



The Ultimate Hand-Held Refractometer Unsurpassed
in Function, Operation, and Design

MASTER



Design Registration No.000379326-0001, 000379326-0002 (EU)
ZL 2005 3 0116403.4.5 (China), D111526 (Taiwan), D555, 549 (U.S.A.),
1255763, 1255764, 1255765, 1255766, 1255767 (Japan)
Patent Granted in countries around the world.

About the Trade Mark:

Year 2005-ATAGO was established 65 years ago and we have been developing, manufacturing, and marketing Refractometers based on our in-depth study of optics. This year we have released our NEW Hand-Held Refractometer series, the "MASTER" to support and meet our customer's needs. The NEW "MASTER" series is a fitting name to match its ultimate performance. The trade mark, "光" is the Japanese Kanji which means "light". The decision to use this Kanji as a trade mark for the MASTER series is to emphasize that this product was designed and manufactured in Japan. With the multitude of imitation products out in the market today, ATAGO is maintaining our identity as the master of manufacturing quality instruments. We, ATAGO, would like to be your business partner and to be the "light" to continue towards a bright future together.



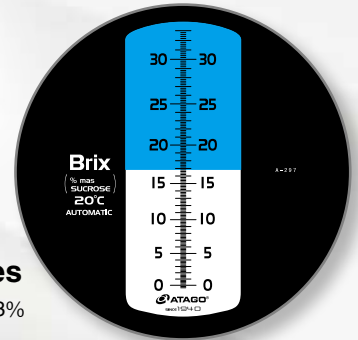
Hand-held Refractometer

MASTER series

Choose the right model for your sample, based on the features and materials of the instrument.



Brix scale examples
MASTER-α Brix 0~33%



Features 6 types

Both the α and T types are equipped with the Automatic Temperature Compensation feature. Choose the α type for the added feature of IP 65 water-resistance. The H type is the heat-resistant version of the α type.

Series / Model	α	T	M	H	NEW 53S	NEW 500
Water resistant	●	—	—	●	●	●
Automatic temperature compensation	●	●	—	●	●	—
Heat resistant	—	—	—	●	—	●
Milky sample	—	—	—	—	●	—

MASTER-53S for Milky sample

Opaque, inhomogeneous liquids can be difficult to get a clear boundary line with a conventional refractometer. This model is recommended for cream-based sauces, yogurt, mayonnaise, and various emulsions used in industrial processing.

NEW



Milk



Mayonnaise



Yogurt



Mold release agent



MASTER-500

0-90% Wide Brix Range

NEW



Reasons to choose the MASTER

1 Water Resistant

$\alpha \cdot H$



The concept of a washable hand-held analog unit is exceptional. After measuring, the instrument can be cleaned with running water under a faucet. The new structural-design of these units allows them to be washed whenever necessary. Rated IP65 (dust tight and water resistant).



The world's first feature

5 Durability



The MASTER series has passed all water resistance, dust resistance, and drop tests. Instruments were subjected to water jets from four directions, dropped from a height of one meter onto an oak platform, and withstood the pressure changes of air travel.

6 Calibration



The α and H types can now be calibrated with the new waterproof calibration screw. All MASTER models can be calibrated by end-user.

2 Hygienic Design



The MASTER series was also designed with a smooth and easy-to-clean grip, eliminating the possibility of food and samples being trapped which can result in contamination and bacterial growth.

7 Automatic Sample Distribution (ASD)



ATAGO has developed a spoon-shaped tip that automatically spreads the sample across the prism. This makes the instrument even more user-friendly, saving valuable time.

3 Visibility



Efficiently using an analog unit depends on how easily the measured value can be read. Extensive research and the use of quality optics result in a measurement scale that is very bright, creating a high contrast to see clearly where the boundary intersects the memory lines of the scale.

8 Repair and Service



ATAGO has established a close network of customers by providing excellent customer service and support. When an ATAGO instrument needs servicing, not only is each customer treated with respect, but they are also provided with detailed methods and userspecific suggestions on sampling and taking measurements, based on individual needs.

4 Automatic Temperature Compensation (ATC) $\alpha \cdot T \cdot H$



The newly designed ATC system allows the MASTER series to read more accurately than any comparable unit. ATAGO has applied for a patent on the design of the improved ATC system. The MASTER series reads more accurately than any comparable unit in the market.

9 Reputation for Quality



ATAGO has built a firm reputation for reliability and quality during its over 70 years history. We are a strong company that exports to over 154 countries with continued growth expectations. ISO 9001 certified, along with our integrated system for producing and marketing our products, based on the "Plan-Do-Check-Act" cycle, is essential to the continued quality and to the promoting of the ATAGO name.

Simple Operation



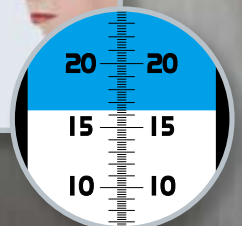
1 Apply 1-2 drops onto the prism.



2 Close the daylight plate. View the scale through the eyepiece.



3 Read the measurement value where the boundary line intersects the scale.



Understanding model names

A model name consists of the scale (sample name), material, and feature type.

Brix Scale

MASTER-

2

P

α

Example Measuring sauces

Sample information

- About 40% Brix (see **A** in chart below)
- Salty
- Oily

Scale

Choose **2** **28-62%**
(see **B** in chart below).

Material

Choose the salt-resistant **P**
plastic body.

Metal ...Blank

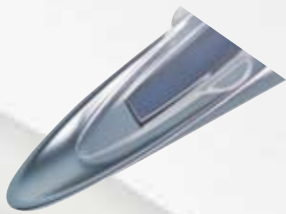
Features

Choose the washable type for easy cleaning.

Choose **α**

Material 2 types Choose either metal or plastic.

Metal



Die-cast aluminum

Ideal for the agriculture industry, metal working fluids, and various high-temperature samples. Resistant to organic solvents.

Plastic



PBT (polybutylene terephthalate)

Resistant to salty and acidic samples.

Brix of Various Samples

Refractive index and Brix of various types of samples

Brix (%)	Food industry	Chemical industry	Medical Science industry	Memory (Brix) □ = Memory No.																				
1.333 (Ri)	Drinks Green tea		Methanol Saline	<table border="1"> <tr> <td>(1)</td> <td>10</td> <td>20</td> <td>53</td> <td>500</td> </tr> <tr> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>33</td> <td>10</td> <td>20</td> <td>53</td> <td>90</td> </tr> <tr> <td>%</td> <td>%</td> <td>%</td> <td>%</td> <td>%</td> </tr> </table>	(1)	10	20	53	500	0	0	0	0	0	33	10	20	53	90	%	%	%	%	%
(1)	10	20	53		500																			
0	0	0	0		0																			
33	10	20	53		90																			
%	%	%	%		%																			
	Water	Cutting oil (emulsion)	Aloe extract Sea water																					
1.34	5 Beer	Nickel plate liquid	Chlorella extract																					
	Fruits / Vegetables Tomato Strawberry Lemon																							
1.35	10 Coffee Soy milk Cola Milk	Gelatin liquid	Serum																					
	Seasonings Miso soup																							
1.36	15 Orange Apple Prince melon	Freon113																						
	Beef curry Demiglace (sauce) Orange jelly																							
1.37	20 Lactic acid-bacteria beverage	Silicone solution (emulsion)	Acetone Ethanol																					
	Canned syrup	Electrolyte Freon 11	Acetic acid Saturated saline																					
1.38	30	Acrylonitrile																						
	Ketchup																							
1.39	40 Soy sauce Sauce	Silicone oil	Octane																					
	Jam Low-sugar jam																							
1.40	50 Egg yolk	Ethylene glycol Propylene glycol																						
	Fats Butter																							
1.41	60 Olive oil																							
	Honey Honey Starch Syrup	Diesel oil Ricinus	Glycerin																					
1.42	70																							
	Jam																							
1.43	80	Polyvinyl chloride (PCV) Styrene Asphalt																						
1.50	90																							

Specifications

Brix Scale

Range (Minimum)	Series	α		T		M	
	Material	Metal	Plastic	Metal	Plastic	Metal	Plastic
1 0~33% (0.2%)	Model	MASTER- α	MASTER-P α	MASTER-T	MASTER-PT	MASTER-M	MASTER-PM
	Cat.No.	2311	2391	2312	2392	2313	2393
	Accuracy	$\pm 0.2\%$ * $\pm 0.1\%$ (10~30°C)		$\pm 0.2\%$ * $\pm 0.1\%$ (10~30°C)		—	
	Size & Weight	3.2x3.4x20.3cm/155g	3.2x3.4x20.3cm/105g	3.2x3.4x20.3cm/155g	3.2x3.4x20.3cm/105g	3.2x3.4x20.3cm/155g	3.2x3.4x20.3cm/105g
2 28~62% (0.2%)	Model	MASTER-2 α	MASTER-2P α	MASTER-2T	MASTER-2PT	MASTER-2M	MASTER-2PM
	Cat.No.	2321	2941	2322	2942	2323	2943
	Accuracy	$\pm 0.2\%$ * $\pm 0.1\%$ (10~40°C)		$\pm 0.2\%$ * $\pm 0.1\%$ (10~40°C)		—	
	Size & Weight	3.2x3.4x20.3cm/155g	3.2x3.4x20.3cm/105g	3.2x3.4x20.3cm/155g	3.2x3.4x20.3cm/105g	3.2x3.4x20.3cm/155g	3.2x3.4x20.3cm/105g
3 58~90% (0.2%)	Model	MASTER-3 α	MASTER-3P α	MASTER-3T	MASTER-3PT	MASTER-3M	MASTER-3PM
	Cat.No.	2331	2951	2332	2952	2333	2953
	Accuracy	$\pm 0.2\%$ * $\pm 0.1\%$ (10~40°C)		$\pm 0.2\%$ * $\pm 0.1\%$ (10~40°C)		—	
	Size & Weight	3.2x3.4x16.8cm/130g	3.2x3.4x16.8cm/90g	3.2x3.4x16.8cm/130g	3.2x3.4x16.8cm/90g	3.2x3.4x16.8cm/130g	3.2x3.4x16.8cm/90g
4 45~82% (0.2%)	Model	MASTER-4 α	MASTER-4P α	MASTER-4T	MASTER-4PT	MASTER-4M	MASTER-4PM
	Cat.No.	2341	2961	2342	2962	2343	2963
	Accuracy	$\pm 0.2\%$ * $\pm 0.1\%$ (10~40°C)		$\pm 0.2\%$ * $\pm 0.1\%$ (10~40°C)		—	
	Size & Weight	3.2x3.4x16.8cm/130g	3.2x3.4x16.8cm/90g	3.2x3.4x16.8cm/130g	3.2x3.4x16.8cm/90g	3.2x3.4x16.8cm/130g	3.2x3.4x16.8cm/90g
10 0~10% (0.1%)	Model	MASTER-10 α	MASTER-10P α	MASTER-10T	MASTER-10PT	MASTER-10M	MASTER-10PM
	Cat.No.	2371	2981	2372	2982	2373	2983
	Accuracy	$\pm 0.2\%$ * $\pm 0.1\%$ (10~30°C)		$\pm 0.2\%$ * $\pm 0.1\%$ (10~30°C)		—	
	Size & Weight	3.2x3.4x20.3cm/155g	3.2x3.4x20.3cm/105g	3.2x3.4x20.3cm/155g	3.2x3.4x20.3cm/105g	3.2x3.4x20.3cm/155g	3.2x3.4x20.3cm/105g
20 0~20% (0.1%)	Model	MASTER-20 α	MASTER-20P α	MASTER-20T	MASTER-20PT	MASTER-20M	MASTER-20PM
	Cat.No.	2381	2991	2382	2992	2383	2993
	Accuracy	$\pm 0.2\%$ * $\pm 0.1\%$ (10~30°C)		$\pm 0.2\%$ * $\pm 0.1\%$ (10~30°C)		—	
	Size & Weight	3.2x3.4x20.7cm/165g	3.2x3.4x20.7cm/110g	3.2x3.4x20.7cm/165g	3.2x3.4x20.7cm/110g	3.2x3.4x20.7cm/165g	3.2x3.4x20.7cm/110g
53 0~53% (0.5%)	Model	MASTER-53 α	MASTER-53P α	MASTER-53T	MASTER-53PT	MASTER-53M	MASTER-53PM
	Cat.No.	2351	2971	2352	2972	2353	2973
	Accuracy	$\pm 0.5\%$ * $\pm 0.25\%$ (10~30°C)		$\pm 0.5\%$ * $\pm 0.25\%$ (10~30°C)		—	
	Size & Weight	3.2x3.4x16.8cm/130g	3.2x3.4x16.8cm/90g	3.2x3.4x16.8cm/130g	3.2x3.4x16.8cm/90g	3.2x3.4x16.8cm/130g	3.2x3.4x16.8cm/90g

Heat resistant

Series	H			
Material	Metal			
Model	MASTER-50H	MASTER-80H	MASTER-93H	MASTER-100H
Cat.No.	2354	2364	2374	2384
Range	Brix 0.0~50.0%	Brix 30.0~80.0%	Brix 45.0~93.0%	Brix 60.0~100.0%
Minimum	0.5%			
Accuracy	$\pm 0.5\%$ * $\pm 0.25\%$			
Size & Weight	3.2x3.4x 16.8cm/130g			

Milky sample ▶ Wide Brix

Series	53S <small>NEW</small>	500 <small>NEW</small>
Material	Metal	
Model	MASTER-53S	MASTER-500
Cat.No.	2355	2363
Range	Brix 0.0~53.0%	Brix 0.0~90.0%
Minimum	0.5%	1.0%
Accuracy	$\pm 0.5\%$ * $\pm 0.25\%$	
Size & Weight	3.2x3.4x 16.8cm/130g	

Special Scale

Sample	Coolant	Battery Coolant	Battery Coolant	Refractive index	Honey <small>NEW</small>
Series	M	M	M	M	α
Material	Plastic				
Model	MASTER-BR	MASTER-BC	MASTER-BCF	MASTER-RI	MASTER-HONEY
Cat.No.	2930	2931	2932	2612	2524
Scale	① propylene glycol ② ethylene glycol	① ethylene glycol freezing temp ② propylene glycol freezing temp ③ battery fluid d20/20	① ethylene glycol freezing temp ② propylene glycol freezing temp ③ battery fluid d20/20	Refractive index	Honey moisture
Range	① 0 to 70% 0 to -50°C ② 0 to 70% 0 to -50°C	① 0 to -50°C ② 0 to -50°C ③ 1.150 to 1.300	① 32 to -60°F ② 32 to -50°F ③ 1.150 to 1.300	1.435 to 1.520	12.0 to 30.0%
Minimum Scale	5% 5°C	① 5°C ② 5°C ③ 0.01	① 10°F ② 10°F ③ 0.01	0.001	0.2%
Size & Weight	3.2x3.4x16.8cm, 90g	3.2x3.4x20.3cm, 105g		3.2x3.4x16.8cm, 130g	3.2x3.4x16.8cm, 90g

Sample	Seawater	Seawater	Salinity	Salinity	Salinity (Wide range)	Salinity (Wide range)
Series	α	M	α	M	α	M
Material	Plastic					
Model	MASTER-S/Mill α	MASTER-S/Mill M	MASTER-S10 α	MASTER-S10 M	MASTER-S28 α	MASTER-S28 M
Cat.No.	2491	2493	2471	2473	2481	2483
Scale	① Salinity ② Specific gravity		Sodium chloride		Sodium chloride	
Range	① 1‰ ② 0.001		0.0 to 10.0g/100g		0.0 to 28.0g/100g	
Minimum Scale	① 0 to 100% ② 1.000 to 1.070		0.1g/100g		0.2g/100g	
Measurement Accuracy	① $\pm 2\%$ * $\pm 1\%$ ② ± 0.001 * ± 0.0005 (10 to 30%)	—	$\pm 0.2g/100g$ * $\pm 0.1g/100g$ (10 to 30°C)	—	$\pm 0.2g/100g$ * $\pm 0.1g/100g$ (10 to 30°C)	—
International Protection Class	IP65		IP65		IP65	
Size & Weight	3.2x3.4x20.7cm, 110g		3.2x3.4x20.3cm, 105g		3.2x3.4x20.3cm, 105g	

IP65 = dust-tight and protected against water jets (except eye piece)
*Repeatability

Applications

-Measuring sugar concentration, concentration, Brix and Refractive Index-

▶ Honey



Honey

▶ Jam, Syrup



Jam, syrup, confectioneries

▶ Soy milk



Soy milk

▶ Condiments



Condiment, seasonings, ketchup, various sauces, soy sauce

▶ Wine



Grapes, wine must

▶ Drink



Fruit juice, soft drink, carbonated beverage

▶ Cooking



Chinese noodle soup, various soup, various sauces

▶ Agriculture



Fruit and vegetable juice, leaf juice, stem juice, root juice

▶ Salinity



Sodium chloride solution, sea water, pickles

▶ Machine Tools



Firefighting foam, soluble cutting oil

▶ Chemicals and medicine



Brine, deicing solution, medicine, chemical, cosmetics, cleaning solution

▶ Clinical



Urine, serum

Optional Accessories



Small Volume Daylight Plate With Hinge Pin

For metal body model
Parts.No. RE-2311-58M
For plastic body model
Parts.No. RE-2391-50M



Super Extractor

Parts.No. RE-29401



Sucrose solution (for Brix confirmation)

Parts.No. RE-110010 10% Sucrose
Parts.No. RE-110020 20% Sucrose
Parts.No. RE-110030 30% Sucrose
Parts.No. RE-110040 40% Sucrose
Parts.No. RE-110050 50% Sucrose
Parts.No. RE-110060 60% Sucrose

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* Specifications and appearance are subject to change without notice.

All ATAGO refractometers are designed and manufactured in Japan.

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