

Rice Quality Analyzer



Model RN300



Tomorrow's Testing, Today !
1-800-438-5388

Rice Quality Analyzer

Standardized Rice Grain Analysis

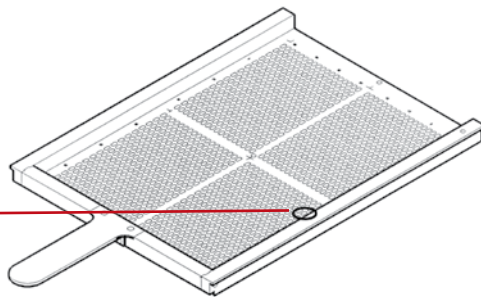
The RN300 gives you the ability to standardize rice grading, ensuring consistent acceptance/rejection criteria and helping you optimize yields, vendor payment, and processing parameters. By providing measurements in both a numeric and optical fashion, assessment is both quantitative and qualitative, all in 24 seconds! When used in conjunction with our RN series of rice composition analyzers, your lab has a full assessment of rice quality.

Almost 60 Years of Development

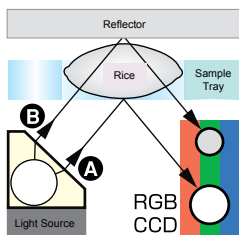
The RN300 is the latest rice grading analyzer developed by Kett - the worldwide leader in rice testing and assessment. Developed in conjunction with Japan's research and development project for inspection instruments, the RN300 is approved by the Mizuho Food Inspection Association for Uruchi (Japonica) brown rice.

Operation Overview

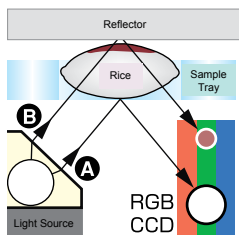
Rice grains are placed into a measurement tray (1148 grains per tray). Each hole in the tray has an address. The tray is then placed in the scanner and light transmitted and reflected off of each grain. The RGB signal from each sample is then collected and stored in a sample file within our "Quality Scan" software. Sample data is then compared with standard settings (or your customized grading scale) and each rice grain analyzed. Sample quality is summarized and data are shown on the computer screen - both numerically and optically - in only 24 seconds. Grains are numbered by row and column as well as color-coded for quick, simple problem identification and verification. An automatic grain line former, the TZ700 is available as an option for even faster, more efficient sample processing.



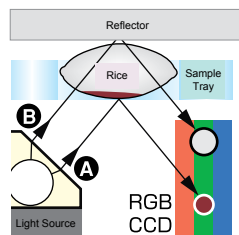
One-to-one correlation between the sample and the graphical data file



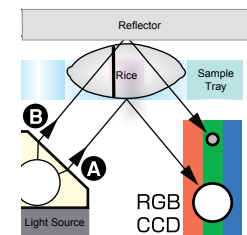
Even Grain
Light (A) reflects on the grain surface back to the RGB sensor. Light (B) transmits back through the grain, off the reflector and back to the sensor.



Discolored Grain (top side)
Light (B) transmits through the grain and is colored before reflecting back through the grain.



Discolored Grain (bottom side)
Light (A) reflects on the colored grain surface.



Cracked Grain
Light (B) is diffused and absorbed while passing through the crack in the grain.

Data Analysis

Quality Scan automatically saves the measurement data, along with date, time and sample number into Excel. Using this common file structure allows you to interchange data with suppliers and customers to optimize your supply chain. In addition, you can easily retain measurement data for simple trend analysis or operational reviews desired by anyone on your staff. When used with our AN series of rice composition analyzers, data sets from both instruments may be combined to centralize your measurement storehouse.

Consistent with Human Evaluation

One of the primary design goals for the RN300 is to replicate the rice grading procedure a human would do during manual inspection. This is achieved by using an optical system that measures both reflectance and transmittance values. Kett's technical design expertise and the ability to see both a numeric grade as well as the video picture of each grain, all in a highly integrated hardware/software solution allows you to accurately compare the results with personal grading standards.

Precision and Accuracy - Yet Simple to Use

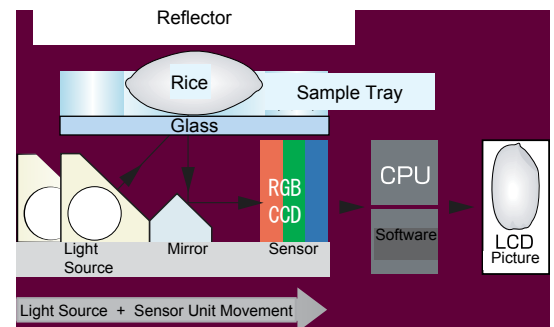
The RN300 has been designed to provide consistent results and minimal maintenance - year, after year, after year. To ensure these goals are obtained, numerous design features have been included.

Sealed Optical Sensor

The optical sensor is completely separated from the sample and enclosed in glass. This protects the sensor from contaminants that would affect measurements.

Limited Sensor Travel

Since the optical unit scans the sample to receive the RGB output, reducing sensor movement minimizes vibration to optimize picture clarity.



Simple and Rapid Sample Handling

When production needs answers quickly, the sample handling design of the RN300 meets the challenge.

With two sample trays, one can be loaded with grain while the other tray is being automatically scanned and measured. An automatic grain line former, the TZ700 is available as an option for even faster, more efficient sample processing.

Grading and Analysis

Sample Grading

Both brown rice and polished (white) rice calibrations are included with the RN300.

Brown Rice Grading

Brown rice may be assessed in Approval mode or General mode. Approval mode classifies the grain in three criteria, Even (Integral), Cracked, and Other in accordance with the criteria approved by the Japan Food Inspection Association. General mode can more finely classify the grain, using up to 6 criteria in Standard and 21 different categories in Fine.

Polished Rice Grading

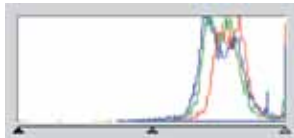
The Japan Polished Rice Industrial Association and Kett coordinated efforts to develop sorting criteria for the RN300. Basic mode provides 4 criteria, 6 criteria are utilized in Standard Mode and 17 criteria in Fine. In addition, the remaining amount of germ can be displayed with each grain.

Picture Analysis

The shape and color evaluation of each grain is generated by the detected RGB signal. Size, length, width and proportion of each grain is calculated. When compared with pixel data, grain discoloration and partial discoloration are readily assessed. In addition, the color distribution pattern allows for recognition of Even, Immature, and Damaged grains. Changes in color concentration allow the RN300 to recognize Cracked, Scraped, Germinated and Unpolished as well as other programmed assessment criteria.



Picture Image Processing



RGB Signal Processing Distribution

Six Standard Sorting Classifications

Brown Rice



Polished Rice



Simple Measurement

The Quality Scan software automatically starts when the RN300 is powered on. The user-friendly graphical interface ensures easy operation. Just click the "Measurement" button for normal use and then select the functions you want to use with the "Select" button.

Kett Quality Scan Software Screens



Start Screen

Select Approval Mode or General Mode as well as Brown Rice or Polished Rice



Thumbnail Screen

Grain pictures are displayed on the left and numeric data on the right. Numeric data includes location number, quality, typification rate, length, width and projected size of the grains. Results may be sorted as desired.



Inspection Results - General Mode

A histogram of shape analysis is displayed in the left corner. On the right, the number of grains in each classification category, and overall mass percentage in each category are shown. The display may be toggled between Basic, Standard and Fine sorting.



Inspection Results - Approval Mode

A histogram of shape analysis is displayed in the left corner. On the right, the number of grains in the three classification categories, and overall mass percentage in each category are shown.

RN300 Rice Quality Analyzer

Simple, yet Complete Grain Sorting Analysis.

Replace your manual inspection stations and the time consuming analysis needed by your QA team with a more automated solution. Also tests are now standardized as the computer analysis does the work, eliminating the variation always inherent in manual analyses. At the same time, the RN300 is so easy to use that limited training is required for fast, accurate and complete utilization by your staff.

Printer Output and Options

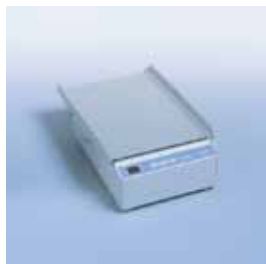
Numeric data is available with the thermal printer. Numeric data and/or color pictures of each rice grain may be printed when used with an optional color printer. The RN300 includes a carrying case for the instrument, laptop and thermal printer. In addition, the optional TZ700 grain sorter speeds sample placement and the optional communications cabling for integration with the AN composition analyzers integrates the rice evaluation system into one compact package.



On-Screen displays of the print menu



RN300 - In Use



TZ700 Grain Sorter - Optional



AN900 Rice Composition Analyzer

Designed for Years of Stable Use

As previously described, the RN300 is built for years of accurate, reliable use. Kett stands behind the RN300 systems with a full **One-Year** manufacturer's warranty on parts and labor. Kett's dependability and reliability allow you to productively focus on improving your product's quality and not waste time calibrating and verifying our gauges. Kett is recognized as the worldwide leader in rice measurement instrumentation. With almost 60 years of design and manufacturing excellence, the RN300, like all Kett instruments, is the standard by which others are judged.

Tomorrow's Testing, Today!

In addition to the RN300, Kett manufactures over 200 instruments. Available for portable handheld, laboratory desktop or online process applications, if you have a measurement requirement, we offer solutions...today! If you need to measure, and grade rice - - accurately, quickly, and simply, wish to place an order, or require additional guidance on model selection, please call Kett toll-free!

Specifications

RN300	
Measurement Principle	Video Picture Analysis
Grains Measured	Brown and Polished (white)
Grains per Test	Up to 1148
Test Time	24 seconds/sample
Sorting Modes and Categories	Basic - Even/Cracked/Other Standard - Even/Cracked/Other/Immature/Dead/Discolored Fine - 21 Categories
Polished Rice	Standard - Normal/Crushed/Discolored/Other/Powdered/Damaged Fine - 17 Categories Cracked Grains Remaining Germ
Display	Inspection - Number of Grains/Composition %/Mass % by category Picture - Color Display/Grain ID Numeric Data - Quality/% per Category/Length/Width/Projected Area per Grain
Ambient Temperature	0-35°C
Ambient Humidity	0-80% RH (non-condensing)
Power Source	100-120VAC, 100VA consumption
Communications	USB
Options	Integration with AN900, TZ700 Grain Sorter
Weight (kg) (Net/Shipment)	12/18
Dimensions (mm)	840Wx115Hx580(D)
Warranty	One Year - Parts and Labor Maintenance Agreements available

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