



REF-113ATC, Hand Refractometer, 0–32% Brix/ATC

Designed to measure sugar content. Just a few sample drops are enough to determine the percentage of dissolved solid, according to the principle for which the refraction index of a solid dissolved is proportionate to its concentration. This is a simple and accurate method, extremely useful for controlling the quality of fruit, jam, vegetables, tomatoes, beet sugar, canned foods, etc., in the field or in the factory. This new revolutionary instrument allows to measure without problems due to temp. changes, eliminating the inconvenient of temperature compensation. until now indispensable for refractometric measuring operations.

Model	Range	Precision
REF-113ATC	0–32% Brix/ATC (10°C–30°C)	0.2%



REF-104, Hand Refractometer, 28–62% Brix

Ideal for concentrated fruit juices and canned foods that use sugar infusion, and half-scale concentration samples. In the bright/blue field, the boundary line is clearly visible with good contrast.

Model	Range	Precision
REF-104	28–62% Brix/ATC	0.2%



REF-105, Hand Refractometer, 45–82% Brix

Standard refractometer used to measure the sugar content of concentrated fruit juices, condensed milk, liquid sugar and marmalade, and for very dense products, jams, syrups, concentrated substances, glucose, treacle.

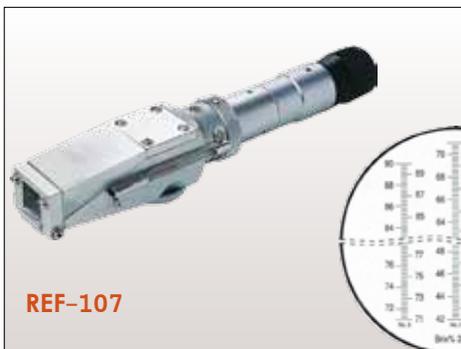
Model	Range	Precision
REF-105	45–82% Brix	0.5%



REF-116, Hand Refractometer, 58–90% Brix

Designed to measure the common indexes of HONEY: high sugar content, Baume and water. It determines the percentage of water in the honey by measuring the refraction index. It permits the determination of the collecting period, conservation and commercial value. Useful for preparing the spring mixtures of the bees.

Model	Range	Precision
REF-116	58–90% Brix	1% Brix
	38°Bé–43°Bé	0.5°Bé
	12–27% water	1% water



REF-107, Hand Refractometer, 0–90% Brix

It precisely determines the sugar content of each solution; suitable for all products, both diluted & concentrated. It adopts a light transmission system to increase the contrast of the boundary line in the field of vision.

The Amici prism, inside situated, has been made to eliminate color, so as to obtain a clear boundary line in the field of vision. Thanks to the special thermometer with which it is equipped, the measurements can be easily corrected by the relative tables.

Model	Water percentage	Precision
REF-107	0–90% Brix	0.2%
	3 Ranges: 0–42%; 42–71%; 71–90%	



REF-117, Hand Refractometer, 12–27% Brix

Refractometer for honey, for quickly determination of the percent age of water in the honey and relevant Baumé degree. Manual temperature compensation between 20°C and 40°C.

Model	Water percentage	Precision
REF-117	12–27%	0.2%
	Baumé range	
	38°Bé–43°Bé	1°



REF-108, Hand Refractometer, 0–80% Brix

Universal broad-scale refractometer, able to precisely determine the sugar content of all kinds of products. Selnable scales between 0 and 80° Brix.

Model	Range	Precision
REF-108	0–80% Brix	1%



REF-111, Hand Refractometer, 0–10% Brix

The REF-111 model features an enlarged Brix scale making possible high-precision measurements. It can be used to measure the Brix degree in fruit juices, emulsion oils, lubricating oils and all low-concentration substances, with Brix degree of 10% or lower.

Model	Range	Precision
REF-111	0–10% Brix	0.1%



REF-112, Hand Refractometer, 0–18% Brix

The model with high-resolution Brix scale has been developed for low concentrations. The scale can measure the Brix degree in fruit juices, soft drinks, must wine and various types of drinks, lubricating oils, emulsion oils, tomato, etc.

Model	Range	Precision
REF-112	0–18% Brix	0.1%



REF-113, Hand Refractometer, 0–32% Brix

Designed to measure sugar content. Just a few sample drops are enough to determine the percentage of dissolved solid: according to the principle for which the refraction index of a solid dissolved is proportionate to its concentration. This is a simple and accurate method, extremely useful for controlling the quality of fruit, jam, vegetables, tomatoes, beet sugar, canned foods, etc., in the field or in the factory.

Model	Range	Precision
REF-113	0–32% Brix	0.2%



REF-212, Hand Refractometer, 0–28% Brix Salinity

Refractometer able to determine the percentage of sodium chloride in sea water and in prepared-food solutions. with salt concentration up to 28%. meaning 28g of salt in 100g of solution. Suitable for controlling refrigerating brines. for food treatment liquids used in the processing industry. for brackish and sea water. Instrument calibrated to the refraction index of sodium chloride.

Model	Range	Precision
REF-212	0–28% Brix salinity	0.2%



REF-211, Hand Refractometer, 0–100‰ Brix Salinity

It measures low-concentration salt content. It adopts scale with unit of salinity per thousand (‰). The refractometer is easy to use and quickly provides the direct measurement of saline density and the specific weight of sea water.

Model	Range	Precision
REF-211	0–100‰	1‰
	1000–1070 sg	0.001 sg



REF-311, Hand Refractometer, 0-12g/dl Proteins & Urine

This high-precision and widely-used model has been designed to quickly determine the proteins in blood serum & the specific weight of urine; indispensable for all chemical-clinical test laboratories.

Model	Range	Precision
REF-311	0-12g/dl	0.2g/dl
	1000-1040 sg	0.002 sg



REF-312, Hand Refractometer, 0-12g/dl Proteins & Urine

Widely used in chemical-clinical test laboratories to determine the proteins in blood serum and the specific weight of urine.

The instrument also features refraction index scale (Nd), to determine the concentration of test reagent solutions, and calibration line (Wt) for instrument control.

Model	Range	Precision
REF-312	0-12g/dl	0.2g/dl
	1000-1050 sg	0.002 sg
	1.3330-13600 RI	0.0005 RI



REF-414, Hand Refractometer, Measuring The Freezing Point

It permits measuring the freezing point of glycol ethylene and propylene solutions. Especially suitable for controlling lead battery charges & concentration of heat exchange liquid in cooling systems.

Model	Range	Precision
REF-414	0°C/-50°C	5°C
	1.15-1.30 sg	0.01 sg



REF-513, Hand Refractometer, Alcohol

It permits measuring the approximate value of the amount of alcohol in aqueous solutions and the sugar content of grape juice. The scale directly shows measurement results.

Model	Range	Precision
REF-513	0-25%	0.2%



REF-711, Hand Refractometer, 0-26% Babo

Manual instrument indispensable for all grape growers and wine-making industries. It features 3 measurement scales (Brix, Babo, Oechsle), for the quick sight determination of the sugar content of grapes & musts.

Model	Range	Precision
REF-711	0-26% Babo	0.2%
	0-140 °Oechsle	1°
	0-32% Brix/ATC	0.2%



REF-601A, Hand Refractometer, Gemology

Used to measure the refraction index in gemology. It features inner protection for the light, to obtain enough lighting for measuring, and polarizer filter.

Model	Range	Precision
REF-601A	1.30-1.81	0.01

K7135, ABBE Refractometer



K7135

Standard accessories:

- Calibrating glass prism
- Monobromonaphthalene standard, bottle
- Stabilised mains adapter
- Calibrating screwdriver
- Dust cover.

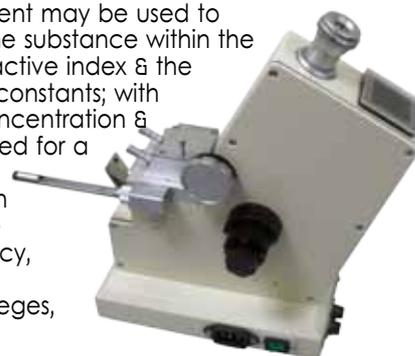
BRIX Scale (%):

The Brix degree measures the concentration percentage of soluble solid content of a sample (aqueous solution), i.e. the sum of all the solids dissolved in the water (sugar, salt, proteins, acids, etc.); the measurement result is their sum in the sample. Basically, the Brix degree is calibrated to the grams of cane sugar contained in 100 g of solution. For this reason, when a sugar-based solution is measured, the Brix degree precisely calculates real concentration. In the event of the substance to be examined also containing other components different from sugar, a referment should be a conversion table, so as to correct the obtained values and make sure the result represents the exact sample concentration.

Uses:

Projection Abbe Refractometer is a kind of instrument which can be used to determine the refractive index n_D and the mean dispersion $n_F - n_C$ for the transparent or semitransparent liquid or solid (mainly used to determine the transparent liquid).

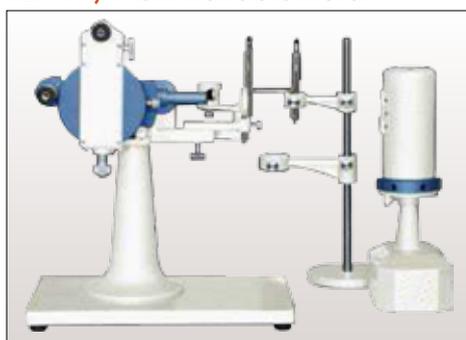
With the help of thermostat, this instrument may be used to determine the refractive index n_D for the substance within the temp. range from 0°C to 50°C The refractive index & the mean dispersion are important optical constants; with which the optical property of purity, concentration & dispersion power, etc. can be determined for a certain substance. Therefore, this instrument has been used widely; it is an indispensable common one used in the industries of chemicals, grease, pharmacy, painting, food processing, sugaring, etc. by relevant factories, colleges, and scientific research institutes.



Specifications:

Model	K7135
Refractive index (n_D) measuring:	
Measuring range	1.300 ~1.700
Scale unit	0.0005
Measuring accuracy	0.0003
2 Measurement for the concentration of sugar solution:	
Measuring range	(0 ~95)%
Scale unit	0.25%
Illuminating lamp	High intensity LED
Temperature range	0°C ~50°C
Instrument weight	6.5Kg
Dimensions (mm)	370x240x440

REF-PR, Prism Refractometer



Measurement range:

Refractive index n_D for solid substances	1.30-1.95
Refractive index n_D for liquid substances	1.30-1.70
Accuracy:	
Refractive index n_D	$\pm 5 \times 10^{-5}$
Wavelengths:	706.5, 656.3, 589.3, 587.6, 546.1, 486.1, 435.8, 404.7nm
Weight (Gross):	80 kg
Overall Dimensions:	720x550x560mm

Characteristics:

- Measurement of refractive index, average or partial dispersion of transparent or semi-transparent liquid and solid substances.
- An instrument essential for manufacturers of optical instrument & scientific research institutes & schools of higher learning
- Visual aim, quick measurement, high precision and easy to operate.

Standard Concentration of Known Substances:

	Concentration %	
Fruit Fruit Juice	Oranges, pears	6-13
	Tomato	3-6
	Apples, melons	12-18
	Strawberries, peaches	6-12
	Grape seeds	13-24
	Concentrated fruit juices	42-68
	Fruit juice	12-18
	Strained tomato	7-16
	Tomato juice	5-9
	Aerated drinks	6-15
	Nectars	16-23
	Drinks with lactic acid	16.5-21.5
Foods	Condensed milk	52-68
	Liquid sugar	58-80
	Canned fruit	14-28
	Egg yoke	45-48
	Milk	12-17
	Marmalade, flour	60-70
	Vegetable oils	57-90
Industry	Oily emulsions	0-7
	Oils for soluble temper	0-20



RA-130

Applications: Measurement of sucrose concentration of fruit juices • Measurement of sucrose concentration of jam and honey • Brix measurement on beverages • Brix measurement on liquid seasonings • Concentration control on pharmaceutical & medical liquid samples.

RA-130, Portable Refractometer Datalogger

Features:

- Wide measuring range: Brix 0~85% Refractive index 1.3200~1.5000
- Data storage: Up to 1100 measurements results
- Data transfer to your computer by supplied software via infrared port. Can also output via RS232C with RS converter for infrared (Option).
- Can display measurement results in Refractive Index (RI), Temperature compensated RI, Brix % and the like.
- Automatic data saving and Automatic data output can be chosen.
- Three different sucrose conversion tables Brix and isomerized sugar HFCS42, HFCS55.
- Data can be converted to user-defined concentration and the unit can be used as a concentration meter.

Model	RA-130
Measurement method	Optical detection of critical angle with Na-D line
Measurement objects	Liquids such as water solution like fruit juices or soft drinks and organic solvents
Measurement range	nD 1.32 ~ 1.50 Brix 0 ~ 85% HFCS42 0 ~ 76% HFCS55 0 ~ 80%
Accuracy	nD ±0.0005 Brix ±0.2% HFCS42 /55 ±0.2%
Resolution	nD 0.0001, Brix 0.1%, HFCS42 /55 0.1%
Temperature range	10 ~ 40°C
Display contents	Refractive index, Temp. comp. RI, Brix, HFCS42, HFCS55 and Temperature (°C/°F). Sample number, Data storage, Data output, Data deletion, Battery alarm and the like.
Temperature compensation	Up to 10 kinds of input for temp. compensation coefficients of measured samples and Compensation temperatures
Data storage	1,100 measurement results
External output	Computer or printer (either, not both) can be connected • IrDA connection is standard supplied • RS232C connection requires optional RS converter for infrared (#029-0007)
Weight	Approx. 200g
Power source	DC 3V (2 x 1.5V alkaline AAA dry cells)
Battery life	60 hours (one measurement in one minute)
Sampling method	2 ways selective – Dipping or Dripping method available



REF-85

The REF-85 – digital refractometer eliminates the uncertainty associated with mechanical refractometers and is easily portable for measurements in the field. The measurement technique & temp. compensation 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 message codes.

Key features include: Dual-level LCD • Automatic Temp. Compensation (ATC) • Easy setup & storage • Battery operation with Low Power indicator (BEPS) • Automatically turns off after 3 minutes of non-use.

REF-85, Portable Refractometer

The REF-85 – is an optical instrument that employs the measurement of refractive index to determine the % Brix of sugar in aqueous solutions. The method is both simple & quick. Samples are measured after a simple user calibration with deionized or distilled water. Within seconds the instrument measures the refractive index of the sample and converts it to % Brix concentration units.

Model	REF-85	
Range	0 to 85% Brix	0 to 80°C / 32 to 175°F
Resolution	0.1% Brix	0.1°C / 0.1°F
Accuracy	±0.2% Brix	±0.3°C / ±0.5°F
Light Source	Yellow LED	
Measurements Time	Approximately 1.5 seconds	
Min. Sample Volume	100 µL (cover prism totally)	
Sample Cell	SS ring and flint glass prism	
Temp. Compensation	Automatic between 10 and 40°C / 50 to 104°F	
Case Material	ABS	
Enclosure Rating	IP 65	
Battery Type	1 x 9V AA (included)	
Battery Life	5000 reading	
Auto-shut off	after 3 minutes of non-use	
Dimensions	192x102x67mm	
Weight	420g	



REF-A61/62/65

REF-A65 Auto Refractometer includes built-in Peltier precise temperature control system and high-performance CCD light-sensitive part, can accurately and efficiently complete sample analysis tests through exclusive signal acquisition, analysis and processing technology. REF-A65 can automatically measure the refractive index (nD) of transparent or translucent liquids and mass fraction (Brix) of sugar solution, is accurate, reliable, quick, easy for operation, and so on.

Characteristics:

- High-resolution CCD detector offers automatic measurement, avoiding personal errors, having higher accuracy.
- With standard interface, can connect heating equipment.
- Measuring prism is made of high hardness sapphire glass, of excellent properties against corrosion & scratches, free for clean and durable.
- High brightness LED lights with long service life.
- Extremely large storage capacity can store up to 1000 groups of data information automatically.
- Exclusive signal acquisition, analysis and processing technology ensures accurate measurement results.
- Large color touch screen display and innovative WINDOWS software interface give extremely convenient device operation and data acquisition.
- External USB and RS232 ports can be directly connected to PC; USB disk and SD card interfaces are easy for data export and backup.

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REF-A65, Automatic Refractometer

Characteristics:

- High-resolution CCD detector offers automatic measurement, avoiding personal errors, having higher accuracy.
- Peltier accurate temperature control system is built in.
- Measuring prism is made of high hardness sapphire glass, of excellent properties against corrosion and scratches, free for clean and durable.
- High brightness LED lights.
- Extremely large storage capacity can store up to 1000 groups of data information automatically.
- Exclusive signal acquisition, analysis and processing technology ensures accurate measurement results.
- Large color touch screen display and innovative WINDOWS software interface give extremely convenient device operation & data acquisition.
- External USB and RS232 ports can be directly connected to PC; USB disk and SD card interfaces are easy for data export and backup.

Model	REF-A65
Refractive index range(nD)	1.3000-1.7000
Measured value error(nD)	±0.0002
Measurement resolution(nD)	0.0001
Rang of sugar solution mass fraction(Brix)	0-95%
Measured value error(Brix)	±0.1%
Measurement resolution(Brix)	0.1%
Temperature display range	0-50°C
Temperature range	15°C-30°C
Temperature resolution	0.1°C
Power supply	220V, 50Hz

REF-A62, Automatic Refractometer

REF-A62 Auto Refractometer includes high-performance CCD light-sensitive part, can accurately and efficiently complete sample analysis tests through exclusive signal acquisition, analysis and processing technology. REF-A62 can automatically measure the refractive index (nD) of transparent or translucent liquids and mass fraction (Brix) of sugar solution, is accurate, reliable, quick, easy for operation, and so on.

Model	REF-A62
Refractive index range (nD)	1.3000-1.7000
Measured value error (nD)	±0.0002
Measurement resolution (nD)	0.0001
Rang of sugar solution mass fraction (Brix)	0-95%
Measured value error (Brix)	±0.1%
Measurement resolution (Brix)	0.1%
Temperature display range	0-50°C
Power supply	220V, 50Hz

REF-A61, Automatic Refractometer

REF-A61 Auto Refractometer includes high-performance CCD light-sensitive part, can accurately and efficiently complete sample analysis tests through exclusive signal acquisition, analysis and processing technology. REF-A61 can automatically measure the refractive index (nD) of transparent or translucent liquids and mass fraction (Brix) of sugar solution, is accurate, reliable, quick, easy for operation, and so on.

Model	REF-A61
Refractive index range(nD)	1.3000-1.7000
Measured value error(nD)	±0.0002
Measurement resolution(nD)	0.0001
Rang of sugar solution mass fraction(Brix)	0-95%
Measured value error(Brix)	±0.1%
Measurement resolution(Brix)	0.1%
Temperature display range	0-50°C
Power supply	220V, 50Hz