

ICUMSA compliant

FDA 21CFR Part11  
compliant

Automatic Polarimeter



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



Automatic  
Polarimeter

# AP-300

## Features

**NEW** FDA 21 CFR Part 11 Software Included in Standard Delivery.

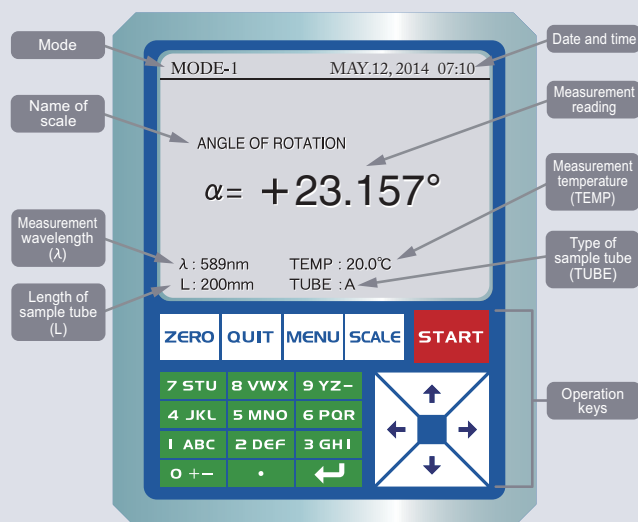
**NEW** With high resolution : Angle of rotation 0.001°, International Sugar Scale 0.001°Z

- 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 "°."
- **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.



Jacketed flow tube



Jacketed flow tube with funnel

## 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.



Type A

# Specifications

Scales	Angle of Rotation, International Sugar Scale (without temperature compensation), International Sugar Scale (with Automatic Temperature Compensation)
Measurement readings	Angle of Rotation, International Sugar Scale (without temperature compensation), International Sugar Scale (with Automatic Temperature Compensation), Specific Optical Rotation, Concentration, and Purity.
Measurement range	Angle of Rotation: -89.999 to + 89.999° International Sugar Scale : -130.000to + 130.000°Z
Resolution	Angle of Rotation : 0.001° (Default 0.01°) International Sugar Scale : 0.001°Z (Default 0.01°Z)
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 )
Length of observation tube	Up to 200mm

Temperature	10.0 to 30.0°C Temperature accuracy : ±0.5°C Temperature resolution : 0.5°C
Temperature compensation range for International Sugar Scale	18.0 to 30.0°C
History function	History function stores the 30 previous measurement values for reference, printing or exporting to a computer.
Display panel	Backlit Color LCD
Graphic display	Graphic display indicating the conformity of measurement values for measurements with limit settings.
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



- Can be connected to a printer
- Sortie imprimante
- Verbindung mit Personalcomputer
- Collegabile a stampante esterna
- Conexión para impresora
- 可與印表機連結



- RS-232C Interface
- Interface RS232C pour PC
- Interface RS232C
- Interfaccia RS232C
- Interface RS232C
- RS232C輸出



- Automatic Temperature Compensation
- Compensation automatique de
- Automatische Temperaturkompensation
- Compensazione automatica della temperatura
- Compensación de automática de temperatura
- 自動溫度補償



- Digital display
- Affichage numérique
- Digital Anzeige
- Display digitale
- Pantalla digital
- 數字顯示



- 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)

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

All ATAGO polarimeter are designed and manufactured in Japan.

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