CI-710S SpectraVue Leaf Spectrometer

Manual

Contents

Overview

Unpacking & Getting Ready for Use

If you have just received your CI- 710, the instrument will arrive in a carrying case that includes:

- The CI-710S
- Light Reflectance Standard
- Dark Reflectance Standard
- 4, 18650 batteries
- Battery Charger
- USB Wall Charger
- USBA to USBC cable
- User's Manual

Loading the Batteries

The CI-710 uses two 18650 Li-ion 3.7V 3100mAh rechargeable batteries. To remove the battery cover, press the tab upwards and lift. The batteries will be visible and can be removed. When inserting new batteries, both batteries should be inserted into the unit positive (+) side towards the power switch.

Warning: Do not drop batteries, this may cause them to crack and rupture.

Charging the Instrument

To charge the CI-710, use the battery charger to charge the 18650 batteries or plug a USB-C cable into the righthand side of the instrument.

Turning the Instrument On

1. Slide the Power On/Off Switch upwards, the instrument will turn on.

This process takes a few moments and instrument will display the homepage when the instrument is ready.

Note: When turning the instrument off, make sure to let it power down for 15 seconds before you attempt to turn it back on.

Measurements

The CI-710 can operate in multiple measurement modes including scope, reflectance, transmittance, and absorbance mode.

Reflectance mode shows light that has been reflected or scattered from a sample.

Transmittance mode compares light that has passed through a sample to light that has not.

Scope mode is used during set-up and to see the effects of adjusting integration time and smoothing. The spectrum displayed when the CI-710 is in Scope mode is the raw voltage coming out of the A/D converter from 0 - 65535.

Calibration

To calibrate the device:

1. Press the ⚙ Button on the home screen.
2. Press the far-left Calibration Button.
3. Step One: Insert the Light Reflectance Standard and press Continue.
4. Step Two: Insert the Dark Reflectance Standard and press Continue.
5. Step Three: Remove the Dark Reflectance Standard and press Continue.
6. All Done! Ready for use.

Home

Taking Measurements

There are two ways to take measurements. The Live Measurement mode, and the Single Measurement mode

Previewing Live Measurements

1. Place leaf inside of the leaf clip.
2. Enable Display Live Measurement in the Graph menu.
3. Select your chosen mode in the Home screen.
4. Press the ▷ Start button.
5. Press the 🖫 Save button to record a measurement.
6. Press the red box to stop previewing.

Take Single Measurement

1. Place leaf inside of the leaf clip.
2. Disable Display Live Measurement in the Graph Menu.
3. Select your chosen mode in the Home screen.
4. Press the ▷ Start button to take and save a measurement.

Changing Modes

1. Press ⇄ Change Mode.
2. Select new mode.

Adjusting Graph Size

The bar and line graphs can be resized by dragging the ≡ bar up and down. To easily reset the two graphs to the same size, press the ▣ split screen icon on the Home screen.

Measurements

Exporting Data

Measurements and calculations can be downloaded to the computer as a .csv file to be assessed using your choice of software.

Exporting to a Network Drive

1. Select desired measurements and calculations from the Measurements screen.
2. Press ⤤ Export.
3. Press Network Drive
4. Connect to the network drive.
5. Select the Data folder.
6. Open the ExportedFiles folder.
7. Select the desired. csv files and download them to your computer.

1. Exporting to a USB Drive
1. Insert USB Drive into the side of the instrument.
2. Select desired measurements and calculations from the Measurements screen.
3. Press ⤤ Export.
4. Press USB.
5. Wait for the pop up to signal finished exporting.
6. Remove USB drive, and insert into your computer.
7. The .csv files will be on the root directory of the flash drive.

Deleting Measurements

The 🗑 Delete button will delete all currently selected measurements. If no measurements are selected, it will delete all measurements. You can see if a measurement is selected or not by checking if there is a colored bar on the right-hand side of its row.

1. Press the ✐ Measurements button.
8. Select measurements chosen to be deleted from the Measurements screen.
2. Press the 🗑 Delete button.

Measurement Tags

A measurement tag is a searchable "Tag" that can be used to organize large amounts of measurements. These tags can be edited by using the edit button or by scanning a bar code.

Using A Barcode Scanner

A barcode scanner can be used to take measurements.

1. Plug the barcode scanner into the instrument.
2. Press the ▷ Start button.
3. Scan a barcode to record to a new measurement with that barcode as the tag.

Filtering Tags

To show all measurements, the filters text box must be either empty or *.

1. Press the ▽ Filter button.
2. Type or scan the desired tag.

Editing Tags

Each measurements tag can be manually edited or edited with a barcode scanner.

1. Select all the measurements that you wish to edit to the same tag.
2. Press ⬦ Edit Tags.
3. Tap on the textbox and type in a new tag or scan a barcode.
4. Press Confirm.

All measurements that show up in the list will now contain that tag.

Calculations

Adding Calculations

1. Press the ▦ Calculations button.
2. Press the ➕ button on the top right of the calculations screen.
3. On this page, under *Template* is a list of recorded known indices which can be selected. Otherwise the field can be filled in manually.
4. The calculation can have a Title, Description, Note, and Equation which can be filled in.
5. In the *Equation* box, user defined calculations can be input.
    a. These equations use the standard JavaScript format such as Math.pow()
    b. A, R, and T are the prefixes for the specific wavelengths, to select a specific wavelength use a prefix followed by the number such as R500.
6. If the equation is valid, press the 💾 Save button.

Note: If the equation is INVALID, the save button will be greyed out and an error message will appear.

Deleting Calculations

1. Press the ▦ Calculations button.
2. Select chosen calculations to be deleted.
3. Press the 🗑 Delete button.

Editing Calculations

1. Swipe left on a calculation.
2. Select Edit.
3. Make any changes.
4. Press 💾 Save.

Settings

Spectrometer

- Integration Time is the duration the detector captures light. This can range from 0.03ms up to 60,000ms. The automatic detection mode will automatically increase or decrease the integration time to find 90% saturation.
- Smoothing averages the spectral data over the number of pixels. For example, a smoothing of two will average a pixel x with x-2, x-1, x, x+1, x+2.
- Scans to Average is how many scans should be taken and averaged together for a clearer result with less noise.

Graph Settings

These settings are specific to graph itself, and modify the viewing range, and what items appear on screen.

Viewing a Specific Spectrum Range

By default, data from 380-1100nm are displayed. The specifications for this instrument are 380-1100nm. Values outside this range can include extra noise.

- Use the Slider to select the first visible wavelength and last visible wavelength.

Highlighting Calculation Wavelengths

By default, calculation wavelengths are not displayed on the graph. The calculation wavelengths appear as vertical bars on the line graph that correspond to the position in nanometers and the color of the calculation.

- Press the Highlight Calculation Wavelengths checkbox to turn this feature on.

Display Live Measurement

By default, live previews of the measurement are displayed on the graph. If unchecked, pressing record will take a single measurement, display on the graph, and save it.

Display Measurement Peaks on Graph

Measurement peaks are the peak points of the measurement. The specifications for the peaks are user defined.

- The minimum threshold is the minimum value in the Y axis that peaks can start appearing.
- The Range of Peaks is a sliding range centered around each point where it looks for a peak.
- Minimum Peak Height is the distance between the highest and lowest point within your range of peaks.
- Minimum Peak Width is the minimum width the peak must be.

WIFI Settings

Connecting to a WIFI Network.

1. Press the ⚙ Settings button.
2. Press WIFI.
3. Select the desired network and enter password if needed.

Connecting to the instruments network drive

1. Press the ⚙ Settings button.
2. Press the WIFI button.
3. Connect to a WIFI network.
4. On the top of the screen is a label IP Address:
5. Open a browser on your computer. Enter \\ followed by the IP Address.
6. If a username and password is required, the username is Administrator and password is p@ssw0rd

Specifications

CI-710S SpectraVue Leaf Spectrometer

Subject to change

- Grating: MN300-0.5 – 300 lines/mm
- AD Resolution: 16 bit
- Capture modes: One-time or Continuous
- Integration Modes: Auto or Manual
- Integration Time: 30 µs – 60s
- Measuring Modes: Reflectance, Transmittance, Absorbance
- Wavelength Range:200 - 1100 nm (default 360 - 1100) Contact for more info
- Wavelength Data Increment: .55 - .7 nm
- Display: 7″ 1024 x 600 IPS Display
- FWHM: 2.4
- Weight: 2 lb. 1 oz.
- Battery Life: 3- 4 hours
- Power supply: Two 18650 Batteries and USBC
- Detector: CMOS Linear Array
- Stray Light: 0.2 - 1%
- Languages: English, Spanish

Technical Support

If you have questions, online support is available at the following address...

https://www.cid-inc.com/support/

CID Bio-Science is committed to provide customers with high quality, timely technical support.

CID Bio-Science contact information:

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