

## Specifications

Scales	Angle of Rotation, International Sugar Scale (without temperature compensation), International Sugar Scale (with Automatic Temperature Compensation)	Temperature	10.0 to 30.0°C Temperature accuracy : ±0.5°C Temperature resolution : 0.5°C
Measurement readings	Angle of Rotation, International Sugar Scale (without temperature compensation), International Sugar Scale (with Automatic Temperature Compensation), Specific Optical Rotation, Concentration, and Purity.	Temperature compensation range for International Sugar Scale	18.0 to 30.0°C
Measurement range	Angle of Rotation: -89.999 to + 89.999° International Sugar Scale : -130.000 to + 130.000°Z	History function	History function stores the 30 previous measurement values for reference, printing or exporting to a computer.
Resolution	Angle of Rotation : 0.001° (Default 0.01°) International Sugar Scale : 0.001°Z (Default 0.01°Z)	Display panel	Backlit Color LCD
Measurement accuracy	Angle of Rotation : Displayed value ±0.01° (-35.00 to +35.00°) Relative precision ±0.2% (-35.01 to -89.99°, +35.01 to + 89.99°) International Sugar Scale : Displayed value ±0.03°Z (-101.00 to +101.00°Z) Relative precision ±0.2% (-130.00 to -101.01°Z, +101.01 to +130.00°Z) (Checked by reading a standard Quartz Plate )	Graphic display	Graphic display indicating the conformity of measurement values for measurements with limit settings.
Length of observation tube	Up to 200mm	Additional Features	(1) Average Measurement Value (2) Password Function
		Output	(1) Digital Printer DP-63 or DP-AD (optional). (2) RS-232C input/output ports for connecting to a computer system.
		Light source	Halogen lamp
		Accessories	Observation tubes (100mm [5mℓ], 200mm [10mℓ])
		Power supply	AC100V to 240V, 50/60Hz
		Power consumption	65VA
		Dimensions and weight	48.5×28.5×17.5cm, 14.4kg (main unit only)

## Option

### Digital printer DP-63

Cat.No.3118



Input method	RS-232C
Type of printer	Thermal printer
Printing data fields	Angle of rotation, International Sugar Scale, Specific optical rotation, Concentration, Purity, Length of sample tube, Measurement temperature, Day, Month, Year and Time
Power supply	AC adapter (Input voltage : AC100 to 240V)
Power consumption	13VA
Dimensions and weight	17×16×7cm, 580g (main unit only)

### Digital Printer DP-AD

Cat.No.3123



Input method	RS-232C
Type of Printer	Dot matrix printer
Printing data fields	Angle of rotation, International Sugar Scale, Specific optical rotation, Concentration, Purity, length of sample tube, Measurement temperature, Day, Month, Year and Time
Power supply	AC adapter (Input voltage : AC100 to 240V)
Power consumption	7VA
Dimensions and weight	11×18×9cm, 470g (main unit only)

### Quartz control plates



RE-72043 : Quartz Control Plate 8°(25°Z)	RE-72048 : Quartz Control Plate -8° (-25°Z)
RE-72044 : Quartz Control Plate 17°(50°Z)	RE-72049 : Quartz Control Plate -17° (-50°Z)
RE-72045 : Quartz Control Plate 34°(100°Z)	RE-72050 : Quartz Control Plate -34° (-100°Z)

### Circulating constant temperature

#### Bath 60-C4 Cat.No.1922



Tank capacity	0.5ℓ
Temperature setting range	10 to 60°C (water)
Constant-temperature accuracy	±0.2°C, PID control method using a thermo-module
Flow rate	4ℓ / min.
Power supply	AC100 to 240V, 50 / 60Hz
Power consumption	430VA
Dimensions and weight	38×24×27cm, 11.0kg (main unit only)

## EXPLANATION OF ICONS

Icons, for functions, specifications and scales have been added to this catalog



**ATAGO CO., LTD.**

http://www.atago.net/ overseas@atago.net

Headquarters: The Front Tower Shiba Koen, 23rd Floor  
2-6-3 Shiba-koen, Minato-ku, Tokyo 105-0011, Japan  
TEL : 81-3-3431-1943 FAX : 81-3-3431-1945



**HACCP GMP GLP**

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

<b>ATAGO U.S.A., Inc.</b>	TEL : 1-425-637-2107	customerservice@atago-usa.com
<b>ATAGO INDIA Instruments Pvt.Ltd.</b>	TEL : 91-22-28544915, 40713232	customerservice@atago-india.com
<b>ATAGO THAILAND Co.,Ltd.</b>	TEL : 662-982-8718-9	customerservice@atago-thailand.com
<b>ATAGO BRASIL Ltda.</b>	TEL : 55 16 3916-6000	customerservice@atago-brasil.com
<b>ATAGO ITALIA s.r.l.</b>	TEL : 39 2 36557267	customerservice@atago-italia.com
<b>ATAGO CHINA Guangzhou Co.,Ltd.</b>	TEL : 86 20-38106065	info@atago-china.com
<b>ATAGO RUSSIA Ltd.</b>	TEL : +7(812)339-20-02	info@atago-russia.com

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

[ENV.05] 14071000PP Printed in Japan

**ATAGO®**  
World Top Polarimeters

ICUMSA compliant

FDA 21CFR Part11 compliant



**Automatic Temperature Compensation Function for International Sugar Scale**  
Finally, a multifunctional fully automatic polarimeter at a reasonable price!

Automatic Polarimeter

# AP-300

Cat.No.5291



- Angle of Rotation
- International Sugar Scale (without temperature compensation)
- International Sugar Scale (with Automatic Temperature Compensation)
- Specific Optical Rotation
- Concentration
- Purity



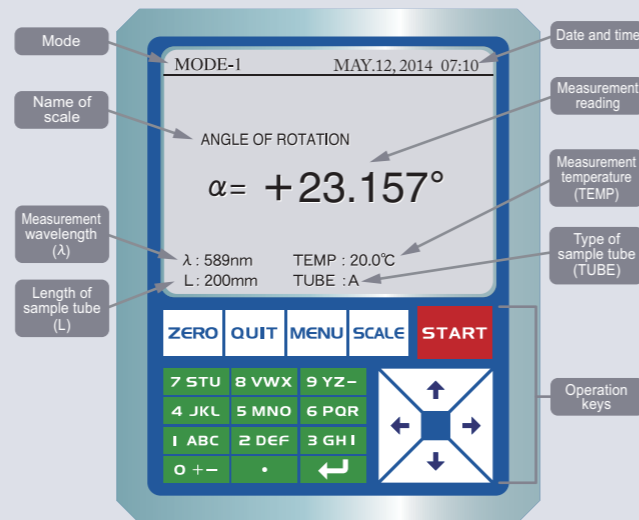
## Features

- NEW** FDA 21 CFR Part 11 Software Included in Standard Delivery.
- NEW** With high resolution : Angle of rotation 0.001°, International Sugar Scale 0.001°Z
- Easy To Use: Simply place an observation tube in the sample chamber of the AP-300 and press START key
- Automatic Temperature Compensation Function for International Sugar Scale with a range between 18°C and 30°C
- Conforms with ICUMSA standards
- Built in memory stores the 30 most recent measurement readings
- Out-of-range measurements are indicated instantly by graphic display
- The AP-300 offers ease of use with a very competitive price
- Compact and space saving
- Average Measurement Value is Displayed!
- Password Function as necessary for ISO Standard!

## Application

- Measures the specific optical rotation of medical agents
- Measures the concentration of optically active substances found in fragrance materials or chemical compositions
- Measures the international sugar scale and the purity of sugar
- Identifies the attributes of inverted sugar, etc.
- Measures the specific optical rotation or the concentration of optically active substances

### Example of angle of rotation display



### Explanation of measurements display

- Angle of rotation**  
The angle of rotation is the basic numeric value measured by polarimeters, and changes depending on the concentration of the solution, the length of the observation tube, temperature, and/or the measurement wavelength. It is symbolized by " $\alpha$ " and indicated in "°."
- International Sugar Scale**  
The International Sugar Scale is indicated in "°Z."  
The measurement value of 26g of sucrose in 100ml of sucrose solution in a 200mm observation tube is 100°Z. This measurement value is commonly used in the sugar manufacturing industry, and is usually temperature-compensated to the reference temperature of 20°C (68°F). The AP-300 can display the measurement value with or without temperature compensation (Automatic Temperature Compensation, "ATC").
- Specific Rotation**  
The Specific Rotation is a numeric value unique to each substance. By definition, the specific rotation value is equivalent to the angle of rotation obtained by a measuring a solution of 100% concentration in a 100mm observation tube (although such a measurement is actually not practical). Specific rotation is symbolized by "[ $\alpha$ ]" and indicated in "°."  
Specific rotation is symbolized by "[ $\alpha$ ]" and indicated in "°."
- Concentration**  
The Concentration is the density of a liquid solution made by dissolving an optically active substance in water or alcohol. It is indicated in "g/100ml."
- Purity**  
The Purity is the proportion of sucrose compared to the soluble solid content in a sample. It is indicated in "%." To measure the purity, input the Brix value of the sample (which can be obtained by using an ATAGO refractometer) into the AP-300 before taking a measurement.



## Observation tubes

- RE-72056 : Observation tube 50mm long OT-50(A)/2.5mℓ
- RE-72054 : Observation tube 100mm OT-100(A)(SUS)/5mℓ
- RE-72055 : Observation tube 200mm long OT-200(A)/10mℓ
- RE-72036 : Jacketed flow tube 50mm/2.5mℓ
- RE-72034 : Jacketed flow tube 100mm/4.5mℓ
- RE-72035 : Jacketed flow tube 200mm/9mℓ
- RE-72051 : Unjacketed flow tube (Glass) 50mm/4.5mℓ
- RE-72052 : Unjacketed flow tube (Glass) 100mm/9mℓ
- RE-72033 : Jacketed flow tube with funnel 100mm/11mℓ
- RE-72032 : Jacketed flow tube with funnel 200mm/15mℓ
- RE-72037 : Unjacketed flow tube with funnel 100mm/11mℓ
- RE-72038 : Unjacketed flow tube with funnel 200mm/15mℓ
- RE-72042 : Unjacketed small volume observation tube 10mm long/1mℓ
- RE-76015 : Sample chamber cover for Flow Cell (Cover only)
- RE-76018 : Inner lid for 50mm tube
- RE-76016 : Inner lid for 100mm tube
- RE-76017 : Inner lid for 200mm tube

\* To use the flow tubes, the sample chamber RE-76015 and a inner lid matching the size of the tube will be necessary to be purchased.

## Special Packages

ATAGO has prepared 4 different AP-300 packages.

### Recommended for sugar industry

#### Type A

### Temperature Control

Cat.No.5296

- AP-300
- Jacketed flow tube with funnel (200mm-approximate volume 15ml)
- \* Circulating Constant Temperature Bath 60-C4 (Cat.No.1922) sold separately.

#### Type B

### No Temperature Control

Cat.No.5297

- AP-300
- Unjacketed flow tube with funnel (200mm-approximate volume 15ml)

### Recommended for pharmaceutical industry

#### Type C

### Temperature Control

Cat.No.5294

- AP-300
- Jacketed flow tube(100mm)
- Inner Lid (For Tube 100mm)
- Quartz Control Plate (8°, 17°, or 34°)
- Digital printer DP-AD
- Printer paper for DP-AD
- Ribbon cassette for DP-AD
- Circulating Constant Temperature Bath 60-C4 (Cat.No.1922)

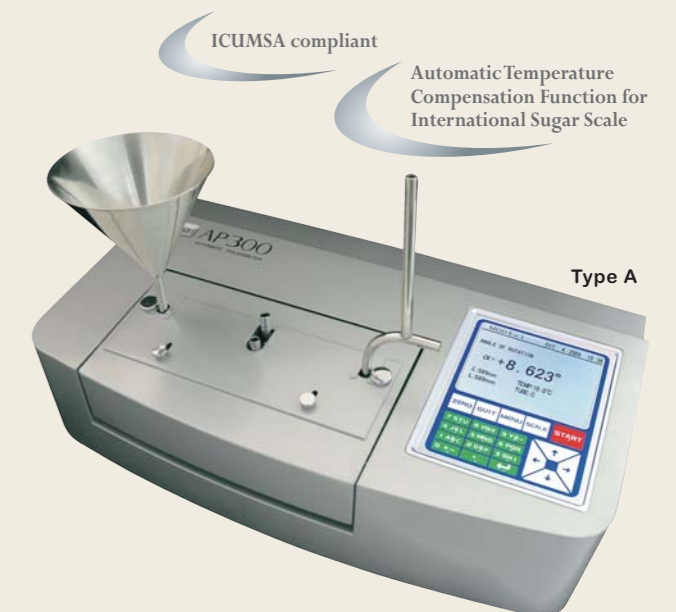
#### Type D

### No Temperature Control

Cat.No.5295

- AP-300
- Quartz Control Plate (8°, 17°, or 34°)
- Digital printer DP-AD
- Printer paper for DP-AD
- Ribbon cassette for DP-AD

Options other than above mentioned 4 types are available. Contact your nearest ATAGO representative for details.



# POLAX-2L

**Cat.No.5223**

*Angle of Rotation, International Sugar Scale  
is Indicated Digitally!*

*Temperature Indication Function  
Easy Operating & Accurate Measurement*

### Long lasting LED

“LED” which has a long life and lights overwhelmingly fast in comparison with the sodium lamp, is used as a light source. The wavelength of 589nm equivalent to D-line of the sodium is ensured by using interference filter together with “LED”.

### Digital display

Look through the eyepiece and match the brightness at the left and right of the visual field with push-button switches. Measurement value is indicated digitally on the display panel. Moreover, the temperature of the sample chamber can be indicated on the display panel by pressing the shift/temp switch.

### Smooth measurements

Push-button switches are used to rotate the analyzer. In addition to the right(+) and left(-) switches, the POLAX-2L has the shift/temp switch with which the rotation speed can be changed in two steps.



# POLAX-2L

Cat.No.5223

## APPLICATIONS

- Polarimeter is widely used in the pharmaceutical and chemical industries for quality control. Approximately 60 types of chemical materials for measuring "Angle of Rotation" in the list of Pharmacopeia. Including ascorbic acid, testosterone, and cocaine.
- Many optically active materials used in food additives, flavoring and perfumes, the polarimetric analysis is widely applied.
- International sugar scale ( $^{\circ}Z$ ) is used for sugar measurement and polarimeter is essential instruments for this procedure.
- Polarimeter is widely used for educational purposes in the field of "Physics" and "Applied science" course for understanding polarized light, optical rotation, optical active substances, and optical activity.



## SPECIFICATIONS

<b>Measurement range</b>	Angle of rotation: $-179.95^{\circ}$ to $+180.00^{\circ}$ International sugar scale: $-130.0^{\circ}Z$ to $+130.0^{\circ}Z$
<b>Minimum indication</b>	Angle of rotation: $0.05^{\circ}$ International sugar scale: $0.1^{\circ}Z$
<b>Measurement accuracy</b>	Angle of rotation: $\pm 0.10^{\circ}$
<b>Measurement temperature range</b>	5 to $40^{\circ}C$
<b>Light source</b>	LED with interference filter (589nm)
<b>Accessories</b>	Observation tubes : 100mm tube and 200mm tube / each
<b>Power supply</b>	AC100 to 240V, 50/60Hz (power consumption: 35VA)
<b>Operation switches</b>	<p><math>\triangle R \oplus</math>=Right rotation switch : Rotates the analyzer slowly to the right  <math>\blacktriangledown L \ominus</math>=Left rotation switch : Rotates the analyzer slowly to the left  <math>\blacklozenge</math> temp=Shift/ temp switch :</p> <p>Pressing this switch simultaneously with either <math>\oplus</math> switch or the <math>\ominus</math> switch will provide a faster rotation (in the shift mode).  * When this switch is pressed for 2 seconds or more, the temperature of the sample chamber is indicated on the display panel (until the switch is released from pressing).</p>
<b>Dimensions and weight</b>	43×22×30cm, 11.5kg (Main Unit Only)

\* The observation tube (length:100mm, liquid capacity:1 to 1.5ml) for small volume of sample is available as an option.

### EXPLANATION OF ICONS

Icons for functions, specifications and scales have been added to this catalog.



\*Digital display  
 \*Affichage numérique  
 \*Digital Anzeige  
 \*Display digitale  
 \*Pantalla digital  
 \*数字顯示



\* AC outlet(AC100 to 240V)  
 \* Alimentation secteur(CA 100 à 240 V)  
 \* AC Ausgang (AC 100 bis 240V)  
 \* Uscita AC (AC 100 240V )  
 \* Conexión a 240V CA  
 \* AC插座(AC 100至240V)

All ATAGO polarimeters are designed and manufactured in Japan.



HACCP

GMP

GLP

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## ATAGO CO., LTD.

Headquarters: The Front Tower Shiba Koen, 23rd Floor  
 2-6-3 Shiba-koen, Minato-ku, Tokyo 105-0011, Japan  
 TEL : 81-3-3431-1943 FAX : 81-3-3431-1945  
 overseas@atago.net http://www.atago.net/

### ATAGO U.S.A., Inc.

TEL : 1-425-637-2107 customerservice@atago-usa.com

### ATAGO INDIA Instruments Pvt. Ltd.

TEL : 91-22-2833-8038 / 8076 customerservice@atago-india.com

### ATAGO (THAILAND) Co., Ltd.

TEL : 662-982-8718-9 customerservice@atago-thailand.com

### ATAGO BRASIL Ltda.

TEL : 55 16 3916-6000 customerservice@atago-brasil.com

### ATAGO ITALIA s.r.l.

TEL : 39 2 36557267 customerservice@atago-italia.com

### ATAGO CHINA Guangzhou Co., Ltd.

TEL : 86 20-38106065 info@atago-china.com



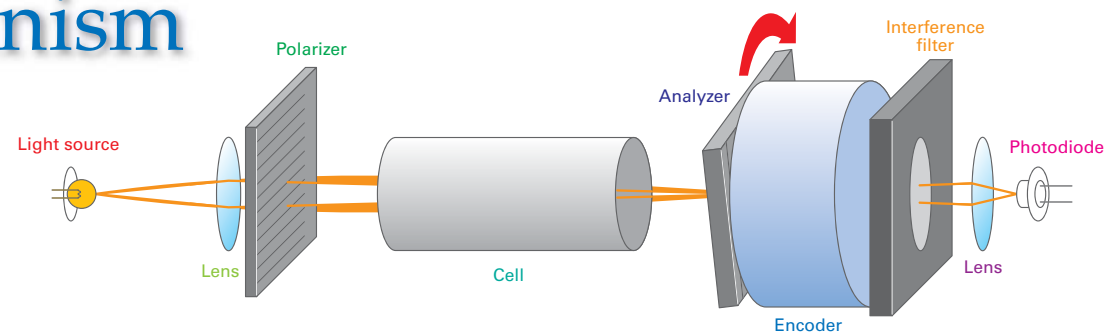
\* Specifications and appearance are subject to change without notice.

Here at last – the product of our uncompromising pursuit of ultimate usability.

- FDA 21 CFR Part 11 Software Included in Standard Delivery **NEW**
- Measurement stability in **12 seconds**  
(4 seconds in the high-speed & consecutive measurement mode)
- Resolution of up to **4 decimal places**
- Repeatability of **±0.003°** Angle of Rotation and **±0.0090°Z**
- Up to **999** automatic consecutive measurements followed by average value display
- **Sleep & timer feature** to take measurement later at specified time
- Improved usability with the use of **touch screen** technology
- **Connectivity to RX Digital Refractometers** for automatic purity measurement



## Mechanism



## Specifications

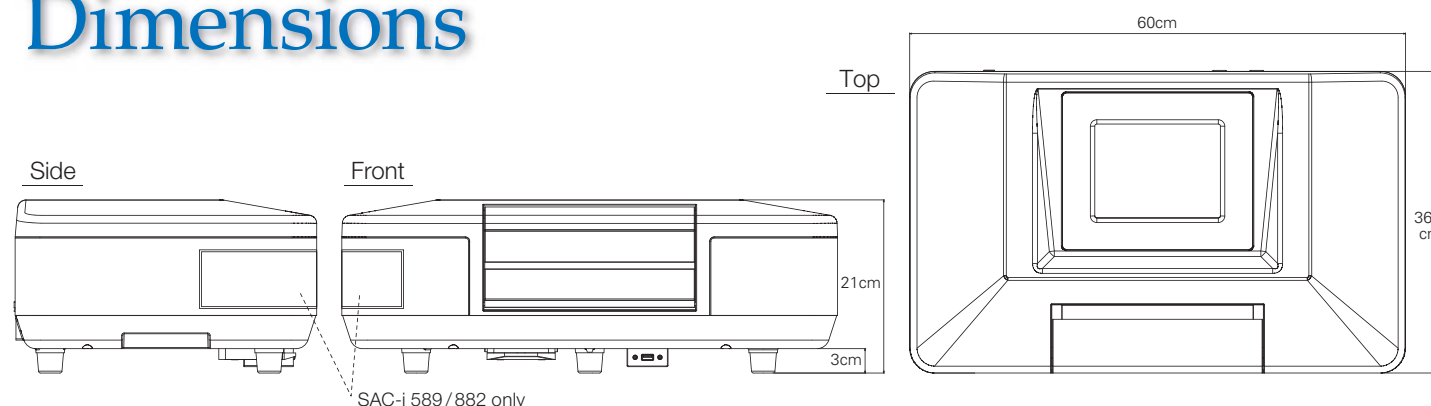
SAC-i Cat.No.5951	
Measurement accuracy	Angle of Rotation: ±0.002° (-5.0000 to +5.0000°) ±0.005° (-45.0140 to -5.0001°, +5.0001 to +45.0140°) International Sugar Scale: ±0.0150°Z (-130.0000 to +130.0000°Z) [Other ranges] Angle of Rotation: ±0.010° International Sugar Scale: ±0.0300°Z
Repeatability	±0.003° Angle of Rotation and ±0.0090°Z
Measurement wavelength	589nm (equivalent to the sodium-D line spectrum)
Light source unit	LED: 589nm interference filter

SAC-i 589/882 Cat.No.5952	
Measurement accuracy	589nm: Angle of Rotation: ±0.002° (-5.0000 to +5.0000°) ±0.005° (-45.0140 to -5.0001°, +5.0001 to +45.0140°) International Sugar Scale: ±0.0150°Z (-130.0000 to +130.0000°Z) [Other ranges] Angle of Rotation: ±0.010° International Sugar Scale: ±0.0300°Z 882nm: Angle of Rotation: ±0.005° (-19.3000 to +19.3000°) International Sugar Scale: ±0.0150°Z (-130.0000 to +130.0000°Z) [Other ranges] Angle of Rotation: ±0.010° International Sugar Scale: ±0.0700°Z
Polarizer	Glan Taylor Prism
Measurement wavelength	589nm (equivalent to the sodium-D line spectrum) 882nm (near infrared ray)
Light source unit	LED: 589nm interference filter, 882nm interference filter

\* Checked by reading a standard quartz plate.

SAC-i series Common Specifications	
Measurement Scales	Angle of Rotation International Sugar Scale (without temperature compensation) International Sugar Scale (with Automatic Temperature Compensation) Specific Rotation Concentration Purity User scale Angle of Rotation of Quartz Plate (with Automatic Temperature Compensation) Temperature (°C/°F)
Measurement range	Angle of Rotation: -89.9999 to +90.0000° and -360.0000 to +360.0000° International Sugar Scale: -259.0000 to +259.0000°Z
Resolution	Angle of Rotation: 0.0001° International Sugar Scale: 0.0001°Z
Temperature compensation range	10 to 40°C
Temperature display accuracy	±0.2°C
Ambient temperature	Use the instrument where the temperature is between 10 to 40°C
Display method	7.5-inch color LCD + touch screen
Printer output	Digital printer DP-AD/DP-63 (sold separately) Output method: RS-232C (9 pin D-Sub male connector)
Data output to USB flash drive	CSV text file format
Communication with computer	Communication via: USB-Serial
Observation tube included	Observation tubes (100mm [5ml], 200mm [10ml])
Power supply	AC 100 to 240V, 50/60 Hz
Power consumption	140VA
Dimensions and weight	60x36.5x21cm, 20.0kg (main unit only)

## Dimensions



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2-6-3 Shiba-koen, Minato-ku, Tokyo 105-0011, Japan  
TEL : 81-3-3431-1943 FAX : 81-3-3431-1945

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<b>ATAGO THAILAND Co., Ltd.</b>	TEL : 66-21948727-9	customerservice@atago-thailand.com
<b>ATAGO BRASIL Ltda.</b>	TEL : 55 16 3913-8400	customerservice@atago-brasil.com
<b>ATAGO ITALIA s.r.l.</b>	TEL : 39 02 36557267	customerservice@atago-italia.com
<b>ATAGO CHINA Guangzhou Co., Ltd.</b>	TEL : 86-20-38108256	info@atago-china.com
<b>ATAGO RUSSIA Ltd.</b>	TEL : 7-812-777-96-96	info@atago-russia.com
<b>ATAGO NIGERIA Scientific Co., Ltd.</b>	TEL : 234-707-558-1552	atagonigeria@atago.net

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



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SAC-i Cat.No.5951

SAC-i 589/882

Cat.No.5952

Automatic Polarimeter / Saccharimeter



SAC-i 589/882

It has become common that dark color - raw sugar samples are measured at 882nm without decolorization treatment.

SAC-i 589/882 can measure samples at both 589nm and 882nm by changing the optical units.

High Performance Sugar Analysis, Now Easier Than Ever.

ICUMSA compliant

FDA 21 CFR Part11 compliant

# SAC-i

Cat.No.5951

# SAC-i 589/882

Cat.No.5952

Automatic Polarimeter / Saccharimeter



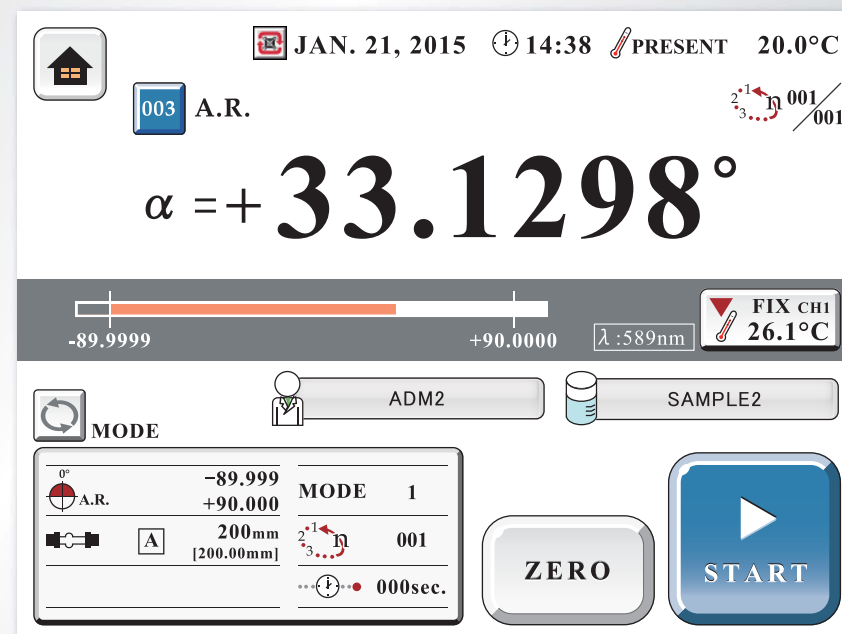
## New Generation Saccharimeter

### Home screen

Choose from a total of 6 options – 3 graphic themes, each with 2 background options.

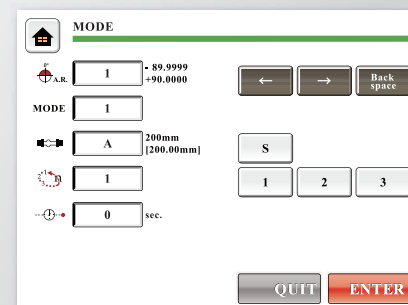


## Smooth and Accurate Operations, Guaranteed



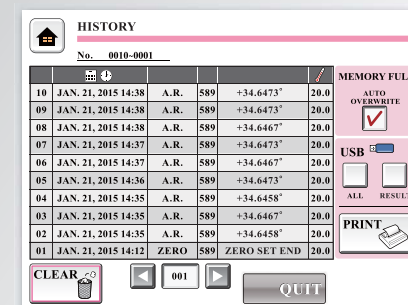
### Measurement screen with setting sub-window (lower left)

Basic settings are easily accessible from a sub-window within the main measurement screen. With a touch on the screen, it can switch to display the last 10 measurement history.



### Measurement mode screen

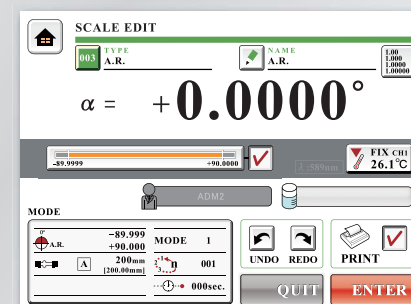
Customize measurement methods – mode, wait time, consecutive measurements, temperature, and more.



### History screen

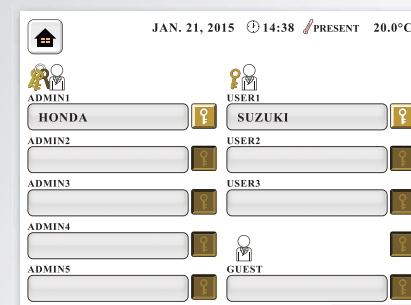
Up to 5,000 each of measurement and zero-setting / calibration data can be stored.

## Touch Screen



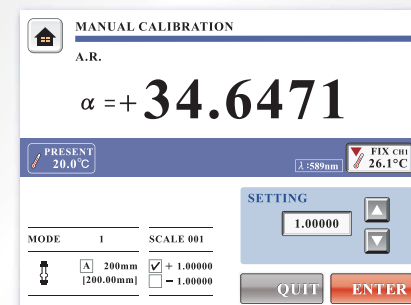
### Sale edit screen

Edit and save your own scales with ease.



### High-security protection

Design your ideal data security system with the 4 system levels in combination with 9 individual user passwords.



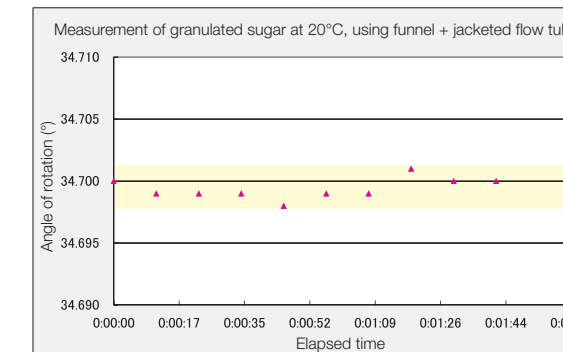
### Manual calibration

Correct measurement discrepancies among units within the accuracy specification for consistency across multiple units.

## Exceptional Stability & Reliability

### Increased repeatability

ATAGO's innovations in technology has made high-stability measurement possible. The repeatability is the best in its class, and sample types that are conventionally difficult to measure can be measured with great repeatability and accuracy.



### PTB traceability

Manufacturing and calibration is executed with quartz control plates made to the German PTB standards.



### Approved by CONSECANA

The SAC-i has passed the rigorous approval process by CONSECANA, the group representing ORPLANA, the Brazilian sugarcane growers association.



## User-Friendly Construction



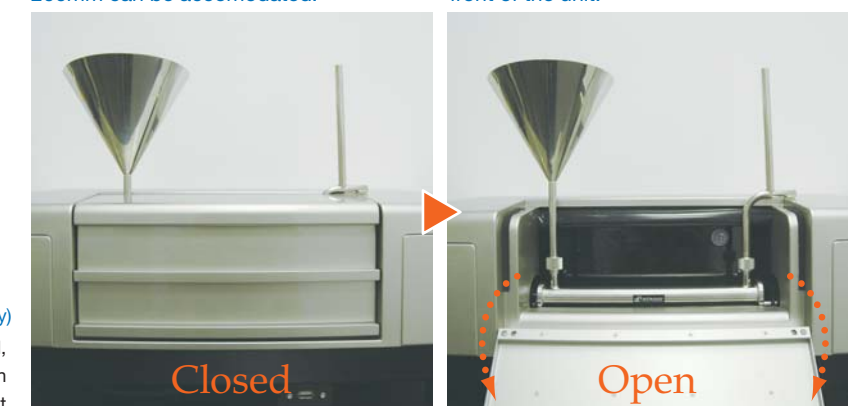
An observation tube length of up to 200mm can be accommodated.

USB ports are easily accessible from the front of the unit.

## Hardware

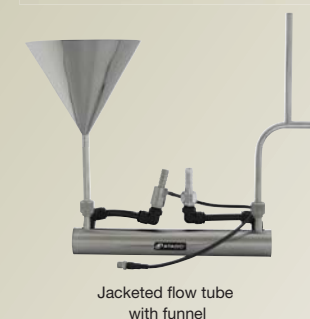
### Flow cell (sold separately)

The chamber cover opens forward, allowing for hassle-free installation of the flow cell attachment.



## Accessories

### Observation tubes



Jacketed flow tube with funnel

- RE-72080 : Observation tube 50mm OT-50(I) (SUS) 2.5ml
- RE-72078 : Observation tube 100mm OT-100(I) (SUS) 5ml
- RE-72079 : Observation tube 200mm OT-200(I) (SUS) 10ml
- RE-72113 : Jacketed flow tube with funnel 100mm
- RE-72114 : Jacketed flow tube with funnel 200mm
- RE-72037 : Unjacketed flow tube with funnel 100mm
- RE-72038 : Unjacketed flow tube with funnel 200mm
- RE-72042 : Unjacketed small volume observationtube 10mm long 1ml
- RE-72110 : Jacketed flow tube 50mm (With water jacket)
- RE-72111 : Jacketed flow tube 100mm (With water jacket)
- RE-72112 : Jacketed flow tube 200mm (With water jacket)
- RE-72051 : Unjacketed Flow Tube (Glass) 50mm/4.5ml
- RE-72052 : Unjacketed Flow Tube (Glass) 100mm/9ml

### Digital printer

DP-63 Cat.No.3118



- Input method : RS-232C
- Type of printer : Thermal printing
- Printing data fields : Angle of rotation, International Sugar Scale, Specific optical rotation, Concentration, Purity, Length of sample tube, Measurement temperature, Day, Month, Year and Time
- Power supply : AC adapter
- Power consumption : (Input voltage : AC100 to 240V) 13VA
- Dimensions and weight : 17×16×7cm,580g (main unit only)

### Digital printer

DP-AD Cat.No.3123



- Input method : RS-232C
- Type of Printer : Dot matrix printing
- Printing data fields : Angle of rotation, International Sugar Scale, Specific optical rotation, Concentration, Purity, length of sample tube, Measurement temperature, Day, Month, Year and Time
- Power supply : AC adapter
- Power consumption : (Input voltage : AC100 to 240V) 7VA
- Dimensions and weight : 11×18×9cm, 470g (main unit only)

### Circulating constant temperature Bath

60-C4 Cat.No.1922



- Tank capacity : 0.5L
- Temperature setting range : 10 to 60°C (water)
- Constant-temperature accuracy : ±0.2°C, PID control method using a thermo-module
- Flow rate : 4L / min.
- Power supply : AC100 to 240V, 50 / 60Hz
- Power consumption : 430VA
- Dimensions and weight : 38×24×27cm, 11.0kg (main unit only)

### Quartz control plates



- RE-72043 : Quartz Control Plate 8° (25°Z)
- RE-72044 : Quartz Control Plate 17° (50°Z)
- RE-72045 : Quartz Control Plate 34° (100°Z)
- RE-72048 : Quartz Control Plate -8° (-25°Z)
- RE-72049 : Quartz Control Plate -17° (-50°Z)
- RE-72050 : Quartz Control Plate -34° (-100°Z)

## Included software

### FDA 21 CFR Part11 Software

Software for compliance with 21 CFR Part 11 requirements on electronic records and electronic signatures. Cat.No.3167

