IOS APOLLO: QUICK START GUIDE

MARCH 2023

Version 1.5

Intelligent Optical Systems, Inc
19601 Mariner Ave. Torrance, CA 90503
(424) 241-0720
ios_business@intopsys.com
www.intopsys.com/IOS-Apollo

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1 Introduction

1.1 Scope and Purpose

Thank you for choosing the Apollo modular sensor platform, a cutting-edge sensing solution that utilizes optical fiber technology for highly accurate measurements in challenging environments. With its low size, weight, power, and cost, the Apollo is a versatile platform that can be custom configured with various optical and electrical/electrochemical channels, making it suitable for a wide range of applications such as down well sensing, remote sensing, waste water monitoring, drinking water monitoring, aquaculture, hydroponics, and environmental monitoring. The Apollo's fiber optic sensors offer numerous advantages over traditional sensors, including reduced chemical interference, low size and weight, and the ability to be located far from the readout unit without power requirements. Furthermore, the Apollo features 2 DO and 2 pH optical sensor caps, enabling easy measurements of both Dissolved Oxygen and pH levels without the need for complicated calibrations. We recommend reading this instruction manual thoroughly to understand the instrument's features and maximize its potential.

2 Getting Started

2.1 Initial Inspection

Upon receiving your Apollo modular sensor platform, it is important to carefully unpack the instrument and accessories and inspect them for any signs of damage. We recommend comparing the received parts with the items on the packing list to ensure that all components are present and in good condition. In the event of any missing or damaged parts or materials, please contact Intelligent Optical Systems at (424) 241-0720. We strive to provide the highest level of customer support, and we will work to quickly resolve any issues you may encounter.

2.2 What's in the Box?

The Apollo modular sensor platform comes with everything you need to get started with your sensing applications. The package includes an 8 Channel Optoelectronic Unit that features 2 detectors, 2 LEDs, 1 RTD (Resistance Temperature Detector), and 1 EC (Electrical Conductivity) channel (in the base configuration), offering versatile measurement capabilities. Additionally, the package includes 2 bifurcated optical sensor bundles, which allow you to measure multiple parameters simultaneously. For easy measurement of Dissolved Oxygen and pH levels, the Apollo also comes with 2 pre-calibrated sensor caps for each parameter. To measure temperature and conductivity, the package includes an RTD probe and cable and an EC probe cable, respectively. Finally, the package includes a USB cable, enabling easy connectivity with your computer for data transfer and analysis. With everything included in the box, you'll be ready to start measuring with the Apollo right out of the gate.

Apollo Optoelectronic Unit

Clockwise: Optical Bundle and Probe, Temp Probe, EC Probe

Sensor Cap

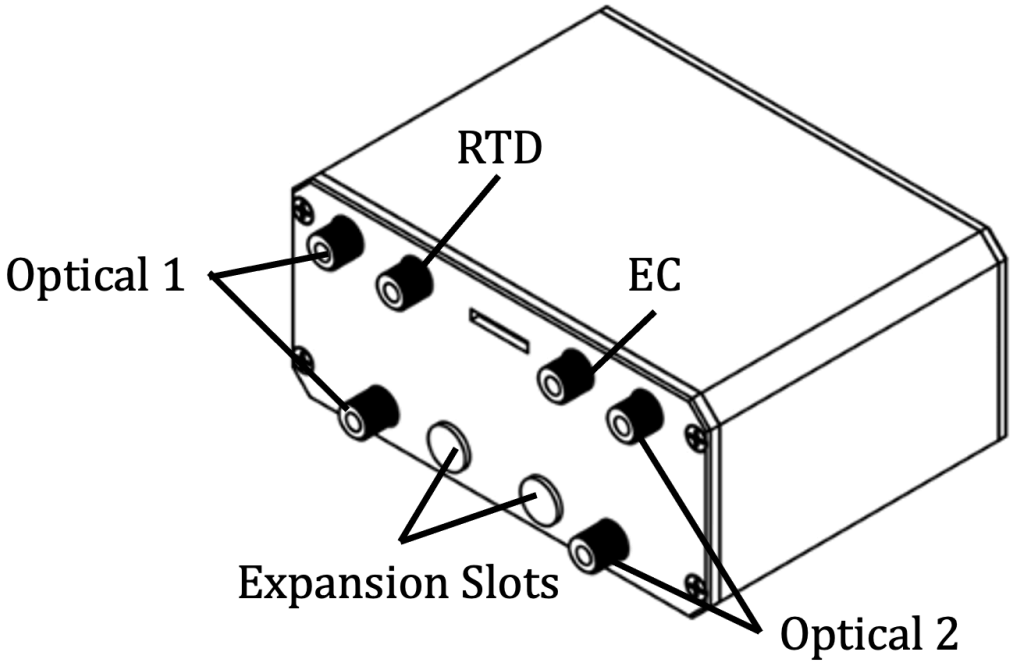
2.3 Connecting

For the base unit, connect sensors in the following manner. Custom configurations will have different connections.

- Optical 1 (**OPT1**): Connect 1 bifurcated optical sensor bundle to Ch1 and Ch5.
    - Screw sensor cap on the end of the optical bundle
- Optical 2 (**OPT2**): Connect 1 bifurcated optical sensor bundle to Ch4 and Ch8.
    - Screw sensor cap on the end of the optical bundle
- RTD: Connect the RTD probe to Ch2.
- EC: Connect the EC probe to Ch3.
- Connect the USB 5-pin Micro-B cable into back of Apollo unit and connect to a Microsoft Windows PC.

Sensor Cap Installed on Optical Probe

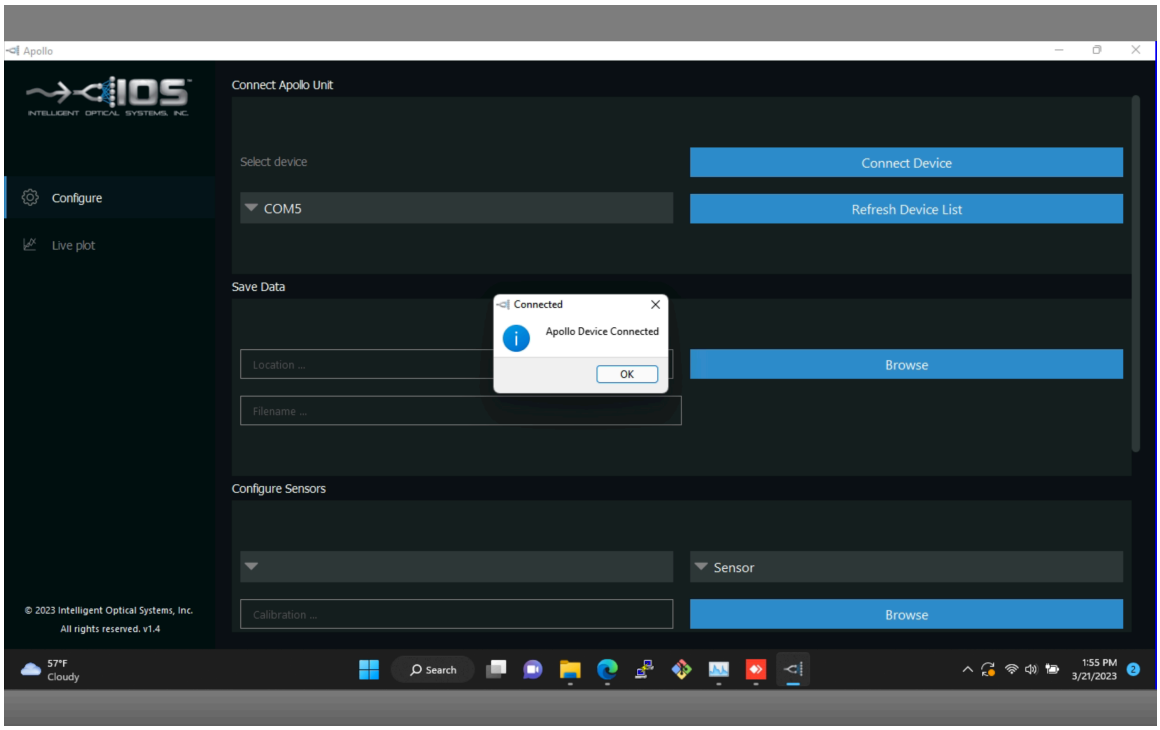
Apollo Channel Layout



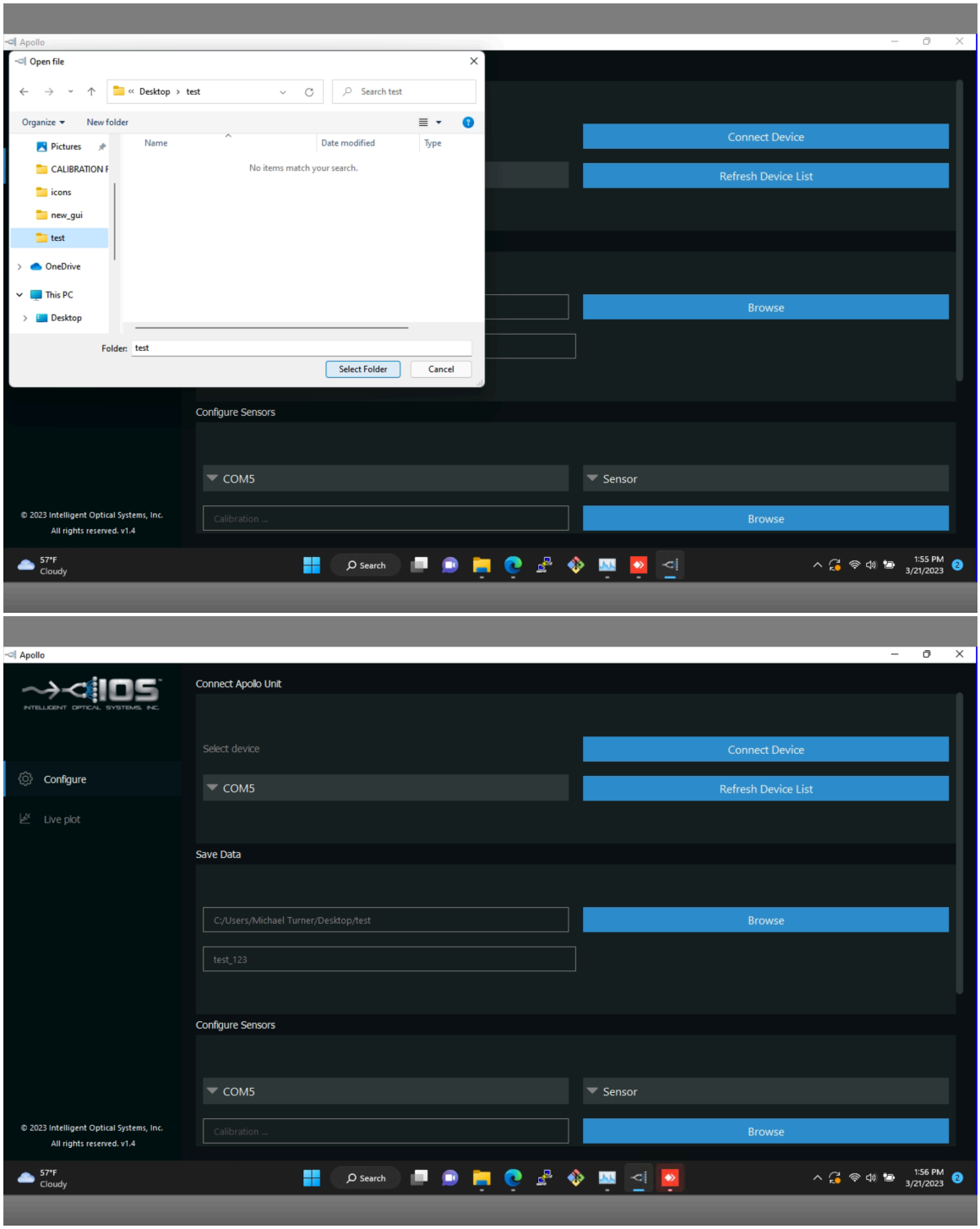
3 Operation

3.1 How to use

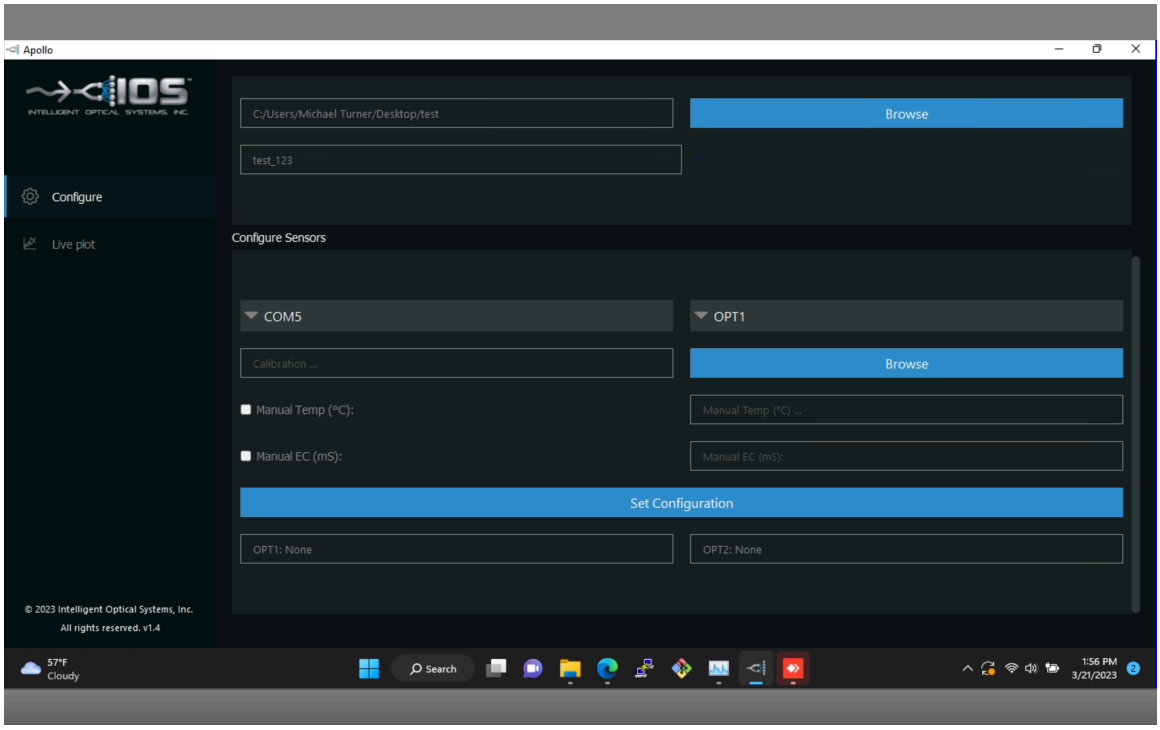
1. Start the IOS Apollo Software (found at www.intopsys.com/IOS-Apollo). It may take some time to load the first time.
2. Go to the "Configure" tab, under the “Connect Apollo Unit” section, click "Refresh Device List", select you Apollo device from the "select device…" dropdown menu, click "Connect Device". The “Serial Device Connected” popup should appear.



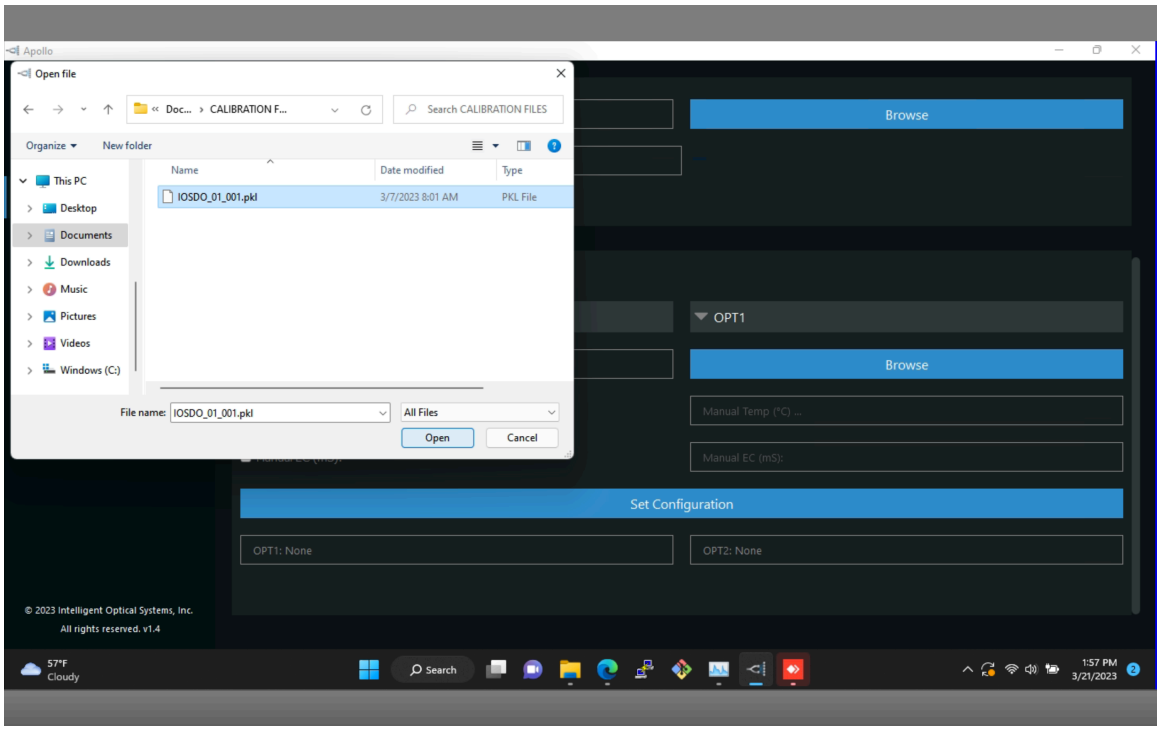
3. Scroll down to the “Save Data” section. Click the “Browse” button. Navigate to the directory where you would like the data to be saved. Click “Select Folder”. Enter the desired filename prefix in the “Filename…” box.



4. Under the “Configure Sensors” section, select the first optical sensor “OPT1” from the “Sensor” dropdown menu.



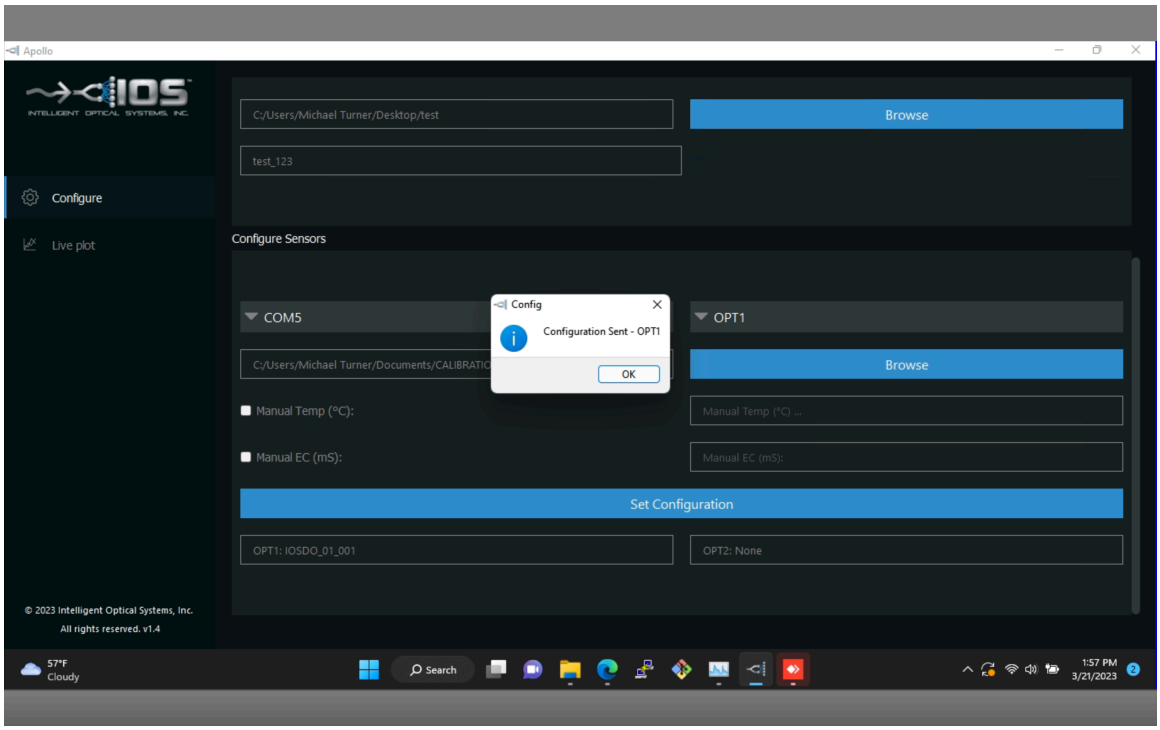
5. Click “Browse” and then navigate to the calibration file for the sensor cap installed in OPT1. The calibration files can be found at www.intopsys.com/IOS-Apollo, click the “Open” button.



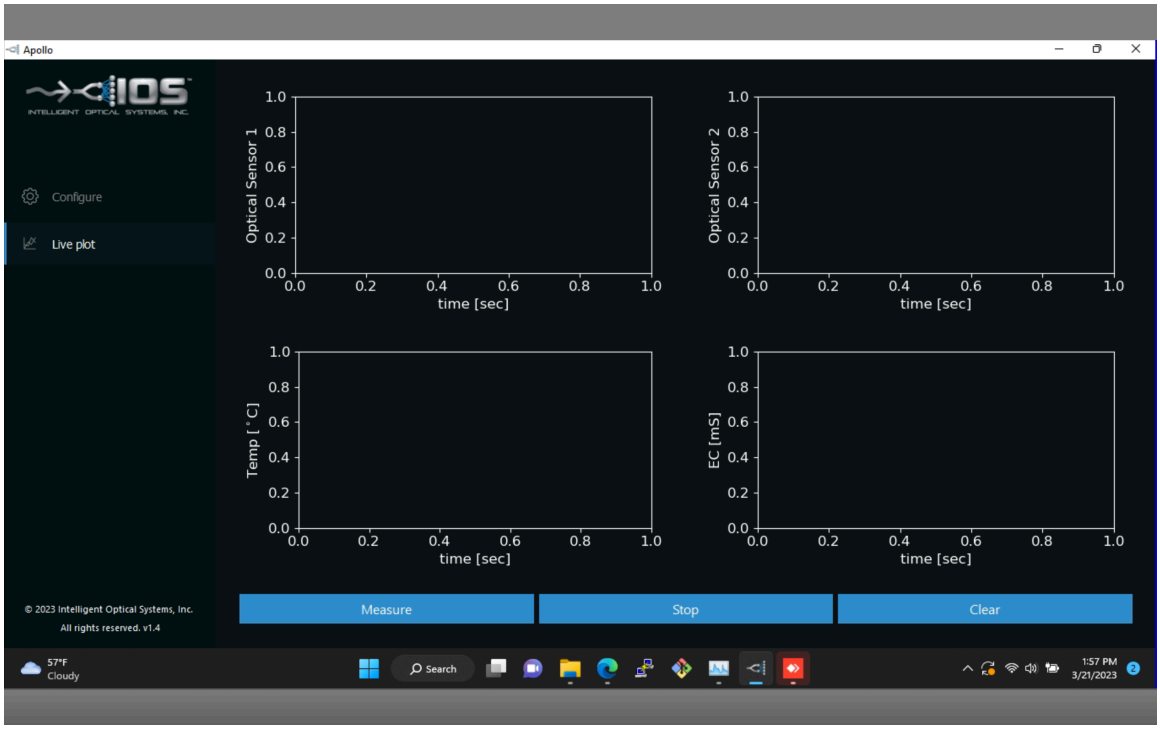
6. Typically, the provided RTD sensor will be used to correct the optical sensor signal. In this case nothing else needs to be entered.

If you do not have the RTD sensor, or do not wish to use it, you can set the temperature manually to be a constant value. Click the "Manual Temp" tick box, and write the desired temperature in the "Manual Temp" box.

Once done click "Set Configuration". A "Configuration Sent" popup should appear. The sensor ID that the channel is configured for will update in the boxes below the "Set Configuration" button.

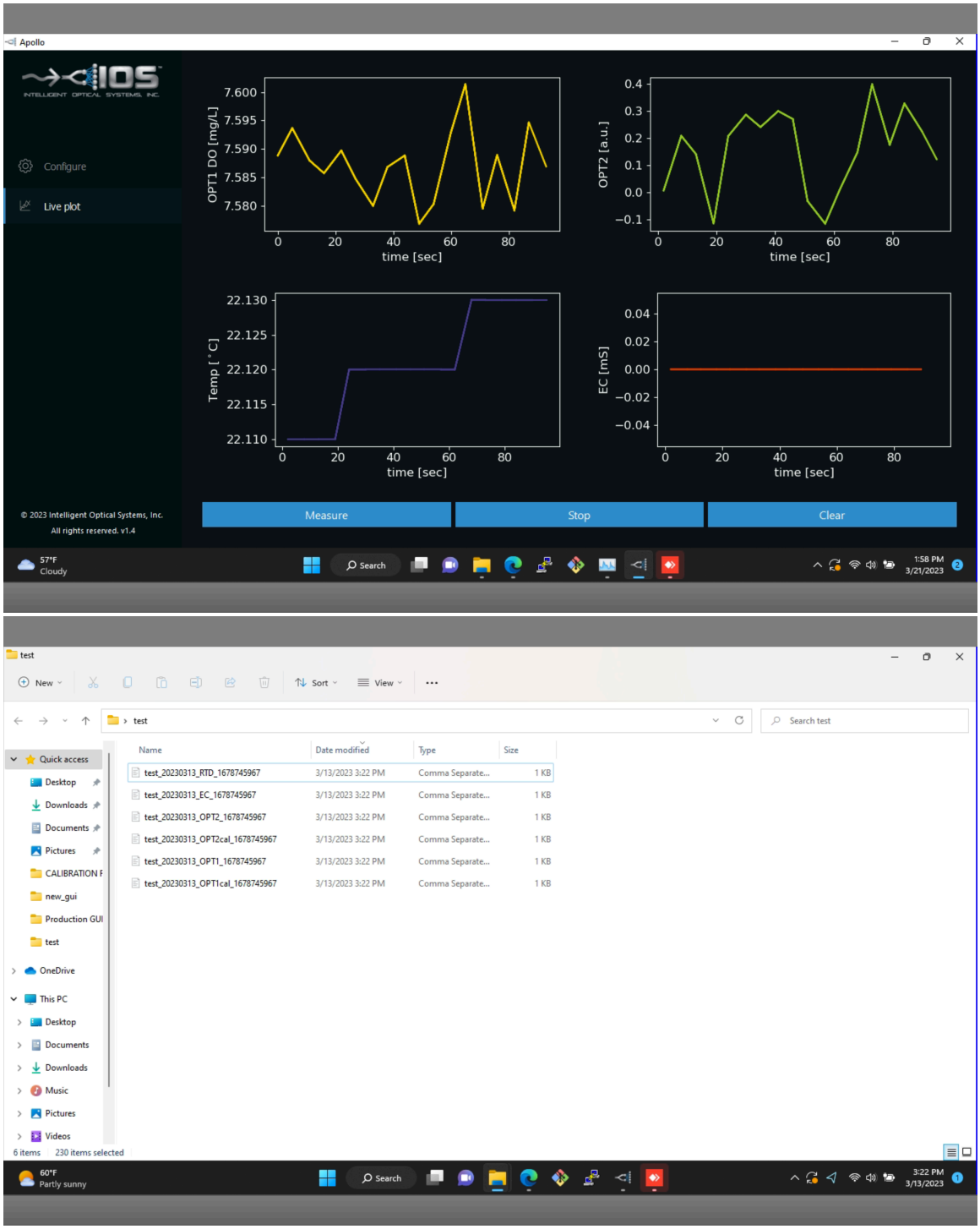


7. Repeat steps 4 -6 for "OPT2".
8. Navigate to the "Live Plot" tab. Click "Measure".



9. Data will begin plotting automatically. Data will automatically be saved to individual comma separated value (CSV) files in the directory that was indicated in Step 7.

   Note, if a calibration is not configured for the channel, the raw optical signal will be plotted instead.



10. Clicking “Stop” will stop the plotting and saving of data. Clicking “Clear” will clear the plots. Clicking “Measure” again, at any time, will begin a new plot and a new set of saved files.
11. Click “Stop” and the exit the program when finished