

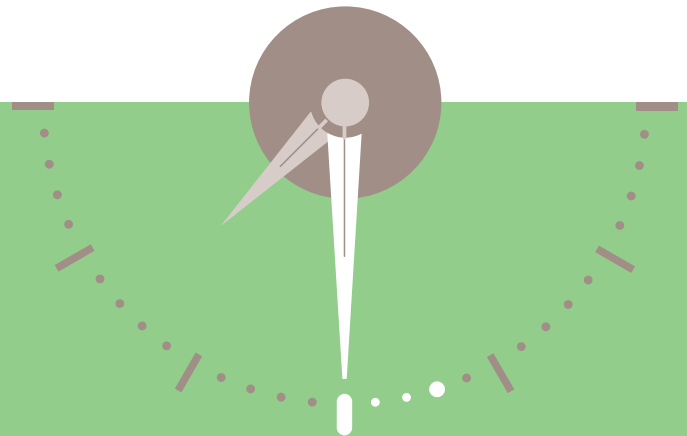
*integrated solutions  
for interoperable  
systems  
of fingerprint  
identification*



**PAPILLON FILTER**  
EXPRESS ID CHECKS



**PAPILLON** SOLUTIONS  
FOR  
INSTANT IDENTIFICATION  
BY SINGLE  
FLAT FINGERPRINTS





**PAPILLON AO** is a well-known Russian company with extensive experience in the provision of robust automated fingerprint identification systems (AFIS) and comprehensive collection of innovative software biometric solutions for law-enforcement agencies, government and business entities throughout Russia and abroad.

PAPILLON designs and implements large-scale interoperable systems of finger and palm print identification meeting diverse identity challenges, including crime investigation, that fully comply with the current world's standards for the interchange, identification and verification of fingerprint information.



Express ID checks are conducted to discover individuals who are suspected in crimes or wanted, to expose identity fraud, to establish identity of citizens who refuse or are unable to give any details of themselves. Border and immigration control, background checks for job applicants and inmate tracking are also examples for quick identity checks.

### Frequently asked questions about the Express ID Check technology and the PAPILLON FILTER system

#### 1 What is the express checking of personal identity by fingerprints?

The whole point of real-time express identity checks against any PAPILLON AFIS database is that two or more finger images captured with a livescan fingerprint device are automatically transmitted for search of the database to obtain an instant comprehensive response.

In case of positive identification, demographic data and relevant face photos from any and all matching files are then retrieved and displayed on the screen of the submitting station.

Otherwise, the *No matching tenprints found* message appears on the screen. Responses to identification requests are generated in PAPILLON AFIS and transmitted automatically without any operator's assistance.

#### 2 What hardware and software is needed to conduct express ID checks against PAPILLON AFIS databases?

A fingerprint scanner is a "must" of any Express ID check workstation or terminal. It is attached to a desktop or portable computer where the ad hoc software PAPILLON FILTER, running under Windows or Linux, is installed.

A range of handheld portable devices PAPILLON DPP, based on microcomputers, equipped with a single finger scanner and an embedded special software package, is an alternative solution designed by PAPILLON for spot ID checks.

Technically, the express ID checking involves reliable active communication with an AFIS (TCP/IP).



PAPILLON has always been an adherent of a comprehensive approach to construction of high-tech integrated software and hardware systems. That is why PAPILLON dactyloscopic technologies have no 'blank' spaces, providing creation and effective interaction of all mission-critical nodes and levels in most complicated systems.

PAPILLON AFIS is a cornerstone of all fingerprint identification solutions, a system featuring the highest search performance on databases of any size, providing the maximum automation of entry, processing, comparison, storage and transfer of fingerprint/palmprint information.

High-quality imaging of finger and palm prints as well as transmission of electronic tenprint cards to AFISs is ensured by PAPILLON's proprietary, patented technology of Live SCANNER.

**The task of checking personal identity by single flat fingerprints against an AFIS database quickly and reliably is successfully completed with the proprietary technology of real-time express ID checks PAPILLON FILTER.**

The technology of express ID checks was devised in 2001 and first put into action successfully in 2005. Today law enforcement agencies throughout the Russian Federation use over 2000 systems of PAPILLON FILTER allowing them to perform express ID checks of personal identity against any and all fingerprint databases kept by national, interregional and regional AFISs.

#### 3 Which of the scanner models fits for express ID checks?

PAPILLON FILTER software allows the use of any model from PAPILLON's large family of fingerprint scanners. If the station is intended for express ID checks only, it's reasonable to use a single finger capture device such as PAPILLON DS-21C or DS-22N. Stations that come standard with PAPILLON DS-45/45M or DS-30N/30NM can be used for both express ID checks and fingerprint enrollment (image acquisition and entry of relevant text information to create forensic quality tenprints).

PAPILLON livescan devices are certified to comply with the FBI IQS requirements and, moreover, ensure high-quality imaging even of difficult-to-capture fingerprints, those with dry skin, moist or sweaty, with worn-out ridge pattern.

#### 4 What is the difference between the operation of express ID check and the conventional comparison of a complete tenprint against the AFIS database?

PAPILLON AFIS comprises a search engine that performs searches of the database for each image from newly entered tenprints and latent lifts (acquired from paper mediums or in electronic form), and an express ID check module that serves instant identification requests transmitted via communication channels from remote sites. The express ID check does not require to create a full-featured 10-print card and to submit it to the AFIS database for search. The ID check request automatically generated on any remote site is transmitted to the above-mentioned express ID check module automatically, without any operator's assistance. Upon completion of the searches, the module produces not a list of candidates but a list of all matching files and automatically feeds it back to the requester.

#### 5 How high are the reliability and accuracy rates of the express ID checks?

PAPILLON's proprietary comparison algorithms provide the highest rates of reliability and selectivity of searches regardless of the size of the database, which has been proven time and again in a large number of trials, carried out to test the tenprint-to-tenprint and latent-to-tenprint search performance, and by the actual operation of the system, handling databases of many millions of fingerprint records.

The express ID check technology has been widely and successfully used by law enforcement agencies of Russia since 2009. The checks are conducted against data arrays containing hundreds of thousands to tens of millions of tenprint records. During the entire period of actual operation, no case of false identification has been reported.

This fact denotes the highest possible selectivity of this type of searches. In the actual conditions, when automated databases keep mostly copies of tenprints acquired from paper cards and therefore containing fingerprints of moderate quality, the high reliability of express ID checks is achieved by including into search requests from 4 (default number) to 10 flat finger impressions.

High quality data arrays created, for instance, by applying PAPILLON Live SCANNER technology assure positive results by one or two fingerprints captured.

#### 6 Can the express identification be carried out against multiple databases?

The Express ID Check workstation can be connected as a client to several PAPILLON AFIS databases at a time, thereby allowing the comparison of the obtained information against all of them simultaneously or sequentially.

#### 7 What communication channels can be used for conducting the express ID checks?

The information can be transmitted over any communication channel supporting IP connection:

- LAN
- Dial-up or dedicated phone lines
- Cellular GSM/GPRS/EDGE/UMTS/LTE
- Synchronized satellites channels
- Wi-Fi
- BlueTooth.

#### 8 How much time does it take to complete an express identification request?

Run time a single check takes is comprised of the time during which the identification request is processed by the AFIS and that needed for data transmission via communication channels. The time of processing depends upon the size of a database against which this information is being matched and upon the computational power of the AFIS hardware resources involved in the express ID processes.

Designed to effectively utilized fast-acting modern communication channels, all PAPILLON AFIS systems have computing capabilities enabling the completion of express ID check requests within seconds (from capturing finger images to receiving the result of search).

#### 9 Is any special training needed to operate the Express ID Check system?

The procedure of express ID check is automated as much as possible and does not require any special knowledge and expert skill in the field of fingerprinting. The operator's basic function is to take livescan fingerprints of a person to be checked.

Allowing the operator to rescan any image as many times as needed, the FILTER software gives full guidance in taking fingerprints that ensure high quality and accuracy of fingerprints being captured. Initiation of electronic transmission to AFIS system(s) and receiving of results is completely automatic.

### PAPILLON Livescan Devices for Express Identification

<p><b>PAPILLON DS-45</b> Overall Dimensions: 243 x 423 x 127 mm</p>  <p><b>Image Capture:</b>  <ul style="list-style-type: none"> <li>• Flat fingerprints</li> <li>• Rolled fingerprints</li> <li>• Palmprints</li> <li>• Single flat fingerprints</li> </ul> </p>	<p><b>PAPILLON DS-30N</b> Overall Dimensions: 142 x 160 x 160 mm</p>  <p><b>Image Capture:</b>  <ul style="list-style-type: none"> <li>• Flat fingerprints</li> <li>• Rolled fingerprints</li> <li>• Single flat fingerprints</li> </ul> </p>	<p><b>PAPILLON DS-22N</b> Overall Dimensions: 88 x 192 x 60 mm</p>  <p><b>Image Capture:</b>  <ul style="list-style-type: none"> <li>• Rolled fingerprints</li> <li>• Single flat fingerprints</li> </ul> </p>
<p><b>PAPILLON DS-45M</b> Overall Dimensions: 243 x 425 x 135 mm</p>  <p><b>Image Capture:</b>  <ul style="list-style-type: none"> <li>• Flat fingerprints</li> <li>• Rolled fingerprints</li> <li>• Palmprints</li> <li>• Single flat fingerprints</li> </ul> </p>	<p><b>PAPILLON DS-30NM</b> Overall Dimensions: 137 x 307 x 107 mm</p>  <p><b>Image Capture:</b>  <ul style="list-style-type: none"> <li>• Flat fingerprints</li> <li>• Rolled fingerprints</li> <li>• Single flat fingerprints</li> </ul> </p>	<p><b>PAPILLON DS-21C</b> Overall Dimensions: 53 x 110 x 31 mm</p>  <p><b>Image Capture:</b>  <ul style="list-style-type: none"> <li>• Single flat fingerprints</li> </ul> </p>

## Express ID Check against PAPILLON AFIS Databases used wherever fast and reliable identification is needed

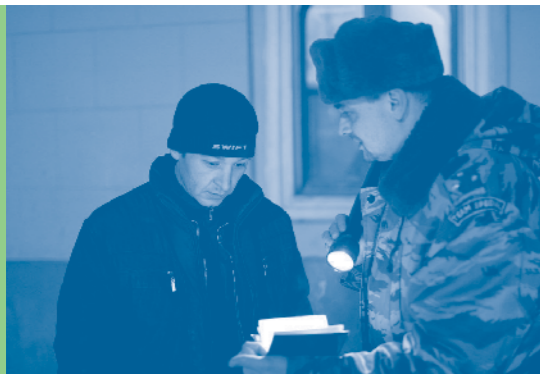
- High-speed checking
- Submission of up to 10 flat fingerprints
- Ability to scan several flats simultaneously (DS45/45M, DS-30N/30NM)
- Submission of main demographic data (name, date and place of birth)
- Automatic quality check feedback
- Automatic data transmission to AFIS
- Automatic search of the AFIS database
- Visual control over the search progress
- Automatic receiving of search results
- Response containing all matching files
- Ability to check the identity against multiple databases
- Automatic generation and printing of relevant statistic reports



● Patrolling



● Safeguarding at sports events



● Passport and other ID document control



● Event security

Express ID Check Requests  
(flat fingerprint images and brief demographics)

Cellular (GSM/GPRS/EDGE/UMTS/LTE), synchronized satellites channel, dial-up and dedicated phone lines, LAN

### PAPILLON AFIS & Express ID Checks Matching System



Express ID Check Results  
(brief demographics and facial photos from all matching tenprints)

Cellular (GSM/GPRS/EDGE/UMTS/LTE), synchronized satellites channel, dial-up and dedicated phone lines, LAN



● Inmate tracking



● Industrial safeguarding and enterprise security

### PAPILLON Express ID Check Workstations



● Border and customs control



● Accounts for refugees



● Accounts for labor migrants



● Identification of individuals unable to report details on themselves



● Transport safety

## PAPILLON SOLUTIONS FOR INSTANT BIOMETRIC IDENTIFICATION



Desktop workstation for electronic fingerprinting and express identification with PAPILLON DS-30N

### PAPILLON MDS 45 Livescan Station

The station is designed for intensive use at law enforcement agencies, as a point of capture for all data collected during fingerprint enrollment and suspect booking. This standalone station is equipped with PAPILLON DS-45.



### PAPILLON MKDS xx Mobile Station

PAPILLON MKDS is designed for in-the-field enrollment and identity checks. It's a part of PAPILLON's extensive portfolio of integrated communication and information solutions that address mission-critical public safety and security requirements.



## PAPILLON offers both stationary and mobile solutions based on PAPILLON livescan devices and involving connectivity (TCP/IP) with PAPILLON AFIS.

Workstations equipped with DS-45/45M or DS-30N/30NM can be deployed and optimally used for creation of electronic tenprints (PAPILLON Live SCANNER software) and for express checking of personal identity against PAPILLON AFIS databases (PAPILLON FILTER software).

#### Components:

- PAPILLON Live SCANNER software
- PAPILLON FILTER software
- PC / Notebook
- PAPILLON DS-45/45M or DS-30N/30NM Scanner
- UPS
- Digital camera
- Camera tripod
- Modem and/or EDGE/GPRS/GSM modem
- Digital signature (optional)
- Electronic signature tablet (optional)
- Printer

If the workstation is used for express ID checks only, it can be equipped with a single flat fingerprints scanner such as PAPILLON DS-21C or DS-22N.

#### PRODUCT CAPABILITIES:

- Creation of forensic quality tenprints, including palm impressions, and their export to AFIS (PAPILLON Live SCANNER package)
- Fast automatic checking of personal identity by his/her flat fingerprints against tenprint databases of Live SCANNER and PAPILLON AFIS (PAPILLON FILTER package)
- Acquisition of fingerprint data from paper tenprint cards and lifted latent print record cards to search them against AFIS databases (flat-bed scanner and remote input package)

#### BENEFITS:

- Self-contained rugged cabinet, incorporating all necessary equipment
- Maximum performance in harsh, high traffic environments
- Effective protection of the equipment against unauthorized access, damage and destruction
- Ergonomic design providing working areas sufficient for operation with documents and accessories such as a tablet for electronic signatures

Can be equipped with DS-30N fingerprint scanner or DS-45 integrated finger and palm print scanner.

#### PRODUCT HIGHLIGHTS:

- Use of a portable computer (notebook)
- Shockproof cases incorporating all of the components and relevant mounting accessories for easy transport to the remotest locations
- Use of cellular links for data transmission
- Autonomy due to rechargeable batteries
- Can use car adapter for power supply

All components are packed neatly into two rather small shockproof, rugged cases. To create electronic tenprints and conduct express ID checks, you need the case where a notebook, a fingerprint scanner and a camera are enclosed. The other case contains a printer and relevant consumables for printing.

These mobile stations were successfully used during counter-terrorism operations on the territory of Chechnya.

Currently, they are actively used by Border Police of the Russian Federation.

## The PAPILLON DPP series of compact mobile devices is designed to meet today's needs for the in-field fingerprint identification by matching the captured images against AFIS databases and for on-the-spot verification of passports and other ID documents.

PAPILLON DPP terminals enable:

- Instant check of subjects' fingerprints against AFIS databases
- Creation of tenprint cards (demographics, plain or rolled (DPP-6p) fingerprints, facial and SMT photo), transmission them to AFIS for filing and matching against unsolved latent fingerprints
- Operation with contact smart cards compliant with ISO/IEC 7816 standard requirements:
  - reading of data, including fingerprint information, stored on card chip
  - display of read data on the screen for verification
- Operation with passport and visa documents compliant with ICAO Doc 9303 standard requirements:
  - recognition and reading of up to 3 lines of machine-readable zone (MRZ)
  - reading of data, including fingerprint information, stored on contactless chips
  - display of read data on the screen for verification
- Identification photography in compliance with the ISO/IEC 19794-5:2005/ GOST R ISO/IEC 19794-5-2006 standards
- Instant check of personal identity by his/her facial image (against AFIS databases)

Automatic real-time identity verification by face images is available in the latest versions of PAPILLON AFIS.

The subject's photograph taken with the mobile terminal camera is transmitted to the AFIS, where the facial image is coded and compared to those in the database. Results of the search are received back on the handheld unit; and if there is a match, provide detailed information about the subject from all of his tenprints available in the AFIS database, including those that do not contain his facial images (name, date fingerprinted and ground for taking fingerprints, etc.).

### PAPILLON DPP-6p Biometric Terminal

designed on the base of a palm-size computer and certified by the FBI, USA for compliance with the IAFIS IQS EBTS App. F Mobile ID FAP 45 Specification requirements (in 2015). Its enlarged (in comparison with other models) sensing area 42 x 40 mm enables the acquisition of rolled finger impressions along with flats, which allows to create forensic quality tenprint cards.

### PAPILLON DPP-7 Biometric Terminal

designed on the base of a smartphone model with certain characteristics, the choice of which is determined by PAPILLON's market considerations and the customer's wishes. The terminal is certified by the FBI, USA for compliance with the NGIS IQS EBTS App. F Mobile ID FAP 10 Specification requirements (in 2016).

The impact-resistant unit designed by PAPILLON is connected to the smartphone with a rotation gear. The unit incorporates a fingerprint scanner and a contact smartcard reader. Reading MRZ and contactless smartcards as well as photographing (same as DPP-7i) is done with standard tools the smartphone provides.

The DPP-7 enables real-time identity checks against a local database of tenprints stored on the smartphone.

### PAPILLON DPP-7i Biometric Terminal + Smartphone App

DPP-7i is a light version of DPP-7 without a smartphone. The PAPILLON DPP-7i application software is compatible with a wide range of series-produced smartphones and tablets, which allows law enforcers to use any available devices. It is important to note that the functions allowing you to operate documents compliant with ICAO Doc 9303 are available only on smartphones supporting NFC technology. The quality of livescan fingerprints captured with the terminal is compliant with the FBI's requirement to PIV devices. The terminal enables live scanning of fingerprints and reading of contact smartcards.



PAPILLON DPP-6p



PAPILLON DPP-7



PAPILLON DPP-7i

## PAPILLON DPP Specifications

	DPP-6p	DPP-7	DPP-7i
	based on a small-size computer	based on a smartphone with (at least): • Android 4.4 • CPU: 4 cores, 1.5 GHz • RAM 1 Gb • ROM 8 Gb • LCD (touch-screen): 4.7", 960 x 540 pixels • MicroSD 32 Gb • Autofocusing Camera 5 MPix • NFC support • Battery: Li-Ion, 2300 mAh	Requirements for smartphone/tablet (at least): • Android 4.4 • RAM 1 Gb • Bluetooth
Dimensions, mm	170 x 91 x 262	80 x 45 x 180	80 x 32 x 170
Weight, max, kg	2	0.6	0.5
Communication with AFIS	GSM/GPRS/EDGE/UMTS, WiFi, Bluetooth, Ethernet 1Gbps	GSM/GPRS/EDGE/UMTS/LTE, WiFi, Bluetooth	Bluetooth (data transfer to/from smartphone/ tablet)
Fingerprint scanner: Scan Area, mm	42 x 40	20 x 20	20 x 20
Image Resolution, ppi	500	500	500
Dynamic Range, bpp	8	8	8
Scan Time per Finger, sec	< 5	< 2	< 2
LCD Display, pixels	640 x 480, touch-screen	Smartphone screen	—
MRZ Reader	Yes	Yes	—
ISO 14443 Type A/B Contactless Card Reader	Yes	Yes	—
ISO/IES 7816 Contact Card Reader	Yes	Yes	Yes
Battery	ICR18650	ICR18650	ICR18650
Operation Time, hours	5	14	14
Navigation	GLONASS/GPS	—	—
Autofocusing Camera, MPix	3	Smartphone camera	—
Local database (watchlist), max, tenprints	—	60,000	—
Search time against local database, sec	—	< 30	—

## PAPILLON FILTER Technology Practices

### Albania

All major entry points to the country – international airport, harbors and border check-points – have all the opportunities to conduct express ID checks against the central AFIS database installed in Tirana, the capital of the Republic. Remote stations are connected to the Albanian AFIS system based on PAPILLON's technologies via dedicated DSL channels of MOPO Network. One session of express ID check against the entire AFIS database (about 500 thousand tenprints) takes less than 1 minute.

### India

A large number of small portable tablet-based PAPILLON DPP devices have been purchased for the needs of the Telangana State Police as part of the AFIS project that has been successfully implemented since 2017. Out on patrol, officers use these devices to immediately identify individuals and connect them to their records.

### Serbia

2012, arising out of the Project "Supply of AFIS/FIIS System to Prevent and Suppress Illegal Migrations on the Territory of the Republic of Serbia", an AFIS system constructed by and based on PAPILLON's technologies was put into operation for the needs of the Ministry of Internal Affairs and Border Police. Along with standard components, this system comprises 222 compact handheld PAPILLON DPP devices enabling remote identity checks against the central AFIS and verification of border crossing credentials.

### Russia

The technology of express ID checks has been widely used in Russia by law enforcement bodies since 2009 within the framework of a nationwide project of Integrated AFIS (AFIS MVD). The express ID check matching systems have been deployed at:

- Central site of AFIS MVD with the database of more than 50 million tenprints
- 10 interregional AFIS sites with databases of 3 to 10 million tenprints
- 70 regional AFIS sites with databases of 150 thousand to 3 million of tenprints.

Currently, PAPILLON MDS 45 stations are being installed and put into operation at local agencies to perform real-time express ID check against regional, interregional and federal AFIS databases. More than 1,500 MDS stations had been installed by year-end 2018. The outcome of their operation shows that in most cases the fingerprints of individuals being checked exist in the AFIS databases. During such checking, numerous cases of identity fraud have been discovered.

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