Reichert
Arias OptiMatrix™ 500 Refractometer

Exclusive, World-Class Precision in a Dual Array System.

The ***Arias OptiMatrix™ 500*** is the world's first transmitted light refractometer with precision comparable to high-end automatic reflected light refractometers. This dual-array, automatic refractometer eliminates the need for shadowline intersect interpretation and delivers consistently repeatable results. The ***Arias OptiMatrix™ 500*** compensates for temperature and delivers the results on an easy-to-read digital display.

Reichert *Arias OptiMatrix™ 500* Key Features:

- **Dual linear scanned array detectors**
- **Electronic interpretation of shadowline intersect**
- **Direct reading of refractive index, temperature compensated refractive index, percent solids, temperature compensated percent solids, and temperature**
- **Measurement of refractive index to 5 significant places and percent solids to 2 significant places**
- **Range 1.30000 to 1.70000 Refractive Index and 0.00 to 95.00 % Solids**
- **Accuracy +/- 0.00005 Refractive Index and +/- 0.03 % Solids**
- **Precision to +/- 0.00002**
- **Illumination using 589nm internal LEDs**
- **Operating temperature range from 10 degree Celsius to 80 degree Celsius**
- **Internal memory can store 14 custom measurement scales**
- **Automatic temperature equilibration**
- **Multi-lingual on-screen instructions - English, German, French, and Spanish**

Reichert™
TECHNOLOGIES
Analytical Instruments

Innovative precision instruments for over a century

Precision the Human Eye Can't Match

The ***Arias OptiMatrix™ 500's*** unique ability to take an automatic reading of the shadowline intersect eliminates reading scatter caused by operator interpretation. Some shadowlines are not sharp due to particulate matter or non-homogeneous samples. With a manual refractometer, this may result in variations in readings between operators. With the ***Arias OptiMatrix™ 500***, this is no longer a problem. Consistent results are obtained by allowing the instrument to automatically interpret the shadowline (see Figure 1). Simply place a sample on the prism, bring the shadow into the field of view, and press the Read button. There is no need to visually align the shadowline on the crosshairs. You will receive accuracy comparable to high-end automatic reflected light refractometers. Of course, there are many times when manual interpretation is desirable. For these times, the ***Arias OptiMatrix™ 500*** can be easily switched to the manual mode.

OptiMatrix™ Dual Arrays

The ***Arias OptiMatrix™ 500*** uses an OptiMatrix™ refractive index system of two arrays to precisely determine the shadowline position. The first array determines the operator positioning of the shadowline within the crosshairs. The second array automatically detects the exact shadowline position with much higher accuracy than can be achieved manually. The shadow doesn't even need to be aligned with the crosshairs. The reading is automatic as long as the shadowline is within the field of view.

	Traditional Analog Refractometer	Traditional Digital Refractometer	Reichert ARIAS 500
Person 1	43.0	42.8	42.7
Person 2	42.5	42.7	42.7
Person 3	42.8	42.6	42.7

One Wavelength

The ***Arias OptiMatrix™ 500*** uses monochromatic light at the industry standard 589 nm. High intensity, LED internal light sources provide bright, even illumination without the need for adjusting an external light. This eliminates dispersion problems and corrections caused by the white light used in traditional transmitted light refractometers. The internal light source makes the ***Arias OptiMatrix™ 500*** ideally suited for all types of samples including transparent, translucent, and semi-translucent liquids and solids.

Multipoint Calibration

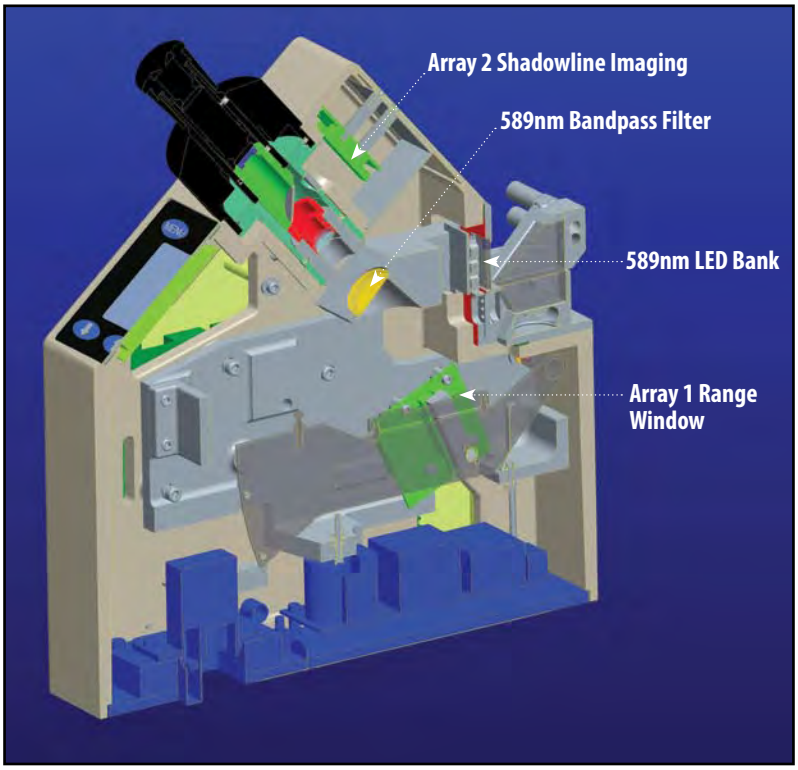
The ***Arias OptiMatrix™ 500*** allows the user to utilize seven calibration points within the entire 1.30000 to 1.70000 refractive index range. The first calibration point is water, the other six are customizable. In the past, many companies dedicated an instrument to a narrow range to ensure accuracy. With the multipoint calibration ability, this is no longer necessary. ISO calibration compliance is easy because there is never a need to adjust optics to calibrate the slope and set point of the instrument.

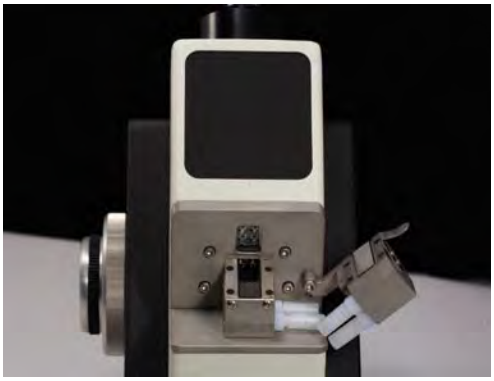
Accurate Temperature Measurement

The location of the temperature sensor in the refractometer is critical because refractive index is dependent upon temperature. The only place to obtain a truly accurate measurement is at the prism/sample interface where the sample is read. Temperature can vary by a few degrees at other locations such as in water bath lines. The ***Arias OptiMatrix™ 500***, like all Reichert laboratory refractometers, uses a thermistor located directly at the prism to provide the most accurate temperature readings possible. This in turn provides highly precise refractive index readings.

Figure 1

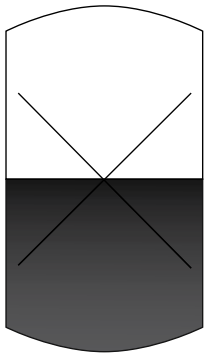
Three users analyzed the Brix of the same raspberry salad dressing sample using three types of transmitted light refractometers. Notice that the ***Arias OptiMatrix™ 500*** provided consistent readings even with different users analyzing a difficult sample.



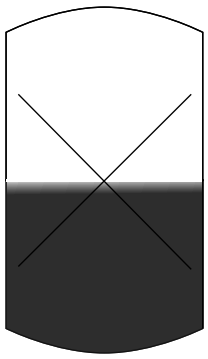


589nm internal light sources provide bright, even illumination over the entire prism surface.

The user-friendly push-buttons and display screen allow for easy customization and analysis.



Some samples, like apple juice, produce a sharp, clear shadowline.



Other samples, like tomato juice, produce "fuzzy" shadowlines because light does not transmit easily.

But no matter what the shadowline, the ARIAS 500's automatic mode will produce the correct answer.

Reichert *Arias OptiMatrix™ 500* Technical Specifications	
Catalog Number	1310499SA (110v to 240v with US, EU, and UK power cords
Operation	Semi-automatic, transmitted light laboratory refractometer
Automatic Reading Range	Shadowline within the field of view
Sample Types	Transparent and translucent liquids and solids
Illumination	6 high intensity long life LEDs, 589nm
Reading Range	1.30000 to 1.70000 Refractive Index and 0.00 to 95.00 % Brix (ICUMSA)
Reading Accuracy	+/- 0.00005 Refractive Index and +/- 0.03 % Brix
Calibration	Set point with distilled water and span point with NIST oils
Temperature Control Method	Ports for external circulator
Temperature Control Range	10 degree Celsius to 80 degree Celsius
Temperature Precision	0.01 degree Celsius
Prism Assembly	Glass prism sealed with epoxy to 416 grade stainless steel housing
Display	Graphic LCD display, 44mm W x 44mm H (1.75" x 1.75")
User Interface	Simple, effective 5-button operation with on-screen instructions
Data Output	two 9-pin RS232C serial ports
Baud Rate	User-definable up to 57,600 bps
Channels	Channel 1 is Brix (ICUMSA) and channel 2-15 is user defined (numerous scales available)
Calibration History Record	Maintains hundreds of the most recent calibration records
Automatic Temperature Equilibration	Automatically detects temperature equilibrium point between the sample and the instrument
Password	Setup and menu parameters can be password protected
Languages	English, German, French, and Spanish
Net Weight	7.84 kg (17.25 lb)
Warranty	2 years

Create a Partnership in Precision

All of our refractometers come with world-class customer service and technical assistance. Whether you're measuring Brix, RI, or a custom scale, Reichert will work with you to ensure your Reichert Refractometer exceeds your expectations.

Reichert Provides Real World Solutions and Outstanding Value to Every Customer

Digital Benchtop Refractometers

Part #	Description
13107000	AR700 AUTOMATIC REFRACTOMETER
13107700	AR70 AUTOMATIC REFRACTOMETER
13106000	AR600 AUTOMATIC REFRACTOMETER
13106600	AR60 AUTOMATIC REFRACTOMETER
13980000	*r²i300* AUTOMATIC REFRACTOMETER

Transmission Style Abbe Refractometers

Part #	Description
1310499SA	ARIAS OPTIMATRIX 500 SEMI-AUTOMATIC ABBE REFRACTOMETER
1310488M	Abbe MARK III REFRACTOMETER

Diagnostic/Laboratory Instruments

Part #	Description
1310310C	UNISTAT BILIRUBINOMETER 115V
1310311C	UNISTAT BILIRUBINOMETER 230V
13102140	SPECIMEN CUVETTES (51 PER PKG)
13332700	DIGITAL COLONY COUNTER 110V
13332800	DIGITAL COLONY COUNTER 220V
13332500	MANUAL COLONY COUNTER 110V
13332600	MANUAL COLONY COUNTER 220V

Digital Hand-Held Refractometers

Part #	Description
13940000	*r²mini* REFRACTOMETER
13950000	AR200 REFRACTOMETER
13952000	AR200 W/ IR COMMUNICATIONS PKG
13960000	TS METER-D CLINICAL REFRACTOMETER
13962000	TS METER-D CLINICAL W/ IR COMMUNICATIONS PKG

Hand-Held Refractometers

Part #	Description
13104230	GOLDBERG BRIX 0-30
13104190	GOLDBERG SALINITY METER
1310400A	GOLDBERG TS METER
13104060	GOLDBERG ILLUMINATED TABLE STAND 110V
13104080	GOLDBERG ILLUMINATED TABLE STAND 220V
13740000	TS400 HP CLINICAL REFRACTOMETER
13851500	15HP 0-15 BRIX
13853500	35HP 0-35 BRIX
13856500	65HP 35-65 BRIX
13859000	90HP 65-90 BRIX
13851000	IFT10HP INDUSTRIAL FLUID TESTER
13759600	BC3 HP BRAKE-CHEK
137596C0	BC3C HP BRAKE-CHEK
13759510	BC4 HP BRAKE-CHEK (USA)
13759500	BC4 HP BRAKE-CHEK (European)
137530L0	RHINO 0-30 BRIX
137531L0	RHINO 0-50 BRIX
137533L0	RHINO 50-90 BRIX
137564L0	RHINO DC60 COOLANT DEG C
137584L0	RHINO DC70 COOLANT DEG F
13754000	RHINO IFT40 INDUSTRIAL FLUID TESTER
137536L0	RHINO VET360 TS METER
137528L0	RHINO OE200 WINE TESTER