

Digital Hand-held  
**'Pocket' Refractometer**

*Pocket* **PAL-1**

Cat.No.3810

**Pocket→Palm→Perform**







"The PAL-1 sets the stage for the world of re  
**Ergonomically engine**

Digital Hand-held  
**'Pocket' Refractometer**  
**PAL-1**



**The next generation of Digital Refractometers**

**Names and Functions of Components** **Actual Size**

The PAL-1 can be operated with one hand.

**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 displayed large and easy to read.

**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**

Conveniently sized to use your personally favorite strap.



Convenient storage case

**The Main Features**



\* Revolutionary NEW design : Easy to pour out and remove samples and difficult to spill the sample



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

\* Wide measurement range (Brix 0.0 to 53.0%) - can measure various samples.

\* Automatic Temperature Compensation

\* Automatically cancel the measurement and display an error message when an erratic measurement value is detected.





refractometry in the 21st century."

# Redesigned design for tire free use.

The PAL-1 is a completely new and redesigned digital hand-held instrument that will change the traditional conceptions of refractometers. The PAL-1's surprisingly compact size allows you to easily carry it around and use it indoors as well as outdoors. The size, design, function and performance will surprise you. The PAL-1 will expand your range of measuring possibilities.



## Application

- \*Outdoors at fruit and vegetable farming orchards
  - \*Indoors at beverage (fruits juice, coffee, soft drink, etc) and food (soy source, sauce, seasoning, soup, pickle, low concentration of jam, marmalade, jelly and syrup, etc) factories
- The PAL-1 can measure high temperature samples during the heating or cooking process.  
(The measured Brix value will stabilize after taking a few repeated measurements.)
- \*At fruit and vegetable markets or supermarkets
  - \*At restaurants or shops
  - \*At junior high, high schools, or universities as a course material

## Measurement Method



1

Apply 2-3 drops onto the prism surface.



2

Press the START key.



3

Brix(%) value displayed in 3 seconds!





## Specifications

Measurement Range	Brix 0.0~53.0%
Resolution	Brix 0.1%
Measurement Accuracy	Brix $\pm 0.2\%$
Measurement Temperature	10~60°C Automatic Temperature Compensation
Ambient Temperature	10~40°C
Power Supply	2 x AAA Batteries
International Protection Class	IP65
Dimensions and Weight	55(W)×31(D)×109(H)mm, 100g

## 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

CALIBRATION CERTIFICATE

Issue No. \_\_\_\_\_  
Date of Issue \_\_\_\_\_  
Serial No. \_\_\_\_\_

Product Name: Digital Hand-held Pocket Refractometer

Model: PAL-1

1. Appearance Inspection:  Satisfactory

2. Function Inspection:  Satisfactory

3. Performance Inspection:

	Distilled Water 0.0%	Reference Liquid 20.0%	Reference Liquid 50.0%
1st			
2nd			
3rd			
Average			
Error			

④ Measuring Accuracy:  $\pm 0.2\%$

4. Room Temperature and Humidity: \_\_\_\_\_ °C \_\_\_\_\_ %

5. Calibration Date: \_\_\_\_\_

6. Inspected by: *[Signature]*

7. Approved by: *[Signature]*

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Rev. 2-03

## ATAGO Hand-held Refractometer History

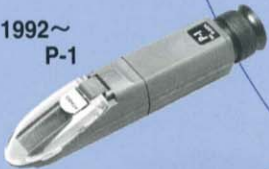
1952~  
HSR-1



1971~  
N-1



1992~  
P-1



1996~  
N-1E



2003~  
Pocket PAL-1



- \* 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
- \* Hitzebeständig
- \* Resistente al calore
- \* Muestras De Alta Temperatura
- \* 高溫樣品用

**CE HACCP G.M.P. G.L.P.** ATAGO products are acknowledged by HACCP, G.M.P. and G.L.P. systems.

**ATAGO CO., LTD.**

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