### @ATAGO POCKET REFRACTOMETER

# PAL Series





FOR FOOD

## The Original Pocket Refractometer.

NEW Measurement temperature up to 100°C NEW Temperature display

- Extremely water resistant (IP65)
- Revolutionary new ELI feature
- Calibration with water only
- Light & compact, 100g
- Automatic Temperature Compensation (ATC)
- Ergonomically designed for one-handed operation
- •2 carrying options: strap and case
- Hard plastic storage case
- Will float if accidentally dropped in water

• Can be washed under runnina water

displayed in 3 seconds!

### External Light interference (ELI) Patented

When intense light penetrates the prism of a digital refractometer, the light waves interfere with the sensor, which may lead to inaccurate measurements. To ensure accurate measurement results, the PAL is programmed with the ELI function which displays the [nnn] warning message when intense direct light is detected. Forming a habit of shading the sample stage with your hand and re-pressing the START key (when the warning message from the ELI function is displayed) will ensure accurate measurement results each time.





### **Optional Accessories**





ZERO Key





Strap Holder



Full Range & High Accuracy

The PAL-3 has been modified to have a high measure-

0.0 to 53.0 Brix

The PAL-1 works perfectly in measuring almost any

fruit juice, food, or drink, such as soup, sauce,

ketchup, tomato sauce, and low-sugar jam.

Improved Repeatability

The PAL-S improves repeatability of samples that

cause inconsistent readings. Ideal for fatty, dark,

and/or emulsion samples, such as dairy products.

Cat.No.3860 5

Standard accessory: MAGIC™

Measurement range Measurement accuracy

Measurement temperature

Reference

RES Resolution

PAL-3

ment accuracy at  $\pm 0.1\%$  Brix.

RNG: Brix 0.0 to 93.0%

ACC · Brix ±0.1% . ±1℃

TMP: 10 to 100°C (ATC)

RFS: Brix 0.1%, 0.1℃

RNG: Brix 0.0 to 53.0%

ACC: Brix ±0.2% . ±1℃

TMP: 10 to 100°C (ATC)

RES: Brix 0.1%, 0.1℃

RNG: Brix 0.0 to 93.0%

ACC: Brix ±0.2% . ±1℃

TMP: 10 to 100°C (ATC)

RES: Brix 0.1%, 0.1℃

PAL-S

PAL-1

### Wide Brix Range

PAL-α

Cat.No.3840 Brix



The PAL- $\alpha$  is a special model with a wide Brix range (0-85%) offered at a very reasonable price.

RNG: Brix 0.0 to 85.0% ACC: Brix ±0.2%, ±1℃ TMP: 10 to 100°C (ATC) RES: Brix 0.1% . 0.1℃



<Brix Scale>

**High Brix** 

PAL-2



The PAL-2 can measure various high concentration samples, such as jam, marmalade, jelly, honey, and concentrated juice.

RNG: Brix 45.0 to 93.0% ACC: Brix ±0.2% . ±1℃ TMP: 10 to 100°C (ATC) RES: Brix 0.1%, 0.1℃





## Continuous Measurement

PAL-LOOP

tional measuring method.





RNG: Brix 0.0 to 85.0% ACC: Brix ±0.2% . ±1°C TMP: 10 to 100°C (ATC) RES: Brix 0.1%, 0.1℃



## Common Specifications

Ambient temperature 10 to 40℃ 2×AAA Batteries Power supply International protection class IP65 Water resistant Dimensions and weight  $5.5 \times 3.1 \times 10.9$  cm. 100a

\* 10 to 100°C (Automatic Temperature Compensation) (Hot samples over 100°C can be measured under specified conditions.



Please contact ATAGO for further details.) \*\* Temperature display range is 9.0 to 99.9°C.

### @ATAGO POCKET REFRACTOMETER

### **Brix & Refractive Index**

PAL-BX/RI

Dual scales of Brix (0.0-93.0% full range,  $\pm 0.1\%$ accuracy) and Refractive Index (0.0001 nD resolu-

RNG: Brix (Bx) 0.0 to 93.0%

Refractive Index (RI) 1.3306 to 1.5284 ACC: Bx  $\pm 0.1\%$ ,  $\pm 1^{\circ}$ C RI  $\pm 0.0003$ ,  $\pm 1^{\circ}$ C

TMP: Bx 10 to 100°C (ATC) RI 5 to 45°C RES: Bx 0.1% , 0.1°C RI 0.0001 , 0.1°C



### Refractive Index

PAL-RI

Suitable for Refractive Index (0.0001 nD resolution) measurement. The Refractive Index and temperature of the sample will continuously scroll across the

RNG: 1.3306 to 1.5284 ACC: ±0.0003.±1℃ TMP: 5 to 45°C RES: 0.0001,0.1℃



### **Honey Moisture**

PAL-22S

Cat.No.4422



For measuring the % water content of honey easily and displays readings digitally. Comfortable, easy to use, light & compact.

RNG: 12.0 to 30.0% ACC: ±0.2%, ±1℃ TMP: 10 to 40°C (ATC) RES: 0.1%, 0.1℃



### Sodium Chloride (w/w)

PAL-03S

Cat.No.4403



For measuring the concentration of sodium chloride in water, Ideal for measuring de-icing fluids, brines, and other salt water.

RNG: 0.0 to 28.0% ACC: ±0.2%, ±1℃ TMP: 10 to 40°C (ATC) RES: 0.1%, 0.1℃



## Propylene Glycol (V/V)

PAL-88S/89S

Cat.No.4488.4489



Cat.No.4491,4492 For measuring the concentration of ethylene glycol

°F (92S).

#### PAL-88S

RNG: Co 0.0 to 90.0% Fr 0 to -50°C ACC: Co ±0.4% . ±1°C Fr ±1°C

TMP: 10 to 40°C (ATC)

°F (89S).

RES: Co 0.2%, 0.1℃ Fr 1℃

#### PAL-89S

RNG: Co 0.0 to 90.0% Fr 32 to -60° F ACC: Co  $\pm 0.4\%$ Fr ±1°F

TMP: 50 to 104° F (ATC)

Calibration solutions on Page 51

RES: Co 0.2%

Co = Concentration of Propylene glycol Fr = Freezing point of Propylene glycol



### Ethylene Glycol (V/V)

PAL-91S/92S



concentration and freezing point in °C (91S) or

#### PAL-91S

RNG: Co 0.0 to 90.0% Fr 0 to -50°C ACC: Co ±0.4% . ±1°C Fr ±1°C

TMP: 10 to 40°C (ATC)

RES: Co 0.2%, 0.1°C Fr 1°C PAL-92S

RNG: Co 0.0 to 90.0% Fr 32 to -60° F ACC: Co  $\pm 0.4\%$ Fr ±1°F

TMP: 50 to 104°F (ATC)

RES: Co 0.2% Fr 1°F

> Co = Concentration of Ethylene glyco Fr = Freezing point of Ethylene glycol



### Hydrogen Peroxide (w/w)

PAL-39S

For measuring the concentration of hydrogen peroxide (H2O2) commonly used as a disinfectant.

RNG: 0.0 to 50.0% ACC: ±0.6% . ±1℃ TMP: 10 to 35°C (ATC) RES: 0.2%, 0.1℃



### **Cutting Oil**

**PAL-102S** 

For measuring the concentration of cutting oils. Suitable for measuring the percent dilution of hydraulic oil and cleanina liquids.

RNG: 0.0 to 70.0 ACC: ±0.2, ±1℃ TMP: 10 to 75°C (ATC) RES: 0.1,0.1℃



<Special Scales>

#### Seawater

PAL-06S

Cat.No.4406

For measuring the salinity of seawater. The salinity is displayed in parts per mille(%). Essential for aqua-

RNG: 0 to 100% ACC: ±2‰, ±1℃ TMP: 10 to 40°C (ATC)

RES: 1‰.0.1℃

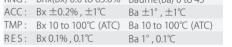


## **Brix & Baume**

PAL-Pâtissier Cat.No.4508

Dual scale of Brix and Baume. Ideal refractometer for pastry chefs. Wide range of 0.0-85.0% Brix.

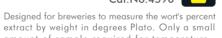
RNG: Brix(Bx) 0.0 to 85.0% Baume(Ba) 0 to 45° ACC: Bx  $\pm 0.2\%$ ,  $\pm 1^{\circ}$ C Ba  $\pm 1^{\circ}$ ,  $\pm 1^{\circ}$ C TMP: Bx 10 to 100°C (ATC) Ba 10 to 100°C (ATC)



## Plato

### PAL-Plato

Cat.No.4590



extract by weight in degrees Plato. Only a small amount of sample required for temperaturecompensated readings. Digital display - no more guessing where the line is.

RNG: 0.0 to 30.0°P ACC:  $\pm 0.2^{\circ}P$ ,  $\pm 1^{\circ}C$ TMP: 10 to 75°C (ATC) RES: 0.1°P,0.1℃



#### Reference

- 110	710101100
RNG	Measurement range
ACC	Measurement accuracy
ГМР	Measurement temperature
RES	Resolution

### Common Specifications

Ambient temperature	10 to 40°C	(PAL-39S 10 to 35°C)
	2×AAA Batteries	(1712333 10 10 33 C)
Power supply		
International protection class	IP65 Water resistant	
Dimensions and weight	5.5×3.1×10.9cm, 100g	





Calibration solutions on Page 51