



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

# MASTER



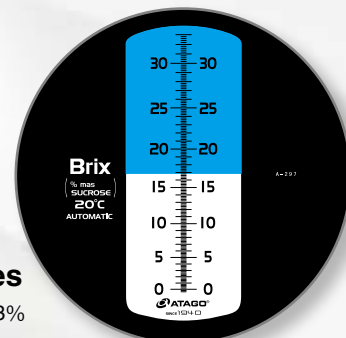
Design Registration No.000379326-0001, 000379326-0002 (EU)  
ZL 2005 3 0116403.4,5 (China), D1111526 (Taiwan), D555, 549 (U.S.A.),  
1255763, 1255764, 1255765, 1255766, 1255767 (Japan)  
Patent Granted in countries around the world.

# 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.



NEW



Milk



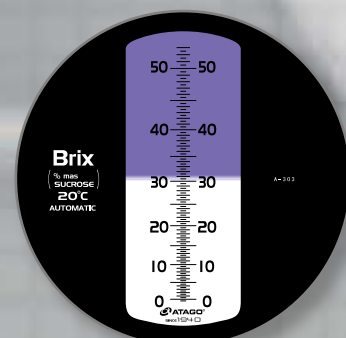
Mayonnaise



Yogurt



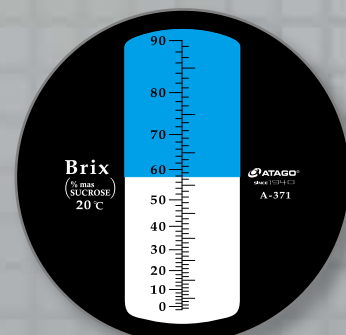
Mold release agent



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



NEW



## ■ Understanding model names

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

**Brix Scale**

**MASTER-**

**2**

Scale

↑

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

**P**

Material

↑

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

**Metal** ... Blank

**α**

Features

↑

Choose the washable type for easy cleaning.  
**Choose a**

**Example** **Measuring sauces**

Sample information

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

## 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)	<b>Drinks</b>		Methanol	(1)
0	Green tea	Cutting oil (emulsion)	Saline	0
			Aloe extract	0
			Sea water	0
1.34	<b>Fruits / Vegetables</b>	Nickel plate liquid	Chlorella extract	33
5	Beer			10
	Tomato			20
	Strawberry			53
	Lemon	Gelatin liquid	Serum	90
1.35	Coffee			
10	Soy milk	Freon113		
	Cola			
	Milk			
1.36		Silicone solution (emulsion)	Acetone	
20	Lactic acid-bacteria beverage		Ethanol	
1.37		Electrolyte	Acetic acid	
	Canned syrup	Freon 11	Saturated saline	
1.38		Acrylonitrile		2
30	Ketchup			28
1.39				62
40	Soy sauce			
	Sauce			
1.40		Silicone oil	Octane	4
50	Egg yolk			45
60	<b>Fats</b>	Ethylene glycol		82
	Butter	Propylene glycol		
70	Olive oil			3
				58
	<b>Honey</b>	Diesel oil	Glycerin	90
	Jam	Ricinus		
80				
	Honey Starch Syrup	Polyvinyl chloride (PCV)		
90		Styrene Asphalt		
1.50				



# Specifications

## Brix Scale

Range (Minimum)	Series	$\alpha$		T		M	
	Material	Metal	Plastic	Metal	Plastic	Metal	Plastic
<b>(1)</b> <b>0~33%</b> (0.2%)	Model	MASTER- $\alpha$		MASTER-T		MASTER-M	
	Cat.No.	2311		2312		2313	
	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/155g		3.2x3.4x20.3cm/155g	

<b>2</b> <b>28~62%</b> (0.2%)	Model	MASTER-2 $\alpha$	MASTER-2P $\alpha$	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/155g		3.2x3.4x20.3cm/155g	

<b>3</b> <b>58~90%</b> (0.2%)	Model	MASTER-3 $\alpha$	MASTER-3P $\alpha$	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/130g		3.2x3.4x16.8cm/130g	

<b>4</b> <b>45~82%</b> (0.2%)	Model	MASTER-4 $\alpha$	MASTER-4P $\alpha$	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/130g		3.2x3.4x16.8cm/130g	

<b>10</b> <b>0~10%</b> (0.1%)	Model	MASTER-10 $\alpha$	MASTER-10P $\alpha$	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/155g		3.2x3.4x20.3cm/155g	

<b>20</b> <b>0~20%</b> (0.1%)	Model	MASTER-20 $\alpha$	MASTER-20P $\alpha$	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/165g		3.2x3.4x20.7cm/165g	

<b>53</b> <b>0~53%</b> (0.5%)	Model	MASTER-53 $\alpha$	MASTER-53P $\alpha$	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/130g		3.2x3.4x16.8cm/130g	

### ► 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 <b>NEW</b>	500 <b>NEW</b>
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 <b>NEW</b>
Series	M	M	M	M	$\alpha$
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 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	$\alpha$	M	$\alpha$	M	$\alpha$	M
Material	Plastic	Plastic	Plastic	Plastic	Plastic	Plastic
Model	MASTER-S/Mini $\alpha$	MASTER-S/Mini M	MASTER-S10 $\alpha$	MASTER-S10 M	MASTER-S28 $\alpha$	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 $\pm 0.001$ * $\pm 0.0005$ (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

# Reasons to choose the MASTER

## 1 Water Resistant



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

$\alpha \cdot H$

## 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  $\alpha$  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



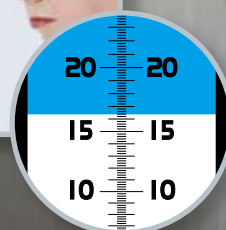
1 Apply 1-2 drops onto the prism.



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



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





# Applications

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

## ► Honey



Honey

## ► Jam, Syrup



Jam, syrup, confectioneries

## ► Soymilk



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