

1 Precision refractometers, basic model

Simple and precise optical instruments to analyse liquids and their solid contents. Models are equipped with an automatic temperature compensation device (ATC). Supplied with a plastic box and comfortable leather-type case.

Type	For	Measuring range	Accuracy	PK	Cat. No.
RSM/ATC	Salinity	0 - 100 ‰	1 ‰	1	9.801 249
RMA/ATC	Wine	0 - 25 % Vol	0,2 % Vol	1	9.801 252
		0 - 40 % Brix	0,2 % Brix		
RGA/ATC	Alcohol	0 - 80 % Vol	1 % Vol	1	9.801 256
RCS/ATC	Salinity	0 - 28 ‰	0,2 ‰	1	9.801 250
RPC/ATC	Freezing point	-50 - 0 °C	5 °C	1	9.801 251
	batteries	1,10 - 1,40	0,1		
RBO/ATC	Wine	0 - 140° Oe	1° Oe	1	9.801 254
		0 - 25° Babo	0,2° Babo		
		0 - 32 % Brix	0,2 % Brix		
RBB/ATC	Wine	0 - 25 % Vol	0,2 % Vol	1	9.801 255
		0 - 22° Be'	0,2° Be'		
		0 - 40 % Brix	0,2 % Brix		
RCZ/ATC		0 - 32 % Brix	0,2 %	1	9.801 200
RBC/ATC		0 - 10 % Brix	0,1 %	1	9.801 241
RLC/ATC		0 - 18 % Brix	0,1 %	1	9.801 242
RFC/ATC		28 - 62 % Brix	0,2 %	1	9.801 244
RPU		0 - 80 % Brix	1 %	1	9.801 246
RMM/ATC	Honey and jam	58 - 90 % Brix	0,5 % Brix	1	9.801 247
		38 - 43° Be'	0,5° Be'		
		17 - 27 water	1 % water		



Manual hand-held refractometers

Precision instruments for quick daily use. Various scales and functions ensure there is a suitable refractometer for every application area.

A.KRÜSS Optronic

Type	Measuring range	Accuracy	PK	Cat. No.
HRB32-T*	0 ... 32 % Brix	±0.2 % Brix	1	9.801 142
HRB90	0 ... 90 % Brix	±0.2 % Brix	1	9.801 150
HRND	nD 1.3330 ... 1.5170	nD ±0.0005	1	9.801 151
HRB92-T	58 ... 92 % Brix, 38 ... 43 °Baume, 12 ... 27 % water in honey	±1 % Brix, ±0.5 °Baume, ±1 % water in honey	1	6.290 771
HRB18-T	0 ... 18 % Brix	±0.1 % Brix	1	4.662 296
HRB82-T	45 ... 82 % Brix	±0.2 % Brix	1	4.662 319
HRKFZ-T	50 ... 0 °C, 1.10 ... 1.30 g/cm³	±5 °C, 0.01 g/cm³	1	4.662 320
HRS10-T	0 ... 10 ‰	±1 ‰	1	4.662 321
HRH30-T	12 ... 30 % water in honey	±0.1 % water in honey	1	6.311 908

*with automatic temperature compensation



9.801 142



9.801 151



Refractometers, hand-held, precision

For simple, manual measurement of concentrations and refractive indices of liquids. Hand-held, precision refractometers with focussing eyepiece, soft rubber eyecups (to reduce straylight ingress, also spectacle lenses do not slip off and are not scratched), case and conversion tables. Hand-held refractometers cannot be fitted with a thermostatic controller and so measurements have to be temperature compensated.

ATAGO

Models with extra code M: Basic model

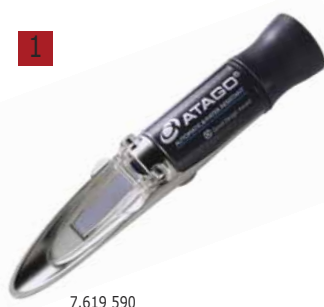
Models with extra code T: with automatic temperature compensation (ATC)

Models with extra code α : with automatic temperature compensation (ATC) and protection class IP65

Models with extra code H: for hot samples, with prism made of tempered glass

Type	For	Measuring range	Accuracy	Minimum scale value	PK	Cat. No.
MASTER 53 α	Brix	0,0 - 53,0 % Brix	± 0.5 % Brix	0.5 % Brix	1	7.619 590
MASTER-S10 α	Sodium chloride	0,0 - 10,0 g/100 g	± 0.2 g/100 g	0.1 g/100 g	1	9.801 372
MASTER-S28 α	Sodium chloride	0,0 - 28,0 g/100 g	± 0.2 g/100 g	0.2 g/100 g	1	7.653 540
MASTER-20T	Brix	0,0 - 20,0% Brix	± 0.2 % Brix	0.1 % Brix	1	9.801 301
MASTER-53T	Brix	0,0 - 53,0 % Brix	± 0.5 % Brix	0.5 % Brix	1	9.801 472
MASTER-20M	Brix	0,0 - 20,0 % Brix	-	0.1 % Brix	1	6.235 710
MASTER-53M	Brix	0,0 - 53,0% Brix	-	0.5 % Brix	1	9.801 302
MASTER-S10M	Sodium chloride	0,0 - 10,0 g/100 g	-	0.1 g/100 g	1	9.801 370
MASTER-S28M	Sodium chloride	0,0 - 28,0 g/100 g	-	0.2 g/100 g	1	9.801 335
MASTER-S/Mill- α	Salinity, Sea water Spec. density	0,0 - 100,0 ‰ 1,000 - 1,070	± 2 ‰ $\pm 0,001$	1 ‰ 0.001	1	9.801 359
MASTER 500	Universal application	0,0 - 90,0 % Brix	-	1.0 % Brix	1	6.261 851
MASTER-BR	Freezing point coolant*	0 - 70%, 0 ... -50 °C	-	5 °C	1	9.801 348
MASTER-RI	Refractive index	1,435 - 1,520 nD	-	0.001 nD	1	9.801 360
HSR-500	Brix	0,0 - 90,0% Brix	-	0.2 % Brix	1	9.801 312
R-5000	Refractive index	1,333 - 1,520 nD	-	0.001 nD	1	9.801 313
HHR-2N	Honey	12,0 - 30,0% humidity	-	0.1 %	1	9.801 333
MASTER-20 α	Fruit juice, cutting oil	0,0 - 20,0 % Brix	± 0.2 % Brix	0.1 % Brix	1	6.230 298
MASTER-TA	Wine	0,0 - 25,0 % T.A., 0,0 - 40,0 % Brix	± 0.3 % T.A. ± 0.2 % Brix	0.2 % T.A. 0.5 % Brix	1	6.231 790
MASTER-OE	Wine	0 - 130 Oe 0,0 - 33,0 % Brix	± 2 Oe ± 0.2 % Brix	2 Oe 0.5 % Brix	1	7.970 129
MASTER-GOE	Wine	30 - 170° 0,0 - 40,0 % Brix	± 2 ° ± 0.5 % Brix	1° 0.5 % Brix	1	6.286 459
MASTER-KMW	Wine	0,0° - 27,0° 0,0 - 33,0 % Brix	± 0.5 ° ± 0.5 % Brix	0.5° 0.5 % Brix	1	6.286 460
MASTER-BAUME	Wine	0,0 - 21,0 Baume 0,0 - 40,0 % Brix	± 0.3 Baume ± 0.5 % Brix	0.2 Baume 0.5 % Brix	1	6.229 977
MASTER-80H	Brix	30,0 - 80,0 % Brix	± 0.5 % Brix	0.5 % Brix	1	6.230 295
MASTER-93H	Brix	45,0 - 93,0 % Brix	± 0.5 % Brix	0.5 % Brix	1	6.238 823
MASTER-100H	Brix	60,0 - 100,0 % Brix	± 0.5 % Brix	0.5 % Brix	1	7.652 042
MASTER-Honey/BX	Honey	12,0 - 30,0% humidity 58,0 - 90,0 %	± 0.2 % Brix	0.2 % Brix	1	6.286 461
MASTER-50H	Brix	0.0 - 50.0 Brix	± 0.5 % Brix	0.5 % Brix	1	6.234 218
MASTER-S/MiIM	Sodium chloride	0 - 100‰	-	1 ‰	1	6.242 307

*for Ethylene glycol and Propylene glycol

1


7.619 590

2


9.801 312

3


9.801 333

1 LLG-uniREFRACTO 5 pro NEW

LLG-uniREFRACTO 5 pro is a compact digital 3-scale handheld refractometer for measuring, e.g. Brix and refractive index of liquids. Two scales are pre-set to 0 - 95 % Brix and 1.33 - 1.54 RI, the third scale can be freely selected from more than 45 different scales, including Brix, refractive index, AdBlue®, °Baume, °Butyro, Ethylene Glycol %, Calcium Chloride % and specific gravity. All three scales can be freely selected and changed. The operation is quick and easy, calibration can simply be done with distilled water. The waterproof housing (IP 65) allows cleaning under running water.

- Easy switching between the three scales
- 4-digit LCD display
- Automatic temperature correction
- Sample plate made of stainless steel

Scope of supply: refractometer, protective cover

Specifications

Resolution:	0.1 % Brix/0.0001 RI
Accuracy:	±0.2 % Brix/±0.0003 RI
Operating temperature:	5 ... 40 °C
Measuring temperature sample:	5 ... 80 °C
Rel. Humidity:	< 95 %
Dimensions (W x D x H):	120 x 55 x 35 mm
Weight:	180 g
Power supply:	2 x AAA/LR03
IP code:	IP65
Warranty:	3 years



Type	PK	Cat. No.
LLG-uniREFRACTO 5 pro	1	6.263 632

Digital Hand-held Pocket Refractometer PAL series 2

For measurement of various high concentration samples such as jam, marmalade, jelly, honey, concentrated juice or acidity and salinity. Ingress Protection class IP 65 means that they can be cleaned under running water. Easily calibrated since "zero-setting" (calibration) is achieved using water. Temperature measurement with Automatic Temperature Compensation. Various models for a variety of applications, e.g. measurement of urine, salt, sugar. With data transmission via near field communication (NFC).

ATAGO

Specifications

Resolution:	Brix 0.1 %
Measurement accuracy:	Brix ±0.2 %
Ambient operating temperature:	10 to 40 °C
IP code:	IP 65
	dust- and waterproof
Power supply:	2 x AAA Batteries (incl.)
Dimensions:	55 x 31 x 109 mm
Weight:	100 g



9.801 375

Type	For	Measuring range	Temp. range °C	PK	Cat. No.
PAL-1	Brix	0.0 - 53.0 Brix	10 - 100	1	9.801 375
PAL-3	Brix	0.0 - 93.0 Brix	10 - 100	1	9.801 382
PAL-Alpha	Brix	0.0 - 85.0 Brix	10 - 100	1	9.801 362
PAL-RI	Refractive index	1.3306 - 1.5284nD	5 - 45	1	9.801 383
PAL-BX/RI	Brix + refractive index	0.0 - 93.0 Brix, 1.3306 - 1.5284nD	Brix: 10 - 100, nD: 5 - 45	1	6.231 591
PAL-22S	Honey, moisture	12.0 - 30 %	10 - 40	1	6.232 434
PAL-10S	Urine, spec. gravity (USG)	1000 - 1060 S.G.	10 - 35	1	6.236 094
PAL-UREA	Urine, concentration in water	0.0 - 55.0 %	10 - 40	1	6.258 218
PAL-DOG/CAT	Urine of animals, spec. gravity	DOG: 1000 - 1060 S.G. CAT: 1000 - 1080 S.G.	10 - 35	1	6.286 468
PAL-SALT	Salt	0.00 - 10.0 % g/100 g	5 - 100	1	6.283 064
PAL-03CS	Salt	0,00 - 28.0 % g/100 g	10 - 40	1	4.672 019
PAL-06S	Salinity, Sea water	0 - 100 ‰	10 - 40	1	6.272 489
PAL-34S	Ethyl alcohol (g/100 g)	0,0 - 45 %	10 - 35	1	6.251 197
PAL-91S	Ethylene glycol (V/V)	0,0 - 90,0 %	10 - 40	1	7.920 049
PAL-88S	Polypropylene, concentration (V/V)	0,0 - 90,0 %	10 - 40	1	7.910 093
PAL-PLATO	Beer	0,0 - 30,0 P	10 - 75	1	6.258 663
PAL-COFFEE (BX/TDS)	Coffee	0,00 - 25,00 % Brix 0,00 - 22,00 % TDS	10 - 100	1	6.270 239
PAL-39S	Hydrogen peroxid (g/100 g)	0,0 - 50,0 %	10 - 35	1	6.230 985
PAL-102S	Cutting oil + coolant	0.0 - 70.0	10 - 100	1	6.242 530

1



6.291 100

Digital Hand-held Pocket Refractometer PAL-BX/ACID series

NEW

ATAGO

For measuring Brix and Acidity of fruit.

The combination of Brix and Acidity determines fruit maturity and Brix to Acid ratio.

Easy and precise measurement without titration and chemicals.

Scope of supply: Refractometer, balance, 1 x beaker, 1 x measuring spoon

Specifications

Measuring range Brix:	0.0 ... 60.0 %
Accuracy Brix:	±0.2 %
Accuracy Acidity:	±0.10 % (0.10 .. 1 %) relative accuracy ±10 % (1.01 ... 8.80 %)
Temperature range:	10.0 ... 40.0 °C
Accuracy Temperature:	±0.1 °C
Dimensions (W x D x H):	55 x 31 x 109 mm
Weight:	100 g
Power supply:	2 x AAA batteries
IP code:	IP65

Type	For	Measuring range	PK	Cat. No.
PAL-BX/ACID F5 Master Kit	Multi Fruit	Multiple	1	6.291 099
PAL-BX/ACID1 Master Kit	Citrus	0.10 ... 8.80 %	1	6.291 100
PAL-BX/ACID2 Master Kit	Grape & Wine	0.10 ... 4.00 %	1	6.287 939
PAL-BX/ACID3 Master Kit	Tomato	0.10 ... 4.00 %	1	6.286 007
PAL-BX/ACID4 Master Kit	Strawberry	0.10 ... 3.50 %	1	6.291 101
PAL-BX/ACID5 Master Kit	Apple	0.10 ... 4.00 %	1	6.291 102
PAL-BX/ACID6 Master Kit	Banana	0.10 ... 0.60 %	1	6.291 103
PAL-BX/ACID7 Master Kit	Blueberry	0.10 ... 4.00 %	1	6.291 104
PAL-BX/ACID8 Master Kit	Kiwi	0.10 ... 3.00 %	1	6.291 105
PAL-BX/ACID9 Master Kit	Pineapple	0.10 ... 3.50 %	1	6.291 106
PAL-BX/ACID11 Master Kit	Plum	0.10 ... 4.00 %	1	6.291 107
PAL-BX/ACID14 Master Kit	Pear	0.10 ... 4.00 %	1	6.291 109
PAL-BX/ACID40 Master Kit	Coffee cherry	0.10 ... 1.90 %	1	6.291 110
PAL-BX/ACID91 Master Kit	Milk	0.10 ... 0.30 %	1	6.291 111
PAL-BX/ACID96 Master Kit	Yogurt	0.10 ... 3.00 %	1	6.291 112
PAL-BX/ACID101 Master Kit	Beer	0.10 ... 20.00 %	1	6.291 113
PAL-BX/ACID121 Master Kit	Sake	0.5 ... 25.00 %	1	6.291 114
PAL-BX/ACID181 Master Kit	Vinegar	0.5 ... 12.00 %	1	6.291 115

2



9.80 1376

Digital refractometers

ATAGO

Type PR-32α

Can be used to measure fruit juices, soft drinks, diluted soluble oils, aqueous cleaning solutions, etc.

Type PR-101α

Applications include measuring fruit juices, lemonade, coffee, diluted soluble oils and anti-freeze solutions.

Type PR-201α

It can be used for accurately measuring jams, concentrated fruit juices, coolants and similar products.

Type PR-301α

Especially suited to measuring jellies, liquid cane sugar, etc.

Type PET-109

This model is used for simply determining the concentration of ethyl alcohol, which is used in foods and for cleaning, cooling and other purposes.

Type PR-RI

A new Refractive Index model has been added to the popular long-selling "Palette Series".

It is suitable for measuring the refractive indices of liquid samples in pharmaceutical and chemical products.

Ambient temperature: 10 to 40 °C.

All models are with data transmission via near field communication (NFC).

3



9.801 369

Specifications (all types):

Measurement time:	3 seconds (Type PET-109, Measurement time: 2 seconds)
Sample volume:	0.1 ml
Power supply:	9V battery
Dimensions:	170 x 90 x 40 mm
Weight:	300g

Type	Measuring range	Graduations	Accuracy	Working Temp. range °C	PK	Cat. No.
PR-32α	0,0 - 32,0 % Brix	0,1 % Brix	± 0,1 % Brix	5,0 - 40,0	1	9.801 376
PR 101α	0,0 - 45,0 % Brix	0,1 % Brix	± 0,1 % Brix	5,0 - 40,0	1	9.801 377
PR-201α	0,0 - 60,0 % Brix	0,1 % Brix	± 0,1 % Brix	10,0 - 40,0	1	9.801 378
PR-301α	45,0 - 90,0 % Brix	0,1 % Brix	0,1 % Brix*	10,0 - 40,0	1	9.801 379
PET-109	0,0 - 45,0 % (w / w)	0,1 % (w / w)	± 0,5 % (w / w)	10,0 - 35,0	1	9.801 344
PR-RI	1,3306 - 1,4436 nD	-	± 0,0002 nD / 20 °C	5,0 - 45,0	1	9.801 369

*from 10 to 30 °C

10. Optical instruments and Microscopes

Refractometers/Hand held refractometers

Digital hand-held refractometers DR101-60/DR201-95/DR-301-95

Digital hand-held refractometer with two different scales, Brix and RI. Handling is fast and very easy, distilled water is used for calibration. With automatic temperature compensation.

A.KRÜSS Optronic

DR301-95 offers 2 additional user-defined scales and can be connected to a computer. Specialities: optional temperature compensation feature and upper and lower tolerance alarm.

Specifications	DR101-60 DR201-95 DR301-95
Temperature range:	10 ... 40 °C
Accuracy:	±0.5 °C
Temperature compensation:	10 ... 40 °C
Dimensions:	110 x 62 x 32 mm 130 x 80 x 40 mm 180 x 100 x 60 mm
Weight:	160 g 200 g 500 g
Power supply:	1.5 V battery 1.5 V battery 9 V battery, incl. AC adapter
IP code:	IP65 IP64 IP50

Type	Measuring range	Accuracy	Resolution	PK	Cat. No.
DR101-60	nD 1.330 ... 1.4419 0 ... 60.0 %Brix	nD ±0.0005 ±0.35 %Brix	nD 0.0001 0.1 %Brix	1	9.801 117
DR201-95	nD 1.3330 ... 1.5318 0 ... 95 %Brix	nD ±0.0003 ±0.2 %Brix	nD 0.0001 0.1 %Brix	1	6.230 350
DR301-95	nD 1.3330 ... 1.5318 0 ... 95 %Brix	nD ±0.00015 ±0.1 %Brix	nD 0.0001 0.1 %Brix	1	6.236 921

1



6.230 350

2



6.236 921

Digital portable refractometers Refracto 30PX/30GS

Portable device for determining refractive index and derived concentration values. Simple operation and fast results: the sample is either dripped onto the measuring cell or the instrument is immersed directly in the sample liquid. Suitable for laboratory and field measurements, e.g. in food processing or industry.

Mettler-Toledo Online

- Automatic temperature compensation
- Suitable for measurement of dark samples
- Backlit LCD display shows values and menu functions
- Calibration with water
- Memory for up to 1100 measured values, together with sample ID, unit, temperature compensation coefficient, time and date
- Individual formulas for calculation of user-defined concentration data can be defined in the device
- Measuring units: nD, nD temperature compensated, Brix% temperature compensated, HFCS42, HFCS55, °Baumé, °Oechsle (D, CH), °KMW (Babo), T.A. 1990, weight %, vol.-%, specific weight and freezing point (in °C or °F) for ethanol and NaCl, weight %, volume % and freezing point (in °C or °F) for ethylene glycol and propylene glycol, weight % and volume % for isopropyl alcohol, user-defined unit
- Values can be transferred to the PC via IR interface

Refracto 30PX: Optical glass measurement cell

Refracto 30GS: Sapphire measurement cell for larger measuring range and faster temperature compensation

Scope of delivery: Refracto 30PX/GS, pipette for sample handling, cleaning towels, operating instructions, flasks for sample and cleaning solutions, CD-ROM with software for data transmission, transport case

3



9.947 555

Specifications	Refracto 30 PX // Refracto 30 GS
Refraction range:	1.32 ... 1.50 // 1.32 ... 1.65
Refraction accuracy:	±0.0005
Refraction resolution:	0.0001
Brix range:	0 ... 85 %
Brix accuracy:	±0.2 %
Brix resolution:	0.1 %
Temperature range:	0 ... 40 °C
Temperature resolution:	0.1 °C
Dimensions (W x D x H):	62 x 187 x 63 mm
Weight:	250 g
Power supply:	2 x AAA 1.5 V (please order separately)

Type	PK	Cat. No.
Refracto 30PX	1	9.947 555
Refracto 30GS	1	9.947 556

1


6.266 906

Digital Refractometer RX-5000i/RX-5000i-Plus

ATAGO

The most accurate refractometer in the world is now even more stylish, smart, and functional. Featuring intuitive touch screen technology, the new RX-i series makes navigation and selection a breeze. The RX-5000i measures with the same accuracy level as the RX-5000alpha (± 0.03 % Brix and ± 0.00004 nD). The RX-5000i-Plus measures with the same accuracy level as the RX-5000alpha-Plus (± 0.010 % Brix and ± 0.00002 nD). The RX-i series come with newly added functions, such as USB flash drive and self-diagnosis capability. These products come standard with a 2 year warranty. The warranty period can be extended to 3 years if the product is registered with ATAGO. FDA 21 CFR Part 11 Software Included in Standard Delivery

Modes:

- Displays the measurement value once the sample reaches the target temperature
- Measures refractive index and temperature at fixed intervals and displays the estimated measurement value at the target temperature
- The thermo-module can be turned off. Without temperature control, the measurement value is displayed in 4 seconds after the START key is pressed
- Displays the measurement value once a certain level of sample stability is achieved.
- Only on the RX-5000i-Plus: Measuring of Low Brix Liquid Samples (such as teas), obtaining highly repeatable results (0.010 % Brix).

Specifications

Measurement range:	0.000 to 100.00 % Brix, 1.32420 to 1.58000 nD
Resolution	
RX-5000i:	0.01 % Brix, 0.00001 nD
RX-5000i-Plus:	0.005 % Brix, 0.00001 nD
Accuracy	
RX-5000i:	0.03 % Brix, 0.00004 nD
RX-5000i-Plus:	0.010 % Brix, 0.00002 nD
Working temperature:	5 to 75 °C
Output terminals:	USB, RS-232C
Power supply:	100 - 240 V, 50/60 Hz
Dimensions:	370 x 260 x 140 mm
Weight:	6.6 kg

Type	PK	Cat. No.
RX-5000i	1	6.266 906
RX-5000i-Plus	1	6.245 034

2

2 CO₂/Brix Monitor CooRe

NEW

ATAGO

Dissolved carbon dioxide monitor with three functions, piercing a hole in the container, measuring dissolved carbon dioxide and Brix.

- Easy operation with a press of button
- With auto measurement, results in 1.5 min
- Simultaneously measures CO₂ and Brix
- Requires only 100 ml of sample
- Can be operated by AC adapter or battery for mobile use
- USB port



Specifications

Measuring range Brix:	0.00 ... 20.00 %
Accuracy:	± 0.05 %
Measuring range CO ₂ :	0.000 ... 24.000 g/l
Measuring range pressure:	0.00 ... 10.000 bar
Accuracy:	± 1.0 %
Messbereich Temperatur:	0.0 ... 30.0 °C
Accuracy:	± 1 °C
Working Temperature	
Brix:	5.0 ... 30.0 °C
CO ₂ :	0 ... 25 °C
Dimensions (W x D x H):	405 x 210 x 450 mm
Weight:	13 kg
Power supply:	230 V, 50/60 Hz or 1 x Lithium battery
IP code:	IP 65

Type	PK	Cat. No.
CooRe	1	6.273 964

Digital Laboratory refractometers

The DR6000 refractometers work with hardly any service and are very quiet, good for long-term work in the lab. Very easy to operate due to an intuitive touch screen. Optional connections to printer, PC or network provide highest flexibility. High precision through integrated peltier thermostat (T-model). Flow measurement cells enable continuous measuring (TF-model). The devices are used wherever a substance in watery solutions has to be measured. Areas of usage: beverage, chemistry, pharma, food, paper, sewerage, textile, petrochemistry, cosmetics.

A.KRÜSS Optronic



9.801 102

Specifications

Interface:	RS-232, USB, Ethernet
Temperature range:	10 ... 80 °C
Resolution:	0.1 °C
Accuracy:	0.1 °C
Measurement modes:	Single, interval
Scales:	Refractive index (nD), concentration of sucrose, glucose, fructose and invert sugar (%Brix), user-defined
Power supply:	90 ... 240 V, 47/63 Hz

Type	Measuring range	Accuracy	Resolution	PK	Cat. No.
DR6000	nD 1.3200 ... 1.5800 0 ... 95 %Brix	nD ±0.0001 ±0.1 %Brix	nD 0.0001 0.1 %Brix	1	6.239 384
DR6000-T	nD 1.3200 ... 1.5800 0 ... 95 %Brix	nD ±0.0001 ±0.1 %Brix	nD 0.0001 0.1 %Brix	1	6.237 965
DR6000-TF	nD 1.3200 ... 1.5800 0 ... 95 %Brix	nD ±0.0001 ±0.1 %Brix	nD 0.0001 0.1 %Brix	1	9.801 101
DR6100-T	nD 1.3200 ... 1.7000 0 ... 95 %Brix	nD ±0.0001 ±0.1 %Brix	nD 0.0001 0.1 %Brix	1	6.241 690
DR6100-TF	nD 1.3200 ... 1.7000 0 ... 95 %Brix	nD ±0.0001 ±0.1 %Brix	nD 0.0001 0.1 %Brix	1	6.235 892
DR6200-T	nD 1.32000 ... 1.58000 0 ... 95 %Brix	nD ±0.00002 ±0.02 %Brix	nD 0.00001 0.01 %Brix	1	9.801 102
DR6200-TF	nD 1.32000 ... 1.58000 0 ... 95 %Brix	nD ±0.00002 ±0.02 %Brix	nD 0.00001 0.01 %Brix	1	9.801 103
DR6300-T	nD 1.32000 ... 1.70000 0 ... 95 %Brix	nD ±0.00002 ±0.02 %Brix	nD 0.00001 0.01 %Brix	1	9.801 104
DR6300-TF	nD 1.32000 ... 1.70000 0 ... 95 %Brix	nD ±0.00002 ±0.02 %Brix	nD 0.00001 0.01 %Brix	1	9.801 105

Digital Laboratory refractometers Abbemat 3000/3100/3200

NEW

Anton Paar

The laboratory refractometers Abbemat are equipped with the most important refractometric concentration beams, whereby further methods can be installed. They are characterised by fast measurements with high accuracy and are maintenance-free. For Abbemat 3200 and 3100 the built-in temperature control unit regulates the temperature, while the Abbemat 3000 provides automatic temperature correction.

- Compact device according to DIN A 4 size
- Sample trough with smooth, easy to clean surface and optimal shape of the measuring area
- 5.8" touchscreen for clear presentation of the measurement results
- More than 200 additional scales available on request
- 3 years warranty

Specifications

Temperature accuracy:	±0.05 °C
Light source:	LED
Wave length:	589 nm
Sample volume:	approx. 0.2 ml
Interfaces:	RS-232, 2 USB-interface, 1 serial USB-interface, ethernet printer, ethernet LIMS (Abbemat 3200)
Scales:	refractive index, brix, glucose, fructose, invert sugar, sucrose
Dimensions (W x D x H):	228 x 300 x 94 mm
Power supply:	100 ... 240 VDC, 50/60 Hz

Type	Measuring range	Accuracy	Resolution	Temp. range °C	PK	Cat. No.
Abbemat 3000	nD 1.30 ... 1.66 0 ... 100 %Brix	nD ±0.0001 ±0.05 %Brix	nD 0.0001 0.01 %Brix	Temperature correction	1	6.313 800
Abbemat 3100	nD 1.30 ... 1.66 0 ... 100 %Brix	nD ±0.0001 ±0.05 %Brix	nD 0.0001 0.01 %Brix	20 °C / 25 °C	1	6.313 801
Abbemat 3200	nD 1.30 ... 1.72 0 ... 100 %Brix	nD ±0.0001 ±0.05 %Brix	nD 0.0001 0.01 %Brix	15 ... 60 °C	1	6.313 802



6.313 802

1



1 Circulation thermostat PT31

A.KRÜSS Optronic

The PT31 circulation thermostat is equipped with high performance functions. The device is ideally suited for applications requiring a temperature range at a constant level. The robust locking mechanism of the PT31 provides a sturdy connection and ensures constant temperature control of the medium.

- Temperature control using Peltier technology
- Space-saving, sturdy design
- Suitable for operation with non-flammable liquids (water or water/glycol mixture)

Specifications

Temperature range:	8 ... 35 °C
Accuracy:	±0.2 °C
Resolution:	0.1 °C
Pump performance:	20 l/h
Max. pump pressure:	20 mbar
Cooling power:	20 W
Heating power:	30 W
Power supply:	100 ... 240 V AC, 50/60 Hz, 1.3 A
Dimensions (W x D x H):	108 x 145 x 199 mm
Weight:	1.5 kg

Type	PK	Cat. No.
PT31	1	9.841 515

2



2 Circulation thermostat PT80

A.KRÜSS Optronic

The PT80 circulation thermostat is an extremely quiet, energy-efficient and handy device that has been specially developed for small temperature control tasks in the laboratory. Fast temperature control is also possible due to the low filling volume of only 250 ml.

With an accuracy of ±0.1 °C, the PT80 is ideally suited to high laboratory standards for the temperature control of polarimeters and refractometers. The PT80 is also very well equipped for efficient and environmentally friendly cooling of condensers (e.g. Liebig or reflux condensers) in thermal separation processes on a laboratory scale.

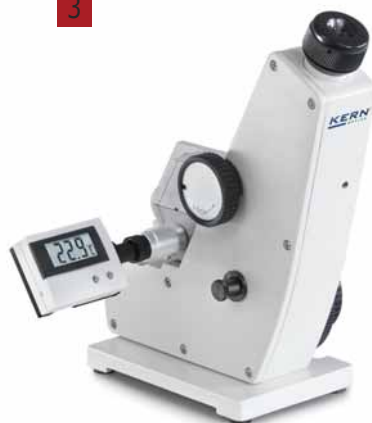
- Circulation thermostat with Peltier technology
- Rapid temperature control and high temperature accuracy
- Extremely quiet and low-vibration operation
- Environmentally friendly, due to 50 % lower energy consumption and elimination of refrigerants
- Suitable for operation with non-flammable liquids (water or water/glycol mixture)

Specifications

Temperature range:	5 ... 80 °C
Accuracy:	±0.1 °C
Resolution:	0.1 °C
Pump performance:	60 l/h
Max. pump pressure:	110 mbar
Cooling power at 20 °C:	40 W
Heating power:	120 W
Power supply:	100 ... 240 V AC, 50/60 Hz, 2.5 A
Dimensions (W x D x H):	170 x 244 x 225 mm
Weight:	2.7 kg

Type	PK	Cat. No.
PT80	1	6.273 831

3



3 Abbe refractometer ORT 1RS

Kern & Sohn

Universally applicable, analogue table-top Abbe refractometer for use in industry, pharmacy and laboratory.

- Measurement of Brix and refractive index
- Compact and robust design
- For the measurement of liquids, solids and pasty samples
- With digital thermometer

Scope of supply:

Refractometer, calibration solution, calibration block, pipette, screwdriver, cleaning cloth, digital thermometer

Specifications

Measuring temperature:	20 °C
Dimensions (W x D x H):	180 x 90 x 240 mm
Weight:	1950 g

Type	Measuring range	Accuracy	PK	Cat. No.
ORT 1RS	0 ... 95 % / 1.3000 ... 1.7000 nD	0.1 % / 0.0002 nD	1	4.657 752

1 Abbe Refractometer Model RMT

Laboratory refractometer for precisely measuring liquids, solids, semi-liquids and powders. Optical refraction index and Brix scale reading system, with an excellent boundary line brightness and contrast. Prism with large windows, equipped with movable shrouds to keep out light. Focussable eyepiece.

Exacta Optech

Standard accessories: Calibrating glass prism, thermometer, dust cover, calibrating screw driver, wooden case.

Specifications

Range: 1.300 to 1.700 nD
0 to 95 % Brix
Precision: 0.001 nD
0.2 % Brix
Thermometer: 0 to 70°C

Type	PK	Cat. No.
RMT	1	9.801 257



Abbe refractometer AR4/AR2008

Classic refractometers for solids and liquids. With integrated digital thermometer. Optionally they can be combined with a thermostat.

A.KRÜSS Optronic

Specifications

Scales: Refractive index (nD),
Concentration of sucrose (%Brix)
Measuring ranges: nD 1.3000 ... 1.7200
0 ... 95 %Brix
Accuracy: nD ±0.0002
±0.1 %Brix
Light source: LED
Temperature range: 0 ... 99.9 °C

2 Abbe refractometer AR4

- Scales can be adjusted manually using the drive knob
- Measured value can be read via an eyepiece
- Temperature is shown on the LCD display
- Optionally: In combination with the circulation thermostat PT31 the temperature can be maintained at 20 °C or 25 °C

A.KRÜSS Optronic

Specifications

Dimensions (W x D x H): 100 x 190 x 270 mm
Weight: 2.5 kg
Power supply: 7.5 V

Type	Measuring range	Accuracy	Resolution	PK	Cat. No.
AR4	nD 1.3000 ... 1.7000 0 ... 95 %Brix	nD ±0.0002 ±0.1 %Brix	nD 0.0005 0.25 %Brix	1	9.801 110



3 Abbe refractometer AR2008

NEW

- Digital output of the measurement results
- With serial interface
- An automatic temperature compensation for the Brix scale can be optionally connected
- Optional: Measurement of the refractive index within the temperature range of 5 to 80 °C in combination with circulation thermostat PT80

A.KRÜSS Optronic

Specifications

Dimensions (W x D x H): 130 x 255 x 290 mm
Weight: 5 kg
Power supply: 115 V/230 V, switchable

Type	Measuring range	Accuracy	Resolution	PK	Cat. No.
AR2008	nD 1.3000 ... 1.7000 0 ... 95 %Brix	nD ±0.0002 ±0.1 %Brix	nD 0.0001 0.1 %Brix	1	6.055 199



Refractometers/Benchtop refractometers

1


1 Digital Abbe refractometer, DR-A1-Plus

Very simple operation, where only the refraction boundary line has to be moved to the measurement cross hairs. The refractometer displays measurements directly (as a refractive index or in Brix (%)) in digits together with temperature. Measurements can be taken easily by anyone using this refractometer without taking an analogue scale reading in advance. Dispersive value can not be measured using this refractometer.

ATAGO

Specifications

Measurement range:	1.3000 - 1.7100 nD
	0.0 - 100.0 Brix
Resolution:	0.0001 nD
	0.1 % Brix
Accuracy:	0.0002 nD
	0.1 % Brix
Temperature range:	0 to 50.0 °C
Power supply:	a.c. adapter (100 to 240 V 50/60 Hz)
Dimensions:	130 x 290 x 310 mm
Weight:	6.0 kg

Type	PK	Cat. No.
DR-A1-Plus	1	6.283 092

2


2 Sucrose (Brix) Standards

Certified stabilized Sucrose (Brix) Standards.

Reagecon

- ISO17025 accredited
- Uncertainty of measurement of 0.11 % for all Brix values at 20 °C
- Equivalent Nominal Refractive Index values from ICUMSA published tables reported on Certificate of Analysis
- Compatible with any brand of Refractometer
- 12 month shelf life
- Provided in high quality HDPE 15 ml dropper bottles

Brix %	Refractive Index at 20 °C	PK	Cat. No.
0	1.332986nD	1	6.264 212
5	1.340264nD	1	6.265 876
10	1.347824nD	1	6.257 923
15	1.355679nD	1	6.263 260
20	1.363842nD	1	6.264 889
30	1.381149nD	1	6.258 368
40	1.399860nD	1	7.660 408
50	1.420087nD	1	6.258 369
60	1.441928nD	1	6.265 875

3


3 Refractive Index standards

Certified standards with values expressed in Refractive Index (R.I) units nD.

Reagecon

- ISO 17025 accredited with an uncertainty of measurement up to ± 0.00014 nD units at 20 °C
- 12 month shelf life
- Aqueous based
- Compatible with any brand of refractometer
- Convenient high quality 15 ml HDPE dropper bottle

Refractive Index at 20 °C	PK	Cat. No.
1.34325nD	1	6.265 877
1.34782nD	1	7.658 877
1.37233nD	1	6.265 878
1.38115nD	1	6.258 375
1.39032nD	1	6.265 879
1.40978nD	1	6.265 142
1.42009nD	1	6.258 376
1.44193nD	1	6.265 880

Digital Refractometer/Polarimeter RePo

All-in-One refractometer and polarimeter hybrid unit. Only 3 ml sample is needed. With the press of a button, purity, international sugar scale, specific rotation and concentration can be displayed. Users can also set an upper and lower measurement limit. An indicator light alerts the user if a measurement value is within the limits.

ATAGO



RePo-1: can measure both brix and optical rotation of the sample.
 RePo-1 Package includes: Main unit, 100 ml beaker, 50 x Syringe Filters orange 45, 3 x 20 ml Syringes, 100 x Easy filter.

RePo-2: As RePo-1, additionally the RePo-2 also determines and displays the amount of fructose (%) within HFCS. The RePo-2 is ideal for various industries such as food and beverage, or sugar refining.

RePo-3: As RePo-1, additionally the RePo-3 also determines and displays the amount of invert sugar (%) derived from sucrose. The RePo-3 is ideal for various industries such as sugar refining.

RePo-4: As RePo-1, additionally the RePo-4 also determines and displays the amount of fructose (%) and honey moisture (%). The RePo-4 is ideal for total quality control of honey.

RePo-5: As RePo-1, additionally the RePo-5 can also display the refractive index (nD) of a sample. The RePo-5 is ideal for quality control in various industries such as fragrances, cosmetics, or pharmaceutical.

Specifications

Measurement range	
Angle of Rotation:	-5 to +5°
Brix (%):	0 to 85 %
Temperature:	15 to 40 °C
Resolution	
Angle of Rotation:	0.01°
Temperature:	0.1 %
Brix (%):	0.1 °C
Accuracy	
Angle of Rotation:	±0.1° (at 20 °C)
Brix (%):	±0.2 %
Temperature:	±1°C
Working temperature:	5 to 40 °C
Wavelength:	589 nm
Power supply:	4 x Size AAA alkaline battery
Dimensions:	101 x 160 x 38 mm
Weight:	325 g
IP code:	IP 67

Type	For	Measuring range	PK	Cat. No.
RePo-1	Sugar	-130 - +130°Z	1	6.266 905
RePo-1 Package	Sugar	-130 - +130°Z	1	6.286 462
RePo-2	Fructose	0,0 - 99,9 %	1	6.286 463
RePo-3	Inverted sugar	0,0 - 99,9 %	1	6.286 464
RePo-4	Fructose in Honey / Honey (moisture)	0,0 - 99,9 % / 13,0 - 30,0 %	1	6.286 465
RePo-5	Refractive index	1,3306 - 1,5050 nD	1	6.286 466

2 Polarimeter PL1

Simple and sturdy instrument to measure the rotation angle of optically active substances. The measure in 180° is directly readable on two mechanical dials.

Exacta Optech

Light source: LED lamp (589.3 nm)
 Polarimetric Tubes one 100 mm and one 200 mm
 Dust cover
 Optical Glass Windows (4 pcs)
 Rubber seals
 Fuses

Range: 0 to 180°
 Reading precision: 0.05°

Type	PK	Cat. No.
PL1	1	9.801 259

