

AP-300 Polarimeter Manual

02/02/2021 K.B. and S.D.C.

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1. Connecting the AC power cable

If the polarimeter is not plugged in, insert the connector of the AC power cable to the AC power input terminal located at the back of the AP-300.

2. Power-on

- a. Plug the AC power cable to 240 V power outlet
- b. To turn on the power, move the power supply switch on the back of AP-300 to the 'I' position
- c. After AP-300 is on, it will display the company name "AP-300, ATAGO CO LTD-TOKYO. JAPAN" then the display changes to one of the measurement display screens three seconds later

After the power is supplied to the AP-300, allow 30 minutes for the unit to warm up before conducting zero setting or starting a measurement

- d. After turning off the power switch, wait for more than one minute before powering on. If the switch is turned on again immediately after turning off, a malfunction may occur.
- e. In the situation where the power switch is turned on and the liquid-crystal-display screen is not displaying properly, turn off the power. Wait for at least 1 minute, and then turn on the power switch again.

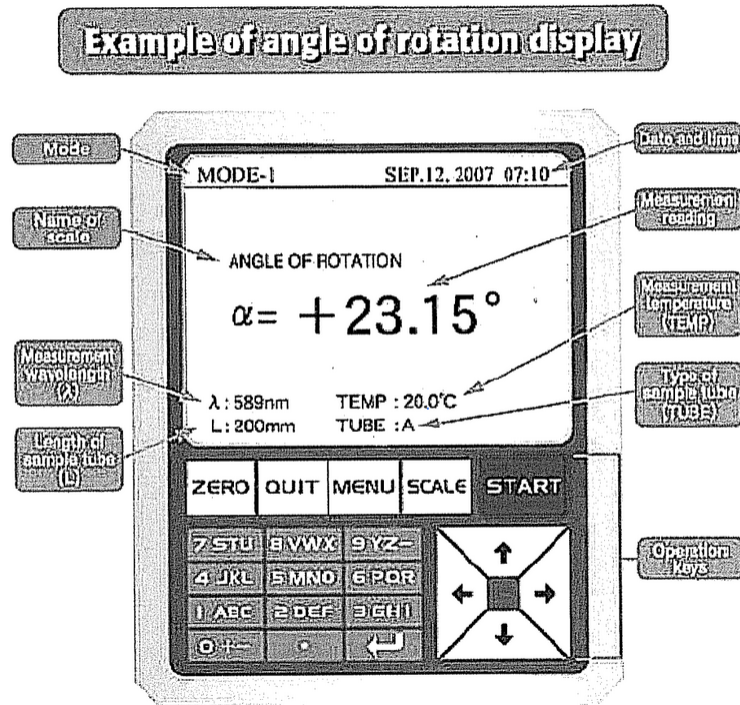
3. Setting

3.1 Setting the measured display screen

If the display screen is not the desired one, press the SCALE key repeatedly until the desired screen is displayed. The last screen displayed when the power is turned off will also be displayed when the unit is turned on again.

3.2 Setting up the Mode and measurement count

The AP-300 is preset for “MODE-1”. Notice that the mode number indicates “MODE-1” when a measurement value screen is on the display panel. If a different mode is displayed, take the following steps to change the mode.



- Press the MENU key when a measurement value screen is on the display panel
- Upon verifying that the arrow (→) is pointed to “1 MODE” press the ↓ key. If arrow is not pointing to “1 MODE” press the ↑ or ↓ to move it, and then press the ↓ key.
- The setting next to MODE should be selected. Use the ← key → to select “1” for MODE-1, then press the ↓ key.
- Select the number next to MEASUREMENT CNT. Section. Enter the measurement count by using the numeric keypad, and then press the ↓ key. Display will return to the SET UP MENU screen after a beep.

* A continuous measurement from 2 to 10 times can be set. For instance, when setting is 3, it measures 3 times continuously.

- Press the QUIT key. The display panel will return to measurement display screen. The setting of the MODE and the MEASUREMENT CNT. have been completed successfully.

3.3 Setting the Observation Tube

- **Observation Tube**

The AP-300 package includes one 99.97 mm (tube A) observation tube (volume 5 mL) and one 199.98 mm (tube B) observation tube (volume 10 mL). For precise measurement, use the 199.98 mm tube to measure samples with higher clarity, and the 99.97 mm tube to measure samples with low clarity or those that are colored. Set up the selected observation tube according to the following directions.

- a. Press the MENU key when a measurement value screen is on the display panel.
- b. Press \uparrow or \downarrow to move the arrow (\rightarrow) on the screen to "2 TUBE" then press key.
- c. The screen of TUBE SET will be displayed on the display screen. Select TUBE section select the type of a used observation tube indicated by letter 'A' through 'J' by pressing the \uparrow or \downarrow key, and then press the \downarrow key.
- d. Press the QUIT key; the display panel will return to Measurement display screen.

- **Setting the specific rotation measurement value display**

- a. Press MENU when the Specific Rotation Measurement Value screen is on the display panel
- b. On the Specific Rotation Measurement Value display, the concentration value of the sample to be measured needs to be input before taking a measurement. Using \uparrow or \downarrow , move the arrow (\rightarrow) on the screen so that it points to "3 CONC/S.R./BRIX", then press \downarrow .
- c. The setting inside "[]" under 1 CONC. should be highlighted. Enter the desired concentration value, using the numeric keypad, and then press the \downarrow key. Press the \downarrow key twice to fix the setting.
- d. The screen returns to the SET UP MENU after a beep.
- e. Press the QUIT key to return to the measurement value screen or the ZERO SET END screen.

4. Preparing the sample.

- **Filling an observation tube with a sample**

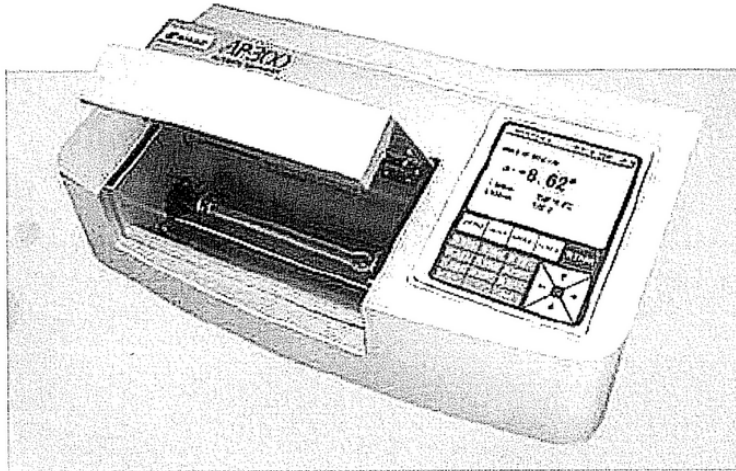
- An observation tube consists of the main tube, two pieces of deck glass, two pieces of rubber packing, and two screw caps. The deck glass, rubber packing, and screw caps are used on both end of the observation tube.

- a. Hold the screw cap at one end of the tube with your fingers and turn it counterclockwise to unscrew it. Remove the rubber packing and the deck-glass.
- b. Hold the tube straight up and pour the sample into it, to a level where the upper surface of the sample extends just past the rim of the observation tube, held by the surface tension. Gently slide the deck-glass over it from the side so that air does not get inside.
- c. Place the rubber packing over the deck-glass, and then screw the screw cap back on.
 - If there is air trapped in the observation tube, be sure to keep the air in the air trap.
 - An excess amount of air in an observation tube may hinder measurement light traveling through the sample properly.
 - Always use an observation tube that is clean and dry.
 - Contaminants found in a sample, turbidity or coloring of a sample greatly affects measurements, as the AP-300 sends polarized light through long layers of the sample solution filled in the observation tube.

5. Measuring the sample

5.1 Conducting zero setting

- **After the power is supplied to the AP-300 allow 30 minutes for the unit to warm up before conducting zero setting or starting a measurement.**
- a. Make sure that the sampling chamber is completely empty.
 - b. Press the ZERO key.
 - c. Close the sample chamber cover.
 - d. The AP-300 begins zero setting. When the process is complete, the ZERO SET END screen will be displayed on the display panel.



a) The zero setting has been completed successfully.

5.2 Sample Measurement

- a. Place an observation tube filled with a sample in the sampling chamber, and then close the sample cover.
 - b. Press the START key.
 - e. "READING" will be displayed on the display screen, and it will start measuring.
 - d. Measurement value will be displayed on the display screen.
 - e. Average clue of the measurements will be displayed when the "MEASUREMENT CNT>" is set more than 2 in the MODE setting.
- **The red arrow in the bottom right-hand corner of the display panel, which appears following the display of the measurement value, indicated that the AP-300 is not ready for a new measurement. Wait until the arrow flashes green to start a new measurement**
 - When you measure a high concentration sample, leave the observation tube in the chamber for about 5 minutes. That way, you can take stable readings.