



Lumidigm® M-Series Fingerprint Sensors

Enhanced fingerprint capture firmware and high-performing liveness detection available in the embedded M321!

KEY ENHANCEMENTS:

- More reliable fingerprint image capture (M321)
- High performance liveness detection (M321)
- Top MINEX III algorithm for improved 1:1 and 1:N matching up to 5000
- Updated SDK tools

USE CASES:

- Enterprise: Logical access
- Banking: Employee logical access (single sign-on), teller authentication
- Healthcare: Patient and staff authentication, electronic medical record access, e-prescribing (EPCS)
- Point of Sale (POS)

BIOMETRIC AUTHENTICATION FOR THE ENTERPRISE

- **Real World Performance** — Patented Lumidigm multispectral imaging outperforms conventional fingerprint technologies, reducing problems with user enrollment and matching.
- **Reliable Fingerprint Capture** — Enhanced finger detection software consistently captures high quality fingerprint images from all users in all environments.
- **High-Performance Liveness Detection** — Embedded sensors now provide strong liveness detection, preventing the fraudulent use of fake or stolen biometric data.
- **Enhanced Matching** — Top-ranked MINEX III algorithm is interoperable with ANSI/ISO templates and delivers accurate 1:1 matching and 1:N searches up to 5,000 users.
- **Excellent Value** — Robust, compact and field-proven, M-Series USB sensors bring multispectral imaging to the enterprise desktop.

Lumidigm M-Series Fingerprint Sensors extend patented multispectral imaging technology to the value-conscious enterprise, providing the required durability and performance in a sleek and compact USB desktop housing. The M-Series captures fingerprint data for all users, detects fraudulent verification attempts, and provides accurate fingerprint matching. With the M-Series, you can strengthen your identity and access management solution by replacing vulnerable passwords with the quick and secure touch of a finger.

Multispectral imaging technology captures surface and subsurface fingerprint data, delivering clear images every time — even when finger surface features are hard to distinguish due to age, dryness, or finger pressure. Multispectral imaging outperforms traditional optical or capacitive technologies that capture only surface details, resulting in poor performance in common conditions.

High-performance liveness detection, available with the M321, prevents the fraudulent use of fake or stolen biometric data and protects user privacy.

The M Series features a top ranked MINEX III certified algorithm with interoperable ANSI/ISO fingerprint minutia templates, proven 1:1 and 1:N matching up to 5000 users, and FBI-certified WSQ finger image compression. The desktop devices support image, template and match score outputs and are available in embedded or streaming operating mode.

The M-Series USB sensors are ideal desktop devices to replace passwords and prevent the use of shared, stolen or faked ID credentials in logical access applications such as employee network access (single sign-on), bank teller authentication, patient and healthcare provider authentication, and point of sale (POS) transactions.

Operating modes:

- Embedded sensors (M321, M301*) store and process biometric data on-device. Supports Windows, Linux, Android and thin clients.
- Streaming sensors (M311) connect to an Intel 32b/64b USB host (Windows or Linux) that stores and processes biometric data.

* Legacy M301 embedded sensors not recommended for new designs

SPECIFICATIONS

	M321 (Embedded)	M301 (Embedded legacy)	M311 (Streaming)
FINGERPRINT IMAGING SYSTEM			
Technology	Patented Lumidigm optical multispectral imaging		
Image resolution / bit depth	500 dpi / 8-bit, 256 grayscale		
Platen area	0.55" x .69" (13.9mm x 17.4mm) rectangle, uncoated		
BIOMETRIC FUNCTIONS			
Image output format	ANSI 381, ISO 19794-4, WSQ compression (FBI certified)	ANSI 381, WSQ compression	ANSI 381, ISO 19794-4, WSQ compression (FBI certified)
Template output format	1:1: ANSI 378, ISO 19794-2 1:N: Proprietary (ANSI 378+ format)	ANSI 378	1:1: ANSI 378, ISO 19794-2 1:N: Proprietary (ANSI 378+ format) (SDK 6+)
Verify (1:1) match score input	ANSI 378 or ISO 19794-2 input	ANSI 378 template	ANSI 378 or ISO 19794-2 template (SDK 6+)
Identify (1:N) search score input	Proprietary template (ANSI 378+ format)	ANSI 378 template	Proprietary template (ANSI 378+ format) (SDK 6+)
Latent and liveness detection	Yes	Latent only	Latent only
FINGERPRINT TEMPLATES			
Verify (1:1) template storage	Up to 50,000	Up to 50,000	Only limited by USB host memory
Identify (1:N) template storage	Up to 4,000 group, 10 groups	Up to 3,000 group, 10 groups	Up to 5,000 users on USB host (SDK 6+) 1,000 users/group, 10 groups (SDK 5)
Identity (1:N) user storage	Up to 2,000 users (1-finger/user)	Up to 1,000 users (1-finger/user)	Up to 5,000 users (up to 10-fingers/user) (SDK 6+)
Template Size	1592 bytes or less	512 bytes or less	1592 bytes (SDK 6+), 512 bytes (SDK 5)
BIOMETRIC PROCESSING TIMES			
Finger touch to image capture	200 ms (typical)	200 ms (typical)	135 ms (typical)
Finger touch to image out	1.1 sec (typical)	1.3 sec (typical)	400 ms (typical)
Finger touch to 1:1 score or template	1.6 sec (typical)	1.8 sec (typical)	405 ms (typical)
Finger touch to 1:N score	2.0 sec (typical, 1,000 users)	2.0 sec (typical, 1,000 users)	450 ms (typical, 1,000 users)
Liveness detection (when enabled)	425 ms (added processing time)	n/a	n/a
ENVIRONMENTAL RANGE			
Ingress protection	IP50 dust and water protection		
Ambient light tolerance	90 Klux (liveness off), 10 Klux (liveness on)	18 Klux	
Temperature (operating)	-10 to 60°C		
Humidity (operating)	0-100% RH condensing		
ESD immunity (operating)	IEC 61000-4-2 Level 3 +/-8 kV air discharge		IEC 61000-4-2 Level 4 +/-15 kV air discharge
INTERFACE			
Device Interface	USB 1.1 or 2.0		USB 2.0 (480 Mbps)
Memory, platform requirement	n/a		64 MB RAM, Intel 32b/64b platform
Operating systems supported	Windows 10/8/7 (32b/64b), Windows XP, Linux, Android (M321 or M301 only)		
Encryption	n/a		Encrypted video for playback protection
FORM FACTOR			
Overall dimensions	1.9"W x 3.1"D x 2.0"H (47mm x 78mm x 52mm)		
Housing	ABS plastic		
POWER SUPPLY REQUIREMENTS			
+5VDC Current: Operational / Idle	400 mA Operational (peak) / 200 mA Idle (typical)		225 mA Operational / 100 mA Idle
STANDARDS COMPLIANCE			
Interoperability	MINEX III, ANSI 378, ISO 19794-2:2011, ANSI 381, ISO 19794-4:2011, NFIQ, WSQ	MINEX 2004, ANSI 378, ISO 19794-2:2005, ANSI 381, ISO 19794-4:2005, NFIQ, WSQ	MINEX III, ANSI 378, ISO 19794-2:2011, ANSI 381, ISO 19794-4:2011, NFIQ, WSQ (SDK 6+)
Device certifications	CE, FCC Part 15 Class B, EN 60950, IEC 62471, RoHS, DEA EPCS, support for thin clients		CE, FCC Part 15 Class B, EN 60950, IEC 62471, RoHS, DEA EPCS, WHQL

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Lumidigm® V-Series V371 Fingerprint Reader



South Africa President Jacob Zuma receives his Smart ID Card.

Source: GCIS

FINGERPRINT AND CARD AUTHENTICATION ON A SINGLE DEVICE

- **Best Available Biometric Performance** — Integrated Lumidigm V-Series fingerprint sensor provides industry-leading biometric authentication.
- **Detects Fraudulent Verification Attempts** — Award-winning liveness detection easily distinguishes between fake and legitimate biometric characteristics.
- **Streamlines Access for Authorized Users** — Convenient interface lets authorized users quickly validate their identities and be on their way.
- **Eliminates Fraud Due to Shared or Stolen IDs** — Multi-factor authentication with a biometric ensures no user can be verified with someone else's ID card.
- **Leverages Biometric Features of Smart Cards** — Biometric citizen ID cards may be used for assured authentication in any application where a card alone is not sufficient proof of real identity.

The Lumidigm® V371 Reader combines industry-leading biometric performance of HID Global's multispectral fingerprint technology and its best-in-class contactless OMNIKEY® RF card-reading technology into a single, integrated unit for strong multi-factor authentication. Expanding on the success of the Lumidigm V-Series fingerprint sensors and modules, this HID Biometrics solution enables customers to leverage biometric smart ID cards for a range of applications where real identity verification is critical.

The patented multispectral imaging capability of the Lumidigm V371 reads fingerprint data from both the surface and the subsurface of the skin to deliver superior, single-try biometric performance across all populations,

including users with poorly-defined or damaged fingerprints. Award-winning liveness detection prevents the use of fake fingerprints to verify against a borrowed or stolen smart card. These biometric capabilities are combined with contactless card-reading technology to provide strong authentication in one device.

The V371 provides a quick, single-handed interface for user convenience. With the easy-to-integrate and compact V371, multi-factor authentication can be effortlessly and cost-effectively implemented in applications such as government benefit distribution, voter ID, bank account applications, high-value financial transactions, healthcare eligibility verification, and e-prescribing.

DISCLAIMER: The Lumidigm V-Series V371 Reader, as sold, does not perform match-on-card functionality. Match-on-card functionality may be covered by one or more patents, including US Patents RE43,333 and RE44,034, owned by third parties. The V371 should not be used to perform match-on-card functionality without first determining whether a license is needed and obtaining such a license as appropriate.

Lumidigm V371 FEATURES:

- Lumidigm® multispectral imaging fingerprint technology
- Convenient, single-handed interface with contactless card cradle
- Flexible single-factor and two-factor authentication options
- State-of-the-art liveness detection

technology adaptable against future spoof threats

- Supports MIFARE® Classic, MIFARE DESFire® 0.6, and MIFARE DESFire EV1 contactless cards
- Easy integration with the Lumidigm software development kit (SDK)
- Indicator lights: blue, green, red
- USB 2.0 interface

- ANSI 378 and ISO 19794-2 / MINEX III certified fingerprint template and algorithm (with SDK 6 or higher)
- Biometric verification (1:1) and identification (1:N) functions (performed on the USB host device)



SPECIFICATIONS

Lumidigm® V371

FINGERPRINT IMAGING SYSTEM	
Technology	Patented Lumidigm optical multispectral imaging
Image resolution / bit depth	500 dpi / 8-bit, 256 grayscale
Platen area	0.7" x 1.1" (18mm x 28mm) ellipse
BIOMETRIC FUNCTIONS	
Image out	ANSI 381 compliant, ISO 19794-4:2011, FBI certified WSQ, Flat Binary
Template out	ANSI 378 compliant; ISO/IEC 19794-2:2011
Score or verification (1:1)	Requires ANSI 378 template input
Identification (1:N)	Uses ANSI 378+ templates as input
Liveness detection	Included
Latent protection	Included
FINGERPRINT TEMPLATE STORAGE	
Verification (1:1)	n/a on device; unlimited on PC
Identification (1:N)	Up to 5000 users on USB host (SDK 6+); up to 1000 users per group, unlimited groups (SDK 5) Note: 1:N templates not compatible between SDK 5 and SDK 6
CARD READING SYSTEM	
Contactless card interface	13.56 MHz
Supported smartcards	ISO14443A/B ISO15693
Supported credentials	MIFARE® Classic, MIFARE DESFire® 0.6, and MIFARE DESFire EV1 contactless cards
Transmission rate	Up to 848 kb/s
ENVIRONMENTAL RANGE	
Ingress protection	IP65 at the platen / IP53 enclosure
Operating temperature	0 to 60°C
Storage temperature	-20 to 80°C
ESD Immunity	IEC 61000-4-2 4kV/8kV
INTERFACE	
USB	High-speed USB 2.0 Bus Powered
Indicator Lights	Blue / Green / Red
Operating systems supported	Windows 10 (32b/64b); Windows 8 (32b/64b); Windows 7 (32b/64b); Windows XP/2000 (Deprecated)
Encryption	Encrypted video for privacy/playback protection
FORM FACTOR	
Overall dimensions	79.2 mm x 124.3 mm x 63.2 mm (3.12" x 4.89" x 2.49")
Housing	Plastic, IP53
POWER SUPPLY REQUIREMENTS	
Supply current – operational	+5 VDC 500 mA (peak)
Supply current – idle	+5 VDC 250 mA (typical)
STANDARDS COMPLIANCE	
Interoperability	ANSI 378, ISO 19794-2:2011, ANSI 381, ISO 19794-4:2011, NFIQ compliant, MINEX III-certified algorithm
Device certifications	CE, FCC Part 15 Subpart C, RSS Gen, RSS 210, R&TTE Directive including EN 300 330, EN 301 489, RoHS, DEA, EPCS, Microsoft WHQL
MINIMUM SYSTEM REQUIREMENTS	
Interface	High-speed USB 2.0 (480 Mbps)
Memory	64 MB free RAM
Operating system	Supported OS required (see Interface)

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ASSA ABLOY



Lumidigm® V-Series Fingerprint Sensors



The V-Series provides biometric authentication for over two billion banking transactions per year around the world.

INDUSTRY-LEADING BIOMETRIC AUTHENTICATION

- **Best Available Biometric Performance** — From wet to dry, dirty to bright, patented multispectral imaging technology is perfect for every-day deployment conditions.
- **Delivers Seamless User Experience** — Fast and intuitive, the V-Series provides reliable authentication for any user demographic.
- **Detects Fraudulent Verification Attempts** — Award-winning liveness detection rejects fakes and spoofs while ensuring access to authorized individuals.
- **Meets Application Requirements** — Superior biometric performance combined with excellent interoperability and easy integration makes the V-Series the first choice for demanding deployments.
- **Provides a Low Cost of Ownership** — Robust and field-proven, V-Series sensors require minimal maintenance, even in unattended and high-throughput applications.

Key Enhancements:

- Up to four times faster image capture (V302)
- Top-rated MINEX III certified algorithm
- FBI-certified WSQ compression
- New SDK tools

Use Cases:

- **Banking** — ATMs, teller stations, logical access
- **Healthcare** — E-prescribing (EPCS), medical dispensing, record access, benefit verification, patient tracking
- **Citizen ID** — Benefit distribution (pensions, healthcare, welfare), voter verification, national ID.

Lumidigm V-Series Sensors deliver an unmatched ability to acquire, excellent biometric interoperability, and best-in-class liveness detection in a robust device for a low total cost of ownership in a wide variety of fingerprint authentication applications.

The firmware supplied with embedded V-Series sensors (V302) now provides **four times faster image capture**, a top-ranked MINEX III certified algorithm for better accuracy, and FBI-certified WSQ image compression for fast and accurate image transfers. Streaming V-Series sensors (V311) include the MINEX III algorithm and FBI-certified WSQ image compression features when running Lumidigm SDK 6.0 or higher on a USB host device.

The V-Series provides superior images for anyone, anytime, in any environment for superior biometric performance in the real world. Patented multispectral imaging technology simultaneously reads

the surface and subsurface fingerprint to capture clear images every time — even when finger surface features are hard to distinguish due to age, dirt, finger pressure, and skin or environmental conditions.

With best-in-class liveness detection, the V-Series provides a quick and easy user experience while reducing the opportunity for fraud, ensuring that the individual is who they claim to be.

Designed to meet demanding identity verification applications seen around the world, from banking to healthcare to citizen ID, the V-Series conforms to biometric interoperability standards including ANSI and ISO fingerprint minutia template standards, a top-ranked MINEX III certified algorithm and FBI-certified WSQ finger image compression.

The configurable V-Series supports image, template and match score outputs in embedded or streaming operating modes.

Lumidigm® V-Series Sensor key features:

- Multispectral imaging with liveness detection
- Four times faster capture than earlier V30x versions
- MINEX III minutia algorithm supports ANSI/ISO standards
- IP65 water and dust protection for harsh environments

Available in two operating modes:

- Embedded sensors (V302) process biometric data on the device, including template extraction and matching, speeding time to market.
- Streaming sensors (V311) connect to a USB host to process biometric data using the Lumidigm SDK.

SPECIFICATIONS

	V302-40 (Embedded)	V302-xx (Embedded legacy)	V311-00 (Streaming)
FINGERPRINT IMAGING SYSTEM			
Technology	Patented Lumidigm optical multispectral imaging		
Image resolution / bit depth	500 dpi / 8-bit, 256 grayscale		
Platen area	0.7" x 1.1" (18mm x 28mm) ellipse		
BIOMETRIC FUNCTION OUTPUTS			
Image output format	ANSI 381, ISO 19794-4, WSQ compression (FBI certified)	ANSI 381, WSQ compression	ANSI 381, ISO 19794-4, WSQ compression (FBI certified)
Template output format	1:1: ANSI 378, ISO 19794-2 1:N: ANSI 378+	ANSI 378	1:1: ANSI 378, ISO 19794-2 1:N: ANSI 378+ (SDK 6+); Proprietary (SDK 5)
Verify (1:1) template match score	ANSI 378 or ISO 19794-2	ANSI 378	ANSI 378 or ISO 19794-2 (SDK 6+)
Identify (1:N) score	Supported on USB host with SDK 6+	ANSI 378	ANSI 378+ (SDK 6+), ANSI 378 (SDK 5)
Latent and liveness detection	Yes. (Field-updatable algorithm)		
FINGERPRINT TEMPLATES			
Verify (1:1) template storage	Not supported on device	Up to 1,000	Limited by USB host memory
Identify (1:N) template storage	Not supported on device (can output 1:N template)	Up to 400 users (V302-30 only)	Up to 5,000 users (SDK 6+); Up to 1,000 users/group (SDK 5)
BIOMETRIC PROCESSING TIMES			
Finger touch to image capture	200 ms (typical)	800 ms (typical)	800 ms (typical)
Finger touch to image out	800 ms (typical)	1.3 sec (typical)	800 ms - 1 sec (typical)
Finger touch to 1:1 score/template	1.5 sec (typical)	2.0 sec (typical)	900 ms - 1.1 sec (typical)
Finger touch to 1:N score	Not supported on device	2.1 sec (typical, V302-30 only)	950 ms - 1.1 sec (typical)
Liveness detection (when enabled)	500 ms V30x-40 and V30x-30, 100 ms on prior versions (typical)		50 ms (typical)
ENVIRONMENTAL RANGE			
Ingress protection	IP65 dust and water protection		
Temperature (operating)	-10 to 60°C		
Humidity (operating)	0-100% RH condensing		
ESD immunity (operating)	IEC 61000-4-2 Level 4+/-15 kV Air		
INTERFACE			
Device Interface	USB 1.1 or 2.0 (480 Mbps)		USB 2.0 (480 Mbps)
Memory, platform requirement	n/a		64 MB RAM, Intel 32b/64b platform
Operating systems supported	Windows 10/8/7 (32b/64b), Windows XP, Linux, Android (V302)		
Encryption	n/a		Encrypted video for playback protection
FORM FACTOR			
Overall dimensions	3.25"W x 4.00"D x 2.35"H (83 mm x 102 mm x 60 mm)		
Housing	Painted magnesium alloy, IP65 rating		
POWER SUPPLY REQUIREMENTS			
Supply current — operational	+5 VDC 460 mA (peak)		+5 VDC 300 mA (peak)
Supply current — idle	+5 VDC 200 mA (typical)		+5 VDC 100 mA (typical)
STANDARDS COMPLIANCE			
Interoperability	ANSI 378, ISO 19794-2:2011, ANSI 381, ISO 19794-4:2011, MINEX III, NFIQ	ANSI 378, ISO 19794-2:2005, ANSI 381, ISO 19794-4:2005, MINEX 2004, NFIQ	ANSI 378, ISO 19794-2:2011, ANSI 381, ISO 19794-4:2011, MINEX III, NFIQ (SDK 6+)
Device certifications	CE, FCC Part 15 Class B, EN 60950, IEC 62471, RoHS, DEA EPCS, support for thin clients		CE, FCC Part 15 Class B, EN 60950, IEC 62471, RoHS, DEA EPCS, WHQL

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