

*For High Accuracy Food Applications*

# The J157 Series of Automatic Refractometers



*Ask about our  
Auto Measure Option*

**TECHNICAL BULLETIN 911**

## APPLICATION

The J157 is designed as a high accuracy refractometer for food and water based chemical applications. The instrument can read to  $\pm 0.00004$  RI /  $\pm 0.03$  BRIX making it more accurate and reproducible than 4 decimal place wide range chemical refractometers.

## OPERATION

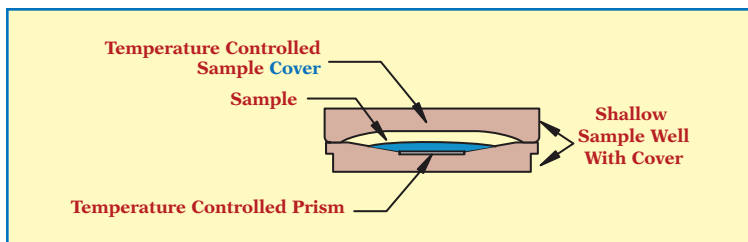
Operating the J157 is as simple as placing a sample on the prism, closing the cover and reading the answer – all in just a few seconds. There are no shadow lines to match and there is no eyepiece requiring any kind of operator determination or manual adjustment. When the “measure when stable mode” is selected, the J157 automatically waits until the sample has been heated or cooled to a predefined temperature before initiating a measurement.

## INTERFACE

A large 7.5 cm x 10cm cold cathode fluorescent back lit graphics LCD allows the scale, sample temperature, set temperature, time, date and temperature correction status to be easily viewed. All functions are activated through a touchscreen panel which will not wear out or get misplaced like traditional or detachable keypads. The touchscreen is resistant to fingernails, sharp objects, chemicals, and acids.

## DUAL TEMPERATURE CONTROL SYSTEM (Important Feature)

Unlike other temperature controlled refractometers, the J157 has temperature control from both above and below the sample. The sample **Cover** is controlled to the same temperature as the prism and, when lowered, is designed to provide a temperature controlled micro environment that provides unrivaled temperature stability, fast measurement time and minimal evaporation. Depending on options, the sample **Cover** can also be used to initiate measurement.



## OPTIONAL SAMPLE PRESSER

The J157 is available with an optional Temperature Controlled Sample **Presser** that touches the sample. Compared with the standard temperature controlled **Cover**, the optional **Presser** reduces the empty volume of the measurement area thereby decreasing evaporation and at the same time helping to evenly spread semi solid materials over the measurement prism. This feature offers improved performance on many samples.



## AUTO MEASURE OPTION

The Rudolph Auto Measure Option allows the closing and opening of the presser to start and end a measurement. The operator just closes the cover to start measuring and lifts the cover to stop measuring. The closing and lifting of the lid functions as the start/stop in the measurement process without ever touching the measure button.

## EASY TO CLEAN MEASUREMENT SURFACE

No matter how good the refractometer is, accurate results will only be obtained if the prism is clean. The Rudolph J Series offers a flat, easy to clean prism that makes this process simple even with sticky samples.

## USER DEFINED SCALES

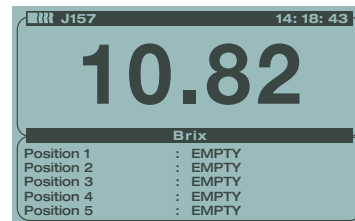
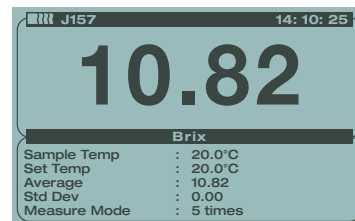
The J157 can be supplied with a large range of standard and customized scales. Scales can be customized in a few minutes. Simply enter 2, 6 or 10 points of concentration vs. corresponding RI data, and the instrument calculates the custom scale automatically.

## CALIBRATION

The J157 offers 1 point, 2 point or a full multi-point calibration. Calibration can be done at 20°C, 25°C or any user selectable temperature within the available range. Regardless of how many times the refractometer has been calibrated, it can always be restored to the initial factory calibration if required.

## USER CONFIGURABLE

Versatile instruments have the advantage of being able to display a lot of information, however this versatility can also lead to confusion, with extra buttons and by forcing operators to interpret extra information that may have no relevance to their application. The J Series customizable display allows the instrument to be configured to exactly what is required for each application. The customizable keypad can be “locked out” or just a few keys can be operable, i.e. the measure key, print key, zero key, customer specified sample keys or any combination thereof. The lockout function, calibration and other functions are all password protected.



## HIGH DURABILITY SAPPHIRE PRISM

The J Series Refractometer offers an artificial sapphire prism for high mechanical and chemical durability. The sample well is made of acid resistant 316 stainless steel with a techtron sealing ring. There is no lamp to change, the LED light source is guaranteed for 1,000,000 measurements.

## OPTIONS AND ACCESSORIES

- NIST traceable calibration liquids
- IO/OQ/PQ package
- Acid resistant sample well and plate
- Printer
- Pre programmed custom scale
- Data capture software
- Small volume sample well
- Different measurement wavelengths
- Barcode reader

# Refractometer Specifications - J157

<b>Measurement Scales:</b>	Refractive Index (RI), BRIX (% sucrose) Temperature Corrected BRIX, Temperature Corrected RI, Urine SG and 30 User Programmable Scales	<b>Temp. Control Range:</b>	15°C - 50°C
<b>Measurement Range:</b>	1.33 - 1.53 RI, 0 - 95 BRIX, 1.0000 - 1.0400 Urine SG	<b>Temp. Accuracy:</b>	0.05°C
<b>Resolution:</b>	0.00001 RI, 0.01 BRIX, 0.0001 Urine SG	<b>Ambient Temp. Limit:</b>	10°C - 40°C
<b>Reproducibility:</b>	$\pm 0.00002$ RI, $\pm 0.015$ BRIX, $\pm 0.0001$ Urine SG	<b>Temp. Correction Range:</b>	18°C - 95°C (for pure sucrose solutions)
<b>Accuracy:</b>	$\pm 0.00004$ RI, $\pm 0.03$ BRIX, $\pm 0.0001$ Urine SG	<b>Temp. Control:</b>	Prism surface and in the cover
<b>Optical Wavelength:</b>	589.3nm	<b>Calibration:</b>	Using water or NIST traceable standards
<b>Measurement Time:</b>	User configurable; generally less than 30 seconds	<b>Operating Dimensions/Weight:</b>	L: 15 1/2" W: 10" H: 5" / 23 lbs. L: 39.5cm W: 25.5cm H: 13cm / 10.4kg
<b>Communication Interface:</b>	Two RS232 ports, one parallel printer port and one auxiliary port	<b>Shipping Dimensions/Weight:</b>	L: 26" W: 21" H: 16" / 30 lbs. L: 66cm W: 53.5cm H: 41cm / 14kg
<b>Auto Measure:</b>	Available as option	<b>Power Requirements:</b>	100-240 volts, 50 Hz - 60 Hz