



V-Series fingerprint readers are field-proven and widely deployed, authenticating over one billion ATM and teller transactions per year.

TRUSTED AND SECURE FINGERPRINT AUTHENTICATION

- **Establishes Trust in Transactions** — Device enables secure communications between the sensor and a centralized account management system, ensuring that only authorized users gain access.
- **Encrypts Sensitive Data** — Cryptographic toolkit provides data security throughout sensitive transactions, preventing man-in-the-middle and replay attacks.
- **Resists Tampering** — Cryptographic keys and other data stored on the device are protected by active hardware tamper detection and response.
- **Provides Best Available Biometric Performance** — Patented Lumidigm multispectral imaging technology leads the industry in real world fingerprint authentication performance.
- **Prevents Fraudulent Verification Attempts** — Award-winning liveness detection reliably distinguishes between fake and legitimate biometric characteristics.

USE CASES:

- **ATMs** — second factor or PIN replacement
- **Tellers** — confirm customer and teller identities
- **High-value transactions** — wire transfers, portfolio management, B2B payments, secure web portal access
- **Government benefits** — pension payments, public healthcare access

HID Global's Lumidigm® V-Series V421 Fingerprint Sensors combine world-renowned Lumidigm biometric performance with data encryption, tamper detection/response, and key management for trusted user authentication. Designed to simplify transactions for users while eliminating fraud for financial institutions, the V421 provides convenient and reliable biometric authentication in solutions requiring end-to-end security in transactions.

New to the V-Series, the cryptographic toolkit provides a broad set of tools that allow an organization to secure data transmissions. The V421 encrypts sensitive data for transactional security, preventing man-in-the-middle and replay attacks using mutual authentication between the host and the sensor. The tamper response capability on the V421 detects and resists physical tampering of cryptographic keys and other data stored on the device. Encrypted and authenticated firmware updates prevent malicious code loading.

The V421 offers exclusive multispectral imaging and best-in-class liveness detection that leverages the industry's best-performing fingerprint sensor platform. Known for its ability to provide a quick and easy user experience while reducing the opportunity for fraud, HID Global's Lumidigm technology gathers biometric data from the surface and subsurface of the finger to provide reliable, real world biometric authentication in any environment and with any user population. Strong, field-updatable liveness detection ensures that the person making the transaction is who they claim to be.

The V421 supports multiple standard cryptography transaction models or can be customized for a proprietary, customer-specific solution. With flexible deployment options, the V421 will reduce fraud and restore trust in transactions.

Lumidigm® V421 FEATURES:

- Cryptographic toolkit with symmetric/asymmetric encryption/decryption algorithms, hashing functions, random number generation, and digital signature generation/verification.
- Physical tamper resistance, detection and response.
- Per-device encryption keys that can be remotely updated.
- Mutual authentication between the host and the sensor.
- Encrypted and authenticated firmware updates.
- Secure boot.
- Lumidigm multispectral fingerprint imaging technology.
- State-of-the-art liveness detection.



SPECIFICATIONS

| Lumidigm® V421 | |
|---|---|
| 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" (17.8mm x 27.9mm) ellipse; durable, chemical resistant glass (no coatings to wear out) |
| BIOMETRIC FUNCTIONS | |
| Image out | Uncompressed or WSQ compressed images |
| Template out | ANSI 378 and ISO 19794-2 compliant (MINEX III certified) |
| Score or verification (1:1) | ANSI 378 and ISO 19794-2 template inputs supported |
| Liveness detection | Included, updatable via firmware |
| Latent protection | Included |
| SECURITY FEATURES | |
| Physical tamper protection | Encapsulated electronics, tamper detection switches, tamper label, secure memory zeroization and other features. |
| Cryptographic toolkit | AES 128/192/256, TDES 64/128/192, RSA 1024/2048/4096, PKCS v1.5, v2.1 digital signature support, SHA-1/256/384/512, HMAC (variable key size), random number generator, unique device identifiers, remote and factory key loading support, configurable secure memory for key storage, multiple secure transaction models, secure boot, encrypted firmware updates and more. |
| BIOMETRIC PERFORMANCE | |
| Finger placement to capture | <1 sec. (typical) |
| Finger placement to image | 2.0 sec. (typical) |
| Finger placement to template / score | 2.3 sec. (typical) |
| ENVIRONMENTAL RANGE | |
| Ingress protection at platen | IP65 |
| Temperature (operating, with enclosure) | -10 to 60°C |
| Humidity (operating, with enclosure) | 0-100% RH condensing |
| ESD Immunity | IEC 61000-4-2 +/- 4kV contact, +/- 8kV air |
| INTERFACE | |
| USB | 480 Mbps high-speed |
| Operating systems supported | Windows 7, Windows 10 |
| FORM FACTOR & DURABILITY | |
| Overall dimensions | V421 Sensors: 3.25 x 4.00 x 2.35 in (8.3 x 10.2 x 6 cm) (enclosure included) |
| Enclosure | V421 Sensors: Painted magnesium alloy, IP65 rating, 2m USB cable |
| POWER SUPPLY REQUIREMENTS | |
| Supply current — operational | +5 VDC 500 mA (peak) |
| Supply current — idle | +5 VDC 100 mA (typical) |
| STANDARDS COMPLIANCE | |
| Interoperability | ANSI 378, ISO 19794-2:2005, ISO/IEC 19784-1:2006, MINEX III-certified algorithm |
| Device certifications | CE, FCC Part 15 Class B, EN 60950, IEC 62471, RoHS, DEA EPCS, FBI WSG, CTI |
| MINIMUM SYSTEM REQUIREMENTS | |
| Interface | USB 2.0 High Speed |
| LIVE FINGER DETECTION | |
| HID multispectral imaging can identify a variety of fake finger types such as silicone, latex, glue, gelatin and paper. HID is the only fingerprint reader to detect and prevented 100% of the spoof attempts during ISO/IEC 30107-3 Presentation Attack Detection (PAD) certification testing. | |
| OTHER | |
| Life | >1 million touches |
| Battery (cryptographic key preservation) | 5 years service life and 10 year storage |
| Blue LED | Blue LED light is user configurable, to remain on or activate upon finger placement |
| Indicator LED's | Red and green LED's are located on the housing |
| Threshold settings | Matching threshold setting is configurable by the user |
| Template size | Template size is configurable by the user |
| Output image size | 500 DPI, cropped 272 x 400 pixels |

The HID Global V421 Platform supports the following cryptographic algorithms and has been found to be fully compliant and registered with the NIST CAVP (Cryptographic Algorithm Validation Program). [<https://src.nist.gov/projects/cryptographic-algorithm-validation-program>]

| CAVP Validation Number | Implemtation | Modes/States/Key Sizes/Description/Notes |
|------------------------|-----------------------|---|
| 3970 | AES Validation | AES (e/d: 128, 192, 256, ECB, CBC), CTR (128, 256) |
| 2177 | Triple-DES Validation | TCBC (e/d: KO 1), TECB (single block only) |
| 2029 | RSA Validation | ALG (RSASSA-PSS, PKCS #1 v1.5); KEY (Gen); RSA Sig (Ver) (1024); RSA (Gen, Ver) (2048, 3072); SHA (1, 224, 256, 384, 512) |
| 2587 | HMAC | HMAC-SHA (1, 224, 256, 384, 512); KS < BS, KS = BS, KS > BS |
| 3273 | SHS Validation | SHA (1, 224, 256, 384, 512) BYTE-only |
| 1164 | DRBG Validation | CTR-DRBG-AES (256) Prediction Resistance Enabled |

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