INTEGRATED BIOMETRICS

Integrated Biometrics' FIVE-0 10-Finger Optical Fingerprint Scanner

Mobile Enrollment, Verification, and Identification That Fits in A Shirt Pocket

The Case for Mobile Fingerprint Enrollment, Verification, and Booking

Law enforcement, military, border control, and national identification programs face a variety of well-publicized and growing expectations. These challenges include:

- Instant identification of illegal immigrants, criminals, and terrorists at the border, before they enter the country and disappear into internal populations
- Enrollment and identification of large populations during natural disasters, often when utilities such as electricity are unavailable
- Rapid enrollment and verification of individuals in remote areas, away from primary facilities
- De-escalation at mass protests and riots by processing primary agitators quickly on-site, rather than having to move angry populations to jails and precincts
- National ID program enrollment and verification
- Quick and efficient identification of terrorist targets and other threats to military forces hidden within civilian populations
- Verification that military strikes eliminated the designated targets

These situations, among many others, place a premium on processing identity in the field, where speed, accuracy, portability, and reliability are essential. Agents must be able to enroll individuals in FBI, counter-terrorism, and international criminal databases – something more typically accomplished within buildings. They also must quickly identify suspects and targets, with extremely high levels of accuracy.

Mobile identification validates suspect individuals at the point of contact – a faster and safer process than attempting to transport large groups of potentially hostile people into a centralized facility. Once cleared, individuals resume normal activities sooner, with less disruption to lives and the local economy.

Forensic operations benefit from a mobile solution, too. Rapid enrollment simplifies the identification of the deceased in unusual situations such as natural disasters. Military personnel gain the ability to identify targeted individuals or soldiers lost at the site of the action, which dramatically reduces the time needed to confirm results or to notify the units affected and next of kin.

Mobile Biometric Identification – And the Limits of Prism-Based Scanners

Biometric identification is the key to mobile identity enrollment, verification, and booking. By definition, biometric solutions use a unique physical characteristic that every individual carries on their body. Fingerprint scanning is the preferred baseline. This technology is highly evolved, with stringent National Institute of Standards and Technology (NIST) and United States Federal Bureau of Investigation (FBI) standards that define quality, data format, and privacy.

Unlike prism-based scanners, Integrated Biometrics' FIVE-0 delivers truly mobile, FBI-certified 10-print enrollment in a package small enough to fit in a shirt pocket.

The challenge with any biometric identification solution is portability. Fingerprint scanners are among the smallest, easiest to carry biometric solutions available. And yet, traditional prism-based backlit 10-finger scanners are impractical for mobile enrollment and booking operations. These units rely on glass platens and complex prism assemblies. As such, they are heavy (typically around 5 pounds), bulky, and require separate battery packs for power, adding another 5-10 pounds to the overall kit. "Portable" becomes a relative term since these systems often require a large, padded case to be transported safely.

The glass surfaces on these scanners are prone to scratching, and any of the glass or prism elements can shatter. The scanning surface itself must be cleaned between scans to remove dirt or oils from previous scans, which slows processing. Extremes of heat, cold, bright lights, and direct sunlight often render the scanners unusable.

These physical restrictions limit the ability of glass-based 10-finger scanners to be used for enrollment or booking in the field. Even worse, the scanner/power source combination is too bulky for one individual to carry. The size and expense limit usability, especially in environments where a car or truck cannot deliver a unit to where it is needed.

The Ideal 10-Finger Mobile Scanner – Compact FAP50 Format, FBI-Certified

Device mobility is a top priority for law enforcement, border control, and humanitarian assistance. A small and light form factor is the key, plus low power consumption, durability, environmental tolerance, data security, and FAP50 conformance.

Devices like Integrated Biometrics' Five-O free officers from desks and field offices. This instant identification and flat capture on the go saves tremendous amounts of time.

– Daniel Bachenheimer, Biometrics Vulnerability Assessment Expert Group, Biometrics Institute, London

The model solution for mobile enrollment, verification, and booking is a single unit that can handle 10-finger scanning while being lightweight and portable. Often, such as when transporting the scanner in a car trunk or a backpack, that device is Integrated Biometrics' rugged and highly reliable Kojak unit.

For other situations, something more aggressive is the answer – a full-featured 10-finger scanner that handles extreme conditions yet fits comfortably into a shirt pocket. This device must:

- Operate off available power, such as a USB connection to a smartphone or tablet
- Deliver FBI-certified scans compliant with the primary databases for domestic and international criminal and terrorist identification
- Meet the FAP50 standard, which mandates a 3.2" x 2" area for finger placement

The FAP50 standard corresponds directly to the space allocated for multi-finger prints on the paper records stored by the FBI before digital alternatives entered wide-spread use. A 10-finger scanner built to these dimensions has the potential to be significantly smaller, lighter, and

more portable than devices meeting larger format specifications. FBI-certification ensures results that meet the industry's most stringent requirements for resolution, compression, and AFIS database compatibility, despite its compact size.

Most manufacturers recognize the need, but they continue to work within the limitations of glass-and-prism technologies. The smallest form factor these solutions have been able to accomplish meets the FAP60 standard, with a 3.2" x 3" scanning area. The complexity inherent in these devices also leads to issues with ruggedness and reliability under common field conditions.

FIVE-0 At-A-Glance

- The first FBI-certified optical fingerprint scanner that delivers mobile FAP50 enrollment, verification, and booking in a package that fits in a shirt pocket
- Uses Integrated Biometrics' patented light emitting sensor (LES) technology
- Built specifically for field operations in difficult environments
- Operates for hours using nothing more than a smartphone as its power source
- Operates in conditions where other fingerprint scanners cannot, without fragile glass surfaces or light sources that need replacement

Integrated Biometrics has taken a different approach, developing the industry's first FAP50, FBI-certified optical biometric fingerprint scanner. This 10-finger unit delivers FBI-certified enrollment, verification, and booking in a package that fits in a shirt pocket. As such, it is the ideal 10-finger mobile scanner.

Introducing Integrated Biometrics' FIVE-0

FIVE-0 uses the Integrated Biometrics' patented light emitting sensor (LES) technology to build a compact, dependable device for mobile enrollment, verification, and booking. FIVE-0 is small, lightweight, and requires very little power. It delivers exceptional scan quality despite difficult field conditions, such as latent fingerprints, bright lights, or direct sunlight, and is highly resistant to dirt, cold, or heat.

FIVE-0's LES sensor uses an electroluminescent polymer to generate an image. This film layer is laminated directly to a thin film transistor (TFT) camera. The result is a slim and lightweight optical 10-finger scanner that meets the resolution and performance

standards mandated for FBI-certified scans – in a package far smaller than what is possible using glass platens, prisms, and backlighting.

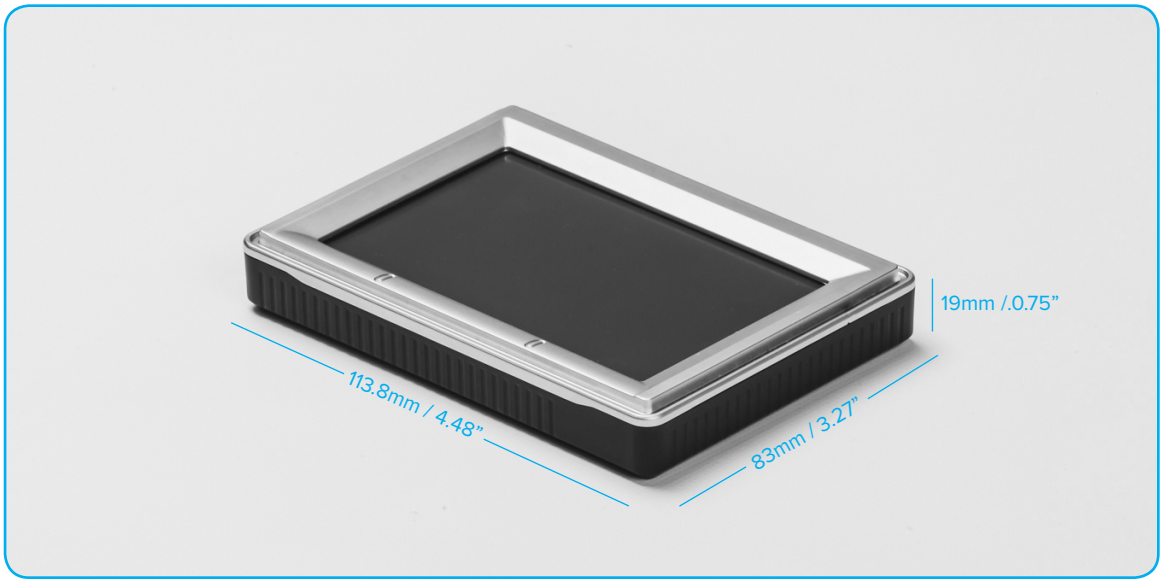
LES technology means that FIVE-0 scanners can operate for hours using power provided by a standard smartphone. With a compact, FAP50-compliant scanning area of 3.2" x 2", they are easy to transport and easy to use. The unique nature of LES places fingers automatically in the optimal position for accurate scanning. Fingerprint scanners using LES automatically reject common nonconductive spoofing techniques. There are no glass surfaces to scratch or break, and no internal light sources to replace.

FIVE-0 comes in two versions. The embedded unit integrates easily into OEM solutions from other manufacturers, such as combined fingerprint, facial, and iris biometric solutions. Its small form factor and low power requirements directly benefit these multimodal offerings.

The standalone FIVE-0 product contains a USB-C port, which draws power using a standard USB connection to a smartphone, tablet, or laptop. This same connection enables FIVE-0 to connect to a broader solution set, as needed.

Both models ship with a comprehensive software development kit (SDK) and easily applied application programming interfaces (APIs). These tools streamline integration with a broad range of identity management and other software applications.

A Better Solution for Mobile Enrollment, Verification, and Booking



Integrated Biometrics redefined mobile identification with its Sherlock two-finger LES optical fingerprint scanners. Now, FIVE-0 represents the same level of advancement for mobile 10-finger scanning when speed, portability, and accuracy are crucial.

Officers from police, military, border control, and national identification programs already carry large volumes of gear into the field. With FIVE-0 they can now perform 10-finger biometric scanning as well, without adding significant bulk or weight. Instead of a one- or two-finger scanner for identification and suitcase-based enrollment kit in the trunk of a car, a single device that fits in a shirt pocket serves both needs.

Field personnel can now process more people, more rapidly, closer to the point of contact than ever before. The result is greater safety for operators and faster resolution of potentially dangerous situations – even in remote areas where electricity and other utilities are not available.

FIVE-0 also enables essential government services that require verification, such as driver's licenses, voter registration, and social programs delivery, to reach remote populations without requiring that those individuals travel hundreds or thousands of miles to enroll. In the case of recovery from manmade or natural disasters, field verification helps individuals establish identity and receive essential services sooner, while simultaneously reducing fraud.

The need for a compact, rugged 10-fingerprint scanner has never been greater. Integrated Biometrics' FIVE-0 is the device that brings the promise of mobile biometric identification to fruition.

About Integrated Biometrics

Integrated Biometrics, LLC designs and manufactures FBI-certified fingerprint sensors for identity solutions serving government agencies, commercial organizations, and consumer markets worldwide. Our technology utilizes a durable, patented, light emitting sensor (LES) film which outperforms traditional prism-based devices in accuracy, power consumption, and usability. These innovative sensors enable organizations to enroll and verify individuals within large populations for use in national ID programs, elections, social services, homeland security, law enforcement, and military operations. Integrated Biometrics offers the only Appendix F FBI-certified sensors that meet the mobility requirements demanded by end users.

Specifications

FBI Certification	FBI Appendix F, PIV, GSA FIPS 201, Mobile ID IQS FAP50
Resolution	500 PPI
Platen Area	3.38" (W) x 2.12" (H) / 85.85 mm (W) x 53.97 mm (H)
Sensing Area	3.2" (W) x 2.0" (H) / 81.28 mm (W) x 50.8 mm (H) – FAP50
Gray Scale	256 grayscale dynamic range
Image Size	1600 (W) x 1000 (H) pixels
Supported Image Formats	RAW, JPEG2000, BMP, PNG, WSQ
Scanner Physical Size	4.48" x .75" x 3.27" 113.8 mm x 19 mm x 83 mm
Product Weight	6.76 oz / 191.64 g (not including cable)
Interface	USB 2.0 (USB Type C, Molex 51146-0600, Molex 51021-0600)
USB Certification Spec	USB-IF USB.ORG
USB Power Requirement	4.40V – 5.25V; Full scanning TFT <300mA; Suspend <2mA
FCC/CE Conformance	FCC Part 15 (per ANSI C62.4:2003) Class A, CSA ICES-003 Class A, CE Emissions: EN 55022:2006 Class A, CE Immunity EN 55024:1998/A1:2001/A2:2003, IEC 61000-4-2
Operating Temperature	-10°C ~ +55°C / 14°F ~ 131°F
Humidity	30~85% RH < 40°C / 104°F
Storage Temperature	-40°C ~ +80°C / -40°F ~ 176°F
Hazardous Material	RoHS Directive 2002/95/EC
Ingress Protection	IP65 (Sealed bezel to scanning surface for embedded version)
Surface Durability	MIL-C-675c 4.5010, MIL-STD-810F
API Interface	Capture single finger/multi-finger; Roll capture; Multi-device/Multi-thread support
Vibration	MIL-STD-810-F (Method 514.5), Category 24, Fig. 514.5C-17
Surface Resistance	Ammonia, IPA, methanol, soaps/detergents, salt water
OS Support	Windows Desktop 32/64 bit (7, 8, 10), Windows Server, Linux, Android 4.0+, Java

For more information, contact Integrated Biometrics:

+1 888 840-8034 | sales@integratedbiometrics.com | www.integratedbiometrics.com