

ABBE REFRACTOMETERS

NAR-3T



NAR-2T



NAR-4T



NAR-1T

DR-A1



DR-M2/1550
DR-M4/1550



DR-M2
DR-M4



Sucrose Solution (for Brix confirmation)

ATAGO started supplying Sucrose Solution for Brix confirmation purpose. Please choose for your use.



Parts No.	Parts Name	Brix Concentration	Contents
RE- 110010	10 % Sucrose	10.00 ± 0.03 %	Approx. 5ml
RE- 110030	30 % Sucrose	30.00 ± 0.03 %	Approx. 5ml
RE- 110050	50 % Sucrose	50.00 ± 0.05 %	Approx. 5ml

* Shelf life for those solution is for 6 weeks.

EXPLANATION OF ICONS

Icons for functions, specifications and scales have been added to this catalog.



- * Can be connected to a circulating constant temperature bath
- * Thermostatable par circulation
- * Circulierendes konstant temperiertes Wasserbad angeschlossen
- * Collegabile a bagno termostatico a circolazione
- * Conexión para baño termostático de circulación
- * 可連結恒溫循環水槽



- * Calibration with water
- * Calibration 1 point* sur eau distillée
- * Kalibrierung mit Wasser
- * Calibrazione con acqua
- * Calibración con agua
- * 用水歸零



- * High temperature samples
- * Résistant à la chaleur
- * Hitzebestaendig
- * Resistente al calore
- * Muestras De Alta Temperatura
- * 高溫樣品用



- * AC outlet(AC100 to 240V)
- * Alimentation secteur(CA 100 à 240 V)
- * AC Ausgang (AC 100 bis 240V)
- * Uscita AC(AC 100 240V)
- * Conexión a 240V CA
- * AC插座(AC 100至240V)



- * Can be connected to a printer
- * Sortie imprimante
- * Verbindung mit Personalcomputer
- * Collegabile a stampante esterna
- * Conexión para impresora
- * 可與印表機連結



- * RS-232C Interface
- * Interface RS232C pour PC
- * Interface RS232C
- * Interfaccia RS232C
- * Interface RS232C
- * RS-232C輸出



- * Digital display
- * Affichage numérique
- * Digital Anzeige
- * Display digitale
- * Pantalla digital
- * 數字顯示



- * Refractive index scale
- * Indice de réfraction
- * Skala fuer Refraktive Index
- * Indice di rifrazione
- * Escala de índice de refracción
- * 折射率刻度

DIGITAL ABBE REFRACTOMETER

DR-A1 *Cat.No.1310*



By simple operation of setting the boundary line of refraction at the cross hairs, this refractometer directly indicates a measurement value (in refractive index or Brix (%), selective) together with the temperature on a digital display. This refractometer enables anybody to carry out measurements easily without reading analog graduation.

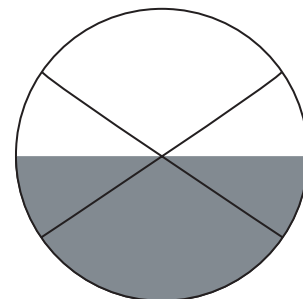
* Dispersive value cannot be measured by this refractometer.

SPECIFICATIONS

Measurement range	: Refractive index(nD) 1.3000 to 1.7100 Brix 0.0 to 95.0% (Automatic Temperature Compensation is executed from 5 to 50°C for Brix only)
Minimum indication	: Refractive index (nD) 0.0001, Brix 0.1%
Measurement accuracy	: Refractive index (nD) ± 0.0002 , Brix $\pm 0.1\%$
Measurement temperature range	: 5 to 50°C (at unit of 0.1°C)
Indications	: Refractive index(nD) or Brix(%) and temperature(°C)
Power supply	: AC adapter (AC100 to 240V, 50/60Hz)
Power consumption	: 10VA
Dimensions and Weight	: Refractometer 13 × 29 × 31cm, 6.0kg AC adapter 10.5 × 17.5 × 4cm, 0.7kg

ACCESSORIES

Test piece (Refractive index Point)	.....1pc
Monobromonaphthalene (4ml)	.....1pc
Allen wrench	.....1pc
Lighting adapter	.....1pc
Tube band	.....10pcs
Instruction manual	.....1pc



Refraction view



Display



NAR-1T (ATAGO'S STANDARD MODEL)

The NAR-1T is a standard Abbe refractometer which measures refractive indices of liquids and solids quickly and accurately. It is designed to give refractive indices of D line without using a sodium lamp.

SPECIFICATIONS

- Measurement range : Refractive index (nD) 1.3000 to 1.7000
Brix 0.0 to 95.0%
- Minimum scale : Refractive index (nD) 0.001, Brix 0.5%
- Measurement accuracy : Refractive index (nD) ± 0.0002 , Brix $\pm 0.1\%$
- Measurement temperature range : 5 to 50°C
- Average dispersion value : nF-nC (to be calculated according to conversion table)
- Digital thermometer : Indication range 0.0 to 50.0°C
(Accuracy $\pm 0.2^\circ\text{C}$, Minimum indication 0.1°C)
- Power supply : AC115V, 220V, 240V (Select one), 50/60Hz
- Power consumption : 6VA
- Dimensions and weight : Refractometer 23 × 18 × 23cm, 3.4kg
Thermometer 8 × 10 × 11cm, 0.8kg

ACCESSORIES

- Test piece (Refractive index standard).....1pc
- Monobromonaphthalene (4ml).....1pc
- Thermometer (Digital type).....1pc
- Screwdriver for scale adjustment.....1pc
- Lamp cord.....1pc
- Illuminator lamp (8V 0.15A).....5pc
- Tube band.....10pcs
- Instruction manual.....1pc

NAR-4T (HIGH REFRACTIVE INDEX MODEL)

Research and Development on new materials for modern technologies is being actively conducted in every industry. Many of these materials (especially polymer film and related materials) are of high refractive index - often too high for the existing Abbe refractometers. But these can now be measured with the nD 1.4700 to 1.8700 range of the NAR-4T.

SPECIFICATIONS

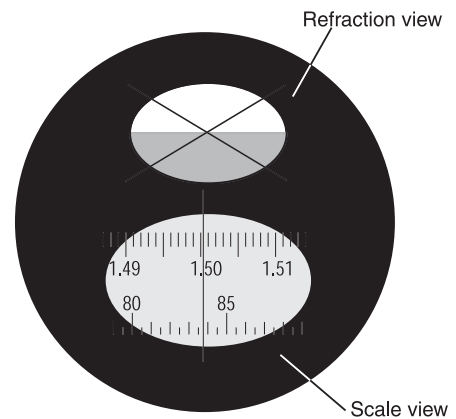
- Measurement range : Refractive index (nD) 1.4700 to 1.8700
- Minimum scale : Refractive index (nD) 0.001
- Measurement accuracy : Refractive index (nD) ± 0.0002
- Measurement temperature range : 5 to 50°C
- Digital thermometer : Indication range 0.0 to 50.0°C
(Accuracy $\pm 0.2^\circ\text{C}$, Minimum indication 0.1°C)
- Power supply : AC115V, 220V, 240V (Select one), 50/60Hz
- Power consumption : 6VA
- Dimensions and weight : Refractometer 23 × 18 × 23cm, 3.4kg
Thermometer 8 × 10 × 11cm, 0.8kg

ACCESSORIES

- Test piece (Refractive index standard).....1pc
- Monobromonaphthalene (4ml).....1pc
- Methylene iodide containing sulfur solution(4ml).....1pc
- Thermometer (Digital type).....1pc
- Screwdriver for scale adjustment.....1pc
- Lamp cord.....1pc
- Illuminator lamp (8V 0.15A).....5pc
- Tube band.....10pcs
- Instruction manual.....1pc



Photo: NAR-1T



Abbe Refractometer for low refractive index measurement

In addition to our standard Abbe Refractometer NAR-1T, we can supply the following Abbe model.

- **Abbe Refractometer 1T-Lo** (for low refractive index measurement) Cat.No.1217

- Measurement range : Refractive index(nD)1.1500 to 1.4800
- Measurement temperature range : 5 to 50°C

Note : You are requested to convert measured refractive indices to "real refractive indices" (with referring to conversion table), since the above Abbe refractometer has the same scale as our standard Abbe refractometer NAR-1T.

For further details, please make inquiries to our overseas department.

ABBE REFRACTOMETER (HIGH TEMPERATURE MODEL)

NAR-2T Cat.No.1220



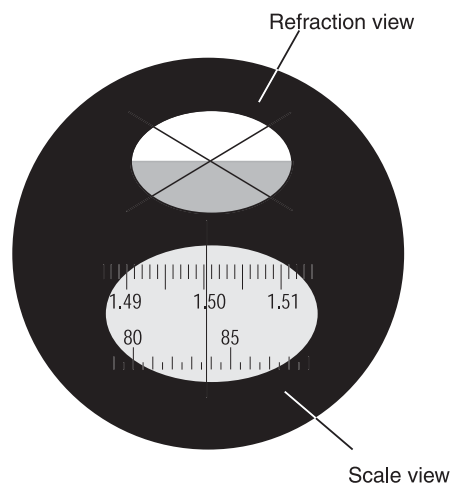
Designed for use with compounds which require measurement at high temperature.

SPECIFICATIONS

Measurement range	: Refractive index(nD) 1.3000 to 1.7000 Brix 0.0 to 95.0%
Minimum scale	: Refractive index(nD) 0.001, Brix 0.5%
Measurement accuracy	: Refractive index(nD) ± 0.0002 , Brix $\pm 0.1\%$
Measurement temperature range	: 5 to 120°C
Average dispersion value	: nF-nC (to be calculated according to conversion table)
Digital thermometer	: Indication range 0.0 to 120.0°C (Accuracy 0 to 100°C: $\pm 0.2^\circ\text{C}$, 100 to 120°C: $\pm 0.5^\circ\text{C}$) Minimum indication 0.1°C
Power supply	: AC115V, 220V, 240V (Select one), 50/60Hz
Power consumption	: 6VA
Dimensions and Weight	: Refractometer 21 × 20 × 25cm, 5.8kg Thermometer 8 × 10 × 11cm, 0.8kg

ACCESSORIES

Test piece (Refractive index Point)	.....1pc
Monobromonaphthalene (4ml)	.....1pc
Thermometer (Digital type)	.....1pc
Screwdriver for scale adjustment	.....1pc
Illuminator lamp (8V 0.15A)	.....5pc
Tube band	.....10pcs
Instruction manual	.....1pc



Abbe Refractometer for low refractive index and high refractive index measurements

In addition to our standard Abbe Refractometer NAR-2T, we can supply the following Abbe models.

- **Abbe Refractometer 2T-Lo** (for high temperature and low refractive index measurements) Cat.No.1227

Measurement range : Refractive index(nD) 1.1500 to 1.4800
Measurement temperature range : 5 to 120°C

- **Abbe Refractometer 2T-HI** (for high temperature and high refractive index measurements) Cat.No.1228

Measurement range : Refractive index(nD) 1.4700 to 1.8700
Measurement temperature range : 5 to 120°C

Another option

*We can supply Abbe refractometer with measurement range of " nD 1.7000 to 2.0800" and with measurement temperature range of "5 to 50°C" or "5 to 120°C".

Note : You are requested to convert measured refractive indices to "real refractive indices" (with referring to conversion table), since the above Abbe refractometer have the same scale as our standard Abbe refractometer NAR-2T.

For further details, please make inquiries to our overseas department.

ABBE REFRACTOMETER (PRECISION MODEL)

NAR-3T *Cat.No.1230*



The NAR-3T has been developed to give improved measurement accuracy and ease of use. This has been achieved by making fundamental improvements to the optical system, utilizing a larger scale, incorporating a high intensity lamp and using a double control knob to give quick and more accurate control.

FEATURES

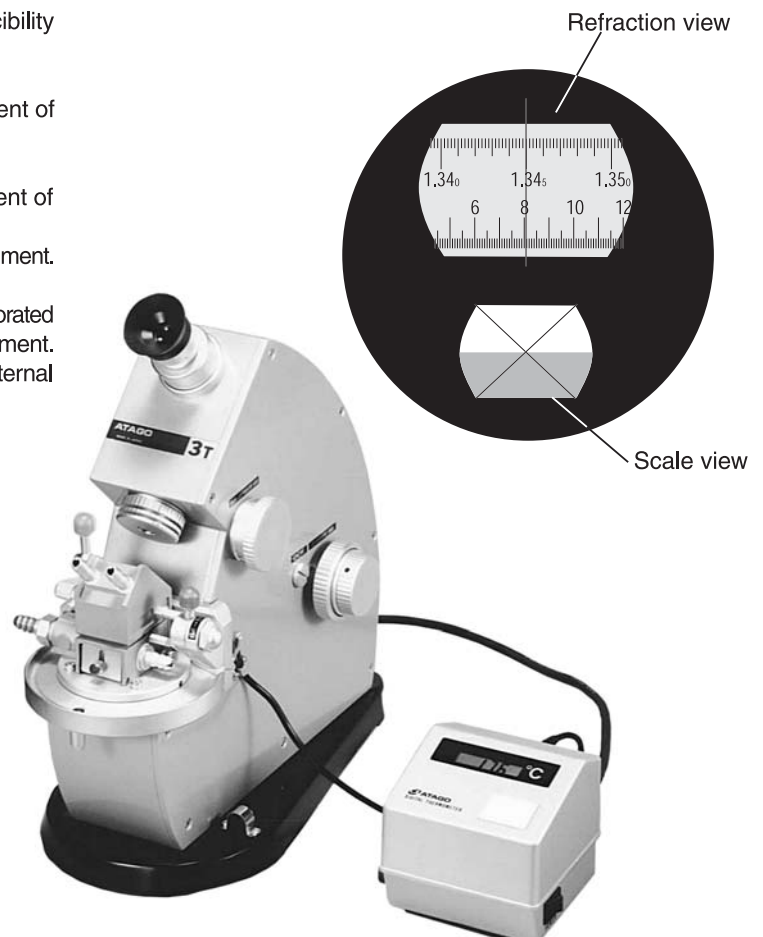
1. Digital thermometer for more accurate measurements.
 - (a) A digital thermometer has an accuracy of $\pm 0.2^{\circ}\text{C}$ divisions.
 - (b) Thermistor is inserted in the main prism.
2. Lighting
 - (a) Built-in for position light intensity switch.
 - (b) High intensity tungsten lamp.
 - (c) Capable of measuring semi-opaque samples.
 - (d) Independent scale illumination of constant intensity.
3. High accuracy obtained using a large scale.
 - (a) The scale is four times larger than those used in conventional instruments of ATAGO.
 - (b) The minimum scale division of 0.0002 enables measurements of refractive index of 0.0001 to be made. Similarly, using the Brix scale which has divisions of 0.1%, enables readings of 0.05% to be obtained.
4. Double control knob for easier operation.
 - (a) Fine control knob for fine adjustment gives greater accuracy and enables the operator to bring the boundary line into the center cross more quickly.
 - (b) This facility gives quicker operation and better reproducibility of measurements.
5. Able to measure solid and liquid samples.
 - (a) The high intensity lighting is suitable for the measurement of both solid and liquid samples.
6. Safe electrical system.
 - (a) The high intensity lighting is suitable for the measurement of both solid and liquid samples.
 - (b) The power supply cable is fixed to the main body of the instrument.
7. Built-in air dryer and moisture removal device.
 - (a) A large cartridge drying chamber containing silicagel is incorporated to prevent moisture condensing on the inside of the instrument.
 - (b) Means are provided for using compressed air to remove internal moisture droplets.

SPECIFICATIONS

Measurement range	: Refractive index(nD) 1.30000 to 1.71000 Brix 0.00 to 95.00%
Minimum scale	: Refractive index (nD) 0.0002, Brix 0.1%
Measurement accuracy	: Refractive index(nD) ± 0.0001 , Brix $\pm 0.05\%$
Average dispersion value	: nF-nC (to be calculated according to conversion table)
Digital thermometer	: Indication range 0.0 to 50.0°C (Accuracy $\pm 0.2^{\circ}\text{C}$, Minimum indication 0.1°C)
Measurement temperature range	: 5 to 50°C
Light source	: 6V, 1.2A tungsten lamp for sample illuminator 8V, 0.15A tungsten lamp for scale field illuminator
Power supply	: AC115V, 220V, 240V (Select one), 50/60Hz
Power consumption	: 10VA
Dimensions and weight	: Refractometer 12 x 31 x 25cm, 9.0kg Thermometer 8 x 10 x 11cm, 0.8kg

ACCESSORIES

Test piece (Refractive index standard)	1pc
Monobromonaphthalene (4ml)	1pc
Thermometer (Digital type)	1pc
L - Wrench (for regulating scale)	1pc
Illuminator lamp (6V 1.2A)	3pcs
(8V 0.15A)	3pcs
Air purger	1pc
Tube band	10pcs
Instruction manual	1pc



**MULTI-WAVELENGTH
ABBE
REFRACTOMETER**

DR-M2

Cat.No.1410



DR-M4

Cat.No.1414



Refractive index or Abbe number (ν_d or ν_e) can be measured at different wavelengths ranging from 450 to 1,100nm. For measurement at wavelengths ranging from 681 to 1,100nm, the optional Near Infrared Ray Viewer (Parts No.RE-9119) is required. The DR-M2/DR-M4 digitally displays measurement result of refractive index or Abbe number digitally on the LCD. Measurement can be achieved by matching the boundary line at the intersection point of the cross hairs. These refractometers can be connected to the digital printer.

SPECIFICATIONS

Measurement range:	
DR-M2	
Wavelength 450nm	: Refractive index 1.3277 to 1.7379
Wavelength 589nm	: Refractive index 1.3000 to 1.7100
Wavelength 680nm	: Refractive index 1.2912 to 1.7011
Wavelength 1,100nm	: Refractive index 1.2764 to 1.6843
DR-M4	
Wavelength 450nm	: Refractive index 1.5164 to 1.9164
Wavelength 589nm	: Refractive index 1.4700 to 1.8700
Wavelength 680nm	: Refractive index 1.4558 to 1.8557
Wavelength 1,100nm	: Refractive index 1.4304 to 1.8303
Minimum indication	: 0.0001 in refractive index 0.1 in Abbe number
Measurement accuracy	: ± 0.0002 in refractive index (with the attached test piece at 589nm)
Wavelength range	: From 450 to 1,100nm (with interference filters) (For measurement at wavelengths ranging from 681 to 1,100nm, the Near Infrared Ray Viewer (optional) is required.)
Measurement temperature range	: 5 to 50°C (at unit of 0.1°C)
Output terminal	: For digital printer, DP-21(A) (optional), Conforming to Centronics standard
Power supply	: AC100 to 240V, 50/60Hz
Dimensions and weight	: Refractometer 13 × 29 × 31cm, 6.0kg Light source unit 15 × 33 × 11cm, 3.0kg
Optional accessory	: Near Infrared Ray Viewer (Part No.RE-9119)



ACCESSORIES

Allen wrench	.....1pc
Test piece (Refractive index point)	.....1pc
Monobromonaphthalene (4ml)	.....1pc
Methylene iodide containing sulfur solution, 4ml (for DR-M4 only)	.....1pc
Lighting glass	.....1pc
Interference filter, 589 nm and 546 nm	.....1each
Spare bulb	.....1pc
Tube band	.....10pcs
Instruction manual	.....1pc

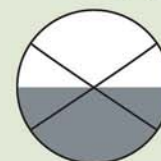
Abbe number can be measured simply!

(In the case of measurement of Abbe number " ν_d ")

- (1) Set the sample on the prism surface.
- (2) Insert the 589nm interference filter (attached to the DR-M2 as a standard accessory). While looking through the eyepiece, match the boundary line with the intersection point of the cross hairs. then, press the SET key.
- (3) Replace the interference filter with the 486nm interference filter (of an optional part). While looking through the eyepiece, match the boundary line with the intersection point of the boundary line with the intersection point of the cross hairs. Then, press the SET key.
- (4) Replace the interference filter with the 656nm interference filter (of an optional part). While looking through the eyepiece, match the boundary line with the intersection point of the cross hairs.
- (5) Press the SET key. The indication on the display at that time represents the Abbe number " ν_d ".




Display




Refraction view



*It is very convenient if you use an optional digital printer, because refractive index at each wavelength and Abbe number are printed.

MULTI-WAVELENGTH ABBE REFRACTOMETER **DR-M2/1550** Cat.No.1412 

DR-M4/1550 Cat.No.1415 

Refractive index or Abbe number (n_d or n_e) can be measured at different wavelengths ranging from 450 to 1,550nm. These refractometers digitally display the measurement result on the LCD. Measurement can be achieved by matching the boundary line at the intersection point of the cross hairs. These units can be connected to the digital printer.

SPECIFICATIONS

- Measurement range:
- DR-M2/1550**
- Wavelength 450nm : Refractive index 1.3277 to 1.7379
 - Wavelength 589nm : Refractive index 1.3000 to 1.7100
 - Wavelength 680nm : Refractive index 1.2912 to 1.7011
 - Wavelength 1,100nm : Refractive index 1.2764 to 1.6843
 - Wavelength 1,550nm : Refractive index 1.2594 to 1.6690
- DR-M4/1550**
- Wavelength 450nm : Refractive index 1.5164 to 1.9164
 - Wavelength 589nm : Refractive index 1.4700 to 1.8700
 - Wavelength 680nm : Refractive index 1.4558 to 1.8557
 - Wavelength 1,100nm : Refractive index 1.4304 to 1.8303
 - Wavelength 1,550nm : Refractive index 1.4215 to 1.8214
- Minimum indication : 0.0001 in refractive index
0.1 in Abbe number
- Measurement accuracy : ± 0.0002 in refractive index
(with the attached test piece at 589nm)
- Wavelength range : From 450 to 1,550nm
(with interference filters)
- Measurement temperature range : 5 to 50 °C (at unit of 0.1°C)
- Output terminal : For digital printer, DP-21(A) (optional),
Conforming to Centronics standard
- Power supply : AC100 to 240V, 50/60Hz
- Dimensions and weight : Refractometer 13 × 29 × 31cm, 6.0 kg
Power supply unit 15 × 33 × 11cm, 3.0kg

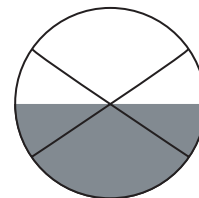
ACCESSORIES

- Near Infrared Ray Viewer.....1pc
- Mounting adapter and set screw.....1each
- Monochromatic light source devise.....1set
- Allen wrench.....1pc
- Test piece.....1pc
- Monobromonaphthalene (4ml).....1pc
- Methylene iodide containing sulfur solution, 4ml (for DR-M4/1550 only).....1pc
- Interference filter, 589nm.....1pc
- Interference filter frame for 589nm.....1pc
- Interference filter frame for registration.....1pc
- Tube band.....10pcs
- Instruction manual.....1pc

Display



Refraction view



DIGITAL PRINTER -optional-

DP-21(A)
Cat.No.3011



All ATAGO refractometers are designed and manufactured in Japan.

CE HACCP G.M.P. G.L.P. ATAGO products are acknowledged by HACCP, G.M.P. and G.L.P.

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※Specifications and appearance are subject to change without notice.