



Content

1. General information	3
2. Introduction	4
3. Display & operating buttons	5
4. Preparing before operating	6
5. Turn on & measure	6
6. Calibration	8
7. Changing scale & temperature unit	10
8. Turning off	11
9. Cleaning & maintenance	11
10. Disposal	11
11. Technical data	12
12. Error codes	12
13. Models and scales	13

⚠ 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

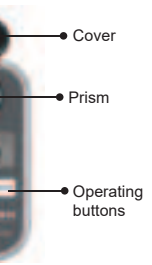
The warranty shall be void in the event of:
• Failure to observe the instructions in the operating manual
• Use for purposes other than those described
• Modifications or opening the device housing
• Mechanical damage and/or damage resulting from media, liquids, natural wear and tear



This digital refractometer cannot measure any liquid that is highly corrosive to metal or glass. When measuring liquids that are corrosive to plastics or react chemically with plastics, be careful not to drop the measured liquid onto the shell. Otherwise it will corrode the shell.

2. Introduction

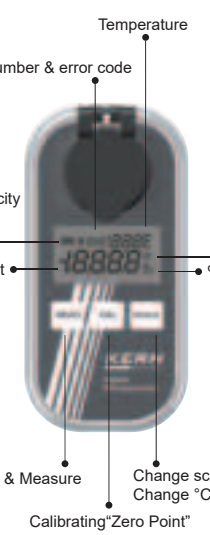
2.1 Description




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

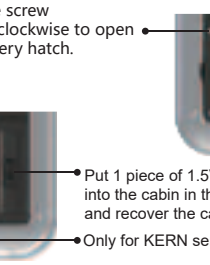
3.1 Description display & operating buttons



⚠ Note: Please replace the battery when the  is displayed.

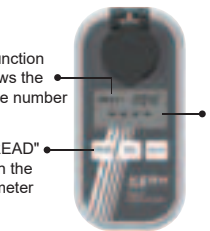
4. Preparing before operating

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

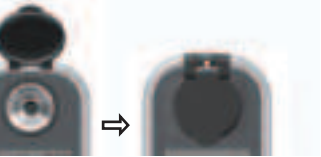
5.1 Turn on



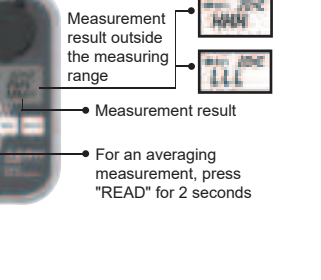
Note:
1. When used outdoors, please avoid strong light so as not to affect the measurement accuracy.
2. Please keep the instrument in a stable and still statement and position.

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".



5. Turn on & measure



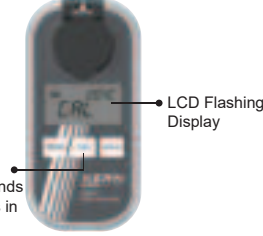
5.3 Average value measurement
Press "READ" for 2 seconds. The device starts an automatic measurement series of 15 measurements and shows the average value. Afterwards, the device automatically turns back to the normal measuring mode.



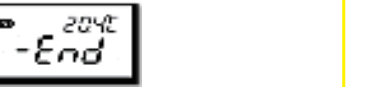
Remaining measurements

6. Calibration

The refractometer can only be calibrated with distilled water. To do this, fill the sample tank with distilled water up to the mark and close the cover.



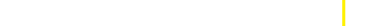
While "CAL" is flashing in the display, press "CAL" again to start the calibration. When the calibration is finished, the display shows "End". After approx. 10 seconds, the device automatically returns to normal mode.



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



Further error codes can be found in the appendix.



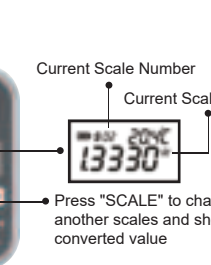
We recommend calibrating the refractometer,

- when commissioning
- after a strong shock
- after longer transport
- after a change of location with a large temperature difference
- if the device has not been used for a long time

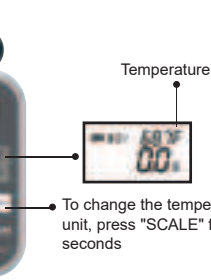
Always use distilled water and make sure that the refractometer, the water and the environment are at the same temperature.

7. Changing scale & temperature unit

7.1 Changing scale



7.2 Changing temperature unit



If exceed the temperature limitations, the signs "HHH" or "LLL" would show.



8. Turning off

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

9. Cleaning & maintenance

1. To avoid damages to the prism and the sample tank, clean them with distilled water after each use.
2. Dry it with a soft cloth afterwards.
3. Do not use hard or abrasive objects for cleaning.
4. Do not leave any residue in the sample tank.
5. 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

of by the operator in accordance with applicable national or regional regulations at the place of use.

NOTE: In accordance with the Battery Ordinance (BattV), batteries must not be disposed of in household waste. The end user is legally obliged to return them.

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

Model	Scale	No.	Range	Unit	Resolution	Accuracy
ORM 50BM	Refractive Index	502	1.3330-1.4200	nD	0.0001nD	±0.0003nD
ORM 1RS	Brix	501	0.0-50.0	%	0.1%	±0.2%
ORM 15U	Refractive Index	502	1.330-1.5177	nD	0.0001nD	±0.0003nD
ORM 25U	Fructose	501	0.0-68.9	%	0.1%	±0.2%
ORM 25U	Glucose	502	0.0-59.9	%	0.1%	±0.2%
ORM 25U	Brix	503	0.0-69.9	%	0.1%	±0.2%
ORM 25U	Refractive Index	504	1.3330-1.5177	nD	0.0001nD	±0.0003nD
ORM 1HD	Lactose	501	0.0-16.5	%	0.1%	±0.2%
ORM 1HD	Maltose	502	0.0-15.6	%	0.1%	±0.2%
ORM 1HD	Dextran	503	0.0-15.6	%	0.1%	±0.2%
ORM 1HD	Brix	504	0.0-50.0	%	0.1%	±0.2%
ORM 1HD	Honey Water	501	5.0-36.0	%	0.1%	±0.2%
ORM 1HD	Honey Source	502	33.0-48.0	%	0.1%	±0.2%
ORM 1HD	Brix	503	0.0-50.0	%	0.1%	±0.2%
ORM 1NA	Refractive Index	504	1.3330-1.5177	nD	0.0001nD	±0.0003nD
ORM 1NA	Salinity NaCl (%)	501	0.0-28.0	%	0.1%	±0.2%
ORM 1NA	Salinity (NaCl) %	502	0-28.0	%	1%	±0%
ORM 1NA	Specific Weight	503	1.000-1.220	-	0.001	±0.002
ORM 1BW	Refractive Index	505	0.0-50.0	%	0.1%	±0.2%
ORM 1BW	Salinity Seawater	501	0-100	%	1%	±0%
ORM 1BW	Chlorinity Seawater	502	0-57	%	1%	±0%
ORM 1BW	Specific Weight	503	1.000-1.070	-	0.001	±0.002
ORM 1AL	Refractive Index	505	1.3330-1.4200	nD	0.0001nD	±0.0003nD
ORM 1AL	Alcohol Mass.	501	0-72	%	1%	±0%
ORM 1AL	Alcohol Vol.	502	0-80	%	1%	±1%
ORM 1BR	Refractive Index	504	1.3330-1.4200	nD	0.0001nD	±0.0003nD
ORM 1BR	Plo	501	0.0-30.5	°P	0.1	±0.3
ORM 1BR	SG Wort	502	1.000-1.130	-	0.001	±0.002
ORM 1BR	Refractive Index	503	0.0-50.0	%	0.1%	±0.2%
ORM 1BR	Refractive Index	504	1.3330-1.4200	nD	0.0001nD	±0.0003nD
ORM 1WN	Oechsle	501	0-150	°Oe	1	±2
ORM 1WN	Vol%	502	0.0-22.0	%	0.1%	±0.2%
ORM 1WN	KMW (Babo)	503	0.0-25.0	-	0.1	±0.2
ORM 1WN	Brix	504	0.0-50.0	%	0.1%	±0.2%
ORM 1WN	Refractive Index	505	0.0-50.0	%	0.1%	±0.2%
ORM 2WN	Oechsle France	501	0-250	°Oe	1	±2
ORM 2WN	Vol%	502	0.0-22.0	%	0.1%	±0.2%
ORM 2WN	KMW (Babo)	503	0.0-25.0	-	0.1	±0.2
ORM 2WN	Brix	504	0.0-50.0	%	0.1%	±0.2%
ORM 1CD	Refractive Index	501	0.0-25.0	%	0.1%	±0.2%
ORM 1CD	Refractive Index	502	0.0-25.0	%	0.1%	±0.2%
ORM 2CD	Refractive Index	503	1.3330-1.4200	nD	0.0001nD	±0.0003nD
ORM 2CD	Refractive Index	504	0.0-25.0	%	0.01	±0.20
ORM 2CD	Refractive Index	505	0.0-25.0	%	0.01	±0.20
ORM 1UN	Refractive Index	503	1.3330-1.4200	nD	0.0001nD	±0.0003nD
ORM 1UN	Refractive Index	504	0.0-12.0	%	0.1	±0.2
ORM 1UN	Refractive Index	505	0.0-50.0	%	0.1%	±0.2%
ORM 2UN	Refractive Index	504	1.3330-1.4200	nD	0.0001nD	±0.0003nD
ORM 2UN	Refractive Index	501	1.000-1.060	-	0.001	±0.002
ORM 2UN	Refractive Index	502	1.000-1.060	-	0.001	±0.002
ORM 2UN	Refractive Index	503	0.0-50.0	%	0.1%	±0.2%
ORM 2UN	Refractive Index	504	1.3330-1.4200	nD	0.0001nD	±0.0003nD
ORM 2UN	Refractive Index	505	0.0-50.0	%	0.1%	±0.2%
ORM 1CA	Refractive Index	501	1.400-1.5	°C	0.1°C	±0.5°C
ORM 1CA	Refractive Index	502	0.0-51.0	%	0.1%	±0.2%
ORM 1CA	Refractive Index	503	1.000-1.500	-	0.001	±0.005
ORM 1CA	Refractive Index	504	0.0-50.0	%	0.1%	±0.2%
ORM 1CA	Refractive Index	505	1.3330-1.4200	nD	0.0001nD	±0.0003nD
ORM 1CA	Refractive Index	506	0.0-100.0	%	0.1%	±0.5%
ORM 1CA	Refractive Index	507	0.0-100.0	%	0.1%	±0.5%
ORM 1CA	Refractive Index	508	0.0-100.0	%	0.1%	±0.5%
ORM 1CA	Refractive Index	509	0.0-100.0	%	0.1%	±0.5%
ORM 2CA	Refractive Index	501	0.0-50.0	%	0.1%	±0.2%
ORM 2CA	Refractive Index	502	0.0-50.0	%	0.1%	±0.2%
ORM 2CA	Refractive Index	503	0.0-50.0	%	0.1%	±0.2%
ORM 2CA	Refractive Index	504	0.0-50.0	%	0.1%	±0.2%
ORM 2CA	Refractive Index	505	0.0-50.0	%	0.1%	±0.2%