

*For Food and Beverage Applications*

# The Temperature Corrected J47 Automatic Refractometer



- Very fast measurement
- Simple to load, simple to measure, simple to clean
- Result independent of operator judgment



RUDOLPH RESEARCH ANALYTICAL		Date: Feb. 1, 2012	Time: 10:48
Sample Temp:	26.7°C	11.46	
Temp Corr:	20.0°C	BRIX	
N: 3.0		11.46	
Avg:		11.46	

Esc Menu Zero Print Measure



## APPLICATION

The J47 was designed to meet the unique needs of a food and beverage testing where the samples are mostly a mixture of sugar and water and the refractometer is viewed more as a tool than a laboratory instrument. The J47's single flat measurement surface, temperature correction and one button measurement capability make it perfect for heavy use applications.

## AUTOMATIC MEASURING SYSTEM

The Rudolph J47 features a fully automatic measuring system. The operator simply places the sample on the prism, presses a button and the result is displayed on a color touch screen. There are no shadow lines to match and there is no eyepiece requiring operator determination or manual adjustment.

## TEMPERATURE CORRECTION (ICUMSA OR CUSTOM)

The standard Rudolph J47 corrects for errors caused by sample temperature variation using the latest ICUMSA temperature correction tables. Temperature correction is a very fast mathematical solution to obtaining measurement results without a temperature control system or a water bath. These measurement results are the most accurate with samples are comprised of predominantly sugar and water and where the sample temperature is already stable when the sample is placed on the instrument. The J47 can also be programmed with custom temperature coefficients and the Rudolph factory can provide assistance with this.

## HIGH ACCURACY IN THE APPROPRIATE CIRCUMSTANCES

The J47 was designed for the food and beverage industries with a BRIX range of 0 - 100% and a Refractive Index range of 1.32-1.53. The J47 has an accuracy of 0.03 Brix and 0.00004 Refractive Index.

## EASY TO CLEAN MEASUREMENT SURFACE

Regardless of an instrument's specified accuracy, a refractometer's real world performance depends on how well the instrument is cleaned between samples. The J47 addresses this issue by providing a very flat easy to clean measurement surface with no corners or crevices that tend to trap samples causing contamination.

## HIGH DURABILITY SAPPHIRE PRISM

When a traditional manual Abbe refractometer is used in a high throughput application prism replacement becomes a regular task. This is because traditional Abbe refractometers have glass prisms which are much softer than the sapphire prism of the J Series and thus more prone to scratching and general wear and tear as described below.

## LOWER COST OF USE

The traditional method of measuring Brix in a laboratory was a Abbe refractometer, sometimes with a water bath attached, sometimes not. (An Abbe with a water bath is the functional equivalent to the J57. An Abbe without the waterbath is the functional equivalent to the J47).

The cost of replacing the Abbe's dual glass prisms over time makes owning a J47 with its single sapphire prism actually less expensive than owning an Abbe over their comparable useful lives.

## CALIBRATION

The J47 offers a 1 or 2 point user calibration. The instrument stores the calibration information in line with ISO and similar standards. The calibration system is password protected enabling an administrator to control who can calibrate the instrument.

### Problem



**You are tired of arguments over shadowline interpretation on your Abbe Refractometer.** One person says the material is on specification, one person says it's not. In addition, **scratches on the glass** prism make visual interpretation even more difficult.

### Solution

**J-Series Internal Reflection Refractometers use scratch proof artificial sapphire prisms** that measure the reflected light not the transmitted light, like the Abbe, so dark samples measure as easily as clear samples. Just put a drop of sample on the prism, press measure and walk away. No shadow line, no manual balancing or interpretation. **Lifetime warranty against prism scratches.**

### Problem



#### Handheld Refractometers

- Not holding calibration
- Instability
- Lack of accuracy
- Glass prism scratching
- No easy means of validating results

### Solution

#### J47

- Long term calibration stability
- Better than 0.03 Brix stability
- 0.03 Brix accuracy
- Sapphire prism cannot be scratched by normal use
- Validate with laboratory performance

# Refractometer Specifications - J47

<b>Measurement Scales:</b>	Refractive Index (RI) Brix (% sucrose)	<b>Light Source:</b>	Light Emitting Diode (exp life> 1,000,000 measurements)
<b>Measurement Range:</b>	J47 1.32 – 1.53 RI, 0 – 95 Brix	<b>Calibration:</b>	1, 2 or 10 point
<b>Reproducibility and Accuracy:</b>	J47 ± 0.00004 RI, ± 0.03 Brix	<b>Communication Interface:</b>	USB download to thumb drive
<b>Temperature Correction:</b>	According to ICUMSA	<b>Operating Dimensions (LxWxH):</b>	12"/31cm x 6"/15.5cm x 5"/13cm
<b>Temperature Control:</b>	N/A See J57	<b>Operating Weight:</b>	8.8lbs/4kg
<b>Ambient Temperature Limit:</b>	10°C to 40°C	<b>Shipping Dimensions (LxWxH):</b>	17"/42.5cm x 12"/30cm x 13"/34cm
<b>Sample Temperature Limit:</b>	None	<b>Shipping Weight:</b>	13.8lbs/6.3kg including accessories kit with manual
<b>Temperature Correction Range:</b>	18 to 95°C	<b>Power Requirements:</b>	100 - 240V/50 - 60Hz
<b>Wavelength:</b>	589.3nm (other wavelengths available)		