

# Reasons to choose the MASTER

## Water Resistant

α-H-53S-500

## 5 Durability



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



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.

## 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.

## 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-53S



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.

## 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.

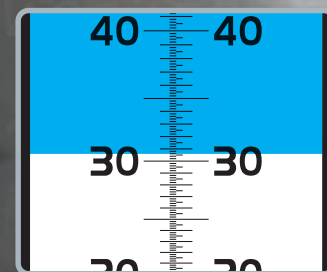
# Simple Operation



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-

### 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



**Daylight Plate**  
For metal body model  
Parts.No. RE-2315-60M  
For plastic body model  
Parts.No. RE-2315-61M

**Small Volume Daylight Plate With Hinge Pin**  
For metal body model  
Parts.No. RE-2311-67 M  
For plastic body model  
Parts.No. RE-2391-67 M



**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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**HACCP GMP GLP**

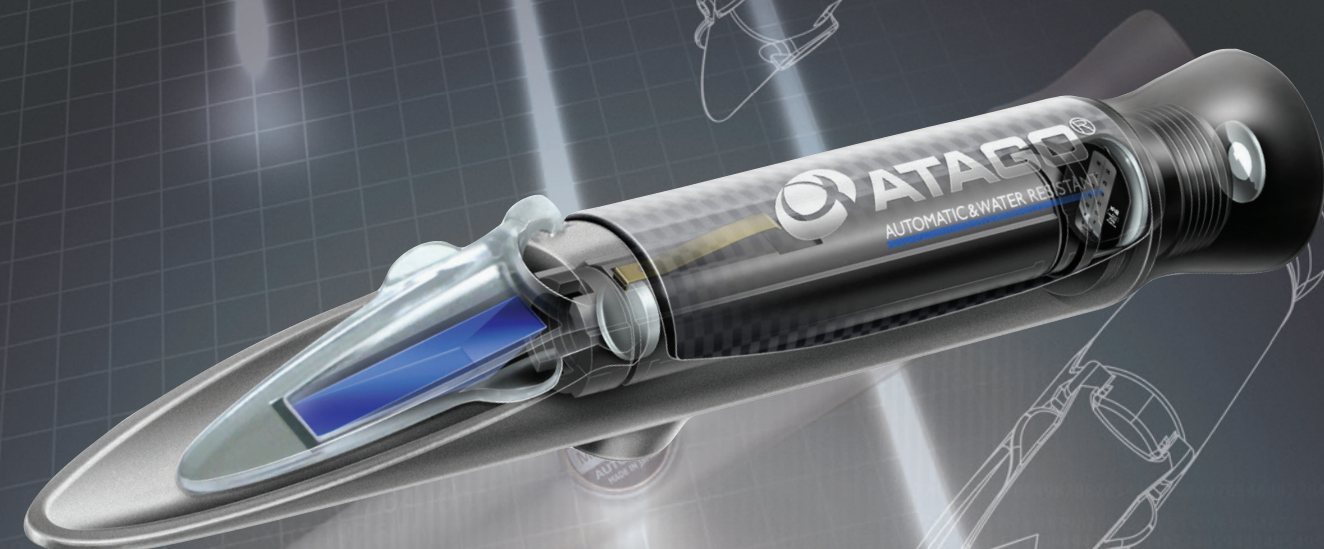
ATAGO products comply with HACCP, GMP, and GLP system standards.

All ATAGO products are designed and manufactured in Japan.

\* Specifications and appearance are subject to change without notice.

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**ATAGO**  
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 "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

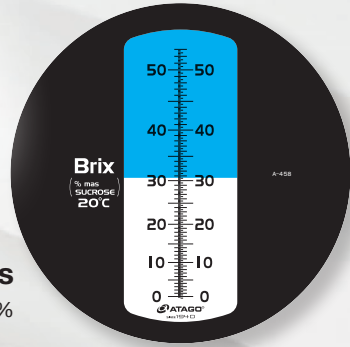


# MASTER series

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



**Brix scale examples**  
MASTER-53X Brix 0 to 53%



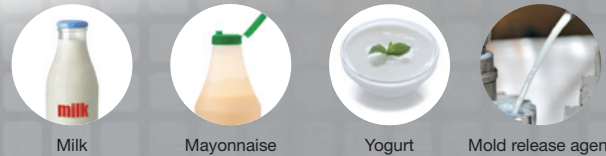
## Features 6 types

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.

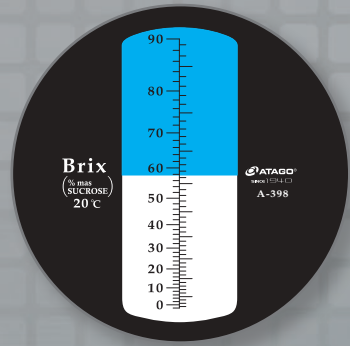
Series / Model	α	T	M	H	53S	500
Water resistant	●	—	—	●	●	●
Automatic temperature compensation	●	●	—	●	●	—
Heat resistant	—	—	—	●	—	●
Milky sample	—	—	—	—	●	—

## 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 to 90% Wide Brix Range



## Understanding model names

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

### Brix Scale

# MASTER-53

# P

# α

### Example Measuring sauces

Sample information

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

Scale  
↑  
Choose **53** 0 to 53% (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)
(RI) 1.333	<b>Drinks</b> Green tea	<b>Water</b> Cutting oil (emulsion)	Methanol Saline Aloe extract Sea water	<b>B</b> 10 20 53 500 0 0 0 0 5 5 5 5 10 % 20 % 53 % 90 %
1.34	<b>Beer</b> Tomato Strawberry Lemon	<b>Fruits / Vegetables</b> Miso soup	Nickel plate liquid Chlorella extract	
1.35	<b>Coffee</b> Soy milk Cola Milk	Beef curry Demiglace (sauce) Orange jelly	Gelatin liquid Serum Freon113	
1.36	<b>Lactic acid-bacteria beverage</b>	Canned syrup	Silicone solution (emulsion) Electrolyte Freon 11	
1.37		Ketchup	Acrylonitrile Saturated saline	
1.38		<b>Soy sauce</b> Sauce <b>A</b>		
1.39		<b>Jam</b> Low-sugar jam		
1.40		Egg yolk	Silicone oil Octane	
1.41	<b>Fats</b> Butter		Ethylene glycol Propylene glycol	
1.42		<b>Honey</b> Honey Starch Syrup	Diesel oil Ricinus	
1.43			Glycerin	
1.44			Polyvinyl chloride (PCV) Styrene Asphalt	
1.50				

## Specifications

### Brix Scale

Range (Minimum)	Series	α		T		M	
		Metal	Plastic	Metal	Plastic	Metal	Plastic
53 0 to 53% (0.5%)	Model	MASTER-53α	MASTER-53Pα	MASTER-53T	MASTER-53PT	MASTER-53M	MASTER-53PM
	Cat.No.	2351	2971	2352	2972	2353	2973
	Accuracy	±0.2% (at 20°C)		±0.2% (at 20°C)		±0.2% (at 20°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 to 10% (0.1%)	Model	MASTER-10α	MASTER-10Pα	MASTER-10T	MASTER-10PT	MASTER-10M	MASTER-10PM
	Cat.No.	2371	2981	2372	2982	2373	2983
	Accuracy	±0.2% (10 to 30°C)		±0.2% (10 to 30°C)		±0.2% (10 to 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 to 20% (0.1%)	Model	MASTER-20α	MASTER-20Pα	MASTER-20T	MASTER-20PT	MASTER-20M	MASTER-20PM
	Cat.No.	2381	2991	2382	2992	2383	2993
	Accuracy	±0.2% (at 20°C)		±0.2% (at 20°C)		±0.2% (at 20°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

### Heat resistant

Series	H			
	Metal			
Model	MASTER-50H	MASTER-80H	MASTER-93H	MASTER-100H
Cat.No.	2354	2364	2374	2384
Range	Brix 0.0 to 50.0%	Brix 30.0 to 80.0%	Brix 45.0 to 93.0%	Brix 60.0 to 100.0%
Minimum	0.5%			
Accuracy	±0.5% (10 to 30°C)		±0.5% (10 to 40°C)	
Size & Weight	3.2x3.4x16.8cm, 130g			

### Milky sample

Series	53S
Material	Metal
Model	MASTER-53S
Cat.No.	2355
Range	Brix 0.0 to 53.0%
Minimum	0.2%
Accuracy	±0.2% (at 20°C)
Size & Weight	3.2x3.4x16.8cm, 130g

### Wide Brix

Series	500
Material	Metal
Model	MASTER-500
Cat.No.	2363
Range	Brix 0.0 to 90.0%
Minimum	1%
Accuracy	±1%
Size & Weight	3.2x3.4x16.8cm, 130g

### Vegetable and Fruit

Series	M
Material	Metal
Model	MASTER-AGRI
Cat.No.	2462
Range	Brix 0.0 to 53.0%
Minimum	0.2%
Accuracy	±0.2% (at 20°C)
Size & Weight	3.2x3.4x16.8cm, 130g

## Special Scale

Sample	Soy Milk		Honey / Brix		Brix / Salinity	
	α	M	α	M	α	M
Series	Plastic		Plastic		Plastic	
Material	MASTER-Soy Milk α		MASTER-Soy Milk M		MASTER-HONEY/BX	
Model	MASTER-S/MIll α		MASTER-S/MIll M		MASTER-S28α	
Cat.No.	2491		2493		2481	
Scale	① Soy Milk Concentration (soybean solids) ② Magnesium chloride concentration		① Honey moisture ② Brix		① Brix ② Sodium chloride	
Range	① 0.0 to 20.0% ② 0.0 to 12.0%		① 12.0 to 30.0% ② 58.0 to 90.0%		① 0.0 to 33.0% ② 0.0 to 28.0g/100g	
Minimum	① 0.2% ② 0.2%		① 0.2% ② 0.2%		① 0.5% ② 0.5g/100g	
Accuracy	① ±0.5% (10 to 30°C) ② ±0.2% (10 to 30°C)		① ±0.2% ② ±0.2%		① ±0.2% ② ±0.2%	
Size & Weight	3.2x3.4x16.8cm, 90g		3.2x3.4x16.8cm, 90g		3.2x3.4x16.8cm, 90g	

Sample	Seawater		Salinity		Salinity (Wide range)	
	α	M	α	M	α	M
Series	Plastic		Plastic		Plastic	
Material	MASTER-S/MIll α		MASTER-S/MIll M		MASTER-S28α	
Model	MASTER-S/MIll α		MASTER-S/MIll M		MASTER-S28α	
Cat.No.	2491		2493		2481	
Scale	① Salinity ② Specific gravity		Sodium chloride		Sodium chloride	
Range	① 0 to 100‰ ② 1.000 to 1.070		0.0 to 10.0g/100g		0.0 to 28.0g/100g	
Minimum	① 1% ② 0.001		0.1g/100g		0.2g/100g	
Accuracy	① ±2‰ (10 to 30°C) ② ±0.001 (10 to 30°C)		±0.2g/100g (10 to 30°C)		±0.2g/100g (10 to 30°C)	
Size & Weight	3.2x3.4x20.7cm, 110g		3.2x3.4x20.3cm, 105g		3.2x3.4x16.8cm, 90g	

Sample	Battery Coolant			Refractive index
	M	M	M	
Series	Plastic			Metal
Material	MASTER-BR			MASTER-RI
Model	MASTER-BC			MASTER-BCF
Cat.No.	2930			2931
Scale	① propylene glycol ② ethylene glycol			① ethylene glycol freezing temp ② propylene glycol freezing temp ③ battery fluid d20/20
Range	① 0 to 70% 0 to -50°C ② 0 to 70% 0 to -50°C			① 32 to -60°F ② 32 to -50°F ③ 1.15 to 1.30
Minimum	① 5% ② 5°C			① 5°C ② 5°C ③ 0.01 ④ 10°F ⑤ 10°F ⑥ 0.01
Size & Weight	3.2x3.4x16.8cm, 90g			3.2x3.4x16.8cm, 130g

Water Resistant α•H•53S•500: IP65 = dust-tight and protected against water jets (except eye piece)