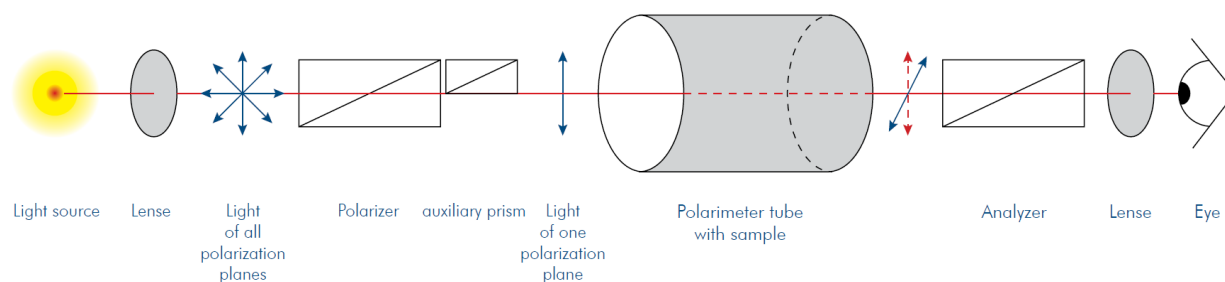




Starch Analysers | Polarimeter



What is POLARIMETRY?



If we regard light as an electromagnetic wave propagating through space, it is possible to illustrate the phenomenon of “polarized light”. The oscillation and the direction of propagation of the wave define a very specific plane. If you would look towards the beam you would see this wave as a line which is inclined at a certain angle in space.

Regular light includes waves that are inclined in any direction of the space while polarized light is inclined only at a defined angle. This polarization can only be achieved by a very close meshed grating – a polarization filter. This one filters out all waves from the regular light that do not have the same inclination as the filter’s grating. Is the light now directed to a second grating which is exactly 90° to the first grating, no light will fall on the detector or the human

eye located behind it. If you place an optically active substance between the two filters, light will again pass through the second filter.

Optically active substances change the inclination of the lightwave. Depending on the design of the device, the second filter is rotated (manually or automatically) until no light will fall on the detector. This technical setup explains the terms “optical rotation”, “rotation angle” as well as the terms “clockwise” and “anticlockwise”. The two later terms describe the behavior of the wave mentioned above during the passage through an optically active substance. Depending on the molecular structure of the substance, the direction of the inclination of the wave is towards the right or towards the left.

In order to be able to measure this change, the second filter has to be rotated anticlockwise or clockwise.

Typical substances are sugar, lactic acid, tartaric acid but also many other biologically active substances.

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Optically active are chiral substances whose molecules can take up different spatial arrangements that can not be aligned with by a rotation. Hence, this is a form of configuration isomerism. The different molecules of the substance are called enantiomers. The chiral center of the lactic acid is the middle carbon atom. Since the two enantiomers have different rotation angles, the polarimetry will provide information about the molecular structure. In addition to the properties of the substance, the following factors also have an influence on the strength of the optical activity: the temperature, the wavelength of the light, the concentration of the substance and possibly also the solvent.

The following applies as well: The longer the path of the light through an optically active substance, the larger the angle of rotation.



P8000 Series Automatic High-Speed-Polarimeters
P8000-PT Series Automatic Polarimeters with Peltier-Temperature control
P8000-DT Series Autom. Polarimeters with Rinsing and Drying Module
PS8000 Series Automatic Sugar Polarimeters



P3000 Series Automatic Polarimeters



1000-LED Manual Lab Polarimeter



Polarimeter Accessories



P8000-Serie | Automatic High-Speed Polarimeters



The fastest polarimeters in the world!

The digital polarimeters of the P8000 series feature an innovative measuring principle to measure optically active liquids. Our patented measuring technology works much faster than in conventional polarimeters, as it reduces measuring time to just one second, regardless of the rotation angle of the sample. In addition, it permits continuous measurement, for example for kinetic investigations or in HPLC use. All adjustments on the device are made via an easy to use touchscreen. An easy to understand help display can be called up at any time. With minimum effort, the user can carry out a simple menu-driven calibration using test quartz. The T-models of the P8000 series are equipped with thermostat interfaces and the delivery includes an external PT31 thermostat. The connection of a temperature-controlled gauge head permits extremely accurate measurement. The devices are intended for use in FDA-regulated sectors due to their GLP compliance, integrated user management and full network support, for simple connection to the laboratory environment and an LIMS.

Range of applications

Pharmaceutical industry

- Monitoring chemical processes
- Purity control and determination of concentrations
- Characterisation of new synthetic substances
- The analysis of pharmaceuticals complies with Pharmacopoeia, DAB and other national and international standards.

Chemical industry

- Purity control and determination of concentrations
- Analysis of optically-active components (qualitative and quantitative)
- Determination of changes in the configuration
- Monitoring chemical processes

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Sugar industry

- Quality control of original and end product
- Determination of fructose and glucose
- Sugar concentrations in refined beet and cane sugar, molasses and beet pulp

Food industry

- Determination of concentration
- Purity control
- Quality control

All internal data (measurement values, parameters and methods) are organised in an SQL database.

This can be accessed externally using SQL queries through a fixed interface (e.g. LIMS). With special software, the device can be controlled by PC remote mode, using the same intuitive layout as the touchscreen on the polarimeter.

The PC stores measurement results as a local copy in the database, so your data is retained after the polarimeter is switched off.

Various data filters allow you to send data in Excel or HTML to your printer or export it in PDF format.

Special features

- Extreme time savings – about 1 sec. Measurement duration
- Bright touchscreen display with intuitive operation
- Extreme precision and resolution across the entire measurement range (regardless of rotation angle)
- High resolution LED with 100,000 hour service life
- Interval or continuous measurement possible
- 100 different methods and user tables (individual tables) can be set
- Calibratable temperature sensor
- High light intensity: Measurement and continuous sample readings possible to an optical density of 3.0
- Tough powder-coated metal housing
- Very quiet operation
- Data display of all important settings and measurements
- User management functionality (password-protected) can be activated
- Integral SQL database for data storage
- USB interface for data export and firmware updates and for connecting keyboard or barcode scanner
- RS-232 interface for serial printer
- Ethernet interface for direct connection to a PC (with possibility of remote maintenance via internet)
- PDF-export
- Direct printing possible on a PostScript-enabled network printer
- Full cGMP/GLP capability: password protection, data backup, automatic printout or data output in CSV-format

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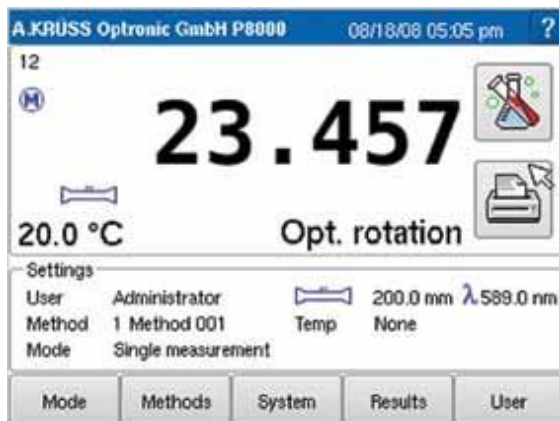
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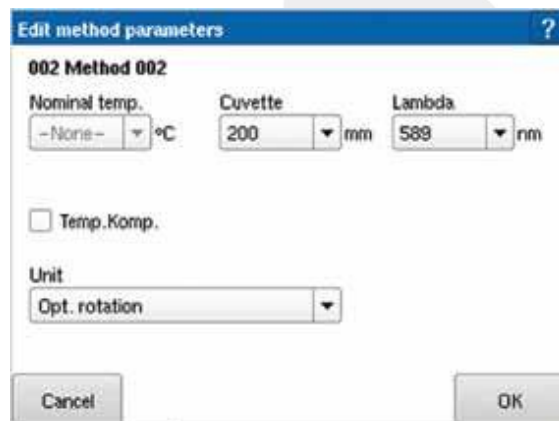
- Meets the relevant international standards such as Pharmacopoeia, OIML, ASTM
- NIST-compliant calibration certificate
- IQ/OQ/PQ-commissioning possible
- Extremely low maintenance and long life



Main measuring display

This is where the measurement is carried out and the results as well as the important parameters are displayed.

- Reading [$^{\circ}$, $^{\circ}Z$, g/ml]: Optical rotation, international sugar scale, concentration
- Tube temperature
- Sample number
- Tube length
- Wavelength
- Thermostat temperature
- Status information



Parameter selection

This menu is used to adjust the measuring parameters.

- Sample designation
- Comment
- Tube length
- Wavelength
- Measuring unit [$^{\circ}$, $^{\circ}Z$, g/ml]
- Specific rotation
- Temperature compensation



Individual user administration and help key

- Your settings are protected by an individual password.
- All screens have a help key which calls up explanations of the symbols shown on the screen.
- There is also extensive online help with every unit.



Specifications

	P8000	P8000-T	P8100	P8100-T
Measuring method	Optical rotation, int. sugar scale, concentration, spec. rotation, user-defined	Optical rotation, int. sugar scale, concentration, spec. rotation, user-defined	Optical rotation, int. sugar scale, concentration, spec. rotation, user-defined	Optical rotation, int. sugar scale, concentration, spec. rotation, user-defined
Measuring range	±90° ±259 °Z 0–99.9 g/ml	±90° ±259 °Z 0–99.9 g/ml	±90° ±259 °Z 0–99.9 g/ml	±90° ±259 °Z 0–99.9 g/ml
Measuring units	Angle [°, °Z] conc. [g/100 ml] user defined	Angle [°, °Z] conc. [g/100 ml] user defined	Angle [°, °Z] conc. [g/100 ml] user defined	Angle [°, °Z] conc. [g/100 ml] user defined
Resolution	0.001° 0.01 °Z 0.1 g/ml	0.001° 0.01 °Z 0.1 g/ml	0.001° 0.01 °Z 0.1 g/ml	0.001° 0.01 °Z 0.1 g/ml
Accuracy	±0.003° ±0.01 °Z ±0.5 g/100 ml	±0.003° ±0.01 °Z ±0.5 g/100 ml	±0.002° ±0.01 °Z ±0.5 g/100 ml	±0.002° ±0.01 °Z ±0.5 g/100 ml
Reproducibility	0.002°	0.002°	0.002°	0.002°
Measuring time ±90°	1 s	1 s	1 s	1 s
Light source	1 LED with filter	1 LED with filter	1 LED with filter	1 LED with filter
Wavelength	589 nm others optional	589 nm others optional	589 nm others optional	589 nm others optional
Wavelength selection	One fixed wavelength	One fixed wavelength	One fixed wavelength	One fixed wavelength
Connection for temperature sensor	Special tube with PT100 temperature sensor required	Special tube with PT100 temperature sensor required	Special tube with PT100 temperature sensor required	Special tube with PT100 temperature sensor required
Temperature measurement	0–99.9 °C	0–99.9 °C	0–99.9 °C	0–99.9 °C
Temperature resolution	0.1 °C	0.1 °C	0.1 °C	0.1 °C
Temperature accuracy	±0.2 °C	±0.2 °C	±0.2 °C	±0.2 °C
Temperature reading point	Tube	Tube	Tube	Tube
Temperature control	–	PT31 Peltier thermostat (water) with fast closure system	–	PT31 Peltier thermostat (water) with fast closure system
Range of temperature control	–	15–40.0 °C	–	15–40.0 °C
Accuracy of temperature control	–	±0.2 °C	–	±0.2 °C
Max. length of tube	220 mm	220 mm	220 mm	220 mm
Sensitivity	min 0.1 % (OD3)	min 0.1 % (OD3)	min 0.1 % (OD3)	min 0.1 % (OD3)
Calibration	Automatic (menu-driven)	Automatic (menu-driven)	Automatic (menu-driven)	Automatic (menu-driven)
Display	LCD TFT 5.7 “ 640x480 pixel color display (VGA)	LCD TFT 5.7 “ 640x480 pixel color display (VGA)	LCD TFT 5.7 “ 640x480 pixel color display (VGA)	LCD TFT 5.7 “ 640x480 pixel color display (VGA)
Operation	Touchscreen	Touchscreen	Touchscreen	Touchscreen
Measured data storage	999 measurements	999 measurements	999 measurements	999 measurements
Interfaces	RS-232 (printer) USB (data export, firmware updates) Ethernet (LIMS, remote monitoring)	RS-232 (printer) USB (data export, firmware updates) Ethernet (LIMS, remote monitoring)	RS-232 (printer) USB (data export, firmware updates) Ethernet (LIMS, remote monitoring)	RS-232 (printer) USB (data export, firmware updates) Ethernet (LIMS, remote monitoring)
Operating voltage	90–250 V 50/60 Hz	90–250 V 50/60 Hz	90–250 V 50/60 Hz	90–250 V 50/60 Hz
Dimensions in cm	64.5 x 20.0 x 36.0	64.5 x 20.0 x 36.0	64.5 x 20.0 x 36.0	64.5 x 20.0 x 36.0
Weight	28 kg	28 kg	28 kg	28 kg

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P8000-PT Automatic polarimeters with Peltier temperature control

Direct temp. control of the sample tube

Based on the reliable P8000 series P8000-PT is a polarimeter with electronic temperature control using a special tube. Peltier elements and a glass tube with unbreakable metal sleeve are just some of its special features.

The good insulation and positioning of the Peltier elements gives verifiable homogeneous sample temperature, making it possible to omit the water

bath thermostat otherwise required for precise measurements. The advantages are obvious:

There is no thermostat to be readjusted and maintained. The set-point temperature is entered directly on the touch-screen of the polarimeter and the device can automatically detect whether the tube has been connected. Of course, it is possible to use standard tubes without temperature control if the accuracy of a temperature-controlled sample is not required. In case the sample has been warmed up before, the time to bring it up to the right temperature can be considerably reduced thus utilizing the short measuring time of the P8000- Series – approx. One second . The P8000 series is the fastest polarimeter in the world!

Special features

As for the P8000, plus temperature-controlled Peltier sample tube.



	P8000-PT	P8100-PT
Measuring method	Optical rotation, int. sugar scale, concentration, spec. rotation, user-defined	Optical rotation, int. sugar scale, concentration, spec. rotation, user-defined
Measuring range	±90° ±259 °Z 0–99.9 g/ml	±90° ±259 °Z 0–99.9 g/ml
Measuring units	Angle [°, °Z], conc. [g/100 ml], user defined	Angle [°, °Z], conc. [g/100 ml], user defined
Resolution	0.001° 0.01 °Z 0.1 g/ml	0.001° 0.01 °Z 0.1 g/ml
Accuracy	±0.003° ±0.01 °Z ±0.5 g/100 ml	±0.002° ±0.01 °Z ±0.5 g/100 ml
Reproducibility	0.002°	0.002°
Measuring time ±90°	1 s	1 s
Light source	1 LED with filter	1 LED with filter
Wavelength	589 nm, others optional	589 nm, others optional
Wavelength selection	One fixed wavelength	One fixed wavelength
Max. length of tube	220 mm	220 mm
Sensitivity	min 0.1 % (OD3)	min 0.1 % (OD3)
Calibration	Automatic (menu-driven)	Automatic (menu-driven)

Display	LCD TFT 5.7 " 640x480 pixel color display (VGA)	LCD TFT 5.7 " 640x480 pixel color display (VGA)
Operation	Touchscreen	Touchscreen
Measured data storage	999 measurements	999 measurements
Interfaces	RS-232 (printer) USB (data export, firmware updates) Ethernet (LIMS, remote monitoring)	RS-232 (printer) USB (data export, firmware updates) Ethernet (LIMS, remote monitoring)
Operating voltage	90–250 V 50/60 Hz	90–250 V 50/60 Hz
Dimensions in cm	64.5 x 20.0 x 36.0	64.5 x 20.0 x 36.0
Weight	28 kg	28 kg
Peltier temperature control	Special tube PRG-100-EPT required	Special tube PRG-100-EPT required
Temperature measurement	0–99.9 °C	0–99.9 °C
Temperature resolution	0.1 °C	0.1 °C
Temperature accuracy	±0.2 °C	±0.2 °C
Temperature reading point	Tube	Tube
Range of temperature control	15–40.0 °C	15–40.0 °C
Accuracy of temperature control	±0.2 °C	±0.2 °C

P8000-DT Series | Autom. Polarimeters with Rinsing and Drying Module

Semiautomatic sampling



The P8000-DT features a temperature-controlled micro-cuvette that can be used in flow-through operation.

This is particularly useful for aggressive or expensive samples and substances, as are often used in the pharmaceutical and flavouring industries. The built-in rinsing and drying unit permits semi-automatic sampling, and subsequent cleaning using a hose pump and the integrated drying unit. This eliminates the need to remove the sample tube and clean it outside the polarimeter, for major savings of valuable sample substances as well as time. Cleaning is also possible through displacement by the new sample.



Special features

As for the P8000-T, plus

- Rinsing and drying module for aggressive substances and small sample volumes
- Parts that come into contact with samples are chemical-resistant (PTFE, PFA, viton, glass)
- Adjustable measurement and cleaning parameters
- Also available with autosampler

Applications as for the P8000-T

Main application areas: Flavourings industry and ingredient analysis of high-value substances.

	P8000-DT	P8100-DT
Measuring method	Optical rotation, int. sugar scale, concentration, spec. rotation, user-defined	Optical rotation, int. sugar scale, concentration, spec. rotation, user-defined
Measuring range	±90° ±259 °Z 0–99.9 g/ml	±90° ±259 °Z 0–99.9 g/ml
Measuring units	Angle [°, °Z] conc. [g/100 ml] user defined	Angle [°, °Z] conc. [g/100 ml] user defined
Resolution	0.001° 0.01 °Z 0.1 g/ml	0.001° 0.01 °Z 0.1 g/ml
Accuracy	±0.003° ±0.01 °Z ±0.5 g/100 ml	±0.002° ±0.01 °Z ±0.5 g/100 ml
Reproducibility	0.002°	0.002°
Measuring time ±90°	1 s	1 s
Light source	1 LED with filter	1 LED with filter
Wavelength	589 nm others optional	589 nm others optional
Wavelength selection	1 fixed wavelength	1 fixed wavelength
Connection for temperature sensor	Special tube with PT100 temperature sensor required	Special tube with PT100 temperature sensor required
Temperature measurement	0–99.9 °C	0–99.9 °C
Temperature resolution	0.1 °C	0.1 °C
Temperature accuracy	±0.2 °C	±0.2 °C

	P8000-DT	P8100-DT
Temperature reading point	Tube	Tube
Temperature control	PT31 Peltier thermostat (water) with fast closure system	PT31 Peltier thermostat (water) with fast closure system
Range of temp. control	15–40.0 °C	15–40.0 °C
Accuracy of temperature control	±0.2 °C	±0.2 °C
Max. length of tube	220 mm	220 mm
Sensitivity	min 0.1 % (OD3)	min 0.1 % (OD3)
Calibration	Automatic (menu-driven)	Automatic (menu-driven)
Display	LCD TFT 5.7 " 640x480 pixel color display (VGA)	LCD TFT 5.7 " 640x480 pixel color display (VGA)
Operation	Touchscreen	Touchscreen
Measured data storage	999 Measurements	999 Measurements
Interfaces	RS-232 (printer) USB (data export, firmware updates) Ethernet (LIMS, remote monitoring)	RS-232 (printer) USB (data export, firmware updates) Ethernet (LIMS, remote monitoring)
Operating voltage	90–250 V 50/60 Hz	90–250 V 50/60 Hz
Sample-feeding	Hose pump	Hose pump
Cleansing	Rinsing and drying module	Rinsing and drying module
Dimensions in cm	64.5 x 20.0 x 36.0	64.5 x 20.0 x 36.0
Weight	28 kg	28 kg

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PS8000 Series | Automatic Sugar Polarimeters



Fast, precise sugar values

This low-cost alternative to the P8000 was developed especially for the sugar industry. The PS8000 is a precise and very fast polarimeter, with the same operating and measurement functions as the P8000. The high light intensity permits measurement and continuous sample readings up to an optical density of 3.0 (dark samples). The measuring values are displayed in the international sugar scale.

Display for different initial weights is possible: In addition to the standard unit of 26 g/100 ml, initial weights of 13 g/100 ml and 6.5 g/100 ml can also be selected.

Applications

As for the P8000

Main application area: Sugar industry

Specifications

	PS8000	PS8000-T
Measuring method	Int. sugar scale	Int. sugar scale
Measuring range	±259 °Z	±259 °Z
Measuring units	Angle (°Z)	Angle (°Z)
Resolution	0.01 °Z	0.01 °Z
Accuracy	±0.01 °Z	±0.01 °Z
Reproducibility	0.02 °Z	0.02 °Z
Measuring time ±90°	1 s	1 s
Light source	1 LED with filter	1 LED with filter
Wavelength	589 nm others optional	589 nm others optional
Wavelength selection	1 fixed wavelength	1 fixed wavelength
Connection for temperature sensor	Special tube with PT100 temperature sensor required	Special tube with PT100 temperature sensor required
Temperature measurement	0–99.9 °C	0–99.9 °C
Temperature resolution	0.1 °C	0.1 °C
Temperature accuracy	±0.2 °C	±0.2 °C
Temperature reading point	Tube	Tube

	PS8000	PS8000-T
Temperature control	–	PT31 Peltier thermostat (water) with fast closure system
Range of temp. control	–	15–40.0 °C
Accuracy of temperature control	–	±0.2 °C
Max. length of tube	220 mm	220 mm
Sensitivity	min 0.1 % (OD3)	min 0.1 % (OD3)
Calibration	Automatic (menu-driven)	Automatic (menu-driven)
Display	LCD TFT 5.7 " 640x480 pixel color display (VGA)	LCD TFT 5.7 " 640x480 pixel color display (VGA)
Operation	Touchscreen	Touchscreen
Measured data storage	999 Measurements	999 Measurements
Interfaces	RS-232 (printer) USB (data export, firmware updates) Ethernet (LIMS, remote monitoring)	RS-232 (printer) USB (data export, firmware updates) Ethernet (LIMS, remote monitoring)
Operating voltage	90–250 V 50/60 Hz	90–250 V 50/60 Hz
Dimensions in cm	64.5 x 20.0 x 36.0	64.5 x 20.0 x 36.0
Weight	28 kg	28 kg

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P3000 Series | Automatic Polarimeters

For fast standard measurements



The P3000 economical polarimeter is a simplified version of the P8000 and uses the same patented fast measurement technique. It measures samples in just 1 second, regardless of the rotation angle, saving much time over measurement with conventional polarimeters.

The P3000 is operated fully automatically with an intuitive touchscreen. Measured values can be displayed as optical rotation angles or in the ICUMSA international sugar scale, and can be printed out with the printer interface.

The P3000 offers unbeatable value for money for all applications where measurement accuracy to 2 decimal points is sufficient.

Specifications

Measuring method	Optical rotation, int. sugar scale
Measuring range	$\pm 90^\circ$ $\pm 259^\circ Z$
Measuring units	Angle [$^\circ$, $^\circ Z$]
Resolution	0.01 $^\circ$ 0.01 $^\circ Z$
Accuracy	$\pm 0.01^\circ$ $\pm 0.01^\circ Z$
Reproducibility	0.01 $^\circ$
Measuring time $\pm 90^\circ$	1 s
Light source	1 LED with filter
Wavelength	589 nm
Wavelength selection	1 fixed wavelength
Temperature measurement	0–99.9 $^\circ C$
Temperature resolution	0.1 $^\circ C$
Temperature accuracy	$\pm 0.2^\circ C$
Temperature reading point	Tube
Max. length of tube	220 mm
Sensitivity	min 0.1 % (OD3)
Calibration	Automatic (menu-driven)
Display	LCD 3.5" color display
Operation	Touchscreen
Interfaces	RS-232
Operating voltage	100–250 V, 50/60 Hz
Dimensions in cm	64.5 x 20.0 x 36.0
Weight	28 kg

Range of applications

Pharmaceutical industry

- Hospitals and pharmacies
- Monitoring chemical processes
- Purity control and determination of concentrations
- The analysis of pharmaceuticals complies with Pharmacopoeia, DAB and other national and international standards.

Chemical industry

- Purity control and determination of concentrations
- Analysis of optically active components (qualitative and quantitative)
- Determination of changes in the configuration
- Monitoring chemical processes

Sugar industry

- Quality control of original and end product
- Determination of fructose and glucose

Food industry

- Determination of concentration
- Purity control
- Quality control

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P1000 Manuel Polarimeter



Classic traditional instrument

The P1000-LED polarimeter is a simple and robust device for basic applications in the lab and for training. It operates according to the half-shade principle and the reading takes place via an eyepiece and two noniuses. The P1000-LED features a high-quality metal stand and a sample chamber for tubes of up to 220 mm length. The LED diodes last about 500 times longer than conventional sodium lamps, making this a highly economical alternative.

It is equipped with a swivel-mounted cover, polarizer and analyzer and the delivery includes accessories.

New: *Energy-saving, long-life LED illumination*

Specifications

Measuring range	2 semi-circles (0-180°)
Glass tubes	100 and 200 mm
Scale division	1°
Reading precision	0.05° (with nonius)
Light source	LED
Dimensions in cm	14.0 x 33.0 x 50.0
Weight	4.3 kg

Scope of delivery

- Polarimeter tubes 100 and 200 mm with bubble trap

Accessories

- Replacement sodium lamp for older models
- Glass cover plate

When you work with BASTAK you receive;

- ✓ Free technical consultancy for tailor made solutions,
- ✓ High quality instruments with free webinars and on-line trainings,
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<https://www.youtube.com/watch?v=UbtWWhEbLy4>



You can find all Catalogues and Competitor Comparison Tables in this link:

https://drive.google.com/drive/folders/1_4aXqljmISG0Gi7c0KeMuPAGWqvi65mT



Sensitive
Nutrition



High
Efficiency



Monoblock
Study Body



Standard
Grinding



Personal
Security

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