POLARIMETER

Quartz Control Plates

Calibration and Validation Standards for Polarimeters

Schmidt+Haensch announced:

NEW TRIPLE Quartz Control Standards TQCP

ONE Quartz Control Plate ⟶
THREE values at each 7 wavelengths

For laboratories working according to Good Laboratory Practice (GLP) or Good Manufacturing Practice (GMP) guidelines or international regulations it's mandatory to regularly verify instrument performance. Quartz control plates are recommended by national pharmacopeia's and standards like ICUMSA (International Commission for Uniform Methods of Sugar Analysis) for this purpose.

QCP's are manufactured using very stable crystalline quartz. The extensive processing is resulting in extremely plane and polished plates of highest parallelism and purity. One or two thin discs of optically active crystalline quartz are mounted in a tube. All QCP's manufactured by Schmidt+Haensch can be equipped with a temperature sensor which allows an automatic temperature control and correction when used in Schmidt +Haensch digital polarimeters not older than 10 years.

The readings of all polarimeters are influenced by the temperature.
Quartz for example has a higher rotation at higher temperatures:

$$\text{Reading (T)} = \text{Reading (20.0°C)} \cdot (1.0 + 0.000144 \cdot (T - 20.0))$$

A plate, which shows 40.000° at 20 °C, will thus show 40.006° at 21 °C and 40.029° at 25 °C.
In difference to that the rotation of solutions will decrease with temperature. For sucrose solutions for example the effect is

$$\text{Reading (T)} = \text{Reading (20.0°C)} \cdot (1.0 - 0.000471 \cdot (T - 20.0))$$

A solution, which shows 40.000° at 20 °C, will thus show 39.981° at 21 °C and 39.906° at 25 °C.

To counterbalance these temperature effects we recommend using quartz control plates which are equipped with a temperature sensor. That means if you are using a QCP with a thermo sensor and connect that to the plug in the sample room, the instrument will compensate the temperature effect automatically, displayed in ° angular degree for the QPC. The measured temperature is displayed also. If you are not using such a temperature sensor, the instrument assumes that the temperature is the standard temperature, which is 20 °C (25 °C).

Each QCP, manufactured by Schmidt+Haensch, comes with a factory certificate showing calibration at 7 different wavelengths and **traceability to PTB not older than two years**. Indicated is the extended measurement uncertainty of **0.005 angular degree**.

Standard wavelengths are:

546.2271 nm	405.0 nm	587.0 nm	589.3 nm
589.44 nm	632.9914 nm	882.6 nm	

Certification of other wavelengths in the range 300 – 900 nm is on request and against extra charge.

Schmidt+Haensch is accredited by **ISO 9001:2008** to certify QCP's. If an official (government) certificate is required, it can be supplied by the **German Institute of Metrology (PTB)** according to their actual charges.

QCP's are supplied in a fitted wooden box for safe storage.

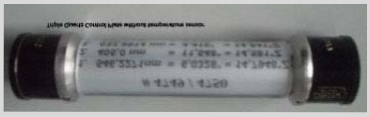
Single QCP:

	Order N°
SQCP -30 - 30 °Z / -10.5 angular degree	**00613**
SQCP 25 + 25 °Z / +8.75 angular degree	**00616**
SQCP 45 + 45 °Z / +15.75 angular degree	**00617**
SQCP 50 + 50 °Z / +17.5 angular degree	**00618**
SQCP 75 + 75 °Z / +26.25 angular degree	**00619**
SQCP 99 + 99 °Z / +34.65 angular degree	**00621**
Sugar degree in the range of -99 to -25 and +25 to +99 °Z ,	**03227**
Temperature sensor for single QCP	**07277**

NEW Triple QCP:

	Consisting of:	Order N°
TQCP 15 + 15°Z / +5.25 angular degree (°)	SQCP +45 °Z / +15.75 ° and SQCP -30 °Z / -10.5 °	**10431**
TQCP 20 + 20°Z / +7 angular degree (°)	SQCP +50 °Z / +17.5 ° and SQCP -30 °Z / -10.5 °	**10432**
TQCP 45 + 45°Z /+15.75 angular degree (°)	SQCP +75 °Z / +26.25 ° and SQCP -30 °Z / -10.5 °	**10433**
TQCP 69.5 + 69.5°Z / +24.33 angular degree (°)	SQCP +99.5 °Z / +34.65 ° and SQCP -30 °Z / -10.5 °	**10434**
TQCP 5 + 5°Z / +1.75 angular degree (°)	SQCP +30 °Z / +10.5 ° and SQCP -25 °Z / -8.75 °	**10430**
Temperature sensor for triple QCP		**02977**

Please note that the value of manufactured quartz control plates can differ from the above listed about ±1 °Z / ±0.35 angular degree due to the natural character of the used quartz!



Triple QCP's consisting of **one left and one right turning quartz plate,** mounted in separate housing. They can be used together for a combined rotation. That means that one plate is on the left and one on the right side of the holder.

If removed one plate from the holder, the other plate can be used separately.

Triple Quartz Control Plate, right single quartz plate removed

Triple Quartz Control Plate, left Single Quartz Plate removed

Recalibration of Quartz Control Plates

There are no known regulations which stipulate the frequency of QCP's recalibration.
Quartz is an extremely stable nature material, which after correct treatment does not change under normal circumstances. For this reason the renewal of quartz control plate calibration is recommended by Schmidt+Haensch only every 5 years. However this depends also on the use and as well on the site conditions, where the plate is used. If the use of the quartz plate take place under very adverse circumstances, dirty environment, high temperature or air humidity or also strong variations in temperature, should be shortened the calibration interval on 3 years.