



Anton Paar

MCP 200

MCP 200/250 Sucromat

Accurate Measurements of
Optical Rotation at Economic Cost

:: Superior Optical Instruments



Over 85 Years of Innovation

Anton Paar GmbH produces high-quality measuring and analysis instruments for industrial and research applications. In the fields of density and concentration measurement it is the established world leader.

Its product portfolio also includes viscometers, rheometers, saccharimeters and refractometers; and instruments for X-ray structure analysis, microwave synthesis and microwave decomposition. Throughout more than eighty-five successful years, the innovative spirit of Anton Paar's employees and their commitment to quality have been the driving forces behind the company. Openness to the requirements of customers and attention to developments in markets are the basis for new product ideas.

Anton Paar's strong R&D department and its partnerships with external research institutes turn these ideas into instruments at the cutting edge of technology.

MCP polarimeters **Building on three decades of experience**

The new MCP series of polarimeters builds on a long tradition, beginning in the 1980s with the first Gyromat and Sucromat series developed and distributed by Dr. Kernchen GmbH.

In 2007 Dr. Kernchen became part of the Anton Paar group, which is renowned for its high-quality rheometers, refractometers, density and sound velocity meters, and research instruments for surface analysis.

The MCP 200/300/500 series is the new generation of polarimeters with full compliance with international standards (pharmacopeias, OIML, ASTM).

The MCP 200/250/300/500 Sucromat series is the new generation of saccharimeters for the sugar industry. MCP Sucromat instruments meet all international standards, e.g. ICUMSA, OIML and Australian Standard K 157.



Making Work Easier

The MCP series has been designed with the user in mind. The built-in software supports intuitive menu navigation and the user is guided through calibration step-by-step. There is the choice of operating the polarimeter via the touchscreen or – for operation in harsh industrial environments – via the soft keys positioned around the screen.

MCP polarimeters can easily be integrated into existing LIMS systems via RS232. It also provides a CAN bus connection, VGA port, Ethernet port, and 4 USB ports for connecting a bar code reader, keyboard, mouse, printer or USB stick. Three of these USB connections are on the side of the polarimeter so it does not need to be moved when connecting external accessories.

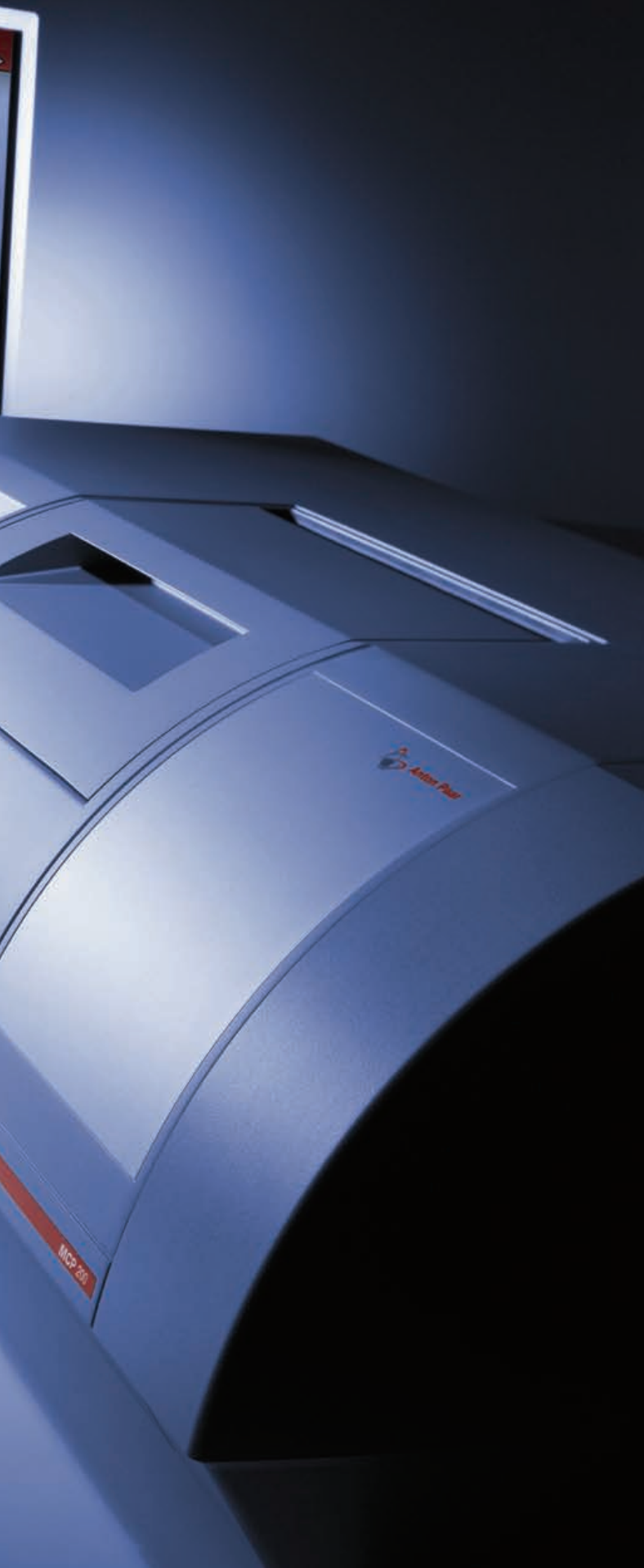
As MCP instruments require a strong light source to perform their measurements, they are equipped with a tungsten halogen lamp. This has a working life of around 2000 hours. Replacement is simple and requires no special knowledge of electrical engineering. As the lamp is located in a separate compartment, the instrument itself does not need to be opened. This simple replacement keeps service costs at a minimum and virtually eliminates downtime.

Customizable and easily upgradable

The MCP series uses a modular concept which allows customer-specific configurations and provides the widest range of options for the future. Besides the standard 589 nm wavelength, up to seven additional wavelengths can be defined according to the applications required. Further wavelengths can be added to the polarimeter at a later date, allowing MCP instruments to grow to fit the tasks at hand.

Upgrade to benefit from Peltier temperature control

Demanding applications additionally require highly accurate temperature control. MCP instruments can be delivered with, or upgraded to, a fully automatic Peltier temperature control system which eliminates the need for a thermostatic water bath. Peltier temperature control is fast and precise. The Peltier system automatically controls the sample temperature with high accuracy.



High Accuracy over the Whole Measuring Range

MCP polarimeters measure Optical Rotation (OR) highly accurately over the whole range.

For all analyses of optically active substances MCP polarimeters provide accurate results, whatever the application.

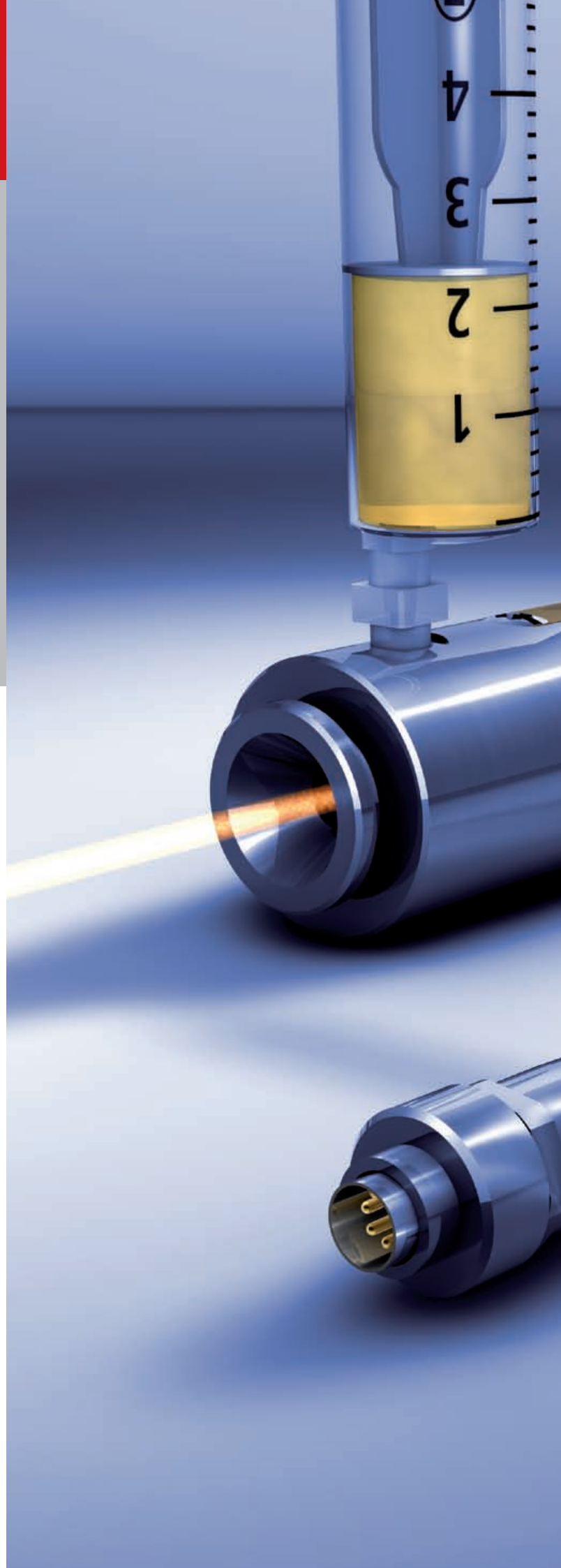
Eliminates human error

MCP instruments use Anton Paar's Toolmaster™ technology to automatically transfer the data needed for adjustment and measurement. This makes MCP instruments the first intelligent polarimeters on the market and helps to eliminate human error during operation.

When the sample cell is changed, MCP 200 polarimeters with Toolmaster™ option immediately detect the new sample cell. The Toolmaster™ memory chip transfers all relevant data from the connected sample cell into the instrument's software. Measurements are therefore clearly documented and traceable, as specified by 21 CFR Part 11.

Calibration and adjustment no longer require tables and manual entry of temperature values. The Toolmaster™ memory chip on the quartz control plate contains all the relevant calibration data. After connecting the quartz control plate to MCP with Toolmaster™ option, all the parameters required for the adjustment procedure are automatically transferred to the instrument. This automatic data transfer minimizes operating errors. The user is lead step-by-step through the procedure on the MCP screen. Adjustment is completed in a matter of minutes.

Quartz control plates are delivered with a manufacturer's certificate. PTB certificates are available on request.





Polarimeter Applications

For Research and Development and government institutions: flexible in use

Its modular concept makes MCP extremely flexible. From routine determination of Optical Rotation and Specific Rotation to demanding measurements for innovative projects, MCP has the right combination of sample cell and wavelength required. The polarimeter can also be upgraded with additional wavelengths and Peltier temperature control at a later date, allowing MCP to be customized to suit any application.

For pharmaceuticals: completely traceable documentation

The MCP polarimeters are designed to meet the exacting standards of the pharmaceuticals industry. They provide full compliance with 21 CFR Part 11, with three user levels, audit trail and forgery-proof data export. They are also compatible with QM systems and GMP/GLP.

Anton Paar's Toolmaster™ technology option ensures completely traceable documentation of the measurements and calibrations. A memory chip on the sample cell and quartz control plate is automatically detected by the polarimeter and all relevant data are transferred and used in the instrument's software. As the sample cell length, temperature and the quartz control plate parameters no longer have to be entered by the operator, Toolmaster™ prevents measurements being made based on incorrect settings.

To cover all standard measurements in the pharmaceutical industry, the following additional wavelengths are available on request: 365, 405, 436, 546, 578, 880 nm.

For flavors, fragrances and essential oils: density, Refractive Index and Optical Rotation measurement from one supplier

Anton Paar is a longstanding partner of companies producing flavors, fragrances and essential oils. The powerful combination of a DMA density meter with an RXA Abbemat refractometer is found in many laboratories across the world. Alongside these instruments for determining density and refractive index, the use of polarimeters in the quality control of flavors, fragrances and essential oils is already established in official specifications. MCP 200/300/500 provides accuracy from very small sample volumes for quick and reliable substance characterization.

Applications for the Sugar Industry

High accuracy for sugar payments

Sugar suppliers are paid based on the sugar content they deliver. Therefore, sugar factories can optimize their profits by measuring the sugar content of the incoming crop as accurately as possible. As MCP Sucromat reliably measures sugar content with an accuracy of ± 0.02 °Z, payment can be calculated exactly. The money saved by only paying for the actual sugar content means the instrument pays for itself in a short period of time.

For all clarification processes

Methods using clarification processes may produce colored filtrates which are too dark to be measured at a visible wavelength but transparent enough for near infrared measurement. MCP Sucromat is available in two models: MCP 200 Sucromat and MCP 250 Sucromat. MCP 200 Sucromat uses a visible wavelength of 589 nm and is suitable for measurement of clarified samples up to an Optical Density (OD) of 4.0.

MCP 250 Sucromat uses two wavelengths: 589 nm and 880 nm. At 880 nm MCP 250 Sucromat accurately measures colored filtrates. Measurement based on near infrared is applicable to all raw sugars, white sugars and sugars which require clarification.

Purity determination for Quality Control

To determine the purity of sugar, MCP Sucromat can be combined with Anton Paar's Abbemat refractometer to make a powerful team. The Abbemat refractometer provides an accuracy of 0.015 % Brix. As it works with MCP Sucromat it needs no PC connection. °Brix, Purity, % RDS and °Z are displayed on the MCP Sucromat screen and recorded in one data file to provide complete sugar analysis.



Specifications



Measuring scales MCP 200:	°Optical Rotation, °Specific Rotation, % Concentration (g/mL, g/100mL, g/L), % Sucrose, % Glucose, °Z International Sugar Scale, mathematic functions and user-defined scales.	
Measuring scales MCP 200/250 Sucromat:	°Z International Sugar Scale, % Glucose and % Sucrose, (g/mL, g/100mL, g/L), % Purity, °Optical Rotation, mathematic functions and user-defined scales. Complete compliance with ICUMSA, OIML and Australian Standard K 157.	
Optical Rotation at 589 nm	MCP 200	MCP 200/250 Sucromat
Measuring range:	± 89.9°	± 259 °Z
Resolution:	0.001°	0.01 °Z
Accuracy:	± 0.005°*	± 0.02 °Z
Repeatability:	± 0.002°	± 0.01 °Z
Response time:	12 seconds	12 seconds
Wavelengths:	589 nm optionally up to eight wavelengths. Standard wavelengths (365, 405, 436, 546, 578, 880 nm)	589 nm / 880 nm (MCP 250)
Light source:	Tungsten halogen lamp, 6V, 20 W, with an average life of 2000 h	
Sensitivity:	A light intensity control compensates attenuation up to Optical Density (OD) 4.0	
Temperature	MCP 200 and MCP 200/250 Sucromat	
Sensor:	Pt 100 sensor input for sample temperature measurement	
Resolution:	0.1 °C	
Accuracy:	+/- 0.2 °C**	
Temperature control: ***	Peltier system for automatic temperature control at 20 °C and 25 °C	
Sample cell:	Optional automatic sample cell identification with Toolmaster™ Sample cells from 2.5 mm to 200 mm	
Display:	TFT touchscreen 6.5", 640 x 480 pixels	
Interfaces:	4 USB, RS232, Ethernet, VGA, CAN bus. Easy connection of keyboard, mouse, printer, bar code reader and networks.	
Mechanical data		
Dimensions (LxHxW):	754 mm x 392 mm x 231 mm (29.7 in x 15.5 in x 9.1 in)	
Weight:	32 kg (70.5 lbs)	
Power supply:	Self-adapting to any mains voltage AC 100 to 240 VAC, 50/60 Hz	
Power consumption:	70 to 100 VA	

* at physically standard conditions

** with Peltier element and "Peltier type" cell

*** optional



Fotos: Croce & Wir



Anton Paar

Anton Paar[®] GmbH
Anton-Paar-Str. 20
A-8054 Graz
Austria - Europe
Tel: +43 (0)316 257-0
Fax: +43 (0)316 257-257
E-mail: info@anton-paar.com
Web: www.anton-paar.com

Instruments for:

Density & concentration
measurement

Rheometry & viscometry

Sample preparation

Microwave synthesis

Colloid science

X-ray structure analysis

Refractometry

Polarimetry

High-precision temperature
measurement

Specifications
subject to change
without notice

01/10 D02IP13-A