



# Analog Refractometers

## IR and LR Series

Industrial and Lighted Models



# OVERVIEW

**Concept:**

A refractometer measures the degree of the bend of light as it passes through a sample. This degree of bend (refraction) can be measured on a multitude of different types of scales. Common scales include: Brix, Baume, Specific Gravity, Refractive Index, & Salinity.

Each type of scale converts the degree of refraction, to something more useful to each industry's application it is used in. For example: The automotive industry uses an IRA series refractometer to measure the percentage of water to glycol to ensure proper mixing of coolant.

**Critical Viewing Angle:**

The angle at which light enters into the refractometer is very important to the crispness of the line being formed. If too much light is reflected off from the surface of the prism, the line formed may be very fuzzy.

**Reading:**  
Without a sample present on the refractometers prism, the scale should appear with an all blue background. Once a sample is present the refraction of the light will show up as a white background; where the two backgrounds meet, they form a line. That line indicates the degree at which the light is bending, and is your reading.

**Objective Lens:**  
When a sample is present the calibration screw adjusts the objective lens, which moves the reading line either up or down.

**Diagram Labels:** READING LINE, ° OF REFRACTION, SAMPLE AREA, CRITICAL VIEWING ANGLE, PRISM, SCALE, CALIBRATION SCREW, OBJECTIVE, SCALE.

# OVERVIEW

## AUTOMOTIVE

FOR ANTIFREEZE & BATTERY ACID

Ensure the proper dilution of antifreeze or check the charge level of battery acid. The antifreeze scales measure ethylene & propylene glycol in both freeze point degrees and the ratio of water to glycol.



## CLINICAL/VETERINARY

FOR SERUM PROTEIN, SPECIFIC GRAVITY AND REFRACTIVE INDEX

Quickly and accurately get indication of basic health parameters such as dehydration and blood protein levels. This three-scale model measures total serum protein, urine specific gravity, and refractive index.

## SALINITY

FOR AQUACULTURE, FOOD PROCESSING & WILDLIFE MANAGEMENT

Measure salt levels in water and other saline fluids. The dual scale gives a direct reading of specific gravity and concentration (parts per thousand).



## BRIX

FOR WINE, BEVERAGES, FOODS & INDUSTRIAL FLUIDS

Measure sugar concentration levels for various beverages and foods, or in industrial fluids such as cutting coolants, glycol solutions, and flux rinsing compounds. The scale gives a direct Brix reading.

# LR Lighted Series

Illuminating Results for All Applications

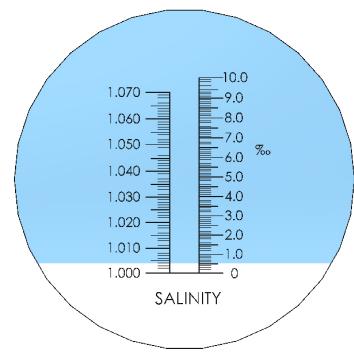
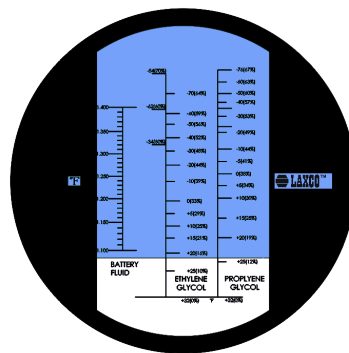
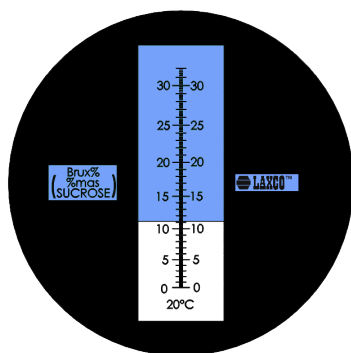
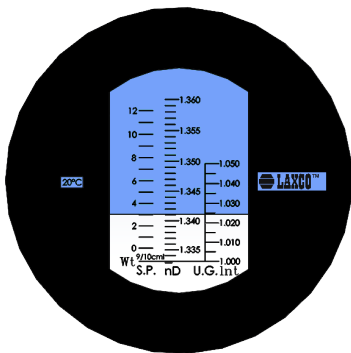
## KEY BENEFITS

- Consistent, easy-to-use LED illumination
- Sharp, high-contrast scale
- Rugged, rubberized housing protects against moisture and other damage
- Daylight plate stays in open position for convenient sample preparation
- Rubber eyecup and grip for easy focusing and comfortable viewing
- Includes carrying case, calibration screw driver, batteries, calibration solution, and 2 droppers
- Automatic temperature compensation adjusts for ambient temperature fluctuations within normal range of 50 ° to 86 ° F (10 to 30 C) to maintain calibration



## AUTOMATIC TEMPERATURE COMPENSATION (ATC)

All models come standard with ATC functionality, which prevents the need for constant re-calibration. As the ambient temperature changes, the scale will automatically compensate for the difference in the degree of the refraction of light. This ensure an accurate reading every time



## OVERVIEW



### LED ILLUMINATION

Laxco LR Lighted Series refractometers incorporate an LED lamp between the daylight plate and prism to prevent the need for ambient light to obtain a reading. Works well in low light situations where there is not a lot of ambient light.

### HINGED DAYLIGHT PLATE

Two ball plungers on each side of the daylight plate locks the daylight in the up or down position to prevent flapping during operation or while applying sample to prism.

## BUILT TO LAST

### CALIBRATION SCREW

Calibration set screw is sealed with water proof cap to prevent water from entering into the system.



### BATTERY

Easy to remove, water tight, sealed battery compartment.



### OPTICS

All glass optics, with large field of view creates a bright, sharp, crisp line for easy reading of sample measurement.

## DURABLE, ALL METAL CONSTRUCTION




# MODELS

## Specifications & Ordering Information

### BRIX MODELS

	Model	Application	Scale Range	Division	Accuracy
	LR-B10ATC	BRIX for Wine, Beverages, Foods & Industrial Fluids	0 - 10 ° Brix	0.1 °	± 0.1 °
	LR-B18ATC	BRIX for Wine, Beverages, Foods & Industrial Fluids	0 - 18 ° Brix	0.1 °	± 0.1 °
	LR-B32ATC	BRIX for Wine, Beverages, Foods & Industrial Fluids	0 - 32 ° Brix	0.2 °	± 0.2 °

### CLINICAL MODELS

	LR-C200ATC	CLINICAL for Serum Protein, Specific Gravity & Refractive Index	Serum Protein 0 to 12 g/100mil Specific Gravity 1.000 to 1.050 Refractive Index 1.330 to 1.360 nD	.2 .0001 .0005	± .2 ± .0001 ± .005
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### SALINITY MODELS

LR-S10ATC	SALINITY for Aquaculture, Food Processing and Wildlife Management	Salinity 0 - 100 ppt Specific Gravity 1.000 to 1.070	1 ppt .0001	± 1 ppt ± .0001
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### AUTOMOTIVE MODELS

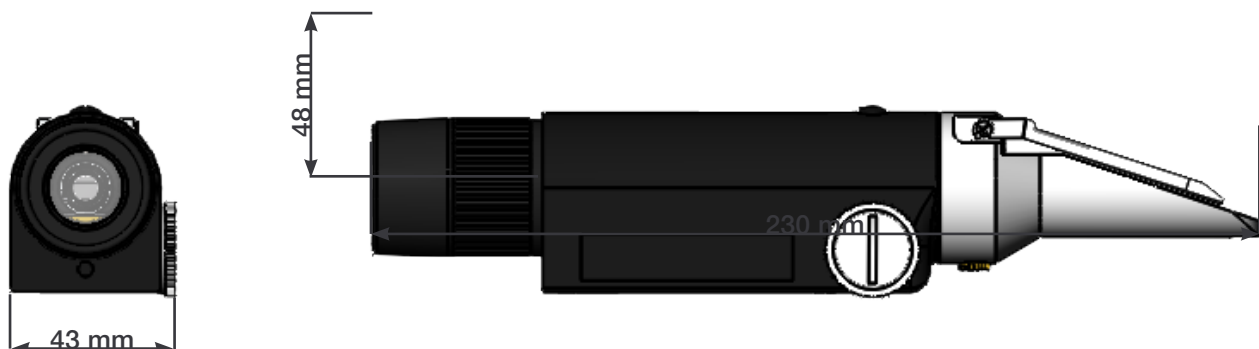
LR-A100ATC	AUTOMOTIVE for coolant and battery fluid testing	Ethylene -84 ° to 32 ° F (0% to 67%) Propylene -76 ° to 32 ° F (0% to 70%) Battery Fluid 1.100 to 1.400	5 ° 5 ° 0.01	± 5 ° ± 5 ° ± 0.01
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## ACCESSORIES

### PARTS

Part #	Description
RP-DPA-5P	Daylight plate assembly

## DIMENSIONS



# IR Industrial Series

## KEY BENEFITS

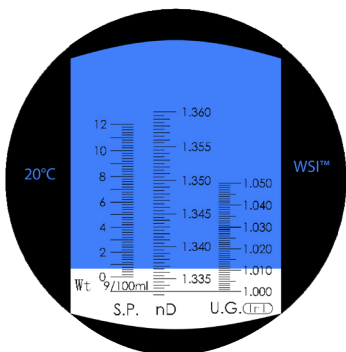
- All metal body to ensure long life
- One-piece daylight plate for quick, easy replacement in case of accidental damage
- Smooth focusing eyepiece
- Integrated footrest allows the unit to be placed securely on any flat surface
- Machined hole for hanging the refractometer in a convenient location
- Easy to access calibration screw
- Focusable eyepiece with rubber eyecup
- Water resistant seal between prism and main body to prevent damage to internal objective lens



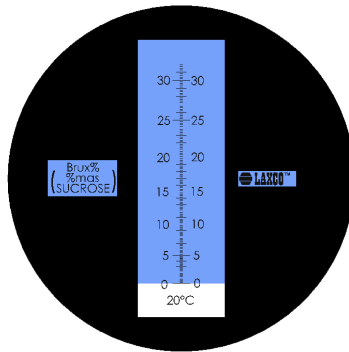
## AUTOMATIC TEMPERATURE COMPENSATION

Some models come equipped with ATC functionality, which prevents the need for constant re-calibration. As the ambient temperature changes, the scale will automatically compensate for the difference in the degree of the refraction of light. This ensure an accurate reading every time

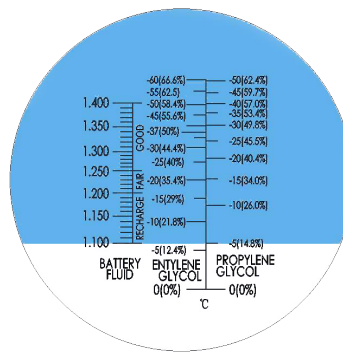
ATC Model Available



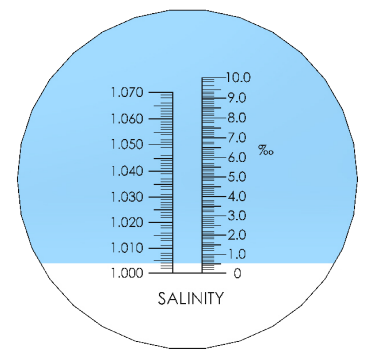
CLINICAL



BRIX



AUTOMOTIVE



SALINITY



### METAL HINGED DAYLIGHT PLATE

U-shaped metal hinged bracket provides durability of frequent lifting and closing. Two screws allow the daylight plate to be quickly removed or replaced in the event of accidental breakage.

### METAL FOOTREST

Foot rest allows the refractometer to be placed on any flat surface without the unit rolling.

## LARGE DAYLIGHT PLATE FOR MAXIMUM BRIGHTNESS

### CALIBRATION SCREW

Calibration set screw is easily accessible on top of the refractometer to make it easy to calibrate.










## DURABLE, ALL METAL CONSTRUCTION




# MODELS

## Specifications & Ordering Information

### BRIX MODELS

	Model	Application	Scale Range	Division	Accuracy	
	IR-B10ATC	BRIX for Wine, Beverages, Foods & Industrial Fluids	0 to 10 ° Brix	0.1 °	± 0.1 °	YES
	IR-B18		0 to 18 ° Brix	0.1 °	± 0.1 °	NO
	IR-B32		0 to 32 ° Brix	0.2 °	± 0.2 °	NO
	IR-B32ATC		0 to 32 ° Brix	0.2 °	± 0.2 °	YES
	IR-B62		28 to 62 ° Brix	0.2 °	± 0.2 °	NO
	IR-B82		45 to 82 ° Brix	0.5 °	± 0.5 °	NO
	IR-B90	58 to 90 ° Brix	1.0 °	± 1.0 °	NO	





### CLINICAL MODELS

	Model	Application	Scale Range	Division	Accuracy	
	IR-C200	CLINICAL for Serum Protein, Specific Gravity & Refractive Index	Urine Specific Gravity 1.000 to 1.050 Serum Protein 1 to 12g/dl Refractive Index 1.334 to 1.360	0.002 0.2 g/dl 0.0005	0.002 .2 g/dl 0.0005	NO
	IR-C200ATC		Urine Specific Gravity 1.000 to 1.050 Serum Protein 1 to 12g/dl Refractive Index 1.334 to 1.360	0.002 0.2 g/dl 0.0005	0.002 .2 g/dl 0.0005	YES

### SALINITY MODELS

	Model	Application	Scale Range	Division	Accuracy	ATC
	IR-S10ATC	SALINITY for Aquaculture, Food Processing and Wildlife Management	Specific Gravity 1.000 to 1.070 Salinity 0 to 10‰	0.001 0.1 %	± 0.001 ± 0.1 %	YES

### AUTOMOTIVE MODELS

	Model	Application	Scale Range	Division	Accuracy	ATC
	IR-A100	AUTOMOTIVE for coolant and battery fluid testing	Ethylene -84 ° to 32 ° F Propylene -60 ° to 32 ° F Battery Fluid 1.100 to 1.400	5 ° 5 ° 0.01	± 5 ° ± 5 ° ± 0.01	NO
	IR-A100ATC		Ethylene -84 ° to 32 ° F Propylene -60 ° to 32 ° F Battery Fluid 1.100 to 1.400	5 ° 5 ° 0.01	± 5 ° ± 5 ° ± 0.01	YES
	IR-A200		Ethylene -60 ° to 0 ° C Propylene -50 ° to 0 ° C Battery Fluid 1.15 to 1.30	5 ° 5 ° 0.05	± 5 ° ± 5 ° ± 0.01	NO
	IR-A200ATC		Ethylene -60 ° to 0 ° C Propylene -50 ° to 0 ° C Battery Fluid 1.15 to 1.30	5 ° 5 ° 0.05	± 5 ° ± 5 ° ± 0.01	YES

# ACCESSORIES

Calibration Chart

Model #	Cal Fluid	RI	Model #	Cal Fluid	RI
IR-A100/ATC	Distilled Water	0	IR-B62	RP-CAL46P	46
IR-A200/ATC	Distilled Water	0	IR-B82	RP-CAL46P	46
IR-A100ATC	Distilled Water	0	IR-B90	RP-CAL60P	60
IR-A300F	Distilled Water	0	IR-C200/ATC	Distilled Water	0
IR-B10ATC	Distilled Water	0	LR-C200ATC	Distilled Water	0
IR-B10ATC	Distilled Water	0	IR-S10ATC	Distilled Water	0
IR-B18	Distilled Water	0	IR-S28	Distilled Water	0
IR-B32/ATC	Distilled Water	0	RL-S10ATC	Distilled Water	0
IR-B32ATC	Distilled Water	0			

## CALIBRATION FLUID

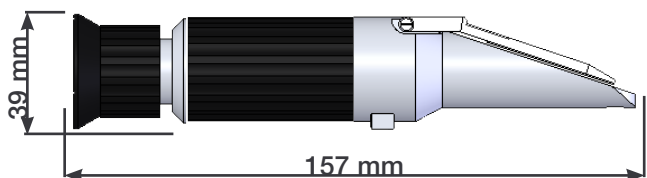
Part #	Description
RP-CAL46P	Calibration fluid, 46° Brix
RP-CAL60P	Calibration fluid, 60° Brix

## DAYLIGHT PLATES

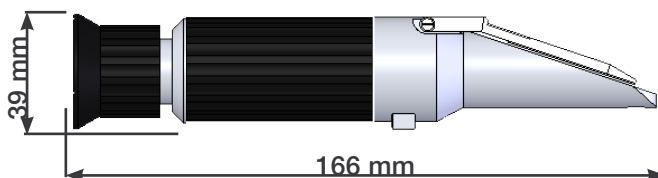
Part #	Description
RP-DPA-2P	Daylight plate assembly for models IR-B18, 32, 32ATC, 62, & 82, IR-A100, 100ATC, 200, 200ATC, 300F, and IR-S28
RP-DPA-3P	Daylight plate assembly for models LR-B10ATC, LR-C200, 200ATC, LR-S10ATC
RP-DPA-4P	Daylight plate assembly for model LR-B90

## DIMENSIONS

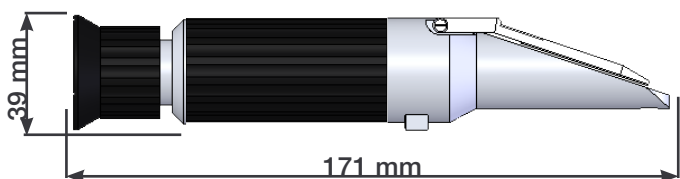
Models: IR-B82 & IR-B90



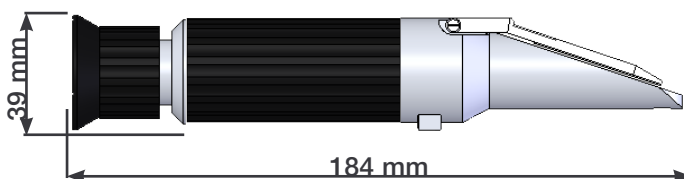
Models: IR-A100 & IR-A200



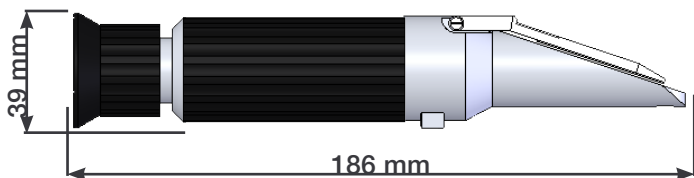
Models: IR-A300F, IR-A400, IR-B55 & IR-B62



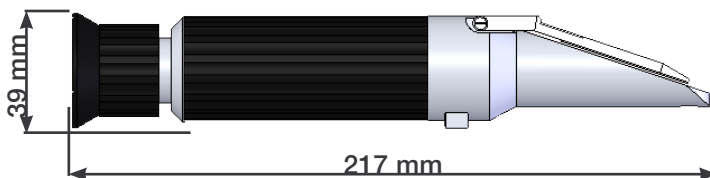
Models: IR-C200



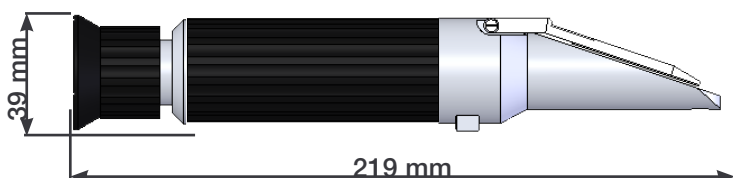
Models: IR-B32



Models: IR-B18



Models: IR-B10





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