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Carefully read through the operating manual even if you have prior experience with KERN refractometers.

1. General information

1.1 Intended use

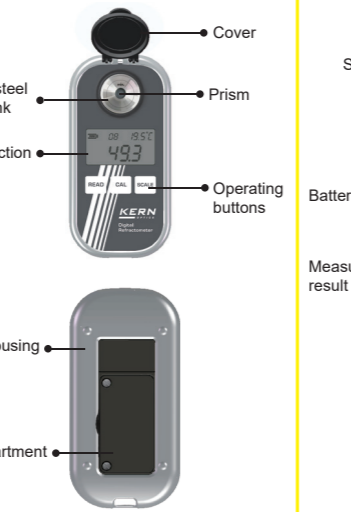
The refractometer is a measuring instrument for determining the refractive index of transparent substances in liquid or in some cases also in the solid state. It is used to observe the behaviour of light as it passes from a prism with known properties to the substance being tested. Use of the refractometer for other purposes is contrary to its intended use and may be hazardous. The manufacturer shall not be liable for any damages caused by improper use.

1.2 Warranty

The warranty shall be void in the event of:
 • Failure to observe the instructions in the operating manual
 • Use for purposes other than those described
 • Modifications or opening the device housing
 • Mechanical damage and/or damage resulting from media, liquids, natural wear and tear

2. Introduction

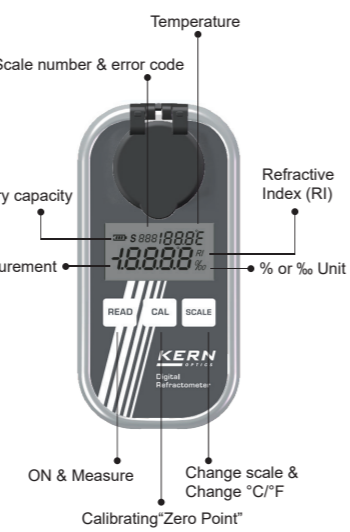
2.1 Description



2.2 Scope of delivery
 1x Storage box | 1x Digital refractometer | 1x Operating manual | 1x AAA Battery 1.5 V | 1x Pipette | 1x Screwdriver

3. Display & operating buttons

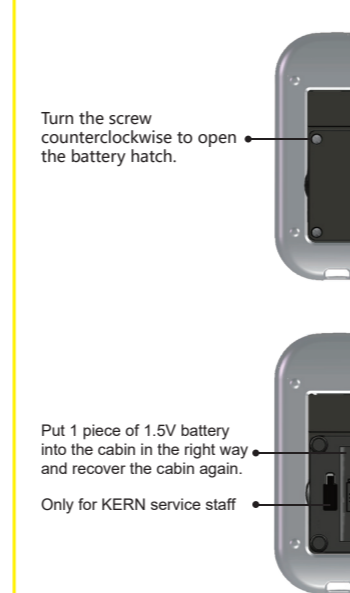
3.1 Description display & operating buttons



Note: Please replace the battery when the is displayed.

4. Preparing before operating

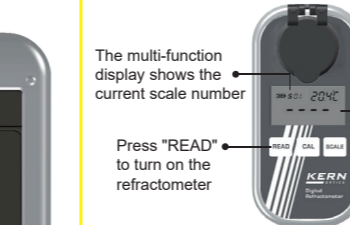
4.1 Install the battery



Put 1 piece of 1.5V battery into the cabin in the right way and recover the cabin again.
 Only for KERN service staff

5. Turn on & measure

5.1 Turn on



The multi-function display shows the current scale number. Press "READ" to turn on the refractometer. If there is no sample filled in, the display shows "- - -".

5.2 Measure

After turning on, clean the sample tank with distilled water and then dry it. Now fill the sample up to the mark, close the cover and press "READ".

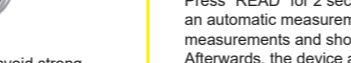


6. Calibration

6.1 Calibration



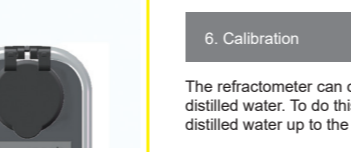
Press "CAL" for 2 seconds to enter calibration mode. Then press "CAL" again for 2-3 seconds until "CAL" flashes in the display.



While "CAL" is flashing in the display, press "CAL" again to start the calibration. When the calibration is finished, the display shows "End". After approx. 10 seconds, the device automatically returns to normal mode.

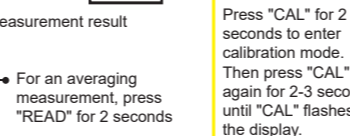


If the calibration was not completed successfully, an error code appears in the display. Here, for example, A01.

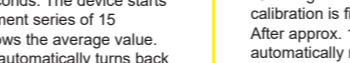


7. Changing scale & temperature unit

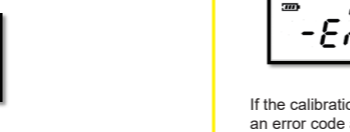
7.1 Changing scale



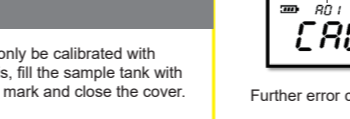
Press "SCALE" to change into another scales and show the converted value.



7.2 Changing temperature unit

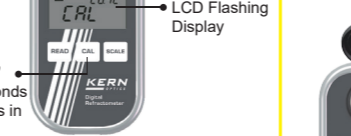


To change the temperature unit, press "SCALE" for 2 seconds.



8. Turning off

8.1 Turning off



If without any operations for 1 minute, the instrument would be automatically turned off.

9. Cleaning & maintenance

- To avoid damages to the prism and the sample tank, clean them with distilled water after each use.
- Dry it with a soft cloth afterwards.
- Do not use hard or abrasive objects for cleaning.
- Do not leave any residue in the sample tank.
- If the refractometer is not going to be used for a longer time, remove the battery and store it at a cool and dry place.

10. Disposal

The packaging consists of environmentally friendly materials which can be disposed of via local recycling facilities. The device and storage box should be disposed

11. Technical data

Scale + accuracy + resolution	Depents to the model
Temperature	0,0 – 40,0 °C / 32,0 – 104,0 °F
Automatic Temperature Compensation	Yes
Minimum sample volume	0.2 - 0.3 ml (Marking ring)
AUTO-OFF	60 seconds
Averaging measurement	15 measurements
Battery	1 x AAA 1.5 V
Lifetime of the battery	Approx. 10.000 measurements
Overall dimensions LxWxH	125x65x30 mm
Net weight	140 g (without battery)

12. Error codes

code	Instructions
A01	Beyond the scope of calibration temperature. (0.0°C~40.0°C)
A02	During calibration, no solution or solution wrong.
A03	This instrument has a hardware failure.

13. Models and scales

ORM 100M
ORM 1RS
ORM 1SU
ORM 2SU
ORM 1HD
ORM 1NA
ORM 1SW
ORM 1AL
ORM 1BR
ORM 1WV
ORM 2WN
ORM 1CD
ORM 2CD
ORM 1UN
ORM 2UN
ORM 1CA
ORM 2CA

13. Models and scales

Model	Scale	No.	Range	Unit	Resolution	Accuracy
ORM 100M	Refractive Index	502	1.3330-1.4200	nD	0.0001nD	±0.0003nD
	Brix	501	0.0-99.9	%	0.1%	±0.2%
ORM 1RS	Refractive Index	502	1.3300+1.5177	nD	0.0001nD	±0.0003nD
	Brix	501	0.0-99.9	%	0.1%	±0.2%
ORM 1SU	Fructose	501	0.0-88.9	%	0.1%	±0.2%
	Glucose	502	0.0-59.9	%	0.1%	±0.2%
ORM 2SU	Brix	501	0.0-99.9	%	0.1%	±0.2%
	Refractive Index	504	1.3330-1.5177	nD	0.0001nD	±0.0003nD
ORM 1HD	Brix	501	0.0-18.5	%	0.1%	±0.2%
	Maltool	502	0.0-15.6	%	0.1%	±0.2%
ORM 1NA	Devtan	501	0.0-18.9	%	0.1%	±0.2%
	Brix	504	0.0-50.0	%	0.1%	±0.2%
ORM 1SW	Honey Water	501	0.0-38.0	%	0.1%	±0.2%
	Honey Bouma	502	0.0-28.0	%	0.1%	±0.2%
ORM 1AL	Brix	503	0.0-90.0	%	0.1%	±0.2%
	Refractive Index	504	1.3330-1.5177	nD	0.0001nD	±0.0003nD
ORM 1BR	Salinity NaCl (%)	501	0.0-28.0	%	0.1%	±0.2%
	Salinity (NaCl)	502	0-28.0	%	1%	±2%
ORM 1WV	Specific Weight	503	1.000-1.220	-	0.001	±0.002
	Refractive Index	504	0.0-99.9	nD	0.0001nD	±0.0003nD
ORM 2WN	Chlorinity Seawater	502	0-37	%	1%	±2%
	Specific Weight	503	1.000-1.070	-	0.001	±0.002
ORM 1CD	Brix	504	0.0-50.0	%	0.1%	±0.2%
	Alcohol Meas.	501	0-72	%	1%	±1%
ORM 2CD	Alcohol Vol.	502	0-80	%	1%	±1%
	Refractive Index	505	1.3330-1.4200	nD	0.0001nD	±0.0003nD
ORM 1UN	Plato	501	0.0-20.5	°P	0.1	±0.3
	Brix	503	0.0-50.0	%	0.1%	±0.2%
ORM 2UN	Refractive Index	504	1.3330-1.4200	nD	0.0001nD	±0.0003nD
	Brix	502	0.0-99.9	%	0.1%	±0.2%
ORM 1CA	SG Wort	502	1.000-1.130	-	0.001	±0.002
	Refractive Index	504	1.3330-1.4200	nD	0.0001nD	±0.0003nD
ORM 2CA	Vin% (Alabo)	501	0.0-25.0	%	0.1%	±0.2%
	KMW (Alabo)	503	0.0-25.0	-	0.1	±0.2
ORM 100M	Brix	504	0.0-50.0	%	0.1%	±0.2%
	Coffee TDS 1	501	0.0-25.0	%	0.1	±0.2
ORM 1RS	Refractive Index	503	0.0-99.9	%	0.1%	±0.2%
	Brix	502	0.0-99.9	%	0.1%	±0.2%
ORM 1SU	Refractive Index	503	1.3330-1.4200	nD	0.0001nD	±0.0003nD
	Brix	501	0.0-25.0	%	0.01	±0.20
ORM 2SU	Refractive Index	503	1.3330-1.4200	nD	0.0001nD	±0.0003nD
	Brix	501	0.0-25.0	%	0.01	±0.20
ORM 1HD	Refractive Index	503	1.3330-1.4200	nD	0.0001nD	±0.0003nD
	Brix	501	0.0-25.0	%	0.01	±0.20
ORM 1NA	Refractive Index	504	1.3330-1.4200	nD	0.0001nD	±0.0003nD
	Brix	501	0.0-25.0	%	0.1%	±0.2%
ORM 1SW	Refractive Index	504	1.3330-1.4200	nD	0.0001nD	±0.0003nD
	Brix	503	0.0-50.0	%	0.1%	±0.2%
ORM 1AL	Refractive Index	504	1.3330-1.4200	nD	0.0001nD	±0.0003nD
	Brix	503	0.0-50.0	%	0.1%	±0.2%
ORM 1BR	Refractive Index	504	1.3330-1.4200	nD	0.0001nD	±0.0003nD
	Brix	503	0.0-50.0	%	0.1%	±0.2%
ORM 1WV	Refractive Index	504	1.3330-1.4200	nD	0.0001nD	±0.0003nD
	Brix	503	0.0-50.0	%	0.1%	±0.2%
ORM 2WN	Refractive Index	504	1.3330-1.4200	nD	0.0001nD	±0.0003nD
	Brix	503	0.0-50.0	%	0.1%	±0.2%
ORM 1CD	Refractive Index	504	1.3330-1.4200	nD	0.0001nD	±0.0003nD
	Brix	503	0.0-50.0	%	0.1%	±0.2%
ORM 2CD	Refractive Index	504	1.3330-1.4200	nD	0.0001nD	±0.0003nD
	Brix	503	0.0-50.0	%	0.1%	±0.2%
ORM 1UN	Refractive Index	504	1.3330-1.4200	nD	0.0001nD	±0.0003nD
	Brix	503	0.0-50.0	%	0.1%	±0.2%
ORM 2UN	Refractive Index	504	1.3330-1.4200	nD	0.0001nD	±0.0003nD
	Brix	503	0.0-50.0	%	0.1%	±0.2%
ORM 1CA	Refractive Index	504	1.3330-1.4200	nD	0.0001nD	±0.0003nD
	Brix	503	0.0-50.0	%	0.1%	±0.2%
ORM 2CA	Refractive Index	504	1.3330-1.4200	nD	0.0001nD	±0.0003nD
	Brix	503	0.0-50.0	%	0.1%	±0.2%