

HI96800 • HI96801 • HI96802
HI96803 • HI96804

Digital Refractometers

for Sugar Analysis Throughout the Food Industry

- **Ideal for the analysis of:**
 - Fruits, energy drinks, puddings, soy milk, juices, jam, marmalade, honey, soups, jelly, tofu and condiments
- **Easy measurement**
 - Place a few drops of the sample in the well and press the READ key
- **Quick, accurate results**
 - Readings are displayed in approximately 1.5 seconds
- **Rubberized keypad**
- **IP65 water protection**
 - Built to perform under harsh laboratory and field conditions
- **Small sample size**
 - Sample size can be as small as 2 metric drops
- **Dual-level LCD**
 - The dual-level LCD displays measurement and temperature readings simultaneously
- **ABS thermoplastic casing**
- **Stainless steel sample well**
 - Easy to clean and corrosion-resistant
- **Startup**
 - When powered on, the meter displays battery life and the set measurement units
- **Unit selection**
 - Pressing the RANGE key quickly cycles through the units of measurement (if applicable)
- **Automatic Temperature Compensation**
 - For exceptionally accurate measurements
- **Single-point calibration**
 - Calibrate with distilled or deionized water
- **BEPS (Battery Error Prevention System)**
 - Alerts the user in the event that low battery power could adversely affect readings
- **Automatic shut-off after three minutes of non-use**



Our digital refractometers are portable for determining sugar content right in the field.

Five Instruments for Sugar Analysis

Hanna offers five sugar refractometers to meet the requirements of the food industry. The HI96800 Refractive Index/Brix, HI96801 % Brix (sucrose), HI96802 Fructose, HI96803 Glucose and HI96804 Invert Sugar digital refractometers are rugged, portable and water-resistant for measurements in the lab or field.

These optical instruments employ the measurement of the refractive index to determine parameters pertinent to sugar concentration analysis.

Refractive Index

The actual measurement of refractive index is simple, quick and provides the operator a standard accepted method for sugar content analysis. Samples are measured after a simple user calibration with deionized or distilled water. Within seconds these instruments measure the refractive index, apply any necessary calculations and display the results in the selected unit. These digital refractometers eliminate the uncertainty associated with mechanical refractometers and are easily portable for measurements in the field.

Features

These five instruments utilize internationally recognized references for unit conversion and temperature compensation and employ methodology recommended in the ICUMSA Methods Book (internationally recognized body for sugar analysis).

Temperature (in °C or °F) is displayed simultaneously with the measurement on the large dual-level display along with icons for low power and other helpful messages.

5 Digital Refractometers for Sugar Analysis to Choose from



HI96800

Measures the **refractive index** in aqueous solutions. Readings can also be displayed with sucrose temperature compensation (nD_{20}) or **% Brix**.

- 1.3300 to 1.5080 Refractive Index range with ± 0.0005 accuracy
- 0 to 85 % Brix range with ± 0.2 % Brix accuracy



HI96801

Measures the refractive index to determine the **% Brix** of sugar in aqueous solutions. The refractive index of the sample is converted to % Brix concentration units.

- 0 to 85 % Brix range with ± 0.2 % Brix accuracy



HI96802

Measures the refractive index to determine the **% fructose** in aqueous solutions. The refractive index of the sample is converted to **% mass (% w/w)** concentration units.

- 0 to 85 % fructose by weight range with ± 0.2 % mass (% w/w fructose) accuracy



HI96803

Measures the refractive index to determine the **% glucose** in aqueous solutions. The refractive index of the sample is converted to **% mass (% w/w)** concentration units.

- 0 to 85 % glucose by weight range with ± 0.2 % mass (% w/w glucose) accuracy



HI96804

Measures the refractive index to determine the **% invert sugar** in aqueous solutions. The refractive index of the sample is converted to **% mass (% w/w)** concentration units.

- 0 to 85% invert sugar by weight range with ± 0.2 % mass (% w/w invert sugar) accuracy

Easy to Operate

Startup Screens

When the meters are turned on, all of the LCD segments will be displayed followed by the percentage of battery life remaining.

Calibration

Perform a quick and easy calibration after startup:

1. Using a pipette, completely cover the prism in the sample well with distilled or deionized water.
2. Press the ZERO key.

Unit Selection

Just press the RANGE key to cycle through the units of measurement (HI96800).

Measurement

Achieve fast, accurate results:

1. Using a plastic pipette, place sample onto the prism surface until the well is full.
2. Press the READ key and the results are displayed in the selected units.

Making a Standard % Brix Solution

To make a Brix Solution, follow the procedure below:

- Place container (such as a glass vial or dropper bottle that has a cover) on an analytical balance.
- Tare the balance.
- To make an X % Brix solution, weigh out X grams of high purity sucrose (CAS #: 57-50-1) directly into the container.
- Add distilled or deionized water to the container so the total weight of the solution is 100 g.

Note: Solutions above 60% Brix need to be vigorously stirred or shaken and heated in a water bath. Remove solution from bath when sucrose has dissolved. The total quantity can be scaled proportionally for smaller containers but accuracy may be sacrificed.

Example with 25% Brix:

% Brix	25
g Sucrose	25.000
g Water	75.000
g Total	100.000

Specifications		HI96800	HI96801	HI96802	HI96803	HI96804
% Brix	Range	0.0 to 85.0 % Brix	0.0 to 85.0 % Brix			
	Resolution	0.1 % Brix	0.1 % Brix			
	Accuracy	±0.2 % Brix	±0.2 % Brix			
nD	Range	1.3300 to 1.5080 nD				
	Resolution	0.0001 nD				
	Accuracy	±0.0005 nD				
nD ₂₀	Range	1.3330 to 1.5040 nD ₂₀				
	Resolution	0.0001 nD ₂₀				
	Accuracy	±0.0005 nD ₂₀				
% mass (% w/w)	Range			0.0 to 85.0 % mass (% w/w fructose)	0.0 to 85.0 % mass (% w/w glucose)	0.0 to 85.0 % mass (% w/w invert sugar)
	Resolution			0.1 % mass (% w/w fructose)	0.1 % mass (% w/w glucose)	0.1 % mass (% w/w invert sugar)
	Accuracy			±0.2 % mass (% w/w fructose)	±0.2 % mass (% w/w glucose)	±0.2 % mass (% w/w invert sugar)
Temperature	Range	0.0 to 80.0 °C (32.0 to 176.0 °F)				
	Resolution	0.1 °C / 0.1 °F				
	Accuracy	±0.3 °C / ±0.5 °F				
Additional Specifications	Temperature Compensation	Automatic, between 10.0 and 40.0 °C (50.0–104.0 °F)				
	Measurement Time	Approximately 1.5 seconds				
	Minimum Sample Volume	100 µL (cover prism totally)				
	Light Source	Yellow LED				
	Sample Cell	Stainless steel ring and flint glass prism				
	Case Material	ABS				
	Enclosure Rating	IP65				
	Battery Type / Life	9V / 5000 readings				
	Auto-off	After 3 minutes of non-use				
	Dimensions	192 x 102 x 69mm (7.6 x 4.1 x 2.7")				
	Mass	350 g (12.3 oz.)				
Ordering Information	HI96800, HI96801, HI96802, HI96803 and HI96804 are supplied with 9V battery, plastic pipette, quick reference guide with QR code for manual download, and instrument quality certificate					
Standard	HI4020-11 Brix standard 50%, 10 mL					