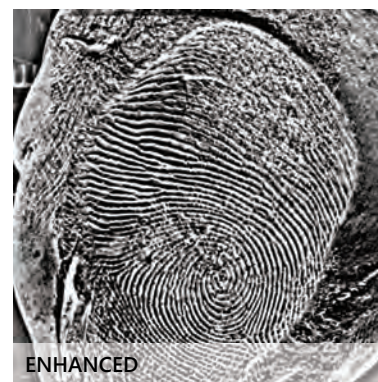
Flexible directional lighting

A high intensity halogen or interference light source fitted with a range of fibre optic light guides provide backlight, coaxial and oblique lighting for the examination of fingerprints on difficult surfaces such as reflective, curved or dusty surfaces or as 3-D impressions in soft materials.

Using a dark field ring light to illuminate a 3-D fingerprint in soft putty.



Enhancement Software



An integral part of DCS 5 is the easy-to-use software that provides sophisticated image processing and enhancement tools to uncover hidden detail within images.

Operated via simple drop down menus, DCS 5 enhancement software enables the operator to remove textured or 'difficult' backgrounds as well as enhance prints developed using a variety of chemical treatments, dyes, stains and dusting powders including the new IR powder. Each toolbox offers the operator 'tried & trusted' enhancement programmes that enable complex processing routines to be performed with a single button press.

Ninhydrin developed fingerprint on a multicoloured patterned background. DCS 5 enhancement software can improve the clarity of fingerprints by removing or reducing backgrounds.

Fingerprint illuminated with the dark field ring light and enhanced using the dedicated 3-D enhancement software.

Encryption software protects all original fingerprints captured by the system. Images that are enhanced or processed in any way automatically lose their status of authenticity with full details of each process being recorded in a detailed Audit Trail.

Essential when presenting courtroom evidence, audit trails detail every step taken during the capture and enhancement process together with information about the operator, computer and software used to perform enhancements. Audit Trail descriptions are in simple to follow language to aid presentation.

DCS Wizard provides an interactive step-by-step guide to achieving consistently high quality images of fingerprints.

By following intuitive steps to select the exhibit type, surface type, chemical processes, and background data the user will be presented with suggestions on the lighting, filters, excitation wavelengths and camera settings required to achieve the optimum print definition and contrast every time.



DCS[®] 5

System Components

1 Camera

custom-modified digital SLR camera

In order to achieve excellent image quality, the DCS 5 has been built around a pro-grade DSLR camera customised by Foster+Freeman for UV-Vis-IR imaging applications.

Setting new standards for image quality, the Nikon D810 includes a new large format image sensor and a powerful image processing engine that work together to produce images of exceptional clarity.

1



Lenses

A choice of specialist lens provides greater control of the image captured by the camera.

2 105mm Vis-IR Macro Lens

for general imaging

Focusing up to 1:1 life size in auto or manual focus modes images remain sharp at every distance.

2



3



4



3 60mm UV Transmitting Lens

for reflected UV imaging

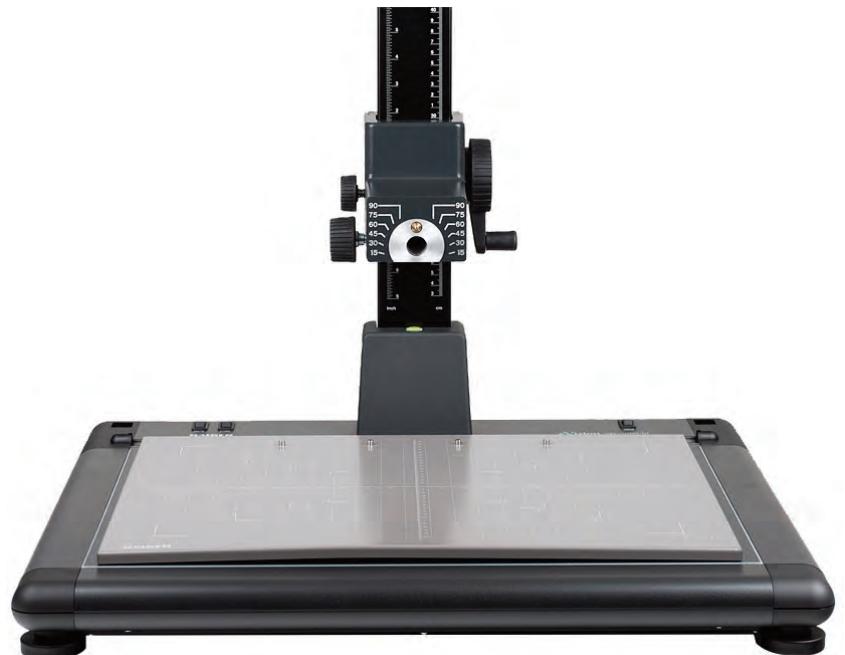
This quartz/fluorite lens, is essential for Reflected UV Imaging but also provides excellent results in the visible and IR.

4 85mm Vis-IR Tilt/Shift Lens

for depth of field control

With a revolving capability of + or - 90 degrees this high performance lens enables selective focussing of images across different focal planes in the visible and IR wavelengths.

5



5 Copy Stand & Accessories

for accurate, repeatable image alignment

Professional photographic copy stand includes a 1.2m column and transmitted light base.

Accessories include camera lens bellows and variable friction light source mounts

DCS[®]5

System Components

1



2



3



4



5



6



1 Multi-wavelength Ring Light

The Crime-lite 8x4Mk2 provides intense white, UV, violet, blue, blue/green, green, orange and red narrow waveband light for visible and fluorescent image examinations.

2 Halogen Light Source Package

Intense 150W light source with 5 coloured filters for general contrast imaging. To be used in conjunction with the fibre optic light guides for directional lighting on any surface type.

3 Forensic Light Source (FLS)

A continuous 400-1000nm narrowband light source used in conjunction with the fibre optic light guides provides specific wavelengths of light for improved contrast imaging and removal of interfering backgrounds.

4 IR Imaging Crime-lite 8x4Mk3

A specialized LED ring light providing intense blue and red light for generating infrared fluorescence from specialist dusting powders such as fpNatural 1. Also includes infrared light for examining reflected infrared images for fingerprints in blood or treated with Physical developer or Powders.

5 UV Light Source

The Crime-lite 82S fitted with 16 UV LEDs. Provides more intense UV at 365nm for generating fluorescence from treated fingerprint images and reflected UV images.

6 Fibre Optic Light Guides

Flexible directional light guides to illuminate any evidence type;

Ring Light

Diffuse, uniform illumination for flat items such as paper, banknotes or coloured plastic.

Backlight/Paddle Light

For transmitted illumination for lifts, clear plastic, cellophane or for specular illumination for prints on reflective surfaces.

Darkfield Ring Light

360° oblique illumination for 3D impressions in soft materials.

Twin arm Goosenecks

Dual directional illumination for curved or reflective surfaces.

Coaxial Light

For reflective surfaces including mirrors & CD's.

DCS[®] 5

SYSTEM DESIGN

BY APPLICATION

In order to accommodate the differing requirements of fingerprint laboratories worldwide, **DCS 5** is a modular system that can be expanded through the addition of application specific modules.

The **DCS 5 core** provides a complete solution to the capture and enhancement of fingerprints within the visible spectrum and includes a Windows PC running the DCS 5 Software, a pro-grade photographic copy stand and a selection of light guide clamps and mounts.

Additional modules can be selected to provide IR, Reflected UV and Shift/Tilt Imaging capabilities.

DCS 5 core

System Components & Product Order Codes

image capture

Nikon D810	DCS5/CAM#B, %B
- Custom-modified camera	
- 36.3million effective pixels	
- 35.9 x 24mm CMOS sensor	
105mm Macro Lens	DCS4/LENS/AF105
- for visible imaging	
- Anti-reflection lens coating	
Imaging Filters	
- Circular Polarizing Filter	DCS5/CPF2
- Visible Pass Filter	DCS5/VPF2
- 715nm IR Imaging Filter	DCS5/IRF1
- 780nm IR Imaging Filter	DCS5/IRF2
- 850nm IR Imaging Filter	DCS5/IRF3
- 1000nm IR Imaging Filter	DCS5/IRF4

illumination

Halogen Light Source	DCS4/LIGHT3/62
- 150W halogen lamp	
- Variable dimmer control	
- Supplied with light guide	
+ Darkfield Light Box	DCS4/LTDARK
+ A4 Line Light	DCS4/LTLINE
Multi-waveband Ring Light	QCL/231x8/KIT
- 32x high intensity LEDs	
- White, UV, Violet, Blue, Blue/Green, Orange and Red illumination	
- Includes power adaptor	
+ Imaging Filters	QCL/232x8/SET

DCS 5 essentials

Pro-Grade Copy Stand	DCS4/STAND
+ Ring Light Mount	QCL/144x8/ASSY
+ Camera Filter Pouch	QCL2/012
+ Camera Filter Step-ring	QCL/212
Desktop PC	DCS4/COMP
+ 24" Monitor	DCS4/MON24W
+ Photo Printer	DCS4/PRIN/CP9600
DCS 5 Software	DCS5/MODULE
+ Image Pro Analyser	DCS4/IPA
+ VeriData iDem	DCS4/IDEM
DCS 5 Wizard	DCS5/WIZARD
DCS Photography Pack	DCSL/075

Application specific modules

+Infrared Imaging

IR Imaging Ring Light	DCS5/SYS/8x4MK3
- Blue, Red and IR LED illumination	
- 715, 780, 850, 1000nm Viewing Filters	
- Includes power adaptor	
- Sample of fpNatural1 IR fingerprint powder	

Forensic Light Source (FLS)	DCS5/SYS/FLS
- 100W halogen lamp	
- 400-1000nm continuous bandpass filter	
- Supplied with light guides	

+Reflected UV Imaging

60mm UV Transmitting Lens	DCS5/LENS/UVIR
- Macro lens with 310-1100nm transmission	
- Manual focusing	
+ 330-385nm bandpass filter	
+ Circular Polarizing Filter	DCS5/CPF3
+ Visible Pass Filter	DCS5/VPF3
+ Optional IR Filter Step-ring	DCS5/SUR52/72
UV Light Source	QCL/82S/UV2
- 16x 365nm LED illumination	
+ Power adaptor	QCL/80
+ UV light source clamp	DCS5/CLAMP

+Shift/Tilt Imaging

85mm Shift/Tilt Lens	DCS4/LENS/PCE85
- Maximum shift: ±12.4 mm	
- Maximum tilt: ±8.3 mm	
- Supplied with macro extension tubes	
+ Circular Polarizing Filter	DCS5/CPF1
+ Visible Pass Filter	DCS5/VPF1
+ Optional IR Filter Step-ring	DCS5/SDR77/72

To request a formal DCS 5 sales quotation, please contact your local Foster + Freeman sales representative providing details of the modules you would like to add to your system.

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