-Digital 'Pocket' Refractometer-

Improved Repeatability with ModeS™ Technology

Pocket PAL-S

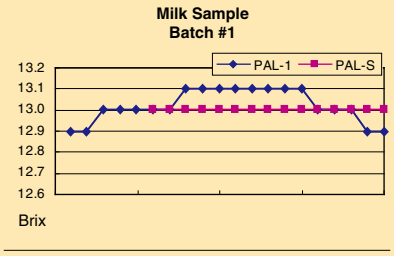
Cat.No.3860

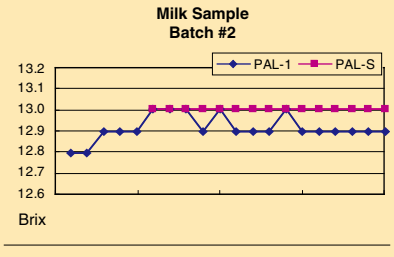
Let's try ModeS™

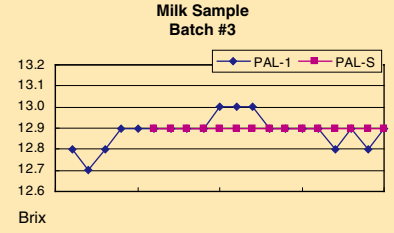
Mode S™ is the solution to fluctuating measurement values.*1 Get consistent results every time!

Comparison with conventional model (PAL-1)

ModeS™ improves repeatability of samples that cause inconsistent readings.







Test method : 3 batches of a milk sample were measured multiple times to test the repeatability.

Test results with PAL-1

Batch	#1	#2	#3	Overall
Average	13.0	12.9	12.9	12.9
Maximum	13.1	13.0	13.0	13.1
Minimum	12.9	12.8	12.7	12.7
Range	0.2	0.2	0.3	0.4
Standard deviation	0.07	0.08	0.08	0.10

Test results with PAL-S

Batch	#1	#2	#3	Overall
Average	13.0	13.0	12.9	13.0
Maximum	13.0	13.0	12.9	13.0
Minimum	13.0	13.0	12.9	12.9
Range	0.0	0.0	0.0	0.1
Standard deviation	0.00	0.00	0.00	0.05

Overall Results

	PAL-1	PAL-S
Average	12.9	13.0
Maximum	13.1	13.0
Minimum	12.7	12.9
Range	0.4	0.1
Standard deviation	0.10	0.05

- Conclusions -

The overall average of both units were close – 12.9 with PAL-1 and 13.0 with PAL-S.
The range of measurement values was smaller with PAL-S than PAL-1 – 0.4 with PAL-1 and 0.1 with PAL-S.
The standard deviation of PAL-S was half of that of PAL-1.

Sample examples

Ideal for fatty, dark, and/or emulsion samples, such as dairy products.


Chocolate


Ketchup


Yogurt


Caramel


Syrup


Ice cream


Mayonnaise


Blueberry jam


Condensed milk


Cutting oil

Milk


Soymilk

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*1 : Stable readings may not be obtained with some samples due to components.

How to Measure

Place a sample on the prism.

Put the provided MAGIC™ on top.

Press the START key.

The PAL takes multiple measurements for 5 to 15 seconds.
The time it takes to achieve stability varies by sample type.

Continuous measurement for 60 seconds

MAGIC™ (included)

This adaptor is used for a hot sample to cool it down quickly and to minimize its evaporation.

MAGIC™

Comments by our development team

It has been our mission to create a refractometer that would give good repeatability even with dark and fatty samples. In the process of developing the new algorithm to minimize fluctuations in measurement values, we conducted numerous tests with a wide variety of such samples, also taking the effects of temperature into consideration.
We are confident that the PAL-S will provide improved repeatability of samples whose measurement values may have been inconsistent with other conventional refractometers.

ModeS™ - now within your reach -

Are you tired of staring at the blurry boundary line and having to guess what the reading should be? Are you wasting time and labor on recording multiple readings and calculating the average? Try the Mode S™! The PAL-S is the first hand-held model to be equipped with this exclusive feature. The PAL-S analyzes the measurement stability internally and displays consistent readings digitally.
ATAGO will continue to devote ourselves in research and development to meet the ever-changing demands of our customers.

PAL-S Cat.No.3860

Measurement range	Brix 0.0 to 93.0% (Automatic Temperature Compensation) Temperature 9.0 to 99.9℃
Resolution	Brix 0.1% Temperature 0.1℃
Measurement accuracy	Brix±0.2% Temperature±1℃
Measurement temperature	10 to 100℃
Ambient temperature	10 to 40℃
Sample	At least 0.3mℓ
Measurement time	60 seconds of continuous measurement after 5 to 15 seconds of analysis
Power supply	2 x AAA alkaline batteries
Battery life	Approximately 1,500 measurements (60 seconds of continuous measurement after 5 to 15 seconds of analysis)
International Protection class	IP65 Water Resistant
Dimensions and weight	55 (W) ×31 (D) ×109 (H) mm, 100g (main unit only)

Other models with ModeS™

Mode S™ is available on the RX-i series and selected models of the RX-α.

RX-5000 i

RX-5000 α

All ATAGO refractometers are designed and manufactured in Japan.

HACCP GMP GLP ATAGO products comply with HACCP, GMP, and GLP system standards.

ATAGO CO.,LTD.

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※Specifications and appearance are subject to change without notice.