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ISEO Zero1

ELECTRONIC SOLUTIONS

FINGERPRINT READER

E N G L I S H

1969-2019
50th Anniversary

FINGERPRINT TECHNOLOGY

Argo is integrating fingerprint biometric authentication. The biometric template is a very secure and convenient authentication credential: it can't be borrowed, stolen or forgotten, and forging one is practically impossible.

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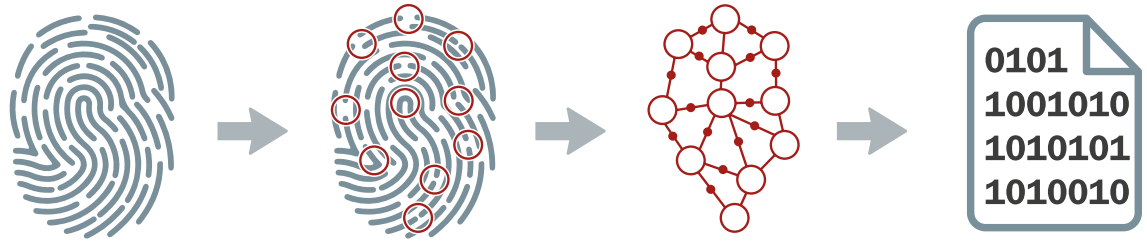
BIOMETRIC TEMPLATE

A fingerprint is made of a series of ridges and grooves. The fingerprint reader uses an advanced image sensor to capture high resolution fingerprint images. Once a fingerprint is captured, the system locates the minutiae points. These minutiae points occur where the lines of the ridges begin, end, branch off and merge with other ridge lines.

These points create the minutiae map. The map is then stored in the door lock as digital data. It is called **biometric template** and it is used for future comparison with other biometri templates of fingerprints presented at the reader.



1. FINGERPRINT
2. MINUTIAE POINTS
3. MINUTIAE MAP
4. BIOMETRIC TEMPLATE

It is important to note that during the entire process **no fingerprint images are stored on the door lock** and that a **fingerprint image cannot be recreated from the biometric template**.

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Fingerprint **reader**

The fingerprint reader has a built-in optical auto sensing function with live finger detection, which automatically detects when real fingers are placed on the window sensor. The fingerprint reader has the following features:

AUTO SENSING

The auto sensing function awakes the door lock only when a finger is placed on the sensor, saving energy and allowing **battery power supply**.

OPTICAL SENSOR

The optical technology is widely adopted as it is far superior to other fingerprint images capture technologies.

FAKE FINGERPRINT DETECTION

A fake fingerprint is an artificial fingerprint made from silicone, rubber, paper, gel, or film. It is used to defeat common biometric readers. The optical fingerprint sensor detects both LIVE and FAKE finger using a combination of a human capacitance sensor and infrared light reflection technology.

ENCRYPTED COMMUNICATION

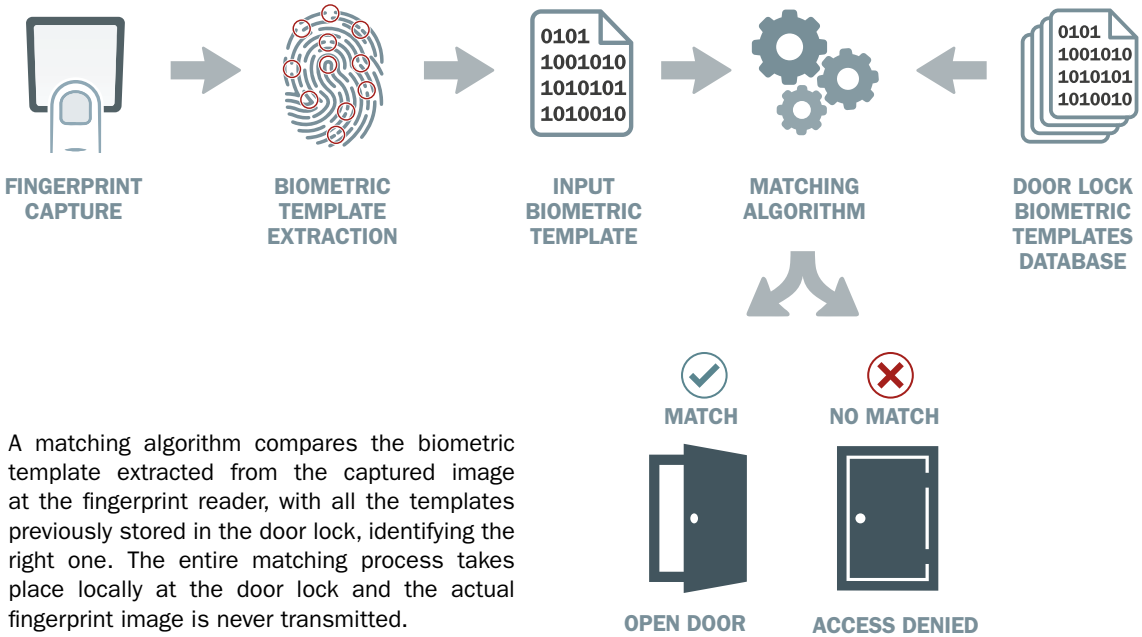
The communication between the fingerprint reader and the x1R Smart lock is protected by secure encryption.

ON-SITE SOFTWARE UPGRADABLE

The fingerprint reader is future-proof and the software can be upgraded to eventually improve its performances without dismounting the reader from the door.

IDENTIFICATION

Identification is the process of comparing a fingerprint biometric template to all the biometric templates previously stored in the door lock.



A matching algorithm compares the biometric template extracted from the captured image at the fingerprint reader, with all the templates previously stored in the door lock, identifying the right one. The entire matching process takes place locally at the door lock and the actual fingerprint image is never transmitted.

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Fingerprint **technology**

DOOR OPENING

Simply place your finger on the reader window. The finger reader **optical sensor** with its built-in **auto sensing** function automatically detects and identifies the fingerprint stored in the user list.
With Argo you can store up to 300 users in total, therefore you can store up to 300 fingerprints.
The **identification time among 300 users** is around **1 second**.

FAR AND FRR: SECURITY LEVEL VERSUS USER CONVENIENCE

The performance of biometric systems is expressed on the basis of the following error rates:

FALSE ACCEPTANCE RATE

The FAR (False Acceptance Rate) is the measure of the likelihood that the biometric security system will incorrectly accept an access attempt by an unauthorized user. In simple words, it's the number of times people get identified when they should not be identified and consequently authorized to open the door.

FALSE REJECTION RATE

The FRR (False Rejection Rate) is the measure of the likelihood that the biometric security system will incorrectly reject an access attempt by an authorized user. In simple words, it's the number of times people do not get identified when they should be identified and authorized to open the door.

As the number of false acceptances (FAR) goes down, the number of false rejections (FRR) goes up and vice versa. In other words, the more secure your access control, the less convenient it will be, as users are falsely rejected by the system. The FAR and FRR can be configured by the door lock administrator with Argo App by adjusting the desired security level as follows:

SECURITY LEVEL	**FAR** (False Acceptance Rate)	**FRR** (False Rejection Rate)
1	1 OUT OF 200.000	1 OUT OF 10.000
2	1 OUT OF 1.000.000	1 OUT OF 6.000
3	1 OUT OF 10.000.000	1 OUT OF 4.000

Unlike many commercial fingerprint readers, where the administrator has no detailed information on how the software is configured, Argo allows you to set the level of security and ease of use.

WHEN DOES FINGERPRINT TECHNOLOGY NOT WORK?

In general, biometric authentications depend on people, environmental conditions or incorrect use: for example, when using dirty fingers on a fingerprint reader. Fingerprints can also wear away if you do a particular kind of work. Exposure to abrasive surfaces, glues, solvents, powders, cement, excessive moisture and cut/damaged fingers constitute environmental issues which are detrimental to the success of a fingerprint installation.

Some people genetically have difficulty to get their fingerprints detected: particular conditions, such as extremely dry or extremely moist fingers, small fingers or previous exposure to harsh chemicals, affect the enrollment and future success of transactions. As a result, some people may find that their fingerprints cannot be recognized or even recorded. There is even a hereditary disorder (Adermatoglyphia) that results in people being born without fingerprints.

It is recommended to memorize for each user not only the fingerprint but also other credentials like PIN, cards, smartphones, to be used in case the fingerprint technology does not work.

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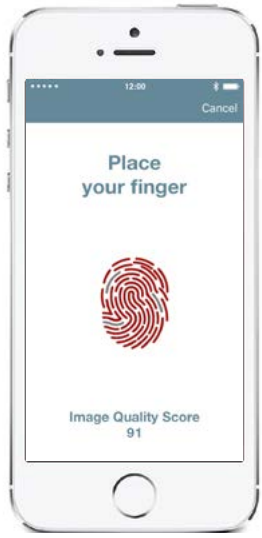
To Enroll **a User**

This procedure allows to add a fingerprint of a user in the door lock User List. It is always recommended to add more fingerprints for the same person.

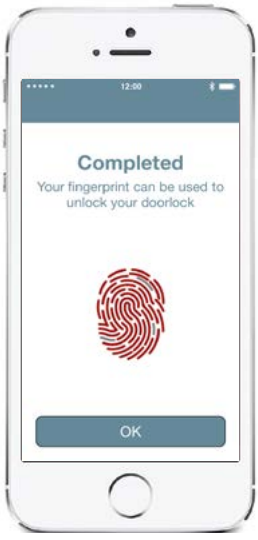
Enter in programming mode and select Add User.

Select Fingerprint.

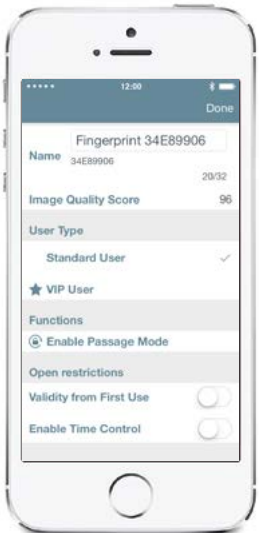
Place and remove the finger repeatedly on the reader.



At each reading of the finger, the image quality score is displayed.



This message will appear when the registration is complete.



Complete the registration adding the Access User data.

The finger is stored in the Fingerprint list.

COPY OF USERS TO OTHER DOOR LOCKS

The users' biometric templates stored in a door lock can be transferred to other door locks without the need to add again the user in all the doors.

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x1R Smart Fingerprint **Readers**

The x1R Smart fingerprint reader can be embedded or mounted on a surface. It can be supplied both as OEM kit, with cable and reader only, and ISEO kit with mounting devices and cover in the following composite material finishes:

Black

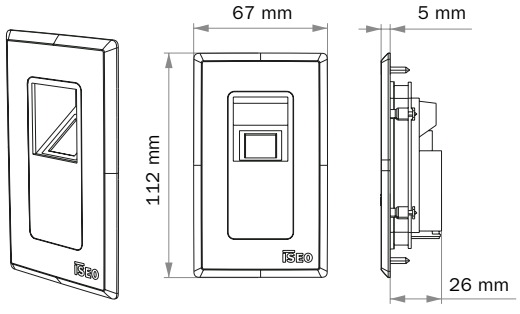
Satin Chrome

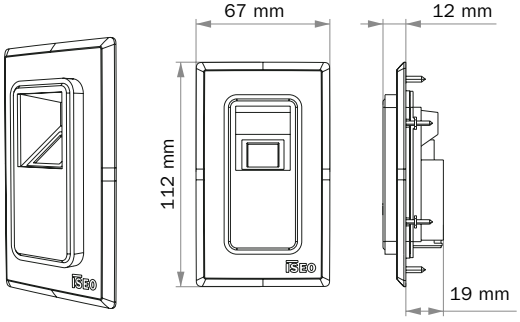
Polished Brass

Bronze

EMBEDDED READER

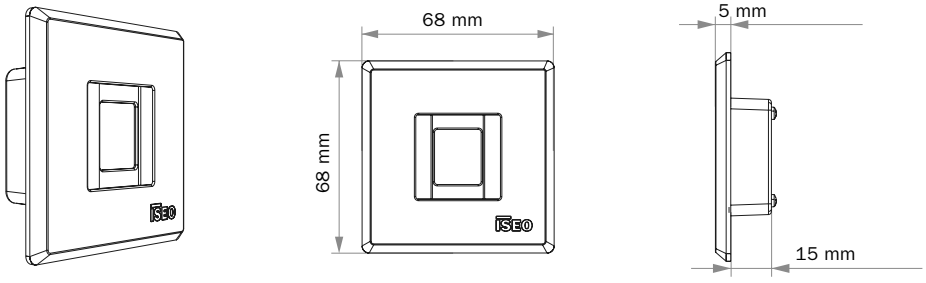
The x1R Smart embedded reader has the optical reader placed at 45° allowing a very convenient user experience. The embedded reader is available in two different models allowing the following mounting options:





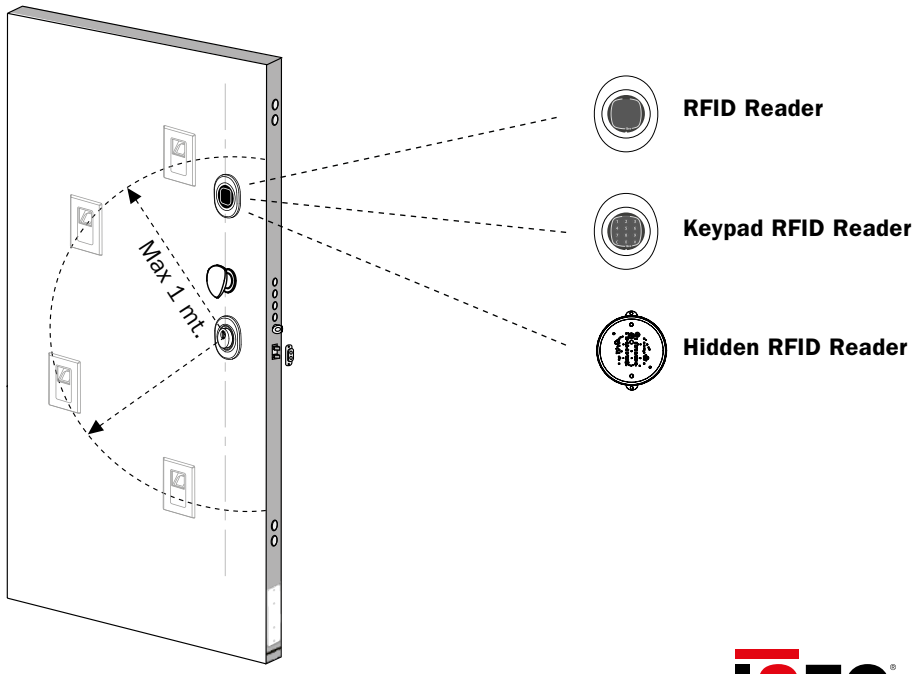
SURFACE MOUNTED READER

The surface mounted reader is applied on the door surface with minimal insertion on the outside door panel without impact on the door structure.



FINGERPRINT READER POSITION

The x1R Smart fingerprint reader is supplied with a 1 meter cable. The x1R Smart finger reader always requires in addition the External Control Module, that can be one of the following: RFID Reader, Keypad RFID Reader, Hidden RFID Reader.



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Code 001021.UK - 01-03-2019. Non-contractual document. Subject to change.