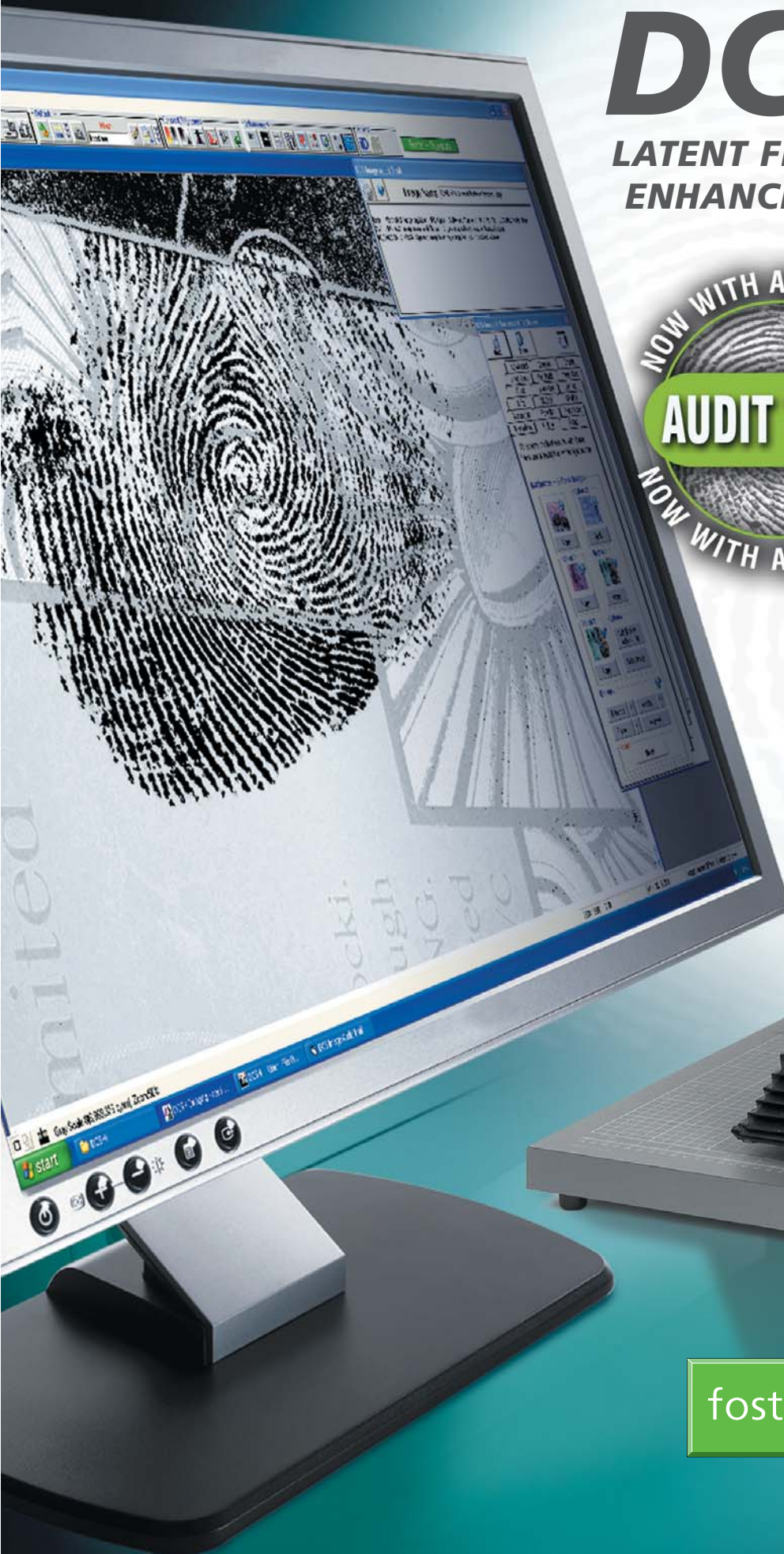


DCS™ 4

LATENT FINGERPRINT
ENHANCEMENT



foster + freeman



DCS™4 *capture, enhancement and presentation of latent fingerprint evidence*

The quality and ultimately the usefulness of latent prints as evidence varies considerably depending on the nature of the surface on which the prints are found, the colour and complexity of the background and the process used to render the latent fingerprint visible. The DCS™4 now offers the examiner a complete solution to their examinations, from capture to enhancement to the presentation of court room evidence.

The DCS™4 provides

- **Image capture** - using a high resolution digital camera
- **Photo Wizards** - guidance on chemical processing & photography
- **Software toolboxes** - a guide to effective image enhancement
- **Image validation** - authentication of original image
- **Audit trail** - details image processing from capture to printout
- **Casework management** - with image archives
- **Photographic quality prints** - using a dye sublimation printer
- **118 modes of illumination** - with the Crime-lite 8x4 ring light

Turnkey system

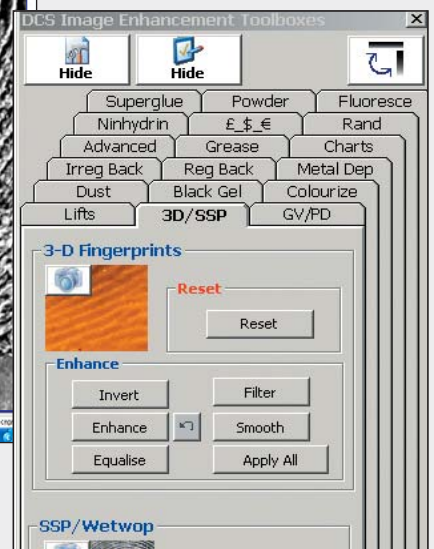
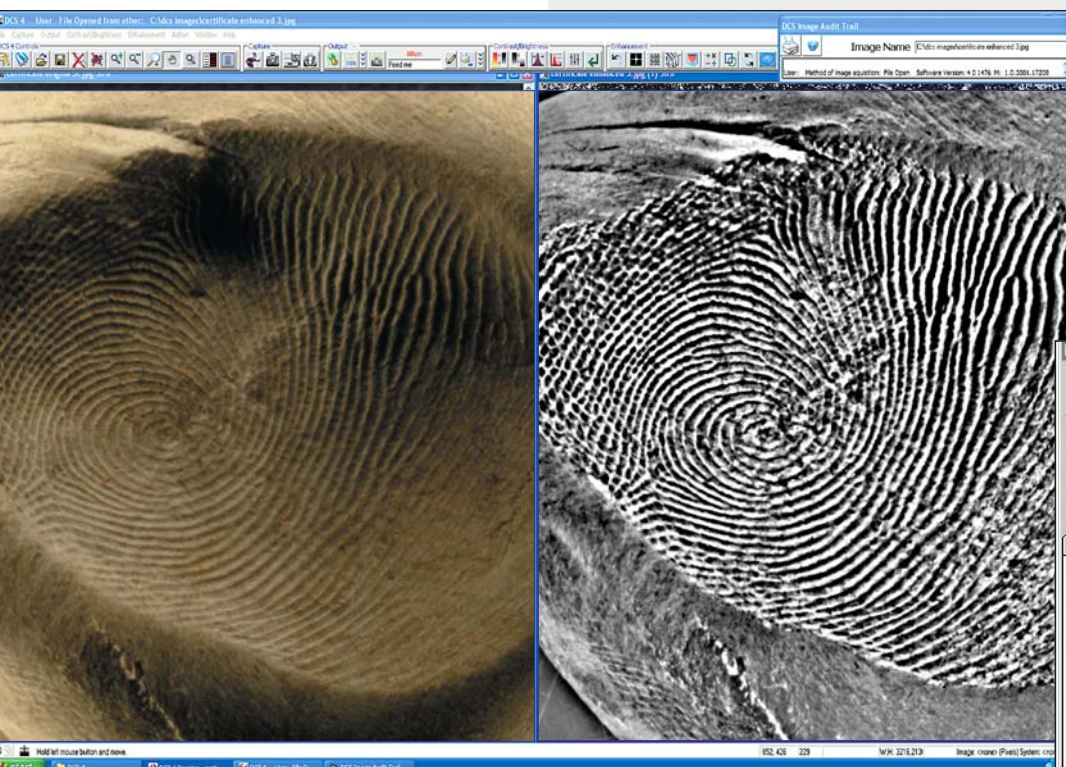
The DCS™4 is operated through a PC under a Windows operating system with an easy to use graphic user interface. Images may be downloaded from the Nikon D700 digital camera or optional scanner with image validation being applied automatically.

The full range of image enhancement programmes are provided through Image-Pro Analyser and pre-selected for the operator according to latent fingerprint type through a unique 'toolbox' system. 1 to 1 photographic quality prints are

generated using a digital printer under software control.

DCS™4 is a turnkey system that includes a PC, Windows operating system, Nikon D700 digital camera, Mitsubishi colour printer, Foster & Freeman's Crime-lite®8x4 high intensity LED ring light and an AFIS compatible output.

Fingerprint in putty enhanced with the 3D toolbox.



DCS™4 capture, enhancement and presentation of latent fingerprint evidence



High resolution imaging

The DCS™4 features the Nikon D700 digital camera, creating high resolution images with 12.1 million pixels with full screen previews. Although preserving manual operation for use at the crime scene, a full software interface has been created to give the operator the convenience of camera control through the system's PC in the laboratory.

Multi wavelength LED ring light

The Crime-lite®8x4 is designed to meet the the varying demands of forensic photography enabling the operator to create the optimum illumination for all types of evidence and backgrounds, enhancing image contrast and definition.

The ring light is fitted with seven narrow bandwidth LED arrays, emitting light at peak wavelengths of 405, 445, 470, 500, 535, 590 and 625nm. These may be selected individually or in multiple combinations to create 98 different colours, enabling the operator to tailor illumination to suit the evidence. Fixed combinations also provide a choice of 10 white light emissions with a range of colour temperatures between 3000°K and 10,000°K. In addition, an array of standard white light emitting LEDs with a colour temperature of 6500°K have 10 intensity settings.

Crime-lite 8x4

The multi wavelength LED ring light offers the forensic photographer 118 modes of illumination



Foster + Freeman DCS-4 Photographic Wizard

Wizard Results


Item Type:

Surface Type:


Chemical Process:

Background:

For optimum image quality the fingerprint **MUST** fill the frame.



Chemical Info



DCS 4 Capture

Reset

Photographic Information

Filters

- Daylight Filter - Multiple coloured backgrounds. Remove backgrounds with Digital Enhancement
- Polarising filters x2 - remove reflections and intensify colours
- If the image has a single colour background, use the correct shade of colour to lighten it - see the Filter Wheel

Light Source

- Crime lite 4x4 - white light and polarising ring. Position the light about 15cm/6in above the item. For fluorescent powders check the manufacturers literature for the correct filtration
- Polytec standard ringlight - Daylight filter and polarisers. Position the ring light 6in/15cm above the object

Multi OR Single Metal Deposition

If the paper is on a plastic or polymer base the choice of chemical treatment will not be Ninhydrin. In most instances development of the latent print is achieved with Cyanoacrylate fuming, vacuum metal deposition, fluorescent dyes or powders. They can be used in sequence or individually.

Therefore the fingerprint colour could be white/dark polymer, fluorescent or a shade of dark grey (MMD) or dark blue (SMD). Select your choice of filter accordingly (lighten or darken the background, increase contrast or remove reflections).

Set the camera to F8 iso 100 and use an even surface illumination

Filter Wheel.

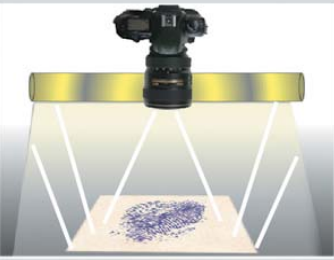


Photo Wizards (optional)

This software package contains detailed information on effective photographic technique with suggestions for the best lighting, filter and camera settings for each different chemical process and exhibit type, ensuring consistent high quality results from all system users. As a stand alone software package Photo Wizards may be used at scenes of crime to improve the recovery of latent fingerprint evidence.

Photo Wizards

Easy to use software guides on how to photograph latent fingerprint types in the laboratory and at the crime scene.

DCS™4 capture, enhancement and presentation of latent fingerprint evidence

Image validation

Encryption software is provided to protect all original fingerprint images recorded by the system. Images that are enhanced or processed in any way automatically lose their status of authenticity and may be clearly identified. The system enables the operator to confirm the authenticity of original images presented as evidence.

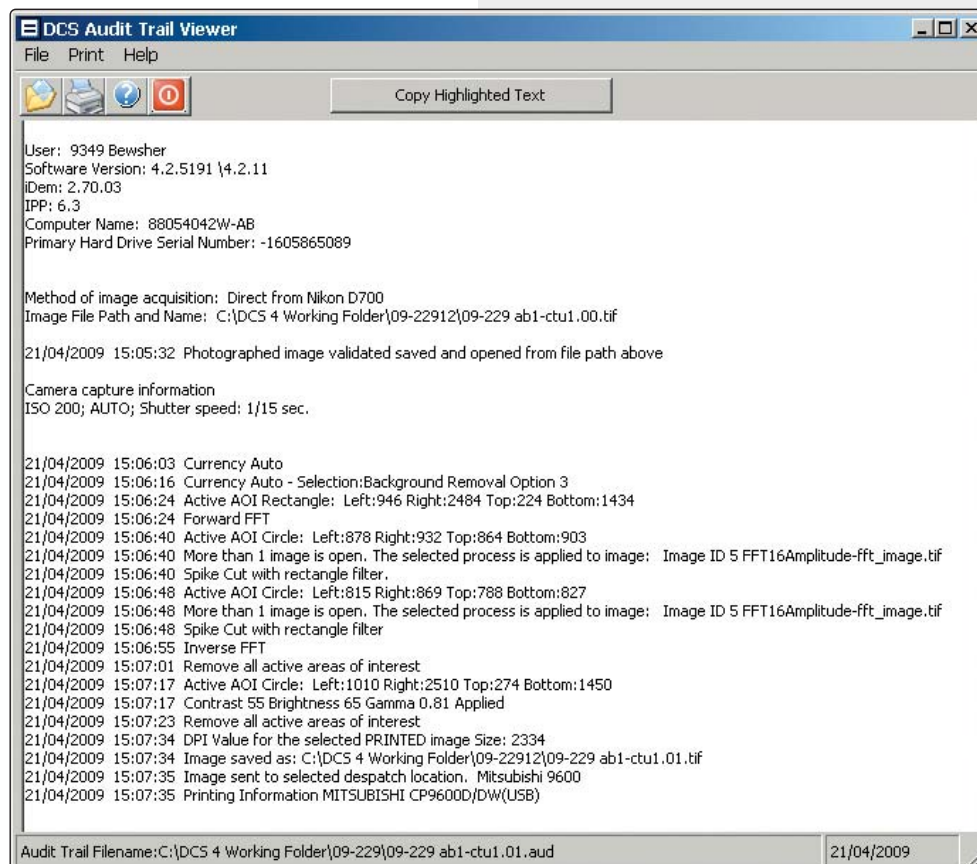
Image enhancement

The DCS™4 offers a unique 'toolbox' system that makes it easier to apply image enhancement software to latent fingerprint images. These include toolboxes for removing textured or irregular backgrounds, repetitive background patterns, toolboxes for enhancing black gel lifts and prints found in blood and developed with luminol, prints processed with ninhydrin, gentian violet, cyanoacrylate or dusted with black and white powders as well as prints found in dust, grease and soft materials such as putty. Each 'toolbox' offers the operator the most effective image enhancing software with simple controls to improve the result. Software is accessed through simple drop down menus which give hints and guidance on their use. These are 'tried and trusted' solutions to the enhancement of latent fingerprints used by experienced fingerprint examiners.



Image enhancement

Using the 'Irregular Background' toolbox, any colour difference between fingerprint and background can be exploited to remove or reduce the background as with this ninhydrin treated print.



Audit trail

An important addition to the DCS™ software, the Audit Trail automatically records in detail the step by step enhancement process that has been applied to each image including the method of capture, whether from a camera, memory card or scanner, name of the operator, date, time, system software version and serial number of the system's hard drive. Other information recorded includes area of interest (AOI) coordinates, which may be recreated when required, and the dpi of the printed image. Importantly, descriptions are in simple to follow language which make presentations to a courtroom or other party easier to conduct.

DCSTM 4 SPECIFICATIONS AND ACCESSORIES

NIKON D700 CAMERA

Order Code: **DCS4/CAM/D700**

Nikon D700 Camera (camera body only)

FEATURES INCLUDE;

- 12.1 megapixel FX (full-frame) CMOS sensor giving full image size 4256 x 2832 pixels.
- File formats include uncompressed TIFF-RGB suitable for DCS4 use.
- Shutter speed 1/8000s to 30s.
- ISO equivalent sensitivity 200 - 6400.
- Hi-speed USB connection.
- Li-ion battery and charger.
- Supplied with AC power adaptor EH-5a and 2GB CompactFlash (CF) card.

NIKON 105mm MACRO LENS

Order Code: **DCS4/LENS/AF105**

- Nikon 105mm f/2.8G AF-S VR Micro NIKKOR with Vibration Reduction.

COPY STAND

Order Code: **DCS4/STAND**

Free standing Kaiser copy stand with adjustable height.

- Transmitted light base, 430 x 350mm, fitted with four 13W daylight, high frequency fluorescent lamps for even illumination.

Incident lighting not included.

COPY STAND MOUNT

Order Code: **QCL/144x8/ASSY**

Allows fully independent adjustment of camera and Crime-lite 8x4, suits most SLR camera and lens combinations.

HALOGEN LIGHT SOURCE PACKAGE

Order Code: **DCS4/LIGHT3**

- 150W halogen light source with dimmer control.
- Twin arm gooseneck fibre optic light guides with focussing lenses, Length: 450 mm (18") gooseneck with 760 mm (30") bundle.
- Polarising caps.
- Green, red, yellow, cyan and daylight dichroic filter caps.
- Ring Light with polarising attachment.
- Back Light.
- Camera filters - polarising and super HMC UV filters.
- Small adjustable arm with clamp and base.
- Large adjustable arm with 2 clamps.



LINE LIGHT

Order Code: **DCS4/LTLINE**

- For oblique lighting. Length: 305mm (12") Includes cylindrical lens attachments.
(not illustrated)

DARK FIELD RING LIGHT

Order Code: **DCS4/LTDARK**

- Provides radial oblique light for 3D indented fingerprint marks, e.g. in dust or putty.

CRIME-LITE 8x4 STANDARD RING LIGHT

Order Code: **QCL/126x8KIT**

- Fitted with 32 high intensity LED arrays, configured as a ring light providing even illumination for forensic photography. Features an integral control unit for activating lamps individually or in combination, LED arrays configured as follows;

LED ARRAYS CONFIGURED AS FOLLOWS;

- White emitting LED x 4, bandwidth of 400-700nm, 10 intensity levels, colour
- Violet emitting LED x 4, peak at 405nm, 10% bandwidth of 390- 430nm
- Blue emitting LED x 4, peak at 445nm, 10% intensity bandwidth of 430-470nm
- Blue emitting LED x 4, peak at 470nm, 10% intensity bandwidth of 450-490nm
- Blue/green emitting LED x 4, peak at 500nm, 10% intensity bandwidth of 470-535nm
- Green emitting LED x 4, peak at 535nm, 10% intensity bandwidth of 500-560nm
- Orange emitting LED x 4, peak at 590nm, 10% intensity bandwidth of 580-620nm
- Red emitting LED x 4, peak at 625nm, 10% intensity bandwidth of 600-650nm

THE KIT IS ALSO SUPPLIED WITH;

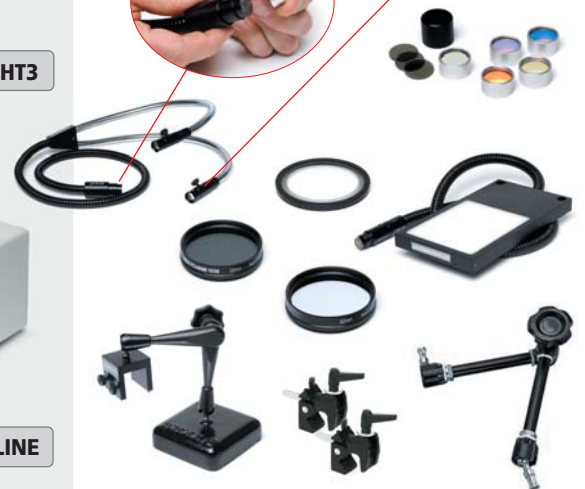
- Bellows, to provide safety shielding.
- Power adaptor, 90-240vAC input, 24vDC output.



DCS4/STAND



QCL/144x8/ASSY



DCS4/LTDARK

Crime-lit8x4 ring light shown mounted with camera and copy stand.



DCS™4 SPECIFICATIONS AND ACCESSORIES

CRIME-LITE 8x4 INSPECTION FILTER SET

Order Code: **QCL/138x8/SET**

- Complete set of nine long-pass glass filters and a polarising filter suitable for the visual inspection or photography of fluorescent evidence. 70mm diameters, slide mount into Crime-lite8x4. Includes a storage case with a capacity for 12 filters.

Set comprises:

- Pale yellow, 455nm 1% transmission at 435nm
- Yellow, 495nm 1% transmission at 476nm
- Deep Yellow, 515nm 1% transmission at 495nm
- Yellow Orange, 530nm 1% transmission at 510nm
- Orange, 550nm 1% transmission at 529nm
- Orange Red, 570nm 1% transmission at 549nm
- Bright Red, 590nm 1% transmission at 571nm
- Red, 610nm 1% transmission at 593nm
- Deep Red, 630nm 1% transmission at 613nm
- Polarising filter, 110mm diameter adjustable polariser with 70mm analyser

DCS 4 SOFTWARE MODULE & TOOLBOXES

Order Code: **DCS4/MODULE**

- Software interface module that integrates all the major DCS™4 functions from fingerprint image capture, validation and enhancement through to final output printing at 1:1.

Functions include:

- Control of the Nikon D700 camera for image capture via USB 2 connection.
- Also compatible with Nikon D2Xs and Fuji S2 Pro cameras.
- Automatic image authentication using Veridata iDem and opening of image for enhancement in Image-Pro Plus.
- Dedicated application specific toolboxes to simplify the enhancement of fingerprint images, each 'toolbox' provides enhancements specific to different types of fingerprint treatments and/or backgrounds.
- Output to local printers, AFIS and Mini-lab.
- Pre-calibrated print buttons for 1:1 image printing at 6 specific focus settings.
- Options to print enlargements and non standard image sizes.

PHOTOGRAPHIC & CHEMICAL TREATMENT WIZARD

Order Code: **DCS4/WIZARD**

- A software module that provides comprehensive information on internationally recognised chemical treatments and photographic techniques for developing and recording latent fingerprints including guidance on lighting and camera settings for effective photography.

IMAGE-PROCESSING

Order Code: **DCS4/IPA**

- Image-Pro Analyser provides a comprehensive range of image processing techniques.

ENCRYPTION SOFTWARE

Order Code: **DCS4/IDEM**

- Signum VeriData iDem, provides authentication of original images. Tested and validated by Foster & Freeman.

AUTO-MONTAGE ESSENTIALS

Order Code: **DCS4/MONTAGE**

- Software to generate fully focused images of samples with a large depth of field, e.g. curved surfaces.

MONITOR

Order Code: **DCS4/MON24W**

- 24" widescreen colour TFT monitor.
- Resolution: 1920 x 1200, brightness: 500cd/m2.
- Contrast Ratio: 1000:1, response Time: 6ms, colour Support: 24-bit (16.7million colours).

DCS 4 COMPUTER SYSTEM

Order Code: **DCS4/COMP**

- High performance PC with peripherals. Please contact Foster & Freeman for the current specification.

DIGITAL COLOUR PRINTER

Order Code: **DCS4/PRIN/CP9600**

- Mitsubishi CP9600DW high resolution 600dpi digital colour printer.
- Printing process: Dye sublimation thermal transfer process.
- Image quality: High resolution 600dpi or normal resolution 300dpi at 256 (8 bit) colour levels each for Yellow, Cyan, Magenta.
- Print size: 15cm x 10cm (6"x4"). Other sizes available with media change.
- Paper roll capacity: 600 prints per roll for 6"x4".



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