

# Development of a User Interface for EIC DIRC Laser Acceptance Tests

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## Development of a User Interface for EIC DIRC Laser Acceptance Tests

EIC DIRC laser acceptance tests will use photodiodes to measure the quantity of light passing through the detectors quartz bars. The quartz bars will be held on two motorized linear stages so they can be moved to test different areas of the bar. During initial set up, alignment, and characterization of the test station, the bar position will be manually adjusted to ensure correct alignment. To make these initial tests more convenient, a remote user interface for the test station that allows photodiode readout and monitoring and control of the linear stages is being developed.

The remote user interface is developed in Python using its *Tkinter* library. This library acts as an interface between Tk and Python, allowing widgets (the name for any item on the screen in Tk) to be placed programmatically. Additionally, the Python program configures certain behaviors and command actions for the widgets. For example, for the photodiode readout widgets, the program waits for the user to select and connect to the COM port that correlates to the photodiode's readout device and then displays the photodiode readings in volts on the user interface.

On the remote user interface, there are four sections: photodiode connection settings and readout; linear stage connection settings, monitoring, and control; bar position setting; and log file configuration and control. Each section has its own connection settings and error handling so it each device can be connected to separately from the others. Disconnecting from devices is handled by the program whenever it is stopped by the user using the screen's X button at the top right.

When the program is running, the photodiode readout is connected to, and the linear stages are connected to, at any time, the user can click the log button at the bottom of the screen. This opens or creates the file entered into the log file path widget, writes the photodiode values, stage position, and whether the bar was in or out of place to the log file in CSV format. This CSV can then be read into the test station's analysis program for calculation of the reflectivity results.

Future features of this user interface will be the addition of an automated mode that iterates over bar positions, recording data at every point. Additionally, the analysis program will be integrated into the program so a separate analysis program does not have to be run.

- A user interface has been developed to assist in data logging during initial set up, alignment and tests of the EIC DIRC laser test station
- Python and Tk-based user interface allows users to configure, monitor, control, and log data from test station devices from one screen
  - Alternative would be to use separate programs for each device and/or function

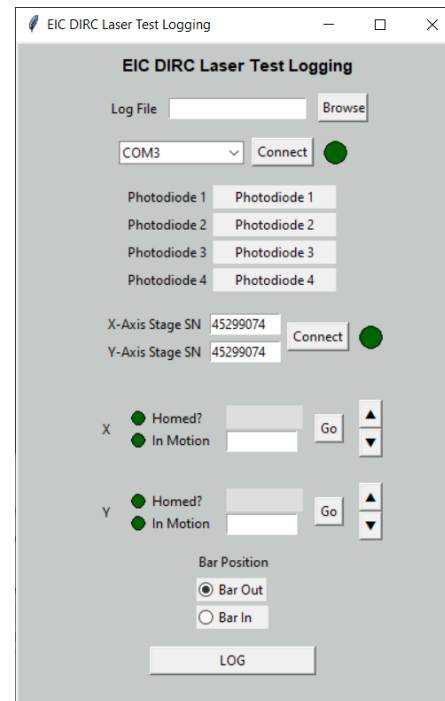


Fig 1: Screenshot of user interface. In screenshot, no components are connected to and all indicators/controls show their default value.