

## Automated Polarization Accessory

### NOTE

NOTICE: This document contains references to Varian. Please note that Varian, Inc. is now part of Agilent Technologies. For more information, go to [www.agilent.com](http://www.agilent.com).

Installation category I

Pollution degree 2

Equipment Class III

### Safety information

Before using this accessory, you must read the Safety Practices and Hazards section in your Agilent Cary Eclipse Fluorescence Spectrophotometer User's Guide.

A link to the Safety section can also be found on the main page of your instrument Help.

If the equipment is used in a manner not specified by the manufacturer, your safety may be at risk.

### Introduction

The Automated Polarization accessory for the Agilent Cary Eclipse Fluorescence Spectrophotometer provides a solution for polarization applications. Such measurements require exciting the sample with vertically polarized light and sequentially measuring the intensity of fluorescence through an analyzing polarizer, oriented vertically and then horizontally.

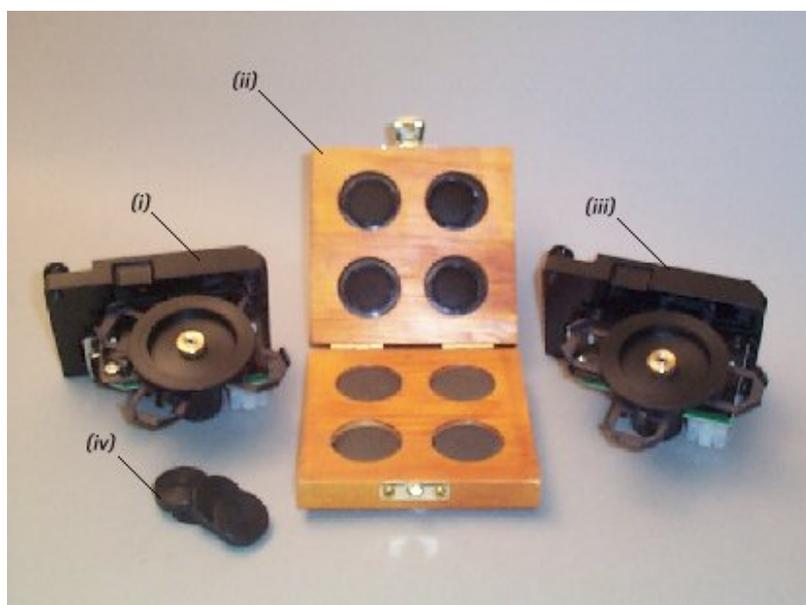
The accessory consists of four metal arms extending from a central wheel (Figure 1 (i)). Each arm is labeled as 1, 2, 3 or 4 by holes etched into the wheel, just below the filter position, (Figure 3a).

Two polarizers are mounted on the polarizer wheel (one polarizer per arm). Polarizers must be mounted in either positions 1 and 3 or positions 2 and 4. Solid black disks must be mounted in the remaining empty positions. This is to ensure the polarization wheel is balanced.



### Unpacking notes

Your accessory is packed in a foam-lined cardboard box. Inside the box you will find a wooden case that contains 2 vertical and 2 horizontal polarizers (Figure 1 (ii)), a plastic bag containing 4 black plastic disks (Figure 1 (iv)), and 2 cardboard boxes, each containing a motorized wheel, into which the polarizers must be mounted. Check that you have received all of the items in the accessory kit by referring to the packing list included with the shipment (Figure 1).



**Figure 1.** i) & iii) Two automated polarizers ii) Vertical and horizontal polarizers iv) Four black disks

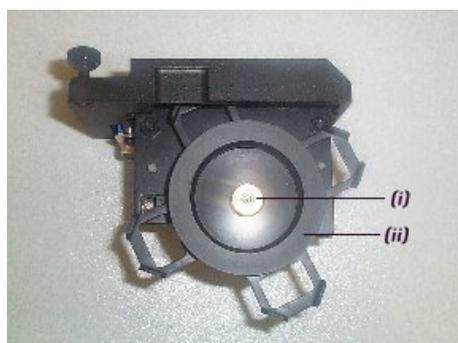
### Installation

Installation of the Automated Polarization accessory can be divided into three stages:

- 1 Installing the polarizers and black disks in the two motorized polarizer wheels.
- 2 Installing the motorized wheels in the instrument.
- 3 Configuring the accessory using the software

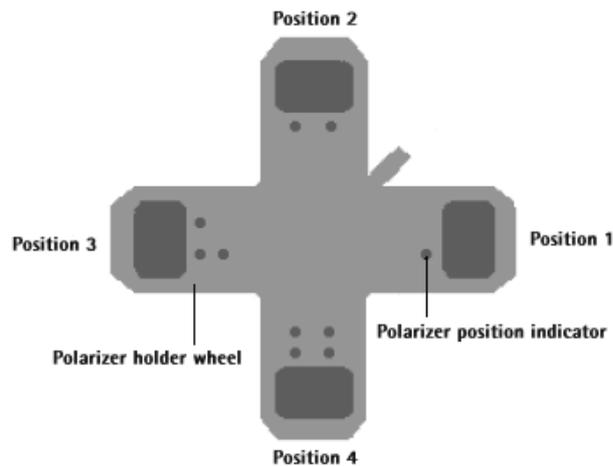
#### Installing the polarizers in the two automated polarizer accessories

- 1 Using your fingers, carefully unscrew the knurled nut (Figure 2 (i)) in the centre of the plastic polarizer locking wheel (Figure 2 (ii)) and remove the locking wheel from the accessory.



**Figure 2.** i) Knurled nut (ii) Polarizer locking wheel

- 2 Polarizers now need to be placed in the accessories. There are four spaces, each labeled 1 to 4 by holes etched into the arms of the polarizer holder, (Figure 3a).



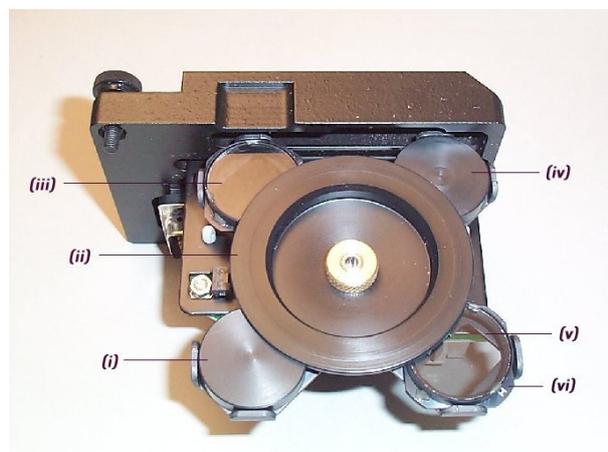
**Figure 3a.** Polarizer positioning

All four polarizer positions must be filled, using 2 polarizers and 2 black disks. By default the software will require you to place the polarizers in positions 1 and 3 in the polarizer holder. Each polarizer end is labeled with a “V” or “H” to identify if they are “vertical” or “horizontal” polarizers, (Figure 3b). Place the vertical polarizer in position 1 and the horizontal polarizer in position 3. The remaining two positions are filled with the black disks.

**NOTE**

The polarizers must be mounted in the motorized holding wheel so that the “V” or “H” label is facing away from the metal mounting arm, facing the user, (Figure 3b (vi)).

Lay one of the motorized wheels horizontally so that the metal arm is facing upwards. Carefully place the polarizer marked “V”, vertical, into position 1 and the horizontal, “H” polarizer into position 3 so that the tip of the polarizer that contains the label is pointing out from the center of the arm. Place a black disk in each of the remaining two positions, (positions 2 and 4) (Figure 3b). Repeat this for the second polarization accessory.



**Figure 3b.** (i) & (iv) Fitted black disks (ii) Replaced Polarizer locking wheel (iii) & (v) Correctly fitted polarizers (vi) Polarizer labeling. In this example the accessory is fitted with two polarizers. They are placed with “Vertical” in position 1 and “Horizontal” in position 3, as shown. The solid black disks are placed in positions 2 and 4.

- 3 Replace the plastic locking wheel(s) removed in Step 1, ensuring the polarizers remain positioned at the arm ends (see Figure 3b).

Replace the knurled nut(s) and rotate in a clockwise direction until finger tight. DO NOT over tighten.

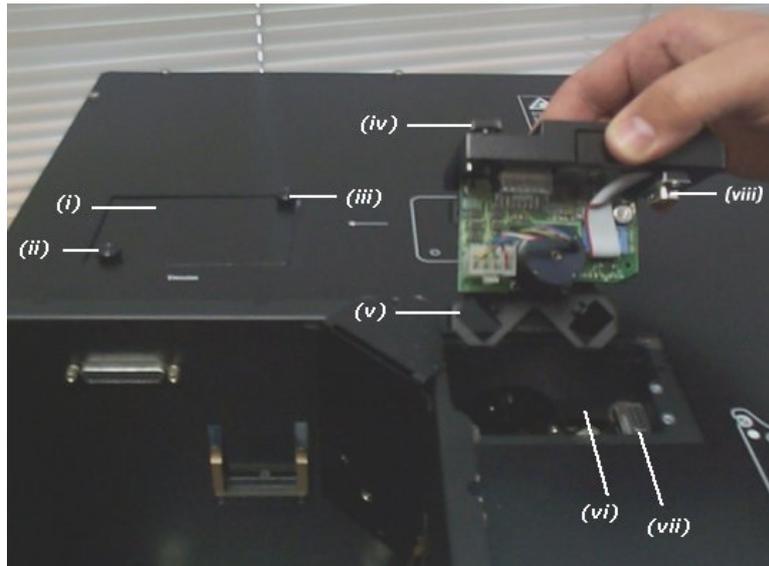
### Installing the accessory in the instrument

- 1 Turn the instrument off and remove any existing accessories from the sample compartment.
- 2 Prepare to remove the outer cover of the instrument by flipping up the four black plastic clasps located at each side of the instrument. Two of these are labeled (iv) and (v) in Figure 4.



**Figure 4.** (i) Circular cover plate (removed) (ii) Front black clasp (iii) Sample compartment front door removed (iv) Right hand side black plastic clasps. Here three of the five black plastic clasps have been flipped up in order to release the cover. The remaining two clasps are located in the same position as (iv) and (v) on the opposite side of the instrument.

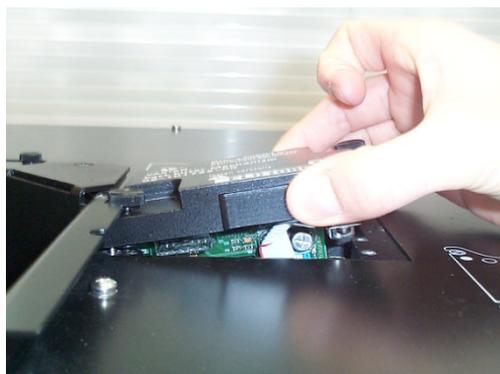
- 3 Remove the sample compartment front door and, using your thumb, lift the circular cover plate in the base of the instrument to expose a black plastic clasp, (Figure 4(ii)). Flip the clasp up.
- 4 Carefully remove the instrument outer cover by lifting it upwards away from the instrument base.
- 5 With the instrument cover removed, the black metal inner covers are now visible (Figure 5). You will be able to see two plates, each secured by two black screws to the top of the instrument. Remove both the black plates by unscrewing the two black screws. These represent the positions for either excitation or emission measurement. An Automated Polarization accessory must be placed in both the excitation and emission chambers. The black plate labeled (i) in Figure 5 covers the emission chamber. The second black plate, closest to the front of the instrument, covers the excitation chamber.



**Figure 5.** (i) Plate covering accessory chamber (emission) (ii) & (iii) Black screws (iv) Black thumb screw (v) Polarizer wheel orientation (vi) Accessory chamber (excitation) with cover removed (vii) & (viii) Alignment of the male and female D-plugs

#### Installing an Automated Polarization accessory in the Excitation position

- 1 To install an Automated Polarization accessory in the Excitation position, hold the accessory above the excitation chamber, located to the right of the sample compartment.
- 2 Orientate the accessory so the male D-plug located on the accessory is aligned with the female D-plug (Figure 5 (vii) & (viii)) inside the excitation chamber.
- 3 Orientate the polarizer wheel as shown in Figure 5 (v) so the arms of the wheel form a diagonal cross.
- 4 Carefully lower the accessory into the excitation chamber, raising the edge nearest the male D-plug on a 30° angle so that the opposite edge of the accessory touches the excitation chamber first (Figure 6). Once the edge is positioned, lower the male D-plug so that it is sitting on top of the female D-plug in the excitation chamber.



**Figure 6.** The edge nearest the male D-plug is raised at a 30° angle with the opposite edge touching the excitation chamber.

- 5 To secure the Automated Polarization accessory gently push down on top of the accessory base directly above the two D-plugs. Once the plugs mate, tighten the black thumbscrews. The accessory is now fitted in the excitation position.

### Installing an Automated Polarization accessory in the Emission Position

- 1 To install an Automated Polarization accessory in the Emission position, hold the accessory above the emission chamber, (Figure 5 (i)). Orientate the accessory so the male D-plug located on the accessory is aligned with the female D-plug (Figure 5 (vii)) inside the emission chamber.
- 2 Orientate the polarizer wheel as shown in Figure 5 (v) so the arms of the polarizer wheel form a diagonal cross.
- 3 Carefully lower both edges of the accessory into the emission chamber ensuring the male and female D-plugs are aligned. Once the accessory is sitting in the emission chamber gently push down on top of the accessory base plate directly above the two D-plugs. Once the plugs mate, tighten the black thumbscrews. The accessory is now fitted in the emission position.
- 4 Once the two Automated Polarizer accessories are secured by tightening the two black thumbscrews you can replace the instrument cover.
- 5 Once the instrument cover is replaced flip down the four black plastic clamps and the front black plastic clamp to secure the cover. Replace the circular cover. (This is the reverse of steps 4, 3 and 2 in order).
- 6 Install the accessory you would like to use with your Agilent Cary Eclipse Fluorescence Spectrophotometer, for example the single cell holder or multicell holder.
- 7 If required, replace the sample compartment front door and close the sample compartment lid.

#### NOTE

If the Automated Polarization Accessories are removed it is important that the black cover plates be replaced and secured using the black screws.

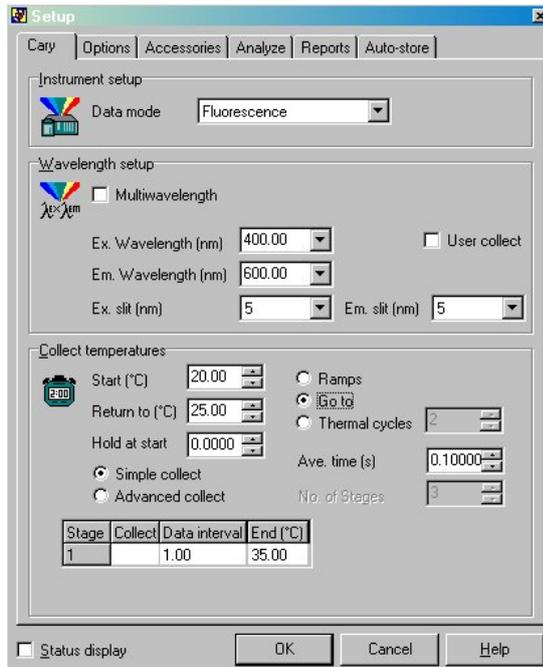
### Configuring the accessory using the software

The Automated Polarization accessory is to be operated by the Thermal Application provided in the Cary Eclipse Bio Software.

#### NOTE

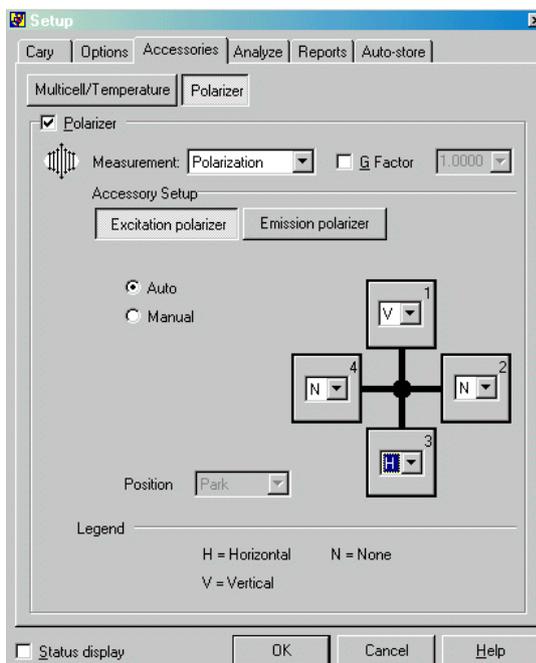
An ADL is required to operate the Automated Polarization accessory in the Scan and Advanced Reads applications. The ADL can be downloaded from [www.agilent.com](http://www.agilent.com).

- 1 Open the Thermal Application.
- 2 Turn on the instrument.
- 3 From the main Thermal window, select the **Setup** button to display the 'Setup' dialog. On the 'Cary' tab, select **Go To** in the Collect Temperatures group.



**Figure 7.** Software setup to allow the use of the automated polarizers, which are fitted in the excitation and emission monochromator chambers.

On the 'Accessories' page of the 'Setup' dialog, select the **Polarizer** check box and select the **Auto** radio button. Under 'Accessory Setup', select the Excitation polarizer and set position 1 to "Vertical" and position 3 to "Horizontal" on the polarization position diagram—that is, set position 1 to "V" and position 3 to "H". Select the Emission polarizer and set position 1 to the "Vertical" ("V") position and set position 3 to the "Horizontal" ("H") position.



**Figure 8.** Configuring the Thermal application for use with the automated polarizers in the excitation position.

- 4 You are now ready to use the automated polarizer with the Thermal Application. For more information about the Thermal or other Cary software applications, click the **'Help'** button.

### Accessory removal

If you need to remove the Automated Polarizer accessories from the instrument to add or change polarizers, grasp the accessory base on the right end of the long edge and lift gently. Once the D-plug is disconnected, the accessory may be carefully removed.

If the accessories are not being re-inserted, be sure to replace the black metal covers over the polarization chambers, and tighten the locking screws.

### Specifications

For environmental and power supply requirements, refer to your instrument operating instructions. This product is suitable for indoor use only.

### Weights

Packed	3 kg (6.614 lb)
Unpacked	1 kg (2.205 lb)

### Dimensions

Packed	370 x 220 x 260 mm (14.57 x 8.66 x 10.24 in)
Unpacked	250 x 120 x 120 mm (9.84 x 4.72 x 4.72 in)

### Maintenance and cleaning

Keep your accessory safely packed in its original box when not in use. Avoid unnecessary handling. If dust or fingerprints are observed on either surface of the polarizer, it should be cleaned using the following procedure:

- 1 Remove the polarizer from the motorized mounting wheel.
- 2 Moisten a piece of lint free tissue (such as lens tissue) with 1-2 drops of spectroscopic grade methanol (NEVER drop solvent directly onto the polarizer).
- 3 Gently wipe the upper surface of the polarizer clean (be careful not to use excessive force).
- 4 Repeat the cleaning procedure on the lower surface using a fresh piece of lens tissue.

### Technical assistance

For technical assistance regarding this accessory, please contact [contact\\_us@agilent.com](mailto:contact_us@agilent.com)

This information is subject to change without notice.



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