

Laboratory Fruit Acidity & Sweetness Meter

NY2100

Features

- Utilizes near-infrared spectroscopy technology with high sampling coverage and superior detection accuracy.
- Performs online non-destructive testing, is pollution-free, and features fast detection speed.
- Designed with a modular structure for easy installation and seamless integration with online intelligent fruit sorting systems.
- Capable of analyzing fruit sugar content and other relevant parameters.

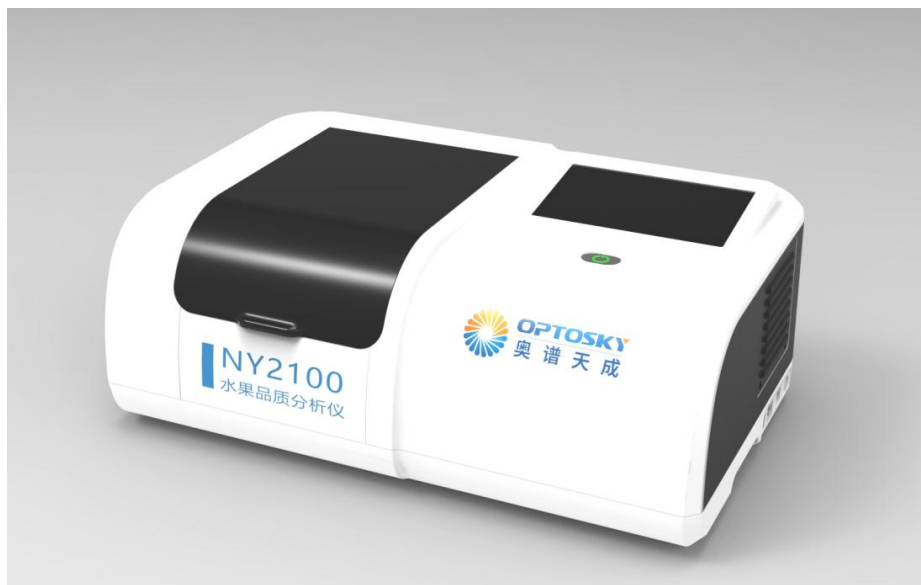
Description

The instrument irradiates fruit with near-infrared light. Different internal components of the fruit absorb light at different wavelengths to varying degrees. By applying chemometric methods based on near-infrared spectral characteristics to establish an analytical model, non-destructive analysis of the internal quality of fruit can be achieved. It enables rapid analysis of indicators such as sugar content (Brix) and acidity without damaging the sample. Furthermore, for specific fruit types, it can analyze internal diseases and defects by establishing discriminant models.

Applications

Fruit diameter between 30mm–110mm spherical or near-spherical fruits. Customized modeling is required for different fruit types, such as:

- Kumquat
- Orange
- Lemon
- Grapefruit
- Apple, Persimmon, etc.



1. Principle

When near-infrared light irradiates the fruit, it interacts with various chemical components inside the fruit. Components such as sugar and acid possess specific molecular structures and chemical bonds. Different chemical bonds (e.g., C-H, O-H, N-H) exhibit distinct absorption peaks in the near-infrared region. When near-infrared light hits the fruit, these components absorb light at specific wavelengths, causing changes in the intensity and spectral distribution of the reflected light.

2. Advantages

● Self-developed Algorithms

Collect near-infrared spectra of the target fruit, select the full-band data matrix of specific wavelength ranges, and use a training set to establish a Partial Least Squares (PLS) model. The model's effectiveness is evaluated through a prediction set, achieving an error range of approximately $\pm 1\%$.

● Personalized Modeling Software, Easy to Use

Self-developed, simple, and efficient modeling software allows for personalized modeling tailored to different types of fruit, ensuring measurement accuracy. The process includes:

Collecting fruit spectral data → Preprocessing spectral data → Selecting characteristic wavelengths → Dividing the sample set → Data modeling → Accuracy validation

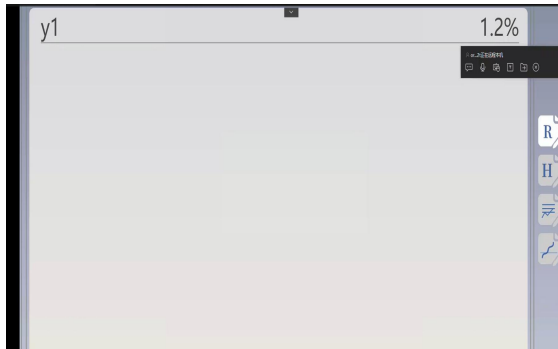
● Detection Results Displayed on Terminal

After simple configuration, the instrument can directly display test results on its digital screen, eliminating the need for an external computer. The device comes equipped with professional modeling software, enabling users to develop models for various types of fruits.

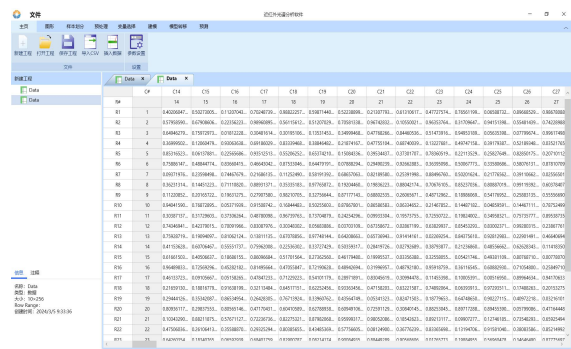
3. Parameter

Model	NY2100-11	NY2100-17	NY2100-25	NY2100-25L
Wavelength	400nm-1100nm	900nm-1700nm	900nm-2500nm	400nm-2500nm
Fruit Types	Kumquat, citrus/oranges, apples, pears, peaches, etc., fruit diameter 50-110mm (modeling based on fruit type)			
Functions	Sweetness, moisture content, etc.			
Accuracy	Brix accuracy: ± 1 (dependent on modeling)			
Material	Sheet metal + aluminum alloy			
Communication	Ethernet port			

4. Software



Test Software



Modeling Software

5. Product Appearance



Note: The model is a customer-specific customized version.