

# *P-2000 Digital Polarimeter*

*Ultimate flexibility for a wide range of applications*

*A new generation of polarimeters  
offering simplicity, reliability and  
complete validation protocols*



**Jasco**

DOMINIQUE DUTSCHER SAS

# P-2000 Digital Polarimeter

Ultimate flexibility for a wide range of applications ranging from quality control to research and technology



Foods



Pharmaceuticals



Sugars and Sweeteners



Essential oils, Flavors and Fragrances



Chemicals

JASCO, a leading manufacturer of polarimeters since 1967, is proud to introduce the new P-2000 multi-option polarimeter. The P-2000 is designed as a customizable polarimeter with various options for a range of applications and budgetary requirements. The instrument system can also be field upgraded as the application requirements change. Options such as polarizers, wavelength filters, lamps and photomultiplier detectors provide a wide range of analytical wavelengths from UV-Vis to NIR.

## Advanced instrument control

Two graphical user interfaces are available including a newly redesigned intelligent remote module (iRM) with a color LCD touch screen and Spectra Manager™ II software, the latest version of JASCO's innovative cross-platform spectroscopy software. Both of these control and analysis interfaces allow full-system control and advanced data processing. 21 CFR part 11 compliant versions for both interfaces can be ordered as an option.



The iRM conveniently guides the operator through routines from data acquisition to data processing. The obtained data can be automatically printed to USB printers, or saved to a compact flash memory card for further processing on a PC.

## High speed, precision and accuracy

The P-2000 offers a response speed as fast as six degrees per second to provide reproducible data for each measurement with a resolution of 0.0001°. A wide dynamic range of up to  $\pm 90^\circ$  enables the system to measure chiral compounds over a broad range of concentrations. The sample chamber is equipped with an integrated temperature, the current temperature constantly updated on the instrument control screen.

## Interference filter

A wide range of interference filters from UV-Vis to NIR

## Light source switching mirror option

## Light source

Up to two light sources can be installed. Available light sources are:

- WI (Tungsten-Halogen lamp)
- Na (Sodium lamp)
- Hg (Mercury lamp)

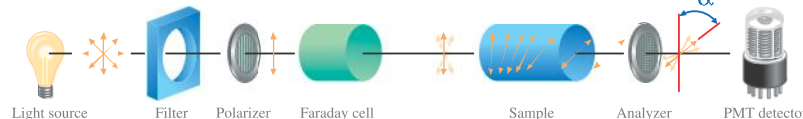
## Polarizer

## Faraday cells

## Automatic accessory recognition

## Analyzer

## PMT detector



## Full line of accessories

In support of diverse applications, a full line of accessories including a variety of cylindrical cells: a demountable stainless steel cell, Peltier thermostatted cell holder, and monochromator options, all offered for functional expansions of the P-2000. Quick-connect fittings with flow control valves in the sample compartment provide simple and secure exchange of water-thermostatted cells for temperature control with water baths. A newly developed Peltier cell holder offers accurate temperature control with  $\pm 0.1^\circ$  accuracy.

## Reliability and instrument verification

An automated validation program is available for GLP/cGMP laboratories or those regulated by the FDA. The program can be used for automated periodic validation of light source energy, zero repeatability, and rotational accuracy/repeatability. Inspected filters, sample cells with certified optical path length, and NIST-traceable rotation plates are also available.

## Ultimate flexibility

With its single optical platform, the P-2000 can be customized to provide the optimum performance for every application. By selecting the most suitable combination of optical elements, the instrument can be used in the ultra-violet, visible and/or NIR regions.

## Examples of versatile system configurations

### A single wavelength system

- 546 nm with Hg or WI lamp
- 589 nm with Na or WI lamp

### A dual wavelength system

- 589/546 nm with Na/Hg or WI lamp

### 5 wavelength system

- 589/578/546/436/365 nm with Na/Hg lamps

### 6 wavelength system

- 633/589/546/436/405/365 nm with WI lamp

### 7 wavelength system

- 633/589/578/546/436/405/365 nm with WI lamp

### System expansion to UV range

- 334/313/302/296/280/254 nm with Hg lamp with the wavelength expansion option for the UV range

- 334/325 nm with WI lamp with the wavelength expansion option for the UV range

### Multiple wavelength system for UV/Vis range

- 633/589/578/546/436/405/365/334/325 nm with WI lamp with the wavelength expansion option for the UV range

### System expansion to NIR range

- 880 nm with WI lamp with the wavelength expansion option for the NIR range

### Multiple wavelength system for NIR and Visible range

- 880/589 nm with WI lamp with the wavelength expansion option for the NIR range

- 880/589/546 nm with WI lamp with the wavelength expansion option for the NIR range

## Lamps and filters

| Filter | Light Source                 |                  |                     |
|--------|------------------------------|------------------|---------------------|
|        | WI (Tungsten-Halogen lamp)   | Na (Sodium lamp) | Hg (Mercury lamp)   |
| 880 mm | Quartz Faraday cell and R928 |                  |                     |
| 633 mm |                              |                  |                     |
| 589 mm |                              |                  |                     |
| 578 mm |                              |                  |                     |
| 546 mm |                              |                  |                     |
| 436 mm |                              |                  |                     |
| 405 mm |                              |                  |                     |
| 365 mm |                              |                  |                     |
| 334 mm | Quartz Faraday cell          |                  | Quartz Faraday cell |
| 325 mm | Quartz Faraday cell          |                  |                     |
| 313 mm |                              |                  | Quartz Faraday cell |
| 302 mm |                              |                  | Quartz Faraday cell |
| 296 mm |                              |                  | Quartz Faraday cell |
| 280 mm |                              |                  | Quartz Faraday cell |
| 254 mm |                              |                  | Quartz Faraday cell |

## Specifications

|                               |   |
|-------------------------------|---|
| Principle                     | Automatic digital polarimeter with symmetric angular oscillation using the optical-null balance method      |
| Light source                  | Tungsten-Halogen lamp (WI), Sodium lamp (Na), Mercury lamp (Hg) (Up to two light sources can be installed.) |
| Modulator                     | Faraday cell  |
| Wavelength                    | 880, 633, 589, 578, 546, 436, 405, 365, 334, 325, 313, 302, 296, 280, 254 nm                                |
| Aperture                      | 1.8, 3 and 8 mm diameters   |
| Angular range                 | ±90°  |
| Response speed                | 6°/sec  |
| Measurement accuracy          | ±0.002° (up to 1°)  |
|                               | ±0.2% (larger than 1°)  |
| Repeatability                 | 0.002°  |
| Resolution                    | 0.0001°   |
| Integration time              | 1 - 100 sec   |
| Detector                      | Photomultiplier tube (1P28-01) (R928 - option)  |
| Readout modes                 | Optical rotation, optical specific rotation, concentration, sugar scale Z, Brix purity, optical purity      |
| Temperature measurement range | 0-40°C (minimum display temp.: 0.1°C)   |
| Dimensions                    | 653 (W) x 249 (D) x 364 (H) mm  |
| Weight                        | Approx. 30 kg   |
| Power requirement             | AC100-240V ±10%, 50 or 60 Hz, 80 - 300 W  |

## Optional accessories



### PTC-203 Peltier cell holder

The PTC-203 Peltier sample cell holder (air cooled) is designed to accept both rectangular and cylindrical cells with a temperature accuracy of ±0.1°C.



### SHP-201W Water jacket sipper

Two types of sample sippers, the SHP-201P Peltier temperature control system and the SHP-201W water-jacketed type for temperature control, are available for quick measurements of multiple samples.



### PT-31 Peltier thermostatic bath

The PT-31 is a compact Peltier thermostatic bath whose dimensions are only 140 (L) x 80 (W) x 210 (H) mm. The temperature range is 8 to 40°C with a temperature accuracy of ±0.2°C.

• Specifications are subject to change without notice.



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