

Lumidigm® V-Series V421-NC Fingerprint Sensors



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 WSQ, 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://csrc.nist.gov/projects/cryptographic-algorithm-validation-program>]

CAVP Validation Number	Implementation	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

For more information, please [click here](#).

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2021-02-12-bio-lumidigm-v-series-V421-mobile sensors-ds-en

PLT-04056