



# ADP600 Series Polarimeters

HIGH PRECISION, MULTI-WAVELENGTH PELTIER TEMPERATURE CONTROLLED MODELS FOR PHARMACEUTICAL, CHEMICAL, FOOD & RESEARCH APPLICATIONS

# High Precision to 4 decimal places

Single. Dual. Multiple. We're on your wavelengths.

Available as single, dual and multiple wavelength derivatives not only covering the visible spectrum, the new ADP600 Series of temperature controlled digital polarimeters are capable of measuring optical rotation to four decimal places in the highly sensitive ultra-violet region. This capability makes the instrument particularly suited for use by scientists wishing to measure chiral compounds and other optically active substances in the chemical, pharmaceutical and food sectors as well as for use in academic research.

## Stable temperatures for accurate results

The ADP600 Series polarimeters feature XPC Technology - Xylem's patented on-board Peltier temperature control system for measuring optically active samples at stable temperatures. Xylem's XPC temperature technology is intelligently applied to the sample chamber of the new polarimeters so that measurement can be accurately made without the need of an external device such as a waterbath to control sample temperature.

The ADP600 Series Polarimeters have two preset operating temperatures being 20°C and 25°C in accordance with European and United States Pharmacopoeia respectively and other user temperatures between 20°C and 30°C may be configured via the instrument user interface.

Temperature control limits are also able to be set between 0.2°C and 0.5°C providing faster stabilisation where a measurement of lower precision is required (for example with pharmaceutical applications where Pharmacopoeia stipulates +/- 0.5°C).

ADP600 Series Polarimeters accept standard size or special low volume leuc taper polarimeter tubes facilitating measurement across optical path lengths between 5mm and 200mm with tube diameters from 3mm to 8mm being readable. For optimum temperature performance, metal bodied tubes are recommended.

Optional lids may be easily fitted to the ADP600 Series Polarimeters, facilitating flow applications.

## Key Features

- High accuracy polarimeters
- Simple Methods system
- Supports FDA regulation 21 CFR Part 11
- US/EP/BP/JP compliant
- External keyboard support
- RFID security for user clearance
- Choice of up to 7 common wavelengths
- 3 USB ports for connectivity to LIMS/PC
- Ethernet port for networking



# ADP Methodology

## One-touch operation for a myriad of methods

Integral to operational simplicity is the full color, high definition, touch-screen graphical user interface. A menu structure featuring a METHODS system makes for one-touch calibration and instrument configuration; especially where the specific rotation of a number of samples is being analysed over a wide range of concentrations, path lengths, temperatures and wavelengths.

A "Mean Method" is also available, allowing a number of readings to be taken from a production batch with the mean being calculated and recorded once the experiment has been completed. The Mean Method is ideal for pharmaceutical applications where compliance with pharmacopoeia is required.

The METHODS system is also very similar to that of the wide ranging RFM900-T Series of high accuracy Peltier controlled refractometers that are in common use throughout the flavours, fragrance, chemical and pharmaceutical industries.

Common scales include I.S.S (z), Specific Rotation, Concentration (g/cm<sup>3</sup>), Purity, % Invert sucrose, % change (Inversion A-B) and Specific Rotation (concentration, moisture content, length) Batch MEAN Method for Pharmacopoeia and GLP.

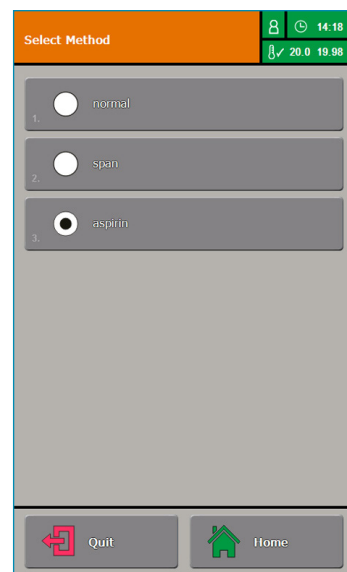


Fig 1. ADP Series GUI (Method screen)

## Compliance to Global Standards

Additionally the ADP600 Series polarimeters feature a secure "print to PDF" function that may be configured to operate in secure environments in accordance with **FDA regulation 21 CFR Part 11** and importantly, the ADP600 Series polarimeters meet all of the requirements, including wavelength directives of British, United States, European and Japanese Pharmacopoeia.

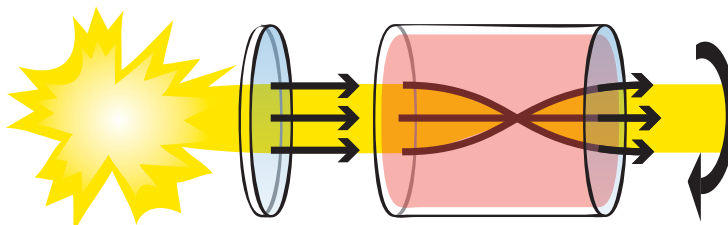
ADP600 Series polarimeters along with RFM900-T Series refractometers, and the ADP450 polarimeter offer the following key benefits for 21 CFR 11.

- Compliance without an intermediate PC - less data security risk and lower system cost
- Server synchronised clock to prevent data tampering
- Electronic signatures including multi-verification (Submitter > Reviewer >> Approver)
- XML output strings with encryption & MD5 check for easy connection to LIMS/Server
- Full instrument configuration audit trail
- Configurable users enforcing unique login & signature credentials as well as strict password controls
- Multi-reading PHR Method for batch measurement as per GLP/PHR
- Print to Secure PDF with custom header (customer logo can be input)

## What is Optical Rotation?

When plane-polarised light passes through an optically active substance, the plane of polarisation will rotate by an amount that is specifically related to the product through which it travelled.

As many chemical compounds display this chiral characteristic, the measurement of optical rotation using a polarimeter is commonplace within the sugar, food, chemical and pharmaceutical manufacturing industries as a production control and quality assurance tool.



# 450 Polarimeters

## Accessories and Calibration

A full range of accessories is available including low volume, standard and flow through sample tubes as well as UKAS-certified quartz control plates traceable to ICUMSA and PTB for verifying instrument performance. Validation documents (IQ/OQ/PQ) are also available.

## A Modular Approach

In order to better suit customer needs, ADP600 Series polarimeters are now designed around a modular selection guide. This approach means customers will have everything they need for their application without spending excess money on things that they don't.



Fig 2. Quartz Plates, available in single or multiple box sets

Simply...

Choose your  
**Polarimeter**

Polarimeter by  
accuracy and  
wavelength

Choose your  
**XPC Tubes**

XPC Tubes by  
length, diameter,  
volume, acids,  
flow, volatility

Choose your  
**XPC Adaptors**

XPC Adaptor to  
match your  
tube type

Choose your  
**Windows**

Window to match  
tube diameter and  
for Vis/NIR or  
UV/Vis Pass

## Application Specific Polarimeter Tubes

Bellingham + Stanley polarimeter tubes are manufactured to high quality standards conforming to ICUMSA recommendations and are compatible with most makes of polarimeter.

Tube ends are precision ground with windows made from specially selected low strain glass in order to achieve highest accuracy optical rotation measurement.

Special tubes, HCl (hydrochloric acid) tubes, XPC Adaptors and cover glasses for ultra-violet measurement are also available. Please visit our website for further details.



Standard XPC tubes



HCl XPC tubes



Low volume XPC tubes

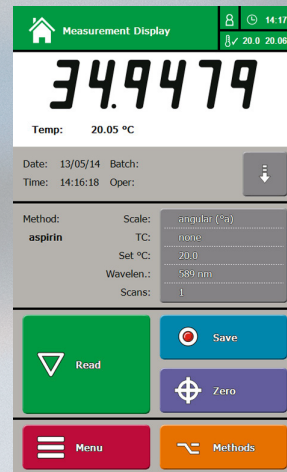


XPC Adaptors

# ADP Specifications

## Common Specifications

<b>Wavelengths</b>	325, 365, 405, 436, 546, 589 & 633nm (model dependent)
<b>Range (°A)</b>	± 89 (-355 to +355 via Method selection)
<b>Resolution (°A)</b>	0.0001
<b>Accuracy (°A)</b>	± 0.003 (@546, 589 & 633nm) / ± 0.005 (@325, 365, 405, 436)
<b>Temperature Range</b>	15-35°C
<b>Temperature Control</b>	XPC Technology (Xylem's patented Peltier temperature control)
<b>Accuracy</b>	± 0.2°C
<b>Temperature Compensation</b>	None, Sugar (ICUMSA), Quartz, User defined
<b>Optical Density Range</b>	0.0 to 3.0 OD
<b>Methods</b>	Specific Rotation, % Concentration, % Invert Sugar, % Inversion (A-B)
<b>Temperature Set Points</b>	20 & 25 °C (variable between 20-30 °C via Method)
<b>Reading Time</b>	15-60 seconds @ 546/589nm and 20/20°C (instrument/sample)
<b>Tube Types</b>	XPC (stainless steel), Low Volume, Flow-through, PEEK (Glass)
<b>Tube Length</b>	5-200mm
<b>Tube Diameter</b>	3-8mm
<b>User Interface</b>	High Definition 7.4" touch-screen colour display
<b>Light Source</b>	UV/Vis lamp (6V, 2A >1000hrs) and narrow band pass filter(s) with auto-off after 1hr of inactivity
<b>Interfaces</b>	3 x USB (A), 1 x Ethernet, 1 x RS232
<b>Power Supply</b>	100-250V~, 50-60 Hz. <2A.



## Optional Accessories

TYPE	CODE	LENGTH (mm)	VOLUME (ml)	XPC Adaptor	UV Pass Windows	LID TYPE
XPC, Standard (S/S)	35-90	100	5	35-95		
XPC, Standard (S/S)	35-91	200	10	35-96	37-545	Standard (included)
Low Volume, Luer, (S/S)	35-74	5	0.1			
Low Volume, Luer, (S/S)	35-73	10	0.2			
Low Volume, Luer, (S/S)	35-72	25	0.5	35-97	35-83	37-010
Low Volume, Luer, (S/S)	35-71	50	1			
PEEK, Standard (glass)	35-12	100	5	35-99		
PEEK, Standard (glass)	35-13	200	10	35-96	35-82	Standard (included)

PEEK: Polyether ether ketone. (S/S): Stainless steel.

Chemical compatibility table for materials used is available.

Other accessories and spare parts available: Tube washers, window & endcaps. Standard & Hastelloy® temperature sensors. Dot-matrix miniature printer. Mini-keyboard and barcode reader. Interface cables.

## Not what you're looking for?

We are constantly adding new accessories and spare parts to our range. If a tube size or material type is not shown in this brochure, please take a look at our website for new items or contact us today.

# Xylem |'zīləm|

- 1) The tissue in plants that brings water upward from the roots;
- 2) a leading global water technology company.

Bellingham + Stanley is part of Xylem Lab Solutions and a leading provider of refractometers and polarimeters.

Xylem Analytics' global brands have been leaders in the laboratory instrumentation market for decades, and are relied upon every day across more than 150 countries. Working in true partnership with our clients, we listen, learn and adapt to individual needs, offering deep application expertise built upon our long history of innovation in instruments and services. Our solutions for analysis, measurement and monitoring help enable many of today's modern laboratories and industrial processes, and provide our customers the trusted and high performing solutions they need to succeed.

Xylem Analytics is part of Xylem Inc., a global company focused on solving the world's most challenging and fundamental water issues. As accurate analysis is crucial to the water industry, Xylem Analytics taps its diverse product brands for leadership in that field and beyond, providing the best laboratory and field monitoring instrumentation across a wide variety of industries.

**For more information on how Xylem can help you, go to [www.xylem.com](http://www.xylem.com)**



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