Melexis

INNOVATION WITH HEART

DVK90384 User Interface Application Note

MAY 23, 2025

Application Note

DVK90384 User Interface

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1. Introduction

The DVK90384 User Interface (UI) is an application for calibrating and operating the MLX90384 evaluation kit of Arcminaxis technology.

2. Prerequisites

2.1. Local Administrative Rights

The installation can be done with or without administrative rights, based on preference. The administrative rights will install the application for all users; otherwise, the application will be installed only for the current user.

2.2. Environment

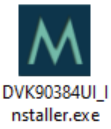
The DVK90384 is a comprehensive evaluation kit designed to simplify the exploration of Arcminaxis technology. It's fully implemented according to our MLX90384 reference design, making it easy to get started.

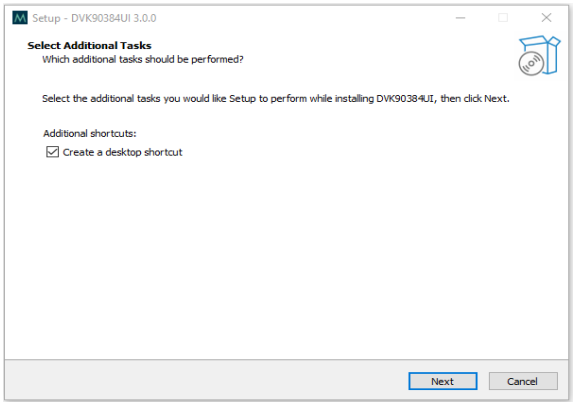
3. Installation Procedure

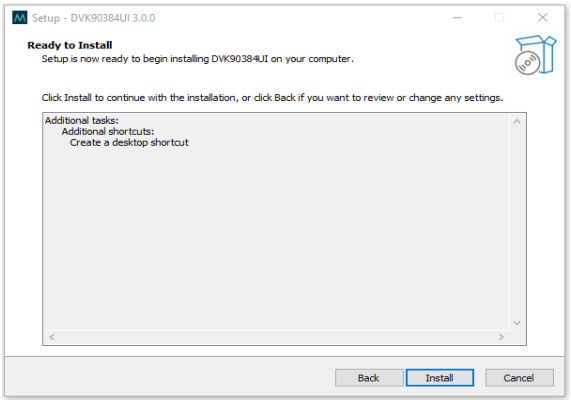
The application is compatible with computers running Windows 7 or higher.

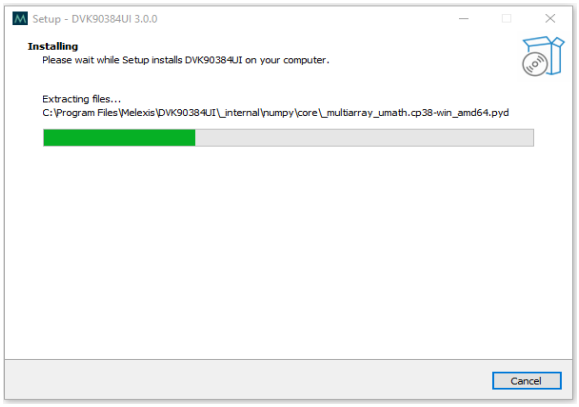
3.1. Windows Installation

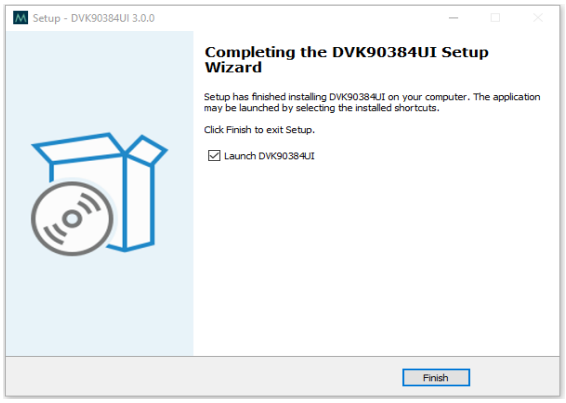
Double-click on DVK90384UI_Installer.exe and follow the installation procedure. The installer will ask for elevation to the local administrator.









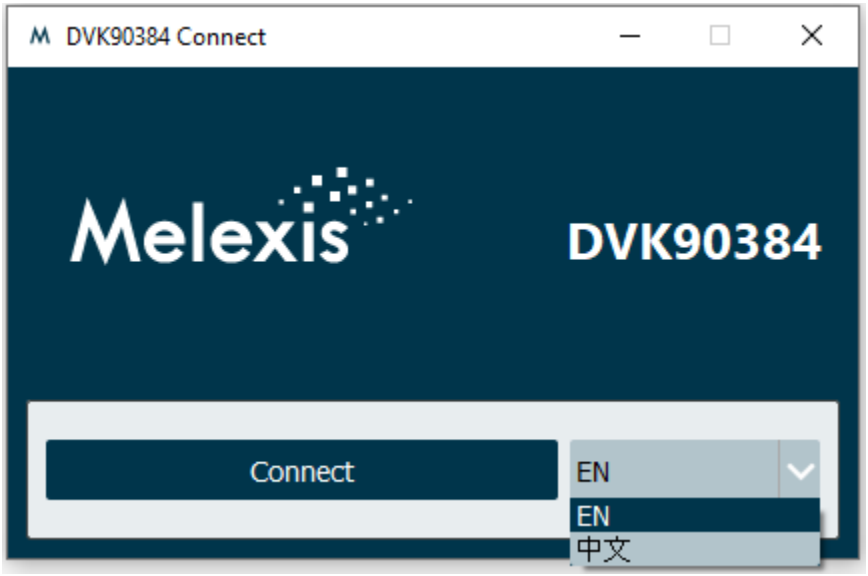


Once the application is installed successfully, and if the shortcut option is selected in the wizard, the *DVK90384UI.exe* icon will be available from the Windows Start Menu and Desktop.

4. Application Description

This section describes the features of the DVK90384 UI.

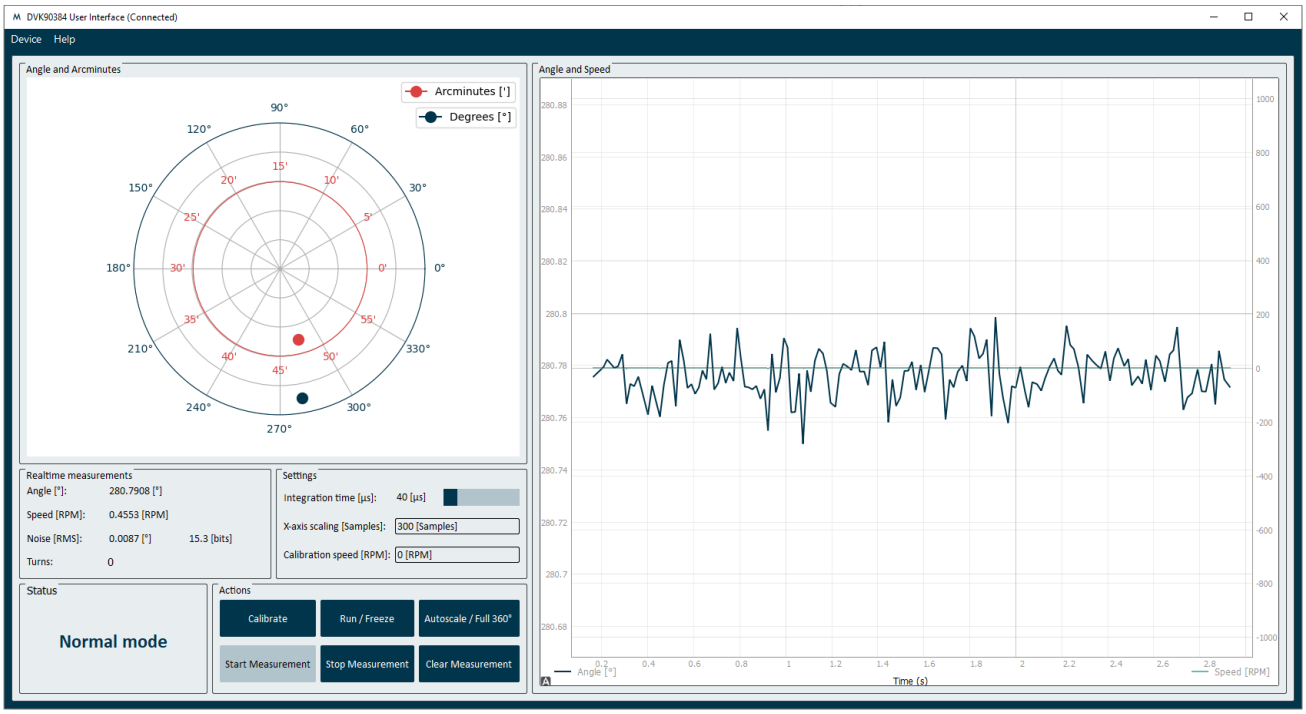
4.1. Connection Window



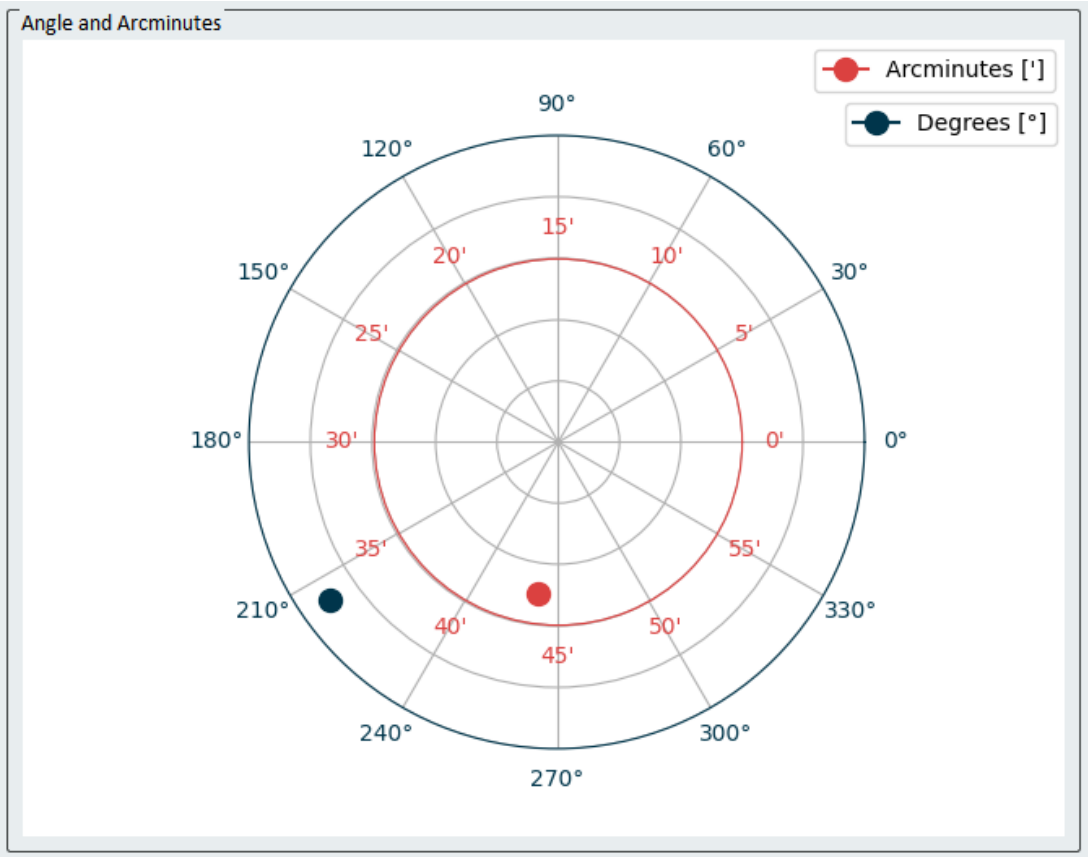
After starting, the application will be in the initial state - the connect window. Click on *Connect*, then a new window will appear.
There is also a drop-down menu for choosing the application language - English or Chinese.

4.2. Application Overview

Upon starting the application, it will activate the measurement process automatically.



4.2.1. Angle and Arcminutes

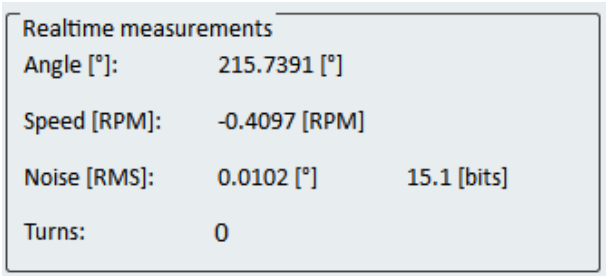


The polar plot shown in the image provides a visual representation of angular measurements in degrees (°) and arcminutes ('). This diagram helps users interpret angular positions and their finer subdivisions efficiently.

Key Features:

- The outer circular grid represents angles in degrees, marked at 0°, 30°, 60°, 90°, up to 360°.
- The inner circular grid represents arcminutes, marked in increments of 5', 10', 15', up to 60'.
- Two distinct markers indicate measurement points:
  - A blue marker represents a degree-based measurement.
  - A red marker represents an arcminute-based measurement.
- A legend in the top-right corner differentiates between degrees and arcminutes for clarity.

4.2.2. Realtime measurements

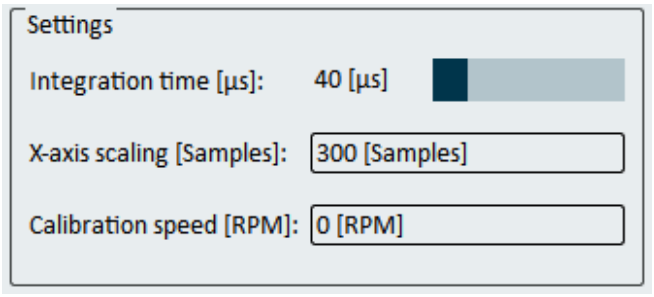


The Realtime measurements panel provides users with key realtime data regarding angular position, rotational speed, noise levels, and turn count. This information is essential for monitoring and analyzing system performance during operation.

Displayed Parameters:

- **Angle [°]**: Displays the current angular position in degrees with high precision (four decimal places).
- **Speed [RPM]**: Indicates the rotational speed of the system in Revolutions Per Minute (RPM).
- **Noise [RMS]**: Shows the Root Mean Square (RMS) noise level in degrees and bits, helping assess signal stability.
- **Turns**: Counts the total number of completed full rotations.

4.2.3. Settings

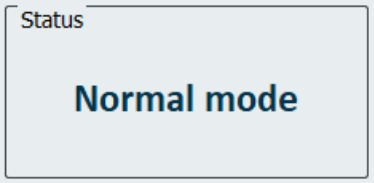


The Settings panel allows users to configure key parameters for system operation and measurement processing.

Configurable Parameters:

- **Integration time [µs]:** Defines the duration of signal integration in microseconds. A longer integration time may improve the precision of the angle but can also increase latency.
- **X-axis scaling [Samples]**: Specifies the number of samples displayed on the X-axis of a graph. Higher values provide a broader time range for analysis.
- **Calibration speed [RPM]**: Sets the reference rotational speed in RPM for the calibration procedure.

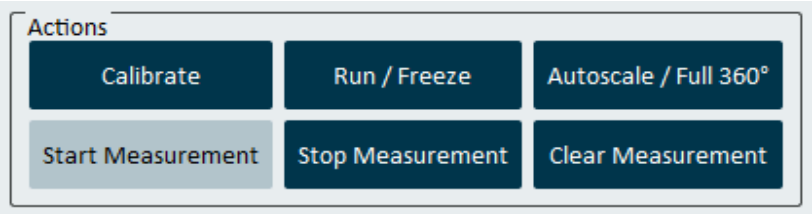
4.2.4. Status



The Status panel displays the current operational mode of the system.

- **Normal mode**: Indicates that the system is functioning under standard operating conditions without errors or interruptions.
- **Calibration Mode**: The system is actively performing a calibration procedure. During this mode, users should avoid making adjustments or interruptions to ensure accurate calibration results.
- **Calibration Successful**: Indicates that the calibration process was completed successfully. The system is now optimized for accurate measurements, and normal operation can resume.
- **Calibration Unsuccessful**: Indicates that the calibration process failed. Possible reasons include incorrect hardware setup, unstable input signals, or insufficient data quality. Users should check the system connections and retry calibration.
- **Idle Mode**: The system is powered on but not actively measuring or processing data. This may occur when no command is issued or after a measurement session has stopped.
- **Not Connected**: Indicates that the system is not detected or communication with the hardware is lost. Users should verify cable connections, check power supply status, and ensure the correct communication interface is selected.

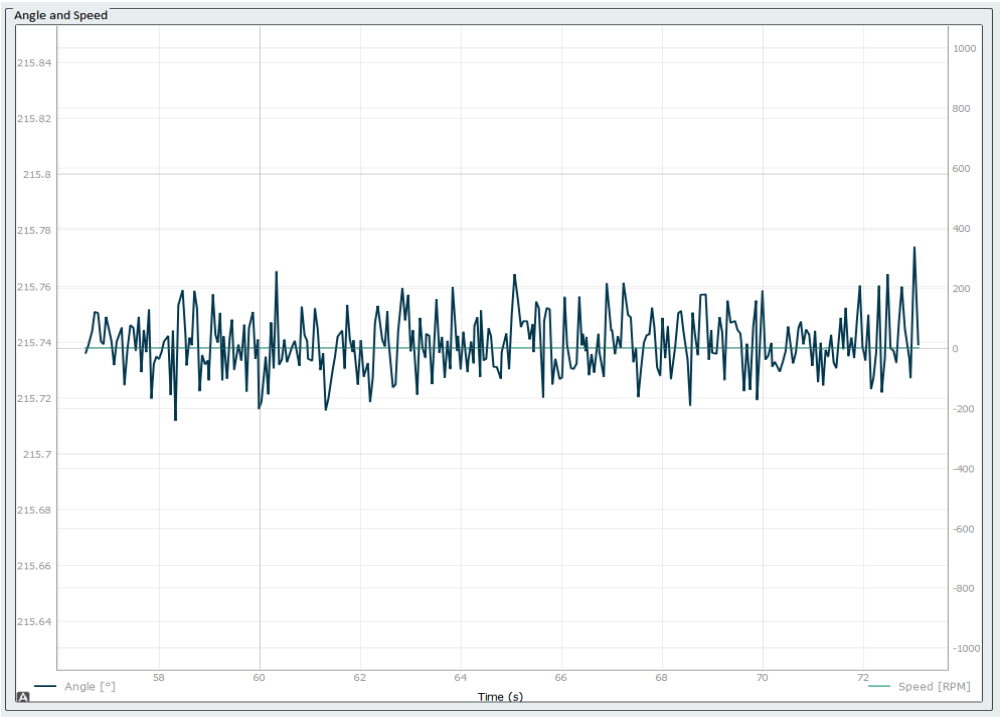
4.2.5. Actions



The Actions panel provides various control buttons for interacting with the system. Each button serves a specific function:

- **Calibrate:** Initiates the calibration process to ensure accurate measurements. The calibration speed needs to be set higher than 0 RPM for the calibration to work properly.
- **Run / Freeze**: Starts or pauses the data acquisition without stopping the measurement process.
- **Autoscale / Full 360°**: Adjusts the display scaling for optimal visualization or sets it to cover a full 360° range.
- **Start Measurement**: Begin a new measurement session.
- **Stop Measurement**: Halts the ongoing measurement while retaining the collected data.
- **Clear Measurement**: Resets the measurement data, clearing all previous readings.

4.2.6. Angle and Speed



The Angle and Speed graph provides a visual representation of the system's real-time measurements over a set number of samples. It consists of two plotted variables:

- **Angle [°]** (shown on the left vertical axis) – Displays the measured angular position over time.
- **Speed [RPM]** (shown on the right vertical axis) – This represents the rotational speed in revolutions per minute.
- **Horizontal axis (Time [s]):** Represents the progression of time, showing discrete measurement points captured at regular intervals.

4.3. Application Toolbar Menu

The **Device** tab enables the connecting and disconnecting of the device.

- **Connect:** Connects the device.
- **Disconnect:** Disconnects the device

The ***Help/About*** menu has detailed information regarding the connection status and UI version.

5. Release Note

Version	Date	Change History
001	23.05.2025	Initial creation.

Table 1: Release Note

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