

# ABBE REFRACTOMETERS – AR4 AND AR2008

## MEASUREMENTS OF LIQUIDS, PASTES, FOILS AND SOLIDS

The Abbe refractometer was developed around 1869 by Ernst Abbe and was one of the first laboratory instrument for determining the refractive index of liquids. Its measuring principle is based on the total reflection. Thanks to the favourable purchase prices, the easy operation and reliability, it still has a firm presence in the laboratory. With the AR4 and AR2008, A.KRÜSS has two classic Abbe refractometers in its product line. They measure the refractive index nD, the dry substance content in % and the dispersion value nF-nC of liquid, viscous as well as solid samples. As a standard, contact liquid for the optical coupling is included in the delivery for the determination of solids. The scope of delivery also includes a calibration body for the calibration and adjustment, a mains adaptor and a dust cover. For the temperature control, the devices are

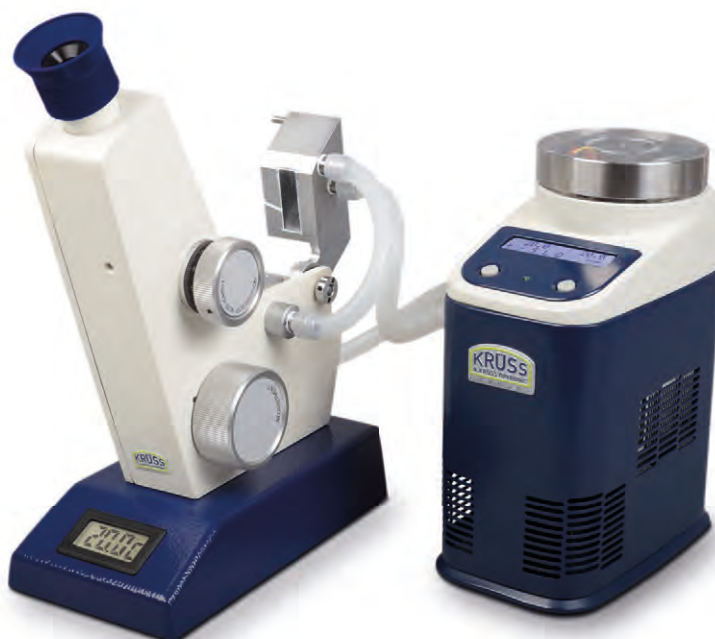
equipped on both sides on the upper and lower prisma holder with thermostat connections that allow for the temperature control with an external thermostat.

### ANALOGUE ABBE REFRACTOMETER

The AR4 determines the refractive index between nD 1.3000–1.7200 and the sugar content in the range of 0–95 % Brix. The scales can be adjusted manually using the drive knob. The measured value is then read via an eyepiece. The refractometer can be connected to a thermostat, e. g. our circulating thermostat PT31 with Peltier element in order to maintain the temperature at 20°C or 25°C. The temperature will be measured with the integrated digital thermometer and shown on the LCD display.



THERMOSTAT TEMP. CONTROL



AR4 with circulating thermostat PT31

#### AR4

SCALES	Refractive index (nD), concentration of sucrose [%Brix]
MEASUREMENT RANGE	nD 1,3000–1,7200 0–95 %Brix
MEASUREMENT ACCURACY	nD $\pm 0,0002$ $\pm 0,1$ %Brix
SCALE MARKING (RESOLUTION)	nD 0,0005 0,25 %Brix
READING ACCURACY	nD 0,0005 0,25 %Brix
TEMP. MEASUREMENT RANGE	0–99 °C

#### PT31

ACCURACY OF TEMP. CONTROL	$\pm 0.2$ °C
TEMP. CONTROL RESOLUTION	0.1 °C
TEMP. CONTROL RANGE	8–35 °C
HEATING CAPACITY	30 W
COOLING CAPACITY AT 20 °C	20 W
PUMP PRESSURE	2000 Pa
PUMP CAPACITY	20 l/h
FILLING VOLUME	100 ml

## DIGITAL ABBE REFRACTOMETER

The AR2008 measures the refractive index or the sugar content within a range of nD 1.3000–1.7200 and 0–95 % Brix. The output of the measurement results is performed digitally. The refractive index or the Brix value is shown on the LED display together with the temperature. A serial interface allows you to directly send the measured values together with the date and time of day to a PC or printed out. The refractometer can be coupled with a thermostat, e.g. our circulating thermostat PT80. In this combination, the device measures the refractive index within the temperature range of 0–70 °C. An automatic temperature compensation for the Brix scale can be optionally connected.

### PT80 – robust, compact, powerful

The PT80 is a high-quality circulating thermostat with Peltier technology that covers with a temperature range between 5 and 80 °C all basic temperature control applications in the lab. The desired temperature can be adjusted and read on a user-friendly touch screen display. The thermostat can be coupled to a PC via the RS-232 interface. We developed the PT80 specifically for the sample preparation and temperature control of our high-quality laboratory instruments such as the polarimeter, digital refractometer or Abbe refractometer.



AR2008 with circulating thermostat PT80



TEMP. COMPENSATION



THERMOSTAT TEMP. CONTROL

### AR2008

SCALES	Refractive index (nD), concentration of sucrose [%Brix]
MEASUREMENT RANGE	nD 1.3000–1.7200 0–95%Brix
MEASUREMENT ACCURACY	nD $\pm 0.0002$ $\pm 0.1$ %Brix
RESOLUTION	nD 0.0001 0.1 %Brix
TEMP. MEASUREMENT RANGE	0–99 °C

### PT80

ACCURACY OF TEMP. CONTROL	$\pm 0.1$ °C
TEMP. CONTROL RESOLUTION	0.1 °C
TEMP. CONTROL RANGE	5–80 °C
HEATING CAPACITY	120 W
COOLING CAPACITY AT 20 °C	40 W
PUMP PRESSURE	11 000 Pa
PUMP CAPACITY	60 l/h
FILLING VOLUME	250 ml

## TECHNICAL DATA – ABBE REFRACTOMETERS

	AR2008	AR4
SCALES	Refractive index (nD) concentration of sucrose [%Brix]	
MEASUREMENT RANGE	nD 1.3000–1.7200 0–95%Brix	
MEASUREMENT ACCURACY	nD ±0.0002 ±0.1%Brix	
RESOLUTION	nD 0.0001 0.1%Brix	nD 0.0005 0.25%Brix
MEASUREMENT PRISM	Optical glass	
LIGHT SOURCE	LED	
WAVELENGTH	589 nm	
TEMPERATURE COMPENSATION	0–90°C	
TEMPERATURE MEASUREMENT	Digital thermometer	
TEMPERATURE MEASUREMENT RANGE	0–99°C	0–99°C
TEMP. MEASUREMENT ACCURACY	±0.3°C	±0.5°C
TEMP. MEASUREMENT RESOLUTION	0.1°C	
METHODS		Adjustable scale
CONTROL	Digital evaluation	Reading via eyepiece
HOUSING	Aluminum cast, powder-coated	
INTERFACES	RS-232, RS-422	
OPERATING VOLTAGE	115/230 V, reversible	7.5 V
POWER CONSUMPTION (MAX.)	40 W	15 W
DIMENSIONS (W X H X D)	120 mm x 290 mm x 250 mm	100 mm x 270 mm x 190 mm
WEIGHT	5 kg	2.5 kg
SPECIAL FEATURES	Thermostat connections available	