

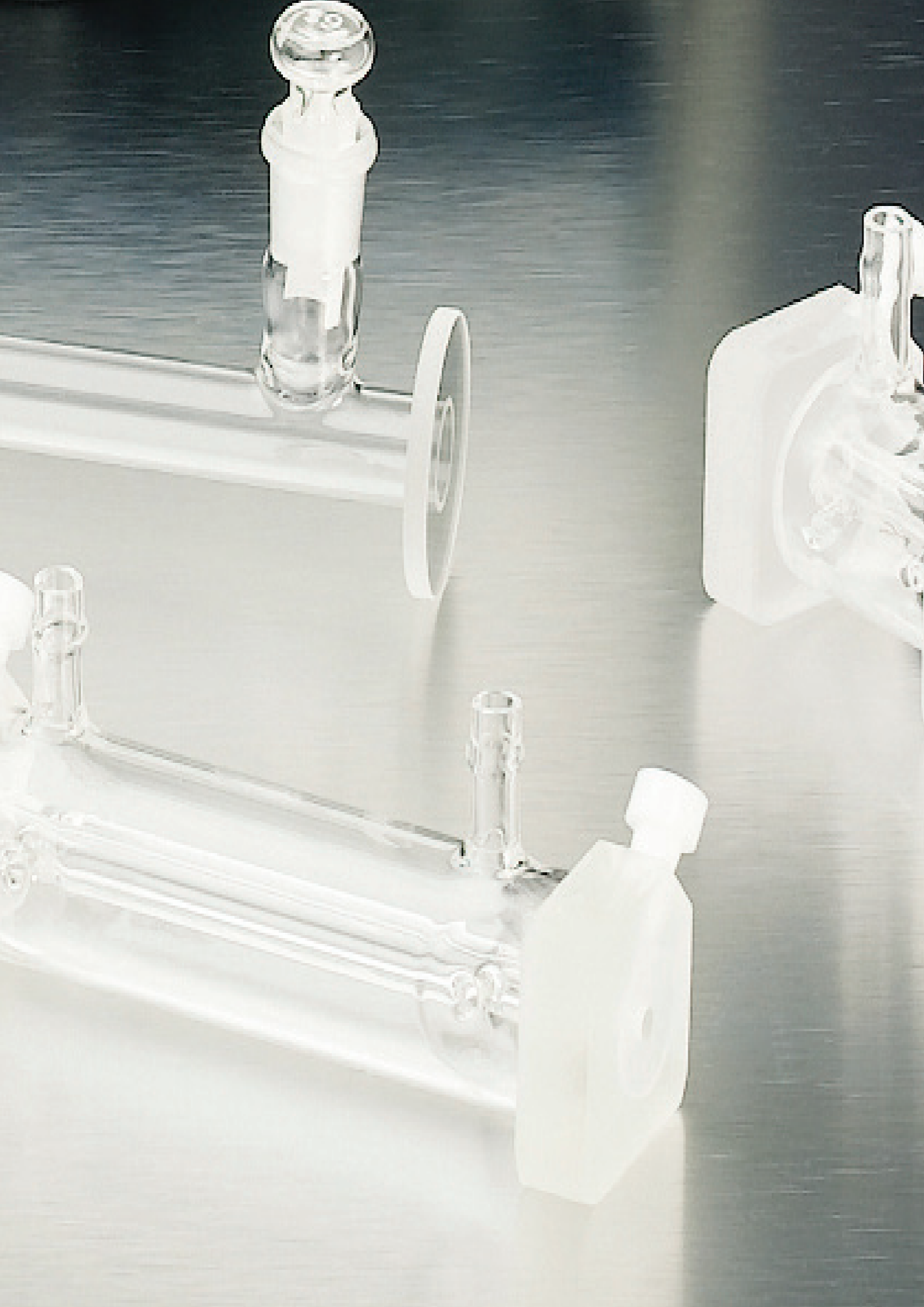
Digital Polarimeter

P-2000 Series



Jasco

Performance
Innovation
Reliability

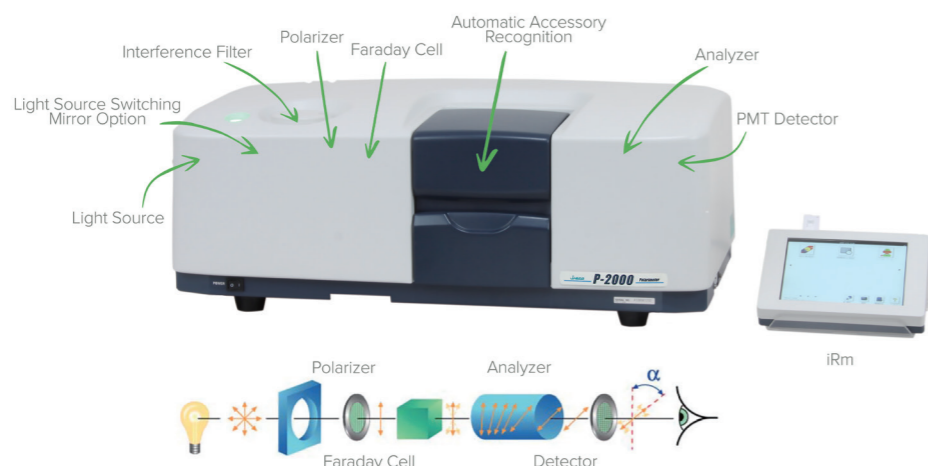


The P-2000 is a configurable, high precision digital polarimeter with a variety of sampling and measurement accessories for greater flexibility as applications grow and change. Optional wavelength filters and source lamps cover a wide range of analytical wavelengths from the UV-Visible to NIR in addition to the traditional sodium (589 nm) lamp used for regulatory compliance.

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System Features



Advanced Control

Two options for operation are available including Spectra Manager™ Suite innovative cross-platform spectroscopy software for Windows. And the intelligent remote module (iRM) with color LCD touch screen. These two control and analysis interfaces allow full instrument control and data processing. Regulatory compliance for 21 CFR part 11 is available as an option with PC based Spectra Manager CFR™.

High Speed, Precision and Accuracy

For fast measurement, the P-2000 has a response speed of up to 6° per second, with a resolution of 0.0001°. The wide dynamic range up to ±90° enables measurement over a very broad range of concentrations. The sample chamber includes temperature measurement with the actual temperature constantly updated and displayed on the control screen.

Accessories

An assortment of accessories and cells are available for a diverse range of sampling types such as cylindrical glass and demountable stainless steel cells, Peltier thermostatted cell holders, and sample sippers. Quick-connect fittings with flow control valves are used for simple exchange of water jacketed cells.

Models

P-2000 WI includes a tungsten halogen lamp and 589 nm interference filter for routine pharmaceutical measurements with the flexibility to add additional filters* as applications and needs grow.

*Available interference filters: 325, 334, 365, 405, 436, 546, 578, 589, 633, 880 nm

P-2000 Na+ For users requiring purity and identification measurements of pharmaceuticals using the 589nm D-line of the sodium lamp. The sodium lamp produces the most accurate and legally defensible Na-D line.

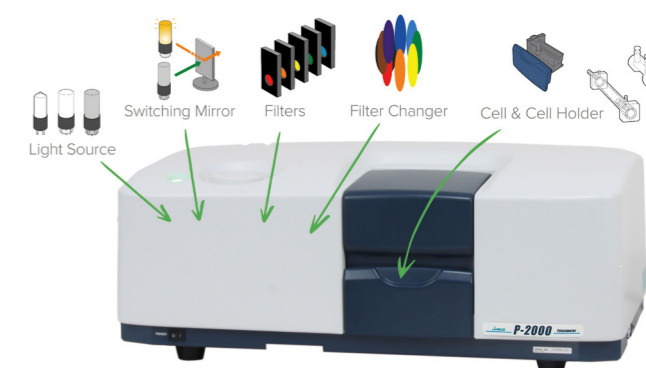
P-2000 Na/Hg uses both sodium and mercury lamp with 6 interference filters* spanning the UV to visible region for the most analytically demanding laboratories.

*Available interference filters: 253, 280, 296, 302, 313, 334, 365, 405, 436, 546, 578, 589 nm

All P-2000 digital polarimeters are iRM and PC compatible (21 CFR Part 11 optional for PC).

Ultimate Flexibility

The P-2000 Digital Polarimeter is a highly configurable instrument, with optional selection of the light source(s), cells, cell holders and wavelengths ranging from the UV-Visible to NIR. The system can be configured to the specific requirements of virtually any application. The user can choose the simplest system matched to their application.



Light Sources

- Up to two light sources can be installed inside the instrument with automatic light source exchange and recognition
- The light source can be easily updated in the field

Wavelength Selection

- A comprehensive range of narrow band interference filters covers the entire spectral range with automatic recognition (and an optional filter wheel for completely automated exchange)
- The optional wavelength extension kit extends the operating range to include the UV-Visible (253 nm) to NIR (880 nm)

Light Source	Wavelength (nm)														
	253	280	296	302	313	325	334	365	405	436	546	578	589	633	880
Na													●		
Hg	●	●	●	●	●		●	●	●	●	●	●			
WI						●	●	●	●	●	●	●	●	●	●

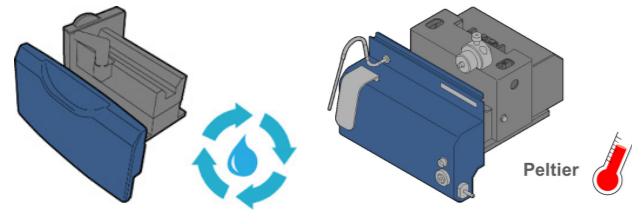
Validation

Simplicity, Reliability and Complete Validation Protocols

The automated validation program is compliant with the requirements of GLP/cGMP, USP and FDA. Validation is used for automated periodic testing of light source energy, zero repeatability, and rotational accuracy/repeatability. For guaranteed measurement accuracy, filters and sample cells with certified optical path length can be used and NIST-traceable calibration standards are also available.

- Polarimeters with both the iRM and Spectra Manager™ include a standard validation program for GLP/cGMP laboratories or those regulated by the FDA
- The validation program can be used to keep track of periodic checking of light source energy, zero repeatability, and rotational accuracy/repeatability to ensure measurements remain in compliance
- Certified filters, sample cells with a certified optical path length, and NIST-traceable quartz rotation plates are available for laboratories that demand the highest quality results

Accessories

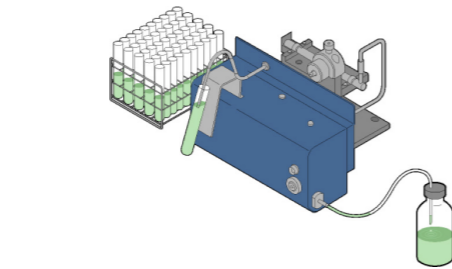


Cell Holders

Quick-connect fittings with stop valves in the sample compartment provide simple and secure exchange of water-thermostatted cells for temperature control with water circulators. A Peltier cell holder offers accurate temperature control with $\pm 0.1^\circ$ accuracy.

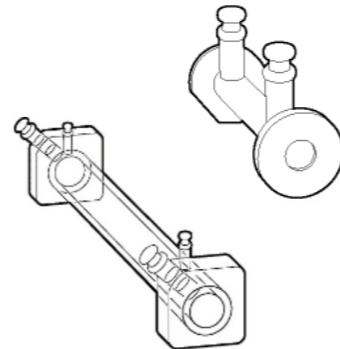
Part Number	Description	Dimensions (mm)	Volume (mL)
1103-1101A	CG1-100 Cylindrical Glass Cell	10 x 100	8.7
1103-1136A	CG1-50 Cylindrical Glass Cell	10 x 50	4.35
1103-1134A	CG1-10 Cylindrical Glass Cell	10 x 10	0.89
1103-1105A	CG3-100 Cylindrical Glass Cell	3.5 x 100	0.98
1103-1106A	CG3-50 Cylindrical Glass Cell	3.5 x 50	0.49
1103-1133A	CG3-10 Cylindrical Glass Cell	3.5 x 10	0.098
1103-1170A	CG2-10 Cylindrical Glass Cell	2.5 x 10	0.039
1103-1167A	CG2-100 Cylindrical Glass Cell	2.5 x 100	0.393
1103-1109A	WCG1-100 Water Jacketed Glass Cell	10 x 100	8.7
1103-1110A	WCG1-50 Water Jacketed Glass Cell	10 x 50	4.35
1103-1112A	WCG1-10 Water Jacketed Glass Cell	10 x 10	0.89
1103-1113A	WCG3-100 Water Jacketed Glass Cell	3.5 x 100	0.98
1103-1114A	WCG3-50 Water Jacketed Glass Cell	3.5 x 50	0.49
1103-1116A	WCG3-10 Water Jacketed Glass Cell	3.5 x 10	0.098
1103-2002A	Flow Through Glass Cell	10 x 100	8.7
1103-1021A	CQ1-100 Cylindrical Quartz* Cell	10 x 100	8.7
1103-1022A	CQ1-50 Cylindrical Quartz* Cell	10 x 50	4.35

* For use at wavelengths below 350 nm



Sippers

Provides quick and easy measurements of multiple samples. Built-in ultra micro-pump allows automated sampling and high throughput measurements.



Specifications

Digital Polarimeter	
Principle	Automatic digital polarimeter with symmetric angular oscillation using the optical-null balance method
Light Source	Tungsten-Halogen lamp (W), Sodium lamp (Na), Mercury lamp (Hg) (Up to two light sources can be installed.)
Modulator	Solid-state Faraday cell
Wavelength	253, 280, 296, 313, 302, 325, 334, 365, 405, 436, 546, 578, 589, 633, 880 nm
Aperture	1.8, 3 and 8 mm diameter
Angular Range	$\pm 90^\circ$
Response Speed	6°/sec
Measurement Accuracy	$\pm 0.002^\circ$ (up to 1°), $\pm 0.2\%$ (larger than 1°)
Repeatability	$\pm 0.002^\circ$
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 temperature: 0.1°C)
Dimensions	653 (W) x 249 (D) x 364 (H) mm
Weight	Approx. 30 kg
Power Requirement	AC100~240V $\pm 10\%$, 50 or 60 Hz, 80 - 300 W

Cell Holders		
	RSC-200 Room Temperature Cell Holder	PTC-262 Peltier Cell Holder
Temperature Control	None (Water Circulation Optional)	Peltier (Air Cooled)
Range	-	15-40°C
Accuracy	-	$\pm 0.1^\circ\text{C}$
Cell Diameter	10 mm, 3.5 mm, 2.5 mm	
Cell Pathlength	100 mm, 50 mm, 10 mm	

Sippers		
	SHP-201 Room Temperature Sipper	SHP-201P Peltier Sipper Temperature Control by Peltier
Temperature Control	None	Peltier (Air Cooled)
Flow Cell	100 mm pathlength	
Minimum Sample Volume	5 mL	
Temperature Range	-	15 ~ 40°C
Temperature Accuracy	-	$\pm 0.2^\circ\text{C}$



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