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TECHNOLOGY GROUP

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We buy your excess, underutilized, and idle equipment
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Custom engineering
so your equipment works exactly as you specify.

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Expert team | Trust guarantee | 100% satisfaction

All trademarks, brand names, and brands appearing herein are the property of their respective owners.

Find the *Atago PAL-1* at our website: ***Click HERE***

Digital Hand-Held "Pocket" Refractometer PAL Special Scales

Select the scale for your application and sample. Please contact us for more details.

Over 80 scales available!



Soy milk, Bittern (Magnesium chloride)

Cat. No.	Model name	Scale
4427	PAL-27S	Soy milk (100℃)
4443	PAL-43S	Bittern (Magnesium chloride)

Cooking

Cat. No.	Model name	Scale
4496	PAL-96S	Chinese noodle soup (100℃)
		Baume of Kansui(Dual scale)
4508	PAL-Pâtissier	Brix / Baume(Dual scale) (100℃)
4498	PAL-98S	Condiment (100℃)

Fruit and Vegetable Growers

Cat. No.	Model name	Scale
3847 NEW	PAL-ORANGE	Brix
3848 NEW	PAL-TOMATO	Brix
3849	PAL-MAPLE	Brix

Honey

Cat. No.	Model name	Scale
4422	PAL-22S	Honey moisture

Salinity

Cat. No.	Model name	Scale
4403	PAL-03S	Sodium chloride (g/100g)
4506	PAL-106S	Sodium chloride (g/100ml)
4404	PAL-04S	Sodium chloride (S.G.)
4405	PAL-05S	Sodium chloride (Baume)

Sea water

Cat. No.	Model name	Scale
4406	PAL-06S	Seawater (Concentration)
4407	PAL-07S	Seawater (S.G.)
4408	PAL-08S	Seawater (Baume)

Food additives, Ingredients

Cat. No.	Model name	Scale
4429	PAL-29S	Citric acid
4430	PAL-30S	Acetic acid
4432	PAL-32S	Phosphoric acid
4464	PAL-64S	Sodium bicarbonate
4465	PAL-65S	Sodium tartrate
4470	PAL-70S	Potassium phosphate

Sugars

Cat. No.	Model name	Scale
4412	PAL-12S	Dextran
4414	PAL-14S	Fructose
4415	PAL-15S	Glucose
4416	PAL-16S	High Fructose Corn Syrup HFCS-42
4417	PAL-17S	High Fructose Corn Syrup HFCS-55
4418	PAL-18S	Inverted suger
4419	PAL-19S	Lactose
4420	PAL-20S	Maltose

Alcohol liquid

Cat. No.	Model name	Scale
4434	PAL-34S	Ethyl alcohol
4436	PAL-36S	Methyl alcohol
4437	PAL-37S	Isopropyl alcohol
4485	PAL-85S	Polyvinyl alcohol

Pharmaceutical reagents

Cat. No.	Model name	Scale
4412	PAL-12S	Dextran
4413	PAL-13S	Creatine
4423	PAL-23S	Glycerin (Low concentration)
4424	PAL-24S	Glycerin (High concentration)
4425	PAL-25S	Inulin
4426	PAL-26S	Mannitol
4431	PAL-31S	Formic acid
4432	PAL-32S	Phosphoric acid
4451	PAL-51S	Sodium bromide
4455	PAL-55S	Magnesium sulfate
4464	PAL-64S	Sodium bicarbonate
4465	PAL-65S	Sodium tartrate
4466	PAL-66S	Potassium oxalate
4468	PAL-68S	Potassium dichromate
4470	PAL-70S	Potassium phosphate
4472	PAL-72S	Sodium tungstate

Wine

Cat. No.	Model name	Scale
4479	PAL-79S	T.A. 1990
4480	PAL-80S	T.A. 1971
4483	PAL-83S	KMW (or Babo)
4484	PAL-84S	Baume
4486	PAL-86S	Oe (Ger) / Brix(Dual scale)
4487	PAL-87S	Oe (Oechsle) / Brix(Dual scale)

Beer

Cat. No.	Model name	Scale
4590 NEW	PAL-Plato	Plato(Sweet wort)

Clinical inspection, Test

Cat. No.	Model name	Scale
4442	PAL-42S	Cesium chloride
4453	PAL-53S	Copper sulfate (Concentration)
4454	PAL-54S	Copper sulfate (S.G.)
4410	PAL-10S	Urine (S.G.)
4510 NEW	PAL-USG(DOG)	Dog Urine(S.G.)
4511 NEW	PAL-USG(CAT)	Cat Urine(S.G.)

Sterilization, Bleaching

Cat. No.	Model name	Scale
4439	PAL-39S	Hydrogen peroxide

Alkaline liquid

Cat. No.	Model name	Scale
4440	PAL-40S	Sodium hydroxide

Artificial leather, Fabric

Cat. No.	Model name	Scale
4438	PAL-38S	Dimethylformamide

Paste

Cat. No.	Model name	Scale
4421	PAL-21S	Dextrin

Snow-melting agent

Cat. No.	Model name	Scale
4403	PAL-03S	Snow-melting agent (Sodium chloride)
4441	PAL-41S	Snow-melting agent (Calcium chloride)
4443	PAL-43S	Snow-melting agent (Magnesium chloride)

Coolant (Double scale)

Cat. No.	Model name	Scale
4488	PAL-88S	Propylene glycol Freezing point of Propylene glycol (℃)
4489	PAL-89S	Propylene glycol Freezing point of Propylene glycol (℉)
4491	PAL-91S	Ethylene glycol Freezing point of Ethylene glycol (℃)
4492	PAL-92S	Ethylene glycol Freezing point of Ethylene glycol (℉)

Chemical products

Cat. No.	Model name	Scale
4423	PAL-23S	Glycerin (Low concentration)
4424	PAL-24S	Glycerin (High concentration)
4430	PAL-30S	Acetic acid
4431	PAL-31S	Formic acid
4432	PAL-32S	Phosphoric acid
4444	PAL-44S	Lithium chloride
4445	PAL-45S	Barium chloride
4446	PAL-46S	Cobalt chloride
4447	PAL-47S	Ferric chloride
4448	PAL-48S	Strontium chloride
4449	PAL-49S	Potassium chloride
4450	PAL-50S	Potassium bromide
4451	PAL-51S	Sodium bromide
4452	PAL-52S	Potassium iodide
4453	PAL-53S	Copper sulfate (Concentration)
4454	PAL-54S	Copper sulfate (S.G.)
4455	PAL-55S	Magnesium sulfate
4456	PAL-56S	Potassium sulfate
4457	PAL-57S	Nickel sulfate
4458	PAL-58S	Sodium nitrate
4459	PAL-59S	Zinc sulfate
4460	PAL-60S	Silver nitrate
4461	PAL-61S	Sodium nitrate
4462	PAL-62S	Potassium carbonate
4463	PAL-63S	Sodium carbonate
4464	PAL-64S	Sodium bicarbonate
4467	PAL-67S	Potassium chromate
4468	PAL-68S	Potassium dichromate
4469	PAL-69S	Sodium thiosulfate
4470	PAL-70S	Potassium phosphate
4471	PAL-71S	Sodium molybdate
4472	PAL-72S	Sodium tungstate

Automobile, Cutting oil

Cat. No.	Model name	Scale
4502	PAL-102S	Cutting oil
4518 NEW	PAL-Urea	Urea

EXPLANATION OF ICONS

- Compact and easy to carry / Portable / Leicht und einfach zu tragen / Calibrazione con liquidi standard esclusivi / Compacto y fácil de llevar / 輕巧易於攜帶
- Calibration with water / Calibration 1 point* sur eau distillée / Kalibrierung mit Wasser / Calibrazione con acqua / Calibración con agua / 用水歸零
- Battery operated / Alimentation par pile / Batteriebetrieben / Alimentazione a batteria / Funcionamiento con batería / 使用電池操作
- Digital display / Affichage numérique / Digital Anzeige / Display digitale / Pantalla digital / 數字顯示
- Automatic Temperature Compensation / Compensation automatique de température / Automatische Temperaturkompensation / Compensazione automatica della temperatura / Compensación de automática de temperatura / 自動溫度補償
- High temperature samples / Résistant à la chaleur / Hitzebestaendig / Resistente al calore / Muestras De Alta Temperatura / 高溫樣品用

All ATAGO refractometers are designed and manufactured in Japan.

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

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ISO9001 REGISTERED H.Q. & Factory

* Specifications and appearance are subject to change without notice.

V.07 11025000PP Printed in Japan

Digital Hand-Held
"Pocket" Refractometers

Pocket PAL series

PAL-1
Cat.No.3810
Brix 0.0 to 53.0%

PAL-α
Cat.No.3840
Brix 0.0 to 85.0% 65th Anniversary Model

PAL-2
Cat.No.3820
Brix 45.0 to 93.0%

PAL-BX/RI
Cat.No.3851
Brix 0.0 to 93.0% Refractive Index 1.3306 to 1.5284

PAL-3
Cat.No.3830
Brix 0.0 to 93.0%

PAL Special Scales

GOOD DESIGN AWARD 2004

Venture Technology Awards Excellence 2004

Technology for Food Industry Award 2005

Pocket-Palm-Perform

IP65 · External Light Interference ELI · High temperature sample · The sample stage:made of metal METAL Sample Stage · Sample size: 2-3 drops 2~3 Drops · Calibration with water only ZERO-set · Measuring time: 2-3 seconds 2~3 sec. · Automatic Temperature Compensation ATC

Patent for Design Registration No. ZL200310103015.2 (China)
Patent for Invention Registration No. ZL03303431.1 (China), 089244 (Taiwan)
Patent Granted in countries around the world.

ATAGO®

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Digital Hand-held "Pocket" Dual Scale Refractometer

PAL-BX/RI

Cat.No.3851



PAL-BX/RI has dual scales of Brix full range and Refractive Index!

Measurement Range
- Brix 0.0 to 93.0 %
- Refractive Index 1.3306 to 1.5284
- Temperature 10 to 100℃ (Brix), 5 to 45℃ (RI)

Resolution
- Brix 0.1 %
- Refractive Index 0.0001
- Temperature 0.1℃

Measurement Accuracy
- Brix ±0.1%
- Refractive Index ±0.0003(water at 20℃)
- Temperature ±1℃

A new ergonomic design for comfort and ease of use!

NEW Measurement temperature up to 100℃ **NEW Temperature display**

In pursuit of an "easy to use","easy to operate" and ergonomic architecture of new instruments, ATAGO has achieved a "palm-fitting" masterpiece as well as a unit that is high in hygienic properties. By reducing the number of unnecessary assembly parts, we have reduced the risks of a germ reproductive environment. Through our efforts to produce a hygienic instrument to be used in any industry, these units are designed to be completely washable. The new Pocket PAL series has been approved by the HACCP, and are equipped with the new ELI feature, which ensures accurate measurements - even outdoors. Requests from our customers worldwide are reflected in the development of the new PAL units.



Brix 0.0 to 53.0% | Brix 45.0 to 93.0% | Brix 0.0 to 93.0% | Brix 0.0 to 85.0%

Certification

In accordance with ISO Quality Management Systems, ATAGO can calibrate and certify your Digital Hand-Held "Pocket" Refractometer. The following documents will be issued (for a service fee):

1. **Calibration Certificate**
2. **Traceability System Diagram**
3. **Traceability Certificate**



Everyone is talking about the new "Pocket" as featured on recent TV programs and Magazines



The next generation of Digital Refractometers

Names and Functions of Components

The PAL can be operated with one hand. **Actual Size**



Sample Stage
The metal sample stage allows for the sample temperature to conform quickly and evenly to the prism temperature for accurate measurements.

Liquid Crystal Display (LCD)
Digital measurement values are large and easy to read.
Displays battery indicator and temperature.

START Key
Conveniently located for single hand operation.

Prism
Made of highly durable optical glass to prevent scratching.

ZERO Key
For Zero Setting, place water on the prism and press.

Strap Holder
Suitable for wrist straps or lanyards.

* External Light Interference (ELI) - Patent Pending
When intense light penetrates the prism of a digital refractometer, the light waves interfere with the sensor resulting in inaccurate readings. The PAL series is equipped with ELI technology, which will display the warning message "nnn" if the ambient light is too intense. If the warning message is displayed, simply turn away from the light source or shade the prism with your hand and press the START key again.



Convenient storage case

Main Features



* Always clean and shiny - can be cleaned under running water



* The innovative design makes it easy to pour out and remove a sample, but difficult to spill the sample.

* Revolutionary new ELI* feature
* Calibrate with water – no more standard solutions
* Light & Compact, 100g
* Automatic Temperature Compensation (ATC)
* Ergonomically designed for one-handed operation

Measurement Method



1 Apply 2-3 drops onto the prism surface.

2 Press the START key.

3 Brix(%) value and temperature displayed in 3 seconds!

Optional

Sucrose Solutions (for Brix confirmation)

Part No.	Part Name
RE-110010	10% Sucrose (±0.03%)
RE-110020	20% Sucrose (±0.03%)
RE-110030	30% Sucrose (±0.03%)
RE-110040	40% Sucrose (±0.04%)
RE-110050	50% Sucrose (±0.05%)
RE-110060	60% Sucrose (±0.05%)



Accessories –For easy carrying–

PAL-case RE-39409 **PAL-strap** RE-39410



Application

		PAL-1 Low & Intermediate Brix	PAL-2 High Brix	PAL-3 (PAL-α) Full Range
At fruit and vegetable farming orchards		○		○
At beverage factories...	fruit juices, coffee, soft drinks, etc.	○		○
	juice concentrates, etc.		○	○
At food factories...	soy sauce, various sauces, etc.	○		○
	syrups, jellies , etc.	○	○	○
	seasoning, soups	○		○
	jams, marmalade, honey, etc.		○	○
	condensed milk, etc.		○	○
At fruit and vegetable markets or supermarkets		○		○
At restaurants or food shops		○		○
In Junior High, High Schools, or Universities as a course material		○	○	○

The PAL series can measure high temperature samples during the heating or cooking process. (The measured Brix value will stabilize after taking a few repeated measurements.)

Specifications

Model	PAL-1	PAL-2	PAL-3	PAL-α
Cat. No.	3810	3820	3830	3840
Measurement Range	Brix 0.0 to 53.0%	Brix 45.0 to 93.0%	Brix 0.0 to 93.0%	Brix 0.0 to 85.0%
	Temperature 9.0 to 99.9℃			
Resolution	Brix 0.1% Temperature 0.1℃			
Accuracy	Brix ±0.2% *Brix ±0.1%		Brix ±0.1% *Brix ±0.1%	Brix ±0.2% *Brix ±0.1%
	Temperature ±1℃			
Measurement Temperature	10 to100℃ Automatic Temperature Compensation (Boiled samples over 100℃ can be measured under specific conditions.Please contact ATAGO for further details.)			
Ambient Temperature	10 to 40℃			
Power Supply	AAA alkaline battery ×2			
Battery Life	Approx.11,000 measurements (When using new alkaline batteries)			
International Protection Class	IP65 Water Resistant			
Dimensions and Weight	55(W)×31(D)×109(H)mm,100g (main unit only)			

*Repeatability

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Artisan Technology Group is an independent supplier of quality pre-owned equipment

Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

We buy equipment

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