Lumidigm SDKEnrollApp

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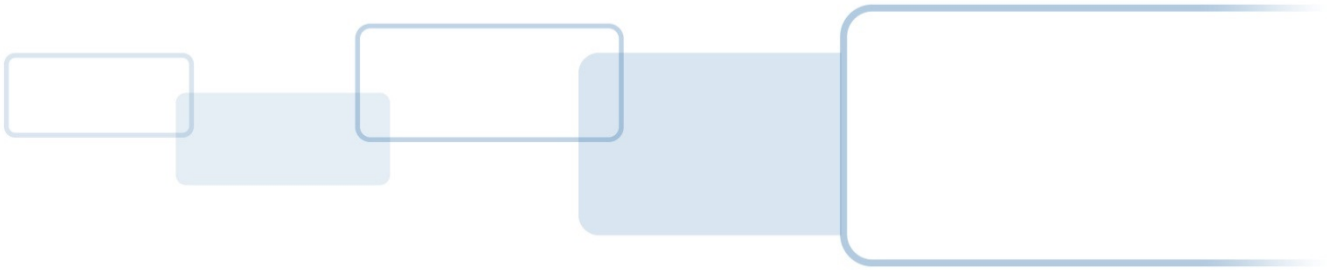

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Revision History

Date	Description	Version
08/15/16	Software Version 6.00	A.2
07/24/15	V371 release.	A.1
12/16/14	First release as part of HID Global (1.6)	A.0

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Contents

1 Installing the SDKEnrollApp

The Lumidigm SDKEnrollApp can be installed on the following operating systems:

- Microsoft Windows® XP[1] x86 SP2 or later[2]
- Microsoft Windows® 7 x86
- Microsoft Windows® 8 x86
- Microsoft Windows® 7 x64
- Microsoft Windows® 8 x64
- Microsoft Windows® 10 x86
- Microsoft Windows® 10 x64

See the **Lumidigm Install Guide** for specific installation instructions.

The Lumidigm SDKEnrollApp is installed as a part of the Lumidigm SDK. The following table indicates the default installation directory of the Lumidigm SDKEnrollApp:

SDKEnrollApp	32-bit operating system default install directory	64-bit operating system default install directory
32-bit version	C:\Program Files\HID Global\Lumidigm Release 6.00.xx\SDK Enroll App	C:\Program Files (x86)\HID Global\Lumidigm Release v6.00.xx\SDK Enroll App

2 About SDKEnrollApp

Lumidigm SDKEnrollApp is an application for demonstrating the capture, enroll, and verification capabilities of compatible Lumidigm sensors. It supports variable match thresholds, spoof detection, database management, live mode, and NIST quality. The user may use the app to save images and debug information. Each of these features is described in detail in this document.

3 Opening SDKEnrollApp

The Lumidigm SDKEnrollApp can support multiple Lumidigm sensors simultaneously. Connect the Lumidigm sensors before you open the SDKEnrollApp. There is a shortcut for this application on the desktop as well as in the Start menu, or you may open the application from **C:\Program Files (x86)\HID Global\Lumidigm Release v6.00.XX\SDK Enroll App\bin\SDKEnrollApp.exe**. Select a sensor from the drop-down list **Select Sensor** on the bottom right corner of the **Options** tab. The app is now ready to use.

See the *Lumidigm Install Guide* for information about installing sensor drivers.

4 SDKEnrollApp Window

The Lumidigm SDKEnrollApp window has three areas:

- **Function** area on the left is organized in tabs: Options, Enrollment, Verification, and About.
- **Image** area on the right side of the window displays live and composite images with details. Select Sensor, Capture, Live Mode, Save Image, and Save Debug are also available in the Image Area.
- **Status** area on the left bottom side of the window which displays the status messages of the app.

5 Arming the Sensors

Lumidigm sensors must be armed before an image may be captured for any function; Capture, Enrollment, or Verification. When a function is chosen by the user, Lumidigm SDKEnrollApp will alert the selected sensor. A glowing blue light will indicate that the sensor is armed. If no finger is placed on the sensor plate within about 15 seconds of arming the sensor, the function will timeout and the status message **Sensor Time Out** will be displayed.

6 Options Tab

6.1 Select Sensor

Select Sensor is a drop-down menu which displays the list of sensors connected. To use a particular sensor, select the sensor from the drop-down list to begin. The type and the serial number are displayed for each sensor connected. As soon as a sensor is selected, the status area updates the status message to **You have selected sensor**, followed by sensor name and serial number.

6.2 Capture an Image

Click on the **Capture** button on the right hand side below the image area. The selected sensor is now armed and ready to capture an image. You will see the presence detection image feedback in the image area of the window, consisting of a video stream of approximately 8 frames per second for a V30x sensor, 20 frames per second for an M30x sensor, and 5 frames per second for an M31x or V31x or V371 sensor. Place a finger on the sensor plate. The user may lift the finger off the platen when acquisition is complete. When processing is done, a composite image will appear in the image area.

6.3 Live Mode

The Live Mode feature displays real-time video of approximately 20 frames per second for V-Series sensors (V30x, V31x, V371) and M31x sensors and 30+ frames per second for M30x sensors. Clicking the **Live Mode** button will display a live video stream in the right frame and will change the button to **Stop Live Mode**.

During Live Mode, all other functionality is disabled. The status message displays **Live Mode in process**. Once the **Stop Live Mode** button is clicked, the status message turns to **Live Mode Stopped**. To exit Live Mode, click the **Stop Live Mode** button.

6.4 Save Image

The composite image of the user fingerprint can be saved by clicking the **Save Image** button. This button enables the user to browse to a desired location to save the image as bitmap image. The resulting bitmap image can be viewed by any image viewer. If user tries to click on **Save Image** without a composite image available in the image window, an **Image Box is Empty** message box is displayed.

6.5 Save Debug

The **Save Debug** function is used for specific purpose: if an error occurs during the capture process or if the user wants to collect data, the user can save and encrypt image sensor data obtained from the last image capture into one single .dat file by clicking the **Save Debug** button. A new window will open and the user may enter a user name, select finger number and instance number, and click **OK** to save or **Cancel** to exit.

If **Save Debug** is clicked without a composite image displayed in the image window, an **Image Box is Empty** message will display.

The debug data files are saved in the following location:

	32-bit operating system debug folder	**64-bit operating system debug folder**
32-bit	C:\ProgramData\Lumidigm\SDKEnrollExample\AppData\Debug\	C:\ProgramData\Lumidigm\SDKEnrollExample\AppData\Debug

Note: The **C:\ProgramData** folder on a 64-bit operating system is a hidden folder.

6.6 Subjects in Database

The **Subjects in Database** displays the list of users currently enrolled and ready to be verified. A selected user may be removed from the database with the **Delete** button.

6.7 Spoof Detection and Matching Thresholds

Lumidigm SDKEnrollApp has three matching thresholds and spoof detection thresholds available:

- Highly Secure
- Secure
- Convenient

The thresholds are selected separately in the **Options** tab. All matches in the Verification mode use the matching threshold selected in Options. The selected threshold is also used during Enrollment to ensure that all three required insertions are consistent with each other. Images captured through Capture, Enrollment, or Verification modes use the spoof security threshold selection to determine if the captured image is a spoof or genuine sample.

Spoof detection can be disabled using the **Enable Spoof Detection** checkbox. The matching threshold and spoof detection threshold persists when the application is closed.

Note: Spoof detection is not available on all Lumidigm sensors.

6.8 Enable Spoof Detection

The Lumidigm SDKEnrollApp spoof detection function determines if each captured image is of a genuine finger or of a spoof. The spoof detection function, when activated, is applied to every image captured during Capture, Enrollment, and Verification.

No action is required to activate spoof detection, but it can be deactivated using the check box in Spoof Thresholds under the **Options** tab. One of these status messages will display on the bottom left for each captured image to show its spoof status:

- It is a real finger
- It is a spoof

The decision is based on the spoof security threshold setting. The spoof detection decision has no effect on enrollment and verification decisions.

Note: Spoof detection is not available on all Lumidigm sensors.

6.9 Sensor Trigger Armed

Sensor Trigger Armed is by default enabled when the application first opens up. However, the Sensor Trigger Armed can be disabled by unchecking the Sensor **Trigger Armed** checkbox.

6.10 NIST Quality

Composite images will have a NIST quality indicator above them. This indicator ranges from 1 (very high quality) to 5 (very low quality). No action is required to enable the NIST quality indicator, but it can be deactivated by unchecking the **NIST Quality** checkbox. The state of the **NIST Quality** checkbox persists when the application is closed.

7 Enrollment Tab

One or more fingers may be enrolled for any subject. Lumidigm SDKEnrollApp requires three successful insertions to enroll a finger, and the three insertions must occur in succession. Once begun, the enrollment process times out after 15 seconds of inactivity. In case of a timeout, you will be presented with an opportunity to try again or cancel the enrollment in progress.

The three insertions for each enrollment are checked against each other to make sure they are consistent with each other. Three different standards for the consistency check are available. See *Section 6.7 Spoof Detection and Matching Thresholds* for more information.

7.1 Enrolling a Subject

1. Select on the **Enrollment** tab to display the Enrollment function.
2. To enroll a finger of a new subject, type a unique **Subject ID** in the field provided. To enroll a finger of an existing subject, choose the appropriate Subject ID from the drop-down menu.
   Note: If you try to enroll a subject without entering a **Subject ID**, a status message **Please enter the Subject ID before Enrolling** will appear.
3. Over the hand images, click on the finger that corresponds to the finger to be enrolled. The finger name (e.g., Left Pinky) indicates the name of the finger you have chosen to enroll. The Lumidigm sensor will flash briefly and the status message **Place finger down for first insertion** appears. The sensor is now armed.
4. Place finger briefly on sensor. This is the first of three insertions required for enrollment. A live image will appear on the right side of the window, replaced shortly by a composite image. The sensor will flash to indicate it is armed for next insertion.
5. Insert finger a second and third time. Enrollment is complete after three successful insertions and a status message displays **Enrollment Successful**.
   Note: This Subject ID now appears in **Subjects in Database** field of the **Options** tab indicating that the subject has been enrolled successfully.

7.2 Enrollment Fingertip Indicators

- **Green circle (rollover):** Indicates that finger is available for the enrollment process.
- **Red circle with E (rollover):** Indicates this finger is enrolled for the selected subject. Clicking on this will change the indicator to a **Green Circle with X** resulting in an error message stating **Finger is already enrolled. Do you want to override?**
  Click **OK** to enroll again or **Cancel** to stop enrolling for the same finger again.

8 Verification Tab

The Lumidigm SDKEnrollApp verification function captures an image and checks it against a specified finger of a specified subject. Results include matching scores. The scores necessary for a match vary according to security settings.

8.1 Verifying a subject

1. Select on the **Verification** tab to display the Verification function.
2. Select a Subject to verify from the drop-down menu. The enrolled fingers for the selected subject are indicated on the hand images by **Red Circles with E** on the fingertips.
3. Roll over on one of the enrolled fingers. The indicator will change to **a Green Circle with a V** indicating that the finger is ready to be verified.
4. Click on this finger to begin verification. Lumidigm sensor will flash to indicate it is armed.
5. Place the finger on the sensor plate for acquisition. A composite image appears along with a status message that displays the Match score **Verification Successful** message for a successfully verified user finger.
6. Fingers that are not enrolled are indicated by **Green Circle** and associated with a status message **User finger not enrolled** when clicking on these fingers.

8.2 Verification Fingertip Indicators

- **Green circle with V:** Indicates the finger is ready to be verified for the selected subject.
- **Red circle with E (rollover):** Indicates this finger is Enrolled for the selected subject