

Lead The Next Generation of Authentication Fields with Stillness (Fingerprints Authentication) + Movement (Electrocardiographic Authentication)

Hybrid-type Biometric Authentication Device [SQ-key Hybrid]

SIMPLEX QUANTUM Inc. (Headquarters: Minato-ku, Tokyo, CEO: Nanako Suzuki) will release a hybrid type biometrics personal authentication device [SQ-key Hybrid]^{*1}. This new personal authentication method combines both Electrocardiographic (ECG) authentication function and fingerprints authentication function^{*2}.

SQ-key Hybrid is a revolutionary device, as it can authenticate an individual correctly by measuring fingerprints ECG waveform simultaneously from three fingers for just few seconds. This device is a new proposal that leads the next generation of authentication fields.

What Is Electrocardiographic(ECG) Authentication?

ECG authentication is the most advanced technology in biometric authentication field, and SQ-key Hybrid is the first device equipped with practical function of ECG authentication.

The potential difference between each part of human's body slightly changes as the heart beats.

Electrocardiogram measures and records these changes, and just like fingerprints, vein pattern, and voiceprint, electrocardiogram is also specific to each individual. The technology used to authenticate an individual with ECG wave is called [Electrocardiographic Authentication (ECG Authentication)]

The measurement of ECG waveform is usually done on the examination table. Electrodes that measure twelve different potential differences are placed on six different body parts. However, capturing and identifying ECG waveform easily is necessary to apply the practical function of ECG authentication system to a device, and a highly reliable algorithm is necessary to identify the patterns of ECG wave that changes slightly from time to time. SQ-key Hybrid is a device that overcome these technical issues.

SIMPLEX QUANTUM Inc. developed unique ECG sensor and AI-type authentication algorithm (patent pending), and realized the practical use of ECG authentication technology.

Hybrid-type Biometric Authentication Combining Stillness (Fingerprint Authentication) + Movement (Electrocardiographic Authentication)

SQ-key Hybrid ECG authentication measures only the potential difference between left and right hands (1st induction). The unique AI-type authentication algorithm analyzes the data with high speed, and authenticates an individual with high accuracy. The data of fingerprint are static, but the data of ECG waveform are dynamic and slightly change from time to time. Our AI-type authentication algorithm keeps the accuracy of the authentication for a long term as it updates the ECG data in every measurement.

Although we might change the design of the device, it will look similar to the device in the picture. An individual will need to place their fingers on the plate, and the device will measure the ECG waveform from the left hand's index finger and the right hand's middle finger. The right hand's index finger is used for fingerprint authentication and used as the ground of ECG measurement (to stabilize the measurement). Fingerprint authentication will complete quickly if the device recognizes the individual. The ECG authentication will complete few seconds after that and the system will authenticate the individual if the collected data matched. This new biometric authentication system is a collaboration of Stillness (Fingerprint Authentication) x Movement (Electrocardiographic Authentication), and it will reject any fake authentication as this device requires the heart beat to authenticate an individual.



Picture 1 SQ-1 Hybrid (the design of the device might change)



Picture 2 Put the left index finger, right index finger, and right middle finger on the sensor plates for few seconds.

The USB Port of The PC Can Be Used as Power Source

Most bio-information measurement device like ECG sensor usually use battery as a power source to avoid the decrease in measurement accuracy caused by the power supply noise. However, SQ-key Hybrid uses its unique power supply separating technology (patent pending) to obtain power supply from high noise devices like the USB port of PC, which also remove the risk of electric shock.

We have finished developing a prototype that operates stably, and we will release this device to the market as soon as the final design and selling price decided.

■SIMPLEX QUANTUM Inc.

In addition to the ECG measurement technology, our company also developed advanced health care service, device, and solution that warn an individual about the stress level and risk of illness, measured from the balance of sympathetic nerve system and parasympathetic nerve system.

<http://simplex-q.com/>

※1 This device is not a medical instrument.

※2 For fingerprints authentication, we use the SDK of high precision fingerprint reader [U.are.U 4500] from Crossmatch (United States), provided by Human Technologies, Inc. (Headquarters: Minato-ku, Tokyo, CEO: Akio Eshi).

【For Inquiries】

Company Name : SIMPLEX QUANTUM Inc.

Email : info@simplex-q.com