

# Analogue refractometer KERN ORA



Box with accessories

## Refractive index measurement for laboratories and the industry

### Features

- The KERN ORA refractometers are universal, maintenance free analogue handheld refractometers.
- The handy and robust design allows the easy, efficient and sustainable use in everyday life.
- Manually calculated conversions and errors of the user are avoided by multiple selectable scales.
- These scales are especially developed, exactly calculated and checked. They are also characterized by their thin and clear lines.
- The optical system and the prism cover are made of special material which allows a low-tolerance measuring.
- All ORA models are equipped with an eyepiece for easy and smooth setting for many different diopter strengths.
- The models marked with "ATC" have an automatic temperature compensation which enables accurate measurement at different ambient temperatures (10 °C to 30 °C).
- The following accessory-parts are included:
  - Calibration liquid
  - Calibration block (if required)
  - Storage box
  - Pipette
  - Small screwdriver
  - Cleaning tissue.
- Further accessories are available optionally.

### Technical data

- Die-cast housing of copper-aluminium alloy, chrome coated
- Measurement temperature without ATC: 20 °C
- Measurement temperature range with ATC: 10 °C – 30 °C
- Packing dimensions WxDxH 215x94x65 mm (depending on the model)
- Dimensions of the box: 205x75x55 mm (depending on the model)
- Product length: approx. 130 – 200 mm (depending on the model)
- Net weight approx. 135 – 600 g (depending on the model)

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STANDARD



1 DAY



2 YEARS  
WARRANTY

OPTION



AUTO  
ATC

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## Scope of application: Sugar

The following models are particularly suitable for the measurement of the “BRIX” value. They are used to determine the sugar content in food, especially in fruit, vegetables, juice and soft drinks. In the same ideal way these refractometers serve for monitoring processes in the industry (coolant monitoring, oils, lubricants and fats).

The main scope of applications is:

- Industry: Monitoring of lubricants for process and quality control
- Food industry: Beverages, fruits and sweets
- Agriculture: Determination of the degree of ripeness of fruits for quality control in harvesting
- Restaurants and large-scale catering establishment



Model	Scales	Measuring range	Division	ATC	
<b>KERN</b>					
ORA 10BB	Brix	0 – 10 %	0,1 %		
ORA 10BA	Brix	0 – 10 %	0,1 %	●	
ORA 18BB	Brix	0 – 18 %	0,1 %		
ORA 20BB	Brix	0 – 20 %	0,1 %		
ORA 20BA	Brix	0 – 20 %	0,1 %	●	
ORA 32BB	Brix	0 – 32 %	0,2 %		
ORA 32BA	Brix	0 – 32 %	0,2 %	●	
ORA 62BB	Brix	28 – 62 %	0,2 %		
ORA 62BA	Brix	28 – 62 %	0,2 %	●	
ORA 82BB	Brix	45 – 82 %	0,5 %		
ORA 80BB	Brix	0 – 80 %	0,5 %		

## Scope of application: Honey

The following models are particularly suitable for the measurement of the “BRIX” value, as well as the water content in honey and “degrees Baumé” to determine the relative density of liquids.

The main scope of applications is:

- Beekeeping
- Honey production



Model	Scales	Measuring range	Division	ATC	
<b>KERN</b>					
ORA 3HB	Brix Baumé Water content	58 – 92 % 38 – 43 °Bé 12 – 27 %	0,5 % 0,5 °Bé 1 %		
ORA 3HA	Brix Baumé Water content	58 – 92 % 38 – 43 °Bé 12 – 27 %	0,5 % 0,5 °Bé 1 %	●	
ORA 6HB	Water content	12 – 30 %	0,1 %		
ORA 6HA	Water content	12 – 30 %	0,1 %	●	

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## Scope of application: Salt

The following models are particularly suitable for the measurement and concentration control of the mass fraction of sodium chloride in water as well as of the content of NaCl (salt) in water. This is often used in the preparation and 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.

The main scope of applications is:

- Food industry
- Restaurants and large-scale catering establishment
- Aquaristic: Fishkeepers / Fishfarmers in sea and sweetwater



Model	Scales	Measuring range	Division	ATC	
<b>KERN</b>					
<b>ORA 1SB</b>	Salinity specific gravity	0 – 100 ‰ 1,000 – 1,070 sg	1 ‰ 0,001 sg		
<b>ORA 1SA</b>	Salinity specific gravity	0 – 100 ‰ 1,000 – 1,070 sg	1 ‰ 0,001 sg	●	
<b>ORA 2SB</b>	Salt (NaCl)	0 – 28 %	0,2 %		
<b>ORA 2SA</b>	Salt (NaCl)	0 – 28 %	0,2 %	●	
<b>ORA 3SB</b>	Salt (NaCl) Brix	0 – 28 % 0 – 32 %	0,2 % 0,2 %		
<b>ORA 3SA</b>	Salt (NaCl) Brix	0 – 28 % 0 – 32 %	0,2 % 0,2 %	●	

## Scope of application: Wine

The following models are particularly suitable for the measurement of the content of sugar in fruits. 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.

The main scope of applications is:

- Agriculture: Wine-growing and fruit-growing
- Wine-production
- Must and alcohol production



°Oe = Degree Oechsle, °KMW = Klosterneuburger Must balance

Model	Scales	Measuring range	Division	ATC	
<b>KERN</b>					
<b>ORA 1WB</b>	Oechsle KMW (Babo) Brix	0 – 140 °Oe 0 – 25 °KMW 0 – 32 %	1 °Oe 0,25 °KMW 0,2 %		
<b>ORA 1WA</b>	Oechsle KMW (Babo) Brix	0 – 140 °Oe 0 – 25 °KMW 0 – 32 %	1 °Oe 0,25 °KMW 0,2 %	●	
<b>ORA 3WB</b>	Oechsle Brix	30 – 140 °Oe 0 – 32 %	1 °Oe 0,2 %		
<b>ORA 3WA</b>	Oechsle Brix	30 – 140 °Oe 0 – 32 %	1 °Oe 0,2 %	●	
<b>ORA 7WB</b>	Oechsle KMW (Babo) Brix	30 – 140 °Oe 0 – 25 °KMW 0 – 32 %	1 °Oe 0,2 °KMW 0,2 %		
<b>ORA 7WA</b>	Oechsle KMW (Babo) Brix	30 – 140 °Oe 0 – 25 °KMW 0 – 32 %	1 °Oe 0,2 °KMW 0,2 %	●	
<b>ORA 2AB</b>	Vol (weight) Vol (weight)	0 – 50 % Vol 50 – 80 % Vol	1 % Vol 2,5 % Vol		

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## Scope of application: Urine

The following models are particularly suitable for the measurement of the specific gravity (sg) in urine, the quantity 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)



Model	Scales	Measuring range	Division	ATC	
<b>KERN</b>					
<b>ORA 2PB</b>	Serum protein Urine (spec. gravity) Refractive index	0 – 12 g / dl 1,000 – 1,050 sgU 1,3330 – 1,3600 nD	0,2 g / dl 0,002 sgU 0,0005 nD		
<b>ORA 2PA</b>	Serum protein Urine (spec. gravity) Refractive index	0 – 12 g / dl 1,000 – 1,050 sgU 1,3330 – 1,3600 nD	0,2 g / dl 0,002 sgU 0,0005 nD	●	

## Scope of application: Industry / Automotive

The following models are particularly suitable for the measurement and determination of AdBlue, glycol concentration (ethylene EG, propylene PG), battery fluid (BF), urea, the freezing point of fountain solution (CW) and the refractive index. Furthermore these models are suitable for the measurement of thermal exchange systems.

The main scope of applications is:

- Automotive industry: Car-workshops and producers
- Chemical industry
- Solar industry: Antifreeze monitoring
- Geothermal industry: Brine-concentration-measurement for ground heat
- Forestry / Lumbermen



Model	Scales	Measuring range	Division	ATC	
<b>KERN</b>					
<b>ORA 4FB</b>	EG (G13) PG (G11 / 12) CW BF	-50 – 0 °C -50 – 0 °C -40 – 0 °C 1,10 – 1,40 kg / l	1 °C 1 °C 5 °C 0,01 kg / l		
<b>ORA 4FA</b>	EG (G13) PG (G11 / 12) CW BF	-50 – 0 °C -50 – 0 °C -40 – 0 °C 1,10 – 1,40 kg / l	1 °C 1 °C 5 °C 0,01 kg / l	●	
<b>ORA 1UB</b>	Urea	0 – 40 %	0,2 %		
<b>ORA 1UA</b>	Urea	0 – 40 %	0,2 %	●	
<b>ORA 4UB</b>	Urea EG (G13) PG (G11 / 12) CW BF	30 – 35 % -50 – 0 °C -50 – 0 °C -40 – 0 °C 1,10 – 1,40 kg / l	0,2 % 1 °C 1 °C 5 °C 0,01 kg / l		
<b>ORA 4UA</b>	Urea EG (G13) PG (G11 / 12) CW BF	30 – 35 % -50 – 0 °C -50 – 0 °C -40 – 0 °C 1,10 – 1,40 kg / l	0,2 % 1 °C 1 °C 5 °C 0,01 kg / l	●	

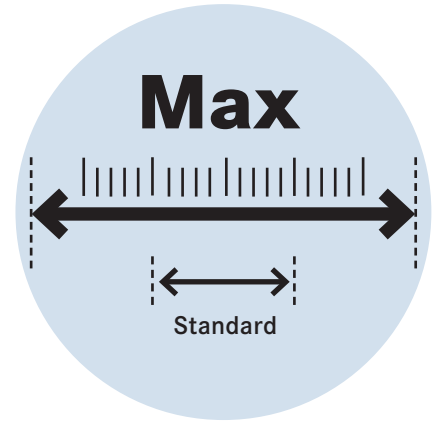
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## Scope of application: Expert applications

The following models have a special large measuring range for the refractive index and large divided scales for the measurement and clear reading of Brix values.

The main scope of applications is:

- Universal application, especially when extra large measuring ranges are required



Model	Scales	Measuring range	Division	ATC	
<b>KERN</b>					
<b>ORA 80BE</b>	Brix	0 – 50 % 50 – 80 %	0,5 % 0,5 %		
<b>ORA 90BE</b>	Brix	0 – 42 % 42 – 71 % 71 – 90 %	0,2 % 0,2 % 0,2 %		
<b>ORA 1RE</b>	Refractive index	1,333 – 1,405 nD 1,405 – 1,468 nD 1,468 – 1,517 nD	0,005 nD 0,005 nD 0,005 nD		
<b>ORA 4RR</b>	Refractive index	1,440 – 1,520 nD	0,001 nD		



ORA 4RR



ORA 90 BE / ORA 1RE



ORA 80BE

## Scope of application: Gemmology / Jewellery

The Gem models have a special refracting-index range for jewellery. For this refractometer there is a nice leather bag in the scope of delivery included.

The main scope of applications is:

- Jewellers
- Training / Education
- Jewellery industry



Model	Scales	Measuring range	Division	ATC	
<b>KERN</b>					
<b>ORA 1GG</b>	Refractive index	1,30 – 1,81 nD	0,01 nD		



ORA 1GG



# Analogue refractometer KERN ORA

## Accessory parts: Analogue refractometer – ORA

Model	Description	
KERN		
ORA-A1101	Prism coverplate with integrated LED-Diode	
ORA-A2103	Leather bag for analog refractometers	
ORA-A1001	Calibration liquid 0% (Distilled Water) Volume: 2,5 ml	
ORA-A1002	Contact liquid 19,6 % for models ORA 6HB, ORA 6HA Volume: 2,5 ml	
ORA-A1003	Calibration liquid 29,6 % for models ORA 62BB Volume: 2,5 ml	
ORA-A1004	Contact liquid 78,8 % for models ORA 82BB, ORA 3HA, ORA 3HB, ORA 4RR; Volume: 2,5 ml	
ORA-A1005	Calibration block for models ORA 82BB, ORA 3HA, ORA 3HB, ORA 6HA, ORA 6HB, ORA 4RR	
ORA-A1007	Contact liquid 2-Iodmethan for model ORA 1GG Volume: 2,5 ml	
ORA-A1008	Calibration block for model ORA 1GG	
ORA-2001	Prism coverplate (spare part)	



Prism coverplate with LED  
ORA-A1101



Leather bag  
ORA-A2103



Calibration liquid



Calibration block



# WolfLabs

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The specifications listed in this brochure are subject to change by the manufacturer and therefore cannot be guaranteed to be correct. If there are aspects of the specification that must be guaranteed, please provide these to our sales team so that details can be confirmed.

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