Laboratory Flexibility with Industrial Strength and Simplicity

The J157 Series of Automatic Refractometers

20 YEAR Service Guarantee

ISO 9001:2008 CERTIFIED FOR CALIBRATION

NVLAP® CALIBRATION
NVLAP LAB CODE: 200898-0
Accreditation to ISO/IEC 17025:2005
www.rudolphresearch.com/resources/quality

ilac-MRA

Rudolph Research Analytical serving its customers with Integrity, Quality, and Innovation for over fifty years.

The Rudolph Advantage

The New J157 Series of Automatic Refractometers from Rudolph Research Analytical bring together exclusive features that provide unmatched performance to improve your process.

Sample Quality

The J157Plus with **Smart Measure™** checks the quality of the measurement and can provide feedback on correct sample loading and cleaning.

TempTrol™

Exclusive Dual Temperature Control System with cooling and heating above and below the sample allows the J157-CC models unparalleled temperature stability and range: ±0.01°C from 10°C- 50°C or select the Plus Option for Temperature Control for 10°C- 90°C.

Flat Easy To Clean Prism

The flat easy to clean prism is a Rudolph trademark. Sticky, difficult to clean or acidic samples are no problem with Rudolph's optional Hastelloy sample dish.

Improve your Process with Trend Analysis™

Trend Analysis™ allows you to save a measurement into a method history to track long term stability of your unique methods.

Calibration Reference Materials

CRM's are available at various RI indexes and temperatures. Contact a customer service representative for assistance in choosing a calibration standard that is right for your application. We can also include a range of 5 NIST tracable CRMs at time of purchase.

Insulating Ring

When Rudolph's Exclusive TempTrol™ cover with insulated ring is closed it creates a protected micro environment with temperature control from below and above the sample.

Choose 5 Decimal Place Accuracy with the J157HA or choose an expanded RI Range with the J157WR:

The J157HA offers ±0.00002 RI Accuracy over the food and beverage RI Range of 1.33-1.53/ 0-95 BRIX while the J157WR offers ±0.0001 accuracy over the chemical Range of 1.29-1.63.

## Embedded Windows 7™ Operating System for Complete Communication Flexibility

Direct connection to LIMS or Server, save data in PDF or Excel. No PC needed. No other brand offers the flexibility of an Embedded Windows 7 Operating System.

Interface Flexibility

Three Displays Allow For Three Interface Solutions

Rudolph allows the lab manager to select from different display options because we understand laboratories and manufacturing floors have different needs when it comes to the information required for monitoring a process. Your instrument's interface can be customized to meet the information your application and environment demand whether you choose our full featured interface or our Load-and-Go™ display interface. The J157 Series offer laboratory flexibility with industrial strength and simplicity making this model series at home on the laboratory bench or on the factory floor.
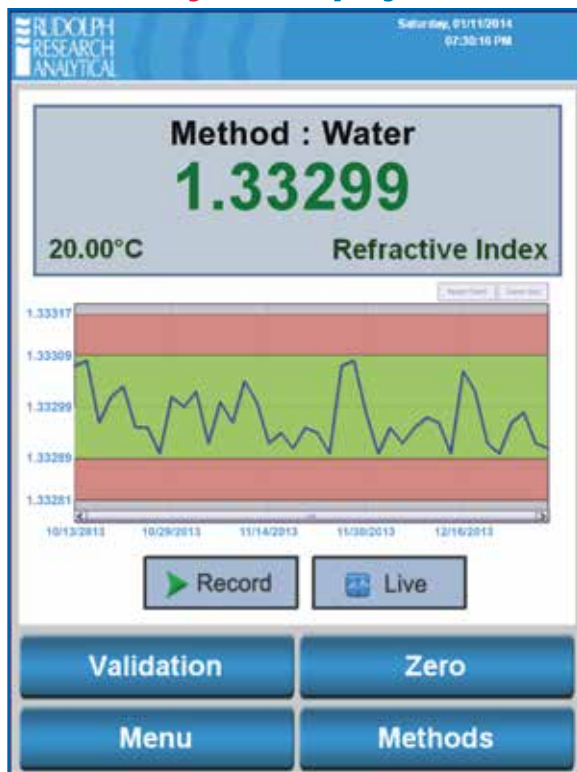
Full Display with Smart Measure™
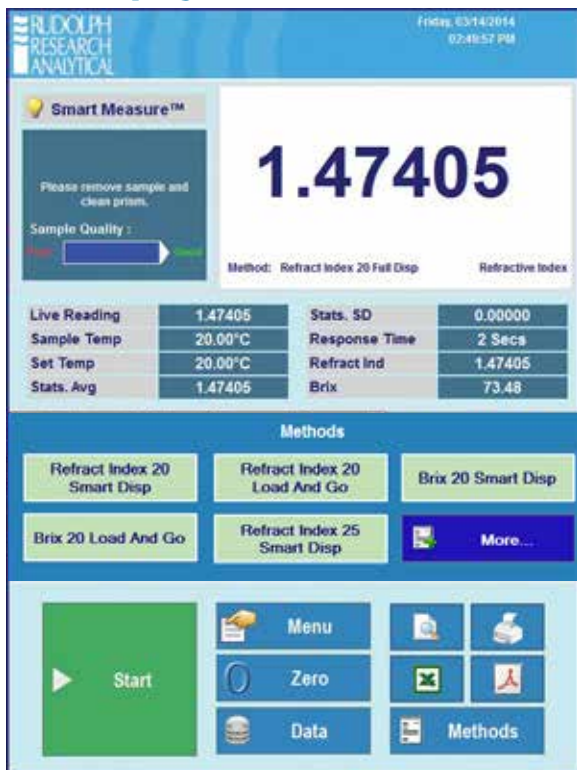
Load - and - Go™ Display
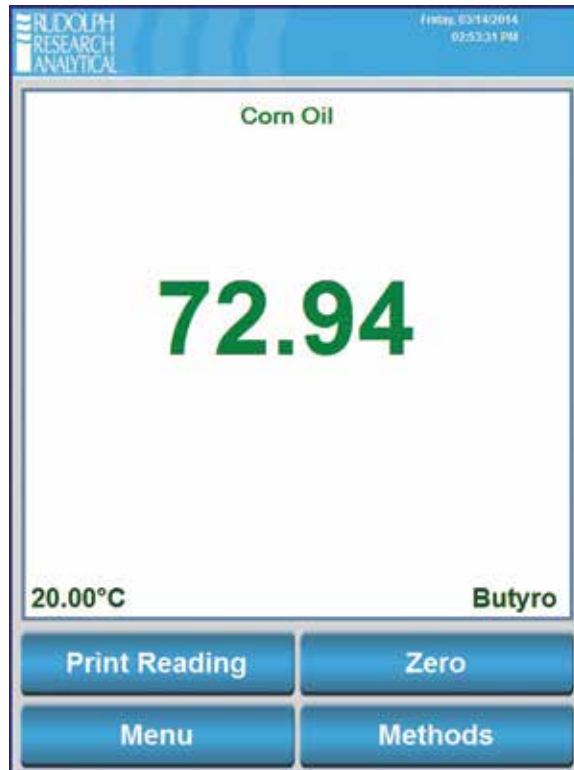
Trend Analysis™ Display

In a modern factory, the most precious commodity is time. When a process starts to move outside its limits people want to know FAST. They want to correct the problem, preferably while it's still small and before a product goes out of specification.

The Rudolph live reading and **Trend Analysis™** feature allows users to easily and quickly see how a process is going and catch minor deviations before they become major ones.

Even in the most tightly controlled manufacturing environments, things do occasionally go out of specification. When an out of specification condition happens, material has to be quickly identified and decisions made as to what to do with the product. Long term data collection is a part of any good process. Knowing when and where the out of specification condition happened is equally as important. Rudolph Trend Analysis™ software quickly shows a supervisor the process history and where the problem occurred.

Exclusive TempTrol™
Dual Temperature Control System

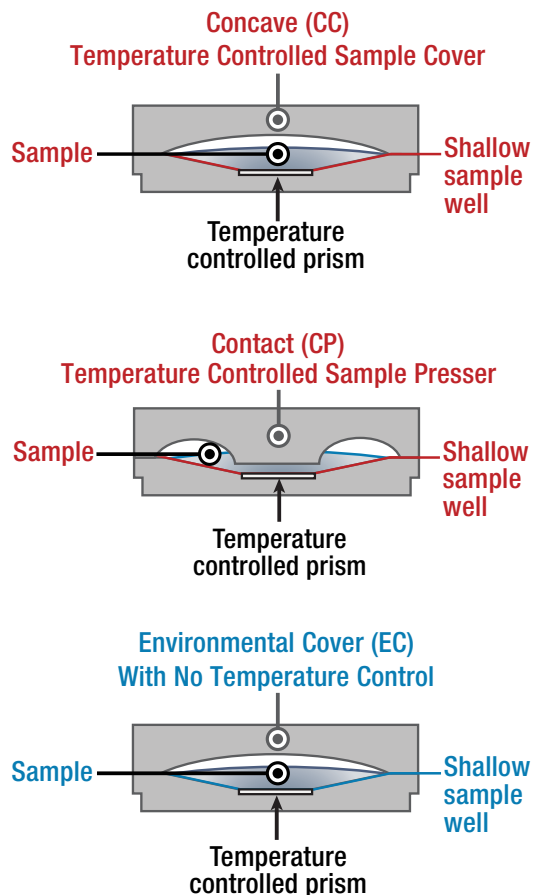### Temperature Controlled Concave (CC) Sample Covers and Pressers

Rudolph Research Analytical's J157 is able to control temperature quickly and accurately because it has a unique dual temperature control system where heating or cooling is applied to both sides of the sample.

The **(CC) Concave 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.

Optional Contact Presser (CP Presser)

The J157 Series are available with an optional Temperature Controlled Sample Presser that touches the sample. Compared with the standard temperature controlled cover, the optional **(CP) Contact 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 such as PET and Glycerine.

(EC) Environmental Cover is great for applications where a micro environment is needed but samples are measured near room temperature where heating and cooling from above the sample may not be needed.

Concave (CC)
Temperature Controlled Sample Cover

Sample — Shallow sample well
Temperature controlled prism

Contact (CP)
Temperature Controlled Sample Presser

Sample — Shallow sample well
Temperature controlled prism

Environmental Cover (EC)
With No Temperature Control

Sample — Shallow sample well
Temperature controlled prism

Sugar Milling, Refining, Processing

Pour Through Solutions

Pour through refractometers are designed for measuring cane or beet juice in a sugar mill. This design has two important benefits: cleaning becomes part of the sample loading process and measurement time is reduced because one sample is poured in after another making the design attractive for seasonal operators. The small funnel design forces improved sample flushing by increasing the number of sample pours for the same amount of sample.

- Cane sugar milling and refining
- Beet sugar milling and refining
- Invert sugar
- Liquid sugar
- Confectionery sugar
- Molasses
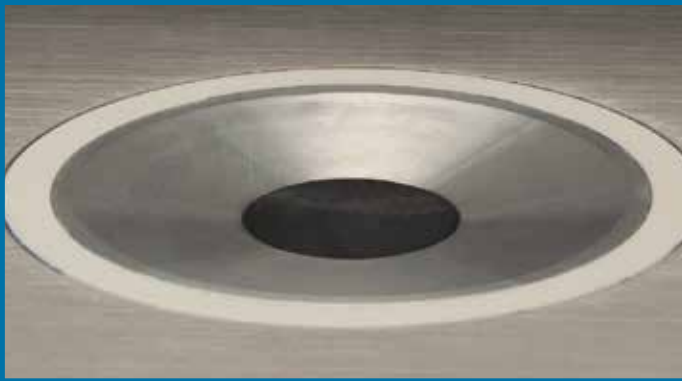- Brown sugar
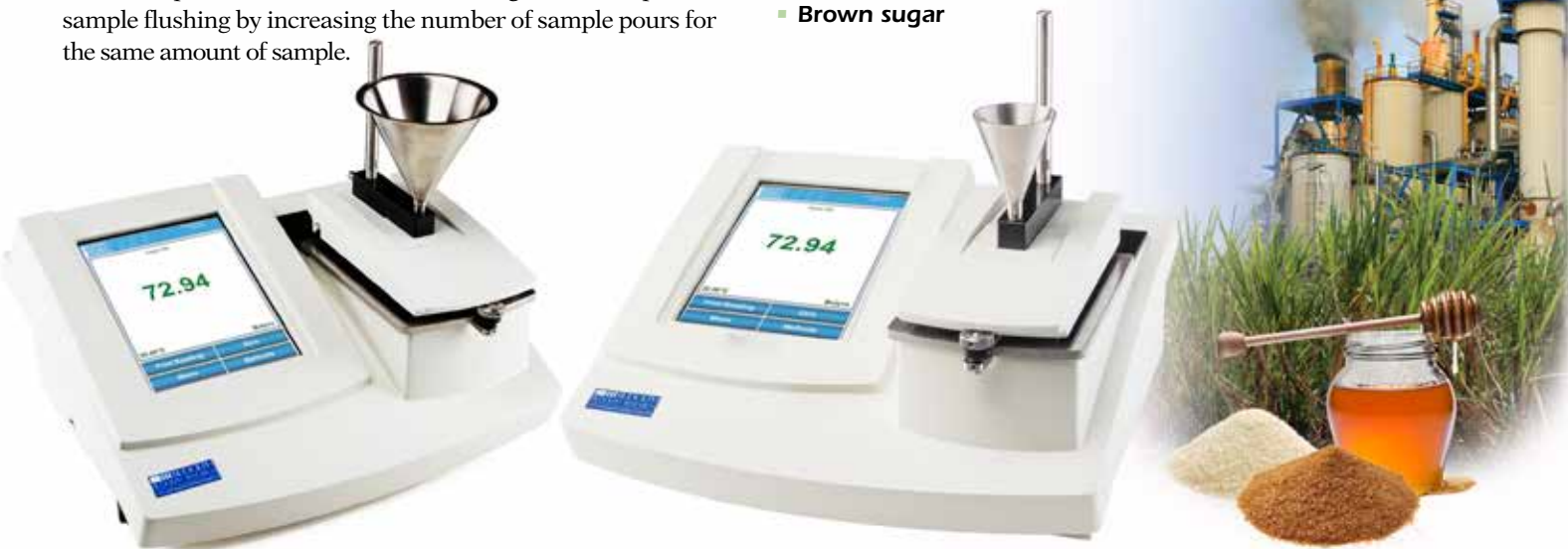
Measurement Surface

Ultra Hard Sapphire Prism

Some manufacturers use glass or YAG (Yttrium-Aluminum-Garnet) prisms. These prisms are softer than synthetic sapphire and have slower temperature transfer coefficients.

Don't worry, you can clean the Rudolph prism with regular paper towels, no special cleaning paper is required.

Ultra Flat Prism

Easy to clean prism – No matter how good the refractometer is, the results will only be right if the prism is clean. **Rudolph's flat prism sample well interface design makes cleaning easy,** even with sticky syrups. The flat low profile sample well with a sample volume of less than 1ml is easily cleaned by wiping with a common paper towel. A single cleaning surface with a **scratch-proof synthetic sapphire prism** makes the J157 a popular choice for high throughput laboratories.
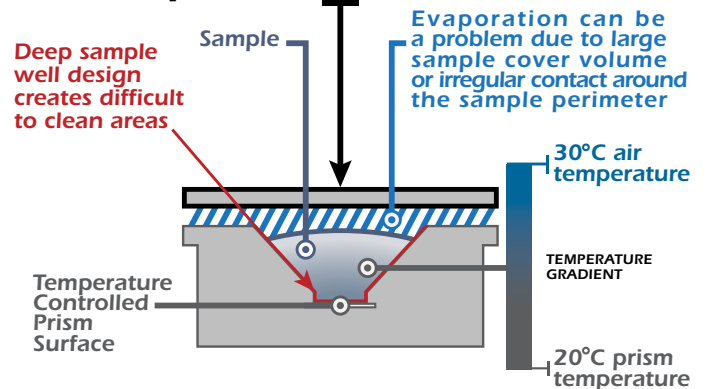
Standard Prism
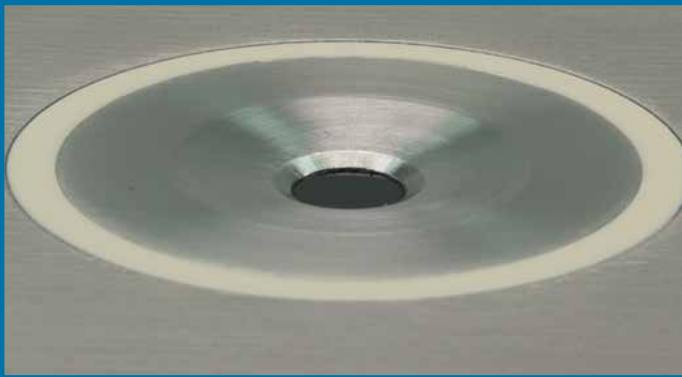
The flat open sample area has no corners to trap even sticky materials and is resistant to almost all solvents including Acetone, Toluene and similar organics. Choose the Hastelloy option for HFl and HCl acids.

Other manufacturers compromise

From the pictures below one can see that **other manufacturers have to make a compromise with the depth and angle of the sample well.** Since these manufacturers use one sample well and cover design for all temperature applications, they end up with a **sample well that is too narrow and deep. The deep sample well makes cleaning needlessly hard** at ambient temperature while failing to provide ideal temperature control when the sample and air temperature are more than 10°C from the desired measurement temperature.

Other Brands have Covers Without a Temperature Control Function

Deep sample well design creates difficult to clean areas

Sample

Evaporation can be a problem due to large sample cover volume or irregular contact around the sample perimeter

30°C air temperature

TEMPERATURE GRADIENT

Temperature Controlled Prism Surface

20°C prism temperature

Competitor 1:
Deep Sample well with prism only temperature control

Competitor 2:
Difficult to clean prism sample well interface

Specifications

Market Focus	Food and Beverage Related Industries		Chemical Related Industries	
Instrument Model	**J157HA**	**J157HA Plus**	**J157WR**	**J157WR Plus**
Measurement Range	RI 1.32-1.53 Brix 0-100 Urine SG 1.000-1.0400	RI 1.32-1.53 Brix 0-100 Urine SG 1.000-1.0400	RI 1.29-1.66 Brix 0-100 Urine SG 1.000-1.0400	RI 1.29-1.66 Brix 0-100 Urine SG 1.000-1.0400
Accuracy	±0.00002 RI ±0.01 Brix	±0.00002 RI ±0.01 Brix	±0.0001 RI ±0.1 Brix	±0.0001 RI ±0.1 Brix
Reproducibility	±0.00002 RI ±0.01 Brix	±0.00002 RI ±0.01 Brix	±0.0001 RI ±0.1 Brix	±0.0001 RI ±0.1 Brix
Resolution	±0.00001 RI ±0.01 Brix	±0.00001 RI ±0.01 Brix	±0.0001 RI ±0.1 Brix	±0.0001 RI ±0.1 Brix
Sample Dish	Easy Clean Ultra Flat Prism	Easy Clean Ultra Flat Prism	Standard Sample Dish	Standard Sample Dish
Temperature Control Range (°C) (within 10°C of ambient)	10°C to 65°C	10°C to 85°C	10°C to 65°C	10°C to 85°C
CC Cover	Not Available	Standard	Not Available	Standard
EP Cover	Standard	Optional	Standard	Optional
CP Presser	Not Available	Optional	Not Available	Optional
PTW Presser	Optional	Optional	Not Available	Optional
Smart Measure™	Not Available	Standard	Not Available	Standard
Validation	Not Available	Standard	Not Available	Standard
Trend Analysis	Not Available	Standard	Not Available	Standard
Measurement Scales	Refractive Index (nD), Brix (% Sucrose), Urine SG and up to 1000 custom programmed scales			
User Interface / Display	8" color Touchscreen Display, 800dpi x 600dpi pixel resolution with 400 nits of brightness			
21CFR Part 11	Available in models J257, J357, and J457			
Operating System	Embedded Windows 7			
Method Creation	Standard			
Temperature control reproducibility	±0.002°			
Ambient temperature limit	5°C to 40°C			
Temperature correction range	4°C to 95°C (for sucrose solutions)			
Sample temperature limit	-20°C to 250°C			
Optical wavelength	589.3nm (NaD line)			
Measurement Response time	User configurable, can be less than 3 seconds			
Calibration	Using water or NIST traceable fluids. Factory default calibration can always be reset.			
Prism	Synthetic Sapphire			
Light Source	Light emitting diode (Estimated life 100,000 hours)			
Acid resistanc	Hastelloy™ measurement surface (optional)			
Data storage/internal memory	32 GB Non-removable Compact Flash			
Communication interface	3 USB, RS232 and Cat5 Network (Ethernet)			
Operating dimensions/weight	L: 17 1/4 inches W: 12 inches H: 13 inches / 23 lbs. L: 43.5 cm W: 30.5 cm H: 33 cm /10.4 kg			
Shipping dimensions/weight	L: 27 inches W: 21inches H:17 inches /30 lbs. gross weight L: 68.58cm W: 52 cm H: 43.18 cm /13.6 kg			
Power requirements	100 - 240 volts, 50 Hz - 60 Hz			

The J157 small format, impact, strip printer for production applications

Strip Impact Printers have the following advantages:

- Small footprints
- Designed for rough industrial environments
- Do not use thermal paper
- Industrial product with long model life, so that the printer is often available for many years