

*For Budget Critical Applications*

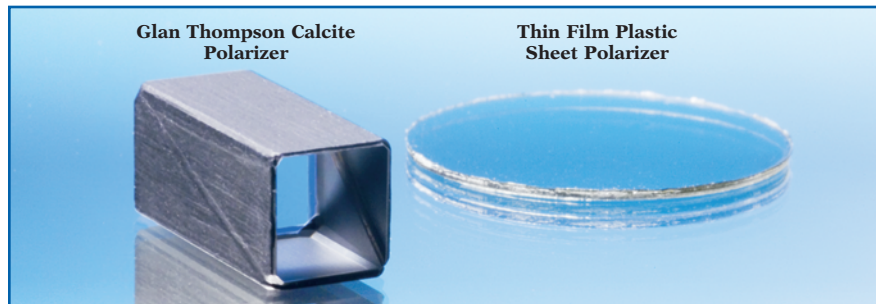
# The Autopol® I Automatic Polarimeter



 **RUDOLPH  
RESEARCH  
ANALYTICAL**

**TECHNICAL BULLETIN 920**

The Autopol I is Rudolph's most economical automatic polarimeter designed for education and less demanding applications where the budget is critical, but quality is still important.



## QUALITY

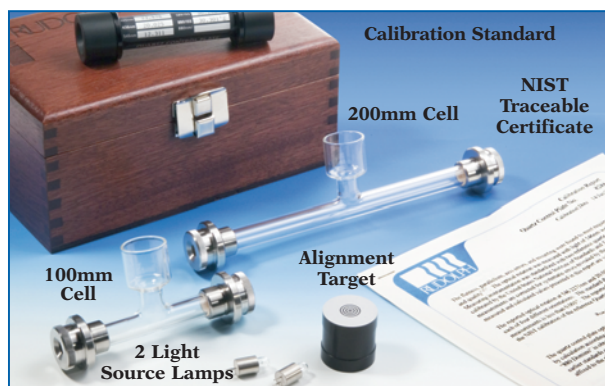
Rudolph manufactures its least expensive polarimeter with the same high quality optics as its more expensive instruments. While other manufacturers in this price range use Polaroid Plastic Diachronic Sheet Polarizers, Rudolph does not. Instead Rudolph uses the same high quality Glan Thompson Calcite Polarizers used in its high accuracy models. (Figure A)

Why are high quality polarizing prisms important? Because prisms are the most critical optical components in the polarimeter. Polaroid prisms are made of a polymeric plastic where the molecules are stretched and oriented in a specific direction so as to linearly polarize light. These types of plastic sheet polarizers are very inexpensive (\$50.00 USD) and are vulnerable to heat, can warp over time, deteriorate from moisture and also have greater light absorption than Calcite Polarizers. In many cases, the plastic polarizers must be replaced in 3 – 5 years. Glan Thompson Calcite Polarizers are comprised of a carbon crystalline structure similar to diamond and have excellent light transmission characteristics. The quality of these prisms is so good, Rudolph guarantees its prisms over the life of the polarimeter.



## TEMPERATURE

As shown in Figure B, the Autopol I comes with a Temperature Probe so that sample temperature can be displayed and printed. However, if the sample requires Temperature Control, then the Autopol I will not be accurate or sensitive enough for this type of sample, as is the case for 98% of pharmaceutical applications where a Certificate of Analysis must be issued.



## OPTIONAL ACCESSORIES

The Autopol I is a Single Wavelength Instrument operating at 589nm. The 589nm wavelength is often referred to as the Sodium D-Line. The Autopol I includes a 100mm or 200mm glass sample cell as well as a full range of optional accessories as shown in Figure C.

(Figure C)

## SPECIFICATIONS:

<b>Measuring Mode:</b>	Optical Rotation, Specific Rotation, Concentration, °Z (ISS) Sugar Degrees
<b>Measuring Scale:</b>	Degrees Arc
<b>Measuring Range:</b>	±89° Optical Rotation
<b>Resolution:</b>	0.01° Arc Optical Rotation
<b>Reproducibility:</b>	0.01° Arc Optical Rotation
<b>Accuracy:</b>	0.02° Arc Optical Rotation 0.05°Z (ISS) Sugar Degrees
<b>Prism:</b>	Glan Thompson Calcite
<b>Optical Wavelength:</b>	589nm
<b>Temp Control Range:</b>	Available on Autopol V only. A 0.01 resolution polarimeter cannot detect the effect of between 20 C° - 30°C
<b>Temp. Control Accuracy:</b>	Available on Autopol V only
<b>Temp. Measurement Range:</b>	10° - 40°C
<b>Temp. Measurement Accuracy:</b>	±0.1°C
<b>Measurement Time:</b>	5 measurements in less than 25 seconds (avg.)
<b>Light Source:</b>	Tungsten-halogen 6V, 20W, avg. 2,000 hour life
<b>Sample Chamber:</b>	Accepts sample tubes up to 200mm
<b>Data Storage:</b>	Available on Autopol V only
<b>Communication Interface:</b>	Two RS232 serial ports, one parallel printer Port and one auxiliary port
<b>Calibration:</b>	Automatic calibration via touch screen
<b>Display:</b>	7.5cm x 10cm Graphics LCD, 320 x 240 dots cold fluorescent back lit
<b>User Interface:</b>	Touchscreen
<b>Automatic Sensitivity Control:</b>	Measures samples with transmittance as Low as .1% (up to O.D. 0.03)
<b>Input Power:</b>	100 - 240V, 50/60 Hz
<b>Operating Dimensions:</b>	24.3"W x 12.7"H x 17.5" D 617mm W x 323mm H x 445mm D
<b>Shipping Dimensions:</b>	36" W x 19"H x 21"D 923mm W x 487mm H x 538 mm D
<b>Operating Weight:</b>	42 lbs. (19.05 kg)
<b>Shipping Weight:</b>	72 lbs. (32.6kg)
<b>Calendar/Clock Functions:</b>	Battery-backed clock; time and date sent to computer & printer