

Reasons to choose the MASTER

1 Water Resistant $\alpha \cdot H$



IP65

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



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



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) $\alpha \cdot T \cdot H$



ATC

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



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



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)



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



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



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



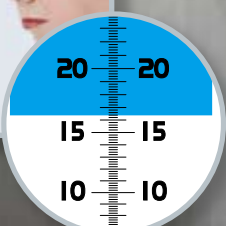
1 Apply 1-2 drops onto the prism.



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

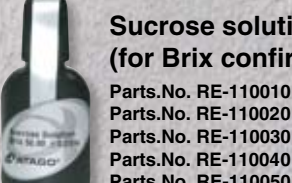
Optional Accessories



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



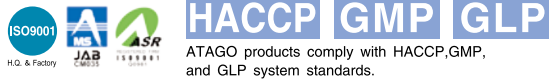
Sucrose solution (for Brix confirmation)
Parts.No. RE-110010 10% Sucrose
Parts.No. RE-110020 20% Sucrose
Parts.No. RE-110030 30% Sucrose
Parts.No. RE-110040 40% Sucrose
Parts.No. RE-110050 50% Sucrose
Parts.No. RE-110060 60% Sucrose

ATAGO CO.,LTD.



LABO AND CO
INSTRUMENTS SCIENTIFIQUES

All ATAGO refractometers are designed and manufactured in Japan.



ISO9001 HACCP GMP GLP
ATAGO products comply with HACCP, GMP, and GLP system standards.

V.04 13021000PP Printed in Japan

ATAGO[®]
MASTER of REFRACTOMETRY



2000 DESIGN AWARD 2001
Grand Prize of Invention Award 2007
JPO Commissioner Encouragement Prize 2007
MEXT 2009
Patent 特許



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

MASTER



IP65 Q-H Series
A.T.C. Q-T-H Series
ASD
2-3 drops

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.



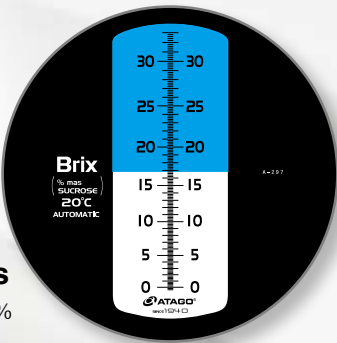
Hand-held Refractometer

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 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.



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

Example Measuring sauces

Sample information

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

MASTER-

2

Scale

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

P

Material

Choose the salt-resistant P plastic body.

Metal ...Blank

α

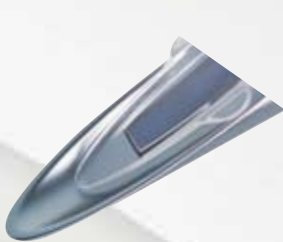
Features

Choose the washable type for easy cleaning.

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

Specifications

Brix Scale

Range (Minimum)  0~33% (0.2%)	Series	α		T		M	
	Material	Metal	Plastic	Metal	Plastic	Metal	Plastic
	Model	MASTER-α	MASTER-P α	MASTER-T	MASTER-PT	MASTER-M	MASTER-PM
	Cat.No.	2311	2391	2312	2392	2313	2393
	Accuracy	±0.2% *±0.1% (10~30℃)		±0.2% *±0.1% (10~30℃)		—	
	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-2 α	MASTER-2P α	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)	—	—
	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-3 α	MASTER-3P α	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)	—	—
	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-4 α	MASTER-4P α	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)	—	—
	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-10 α	MASTER-10P α	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)	—	—
	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-20 α	MASTER-20P α	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)	—	—
	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-53 α	MASTER-53P α	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)	—	—
	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	
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	±0.5% *±0.25%	—
Size & Weight	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°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	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	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	0.1 g/100g		0.2 g/100g		
Measurement Accuracy	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)		
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