



Reasons to choose the MASTER

1 Water Resistant α·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).



Water Resistant


The world's first feature

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.

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.

4 Automatic Temperature Compensation (ATC) α·T·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.

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.

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.

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.

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



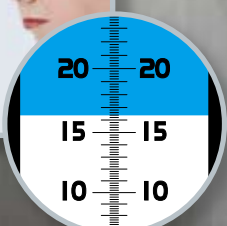
1 Apply 1-2 drops onto the prism.



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



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



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

 <p>Honey</p>	 <p>Jam, syrup, confectioneries</p>	 <p>Soy milk</p>	 <p>Condiment, seasonings, ketchup, various sauces, soy sauce</p>
 <p>Grapes, wine must</p>	 <p>Fruit juice, soft drink, carbonated beverage</p>	 <p>Chinese noodle soup, various soup, various sauces</p>	 <p>Fruit and vegetable juice, leaf juice, stem juice, root juice</p>
 <p>Sodium chloride solution, sea water, pickles</p>	 <p>Firefighting foam, soluble cutting oil</p>	 <p>Brine, deicing solution, medicine, chemical, cosmetics, cleaning solution</p>	 <p>Urine, serum</p>

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.





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

V.04 13021000PP Printed in Japan




MASTER of REFRACTOMETRY





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 "20" 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

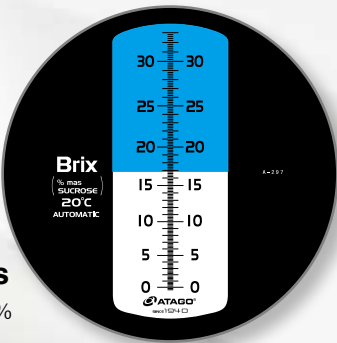


# MASTER series

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

Series / Model	$\alpha$	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.



## MASTER-500 0-90% Wide Brix Range



## 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

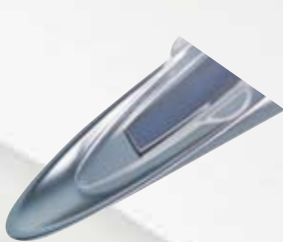
Features

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.
(Ri)				
1.333	<b>0</b> Drinks	Water	Methanol	(1) 10 20 53 500
	Green tea	Cutting oil (emulsion)	Saline	0 0 0 0
1.34	<b>5</b> Beer	Nickel plate liquid	Aloe extract	33 10 20 53 90
	Fruits / Vegetables		Sea water	% % % % %
	Miso soup			
	Tomato		Chlorella extract	
	Strawberry			
	Lemon			
1.35	<b>10</b> Coffee	Gelatin liquid	Serum	
	Soy milk			
	Cola			
	Milk			
	Prince melon			
	Beef curry	Freon113		
	Demiglace (sauce)			
	Orange jelly			
1.36	<b>15</b> Lactic acid-bacteria beverage			
		Silicone solution (emulsion)	Acetone	
			Ethanol	
1.37	<b>20</b> Canned syrup	Electrolyte	Acetic acid	
		Freon 11	Saturated saline	
1.38	<b>30</b> Ketchup	Acrylonitrile		2 28 62 %
1.39	<b>40</b> Soy sauce			
	Sauce			
	Low-sugar jam	Silicone oil	Octane	4 45 82 %
1.40	<b>50</b> Egg yolk			
		Ethylene glycol		
		Propylene glycol		
	<b>60</b> Butter			3 58 90 %
	<b>70</b> Olive oil			
	Honey			
	Jam			
	Honey Starch Syrup	Diesel oil	Glycerin	
		Ricinus		
		Polyvinyl chloride (PCV)		
		Styrene Asphalt		
1.50	<b>90</b>			

## Specifications

### Brix Scale

Range (Minimum)	Series	Material	Metal	Plastic	Metal	Plastic	Metal	Plastic
(1)		Model	MASTER-α	MASTER-Pα	MASTER-T	MASTER-PT	MASTER-M	MASTER-PM
0~33% (0.2%)		Cat.No.	2311	2391	2312	2392	2313	2393
		Accuracy	±0.2% *±0.1% (10~30°C)	±0.2% *±0.1% (10~30°C)	±0.2% *±0.1% (10~30°C)	±0.2% *±0.1% (10~30°C)	±0.2% *±0.1% (10~30°C)	±0.2% *±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	Model	MASTER-2α	MASTER-2Pα	MASTER-2T	MASTER-2PT	MASTER-2M	MASTER-2PM
28~62% (0.2%)	Cat.No.	2321	2941	2322	2942	2323	2943
	Accuracy	±0.2% *±0.1% (10~40°C)	±0.2% *±0.1% (10~40°C)	±0.2% *±0.1% (10~40°C)	±0.2% *±0.1% (10~40°C)	±0.2% *±0.1% (10~40°C)	±0.2% *±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	Model	MASTER-3α	MASTER-3Pα	MASTER-3T	MASTER-3PT	MASTER-3M	MASTER-3PM
58~90% (0.2%)	Cat.No.	2331	2951	2332	2952	2333	2953
	Accuracy	±0.2% *±0.1% (10~40°C)	±0.2% *±0.1% (10~40°C)	±0.2% *±0.1% (10~40°C)	±0.2% *±0.1% (10~40°C)	±0.2% *±0.1% (10~40°C)	±0.2% *±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	Model	MASTER-4α	MASTER-4Pα	MASTER-4T	MASTER-4PT	MASTER-4M	MASTER-4PM
45~82% (0.2%)	Cat.No.	2341	2961	2342	2962	2343	2963
	Accuracy	±0.2% *±0.1% (10~40°C)	±0.2% *±0.1% (10~40°C)	±0.2% *±0.1% (10~40°C)	±0.2% *±0.1% (10~40°C)	±0.2% *±0.1% (10~40°C)	±0.2% *±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	Model	MASTER-10α	MASTER-10Pα	MASTER-10T	MASTER-10PT	MASTER-10M	MASTER-10PM
0~10% (0.1%)	Cat.No.	2371	2981	2372	2982	2373	2983
	Accuracy	±0.2% *±0.1% (10~30°C)	±0.2% *±0.1% (10~30°C)	±0.2% *±0.1% (10~30°C)	±0.2% *±0.1% (10~30°C)	±0.2% *±0.1% (10~30°C)	±0.2% *±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	Model	MASTER-20α	MASTER-20Pα	MASTER-20T	MASTER-20PT	MASTER-20M	MASTER-20PM
0~20% (0.1%)	Cat.No.	2381	2991	2382	2992	2383	2993
	Accuracy	±0.2% *±0.1% (10~30°C)	±0.2% *±0.1% (10~30°C)	±0.2% *±0.1% (10~30°C)	±0.2% *±0.1% (10~30°C)	±0.2% *±0.1% (10~30°C)	±0.2% *±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	Model	MASTER-53α	MASTER-53Pα	MASTER-53T	MASTER-53PT	MASTER-53M	MASTER-53PM
0~53% (0.5%)	Cat.No.	2351	2971	2352	2972	2353	2973
	Accuracy	±0.5% *±0.25% (10~30°C)	±0.5% *±0.25% (10~30°C)	±0.5% *±0.25% (10~30°C)	±0.5% *±0.25% (10~30°C)	±0.5% *±0.25% (10~30°C)	±0.5% *±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	±0.5% *±0.25%
Size & Weight	3.2x3.4x 16.8cm/130g

### Milky sample Wide Brix

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

## Special Scale

Sample	Coolant	Battery Coolant	Battery Coolant	Refractive index	Honey (NEW)
Series	M	M	M	M	α
Material	Plastic	Plastic	Plastic	Metal	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 #20/20	① ethylene glycol freezing temp ② propylene glycol freezing temp ③ battery fluid #20/20	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°F ② 0 to -50°F 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	3.2x3.4x20.3cm, 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	Plastic	Plastic	Plastic	Plastic	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	① Salinity ② Specific gravity	Sodium chloride	Sodium chloride	Sodium chloride	Sodium chloride
Range	① 1% ② 0.001	① 1% ② 0.001	0.0 to 10.0g/100g	0.0 to 10.0g/100g	0.0 to 28.0g/100g	0.0 to 28.0g/100g
Minimum Scale	① 0 to 100‰ ② 1.000 to 1.070	① 0 to 100‰ ② 1.000 to 1.070	0.1 g/100g	0.1 g/100g	0.2 g/100g	0.2 g/100g
Measurement Accuracy	① ±2% *±1% ② ±0.001 *±0.0005 (10 to 30%)	① ±2% *±1% ② ±0.001 *±0.0005 (10 to 30%)	±0.2g/100g *±0.1g/100g (10 to 30°C)	±0.2g/100g *±0.1g/100g (10 to 30°C)	±0.2g/100g *±0.1g/100g (10 to 30°C)	±0.2g/100g *±0.1g/100g (10 to 30°C)
International Protection Class	IP65	—	IP65	—	IP65	—
Size & Weight	3.2x3.4x20.7cm, 110g	3.2x3.4x20.7cm, 110g	3.2x3.4x20.3cm, 105g	3.2x3.4x20.3cm, 105g	3.2x3.4x20.3cm, 105g	3.2x3.4x20.3cm, 105g

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