Digital refractometer KERN ORM

NEW

Transport and storage case

Rear view, screw-on battery compartment cover

Digital measurement of refraction index for universal application

Features

- The KERN ORM refractometers are accurate and universal maintenance free digital handheld refractometers
- They are characterized by their easy-using and robustness
- The typical and practical design is suitable for a quick and convenient everyday use
- The large, easy-to-read display with integrated temperature display supports the user to reliably determine the measurement
- The integrated automatic temperature compensation (ATC), avoids the manual conversion of the measurement. This allows a quick and efficient usage of the instrument
- Rapid, user-friendly calibration of the refractometer is possible at any time using standard commercial distilled water
- The refractometers from the KERN ORM range are protected to international IP65 protection class, against dust and water splashes. After use, you can rinse the refractometer under running water
- Mean value measurements possible
- The follwoing accessory-parts are included:
  - Prism cover lid
  - Pipette
  - Storage box
  - 1 × AAA battery
  - Screwdriver

Technical data

- Measurement temperature: 0 °C – 40 °C
- Overall dimensions W×D×H 121×58×25 mm
- Net weight approx. 289 g
- Power supply: 1 × AAA (1,5 V)
- Lifetime of the battery: approx. 10.000 measurements
- ATC (Automatic Temperature Compensation)
- Minimum sample volume: 4 drops
- Automatic energy management (AUTO-OFF after 60 seconds)
- Mean value measurement (15 measurements)

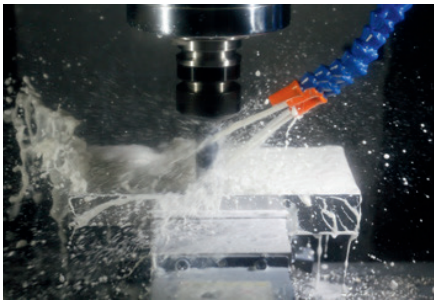
Also available with calibration certificate, see page 109!

STANDARD

AUTO ATC | IP 65 | BATT | 1 DAY

Digital refractometer KERN ORM-B · ORM-R · ORM-SU

Scope of application: Basic measurements for Brix and refractive index



The following models are particularly suitable for basic measurement where the result is required in Brix or refractive index. They are used to determine the sugar content in food or for monitoring processes in the industry (coolant monitoring, water-based mixtures). Alternatively the display can be switched to show Brix or the refractive index.

The main scope of applications is:
- Industry: Monitoring of lubricants in machines and quality control
- Food industry: Beverages, fruits and sweets
- Agriculture: Determination of the degree of ripeness of fruit for quality control in harvesting
- Restaurants and large-scale catering establishment

Model	Scales	Measuring range	Accuracy	Division
KERN				
ORM 50BM	Brix Refractive index	0 – 50 % 1,3330 – 1,4200 nD	± 0,2 % ± 0,0003 nD	0,1 % 0,0001 nD
ORM 1RS	Brix Refractive index	0 – 90 % 1,3330 – 1,5177 nD	± 0,2 % ± 0,0003 nD	0,1 % 0,0001 nD

Scope of application: Sugar

The following models are particularly suitable for direct measurement of different types of sugar. These are used to determine the content of the respective type of sugar in water-based liquids. It is possible to switch between the four different scales.

The main scope of applications is:
- Food industry: Beverages, fruits and sweets
- Agriculture: Determination of the degree of ripeness of fruit for quality control in harvesting
- Restaurants and large-scale catering establishment

Model	Scales	Measuring range	Accuracy	Division
KERN				
ORM 1SU	Fructose	0 – 69 %	± 0,2 %	0,1 %
	Glucose	0 – 60 %	± 0,2 %	0,1 %
	Brix	0 – 90 %	± 0,2 %	0,1 %
	Refractive index	1,3330 – 1,577 nD %	± 0,0003 nD	0,0001 nD
ORM 2SU	Lactose	0 – 17 %	± 0,2 %	0,1 %
	Maltose	0 – 16 %	± 0,2 %	0,1 %
	Dextran	0 – 11 %	± 0,2 %	0,1 %
	Brix	0 – 50 %	± 0,2 %	0,1 %

Digital refractometer KERN ORM-HO · ORM-NA · ORM-SW

Scope of application: Honey

The following model is particularly suitable for the measurement of the water content in honey according to the International Honey Commission (IHC2002) and “degrees Baumé” to determine the relative density of liquids. Alternatively the display can be switched to show Brix or the refractive index.

The main scope of applications is:
- Beekeeping
- Honey production

Model	Scales	Measuring range	Accuracy	Division
KERN				
ORM 1HO	Brix	5 – 38 %	± 0,2 %	0,1 %
	Baumé	33 – 48 °Bé	± 0,2 °Bé	0,1 °Bé
	Water content	0 – 90 %	± 0,2 %	0,1 %
	Refractive index	1,3330 – 1,5177 nD	± 0,0003 nD	0,0001 nD

Scope of application: Salt

The following models are particularly suitable to determin the concentration of NaCl (salt) in water and seawater. This is often used for the preparation and for the cooking of sauces, bases for pastries, the production of brines (e.g. for white cheese) and the preparation of seafood and marinades for meat. Alternatively the display can be switched to show Brix or the refractive index.

The main scope of applications is:
- Food industry
- Restaurants, and large-scale catering establishment, canteens
- Fisch farm

Model	Scales	Measuring range	Accuracy	Division
KERN				
ORM 1NA	Salt content (NaCl) %	0 – 28 %	± 0,2 %	0,1 %
	Salt content (NaCl) ‰	0 – 280 ‰	± 2 ‰	1 ‰
	Spec. Gravity	1,000 – 1,220	± 0,002	0,001
	Brix	0 – 28 %	± 0,2 %	0,1 %
	Refractive index	1,3330 – 1,4100 nD	± 0,0003 nD	0,0001 nD
ORM 1SW	Salt content seawater	0 – 100 ‰	± 2 ‰	1 ‰
	Chlorine content seawater	0 – 57 %	± 2 ‰	1 ‰
	Spec. Gravity	1,000 – 1,070	± 0,002	0,1 %
	Brix	0 – 50 %	± 0,2 %	0,1 %
	Refractive index	1,3330 – 1,4200 nD	± 0,0003 nD	0,0001 nD

Digital refractometer KERN ORM-AL · ORM-BR · ORM-WN

Scope of application: Beer/alcohol

The following models are particularly suitable for determining the sugar content of the original wort of beer in its unfermented state. The value can be read straightaway, without having to be converted, using the SG Wort and Degrees Plato scales. In addition, the percent by volume and percent by mass scales can be used to determine the alcohol content of clear spirits.

The main scope of applications is:
- Beer brewers
- Alcohol production

Modell	Skalen	Messbereich	Genauigkeit	Teilung
KERN				
ORM 1AL	Percentage by mass	0 – 72 %	± 1 %	1 %
	Percentage by volume	0 – 80 %	± 1 %	1 %
	Brix	0 – 50 %	± 0,2 %	0,1 %
	Refractive index	1,3330 – 1,4200 nD	± 0,0003 nD	0,0001 nD
ORM 1BR	Plato	0 – 31 °P	± 0,3 °P	0,1
	SG Wort	1,000 – 1,130	± 0,002	0,1
	Brix	0 – 50 %	± 0,2 %	0,1 %
	Refractive index	1,3330 – 1,4200 nD	± 0,0003 nD	0,0001 nD

Scope of application: Wine

The following models are particularly suitable for the measurement of the sugar content in fruit. It indicates the expected °Alcohol of the fruit. The degree of ripeness of fruit (fruit-sugar) can also be determined, such as e.g. grapes. Alternatively the display can be switched to show Brix or the refractive index.

The main scope of applications is:
- Agriculture: Wine-growing (viticulture) and fruit-growing
- Wine-production
- Must and alcohol production

°Oe = Degree Oechsle, °KMW = Klosterneuburger Most Waage

Model	Scales	Measuring range	Accuracy	Division
KERN				
ORM 1WN	Oechsle	0 – 150 °Oe	± 2 °Oe	1 °Oe
	Percentage by volume	0 – 22 %	± 0,2 %	0,1 %
	KMW (Babo)	0 – 25 °KMW	± 0,2 °KMW	0,1 °KMW
	Brix	0 – 50 %	± 0,2 %	0,1 %
ORM 2WN	Oechsle France	0 – 230 °Oe	± 2 °Oe	1 °Oe
	Percentage by volume	0 – 22 %	± 0,2 %	0,1 %
	KMW (Babo)	0 – 25 °KMW	± 0,2 °KMW	0,1 °KMW
	Brix	0 – 50 %	± 0,2 %	0,1 %

Digital refractometer KERN ORM-CO · ORM-UN

Scope of application: Coffee

The following models are particularly suitable for measuring the dissolved solids (TDS) in coffee to determine or compare the strength of a cup of coffee. For roasting plants, the TDS% value is used to determine the solubility level of a roast and to control the quality. Alternatively the display can be switched to show Brix or the refractive index.

The main scope of applications is:
- Coffee industry
- Coffee roasting plants
- Coffee competitions

Modell	Skalen	Messbereich	Genauigkeit	Teilung
KERN				
ORM 1CO	Coffee TDS 1	0 – 25	± 0,2	0,1
	Brix	0 – 50 %	± 0,2 %	0,1 %
	Refractive index	1,3330 – 1,4200 nD	± 0,0003 nD	0,0001 nD
ORM 2CO	Coffee TDS 2	0 – 25	± 0,2	0,01
	Brix	0 – 30	± 0,2	0,1
	Refractive index	1,3330 – 1,4200 nD	± 0,0003 nD	0,0001 nD

Scope of application: Urine

The following models are particularly suitable for the measurement of the specific gravity (sg) in urine, the quantitiy of serum (serumproteine) in urine (doping control among athletes), and the refractive index.

The main scope of applications is:
- Hospitals
- Doctor's surgeries/Physicians
- Medical training institutions
- Nursing homes
- Sports medicine (doping test)
- Veterinary

Model	Scales	Measuring range	Accuracy	Division
KERN				
ORM 1UN	Urine (spec. gravity)	1,000 – 1,050 sgU	± 0,001 sgU	0,001 sgU
	Serum protein	0 – 12 g/100 ml	± 0,2 g/100 ml	0,1 g/100 ml
	Brix	0 – 50 %	± 0,2 %	0,1 %
	Refractive index	1,3330 – 1,4200 nD	± 0,0003 nD	0,0001 nD
ORM 2UN	Urine (s. g. dog)	1,000 – 1,060 sgU	± 0,002 sgU	0,001 sgU
	Urine (s. g. cat)	1,000 – 1,060 sgU	± 0,002 sgU	0,001 sgU
	Brix	0 – 50 %	± 0,2 %	0,1 %
	Refractive index	1,3330 – 1,4200 nD	± 0,0003 nD	0,0001 nD

Digital refractometer KERN ORM-CA

Scope of application: Industry/Automotive

The following models are particularly suitable for the measurement and determination of AdBlue®, glycol concentration (ethylene (EG) and propylene (PG)), battery fluid (BF), urea, the freezing point of windscreen wash water (CW). Furthermore these models are suitable for the measurement of thermal exchange systems. Alternatively the display can be switched to show Brix.

The main scope of applications is:
- Automotive industry: Car-workshops and producers
- Chemical industry
- Solar industry: Antifreeze monitoring

Model	Scales	Measuring range	Accuracy	Division
KERN				
ORM 1CA	Wash water	(-60) – 0 °C	± 0,5 °C	0,1 °C
	AdBlue®	0 – 51 %	± 0,2 %	0,1 %
	Battery fluid	1,000 – 1,500	± 0,005	0,1 %
	Brix	0 – 50 %	± 0,2 %	0,1 %
	Refractive index	1,3330 – 1,4200	± 0,0003 nD	± 0,0001 nD
ORM 2CA	Ethylene glycol (%)	0 – 100 %	± 0,5 %	0,1 %
	Ethylene glycol (° C)	(-50) – 0 °C	± 0,5 °C	0,1 °C
	Propylene glycol (%)	0 – 100 %	± 0,5 %	0,1 %
	Propylene glycol (°C)	(-60) – 0 °C	± 0,5 °C	0,1 °C
	Brix	0 – 90 %	± 0,2 %	0,1 %

360° rotatable microscope head

Monocular Microscope
For the inspection with one eye

Binocular Microscope
For the inspection with both eyes

Trinocular Microscope
For the inspection with both eyes and the additional option for the connection of a camera

Abbe Condenser
With high numerical aperture for the concentration and the focusing of light

Halogen illumination
For pictures bright and rich in contrast

LED illumination
Cold, energy-saving and especially long-life illumination

Incident illumination
For non-transparent objects

Transmitting illumination
For transparent objects

Fluorescence illumination
For stereomicroscopes

Fluorescence illumination for compound microscopes
With 100 W mercury lamp and filter

Fluorescence illumination for compound microscopes
With 3 W LED illumination and filter

Phase contrast unit
For a higher contrast

Darkfield condenser/unit
For a higher contrast due to indirect illumination

Polarising unit
To polarise the light

Infinity system
Infinity corrected optical system

Zoom magnification
For stereomicroscopes

Auto-focus
For automatic control of the focus level

Parallel optical system
For stereomicroscopes, enables fatigue-proof working

Integrated scale
In the eyepiece

SD card
For data storage

USB 2.0 digital camera
For direct transmitting of the picture to a PC

USB 3.0 digital camera
For direct transmitting of the picture to a PC

WIFI data interface:
For transmitting of the picture to a mobile display device

HDMI digital camera
For direct transmitting of the picture to a display device

PC software
To transfer the measurements from the device to a PC.

Automatic temperature compesation
For measurements between 10 °C and 30 °C

Protection against dust and water splashes IPxx:
The type of protection is shown in the pictogram cf. DIN EN 60529:2000-09, IEC 60529:1989+A1:1999+A2:2013

Battery operation
Ready for battery operation. The battery type is specified for each device.

Battery operation rechargeable
Prepared for a rechargeable battery operation

Plug-in power supply
230V/50Hz in standard version for EU. On request GB, AUS or USA version.

Integrated power supply unit
Integrated in microscope. 230V/50Hz standard EU. More standards e.g. GB, AUS or USA on request.

Package shipment
The time required to manufacture the product internally is shown in days in the pictogram.

ABBREVIATIONS

C-Mount	Adapter for the connection of a camera to a trinocular microscope
FPS	Frames per second
H(S)WF	High (Super) Wide Field (Eyepiece with high eye point for wearers of glasses)
LWD	Long Working Distance
N.A.	Numerical Aperture
SLR camera	Single-Lens Reflex camera
SWF	Super Wide Field (Field number at least ⌀ 23 mm for 10× eyepiece)
W.D.	Working Distance
WF	Wide Field (Field number up to ⌀ 22 mm for 10× eyepiece)