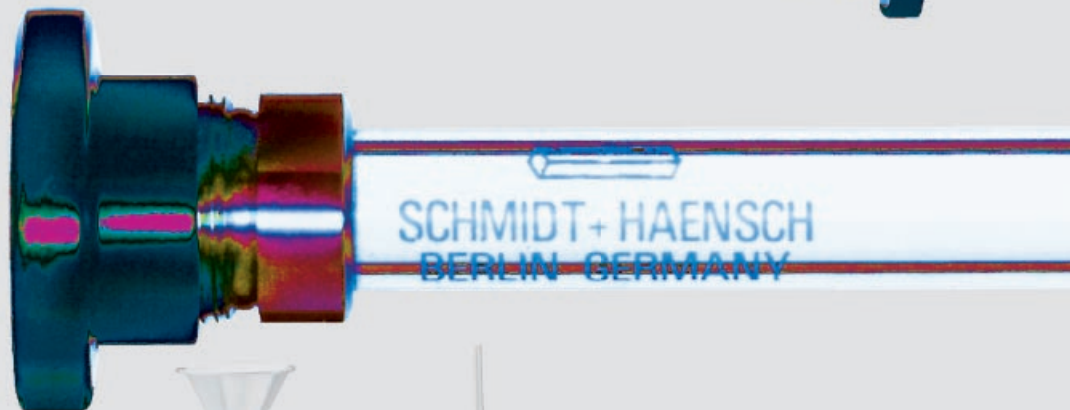
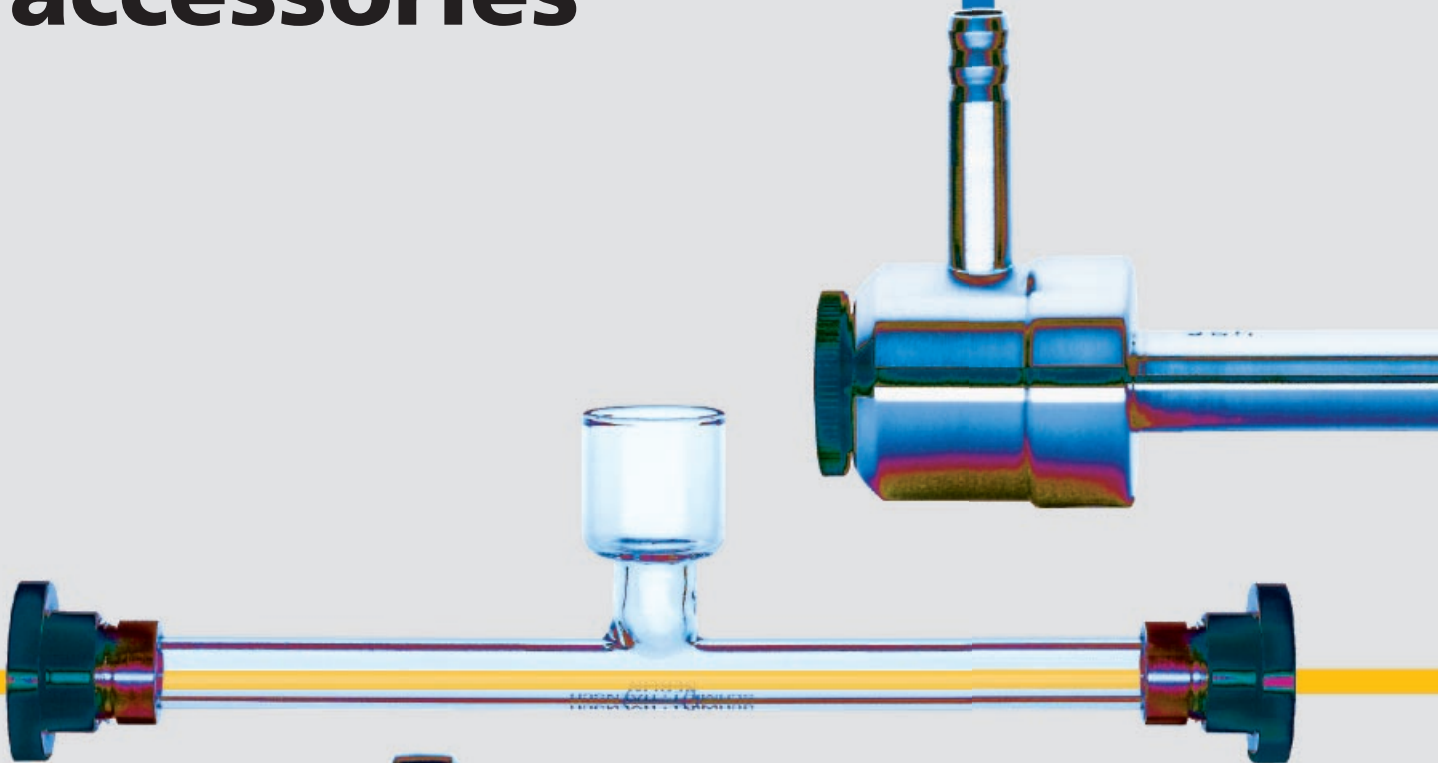


Polarimeter tubes and accessories



SCHMIDT + HAENSCH

Opto-electronic measuring device since 1864

Polarimeter tubes of SCHMIDT+HAENSCH are designed for different applications. All tubes meet the ICUMSA-recommendations, class A ($\pm 0.01\%$) and the corresponding specifications of the O.I.M.L. and the Australian Standard K 157 regarding of construction and precision.

Hints for the choice of tube length

In general: Longer measuring tubes are better than short ones. Sample heterogeneity and residues from pervious samples have a larger influence on the accuracy of the measurement when applying shorter tubes. Larger sample volumes ensure more stability. Exception: For measuring dark samples it might be necessary to use a shorter measuring tube due to the high absorption of light.

Please consider that SCHMIDT+HAENSCH guarantees for the precision of Polarimeters its only if SCHMIDT+HAENSCH measuring tubes are used.

Flow-through tubes

Flow-through tubes are recommended for testing a large number of samples of the same type.

SCHMIDT+HAENSCH recommends two types of tubes:

- for **manual sample changing** or
- for **automatic sample changing**

The tubes for manual sample changing work with funnel and riser on the basis of communicating tubes. The sample in the tube is totally displaced by the following sample.

A volume of approx. 60 cm³ is sufficient.

The automatic sample changing in the tubes works using a by-pass or a pump with hose connections. A volume of approx. 60 cm³ is sufficient, too.

Glass sample tubes for single measurements

Glass tube without bubble trap



Length in mm	Volume in cm ³	ID-N°
100	5,5	02595
200	10,5	02596

Glass tubes with bubble trap

Filling through narrow end and short turnover after sealing prevents influence of air bubbles on measurement.



Length in mm	Volume in cm ³	ID-N°
50	8,0	02604
100	10,5	02600
200	16,5	02601

Glass tube with center filling cup

The filling cup allows easy filling and emptying of the tube. Air bubbles escape through the filler opening when moved slightly.



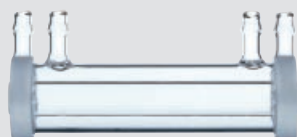
Length in mm	Volume in cm ³	ID-N°
50	3,0	02611
100	6,0	02607
200	12,0	02608

For medical applications:

Length in mm	Volume in cm ³	ID-N°
95,04	5,5	02612
190,09	11,0	02613

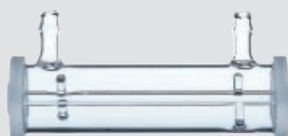
Temperature sensor Accessories (s. P. 4)

Quartz glass flow-through sample tube, thermostatable



Length in mm	Volume in cm ³	ID-N°
100	7,0	08866

Quartz glass micro tube, thermostatable



Length in mm	Volume in cm ³	ID-N°
100	1,0	08962

Precision quartz glass flow cell for small sample volume

With adapter for S+H Polarimeter



Length in mm	Volume in cm ³	ID-N°
10	0,7	09521

▶ Flow-through sample tubes (stainless steel)

Flow-through tube with funnel and riser,
tube for manual sample changing, not thermostatable



Length in mm	Volume in cm ³	ID-N°
100	12	09212
200	17	09213

Flow-through tube with funnel and riser,
with 6 mm hose connection for water circulation



Length in mm	Volume in cm ³	ID-N°
100	12	09216
200	17	09217

Flow-through tube with funnel and riser,
with integrated temperature sensor, thermostatable



Length in mm	Volume in cm ³	ID-N°
100	12	03820
200	17	03830

Only for the new UniPol L-series, Polartronic M- and H-series and new SACCHAROMAT®-models with plug connection inside of the sample compartment. Automatic temperature compensation. **Temperature measuring of the sample**, not of the sample room!

Flow-through tube with hose connection,
automatic sample changing



Length in mm	Volume in cm ³	ID-N°
50	10	09628
100	12	09208
200	17	09209

Flow-through tube, thermostatable version with 6 mm
hose connection for water circulation



Length in mm	Volume in cm ³	ID-N°
100	12	09214
200	17	09215

Micro-flow-through sample tube with 4 mm
hose connection, not thermostatable



Length in mm	Volume in cm ³	ID-N°
10	1,5	02748

▶ Stainless steel sample tube with center filling cup,
thermostatable



Length in mm	Volume in cm ³	ID-N°
100	12,0	02614
200	17,0	02619

▶ Quartz control plates for calibration of polarimeter (Control of the instrument according to GLP)

Quartz control plates are measuring standards, used as testing and adjusting kits for polarimeters. Thin quartz plates (0.4 to 1.6 mm thickness) are polished with highest precision vertically to the axis and plane parallelly. For reasons of mechanical stability, plates with a low angle of rotation (between -24°Z and $+24^{\circ}\text{Z}$) are produced as double quartz plates (combination of a dextro- and a laevorotatory plate).

For each SCHMIDT+HAENSCH quartz control plate a **factory certificate** is supplied, indicating the absolute angle of rotation in angular $^{\circ}$ and $^{\circ}\text{Z}$ for the wavelength 546, 587, 589 and 882 nm.

The angle of rotation of the quartz plate is directly correlated to its thickness and will be indicated at a temperature of 20°C for the wavelength 589 nm.

Since the angle of rotation is highly influenced by the wavelength while the sugar degrees are not, the following table shows the correlation between the different values of the certificate so that the calculation of the angle of rotation of a quartz plate is possible from the sugar degree indicated below for different wavelengths at 20°C .

Wavelength in nm	546.23	589.44	882,6
Conversion factor from $^{\circ}\text{angular}$ to $^{\circ}\text{sugar}$	2.46	2.89	6.76
Conversion factor from $^{\circ}\text{sugar}$ to $^{\circ}\text{angular}$	0.41	0.35	0.15

The required (or needed) value must be specified in your order!

Single quartz control plate

	ID-N $^{\circ}$
Standard sugar degree: -30°Z ($\pm 1^{\circ}\text{Z}$)	00613
Standard sugar degree: $+25^{\circ}\text{Z}$ ($\pm 1^{\circ}\text{Z}$)	00616
Standard sugar degree: $+50^{\circ}\text{Z}$ ($\pm 1^{\circ}\text{Z}$)	00618
Standard sugar degree: $+75^{\circ}\text{Z}$ ($\pm 1^{\circ}\text{Z}$)	00619
Standard sugar degree: $+99^{\circ}\text{Z}$ ($\pm 1^{\circ}\text{Z}$)	00621

Double quartz control plate

	ID-N $^{\circ}$
Standard sugar degree: $+15^{\circ}\text{Z}$ ($\pm 1^{\circ}\text{Z}$)	00614
Standard sugar degree: $+20^{\circ}\text{Z}$ ($\pm 1^{\circ}\text{Z}$)	00615

▶ Accessories for quartz control plates

	ID-N $^{\circ}$
Temperature sensor for automatic temperature correction. Only to be used with new L-, M- and H-series and new Saccharomat $^{\circ}$ models with plug!	07277



Replacement of the factory certificate (only for quartz plates in good shape and no changes are necessary)
Official certificate for quartz control plates can be supplied by the German Institut of Metrology (PTB) on their actual charges

▶ Accessories for quartz glass tubes and flow-through tubes

	ID-N $^{\circ}$
Cover glass for polarimeter tubes, diameter 15.5 mm	01811
Elastic insert for polarimeter tubes, diameter 15.5 mm	01813
Cover glass for polarimeter tubes, diameter 23.7 mm	01812
Elastic insert for polarimeter tubes, diameter 23.7 mm	01814
Cleaning brush for sample tubes	01838
Thermometer; 0 to 40°C ; 0.1°C grating; for tubes with center filling cup	01816
Rubber stopper, with hole to insert thermometer	08341
Temperature sensor for automatic temperature correction for glass tubes with center filling cup (also available for old tubes), can be used with all new Unipol L-series, Polartronic M- and H-series and new SACCHAROMAT $^{\circ}$ models	03720

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Subject to modification without notice
Änderungen vorbehalten
08/08

SCHMIDT + HAENSCH

Opto-electronic measuring device since 1864



ISO 9001:2000

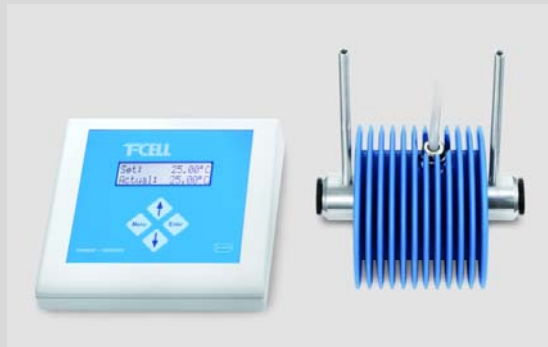


POLARIMETER TUBES

Schmidt+Haensch announced:

NEW Polarimeter Tubes temperature controlled by electronic Peltier-System

Highly accurate sample temperature adjustment without the need for an external water circulator!



Features:

- ◆ Accurate temperature control without external water circulator
- ◆ Large temperature range can be controlled (18°C – 40°)
- ◆ Fast cooling of warm samples in a few minutes
- ◆ Tube:
 - ◇ 100 mm path length
 - ◇ Single measurement
 - ◇ Normal volume
 - ◇ Made from stainless steel
- ◆ Controlled by separate electronic unit
- ◆ Automatic indication of tube length and thermal extension coefficient
- ◆ Can be used in all our digital polarimeters of Unipol L series
- ◆ T-Cell calibration kit for temperature validation and calibration

The optical activity of the sample, measured in angular degree, is a physical property of the solved matter and depends on the temperature as well as the sample itself, the concentration, the tube lengths and the wavelengths of the used light. The influence of temperature changes is specific for each material.

To be able to compare several measuring values, the reference temperature for polarimetric measurements is 20°C (or 25°C). For some substances the effects of temperature changes on the measured angle are well-known. One example are sucrose solutions. Most polarimeters have implemented the so-called sugar scale °Z, which includes a factor to compensate the influence of the temperature.



In case the instrument knows the sample temperature (by using temperature sensors), the polarimeter is able to calculate and indicate the concentration of the sucrose solution compensated to the reference temperature of 20°C.

For all other matters the customer should measure at the reference temperature of 20°C or he must accept a lower precision of the measuring value.

The most common way to cool or heat the sample is to connect the sample tube with an external water bath. In addition nowadays polarimeter tubes with integrated Peltier-elements are available. Schmidt+Haensch's new developed T-Cell is controlled by a separate electronic unit which has his own power supply. Temperatures are programmed and set by the electronic unit via 4 buttons on LCD screen.

Technical Data:

T-Cell	
Consists of T-Cell polarimeter tube and electronic unit	
T-Cell polarimeter tube	
Automatic electronic heating and cooling of the sample	
Temperature range:	18°C - 40°C
Temperature precision:	± 0.1°C
Temperature stability:	± 0.05°C
Time for ΔT = 10°C:	≤ 10 min
Tube length	100 mm
Sample volume	approx. 12 cm ³
Contact material (depending on the model)	Stainless steel, float glass
T-Cell Electronic Unit	
Display	Two lines, illuminated background
Power supply	100 -240 V, 20 VA