

Technical Advisory

Date: March 30, 2009
Product: Kronos 4500 Touch ID™ Terminal
Subject: Touch ID Enrollment Recommended Practices

Overview:

This Technical Advisory provides recommended practices for employees enrolling and verifying on the Kronos 4500 Touch ID terminal. A poor enrollment will likely cause problems when an employee attempts to perform verification later. In rare cases, accepting a poor enrollment could enable other employees to successfully verify against the employee's template.

The following recommended practices are included in this document, along with references to other available documentation:

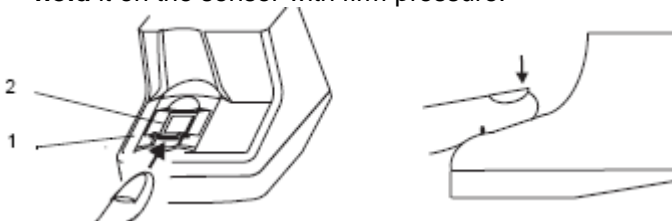
1. Enrollment technique: Lock, Drop and Hold
2. Fingers and Finger Placement
3. Quality and content scores
4. Enrollment Tips

Recommended Practices:

1. Enrollment technique: Lock, Drop and Hold

To enroll an employee's finger scan, follow the Lock, Drop and Hold process.

- a. Gently slide the finger forward and against the ridge **lock** (1). Do not touch the sensor area (2).
Important: Sliding the finger along the ridge lock helps to dissipate electro-static discharge that could adversely affect the operation of the verification device.
- b. Once the first knuckle joint comes in contact with the ridge lock, **drop** the finger on the sensor and **hold** it on the sensor with firm pressure.



2. Fingers and Finger Placement

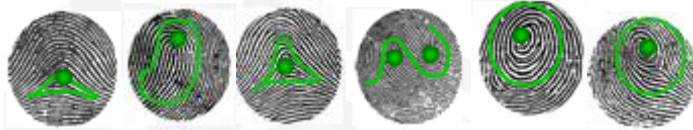
Suggested Fingers: *Index, middle or ring* fingers are recommended. Avoid using thumb and pinky fingers since they are typically awkward to position consistently on the sensor. Some finger conditions (example: dry skin or water logged fingers) may cause difficulty in enrolling and should be avoided.

Finger Core: The finger core is a point located within the inner most recurving ridge of the finger scan area. Normally it is located in the middle of the finger scan area.

The most frequent types of finger core are:

- Arches (plain and tented)
- Loops (singular and twinned)
- Whorl and Central Pocket Loop

When enrolling, place the finger on the sensor where the entire core is on the sensor area – following the lock, drop and hold method will help ensure proper core placement. The following examples show different finger print types and highlight the finger core, which should be centered on the sensor area.



Finger Placement: Completely covering the entire area of the sensor with the finger scan will provide the best performance. Touching the sensor as if pressing a button creates an image that lacks information-rich finger scan data.

Finger Position, Rotation and Pressure:

- **Position:** Placing the finger far from the center position of the sensor will increase the rejection rate.
- **Rotation:** Finger rotation should be kept to a minimum during enrollment and verification. If rotation is needed, finger placement should be at a full 90 degrees.
- **Pressure:** Apply moderate pressure when making contact with the sensor. Too much pressure may cause smudging of the finger scan area. Too little pressure may not allow the sensor to recognize the presence of a finger.

3. Quality and Content Scores

The terminal beeps once if the enrollment is Fair or Good. The terminal beeps three times if the enrollment is poor. In all cases, two scores appear. **A score of 60 for both is required for a good enrollment.**

Quality - A measurement of the useful data found within the finger scan. Some fingers have ridges, scars, or other characteristics that can reduce the amount of useful data and lower the quality value.

Content - The relative amount of information that was detected. Smaller fingers and poor finger placement result in a lower content value.

The following table explains the enrollment scores:

Score	Message on the Screen	Recommended Action
Quality less than 40 or Content less than 20	Poor Enrollment - Not Accepted	You must retry the enrollment
Quality between 40 and 60 inclusive, or Content between 20	Fair Enrollment – Retry Suggested	Retry the enrollment to try to achieve a Good Enrollment. Ensure that the employee uses



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and 60 inclusive		the lock, drop, and hold technique. If you cannot achieve a good enrollment after several attempts, try enrolling a different finger.
Quality and Content greater than 60	Good Enrollment	Test the enrollment

Possible reasons for low enrollment scores:

Possible Reason	Correction
Finger too moist or wet	Excessive moisture may cause the enrollment to be more difficult to obtain, for example if the user washed their hands, but failed to completely dry the finger that is being enrolled. Dry wet or moist fingers before enrolling.
Finger too dry	Depending upon the geographical area, the season, and the skin type of the user, their fingerprint might be excessively rough or dry. Excessively dry skin may affect the enrollment quality. Try applying skin moisturizer a few minutes before enrolling to improve image quality.
Placing your finger as if punching a button	Finger placement should follow the lock, drop and hold method, placing the finger core onto the sensor, with the finger horizontal, not vertical.

4. Enrollment Tips

Remember - Use proper finger placement technique for better verification scores:

1. Use the Ridge Lock and the "Lock, Drop and Hold" technique.
 - Line up Ridge Lock to first crease in finger joint and use firm and evenly distributed pressure.
2. Large or small fingers – place center of finger core in the middle/center of the biometric sensor.
3. Finger scans best with room temperature moist fingers.
 - Moist fingers – rub finger on forehead, bridge of nose, cheek or use lotion/moisturizer.
 - Room temperature – if your hands are cold, rub your hands together or on your clothing. This will cause some friction and warm the fingers. Be aware that rubbing your finger on clothing may cause your finger to become excessively dry. If this occurs, use the techniques mentioned previously to moisten fingers.
4. Long finger nails – Trim finger nails or enroll and verify at a full 90 degree rotation.
 - People with extra long finger nails may find that the biometric verification area at the terminal may not provide sufficient space for proper finger placement. Trim finger nails or enroll and verify at a full 90 degree rotation.
5. Do not slide the finger onto the sensor area
 - While sliding the finger on the ridge lock, be careful to avoiding sliding the finger across the sensor area. Sliding the finger on the sensor area causes smudging of the finger, producing a poor scan result which also results in low enrollment and verification scores.
6. Avoid rolling the finger on the sensor.



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- Rolling the finger causes improper finger placement on the biometric sensor producing poor scan results.
7. Remove excessive perspiration on fingers.
- In some cases, users may produce excessive perspiration on their fingers. Remove any excess perspiration with a tissue or cotton cloth. Excessive perspiration produces an unwanted residue on the biometric sensor that may cause poor scan results.

Additional Information:

The following documentation is available on the Kronos Customer Portal, http://customer.kronos.com :	
Finger Scan Verification Device Users Guide	Customer Portal under Support > Documentation: http://customer.kronos.com/Support/KOL/touchid.htm
The Kronos 4000 Series Terminal Employee Enrollment Training Video	Available in SuperSearch as a Knowledge Base entry: Video: How To Enroll Employees using the 4500 Terminal and Touch ID, Article ID, 3VE-55B-E1O-3YN

Additional Information

For further information please contact your Kronos Support Services Group:

Australia:

Kronos Australia 1 800 811 492

Europe:

Kronos UK Support Centre +44 118 978 8009

South America:

Kronos Mexico +52 55 5002 5012

US/Canada:

Kronos Global Support (800) 394-4357

For other locations please visit: <http://customer.kronos.com/ContactUs.htm>.

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