For the examination of Questioned Documents.

---------------Applications---------------

- Forensic Laboratory
- Border Security & Immigration
- National Banks
- Security Printers
- Museums, Galleries etc.
- High-Security Locations
- Card Grading & Authentication

For the examination of documents including:

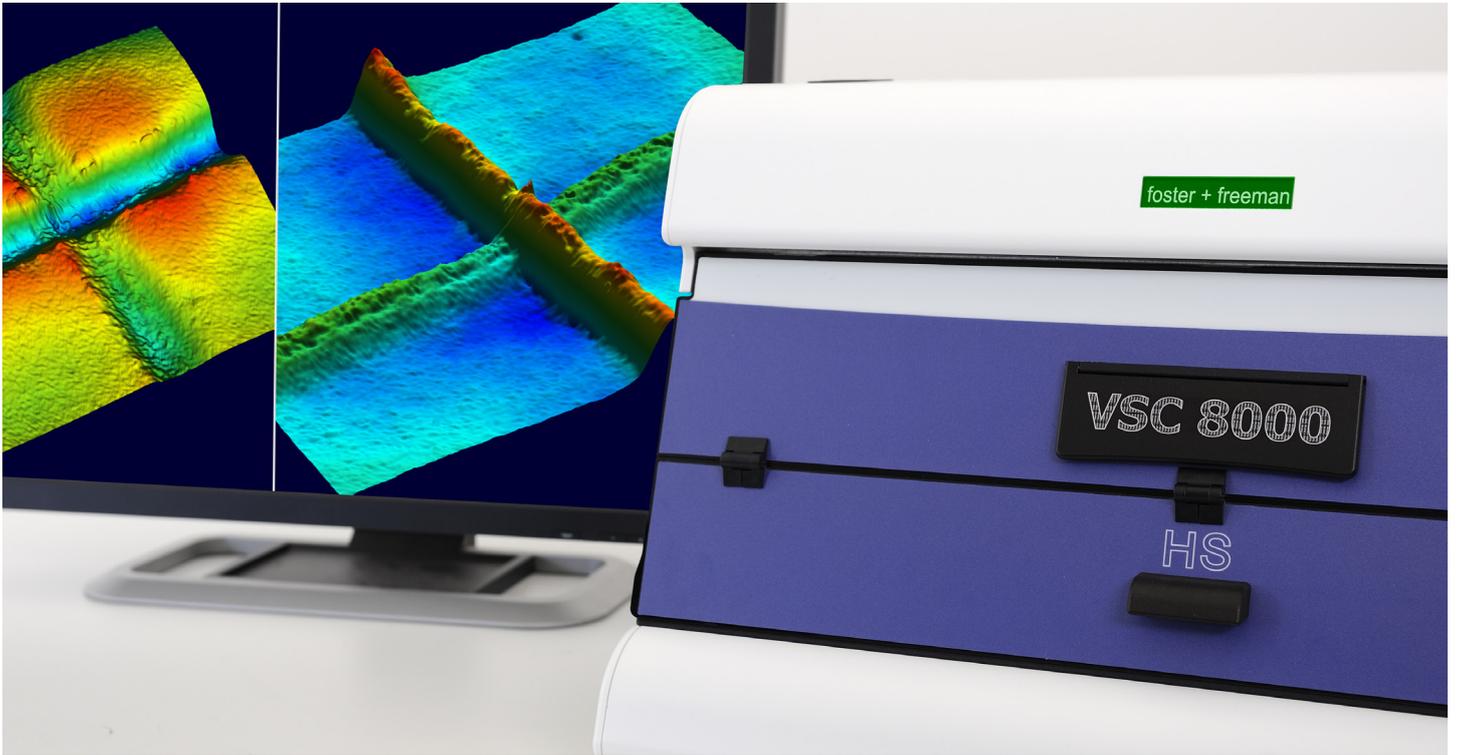| Passports	Visas	Banknotes
Breeder Documemts	Certficates & Permits	
Artwork	Lottery Tickets	Collectibles
Identity Cards	and many more...	

-----------------Hardware-----------------

- High-Resolution 12MP camera
- SRI Imaging up to 127MP
- 250x magnification
- 15 Modes of UV-VIS-IR Illumination
- Motorised XY postioning stage

-----------------Features-----------------

- A complete, QDE workstation

- Perform real-time non-destructive UV-Vis-IR examinations

- Detect counterfeits and frauds

- Reveal evidence of tampering

VSC®**8000/HS**

for the expert analysis of <u>all</u> questioned documents

Our most advanced QDE workstation to date, the VSC8000/HS combines sophisticated digital imaging and multi-wavelength illumination technology with a clear and efficient software interface, to provide a complete solution to the examination of all questioned documents.

Cutting-edge examination techniques including, multi-spectral imaging (from UV through the visible to IR); 3D topographical imaging; hyper-spectral imaging; and full-spectrum color analysis; may all be used to authenticate questioned documents, detect evidence of tampering, and to identify counterfeits and frauds.

Forensic imaging technology meets powerful multi-spectral illumination, in this complete solution for the examination and authentication of questioned documents.

foster+freeman

Using 3D analysis to determine the sequence in which pen strokes were added to a document

Detect Fakes & Counterfeits **Reveal Hidden Details** **Authenticate Security Documents**

Our most advanced Forensic QDE Workstation to date:

Super Resolution Imaging (SRI)
Excellent clarity and image resolution of documents captured using a high-precision 12MP camera

Multispectral UV-Vis-IR Imaging
Directional, multi-spectral light sources can reveal hidden details and semi-covert security features designed to respond at set wavebands.
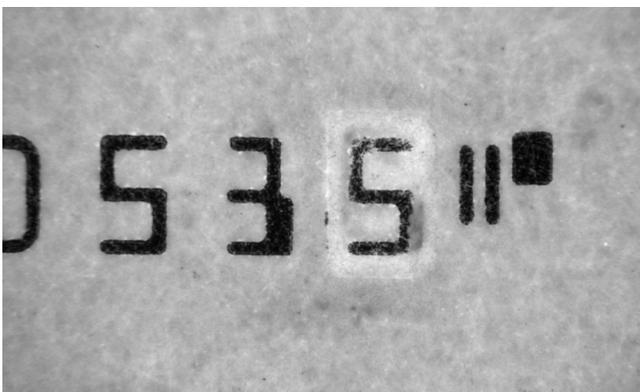
3D Imaging
Derive a 3D model of a documents surface to better analyse security features and impressions in paper.

Microspectrometry
Non-destructive spectral analysis of documents can identify differences in ink and paper formulations.

Calibration and Diagnostics
To ensure accurate and reliable results, the system can be calibrated using NIST traceable standards.

VSC8000/HS | Product appearance and specifications subject to change without prior notice.

VSC®9000

Redefines the limits of optical performance to detect fakes, frauds, & counterfeit documents

foster+freeman

VSC®9000

Introducing the World's Most Advanced VSC for Document Examination.

Ensuring the authenticity of critical documents is an increasingly complex challenge
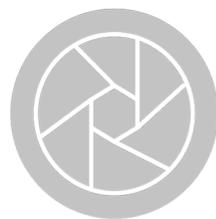
From the controlled environment of a police laboratory to the fast-moving world of international border security, the VSC9000 provides a comprehensive forensic-level solution to the interrogation and analysis of *all* document types.

Equipped with a high-performance optical and illumination system, the VSC9000 enables the examiner to conduct multi-spectral examinations of documents in microscopic detail to authenticate legitimate documents, reveal sophisticated counterfeits and to identify evidence of tampering or manipulation with unparalleled accuracy.
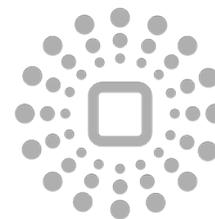
Because every microscopic detail matters

The VSC9000 provides a complete forensic toolset to dissect questioned documents, for the inspection of every fine detail from paper and ink composition to the presence of 3rd level embedded security features.

Beyond the physical, the VSC9000 can reveal and analyse every layer of digitally embedded data (including Biometric e-Chip, MRZ, IPI, RFID etc.) to provide a comprehensive multi-layered interrogation of a document.

| PRECISION IMAGE CAPTURE | ACCURATE ILLUMINATION | FORENSIC-LEVEL ANALYSIS | DIGITAL AUTHENTICATION |

Choose VSC9000
for Forensic-Level Analysis of <u>All Documents</u>.

An evolutionary leap forward in questioned document examination (QDE), the VSC9000 pushes the limits of optical performance for the detection of fake, fraudulent and counterfeit documents.

Choose VSC9000
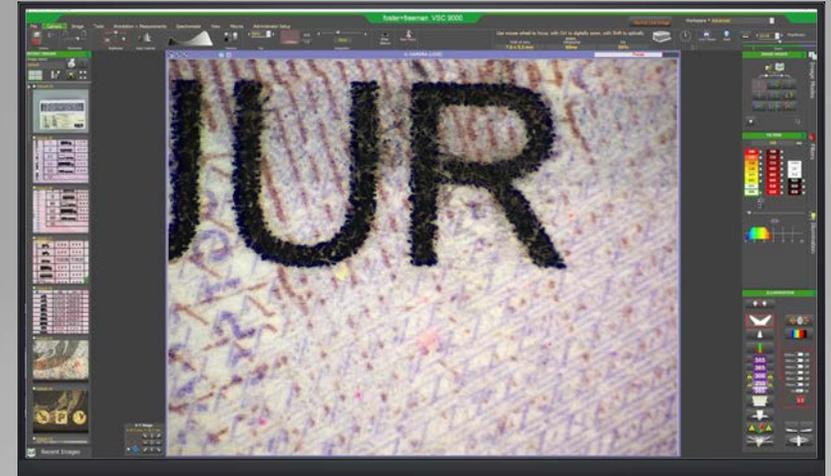### for Exceptional Image Clarity from Low to High Magnification
Leverages four decades of foster+freeman expertise to capture examination-quality images of documents at up to 480x magnification.

Choose VSC9000
for Unmatched Accuracy in Document Examination
Provides a comprehensive suite of tools for uncompromising detection of counterfeits, forgeries, and signs of tampering or manipulation.

Choose VSC9000
for the Identification of Fakes, Frauds, and Counterfeits
Digitally dissect all forms of document, using advanced forensic analysis tools to unlock hidden evidence, authenticate genuine documents, and reveal fakes and alterations.

TRAVEL DOCUMENTS

IDENTITY DOCUMENTS

BANKNOTES & CURRENCY

OTHER SECURE DOCUMENTS

● VSC 9000

foster+freeman

VSC®9000

Choose VSC9000
to Reveal the Truth Within Every Document

Leveraging over 45-years experience in forensic document examination, the VSC9000 utilises scientific-grade components and is precision manufactured to an exceptional standard to ensure the quality and performance of every system.

VSC Technology

SRi IMAGING
An optical system providing excellent clarity and image resolution for pixel-sharp magnified views of documents.

WaveTRIM ILLUMINATION
Scientific-grade filters refine LED output and provide controlled illumination to reduce glare and enhance contrast and detail for consistent document comparison.

AI Assist MRZ
A machine learning model trained on over 20,000 document images for the automated recognition of document Machine Readable Zones.

- **12MP** FINE DETAIL
- **100+** ILLUMINATION MODES
- **MICRO** SPECTROMETER
- **LEVEL 1,2,3** EXAMINATIONS
- **12MP** OVERVIEW
- **UV-VIS-IR** LIGHT SOURCES
- **3D IMAGE** ANALYSIS
- **E-PASSPORT** ACCESS
- **480X** MAGNIFICATION
- **PRECISE** WAVEBAND ACCURACY
- **INK&PAPER** ANALYSIS
- **DATA** DECRYPTION

DUAL-CAMERA IMAGING

MULTI-SPECTRAL ILLUMINATION

FORENSIC MATERIAL ANALYSIS

ADVANCED DIGITAL INSPECTION

● VSC 9000

foster+freeman

A result of over 45 years of VSC design, innovation and refinement, the VSC9000 provides examiners with a comprehensive toolkit specifically designed to address longstanding *and* emerging document security challenges.

DUAL-CAMERA ADVANTAGE

Dedicated optical systems offer seamless magnification transitions between intricate details and full A4/Letter document overviews, maximising efficiency during examinations.

480x IMAGE MAGNIFICATION

Examine in microscopic detail to analyse print and manufacturing quality, and visualise micro-scale security features like taggants.

MULTI-LAYERED ANALYSIS

Explore the 3D topography of a document's surface to reveal imperfections, security features, and determine the order that inks, stamps, marks were applied.
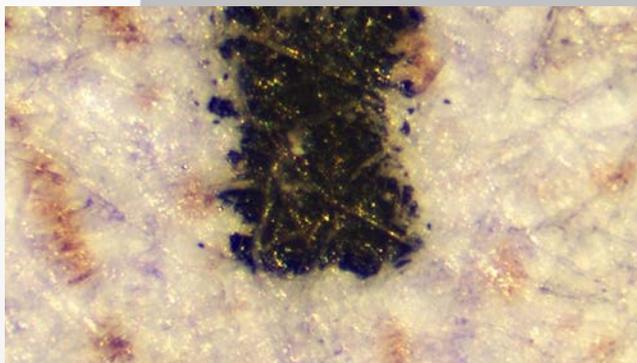
MULTI-MODAL ILLUMINATION

Utilise over 100-modes of LED and incandescent lighting to conduct examinations that span the entire forensic imaging spectrum from UV to IR.

Choose VSC9000
for Legal and Criminal Investigations

For the highest level of document examination, the VSC9000 equips forensic QDE professionals with a comprehensive suite of tools for the dissection and interrogation of all forms of written and printed documents.
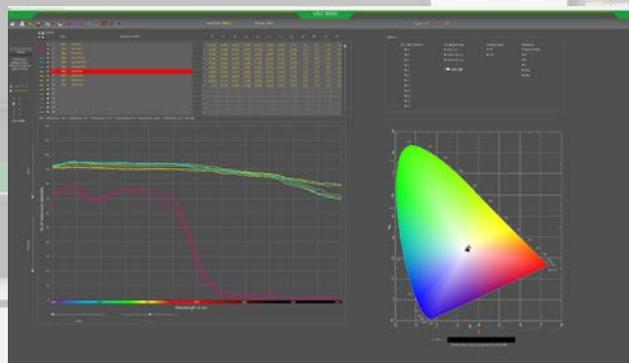
MICROSCOPIC FINE-DETAIL INSPECTION

Reveal alterations and imperfections with pixel-perfect imaging of documents at up to 480x magnification.

Boasting the single greatest leap-forward in image quality during our 40+ year history of VSC product development, the VSC9000 displays live images of unparralelled quality.

The micrometer-precise motorized XY-stage allows examiners to navigate documents and meticulously analyse every detail in real-time.

SURFACE & MATERIAL ANALYSIS

Apply scientific techniques to obtain information about a document's material properties.

The system's integrated high-resolution spectrometer delivers non-destructive, quantifiable analysis of a document's material composition.

Measuring absorption, reflectance, transmission, and fluorescence spectra, aids in material identification, detection of alterations, and may support age or origin verification in specific cases.

MULTI-SPECTRAL UV-VIS-IR IMAGING

Exploit light interactions, from UV to IR to examine beyond the limitations of human vision.

The cornerstone of VSC document analysis, precise narrowband illumination can reveal the presence of alterations and enhance the visualisation of security features.

Equipped to examine *any* document, the VSC9000 provides over 100 modes of illumination through a combination of LED and incandescent lamps.

Choose VSC9000
for International Border Security Applications

Providing the final word in document examination for identity authentication, the VSC9000 is an essential tool for border security at air, land and sea ports of entry, immigration centers, and any other location requiring high-level and reliable document checks.
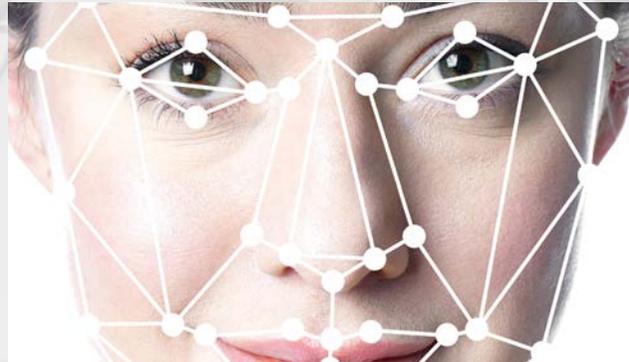

ePASSPORT CHIP DATA ANALYSIS

Extract, decode, and examine data to facilitate Chip Authentication and Terminal Authentication on ePassports.

The VSC9000 enables the user to view all personal data contained on the RFID chip of an ICAO-compliant Electronic Machine-Readable Travel Document.
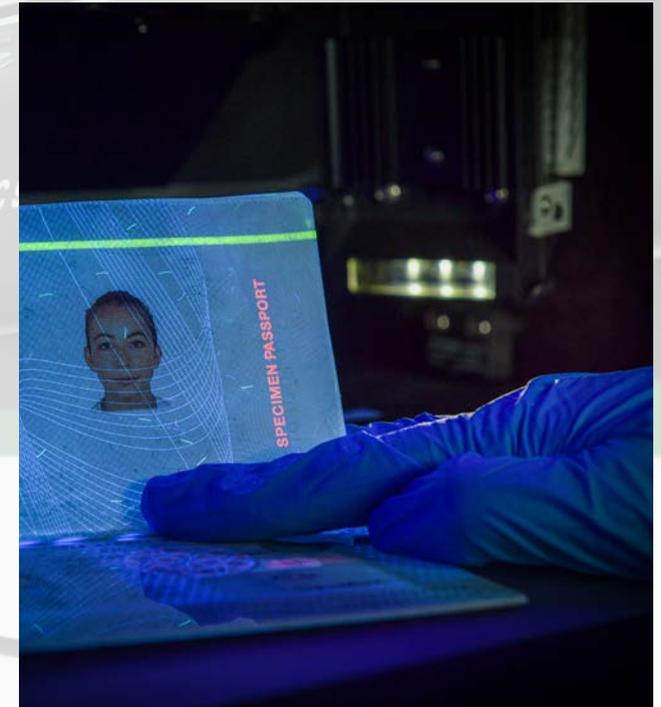
This includes the MRZ and face image protected by Basic Access Control as well as other biometric and document-specific features.

BIOMETRIC FACIAL IDENTIFICATION

Compare and identify document owners using class-leading facial identification technology powered by Gemalto Cogent LFIS.

Equipped with an optional camera, the VSC9000 can provide near instantaneous comparison of live (webcam), embedded (echip), and printed photographs to authenticate the likeness of a document holder. Trained by neural networks, the LFIS algorithm ensures efficiency and accuracy for face detection and recognition.

DOCUMENT SECURITY FEATURE ANALYSIS

Activate, visualise and authenticate all levels of security feature printed and/or embedded within a document.

Using a combination of multi-spectral illumination and embededded decoders, the VSC9000 can reveal the the presence of security features including:

Overt | Watermarks, intaglio, security threads etc...
Covert | UV features, complex OVDs, microprint etc...
Forensic | Taggants, nanoprint, phosphorescence etc...

VSC®9000

HARDWARE features

Optimised for laboratory examinations, the VSC9000 provides imaging, illumination, and material analysis tools for the comprehensive forensic-level analysis of all documents.

Essential VSC Technology includes:
- Dual-camera document imaging system.
- Forensic-level imaging optics providing up to 480x magnification.
- Full-spectral illumination from UV to IR.
- High-specification integral microspectrometer.
- Motorised XY stage for precise micrometre-accurate inspection.

SOFTWARE features

The VSC9000 software provides complete control of examinations and will be instantly accessible to anyone familiar with the VSC line of instruments.

Essential VSC Software functions include:
- Comprehensive document examination toolset with casework management.
- Reveal, decode and display physical and digital security features.
- Extract and examine ePassport biometric personal data.
- Compare documents with stored or database reference documents.
- Advanced analysis modes including 3D and HyperSpectral imaging.

foster+freeman Technology

SUPER-RESOLUTION IMAGING (SRi)
.. an optical system providing excellent clarity and image resolution of documents captured using a precision 12MP camera.

SRi mathematically processes and combines captured images to create a final Super Resolution Image, which allows for pixel-sharp magnified views of documents. By increasing resolution and clarity, SRi imaging can potentially reveal subtle details in documents that might not be visible with standard magnification.

SEGMENTED COAXIAL LIGHTING ARRAY   Patent GB2602793A
.. a coaxial array providing consistent and controlled illumination along the same axis as the camera lens.

A large, segmented coaxial illumination array allows larger coaxial features to be imaged. The single on-axis segment features improved coaxial contrast, whilst off-axis segments allow sub-surface laser-engraved features to be visualised.

WAVETRIM COLOUR-ACCURATE ILLUMINATION
.. a specialist filter technology that further refines an LEDs output to ensure a high-degree of light purity and waveband accuracy.

Scientific-grade filters 'trim' LED output and provide controlled illumination to reduce glare, boost contrast and enhance detail for consistent document comparison. A unique dichoric coating is applied to each WaveTrim filter to prevent auto-fluorescence and further reinforce the output waveband.

VSC SUITE: AI-ASSIST MRZ
.. for the automated recognition of document Machine Readable Zones (MRZ).

A machine learning model trained on over 20,000 document images, this simple AI tool assists the examiner by automatically recognising the presence of MRZ data within a document. Once detected the MRZ can be read and analysed using Optical Character Recognition (OCR).

VSC SUITE: FF-EAC
.. an optional software module to facilitate Chip Authentication and Terminal Authentication on ePassports.

Powered by SECUNET, ff-EAC enables the user to view all personal data contained on the RFID chip of an Electronic Machine-Readable Travel Document. This includes the MRZ and face image protected by Basic Access Control as well as other biometric and document-specific features.

VSC SUITE: FF-3D
.. a dedicated software solution for the three-dimensional examination of documents.

Derive a 3D model of a documents surface topography for the examination of intersecting lines, indentations, surface defects, and 3D print features (intaglio etc.). Using FF-3D, visible and IR images can be colour-mapped, inverted, and rotated throughout 3-dimensional space to aid analysis.

VSC®9000

A Natural Upgrade, for a Step-Change in Optical Performance

17-years since the release of the groundbreaking VSC6000 workstation, the VSC9000 delivers a step-change in optical performance, capable of authenticating a wider range of security features and identifying the high-quality counterfeits currently available via the criminal black market.

	VSC6000	VSC8000	VSC9000
Year of Release	2007	2015	2024
Imaging System	Single-Camera	Single-Camera	Dual-Camera
Image Resolution	5MP	5MP	12MP/12MP
Std. Field of View	210 x 160mm	209 x 167mm	310 x 232mm
Magnification	Up to 170x	Up to 175x	Up to 480x
Microspectrometer	9nm resolution	4nm resolution	2nm resolution
XY Stage	N/A	Motorised	Motorised

VSC9000 System Specification

For full instrument specifications, please contact sales@fosterfreeman.com

Document Imaging System

Primary Camera	- Colour/IR high resolution, live 12MP - Spectral range, 350-1100nm	
Secondary Camera	- A4/Letter overview image, live 12MP - Spectral range, 350-1100nm	

Standard Illumination Sources

Incident Flood	Visible and IR	LED
	UV-A, UV-B, UV-C	LED
Transmitted	Flood: UV, Visible, and IR Spot: 400-1000nm	LED
Oblique/Side	Visible and IR	LED
Variable Bandpass Spot	- 16x Low Pass filters - 16x High Pass filters	250W
Narrow Bandpass Spot	400-1000nm (1nm steps)	100W

Specialist Illumination Sources

OVD	Two-axis Visible array	LED
Coaxial	Segmented array	LED
Anti-Stokes	IR 980nm	LED
3D Imaging	Visible and IR	LED
Phosphorescence	Pulsed UV	LED
Polarised	Visible Polarised	LED

Microspectrometer

Absorption, reflectance, transmission and fluorescence spectra	Spectral Range: 400-1000nm Spatial Resolution: 2nm

XY-Stage

Motorised stage	Movement range of at least 60 x 45mm Step resolution 0.01mm (10µm)

VSC9000 Examination Accessories
For full accessory specifications, please contact sales@fosterfreeman.com

System Accessories	Part ID#
EXTERNAL 32" MONITOR FOR THE VSC 9000 PC	VSC9000/MON
OPTIONAL WIRELESS KEYBOARD AND MOUSE	VSC9000/WKM
OPTIONAL WIRELESS PRECISION MOUSE	VSC/SPACEMOUSE

Examination Accessories	Part ID#
ATR THERMOCHROMIC INK VIEWER	VSC/ATR
POLARISAFE UV LIGHTING MODULE	VSC/POLARISAFE
DOCUMENT TILT PLATE	VSC/TILT
MFSI-2 MAGNETIC SECURITY FEATURE VIEWER	VSC/MSFI/2
QUARTZ GLASS PLATE	VSC/QPLATE
LARGE A4 QUARTZ GLASS PLATE	VSC/QPLATEA4
CARD EDGE VIEWING MIRROR	VSC/EDGEVIEWER
3D IMAGING SOFTWARE MODULE	VSC/3D

Facial Identification Accessories	Part ID#
FACIAL ID EXPERT HARDWARE KIT	VSC/FR/KIT/E
FACIAL ID STANDARD HARDWARE KIT	VSC/FR/KIT/E
LIVE FACIAL IDENTIFICATION SOFTWARE	VSC/FR1

e-Reader Accessories	Part ID#
EREADER 1A (OCR601)	VSC/EREADER/1A
EREADER 3 (HID-OMNIKEY-5427CK)	VSC/EREADER3
EREADER 4 (AT900 MK2)	VSC/EREADER4

Calibration Accessories	Part ID#
NIST TRACEABLE CALIBRATION STANDARDS	VSC/CALIB

Reference Database Subscriptions	Part ID#
KEESING TRAVEL AND IDENTITY DOCUMENTS DATABASE (UPDATES SUBSCRIPTION)	VSC/DB/KDATA
KEESING TRAVEL AND IDENTITY DOCUMENTS DATABASE (ARCHIVE)	VSC/DB/ARCHIVE
KEESING BANKNOTES DOCUMENTS DATABASE (UPDATES SUBSCRIPTION)	VSC/DB/KDATA/C
KEESING BANKNOTES DOCUMENTS DATABASE (ARCHIVE)	VSC/DB/ARCHIVE/C
ASSURE ID SENTINEL (5-YEAR SUBSCRIPTION)	VSC/ASSUREID-SENTINEL

Embedded Data Decoders	Part ID#
EXTENDED RFID CAPABILITY (SECUNET SDK)	VSC/RFID
LETTERSCREEN ++ DECODER	VSC/LS/PLUS
IPI DECODERS	VSC9000/IPI

Microscope Accessories	Part ID#
EXTERNAL CAMERA (FOR MICROSCOPE INPUT)	VSC9000/CAM
F+F DVM DIGITAL VIDEO MICROSCOPE	V6/DVM2000
NIKON SMZ 745T MICROSCOPE (BASIC)	VSC/NIKON/SMZ745T
NIKON SMZ 18 MICROSCOPE (INTERMEDIATE)	VSC/NIKON/SMZ18
NIKON SMZ 25 MICROSCOPE (EXPERT)	VSC/NIKON/SMZ25
LEICA IVESTA 3 MICROSCOPE (BASIC)	VSC/LEICA/IVESTA3
LEICA M80 MICROSCOPE (INTERMEDIATE)	VSC/LEICA/M80
LEICA M205C MICROSCOPE (EXPERT)	VSC/LEICA/M205C
F+F PVM PORTABLE VIDEO MICROSCOPE	VSC/PVM

VSC®**9000**
Ready to find out more?

fosterfreeman.com/vsc-9000/

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