

Digital Polarimeters



Bellingham + Stanley Ltd.

Scientific Instrument Makers

The ADP220 & ADS220 Automatic Digital

Bellingham+ Stanley has been designing and manufacturing polarimeters for over eighty five years. They are built to the highest quality standards using state-of-the-art technologies. The ADP220 is a low cost general purpose fully automatic polarimeter which, in the few years since its launch, has gained popularity world-wide. The ADS220 is a saccharimeter based on the same design but with features that suit particular application in the sugar industry.

ADP220 and ADS220 - common design features

Operation of these instruments is simple with touch-of-a-button controls for instrument zero re-set and mode and set-up changes. Results are displayed digitally and can be printed directly or sent to a computer. In addition to the reading, the instrument displays the mode: the active scale, automatic temperature compensation status, reading stability status, the optical density of the sample and temperature.

The 589 nm LED light source and exterior power supply minimise heat generation within the instrument. There is a choice of two temperature probes: a fixed probe to monitor the sample chamber temperature or a mobile probe which can be suspended in the sample. Tubes of length up to 220 mm can be used and the instrument lid is designed to accept tubing to convey circulating water for sample temperature control and to convey the sample itself when using a (pumped) flow-through polarimeter tube.

There is a choice of scales and automatic temperature compensation modes. For example, quartz temperature compensation can be selected if quartz control plates are being used to check the accuracy of the instrument. The International Sugar Scale (Z) can be selected in combination with sucrose temperature compensation.

Reading response can be set to slow or fast. A slow response (approximately 30 seconds) is recommended where high accuracy is required and/or where samples are dilute or the optical density is high. Where a low resolution ($\pm 0.1^\circ$) reading is acceptable, a fast response of about 5 seconds may be adequate.

A multiplication factor is a constant that can be input to automatically multiply the measured optical rotation. This can be convenient if non-standard tube lengths or concentrations are used or if a specific (molecular) rotation needs to be displayed.

ADP220

As a general purpose instrument, the ADP220 can be used for a multitude of applications, including sugar solutions for which the Z scale and sugar temperature compensation may be selected. When the angular scale is selected, the user may also select the measuring range as follows

-355°	to	-185°
-265°	to	-95°
-175°	to	-5°
-85°	to	+85°
+5°	to	+175°
+95°	to	+265°
+185°	to	+355°

There are also available five user defined scales where, for example, the user may program simple relationships between concentration and optical rotation, thereby making the polarimeter a 'concentration meter'. There is also a user-defined temperature compensation feature.

ADS220

The ADS220 is a saccharimeter, which means it is designed and optimised for the measurement of sugar solutions. In addition to the ISS (Z) scale, it has the standard angular scale but not with the selectable range feature of the ADP220. On the Z scale the ADS220 has a higher measuring accuracy than the ADP220 (see specification).

An important feature is the 'purity' mode. In this mode the instrument can display directly the purity of the measured sample. The equation used is flexible allowing the user to enter the required constants (multipliers). Brix values for the test sample can either be entered manually or the ADS220 can be coupled directly to an RFM refractometer with the reading being transmitted via the RS 232 interface. The resulting purity is displayed on the ADS220.

The ADS220 can be fitted with a 'slotted' lid, designed to accept funnel flow-through tubes that are often preferred in sugar testing laboratories.



Polarimeters



Technical Specification ADP220 and ADS220

Light Source	LED with interference filter (589 nm) 4 mm diameter beam
Interfaces	Serial RS232, parallel, temperature sensor, refractometer
Ambient Temperature	5 to 45 °C

ADP220 Performance Specification

Scale Resolution	0.01
Angular Scale: Range*, Accuracy	-85 to +85 °A, ±0.02 °A
Sugar (ISS) Scale: Range, Accuracy	-225 to +225 °Z, ±0.05 °Z
User-Defined Scales	Up to 5, programmable
Temperature Compensation	None, sugar, quartz, user-defined

* Displayed Scale Range Selectable from -355 to +355 °A

ADP220 Order code 36-20	Automatic Digital Polarimeter supplied with one straight centre filling tube (200mm), ADP220 'Utility' program and instruction manual.
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ADS220 Performance Specification

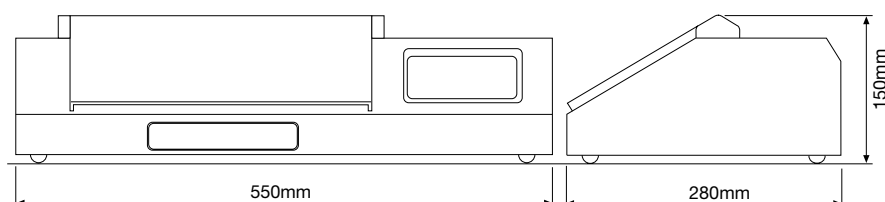
Scale Resolution	0.01
Sugar (ISS) Scale: Range, Accuracy	-225 to +225 °Z, ±0.03 °Z
Sugar Purity Scale	Optional Refractometer Link
Temperature Compensation	None, sugar, quartz, user-defined

ADS220 Order code 36-21	Automatic Digital Saccharimeter supplied with one straight centre filling tube (200mm) and instruction manual.
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Weights and Dimensions

Gross Weight: 14.5kg **Net Weight:** 9.0kg **Dimensions (packed):** 650x410x400mm
Cube: 0.107 **Actual dimensions:** 550x280x150mm not including power supply.

Power supply: External 90-250V~ 50-60 Hz. Supplied with instrument.



Quartz Control Plates

A quartz control plate can be used to verify the measuring accuracy of a polarimeter and therefore is an essential tool for companies wishing to comply with a recognised quality standard.

Bellingham+ Stanley offers two plates suitable for use with the ADP220 and ADS220 instruments. Approximate values are: 100 °Z (33 °A) and 15 °Z (5 °A). Each plate is provided with a certificate showing the exact value and tolerance.



CE This product complies with the requirements of the Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC

Bellingham & Stanley Ltd pursue a policy of continuous product development and improvement and, as such, information given on this data sheet may be updated or withdrawn without notice. All trademarks acknowledged.

A review of the Bellingham+Stanley range



RFM300 Series Refractometers

High precision, multi-purpose instruments - the choice of leading companies world-wide

RFM100 Series Refractometers

Low cost, single mode automatic instruments for the food industry

Model D Polarimeter

A high quality optical polarimeter for industry and academia



Abbe 60 Refractometers

The widest range and highest accuracy available



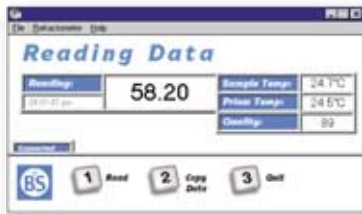
Eclipse Refractometer

A new range of hand-held refractometers that can be used in the full sun of a fruit plantation or the shade of a high tech engineering plant



ADP220 Polarimeter/ ADS220 Saccharimeter

The popular and affordable fully automatic instruments



Prism Software

Software modules for linking/controlling instruments and collating/processing data

B+S Process Instruments

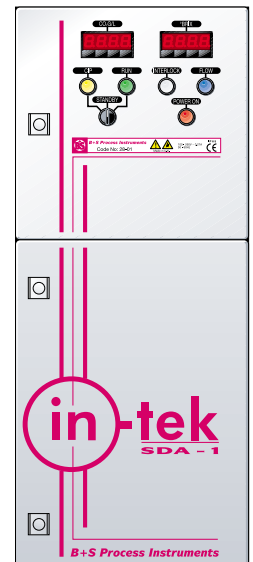
Process Refractometer

In-line measurement and control for Industrial or Hygienic process lines



In-tek SDA-1

In-line beverage analyser for °Brix & CO₂.



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