

For High Throughput *Chemical* Applications

The J57WR Series of Automatic Refractometers



United States Department of Commerce
National Institute of Standards and Technology

NVLAP[®]

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TECHNICAL BULLETIN 925

APPLICATION

The J57WR was designed to meet the unique needs of industrial environments in the chemical industry where the refractometer is viewed as a QC tool rather than a laboratory instrument. A single flat measurement surface, electronic temperature control and one button measurement capability make it perfect for heavy use applications.

AUTOMATIC MEASURING SYSTEM

The Rudolph J57WR 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 7.5cm x 10cm back lit LCD. There are no shadow lines to match and there is no eyepiece requiring operator determination or manual adjustment.

ELECTRONIC TEMPERATURE CONTROL

Refractive Index readings are very sensitive to temperature. When measuring sucrose users have the option of correcting for temperature variation but that option does not work for most chemical companies. Users not measuring sucrose or users looking for better accuracy than provided by temperature correction had to spend the extra money for a circulating water bath and then clean and maintain it. The J57WR's built in electronic temperature control provides the best of both worlds, the absolute accuracy, regardless of sample type, of a temperature controlled instrument with the convenience of operating without a water bath.

WIDE MEASURING RANGE

The J57WR was designed for chemical measurement, not food. This means a very wide measurement range from 1.26 – 1.70 enabling the instrument to measure materials like fluorocarbons and aromatic chemicals that are beyond the range of most refractometers.

EASY TO CLEAN MEASUREMENT SURFACE

Regardless of the specified instrument accuracy the real world performance will always depend on how well the instrument is cleaned between samples. The J57WR addresses this issue by providing a very flat easy to clean measurement surface with no corners or crevices that tend to trap samples in instruments designed for laboratory use.



HIGH DURABILITY SAPPHIRE PRISM

When a traditional refractometer is used in a high throughput application prism replacement becomes a regular task. 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.

LOWEST WHOLE OF LIFE COST

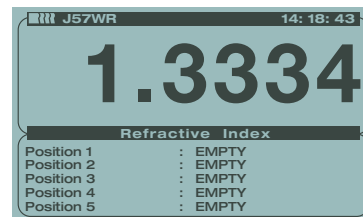
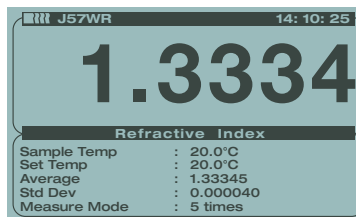
Users in high throughput chemical applications have traditionally used Abbe refractometers due to their low purchase price. Changes in relative prices between electronics and optics and the elimination of a water bath mean the J57WR now has a much lower whole of life cost than an Abbe refractometer.

CALIBRATION

The J57 offers digital 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.

USER CONFIGURABLE

Versatile instruments have advantages when applications change however this versatility can also lead to confusion with extra buttons and by forcing operators to interpret extra results that have no relevance. 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.



Options and Accessories

- NIST Traceable Calibration liquids
- Data capture software
- IQ/OQ/PQ Package
- Small volume sample well
- Acid resistant sample well and plate
- Different measurement wavelengths
- Printer
- Barcode reader

* For higher accuracy covering food applications see J57HA Technical Bulletin 915

Refractometer Specifications - J57WR

Measurement Scales:	Refractive Index (RI) Brix (% sucrose)
Measurement Range:	1.26 - 1.70 RI, 0 - 100 Brix
Reproducibility and Accuracy:	±0.0001 RI, ±0.1 Brix
Control Temperature:	20°C and 25°C
Ambient Temperature Limit:	10°C to 40°C
Sample Temperature Limit:	- 20°C to +250°C
Temperature Correction Range:	18 - 95°C (for pure sucrose)
Wavelength:	589.3nm (other wavelengths available)
Light Source:	Light Emitting Diode (exp life> 1,000,000 measurements)

Calibration:	1,2 or 10 point
Communication Interface:	2 x R232 port, 1 x Parallel port, (USB adaptor available)
Operating Dimensions (LxWxH):	16"/40cm x 14"/35cm x 6"/15cm
Operating Weight:	13.6lbs/7kg
Shipping Dimensions (LxWxH):	26"/66cm x 21"/54cm x 16"/40cm
Shipping Weight:	30lbs /14kg
Power Requirements:	100 - 240V/ 50 - 60Hz